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Inherency – Funding Now

**Squo is funding landsat fully through USGS**

**Salazar 3/9** (Ken, Secretary of the Interior, Congressional hearing, 2011, http://www.doi.gov/budget/2012/data/pdf/testimony\_INTS\_KS20110309.pdf, accessed 7-5-11, JMB)

**The 2012 budget** for the U.S. Geological Survey **includes $48.0 million to begin** planning activities with the National Aeronautics and Space Administration for **an operational Landsat program**. Consistent with the Administration’s National Space Policy, **the 2012 budget enables the USGS to assume management responsibility for a new operational Landsat program that will ensure continuity of Landsat data** in the future. **USGS will provide data requirements and funding, while NASA**, drawing on its historic expertise, **will build the Landsat satellites on a reimbursable basis for the USGS.** This new operating structure is consistent with the approach used for NOAA’s JPSS weather satellites, and will ensure sufficient oversight while avoiding duplication. **The 2012 budget will enable USGS to gather and prioritize Federal user community requirements for land image data, conduct trade studies** on key design alternatives related to the development of the imaging device, **initiate the procurement process through NASA** **for the Landsat 9 and 10 instruments and spacecrafts, and establish a science advisory team, in order to launch Landsat 9 in** FY **2019 and Landsat 10 in** FY **2024. Also included** within a new separate account for National Land Imaging **is an increase of $13.4 million to complete the retooling of the ground receiving stations** **to be able to receive data from the new instruments on Landsat 8,** **expected to be launched** in **December** of **2012**.

**Funding for landsat will be stable into the future**

**McNutt 3/17** (Marcia K., Director, US Geological Survey, Congressional hearing, 2011, http://www.doi.gov/budget/2012/data/pdf/testimony\_INTH\_MM20110317.pdf, accessed 7-5-11, JMB)

**The 2012 budget request for the USGS is $1.1 billion**, an increase of $6.1 million from the 2010 enacted level. In 2012, the **USGS is proposing to establish** a new appropriations account. **National Land Imaging** (NLI), **which comprises a base transfer from the Surveys, Investigations and Research** (SIR**) account of $53.5 million coupled with an increase of $48.0 million to begin work on Landsats 9 and 10**. Excluding the NLI account, the SIR account is $53.6 million below the 2010 enacted level. Decreases are proposed in scientific programs as well as for Interior-wide management efficiencies and administrative savings in travel, contracts, supplies, and in information technology. Major Changes **The USGS 2012 budget request includes establishment of a separate account for Landsat missions along with an increase of $48.0 million to begin developing an operational Landsat program, starting with Landsats 9 and 10**. Landsat furthers Interior's important role in land remote sensing under the President's National Space Policy and provides invaluable data for land use and climate change research. **The new account will include funding for current satellites** (Landsats 5 and 7). **the Landsat Data Continuity Mission** (Landsat 8), which is scheduled to launch in December 2012, **and the development of Landsats 9 and 10, through a continuous Landsat program that will ensure data continuity in the future**. Landsat has become vital to the Nation's agricultural, water management, disaster response, and scientific communities. **Establishment of this account and the increase in funding will provide the stable budgetary foundation needed for a continuous capability. A permanent budgetary and managerial structure will ensure the continued collection and maintenance of** the important **data** the satellite series provides.

**Landsat data won’t be compromised by being within USGS**

**GIS talk 3/15** (2011, http://www.educationgis.com/2011/03/mapps-not-happy-with-usgs-initiatives.html, accessed 7-5-11, JMB)

"On the bright side," Palatiello said, "**we are pleased the budget request includes a**n increase, or **reallocation, of $48 million to support the current and future mission of the National Land Imaging Program**, principally through LANDSAT. The moderate resolution data provided by LANDSAT does not compete with the private sector and is an appropriate government investment. It provides for data that is primarily used in research and scientific applications, much of it funded by the government, which complements higher resolution satellite and airborne capabilities available from the private sector**. This funding by the Obama Administration continues implementation of the 'Future of Land Imaging' program initiated in the Bush Administration.** We support this bipartisan program. MAPPS supports the increase, or reallocation, of $48 million to support **the NLIP**, principally **through LANDSAT**. The bipartisan program **provides government funding for satellites that will ensures data continuity**, which compliments higher resolution satellite and airborne capabilities from the private sector."

Inherency – Funding Now

**Landsat funding allocate to solve issues of status quo**

**Keck 11** (Zachary, DC Foreign Policy Analyst @ The Examiner, CNAS, 3/30, <http://www.cnas.org/blogs/naturalsecurity/2011/03/satellites-you-need-know-landsat-granddaddy-them-all.html>, accessed 7-6-11, CH)

In addition, **the OSTP memorandum** set up an interagency working group to determine the future path of land imaging. This group met on a weekly basis between January and December of 2006 and issued its finding in a report that was released in August 2007. This report laid out a plan for implementing the goal of the 2005 memorandum which **pledged “to transition the Landsat program from a series of independently planned missions to a sustained operational program.**” As we previously noted, the **president’s new budget requests adequate funding for bringing this plan to fruition. Thus for now the future of Landsat is secure**, yet in an era of sweeping budget cuts, this could change. We’ll let you know if it does.

**Landsat funding secure**

**Keck 11** (Zachary, DC Foreign Policy Analyst @ The Examiner, CNAS, 2/23, <http://www.cnas.org/blogs/naturalsecurity/2011/02/final-frontier-week-part-2-president-s-budget-and-earth-observation-sa>, accessed 7-6-11, CH)

**To better integrate the interagency Landsat program, the Obama administration’s new budget would create a new account for it, and it requests $99.8 million dolla**rs for FY 2012 – **a noticeable increase from the $59.6 million Landsat is slated to receive this year**. In addition to maintaining the two current satellites, Landsat-5 and Landsat-7, **this funding increase will help ensure the viability of the Landsat program in the years to come**. For instance, **the administration is requesting $13.4 million towards operations for Landsat-8, a mission that is set to launch in December 2012, as well $48 million for planning the Landsat-9 mission**. The Landsat Data Continuity Mission (LDCM), which Landsat-8 and Landsat-9 are together called, will replace the current satellites in providing continuous earth imagery.

**Landsat funding secure—consistent funding from the USGS and stable allocation for TIRS**

**Behrens 10** (Carl, specialist in Energy Policy, CRS, 9/17, <http://www.fas.org/sgp/crs/misc/R40594.pdf>, accessed 7-6-11, CH)

In the early planning for the LDCM satellite, no provision was made for an instrument that would measure images in the thermal infrared range, although that function is included in the present Landsat-5 and Landsat-7 satellites. **Appeals from numerous users of the information in that spectrum sector led NASA to reconsider the possibility of including** a Thermal Infrared Sensor (**TIRS), and the Congress included $10 million in the FY2009 Omnibus Appropriations bill directly for TIRS. The infrared instrument is now officially part of the design of LDCM, after it was decided that it could be developed and included in LDCM without delaying the launch of the satellite.** NASA includes the “aggressive development schedule” for TIRS as a “project risk” that may require adjustments to meet the targeted launch date. USGS Funding **USGS supports data collection and processing from the current Landsat-5 and Landsat-7 satellites, and also funds development of ground facilities to receive and process information from LDCM. For FY2009 USGS received $24.2 million for LDCM, and the same amount for FY2009 and FY2010.** For FY2011 USGS requested$37.5 million for LDCM.

**TIRS funding now**

**Behrens 10** (Carl, specialist in Energy Policy, CRS, 9/17, <http://www.fas.org/sgp/crs/misc/R40594.pdf>, accessed 7-6-11, CH)

**Of particular concern has been the possibility that the new satellite may not include the capability of receiving data in the thermal infrared spectrum**, a capability that is now in Landsat 5 and 7 and which some users have found particularly useful. **Funding for a Thermal Infrared Sensing Instrument (TIRS) was uncertain and progress on the instrument delayed during the early years of the mission. However, NASA’s FY2009 appropriation included $10 million specifically for TIRS. NASA announced** in its FY2011 budget request **that TIRS would be developed in time to meet the December 2012 launch date**, while noting that because of its late start it required an “aggressive development schedule.”\

Inherency – Old Landsats Solve

**Landsats 3, 4 and 5 provide the best analysis of crops.**

**Collins and Broad 90** (Charles A., Tyson M., U.S. Geological Survey, "Ground-Based Water Pumpage in the Willamette Lowland Regional Aquifier System, Oregon and Washington 1990.") CJQ

Many techniques exist for classifying remotely sensed data. Because the focus of the current study was detection and delineation of croplands, efforts were concentrated on using combinations of **Landsat TM bands 3, 4, and 5** that **provide the best spectral information about growing plants. Four classification methods,** which used combinations of these spectral bands and the early and late season images, **were developed and tested** on the area near Salem. Three of the methods were (1) using bands 3, 4, and 5 of the May image (May345); (2) using bands 3, 4, and 5 of the July image (July345); and (3) using bands 4 and 5 of both the May and July images (MayJuly4545). In the fourth method, a “mask” of areas identified as bare soil on the May image was applied over the July image (July mask), so that only areas that were bare soil in May would be classified on the July image. The rationale for use of this last method was that **perennial crops like grain, grass seed, alfalfa, and mint would be growing rapidly by early May and would contrast with the bare-soil areas that generally are planted in annual crops, such as vegetable row** crops. Each method had advantages and disadvantages. The May345 method showed the perennial crops well; areas used for growing annual crops appeared as bare soil. The July345 method gave better definition of areas growing annual crops but lost definition for some perennial crops. **Many of the perennial crops were mature and were being harvested** by this time. **The** MayJuly4545 **method provided the best overall identification of land-cover classes but did not adequately differentiate the annual crops.**

Inherency – Thermal Now

**Thermal imaging included within LDCM**

**Behrens 10** (Carl E., Specialist in Energy Policy for the Congressional Research Service, Sept 17, http://www.fas.org/sgp/crs/misc/R40594.pdf, accessed 7-3-11, JMB)

In the early planning for the LDCM satellite, no provision was made for an instrument that would measure images in the thermal infrared range, although that function is included in the present Landsat-5 and Landsat-7 satellites. **Appeals from numerous users of the information in that spectrum sector led NASA to reconsider the possibility of including a Thermal Infrared Sensor** (TIRS), **and the Congress included $10 million** in the FY2009 Omnibus Appropriations bill **directly for TIRS. The infrared instrument is now officially part of the design of LDCM, after it was decided that it could be developed and included in LDCM without delaying the launch of the satellite**. NASA includes the “aggressive development schedule” for TIRS as a “project risk” that may require adjustments to meet the targeted launch date.

\*LDCM = Landsat Data Continuity Mission

**Next Landsat has thermal imaging**

**Reuter et al 10** (Dennis, the authors are researchers at various institutions or work at NASA, 11/10, http://landsat.gsfc.nasa.gov/pdf\_archive/Reuter\_etal-IGARSS2010.pdf, accessed 7-3-11, JMB)

**TIRS is a thermal imager** with two channels at 10.8 and 12 μm **being developed** at NASA/GSFC **for** delivery to **LDCM** by December, 2011. **TIRS will provide thermal data continuity with previous Landsat missions**, but **its two channels will also provide new image analysis capability.** Although being built in-house at Goddard with significant institutional support, TIRS development has also received active support from numerous parties including USGS, the LDCM project, The LDCM cal/val team, the Landsat Science Team and, of course, NASA HQ.

\*LDCM = Landsat Data Continuity Mission

**Thermal imaging in the next Landsat mission will be better than the squo**

**Reuter et al 10** (Dennis, the authors are researchers at various institutions or work at NASA, 11/10, http://landsat.gsfc.nasa.gov/pdf\_archive/Reuter\_etal-IGARSS2010.pdf, accessed 7-3-11, JMB)

As is implied in the mission name, **one element of the LDCM project is to provide continuity with past Landsat sensors. Another element is to provide improvements** in sensors where possible. **The Thematic Mapper** (TM), Enhanced Thematic Mapper (ETM), and Enhanced Thematic Mapper Plus (ETM+) sensors **are good examples of this philosophy as the thermal infrared band** improved in spatial resolution from 120 to 60 m for the single-band, whiskbroom-approach systems (See [2] and references therin). **While such data have proved important in providing land-use information,** volcanic and fire-monitoring data, and resource management guidance, **a dual-band sensor** at lower spatial resolution but **with improved sensitivity would maintain continuity and provide valuable data for water resource management** **and agricultural studies**. **TIRS** on LDCM is a 100 meter (120 meter requirement) spatial resolution push-broom imager whose two spectral channels, centered at near 10.8 and 12 microns, **split the spectral range of the single TM and ETM+ thermal band while still providing thermal band data continuity with previous Landsat missions. The push-broom implementation increases system sensitivity by allowing longer integration times** than whiskbroom sensors. **The two channels allow the use of the “split-window” technique to aid in atmospheric correction.** The TIRS focal plane operates near 43 K and consists of three Quantum Well Infrared Photodetector (QWIP) arrays to span the 185 km swath width [5]. **Infrared filters are used to define the spectral coverage of the two channels**. The imaging telescope is a 4-element refractive lens system. A scene select mechanism (SSM) rotates a scene mirror (SM) to change the field of regard from a nadir Earth view to either an on-board blackbody calibrator or a deep space view. The blackbody is a full aperture calibrator whose temperature may be varied from 270 to 330 K. Figure 1 shows a model of the TIRS sensor unit with the major elements identified.

\*LDCM = Landsat Data Continuity Mission

Inherency – NLIP Now

**Obama proposed a National Land Imaging Program through USGS**

**Berger 2/21** (Brian, 2011, Space News, http://spacenews.com/civil/110221-obama-proposal-usgs-landsats.html, accessed 7-5-11, JMB)

U.S. President Barack **Obama is asking Congress for $99 million** next year **to establish a permanent budgetary and managerial home within** the U.S. Geological Survey (**USGS) for** the **Landsat** series of Earth imaging satellites. **If lawmakers approve the president’s proposal to establish** **a** long-sought **National Land Imaging program within the USGS, then the Landsat Data Continuity Mission** (LDCM) now in development for a late 2012 or early 2013 launch **would be the last Landsat spacecraft NASA would be responsible for funding**, according to a senior administration official. Anne Castle, assistant secretary for water and science at the U.S. Interior Department, said NASA would continue to build or buy Landsat spacecraft on behalf of the USGS but would use USGS money to get the job done, rather than spend its own. NASA has been building weather satellites for the U.S. National Oceanic and Atmospheric Administration this way for decades. The USGS, a division of the Interior Department, spent about $60 million in 2010 operating Landsats 5 and 7, maintaining the nation’s archive of land remote sensing imagery, and preparing a network of ground receiving stations for LDCM data. NASA, for its part, devoted about $100 million last year to development of the LDCM spacecraft and its two instruments, the Operational Land Imager and the Thermal Infrared Sensor. NASA is requesting $152 million for 2012 to complete construction of the LDCM spacecraft — commonly referred to as Landsat 8 — and prepare it to launch between December 2012 and June 2013. The mission’s total development cost has risen slightly since last year to $587.6 million, including $127 million set aside for an Atlas 5 launch, according to NASA budget documents. Under the Interior Department’s 2012 spending proposal, **the National Land Imaging program would replace the Land Remote Sensing program at USGS and be given a first-year budget of $99.8 million**, some $48 million of which would be used to create the new organization, establish a science advisory team and begin planning for Landsat 9. **The remainder of the funds would go toward Landsat operations and LDCM ground system preparation**. Castle said **the National Land Imaging budget eventually would ramp up to $250 million** during the peak development years of Landsat 9, which the department aims to launch in 2018 to ensure some overlap with LDCM. “**USGS will establish the requirements and then pay NASA to develop the instrument and to develop the [spacecraft], put it together and launch it**,” Castle said. **Curtis** Woodcock, the Boston University professor who leads the Landsat Science Team, **welcomed the Interior Department’s proposal as “a clear step forward toward the establishment of Landsat as an operational program.**” “This step is long overdue,” Woodcock told Space News. “For a long time our government has had trouble deciding how to handle operational remote sensing programs for land, and hopefully **this is the step that will get us past the bureaucratic hurdle and onto a path that ensures a steady stream of Landsat data.”** The United States has made several abortive attempts over the past decade to put the Landsat program on an operational footing. The missteps include NASA’s ill-fated effort to commercialize the program and a short-lived White House plan to add Landsat instruments to the National Polar-orbiting Operational Environmental Satellite System, the joint civil-military weather satellite program the Obama administration ordered dissolved last year.

Inherency – NLIP Solves

**National Land Imaging Program solves long-term data continuity of Landsat**

**Wigbels et al 8** (Lyn, Senior Fellow/Assistant Professor at the Center for Aerospace Policy Research at George Mason University, a Senior Associate at the Center for Strategic and International Studies Space Initiatives Program, G. Ryan Faith, adjunct fellow at CSIS, Vincent Sabathier, senior associate with the CSIS Technology and Public Policy Program, CSIS, July, http://csis.org/files/media/csis/pubs/080725\_wigbels\_earthobservation\_web.pdf, accessed 7-6-11, JMB)

Land imaging in the United States has been carried out with the Landsat series of missions. The Landsat satellites have always been primarily a program to develop sensors and Earth observation technologies, rather than research involving long-term data acquisition and continuity. Yet. in addition to scientists, many private-sector users are now relying on these technology testbeds to produce data used in an array of Earth observation products. For this reason, **the US. government decided it could not continue to provide land imaging on an ad hoc basis, which led to the** August **2007 decision to establish a National Land Imaging Program to assume funding and management control of U.S. Land imaging capabilities and applications with the objective of addressing**, over the next year, both **the development of new capabilities and the long-term data acquisition and continuity needed to support current and future Earth observation applications.**

Inherency – DOI Now

**Squo is re-organizing landsats under DOI**

**DOI 11** (Department of the Interior press release, 3/21, http://www.doi.gov/news/pressreleases/Secretary-Salazar-Charts-Future-for-Landsat-Satellite-Program.cfm, accessed 7-3-11, JMB)

**Under the plans announced by Secretary Salazar** **and included in the President’s 2012 budget submission,** **the Department of the Interior**’s United States Geological Survey (USGS) **will become the permanent budgetary and managerial home for future Landsat satellites missions, a recommendation that was also endorsed by the past Administration**. Landsat satellites capture data about the Earth’s surface that no other private or public source can provide. This unique data has become vital to agricultural, water management, disaster response, scientific, and national security uses, providing hundreds of millions of dollars in estimated value to the U.S. economy per year. **The USGS already owns and operates the two Landsat satellites currently in orbit and is working in partnership with NASA to develop the LDCM satellite mission**. NASA’s expertise will be retained under the announced plans, with NASA continuing to build and launch future Landsat satellites for USGS. The plans will require Congressional approval to be finalized.

No Solvency – Outdated

**Landsats outdated—only LDCM solves**

**Keck 11** (Zachary, DC Foreign Policy Analyst @ The Examiner, CNAS, 3/30, <http://www.cnas.org/blogs/naturalsecurity/2011/03/satellites-you-need-know-landsat-granddaddy-them-all.html>, accessed 7-6-11, CH)

**The Landsat program** is a set of moderate resolution satellites that have been collecting images of the Earth for nearly 39 years, the longest continuous mission of its kind. It **has many applications for natural security topics**. Currently **it is operating two satellites** - Landsat-5, launched in 1984, and Landsat-7 launched in 1999 – **although their continued operation remains in doubt. As a 2007 report by the Office of Science and Technology Policy concluded, “The currently functioning U.S. moderate resolution satellites (Landsat 5 and 7) are operating beyond their design lifetimes in degraded status and are subject to failure at any time.” To maintain the uninterrupted flow of moderate resolution data, the United States must ensure that** the successor program, Landsat Data Continuity Mission (**LDCM), gets up and running quickly.**

No Solvency – Long orbits

**Landsat 5 only captures a given spot every 16 days**

**Gutro 9** (Rob, Public Affairs Officer and Meteorologist @ NASA, http://landsat.gsfc.nasa.gov/news/news-archive/news\_0188.html, 1/12, DA 7/4/11, OST)

**NASA satellites** have many applications, including observations to improve understanding of the global integrated Earth system**, improve forecasts of hurricanes, and help federal and state agencies assess damages produced by natural hazards such as hurricanes.** Landsat 5 produces 185-kilometer (115 mile) images with a 30-meter (98 feet) ground sampling size that can discern areas changed by hurricanes and tropical storms. **Landsat 5 can capture imagery of a given geographic location every 16 days**.

No Solvency – Manufacturing error

**New GPS satellites will suffer from manufacturing errors**

**Farrel 9** (Nick, Author and journalist, fudzilla.com/home/item/5878-new-gps-satellites-inaccurate, 6/18, DA 7/7/11, OST)

**The last GPS satellite launched by the Pentagon is not working properly and there are fears that the problems might extend to the designs of all of the next generation of the widely used satellites**. The Air Force's Southern California space acquisition centre said that **a GPS satellite, manufactured by Lockheed Martin** and launched in March, **is experiencing “performance problems” in orbit**. It is expected to undergo a battery of tests expected to stretch through October to try to resolve the problems.

**The current iteration of satellites uses a faulty signal**

**Farrel 9** (Nick, Author and journalist, fudzilla.com/home/item/5878-new-gps-satellites-inaccurate, 6/18, DA 7/7/11, OST)

**The satellite is the first to include a new civilian frequency**, L5, which is designed for use by future nationwide air-traffic control systems. **However it looks like that signal is interfering with other signals from the satellite and reducing their accuracy. The degraded signals are accurate only to about 20 feet, versus about two feet for typical GPS signals. Boeing has 12 satellites it wants to launch using the same L5 signal**. Already the project is years behind schedule and hundreds of millions of dollars over budget.

No Solvency – GPS spillover

**GPS fails- Blackouts**

**Johnson 9** (Bobbie, Technology journalist, guardian.co.uk/technology/2009/may/19/gps-close-to-breakdown, 5/19, DA 7/7/11, OST)

It has become one of the staples of modern, hi-tech life: using satellite navigation tools built into your car or mobile phone to find your way from A to B. But **experts have warned that the system may be close to breakdown. US government officials are concerned that the quality of the** Global Positioning System (**GPS) could begin to deteriorate as early as next year, resulting in regular blackouts and failures** – or even dishing out inaccurate directions to millions of people worldwide.

**GPS is failing- puts the entire system in jeopardy**

**Johnson 9** (Bobbie, Technology journalist, guardian.co.uk/technology/2009/may/19/gps-close-to-breakdown, 5/19, DA 7/7/11, OST)

The warning centres on the network of GPS satellites that constantly orbit the planet and beam signals back to the ground that help pinpoint your position on the Earth's surface. The satellites are overseen by the US Air Force, which has maintained the GPS network since the early 1990s. According to a study by the US government accountability office (GAO), **mismanagement and a lack of investment means that some of the crucial GPS satellites could begin to fail as early as next year**. "**It is uncertain whether the Air Force will be able to acquire new satellites in time to maintain current GPS service without interruption**," said the report, presented to Congress. "If not, some military operations and some civilian users could be adversely affected." The report says that Air Force officials have failed to execute the necessary steps to keep the system running smoothly. Although it is currently spending nearly $2bn (£1.3bn) to bring the 20-year-old system up to date, the GAO – which is the equivalent of Britain's National Audit Office – says that **delays and overspending are putting the entire system in jeopardy**.

No Solvency – Implementation

**Satellite implementation fails- GPS failure proves**

**Johnson 9** (Bobbie, Technology journalist, guardian.co.uk/technology/2009/may/19/gps-close-to-breakdown, 5/19, DA 7/7/11, OST)

"**In recent years, the Air Force has struggled to successfully build GPS satellites within cost and schedule goals,**" said the report. **"It encountered significant technical problems** … [**and] struggled with a different contractor." The first replacement GPS satellite was due to launch at the beginning of 2007, but has been delayed several times** and is now scheduled to go into orbit in November this year – almost three years late. The impact on ordinary users could be significant, with millions of satnav users potential victims of bad directions or failed services. There would also be similar side effects on the military, which uses GPS for mapping, reconnaissance and for tracking hostile targets. Some suggest that it could also have an impact on the proliferation of so-called location applications on mobile handsets – just as applications on the iPhone and other GPS-enabled smartphones are starting to get more popular. Tom Coates, the head of Yahoo's Fire Eagle system – which lets users share their location data from their mobile – said he was sceptical that US officials would let the system fall into total disrepair because it was important to so many people and companies. "I'd be surprised if anyone in the US government was actually OK with letting it fail – it's too useful," he told the Guardian. "**It sounds like something that could be very serious in a whole range of areas if it were to actually happen. It probably wouldn't damage many locative services applications now, but potentially it would retard their development and mainstreaming if it were to come to pass."** **The failings of GPS could also play into the hands of other countries – including opening the door to Galileo**, the European-funded attempt to rival America's satellite navigation system, which is scheduled to start rolling out later next year. Russia, India and China have developed their own satellite navigation technologies that are currently being expanded.

AT: Bio-D – No Solve – Landsat Bad

**Landsat fails at bio-d research – especially in the tropics**

**Olson et al 2** (David M., Eric Dinerstein, George V. N. Powell, and Er D. Wikramanayake, Conservation Science Program, World Wildlife Fund, Conservation Biology, p. 1-3, Vol. 16, No. 1, Feb, EBSCO, JMB)

Rapid **developments in satellite remote sensing have generated much enthusiasm about its potential as a powerful tool for ecological research. Yet, the results achieved have largely belied expectations** (Innes and Koch 1998). **While efforts have been made to utilize moderate spatial resolution satellites such as Landsat** ETM+ and SPOT **for** ecological studies such as **biodiversity estimation, these have achieved only moderate success, and provided conflicting outcomes** (e.g., Jakubauskas and Price 1997; Verlinden and Masogo 1997; as also reviewed in Nagendra 2001). While such data are very valuable for the studies of human drivers of land cover change, being at an appropriate scale for such uses (Ostrom and Nagendra 2006), **they are less useful for studies of biodiversity distribution**. Increasingly, thus, **the use of remote sensing became limited to purposes of habitat mapping and analyses of land cover chang**e. **One of the major perceived limitations of satellite remote sensing platforms such as Landsat has been that of insufficient spatial and spectral resolution**. However, as stated by Kerr and Ostrovsky (2003): ‘[the] perceived ‘scale gap’ is narrowing […] with the increasing availability of very high-resolution data that can be linked directly to traditional Weld ecological measurements’. Thus, in recent years, a rapid improvement in spectral and spatial resolution has ostensibly provided researchers with better means to link data from the sky with data from the Weld (Kerr and Ostrovsky 2003). The launch of very high spatial resolution satellite sensors like IKONOS (spatial resolution in the MS: 4 m), Quickbird (spatial resolution in the MS: 2.88 m), and OrbView-3 (spatial resolution in the MS: 4 m) as well as very high spectral resolution sensors such as Hyperion (196 bands) have therefore provided researchers with the opportunity to study ecological systems at far greater detail than previously possible (e.g., Levin et al. 2007; Rocchini 2007). These data have been used for a range of ecological applications including studies of logging impact assessment (Read et al. 2003), upland vegetation monitoring (Mehner et al. 2004), biomass modeling (Thenkabail et al. 2004), species richness estimations (Levin et al. 2007; Rocchini 2007), landscape multi-temporal analysis (Im et al. 2007), forest and wetland classification (Kayitakire et al. 2006; Johansen et al. 2007; Laba et al. 2008), urban vegetation life form estimation (Nichol and Wong 2007), and land cover fractional mapping (Olthof and Fraser 2007). Yet, **despite** the rapid **improvements in remote sensing technologies, an old problem continues to persist. Temperate areas have seen much greater development and application of these new technologies for ecological research, while applications in the tropics continue to lag behind** (Nagendra 2001; Sanchez-Azofeifa et al. 2003; Townsend et al. 2008). Temperate landscapes offer a more manageable location for such studies, with a relatively small number of habitat types, and within each type, a greater predominance of a few, dominant species. **The tropics** on the other hand **offer a challenge of an altogether greater magnitude, with far greater numbers of landscapes, habitats, and species, distributed across a variety of stages of growth and succession, and with far more complex canopy structures** (Nagendra 2001). **Due in part to this challenging complexity, the use of remote sensing in the tropics has largely been limited to studies of deforestation** (e.g., Geist and Lambin 2002), while hyperspectral and hyperspatial satellites have been insufficiently explored for ecological research in these areas (Sanchez-Azofeifa et al. 2003; Townsend et al. 2008)

AT: Bio-D – No Solve – Landsat Low Res

**Landsat fails – not high enough resolution**

**Olson et al 2** (David M., Eric Dinerstein, George V. N. Powell, and Er D. Wikramanayake, Conservation Science Program, World Wildlife Fund, Conservation Biology, p. 1-3, Vol. 16, No. 1, Feb, EBSCO, JMB)

A priority area of research for ecologists is the assessment and monitoring of biodiversity. This is especially essential in tropical habitats where much of the world’s species diversity is concentrated (Nagendra and Gadgil 1999; Sanchez-Azofeifa et al. 2003; Loarie et al. 2007). With accelerated declines in tropical forest clearing and biodiversity across the world, there is an urgent need to identify the locations of biodiversity hotspots, map the distribution of biodiversity across different habitats and landscapes, and monitor rates of change over time. What is the potential of hyperspatial and hyperspectral data for this purpose? **Remote sensing has long been used to predict species rich sites** based on both environmental heterogeneity as derived by spectral heterogeneity (Palmer et al. 2002; Foody and Cutler 2003; Rocchini et al. 2004; Hernández-Stefanoni and Dupny 2007) and Net Primary Productivity (NPP) as derived from vegetation indices such as NDVI (Fairbanks and McGwire 2004; Gillespie 2006). **While some success has been achieved,** obviously, **no single factor such as landscape heterogeneity, or primary productivity, drives biodiversity patterns** (Turner et al. 2003). **Instead, species are clustered based on some exogenous factors, such as climate and soil type.** Such clustering or autocorrelation of species distributions is often at broad scales, facilitating the use of medium-coarse resolution imagery for species diversity estimations (Dormann 2007). Other **biotic and abiotic processes may however cause further structuring within smaller areas of relative environmental homogeneity, giving rise to small scale niche patterning**, **and fine scale variations in biodiversity** (Legendre 1993; Wagner 2003). **In such cases, there is** an apparent **need for hyperspatial data. When medium pixel resolutions,** a few tens of meters in size, **are used for ecological studies, then a single pixel often encompasses a number of individual trees or plants**, sometimes even crossing habitat boundaries (Small 2004). Thus **each pixel corresponds to a mixed** **field signature averaged across multiple objects, leading to difficulties in identification of species identity**, **or the mapping of fine scale variations in biodiversity. Hyperspatial satellite imagery is** potentially **much better suited for biodiversity mapping with pixel sizes of the size of 5 m or less corresponding well to the size of individual tree crowns** (Read et al. 2003; Wulder et al. 2004). Figure 1 illustrates the potential of hyperspatial data for biodiversity studies. In this subtropical landscape in the Nepal Terai plains, the Rapti River separates the Chitwan National Park in the south from a mix of agricultural landscapes and human impacted forests to the north (Nagendra et al. 2008). **Even a visual comparison of a Landsat** ETM+ **image of this landscape** (Fig. 1a) **with an IKONOS image of a nearby date** (Fig. 1b) **indicates that the IKONOS image is capable of detecting heterogeneity at a much** **finer scale that can be observed by the ETM+ image. The ecological impact of small streams and rivulets on biodiversity, and the human impact through roads, mud tracks and the nearby agricultural fields, which can be seen to an extent in the medium resolution Landsat image, is far more clearly discernible from the hyperspatial IKONOS image**. A quantitative analysis of the data supports this (Nagendra, unpublished results).

AT: Bio-D – No Solve – Resources

**Can’t solve bio-d now – conservationism doesn’t have enough resources**

**Miller 5** (James R., Dept. of Natural Resource Ecology and Management and Department of Landscape Architecture, Iowa State U, TRENDS in Ecology and Evolution Vol.20 No.8 August, p. 430-434, http://millerlab.nres.uiuc.edu/pdfs/Biodiversity%20Conservation%20and%20the%20Extinction%20of%20Experience.pdf, accessed 7-7-11, JMB)

The magnitude of the current extinction crisis is widely appreciated in the scientiﬁc community, particularly among ecologists. The erosion of biodiversity is documented and potential strategies to reverse this trend are detailed in an ever-increasing number of journals and at the annual meetings of numerous professional societies. However, **the wherewithal to reverse the degradation of** our **natural heritage in a meaningful way is** still **lacking.** One reason for this is that **conservationists have failed to convey the importance**, wonder and relevance **of biodiversity to the general public**, preaching to the choir rather than reaching the unconverted [1,2]. This **failure stems**, in part, **from the assumption that an ‘educate-the-public’ approach** **will be sufﬁcient** to motivate change [3]. Rather than fostering support for conservation, some forms of ‘education’ might have the opposite effect. Entrepreneur, environmentalist and author Paul Hawken observes that endlessly repeating the calculus of biotic impoverishment and the litany of environmental wrongs might eventually take on the ring of a ‘the sky is falling’ admonition, making the listener feel helpless or incredulous [4]. However compelling the evidence might appear to be, Hawken notes that fear of a future characterized by environmental degradation has rarely been an effective motivator [4]. **Failure to engender broad-based support might also be a function of the estrangement of people from nature.** This possibility was driven home to me by an Australian radio report of the results of a survey of primary school children in Perth, many of whom were apparently unaware that milk is produced by cows and that the cotton in their clothes comes from plants. There are, of course, similar examples from other countries. In the USA, for instance, high-school students in Harris County, Texas, were given a multiple-choice test that comprised scaled black-line drawings of mammals that were either extant or historically present in the region, as well as basic questions regarding their natural history [5]. Results revealed that **many students could not correctly identify common mammals with local distributions**, incorrectly designated common species as extinct or never having existed in the area, **and were generally ignorant about the relationship among urbanization, habitat loss and species declines** [5]. The line that separates that which is deemed relevant by the public from that which is not is brought into sharp focus by the assertion that most Americans can identify hundreds of corporate logos, but fewer than ten native plant species [4], and that adolescents in south-central Los Angeles are more likely to identify correctly an automatic weapon by its report than they are a bird by its call [6]

AT: Bio-D – No Solve – Freshwater

**Freshwater bio-d is terminally dead – too many challenges**

**Dudgeon et al 6** (David, Dept. of Energy and Biodiversity, U Hong Kong, Biol. Rev. 81, pp. 163–182, http://bscw.ihe.nl/pub/bscw.cgi/d2840228/Dudgeon-et-al%202005%20Freshwater%20Biodiversity.pdf, accessed 7-6-11, JMB)

**A signiﬁcant challenge** **to freshwater biodiversity** conservation **results from the complexity imposed on freshwaters by catchment divides and saltwater barriers**. As a result, **low gene ﬂow and local radiation lead** – in the absence of human disturbance – **to considerable inter drainage variation in biodiversity and high levels of endemism** (Table 3). This is especially notable among assemblages that evolved in isolated lakes on islands or mountains and inland plateaux such as the karstic regions of Burma and southwest China (Kottelat & Whitten, 1996). **These and similar tropical uplands are poorly represented in existing protected-area networks** (Rodrigues et al., 2004). Ancient lakes such as Lake Baikal in Siberia and those in the East African Rift Valley support well-known species ﬂocks of endemic crustaceans and ﬁshes, but there are important radiations of cichlids, cyprinids, catﬁshes and other ﬁshes, as well as frogs, crustaceans and molluscs, elsewhere in Africa (Table 3) and the world. For example, species ﬂocks occur among Cyprinidae in the Philippines, Telmatherinidae on Sulawesi, and Balitoridae in China (Kornﬁeld & Carpenter, 1984; Kottelat & Chu, 1988 ; Kottelat & Whitten, 1996). **Virtually all** of these **radiations are severely endangered**, as the examples from Africa illustrate (Table 3). At smaller geographic scales there is substantial species turnover (i.e. b-diversity) among drainage basins and water bodies, and **many freshwater species have restricted ranges** (e.g. Sheldon, 1988 ; Pusey & Kennard, 1996 ; Strayer et al., 2004). **These attributes combine with endemism to produce a lack of ‘substitutability’ among freshwater habitat units. This means that protection of one or a few water bodies cannot preserve all freshwater biodiversity within a region**, or even a signiﬁcant proportion of it. In addition to conﬂicts arising from the multiple use of water, conservation of freshwater biodiversity is complicated by their landscape position as ‘receivers ’ and the problems posed by high levels of endemism – and thus non-substitutability. **Other features intrinsic to freshwater environments, especially rivers, also make them vulnerable to human impacts.** Rivers are open, directional systems, and elements of their biota range widely using diﬀerent parts of the habitat at various times during their lives. Fishes and other animals (from shrimps to river dolphins) use diﬀerent habitats at diﬀerent times, and longitudinal migrations may be an obligatory component of life histories especially if – as in many species – migration is associated with breeding (Welcomme, 1979). Longitudinal migrations may occur within the river, or from river to sea or lake and back, or from sea or lake to river and back. Such movements put animals at risk from stresses in various parts of their habitat at diﬀerent times ; long-lived species with low reproductive rates are likely to be the most vulnerable (Carolsfeld et al., 2004). **Dams in tropical regions are generally constructed without appropriate ﬁshways or ﬁsh passes, or based upon designs that are suitable only for salmonids, and thus they obstruct ﬁsh migrations** (Roberts, 2001). **A dam on the lower course of a river prevents migratory ﬁshes with an obligate marine phase in their life cycle from moving to and from the sea**, **creating the potential for activities in downstream reaches to impact upstream portions of the river** by way of, for example, the nutrient transmission that occurs during spawning migrations of salmon (e.g. Naiman et al., 2002 a; see also Pringle, 2001). Lateral migrations, between inundated ﬂoodplains or swamp forest and the main river channel, represent another axis of connectivity important for feeding and breeding in many ﬁshes and other animals (Welcomme, 1979; Ward et al., 2002; Carolsfeld et al., 2004 ; Arthington et al., 2005) that is dramatically altered by human activities.

AT: Bio-D – No Solve – Conservation Fails

**Conservationism fails – external factors**

**Ehrlich 88** (Paul R., Prof of Biological Sciences at Stanford, Chapter 2 of *Biodiversity*, by Edward O. Wilson, Frances M. Peter, National Academy of Sciences, google books, JMB)

**Arresting the loss of diversity will be extremely difficult. The** traditional "**just set aside a preserve" approach is** almost **certain to be inadequate because of factors such as runaway human population growth, acid rains, and climate change** induced by human beings. **A quasi-religious transformation leading to the appreciation of diversity for its own sake**, apart from the obvious direct benefits to humanity, **may be required to save other organisms** and ourselves.

AT: Bio-D – No Solve – Resource Use

**Bio-d loss inevitable – humans use too much of the Earth’s resources**

**Ehrlich 88** (Paul R., Prof of Biological Sciences at Stanford, Chapter 2 of *Biodiversity*, by Edward O. Wilson, Frances M. Peter, National Academy of Sciences, google books, JMB)

This utter **dependence of organisms on appropriate environments** {Ehrlich, 1986) **is what makes ecologists so certain that today's trends of habitat destruction and modification**—especially in the high-diversity tropical forest (where at least one-half of all species are believed to dwell)—**are an infallible recipe for biological impoverishment**. Those politicians and social scientists who have questioned the extent of current extinctions are simply displaying their deep ignorance of ecology; habitat modification and destruction and the extinction of populations and species go hand in hand. The extent to which humanity has already wreaked havoc on Earth's environments is shown indirectly by a recent study of human appropriation of the products of photosynthesis (Vitousek ct al., 1986). **The food resource of the animals in all major ecosystems is the energy that green plants bind into organic molecules in the process of photosynthesis, minus the energy those plants use for their own life processes**—growth, maintenance, and reproduction. In the jargon of ecologists, **that quantity is known as the net primary production (NPP). Globally, this amounts to** a production of about **225 billion metric tons of organic matter annually**, nearly 60% of it on land. **Humanity is now using directly** (e.g., by eating, feeding to livestock, using lumber and firewood) **more than 3% of global NPP**, and about 4% of that on land. **This is a minimum estimate of human impact on terrestrial systems.** Since Homo sapiens is one of (conservatively) 5 million species, this may seem an excessive share of the food resource. But considering that human beings are perhaps a million times the weight of the average animal (since the overwhelming majority of animals are small insects and mites) and need on the order of a million times the energy per individual, this share might not be too unreasonable. Yet **human beings** can be thought of as **co-opt**ing **NPP** not only by direct use but also **by indirect use.** Thus **if we chalk up to the human account not only the NPP directly consumed, but such other categories as the amount of biomass consumed in fires used to clear land, the parts of crop plants not consumed, the NPP of pastureland** (converted from natural habitat) **not consumed by livestock**, and so on, **the human share of terrestrial NPP climbs to** a staggering **30%. And if we add to that the NPP foregone when people convert more productive natural systems to less productive ones** (such as forest to farm or pasture, grassland to desert, marsh to parking lot**), the total potential NPP on land is reduced by 13%, and the human share of the unreduced potential NPP reaches** almost **40%**. **There is no way that the co-option by one species of almost two-fifths of Earth's annual terrestrial food production could be considered reasonable, in the sense of maintaining the stability of life on this planet**. **These estimates** alone both explain the basic causes and consequences of habitat destruction and alteration, and **give reason for great concern about future trends. Most demographers project that Homo sapiens will double its population** within the next century or so. This implies a belief that **our species can** safely **commandeer upwards of 80% of terrestrial NPP, a preposterous notion to ecologists who already see the deadly impacts of today's level of human activities.** Optimists who suppose that the human population can double its size again need to contemplate where the basic food resource will be obtained.

**Bio-d loss inevitable – resource consumption**

**Maurer 96** (Brian A., Associate Professor. Michigan State University, Department of Fisheries & Wildlife, Department of Geography, Biodiversity Letters, Vol. 3, No. 1, Jan, p. 1-5, JSTOR, JMB)

Two important points emerge from the analysis above. First**, at current**ly measured **rates of human resource consumption, it is** virtually **assured that eventually the human population will consume so much energy that there will be little or none left for other species.** Exactly how long it will take, and what course the loss of biodiversity will take are open to question, and depend on the reliability with which current empirical models relating diversity to energy can be applied to the human consumption problem. If the power model is appropriate, then biodiversity will be lost relatively slowly until humans consume a large fraction of primary productivity, after which it should drop very rapidly with increasing human consumption. Although the exact figure of how rapidly this major low of biodiversity will occur is open to some question, **the calculations presented here imply that unless human consumption changes drastically in the next century, this major loss of biodiversity is a virtual certainty.**

AT: Bio-D – No IL – Hotspots Fail

**Protecting hotspots fails – fragmentation**

**Myers et al 2k** (Norman Myers\*, Russell A. Mittermeier², Cristina G. Mittermeier², Gustavo A. B. da Fonseca³ & Jennifer Kent§ \* Green College, Oxford University, ² Conservation International, ³ Centre for Applied Biodiversity Science, Conservation International, § 35 Dorchester Close, NATURE | VOL 403 24 FEB, p. 853-858, http://biologylabs.utah.edu/dearing/Fall%202010/Teaching/Bush/Myers%20et%20al%202000.pdf, accessed 7-6-11, JMB)

**This is not to say that protection of the hotspots would safeguard all their species indefinitely. According to the well-established theory of island biogeography** 33 , **when an area loses a large propor- tion of its original habitat and** especially when the remaining habitat **is** severely **fragmented, it will eventually lose some of its species** through what are technically known as `ecological equilibriation' or delayed fallout effects. **There is much empirical evidence to support this; for instance, the loss of birds in Brazil's Atlantic forest** 34 , **in Southeast Asia's forests** 35 , **in tropical forests generally** 36,37 **and in the U**nited **K**ingdom38 ; **of tree species in tropical forests** 39 **; of forest plants in eastern North America** 40 ; **of primates in Africa's forests** 41 ; **of large mammals in Tanzania** 42 ; **and of species generally** 43 . Consider the consequences for the smallest hotspot, the Eastern Arc. The remaining primary vegetation is only 6.7% of the original, and its expanse of 2,000 km2 is split into no fewer than 128 patches ranging in size from over 100 to 10 or fewer square kilometres. A bigger hotspot, Cape Floristic Province, with an expanse of 18,000 km2 and 24.3% of its original primary vegetation, is spread around several thousand patches ranging from over 100 to 0.1 km2 . Although most island-biogeography losses are not likely to ensue for some time, it makes sense to take immediate steps to safeguard the hotspots to avoid an exceptionally large extinction spasm through outright loss of habitat on a scale to swamp island biogeography impacts. **As for past extinctions in the hotspots, all too little is known with respect to taxa across the board including invertebrates; however, if we use birds extinct since 1800 as a surrogate we found that nearly 80% of those that disappeared were from hotspot areas.**

AT: Bio-D – No IL – Hotspots Fail

**Preserving bio-d hotspots means they don’t access their impact because the overall environment is destroyed**

**Kareiva and Marvier 3** (Peter, Lead Scientist for The Nature Conservancy, affiliated with the Bren School of the University of California, Santa Barbara and the Environmental Studies Institute at Santa Clara University, Michelle, assistant professor of biology at Santa Clara University, Ph.D. in bio from UC Santa Cruz, American Scientist, http://www.americanscientist.org/issues/issue.aspx?id=869&y=2003&no=4&content=true&page=2&css=print, accessed 7-8-11, JMB)

**Biodiversity hotspots** represent an initial and pioneering effort at establishing conservation priorities. But **by relying too much on counts of plant species**, this approach **loses sight of whole ecosystems, habitats and the needs of people.** To work the metaphor a little harder, you might say that **biodiversity hotspots leave too many places and people out in the cold.** Because many conservation threats are now global in their origin and scope (for example, climate change and invasive species), **place-based priorities risk disenfranchising too many people** from the challenge at hand. Indeed, on reflection, we worry that **the initially appealing notion of getting the most species or greatest biological value per unit area is**, in fact, a thoroughly **misleading** strategy. **How much of a victory would it actually be if people did manage to conserve only the 1.4 percent of the Earth's land surface that contains almost half the world's vascular plants?** The reality is that people must make conservation progress everywhere. Doing that requires not a ranking of theoretically deserving places but a prioritization that takes into account the effectiveness of past conservation efforts. A performance-based system would not only hold conservation organizations more accountable, it would also provide incentives to countries attempting to implement conservation measures, so that those nations demonstrating successes on the ground would be more likely to receive funding in the future. Anyone who has worked for a while in conservation knows that certain people and certain leaders can overcome enormous obstacles and do wonders in the most unlikely places. Yet none of the established priority-setting schemes recognizes such human factors. We believe that **the** officers and **directors of** all **too many foundations**, nongovernmental organizations **and international agencies have been seduced by the simplicity of the hotspot idea**. **Perhaps that's why**, for example, **10 percent of the World Bank's biodiversity projects are located in** a single country: **Brazil.** **This fact is particularly noteworthy because the World Bank is the largest investor in biodiversity conservation**. And collectively, **the three largest nongovernmental conservation organizations** (The Nature Conservancy, World Wildlife Fund and Conservation International) **cluster a dozen offices in Mexico and put many also in Brazil, Indonesia, Madagascar and the Philippines.** Meanwhile, **countries with vast biological resources such as Russia and Argentina together host only three offices**. **Russia, in fact, rarely gets mentioned in conservation circles**—perhaps because information on plant diversity in that sprawling country is so lacking that it is ineligible for hotspot lists. **Unwavering support for the protection of hotspots oversimplifies the difficult decisions that must be made in deciding which projects to fund** and where to invest money. **Although biodiversity hotspots are indeed an academically appealing idea, blind adherence to this mantra runs the risk of leaving the world with a sizable collection of species in a few areas but with an environment that is otherwise largely degraded.** Rather than trying to identify dense concentrations of species on a map, we and other conservationists should be more flexible and should be prepared to reward effective actions on the ground as they happen. If we do so, we will surely discover plenty of coldspots deserving of our attention.

AT: Bio-D – No IL – Conservation Fails

**Conservation fails – no empirical validation**

**Ferraro and Pattanayak 6** (Paul J, Assistant Professor, Department of Economics, Andrew Young School of Policy Studies, Georgia State U, Subhrendu K., Fellow and Senior Economist in Environment, Health, and Development Economics at RTI International, http://www.plosbiology.org/article/info%3Adoi%2F10.1371%2Fjournal.pbio.0040105#equal-contrib, accessed 7-7-11, JMB)

**For far too long, conservation scientists and practitioners have depended on intuition and anecdote to guide the design of conservation investments**. If we want to ensure that our limited resources make a difference, we must accept that **testing hypotheses about what policies protect biological diversity requires** the same **scientific rigor** and state-of-the-art methods that we invest in testing ecological hypotheses. Our understanding of the ecological aspects of ecosystem conservation rests, in part, on well-designed empirical studies. In contrast, **our understanding of the way in which policies can prevent species loss and ecosystem degradation rests primarily on case-study narratives from field initiatives that are not designed to answer the question “Does the intervention work better than no intervention at all?”** **When it comes to evaluating the success of its interventions, the field of ecosystem protection and biodiversity conservation lags behind most other policy fields** (e.g., poverty reduction, criminal rehabilitation, disease control; see Box 1). The immature state of conservation policy research is most clearly observed in the recent publication of the Millennium Ecosystem Assessment. While the biological chapters are rife with data and empirical studies, the Policy Responses volume [1] lists as one of its “Main Messages” the following: “**Few well-designed empirical analyses assess even the most common biodiversity conservation measures.” If any progress is to be made in stemming the global decline of biodiversity, the field of conservation policy must adopt state-of-the-art program evaluation methods to determine what works and when**. We are not advocating that every conservation intervention be evaluated with the methods we describe below. We are merely advocating that some of the hundreds of biodiversity conservation initiatives initiated each year are evaluated with these methods. While there are challenges to field implementation of the methods, their use is no more expensive or complicated than biological assessments. Their promise lies in complementing case study narratives and testing intuition.

**Conservation groups use data incorrectly now – don’t measure outcomes**

**Ferraro and Pattanayak 6** (Paul J, Assistant Professor, Department of Economics, Andrew Young School of Policy Studies, Georgia State U, Subhrendu K., Fellow and Senior Economist in Environment, Health, and Development Economics at RTI International, http://www.plosbiology.org/article/info%3Adoi%2F10.1371%2Fjournal.pbio.0040105#equal-contrib, accessed 7-7-11, JMB)

**Budgets for biodiversity conservation are thinly stretched** [2], **and thus judging the effectiveness of conservation interventions in different contexts is** absolutely **essential** to ensuring that scarce funds go as far as possible in achieving conservation outcomes. Since the early 1990s, **conservation projects have increasingly focused on “monitoring and evaluation.”** This focus was stimulated by the desire of conservationists to be prudent in their use of scarce funds, and by the desire of donors, multilateral aid agencies, and international non-governmental organizations for greater transparency and accountability. **In most efforts, overburdened and undertrained field staff tend to collect data on descriptive indicators** (i.e., administrative metrics of change) **instead of focusing on the fundamental evaluation question: what would have happened if there had been no intervention** (a counterfactual event that is not observed)? Descriptive indicators can be important because they allow us to document the conservation process. However, **we should be evaluating programs at a more fundamental level to find out whether**, for example, **conservation education workshops change behaviors that affect biodiversity.** **The focus must shift** from “inputs” (e.g., investment dollars) and “outputs” (e.g., training) **to “outcomes” produced directly because of conservation investments** (e.g., species and habitats).

AT: Bio-D – No IL – Conservation Fails

**Conservation programs fail – endogenous selection means there is no proof they have an effect**

**Ferraro and Pattanayak 6** (Paul J, Assistant Professor, Department of Economics, Andrew Young School of Policy Studies, Georgia State U, Subhrendu K., Fellow and Senior Economist in Environment, Health, and Development Economics at RTI International, http://www.plosbiology.org/article/info%3Adoi%2F10.1371%2Fjournal.pbio.0040105#equal-contrib, accessed 7-7-11, JMB)

One potential confounder deserves mention because of its widespread, and apparently not well-understood, effects on our ability to make inferences about program effectiveness: endogenous selection. **Current analyses** typically **do not consider the implications of why an area was picked for an intervention and another was rejected**, or why some individuals “volunteered” and others did not. In any non-randomized program, **characteristics that influence the outcome variable also often influence the probability of being selected into the program. Failure to address the issue of endogenous selection can lead to biased estimates of a program's effectiveness.** To better understand the problem of endogenous selection and the need for baselines, covariates, and controls, consider a currently popular conservation intervention: direct incentives in the form of Payments for Environmental Services (PES) [1, 18]. PES programs are being implemented globally in much the same way previous conservation interventions were implemented: with an unwavering faith in the connection between interventions and outcomes and without a plan to judge the effectiveness of such interventions. **Say Costa Rica establishes a program to pay landowners who volunteer to maintain forest cover on their land. We might look at deforestation trends in Costa Rica before and after the program is implemented to evaluate the program's effectiveness. If deforestation rates were increasing before the program and are** stable, **declining,** or increasing at a lower rate **after the program is launched, we might be tempted to say the program is successful. There are,** however, **two problems with this conclusion: it assumes that the past perfectly predicts the future and that “volunteers” represent the general population. If these assumptions are invalid, we cannot infer the deforestation rate in the absence of the program: the counterfactual is missing**. With respect to the first assumption, there are good reasons to believe that past trends are not representative of future ones. Perhaps government subsidies that promote deforestation also declined around the same time that the payment program was initiated.

**Conservation fails – protected areas only work because they are in areas unusable for other things anyway**

**Ferraro and Pattanayak 6** (Paul J, Assistant Professor, Department of Economics, Andrew Young School of Policy Studies, Georgia State U, Subhrendu K., Fellow and Senior Economist in Environment, Health, and Development Economics at RTI International, http://www.plosbiology.org/article/info%3Adoi%2F10.1371%2Fjournal.pbio.0040105#equal-contrib, accessed 7-7-11, JMB)

Unfortunately, **rigorous measurement of the counterfactual in the conservation literature is nonexistent. Consider** some of the best-known conservation interventions—**protected areas. Are such areas generally effective** in protecting habitats and species? **Based on observations that ecosystem conditions inside of protected areas are better than outside of protected areas** [13] or management activities are positively correlated with perceptions of success by protected area managers [14], **many conclude that protected areas are effective. However, such conclusions are premature without well-chosen counterfactuals** that help us estimate what protected ecosystems would have looked like without protection. There is evidence that **protected areas are often sited in areas that are not at risk for large-scale ecosystem perturbation** [13, 15]. In other words, **for political and economic reasons, protected areas are often located in areas with few profitable alternative uses of the ecosystem, and thus, even without protected status, the ecosystems would experience little degradation over time**. In their study of protected areas in Africa, Struhsaker et al. [16] write, “Contrary to expectations, **protected area success was not directly correlated with** employment benefits for the neighboring community, **conservation education, conservation clubs, or with the presence and extent of integrated conservation and development programs**.” Their **results** seem to **question the effectiveness of the community-based interventions**. However, interventions such as integrated conservation and development programs and conservation education are not randomly allocated across the landscape. Community-based interventions are more likely to be tried in areas that are experiencing high human pressures. Thus, comparing average conservation outcomes in areas where interventions benefit local people (high pressure) to average outcomes in areas where there are few such interventions (low pressure) gives a biased (down) estimate of the conservation effect of attempts to benefit residents around protected areas.

AT: Bio-D – No IL – Conservation Fails

**Can’t validate that conservation works – multiple warrants**

**Ferraro and Pattanayak 6** (Paul J, Assistant Professor, Department of Economics, Andrew Young School of Policy Studies, Georgia State U, Subhrendu K., Fellow and Senior Economist in Environment, Health, and Development Economics at RTI International, http://www.plosbiology.org/article/info%3Adoi%2F10.1371%2Fjournal.pbio.0040105#equal-contrib, accessed 7-7-11, JMB)

Given the billions of dollars invested in conservation initiatives and research in the past two decades, one may wonder why careful empirical studies and compelling data are lacking (see Box 3, however, for some recent examples). We do not claim to have conducted a formal study on this topic, but our experience in the field leads us to several conclusions. First, **one usually needs a remarkable combination of political will, a strong commitment to transparency, and a strong ethic of accountability to conduct a well-designed evaluation**. Second, **the diversity of donors** and practitioners often **leads to a plethora of objectives** (e.g., scientific, aesthetic, humanitarian). Encouraging participants, including local actors, to agree on a set of explicit objectives to evaluate may be difficult in many conservation contexts. At the very least, we must use the principles of evaluation to assess the potential for bias in making inferences about program effectiveness. Third, **conservation researchers are unaware of state-of-the-art empirical program evaluation techniques** **and the biases in current analyses.** Donors and government agencies that fund conservation projects typically know little about program evaluation methods, and the practitioners who implement the projects typically lack incentives for careful analysis and falsification of hypotheses. Thus there is neither funding, nor a demand for funding, to conduct more careful analysis of interventions. Fourth, **many believe that rigorous evaluations of effectiveness are expensive and thus would divert scarce conservation funds toward “non-essential” investments**. In contrast, researchers and practitioners in other policy fields have demonstrated that randomized experimental methods can be implemented in the context of small pilot programs or policies that are phased in over time. The difference between what one can learn from a pilot initiative that uses an experimental (or quasi-experimental) design and from one that does not is enormous. Fifth, **the nature of biodiversity conservation can make evaluations more difficult than in other fields. Where outcomes are local, strong and complex spillover effects can occur. Enforcement and cheating can be difficult to verify. Property rights are often unclear** in low-income nations and so the effects of interventions are complex both cross-sectionally and in time-series. **Biological outcomes often respond slowly to interventions** (wildlife stocks), and only time-series identification can be used for many problems. Sixth, **many conservation interventions are short-term projects. The benefits of a careful evaluation, however, will largely be realized after the project ends** and will accrue to the global conservation community. **Field personnel are thus better off investing their time and resources in actions that will yield benefits to them rather than to the larger conservation community.**  Seventh, **program evaluation methods require data**. In other fields of policy analysis, researchers have longstanding national surveys and historical relationships with government agencies and field practitioners that generate substantial datasets for research. Most **conservation interventions, particularly in low-income nations, are framed as independent projects that “test” an idea in one or several locations. Data collection in these locations is often poor or non-existent, with little or no planning for data collection in control “non-project” locations**. Furthermore, we can comprehensively link programs to changes in behaviors and conservation success only when we combine data on ecological, geographic, socio-economic, demographic, and institutional measures. Given the disciplinary biases about appropriate scale and methods for data collection, we rarely find such transdisciplinary efforts. Finally, on a related point, **credible estimates of conservation success depend on the ability to vary** (or isolate) **policy interventions in simple ways across space and time**. We are well aware that within the same ecosystem, heterogeneity in institutions, income opportunities, access to markets, and other socio-economic characteristics can lead to different reactions to a given intervention. However, **if every village or household is exposed to a different intervention** (one gets direct payments, one gets fish farms, one gets agricultural assistance, etc.), **we are left with few observations for each intervention and thus cannot make any inferences about effectiveness.**

AT: Bio-D – No IL – Data Not Used

**Bio-d research won’t be used by policy makers**

**Urho and Niemela 9** (Niko, Ministry of the Environment of Finland and Jari, Urban Ecology Research Group, U Helsinki, 1/15, http://www.biostrat.org/Sustainable%20use%20of%20biodiversity%20-%20FI.pdf, accessed 7-6-11, JMB)

However, it must be realized that **biodiversity research alone is not sufficient for reaching sustainable use of biodiversity**. Placing objectives and forming policies including their implementation must be based on high-quality research results and thereby on understanding of biodiversity and factors affecting it. During the Finnish Biodiversity Research Programme (FIBRE) (1997-2002) it became evident that **there is a lack of co-operation between scientists and decision makers, which has** to a large extent **left biodiversity related scientific research outside decision making**. **There is a need to link research into the decision making processes** to ensure that the results of research inform and guide international and national policies and decisions. Biodiversity platforms should be promoted to increase interaction between researchers and decision makers. It is equally important to encourage active collaboration between scientific researchers to create synergism. Research networks should be developed at the national as well as the European level.

AT: Bio-D – No IL – Data Useless

**Data on species richness not useful – need to focus on uniqueness**

**Brooks et al 6** (T. M. Brooks, 1,2,3 \* R. A. Mittermeier, 1 G. A. B. da Fonseca, 1,4 J. Gerlach, 5,6 M. Hoffmann, 1 J. F. Lamoreux, 3 C. G. Mittermeier, 1 J. D. Pilgrim, 7 A. S. L. Rodrigues 5, 1 Conservation International, 2 World Agroforestry Centre (ICRAF), University of the Philippines, . 3 Department of Environmental Sciences, University of Virginia, 4 Departamento de Zoologia, Universidade Federal de Minas Gerais, 5 Department of Zoology, University of Cambridge, 6 Nature Protection Trust of Seychelles,. 7 BirdLife International in Indochina, Science, Vol. 313, July 7, p. 58-61, http://web.duke.edu/~mmv3/biocon/documents/Brooks2006.pdf, accessed 7-7-11, JMB)

**Six of the nine templates of global conservation priority incorporate irreplaceability**—measures of spatial conservation options (10). The most common measure of irreplaceability is plant (11–14) or bird (15) endemism, often supported by terrestrial vertebrate endemism overall (11, 13, 14). **The logic for this is that greater the number of endemic species in a region, the more biodiversity is lost if that region is lost** (although, in a strict sense, any location with even one endemic species is irreplaceable). **In addition to the number of endemic species, other aspects of irreplaceability have been proposed, including taxonomic uniqueness, unusual phenomena, and global rarity of major habitat types** (16), but these remain difficult to quantify. **Although species richness within a given area is popularly assumed to be important in prioritization, none of the approaches relies on species richness alone. This is because species richness is driven by common, widespread species; thus, strategies focused on species richness tend to miss exactly those biodiversity features most in need of conservation** (//, IS). Three approaches do not incorporate irreplaceability (19-21).

AT: Bio-D – No IL – Ecoregion Analysis Bad

**Ecoregion analysis fails – have to engage governments**

**Kareiva and Marvier 3** (Peter, Lead Scientist for The Nature Conservancy, affiliated with the Bren School of the University of California, Santa Barbara and the Environmental Studies Institute at Santa Clara University, Michelle, assistant professor of biology at Santa Clara University, Ph.D. in bio from UC Santa Cruz, American Scientist, http://www.americanscientist.org/issues/issue.aspx?id=869&y=2003&no=4&content=true&page=2&css=print, accessed 7-8-11, JMB)

One thing is to make sure that the problem is framed properly. In recent times, biologists have achieved a major conceptual advance by realizing that conservation programs must span political boundaries and that for planning purposes biologically defined areas such as "**eco-regions"** represent natural units. Although this **mindset** is useful for quantifying biological value, it **is not** terribly **helpful for making decisions about the feasibility or cost-effectiveness of a particular conservation project. When an organization decides to work in a region, it will necessarily have to deal with the regulatory agencies, legal institutions and people of individual nations.** Thus, although our conservation goals may be biological, **as long as feasibility and cost-effectiveness are important, countries will remain essential units for consideration**.

AT: Bio-D – IL Turn – Hotspot Focus

**Hotspot focus fails – doesn’t preserve the maximal amount of ecosystem function – we i/l turn your impact**

**Kareiva and Marvier 3** (Peter, Lead Scientist for The Nature Conservancy, affiliated with the Bren School of the University of California, Santa Barbara and the Environmental Studies Institute at Santa Clara University, Michelle, assistant professor of biology at Santa Clara University, Ph.D. in bio from UC Santa Cruz, American Scientist, http://www.americanscientist.org/issues/issue.aspx?id=869&y=2003&no=4&content=true&page=2&css=print, accessed 7-8-11, JMB)

At first glance it may seem self-evident that conservation investment should be funneled into the regions or countries with the most biodiversity. But **the hotspot methodology is logical only if the exclusive goal of conservation is to protect the largest possible number of species in the smallest possible area. Using hotspots to set priorities comes into question as soon as one considers a broader range of objectives, such as maintaining functioning ecosystems** throughout the world, **providing the greatest variety of distinct plant and animal lineages for future evolutionary breakthroughs**, preserving spectacular wild landscapes that inspire the human spirit or protecting nature in a way that provides for the well-being of people living alongside. **A hypothetical example reveals some of the unfortunate side effects that arise from emphasizing hotspots above all else. Consider** **two areas of roughly equal size**, the country of **Ecuador and** the state of **Montana. Ecuador is a renowned biodiversity hotspot**, harboring 2,466 vertebrate species and 19,362 vascular plant species. In contrast, **Montana is a biodiversity coldspot, with only 12 percent of Ecuador's species richness**. Clearly, **if one measures success as protecting the largest number of species in the smallest possible area, it makes sense to ignore Montana and to concentrate solely on Ecuador. But assume** for the moment that **we desire some level of conservation effort in both places. Suppose we set a goal of ensuring protection for 20,000 total species from these two areas. We could attain that outcome by preserving 18,000 species in Ecuador and 2,000 species in Montana, or, alternatively, by safeguarding 19,000 species in Ecuador and 1,000 species in Montana. If all that matters is the total number of species protected, these two strategies are equivalent. In reality these two choices would have vastly different consequences on the ground. Both would leave Ecuador with the bulk of its biodiversity intact** (82 percent or 87 percent, if, for argument's sake, one considers just vertebrates and vascular plants) and, presumably, with reasonably well-functioning ecosystems. But shifting from the first to the second strategy cuts the fraction of species protected in Montana severely (from 74 percent to 37 percent).You wouldn't have to be a scientist to notice the difference between saving three-quarters versus two-fifths of the species in the state. But even the best-designed scientific monitoring programs would be hard pressed to register the difference between having 87 percent or 82 percent of the species under protection in Ecuador. **This example illuminates a major flaw with approaches to conservation that are solely based on hotspots. If we measure success simply by tallying up total species protected, we risk the folly of allowing major ecosystems to degrade beyond repair simply because they do not provide lengthy species lists.** For instance, **the Yellowstone ecosystem**, which includes parts of Montana, Idaho and Wyoming**, is species poor, relatively speaking. Yet this region harbors the last assemblage of large mammals and carnivores in the lower 48 states** (grizzly bears, wolves, bison, elk and so forth). And because the Yellowstone ecosystem contains the world's first national park, it is obviously an important locale for continued conservation, despite the relative paucity of species that exist there. So by itself, **the number of species saved is an inadequate barometer of success. Other dimensions of the problem need to be considered as well, including** what environmentalists often describe as "**ecosystem services."**

AT: Bio-D – IL Turn – Hotspot Focus

**Hotspot focus causes net more ecosystem degradation –ignores ecosystem services**

**Kareiva and Marvier 3** (Peter, Lead Scientist for The Nature Conservancy, affiliated with the Bren School of the University of California, Santa Barbara and the Environmental Studies Institute at Santa Clara University, Michelle, assistant professor of biology at Santa Clara University, Ph.D. in bio from UC Santa Cruz, American Scientist, http://www.americanscientist.org/issues/issue.aspx?id=869&y=2003&no=4&content=true&page=2&css=print, accessed 7-8-11, JMB)

**Society** depends on the products and services ecosystems provide to a far greater extent than most of us realize. When asked what nature gives them, most people could name a few foods, drugs and building materials derived from wild species. But they would probably **take for granted** **many** other **products of nature, including clean air, abundant fresh water, fertile soil and a benign climate.** In short, they would fail to recognize the critical role that diverse communities of species play in fostering a healthy and predictable environment. **Would not hotspot-based conservation strategies automatically take such effects into account? Hardly.** **Investing conservation efforts only in hotspots could lead us to ignore and** potentially **lose some of our most valuable ecosystems simply because they harbor few plant species. Consider**, for example, the fact **that hotspot analyses so often point to tropical forests as areas of highest priority. These forests do indeed provide important ecosystem services**, such as climate regulation and nutrient cycling, which Robert Costanza, an economist at the University of Maryland, and his colleagues recently valued at about $2,000 per hectare per year. **But hotspot analyses overlook the value of wetlands—and it's easy to understand why: A typical Spartina marsh has no endemic plants and no more than 20 or 30 plant species total. Still, tidal marshes offer considerable ecosystem services, such as flood regulation, waste treatment and fisheries production**, with an estimated annual value of nearly $10,000 per hectare per year. **Clearly, marshes are precious resources**, not just for people but also **for the enormous variety of wildlife that depends on clean water. Yet by any sort of hotspot reckoning, these marshes would come out at the very bottom of the pile.** This difficulty would not arise if the stated conservation goal were to preserve the functioning of the planet's ecosystems to the maximum extent possible. This objective would not necessarily be incompatible with a desire to save species: Many empirical studies have shown that ecosystem services, such as production of plant biomass, retention of nutrients, resistance to drought, pollination of crops and decomposition of organic matter, decline with major losses in biodiversity. But **one striking feature of the relation between ecosystem services and biodiversity is that it is not linear. Rather, the benefits of biodiversity are quickly realized with an initial accumulation of species and thereafter remain constant, so that protecting more species does not forever translate into more or better ecosystem services.**  It is not clear how to predict where this saturation effect will manifest itself when one considers a variety of possible benefits. But if we accept that benefit curves do level off, we must accept that **there are diminishing returns for protecting ever more species in any particular ecosystem.** Given this pattern, a logical goal might be to ensure that no major ecosystem suffers greater than a 10 percent loss, or a 20 percent loss, or a 50 percent loss of diversity. Although scientists lack the knowledge to assign values to the services provided by the ecosystems in all countries or regions, what matters is obviously not how many species there are as much as what percentage of the native diversity remains sheltered from destruction. **The hotspot approach would result in high levels of protection for a few species-rich areas to the neglect of many others. Thus, setting conservation priorities using only hotspots as a guide could** well **bring** on **an unfortunate side effect: more degradation of global ecosystems than would take place if a more broadly based strategy were used.**

AT: Bio-D – IL Turn – Hotspot Focus

**Hotspot conservation fails – focuses on number of species rather than number of unique life forms – key to evolution**

**Kareiva and Marvier 3** (Peter, Lead Scientist for The Nature Conservancy, affiliated with the Bren School of the University of California, Santa Barbara and the Environmental Studies Institute at Santa Clara University, Michelle, assistant professor of biology at Santa Clara University, Ph.D. in bio from UC Santa Cruz, American Scientist, http://www.americanscientist.org/issues/issue.aspx?id=869&y=2003&no=4&content=true&page=2&css=print, accessed 7-8-11, JMB)

Most **conservationists** emphasize ecological or ecosystem value when discussing the need to preserve biodiversity. But they often **neglect an aspect of biodiversity that is just as important: its worth as a resource for future evolutionary innovation.** In this regard, **one has to consider more than just species.** For example, **a greater amount of evolutionary history and biological distinctiveness is lost when the last species of an entire genus or family becomes extinct** than when a species with many close relatives disappears. Some evolutionary biologists have challenged **the current focus on biodiversity hotspots** as myopic, because it **neglects the unique value of distinct evolutionary lineages, which represent very different life histories and forms**. Rather than simply directing efforts toward areas with rich sets of endemic species, **conservation organizations might better concentrate on saving higher taxonomic groups under threat**. One could, for example, try to rescue genera that are in danger of being entirely lost. **To test this idea, we looked at the distribution of mammal and bird genera with more than one species** for **which th**e World Conservation Union (**IUCN) has listed all their constituent species as critically endangered, endangered, vulnerable or dependent on conservation**. For each of the members of these highly threatened genera, **we** then searched IUCN's latest "redlist" database of endangered species and **recorded all countries in which these rare creatures still occur naturally or have been reintroduced. We then ranked the countries according to the number of highly threatened genera that can be found there**. **This procedure provides a list that differs greatly from one based solely on the richness of endemic plants.** In particular, **this exercise points to a greater need for conservation in certain African nations than does a hotspot-based approach. F**or example, **Kenya, with only 265 endemic plant species, has never been identified as a biodiversity hotspot. Yet our ranking suggests that the conservation of Kenyan wildlife should receive urgent attention.** After all, **this nation is home to species belonging to** each of the following **eight highly threatened mammalian genera**: Alcelaphus (hartebeest), Connochaetes (gnu), Hippotragus (a type of antelope), Oryx (another type of antelope), Otomops (a type of bat), Redunca (reedbuck), Rhynchocyon (elephant shrew) and Surdisorex (mole shrew).

AT: Bio-D – IL Turn – Hotspot Focus

**Focus on small-scale “efficiency” over-prioritizes species that need limited ranges, while killing off species requiring large ranges – perverts evolution**

**Kareiva and Marvier 3** (Peter, Lead Scientist for The Nature Conservancy, affiliated with the Bren School of the University of California, Santa Barbara and the Environmental Studies Institute at Santa Clara University, Michelle, assistant professor of biology at Santa Clara University, Ph.D. in bio from UC Santa Cruz, American Scientist, http://www.americanscientist.org/issues/issue.aspx?id=869&y=2003&no=4&content=true&page=2&css=print, accessed 7-8-11, JMB)

**Another shortcoming of the hotspot methodology becomes apparent when one looks carefully at how it is** often **applied**. Although Myers and his colleagues initially proposed hotspots as a means of setting conservation priorities at a very large scale and in a coarse manner, **the notion of getting the most species per unit area of land protected** ("efficiency") **has been translated to much smaller spatial scales with** potentially **unfortunate consequences**. For example, in the past few years **two influential analyses of biodiversity within the U.S. have been used to show how conservationists might efficiently protect species by focusing on just a few small clusters of critical counties**. **This strategy would, however, fail to protect adequately those species that require large tracts of relatively undisturbed habitat.**  An **added worry surfaces when you take a long-term, evolutionary perspective** on the problem. **By focusing on conserving the most species in the smallest possible area (for the sake of cost-effectiveness), conservationists may** inadvertently **be altering the course of evolution**. How? **Protecting hotspots at small scales favors species that can live in relatively restricted areas. Thus we might expect rodents to enjoy high speciation rates** relative to extinction rates. At the other extreme, **species that require vast territories, and thus cannot be contained in cost-effective hotspots, will suffer disproportionate extinction** relative to speciation. **Hence primates and large carnivores would be expected to wane** relative to their smaller mammalian counterparts. **Recent analyses of vertebrate extinction and speciation rates suggest that this is exactly what is happening**. Thus, as Donald A. Levin (of the University of Texas at Austin) and Phillip S. Levin (of the National Marine Fisheries Service) argued in these pages not too long ago (Macroscope, January–February 2002), the **Earth may** well **end up with a paucity of primates and rhinoceroses, and a surplus of rodents**.

AT: Famine – Alt Cause – Maldistribution

**The problem isn't the amount of food in the world, it's the distribution that matters.**

**Barrett 2** (Christopher B., [http://dyson.cornell.edu/special\_programs /AFSNRM/Parima /Papers%20from %20Cbb2/Papers/BarrettFoodSecurityandFood%20AssistancePrograms.pdf](http://dyson.cornell.edu/special_programs%20/AFSNRM/Parima%20/Papers%20from%20%20Cbb2/Papers/BarrettFoodSecurityandFood%20AssistancePrograms.pdf), Dept. Agri. Res. Mgmt. @ Cornell, accessed 7/8/11) CJQ

The second broad pattern is that, **despite** indisputable **progress, hunger and food insecurity remain distressingly widespread. The absolute number of people suffering** food insecurity **has not fallen** appreciably, **as widespread poverty** and increasingly unequal asset **and income distributions conspire to counteract increased** per capita **food availability and falling** food **prices** [International Conference on Nutrition (1992), Bread for the World Institute (1995)]. A large plurality of the world’s hungry and food insecure reside in South Asia; despite a falling rate of prevalence, absolute numbers of malnourished people have risen there. The best available estimates suggest that 800– 1300 million people in the world – about the same number as are classiﬁed as “poor” – suffer chronic PEM [International Conference on Nutrition (1992), Bread for the World Institute (1995)]. Another **2 billion people are affected by micronutrient deﬁciencies** related to insufﬁcient intake of iodine, iron, or vitamin A [International Conference on Nutrition (1992)]. **The distributional challenge is highlighted by the fact that a large proportion of these people** – indeed, the great majority of food-insecure children – **live in homes where others have enough to eat** [United Nations Children’s Fund (1995)]. **The** distressing **prevalence** of macronutrient and micronutrient deﬁciency **despite ample food availability highlights the** now widely **accepted fact that food availability is not the primary cause of food insecurity, the problem is in the distribution of available food.**

AT: Famine – Alt Cause – Inaction

**Increasing efficiency won't solve—people are too selfish and they'll never help others.**

**Zenit 11** (Roman Reporting Service, <http://www.zenit.org/rssenglish-32994>, accessed 7/8/11) CJQ

VATICAN CITY, JULY 1, 2011 ([Zenit.org](http://www.zenit.org/)).- **Benedict XVI is citing** the United Nations and other experts in affirming **that global food production is capable of feeding the world population. But**, he says, **millions "do not have their daily bread" because of egotism**. The Pope stated this today when he received in audience participants of the 37th session of the U.N. Food and Agriculture Organization. The session concludes Saturday. "**Poverty**, underdevelopment **and hence, hunger, are** often **the result of egoistic behavior that, coming from man's heart, is manifested in social action**, in economic exchanges, in the market conditions, **in the lack of access to food, and is translated in the negation of the primary right of all persons** to nourish themselves and, therefore, to be free from hunger," **the Holy Father stated**. He decried that "even food has become an object of speculations or is linked to changes in a financial market that, deprived of certain laws and poor in moral principles, seems anchored only in the goal of profit."

AT: Famine – Alt Cause – Biofuels

**Biofuels account for half the world's crop consumption—predicting yields won't change that.**

**Evans 11** (Alex, NYU Centre on Int'l Cooperation, <http://www.guardian.co.uk/global-development/poverty-matters/2011/may/31/global-food-crisis-real-cost-biofuels>, accessed 7/8/11) CJQ

Other factors have driven the breathtaking inflation and volatility in food markets over the last few years. These include a rising global population, millions more people shifting to western diets, declining crop yield growth, years of under-investment, extreme weather, high oil prices increasing the cost of inputs such as fertiliser, low stock levels, and kneejerk actions by governments such as food export bans and panic buying by importers. But it is **biofuels** that **have been the real game** changer. As the International Monetary Fund [observed](http://www.imf.org/external/pubs/ft/weo/2008/01/pdf/c1.pdf) in 2008, **biofuels accounted for 1.5% of global liquid fuels supply that year, but represented** nearly **half the increase in food crop consumption, mainly because of corn-based ethanol** in the US. **While they only accounted for a small fraction of liquid fuels, the fact that they represented 75% of the net increase in** non-Opec **liquid fuels** in 2008 **goes a long way towards explaining why oil importers have taken to them with such enthusiasm**. That's scant comfort to the billion or so poor people who don't get enough to eat – they have seen food prices rise still further out of reach as a result of biofuel support policies. Is the tide finally turning against corn-based ethanol and other inefficient "first generation" biofuels? At first glance, it might look like wishful thinking. **The** US farm **lobby**, never shy in pushing for its interests, **has taken to ethanol with a passion**. With presidential elections looming, the **Obama** administration **has been careful not to offend agribusiness: a**[**speech**](http://www.state.gov/secretary/rm/2011/05/162795.htm)**on**[**food security**](http://www.guardian.co.uk/global-development/food-security) **by** the US secretary of state, **Hillary Clinton, this month failed to mention the words "ethanol" or "biofuels" even once**. The EU, too, looks in no mood to rethink its target of obtaining 10% of transport fuels from biofuel by 2020.

AT: Famine – Squo Solves – China Rice

**China switching to aerobic rice now—solves any potential shortage.**

**NYT 7** (New York Times, <http://www.nytimes.com/2007/10/23/business/worldbusiness/23iht-rice.1.8012673.html>, accessed 7/8/11) CJQ

BEIJING — **China**, the world's top consumer and producer of rice, **is turning to a new kind of rice that can grow on dry soil like wheat** as the country faces a serious water shortage due to industrialization and global warming. **China**, a pioneer in aerobic rice, **plans to expand acreage for it to about 30 percent** from about 1 percent now as the water shortage limits expansion of traditional water-flooded rice, or lowland rice, said Wang Huaqi, an aerobic rice breeder at **China** Agricultural University. Together with the International Rice Research Institute, the university **has been working on aerobic rice that is grown like the upland crops of wheat and corn in soil that is not flooded or paddled. Aerobic rice requires** 50 percent **to 70 percent less water**, although its yields are about 30 percent less than hybrid rice - a strain that brought about the Green Revolution in the 1960s, Wang said. Bas Bouman, a senior scientist at the rice research institute, said, "**Our objective is to help farmers cope with decreasing water availability.** Water is getting scarce."

AT: Famine – Squo Solves – China Rice

**Chinese yield can exceed all expectations—status quo fertilization means that the PRC can overcome any shortfalls.**

**Jin, Wu and Liu 2** (ji-yun, PPI/PPC, Ronggui, Dept. Dir. NW Rgn., Rongle, PPI/PPIC, accessed 7/8/11) CJQ

Results clearly indicated that **overall rice production and farmer income were** significantly **improved by balanced fertilization. The** average **best yields achieved with** balanced NPK **fertilization** for rice grown in southern China, regardless of planting season, **increased substantially**. Omitting K (NP treatment) from the balanced fertilization treatment resulted in significant paddy yield reductions of 13, 22, and 9 percent for early, late, and middle rice, respectively. Average paddy yield of all trials (including early, late, and middle season rice) with the best treatments was 8,150 kg/ha, with a 13.3 percent yield reduction if K was not used. The average net benefit from K application ranged from 459 Chinese yuan (RMB) per hectare for middle season rice to 1,690 RMB/ha for late season rice (8.2 yuan = US$1). **To achieve high yield rice production, rational input of inorganic fertilizers is a key management practice**. The weighted mean of N, able 3. **Rice yield responses to balanced fertilization in the 1990s in China**. Rice Fertilizer use, kg/ha Paddy yield, kg/ha Yield increase Net benefit Numbers in parentheses indicate the number of trials conducted. P 2 O5 , and K2 O rates in the best treatments from southern China were 176, 76, and 174 kg/ha, respectively. With a ratio of 1.0:0.4:1 (Table 3), these rates were much more balanced than farmer practice (survey data), with a ratio of 2.8:0.8:1 (Table 2). As a result of **rational rates and balanced use of inorganic fertilizers, yield and farmer profit were** remarkably **improved** (Table 3). **Balanced** **fertilization** field research on rice in northern China **did not begin until the early 1990s.** Results show that an average best yield of 7,800 kg/ha using soil test-based balanced fertilization recommendations required 202 kg/ha N, 112 kg/ha P 2 O5 and 127 kg/ha K2 O, giving a ratio of 1.6:0.9:1 (Table 3). Omitting K from the balanced fertilization treatment resulted in a 16 percent yield reduction. Stated another way, one kg of K2 O produced 10.7 kg of paddy grain. The average net benefit from K application in the north was 1,515 RMB/ha. The approach taken by PPI/PPIC in developing the balanced fertilization technology was to use soil testing as a basis for identifying all plant nutrient deficiencies and assuring these nutrients were applied. Since this is a site-specific technology, it must be made clear that fertilization practices at the different sites reported in these discussions were not equal. As well, **secondary and micronutrients were applied as neede**d. It is important to note that **it is highly unlikely that the magnitude of yields obtained would have been achieved had these additional plant nutrients not been applied**. Unpublished data in reports of field trials at the various sites support this statement. In summary, it is clear that **great potential remains to further increase rice production in China through adoption of improved fertilization techniques**. If the research evidence had been implemented and 10 percent higher yield levels achieved, in 1999 China would have produced an extra 20 M t of rice (a production value of 28 billion RMB). Current PPI/PPIC **China Program activities are highlighting the transfer of fertilizer technology to farmers since it is obvious this message has not been received on a widespread basis.**

AT: Famine – Impact – Wheat Resilient

**The wheat economy is resilient – US and European crops balance Russian failures.**

**Idaho Wheat Commission 10** (Idaho Wheat Commission, http://idahowheatcommission.blogspot.com /2010/07/no-world-wheat-shortage-seen.html, accessed 7/8/11) CJQ

DTN's Bryce Anderson reports that **although some wheat-growing areas in the world have had challenges, the world wheat supply** outlook **does not expect a shortage**, thanks to weather in the U.S. **Bountiful U.S. and Europe wheat harvests are offsetting fears of lower production in Russia** and Canada going into late summer. (DTN file photo)The result is a generally bearish market weather factor going into late summer.  "**Production losses are being seen overseas**, which is cutting into global supplies. **However, stocks remain cumbersome,"** said DTN market analyst John Sanow.  The challenges in other countries included Canada's wheat acreage slashed from spring flooding and Russia's wheat harvest prospects diminished because of summer drought.  But **the U.S. winter wheat crop harvest was large; the** U.S. **spring** wheat **harvest may match record yields; and the** wheat **harvest in Europe** outside of Russia **is going much better than some** analysts **had expected**.  For U.S. hard red winter wheat areas, **May rainfall set the tone for harvest success**. In Kansas -- the top hard-red-winter-wheat-production state -- May rainfall totaled from 3 to 5 inches over most of the wheat-growing areas. June was drier than normal, which allowed wheat to ripen, and harvest to proceed with few major interruptions.  The final harvest was a good one: the Kansas Agriculture Statistics estimates the 2010 Kansas wheat crop at around 369 million bushels, with a yield of 43 bushels per acre -- the fifth-highest yield on record.  Spring wheat areas also see a good harvest shaping up. Reports from the 2010 North Dakota spring wheat crop tour indicate that yields this year may approach last year's record 39 bushels per acre.  Late-summer **drought in Russia puts a bit of a crimp in world wheat supplies**. Russia's drought began in April, and has been called the most serious drought since 1880, back to the days of the czars.  "I see no sign in the next two weeks of a change of more rainfall," said Telvent DTN ag meteorologist Joel Burgio. He has tracked and forecast international weather patterns for more than 20 years.  "Early July, we had the drought centered in central Russia and western Kazakhstan," he said. "**Now, it looks like the hottest weather is shifting west into the Volga Valley and as far (west) as eastern Ukraine**."  But, will even such a historical calamity goad the grain market into a true-blue weather-premium mode? Sanow doesn't think so -- more to the point, he said the market doesn't think so, either.  "The ending stocks-to-use ratio domestically is just shy of 50 percent (the highest level since the 1987-88 marketing year), while the world number is at a strong 28 percent," he said. "**With weather remaining a factor in the Black Sea Region, the market could continue to find support, although at some point bearish fundamentals should take control once again.**"

AT: Famine – Impact – Wheat Resilient

**Wheat is resilient – even if the Middle East falls Idaho can maintain supply.**

**Idaho Wheat Commission 11** (Idaho Wheat Commission, http://idahowheatcommission.blogspot.com /2011/02/idaho-wheat-producers-predict-stable.html, accessed 7/8/11) CJQ

IDAHO -- **The unrest in Egypt has some people worrying about their crops** right here in Idaho, specifically, wheat. **Egypt is the world's largest importer** of wheat. Meanwhile, **Idaho is in the top 10 of states in the union for exporting wheat**. So some of that crop that pumps hundreds of millions of dollars into the state economy depends on buyers that are right now in the midst of a possible revolution. That raised concerns with Sam White, chief operating officer of the Pacific Northwest Farmers Cooperative. He's worried that changes in the Egyptian government could mean an anti-American shift, stopping all U.S. wheat imports into the country. White told the Moscow-Pullman Daily News that, **"We want that Egyptian demand,** it's a vital part of the market...**they buy a lot of wheat** from the world, so it's vital they keep buying it." **However, producers** in the area we talked to, **weren't too worried. "Given the global nature of Idaho wheat**... well, U.S. wheat **and** Idaho **wheat production in general**, I think **we'll be alright,"** said Travis Jones, Executive Director of the Idaho Grain Producers Association. Jones says the demand for U.S. and Idaho wheat around the world remains strong. "Worldwide, **the demand for wheat is high,**" said Jones. "**The supply of other major wheat-producing countries is dow**n, due to weather conditions, mostly. **But in Idaho, we're looking really good**. In fact, our wheat will be up, or is expected to be up this year. And prices are good. So, there's a lot of optimism with Idaho wheat producers." Jones believes whoever is in charge after the dust settles in **Egypt will need Idaho wheat**. "There's a long history of a relationship there, not only with their government, but with some of their private industry," said Jones. "So we think we can get across those hurdles and keep this high quality Idaho wheat continuing over to the Middle East area." Another reason local producers are optimistic is the demand there for the specific type of wheat grown here. Soft white wheat is the most popular wheat produced in Idaho**. That type is used in flat breads, which are commonly eaten in Egypt. Idaho produces over 100 million bushels** of wheat **each year**. The state's 2009 wheat crop was valued at $512 million.

AT: Water – Squo Solves – Talks

**Negotiations solve water tensions in the status quo- even so other conditions take the forfron of political concern**

**Allen 2** (J.A., African Studies @ University of London, muse.jhu.edu/journals/sais\_review/v022/22.2allan.html, DA 7/9/11)

**Progress toward a basinwide set of water agreements appeared to be at an advanced stage by 1995**. The Israel-Jordan Peace Agreement, [End Page 266] **followed by the Oslo Accord in 1995, and then by apparently promising talks between Israel and Syria**, made it appear that a new era had dawned. However, the assassination of Israeli Prime Minister Yitzhak Rabin in 1996 and the subsequent change of government in Israel reversed the progress toward a set of comprehensive agreements, including those over water. The 1996 reversal is an emblematic example of the tendency highlighted by Mayer that negotiators face much more trenchant, in this case lethal, opposition from the factions at home than they do from across the negotiating table: **When nations negotiate, often the toughest bargaining is not between nations but within them. The reason is simple: international agreements, no matter how much in the national 'interest,' inevitably have differential effects on the factional concerns...experienced negotiators almost invariably insist that the more difficult part of their job consists not in dealing with the adversary across the table but in handling interest group, bureaucrats, and politicians at home**. 26 The articles in the September 1994 Peace Agreement between Israel and Jordan demonstrated in a classic way the significance of linkages. Jordan apparently obtained two hundred million cubic meters of water per year in tranches of fifty million cubic meters. The first two concessions were relatively uncomplicated and involved Israel's release of the water to Jordan. The second concession also involved some investment in Jordan. The last two negotiated water transfers were severely entangled in conditions of joint investment, which have made them difficult to realize because Jordan was (and remains) short of financial capital for infrastructure projects. However, the most serious deficiency in the water articles of the Jordan-Israel Peace Agreement was the absence of any provision for drought circumstances. The recurrence of drought in the Jordan Basin is certain. In the event of a drought, freshwater availability should be negotiated by clearly distinguishing reliable sources of water from unreliable ones. Reliable sources of water are those that will be available every year irrespective of drought, provided that surface water and groundwater resources have been managed sustainably. Unreliable water resources are only available in nondrought years. Negotiators always simplify the situation by choosing tentative numbers as if all the water were reliable. Within four years of the 1994 agreement, a serious drought had exposed [End Page 267] this unfortunate assumption. Israel's failure to deliver the negotiated volume was so highly charged politically that the issue quickly went to the King of Jordan and senior Israeli cabinet members for resolution. 27

**No water conflict/tensions negotiations have lead to the production of desalination plants around the region**

**Allen 2** (J.A., African Studies @ University of London, muse.jhu.edu/journals/sais\_review/v022/22.2allan.html, DA 7/9/11)

**The relatively small amounts of water needed for domestic and industrial use—only 10 percent of the total required for self-sufficiency—are much less of a challenge.** Indeed, desalination technology holds great potential for adequately supplying nonagricultural water demand. Israel had delayed installing desalination capacity, judging that the period after a peace agreement with Palestine would be the best circumstances in which to announce its desalination program. **However, with the deterioration in relations with Palestine after the July 2000 Camp David meeting and the onset of a drought, Israel brought forward its program and announced in November 2001 its first plant with a capacity of fifty million cubic meters per year. A second plant was announced in spring 2002, adding another fifty million cubic meters per year in desalination capacity. These were part of a planned four hundred million cubic meter capacity. Construction of two plants to produce a total of one hundred million meters of water annually** began in 2002. Ariel Sharon, as Infrastructure Minister in 1998, suggested that I**srael would desalinate up to eight hundred million cubic meters per year** within the first decades of the twenty-first century. **The economies of the Jordan Basin are likely to be desalinating between one billion and 1.5 billion cubic meters of water by 2020**. These volumes of high quality water would increase the currently available levels of freshwater by 50 percent. **Many Israeli water professionals have realized that manufacturing water will be much easier than negotiating it**. Indeed, it will be less complicated and more secure to manufacture water than to depend on its ongoing [End Page 269] provision by hostile neighbors, even if legal entitlement or a negotiated entitlement could be achieved.

AT: Water – No Solve – Resolution

**Landsat images overlap each other—hard to tell apart landmasses.**

**Schroeder et al 6** (Todd A., Warren B. Cohen, Conghe Song, Morton J., Canty, Zhiquiang Yang, Dept. Forest Science, UO, Forest Science Lab, Dep. Geo @ North Carolina, Systems Analysis @ Munich, <http://ddr.nal.usda.gov/bitstream/10113/38625/1/IND44322324.pdf>, accessed 7/5/11) CJQ

**SEBAL requires as inputs a number of biophysical parameters which can be derived from satellite images**. These include surface albedo, fPAR, emmissivity, evaporation fraction, surface roughness and bulk surface resistance. **Different land classes** (water, bare soil, fynbos, forest, dryland farming, table grapes and wine grapes) **were distinguished** on three LANDSAT images **covering the Western Cap**e wine producing areas, using sequential unsupervised classifications (ISODATA clustering). Areas under table grapes were distinguished from wine grapes on the basis of differences in NDVI’s. Three 5-TM LANDSAT images were used (September 2004, December 2004 and February 2005) (Table 1). LANDSAT images have a spatial resolution of 30 m, and a temporal resolution of 16 days. As LANDSAT 7-ETM images are scan line corrected for missing pixels, not all the images acquired could be used to generate a land cover map. On **the land cover map one can not clearly distinguish vineyards from other orchards and therefore some of the areas classified as table or wine grapes may actually include areas of orchards.** Cloud free ASTER images (Table 1), with a resolution of 15 m, in combination of three LANDSAT 5-TM images, were used to distinguish table and wine grapes from other orchards and to further improve the grape map for the four study areas. **The ASTER images overlap with the LANDSAT images but only cover the four study areas. All the images were geo-referenced to topographic maps** (1:50 000 and 1:100 000). SEBAL results were analysed with the land cover map created from the LANDSAT and ASTER images. Since vineyards are perennial, only one land cover map was used for both study years.

AT: Water – No Solve

**Remote sensing doesn’t solve- no water left**

**Bastiaanssen 3** (W.G.M. Prof remote sensing and water management, http://www.kimberly.uidaho.edu/water/montpellier/p7/Bastiaanssen\_P.pdf, DA 7/9/11, OST)

**Water demand exceeds the water supply in the vicinity of fast expanding super metropolitans found on the alluvial plains of Asia**. A fierce competition for water between the urban, industrial, agricultural and environmental users has began. Several basins exploit groundwater as a remedy to surface water resources scarcity, but this leads to unsustainable developments. **Water policy makers** have, therefore, to **work out strategies for integrated water and environmental management**, which rely on a proper knowledge of the basin hydrological and pollution conditions. Examples from various countries in Asia are elaborated in this paper to demonstrate how spatially distributed evapotranspiration data from remote sensing, in conjunction with other key data, can help to build the knowledge base for integrated basin scale water management. **Remote sensing is not a solution, but, it provides key data that is difficult to access by conventional methods**.

AT: Water – I/L – Water Not Key

**Water shortages are just security rhetoric that act as bargaining chips on strategic non-peripheral issues**

**Allen 2** (J.A., African Studies @ University of London, muse.jhu.edu/journals/sais\_review/v022/22.2allan.html, DA 7/9/11)

**In the realm of international relations theory, the case of international shared waters in the Middle East can be understood within a** nonrigorous, **realist framework. In each river basin there is a hegemon,** such as Turkey in the Euphrates-Tigris river system, Egypt in the Nile river system, or Israel in the Jordan Basin. Within a realist framework**, riparian relations can be explained in terms of each country's capacity to project power**. 6 Functional approaches and regime theory have not provided a useful basis for analysis because there are no international structures that work in the region. 7 **Contentious issues arising over shared freshwater resources are also embedded in** what Barry Buzan calls "**security subcomplexes**." **Securitization theo**ry, well articulated in the case of the Middle East by Buzan, **contrasts the high politics of extreme circumstances—"security politics"—with the "normal politics" that they interrupt, but finally confirms the realist analysis**. 8 Buzan identifies the Middle East and North Africa as a significant security complex containing three subsystems. Whereas **in the Gulf and in North Africa water is only a peripheral issue, the competition over water resources is central to the eastern Mediterranean subcomplex, comprising Israel, Jordan, and Palestine. Yet, despite the importance of water as a source of tension, its significance is limited in negotiations between the Jordan Basin riparian states. Instead, symbolic issues have traditionally dominated negotiation agendas.**

**Water is played up as an important factor in international relation while remaining unimportant**

**Allen 2** (J.A., African Studies @ University of London, muse.jhu.edu/journals/sais\_review/v022/22.2allan.html, DA 7/9/11)

**Water is just one of many contentious issues with which neighboring political economies in the Middle East must contend**. For example, the major issues between Jordan and Israel before their negotiated Peace Agreement in 1994 were peace, territorial boundaries, and water. 9 In the case of Israel and Palestine, there have been five issues—Jerusalem, territorial boundaries, settlements, refugees, and water. 10 When numerous issues are at stake, linkages in negotiation are unavoidable. **However, the symbolic significance** [End Page 257] **of some of the issues at hand, such as defining the status of Jerusalem, determining borders, and gaining a lasting peace will typically overwhelm other, economically significant disputes** (e.g., joint water management, the right of return for refugees)—even when these are strategically profound. For example, in **the 1994 Jordan-Israel Peace Agreement, gains in terms of symbolically charged issues such as suing for peace and obtaining favorable territorial boundaries came at the expense of losses on water claims for Jordan. In fact, in the Jordan Basin, water policy, including water allocation decisions and joint management of common freshwater resources, is typically formulated based on "constructed knowledge," or the product of biased views toward water resource security**. Indeed, important decisions regarding water resources depend on public perceptions of water security, which are manipulated and distorted—i.e., "constructed**." Policymakers purposefully downplay their economies' water deficits because politically, such a risk-free approach to water policy is easier than to confront the seemingly intractable problems posed by acute water scarcity. What has sustained these distorted, "constructed" notions of water security thus far are the global trading system and access to virtual water**. 11 Throughout the past fifty years, Middle Eastern governments have leveraged the global political economy in order to implement otherwise unsustainable water allocation policies. Yet, instead of publicizing the contribution of international trade to solving the region's growing water scarcity problem, policymakers have kept "virtual water" imports, in the form of grain and food commodities, invisible economically and silent politically. Indeed, to discuss them publicly would contradict deeply held beliefs regarding water security (as well as each country's independent national water policies), which would be politically destabilizing to say the least.

AT: Water – I/L – Water Not Key

**Water conflict won’t happen- empirics**

**Allen 2** (J.A., African Studies @ University of London, muse.jhu.edu/journals/sais\_review/v022/22.2allan.html, DA 7/9/11)

The history of hydropolitics in the Middle East during the second half of the twentieth century has been characterized by intense, occasionally armed, hostility. In the late 1940s, the economies of the region could be regarded as water secure, with enough water to meet both domestic and industrial needs as well as food production requirements. Since then, however, the population of the basin has increased from about three million to over fifteen million today. Accordingly, the use of freshwater increased about six-fold in half a century. **While the region's water endowment has remained the same, heavy technical interventions have taken place to divert water for various purposes, radically altering the levels and patterns of use. Initiatives like Israel's urban wastewater reuse program have not contributed significantly to increasing water resources. Clearly, the water resources of the Jordan Basin countries have been very seriously tested, and in these intense demographic and economic circumstances, it is remarkable that there has been so little conflict over water.**

**Virtual water has been ignored and politicians exaggerate the state of water scarcity**

**Allen 2** (J.A., African Studies @ University of London, muse.jhu.edu/journals/sais\_review/v022/22.2allan.html, DA 7/9/11)

The Jordan Basin is also a useful laboratory in which to observe **the miraculous workings of economically invisible and politically silent "virtual water," accessible primarily through the international grain market**. 13 **Given the current population of the basin, the region would need about fifteen billion cubic meters of water to be self-sufficient. However, there are less than three billion cubic meters of freshwater available annually, not counting additional soil water in the northern part of the basin**, **which is** [End Page 260] **estimated at one to two billion cubic meters, but which is not fungible. Yet this annual deficit of ten to twelve billion cubic meters, which has existed since the 1950s, is not publicly discussed**. Nor is the fact that neither Israel, Palestine, nor Jordan can meet their food needs relying solely on their freshwater resources. **Instead, policymakers speak of running out of water in the future. The constructed** [End Page 261**] discourse about the tractability of the water supply problem overwhelms any attempt to introduce the politically unwelcome statistics of stark deficits**. Finally, there has not been a significant amount of negotiation over water issues either. The only agreements reached came toward the end of the period. In 1994, Jordan and Israel signed a peace agreement with articles specifically addressing water. 14 In this sense too, the Jordan Basin provides a useful case study because negotiations over water, albeit strongly linked to other highly politicized issues, have already been initiated, though only long after water shortages became acute. 15

**Water shortage disputes are being settled now**

**Allen 2** (J.A., African Studies @ University of London, muse.jhu.edu/journals/sais\_review/v022/22.2allan.html, DA 7/9/11)

The political ecology of water resources and management in the Jordan Basin countries in the last half of the twentieth century can be considered by decade. The 1940s were a period of massive social and political disruption. The armistice, which marked the end of the Arab-Israeli conflict of 1947-48 and the establishment of a Jewish state, left Israel and Jordan with borders different from those during the period of British administration and different from the boundaries recommended by the UN Partition plan. 16 The new territorial boundaries guaranteed that access to water resources would be contentious. **From 1952 to 1955, the United States tried to devise a rational division of water resources among the Jordan Basin riparian states. The U.S. government sent a special diplomatic mission—the Johnston Mission—to negotiate a basinwide arrangement for optimizing water allocation between Jordan, Israel, and Syria**. 17 The U.S. mission's approach to water resource management was imbued by two ideas. First, **U.S. water experts were convinced that science and engineering, backed by substantial government funding, guaranteed the success of such ambitious projects.** Second, the Johnston Mission was determined to avoid the detrimental consequences of environmental mismanagement. Their model was the Tennessee Valley Authority (TVA), which was set up to address environmental, economic, and social challenges in a poor region of the United States during the 1930s. The lessons from the TVA showed that to reverse resource depletion, both careful planning and strict regulation of resource use were necessary, whereas state-of-the art engineering could minimize the environmental damage of large-scale water development projects. [End Page 262]

AT: Water – I/L – Water Not Key

**Israeli heg checks water conflict**

**Allen 2** (J.A., African Studies @ University of London, muse.jhu.edu/journals/sais\_review/v022/22.2allan.html, DA 7/9/11)

Advocates of political ecology theories contend that the environment, including water resources, is managed in the interests of the powerful. **In the Jordan Basin, power relations have been explicit. Since 1948, Israel has achieved a hegemonic position in military terms. Without explicitly aiming to take control of the basin's water resources, Israel has nonetheless gained sovereignty over these resources in the upper Jordan Basin as a result of territorial expansion and military supremacy.** 20 Integral to the politics of natural resources is the construction of knowledge to reinforce the position of the more powerful riparian state. There is a long tradition of constructing knowledge about the water resources in the Jordan Basin countries. Political ecology theory explains the approaches taken by authors of the thirty or more books about water in the Jordan Basin. Lowdermilk's 1944 study had the clear agenda of justifying a Jewish claim for the regional water resources. 21 That of Ionides in 1953 was inspired by concern for the sustainable use of the limited water resources for economic and social purposes. 22 In the Jordan Basin, as elsewhere, there has been a tendency to assume that water resources would determine economic outcomes and would have a significant and predictable impact on the international relations of riparian states. **Armed conflict was presumed to be an unavoidable element in riparian relations. Yet toward the end of the century, the economic experience of the Jordan Basin has** [End Page 265**] been a spectacular demonstration that natural resources such as water do not determine socio-economic development; on the contary, socio-economic development determines water management options.**  The assumption that local water would be the basis of economic and strategic security has underpinned hydropolitcal discourses in all of the riparian states. They ignored growing real water deficits because recognizing such acute water shortages was politically too risky. Awareness of rising grain imports, which were the obvious indicators of increasing water deficits, could be kept out of the debate on water policy because they arrived invisibly and silently. By 2000, grain imports to Israel (including Palestine) and Jordan exceeded five million tons annually. 23 Had all available freshwater resources in the three territories been exclusively earmarked for grain production, the combined efforts of the Jordan Basin riparian states would only have yielded roughly three million tons of grain.

**Water is a relatively unimportant issue in the middle east**

**Allen 2** (J.A., African Studies @ University of London, muse.jhu.edu/journals/sais\_review/v022/22.2allan.html, DA 7/9/11)

The international market for grain is immensely flexible and an extraordinary phenomenon of political economy. Yet it is by no means an optimizing market system. In fact, its workings are extremely irrational economically. 24 The Jordan Basin countries benefit from the low world grain prices, which are a direct result of years of subsidized agriculture in Europe and North America. Though branded as perverse by economists, agricultural policies in the West nonetheless enjoy broad political support**. More importantly, these subsidized grain exports enable Middle Eastern governments to continue preaching "sanctioned discourses," namely that serious water deficits have yet to occur.** **The growing water deficits over the course of four decades are conspicuously absent from public debate, and the urgency posed by increasing water scarcity in the region has consistently been downplayed**. These perceptions of water in the region, conditioned by the international trade in virtual water, have adversely affected the prospect of successful water negotiations. Indeed, the complex economic processes that enable virtual water to meet local water deficits have been ignored, even though it allows for equitable use of limited freshwater advocated by international lawyers. 25 But the political imperative of maintaining familiar approaches based on conventional constructed knowledge continue to dominate negotiating agendas.

AT: Water – Impact – No Impact

**Politicians use water scarcity to look successful at foreign policy endeavors**

**Allen 2** (J.A., African Studies @ University of London, muse.jhu.edu/journals/sais\_review/v022/22.2allan.html, DA 7/9/11)

As a result, **the spectacularly successful benefits of international trade, conforming to classical notions of comparative advantage, have been subordinated to the "sanctioned discourse" on water in the region.** 12 **The "sanctioned discourse" on water is that Middle Eastern economies only need a little more water to be "secure." Politicians, the agricultural sector—the single largest water consumer in local economies—and the media all reinforce the sanctioned discourse and advocate self-sufficiency in water and food production, without ever clearly defining these terms**. **These policy goals, highly charged politically, are rarely examined or challenged publicly.** For politicians and policymakers, the importance of virtual water is that it allows the pretense, perhaps better described [End Page 258] as the fantasy, of claiming that water deficit problems are being solved domestically and that their countries are achieving self-sufficiency in water and food production.

**Water wars are just hype- Negotiations center on other political issues**

**Allen 2** (J.A., African Studies @ University of London, muse.jhu.edu/journals/sais\_review/v022/22.2allan.html, DA 7/9/11)

However, **such distorted risk awareness regarding water usage among the region's populations has significant, adverse impacts o**n the way negotiations over water resources are approached or even initiated. **The sanctioned discourse is equally evident in the efforts riparian states make to avoid negotiations over common water resources and in their negotiating strategies once they have initiated conflict resolution efforts. In the case of the Israel-Palestine negotiations, a significant turning point was reached when the focus of the negotiations shifted from the contradictory principles of sovereignty, espoused by the Palestinian negotiators, and prior use, argued by Israel, to those of equitable utilization.** Equitable utilization will always be difficult to implement, but it does have the merit of integrating international and national economic processes into a final agreement, thereby enabling a solution that improves the livelihoods of local populations instead of merely focusing on the narrow issue of water deficits. **Access to virtual water and, in due course, desalinated water will contribute both to economic well-being and to decreasing water scarcity by freeing up scarce freshwater resources for other, nonagricultural purposes**. That such constructed knowledge dominates water policy is not unusual, nor even reprehensible. Recognizing the phenomenon of constructed knowledge is, however, critical for understanding the discourse that surrounds water security and water policy in the Middle East.

**Other issues are vastly more important than water tensions in the middle east**

**Allen 2** (J.A., African Studies @ University of London, muse.jhu.edu/journals/sais\_review/v022/22.2allan.html, DA 7/9/11)

**The relations between riparian states of the Jordan Basin have been characterized by very intense international politics over diverse, yet linked issues. Contention over water has proved to be subordinate** [End Page 259] **to symbolic and territorial issues such as peace, Jerusalem, borders, settlements, and the return of refugees.** The riparian states in the basin have all been strong adherents of the "sanctioned discourse" on water. Even Israel has relapsed into a confusing and contradictory water policy since the peace talks began in 1992, despite having charted a new course in the mid-1980s that rejected the usual assumptions about water politics. Jordan is currently in a transitional mode and the government's water policy seems to be moving away from the sanctioned discourse. Water policy in the Jordan Basin as a whole has been a parable of how political impediments attenuate principled innovation.

AT: Water – Impact – No Wars

**Water doesn’t lead to tensions in the middle east**

**Allen 2** (J.A., African Studies @ University of London, muse.jhu.edu/journals/sais\_review/v022/22.2allan.html, DA 7/9/11)

**The Middle East** is very poorly endowed with freshwater: the region **ran out of water resources to meet its strategic needs**—for domestic and industrial use as well as for food production—**in 1970**. **Despite depleted water resources and growing water demand pushed by population growth, international relations over water have,** if anything, **become less tense since 1970**. The reason is that **water has been available on the international market in the form of "virtual water.**" Indeed, economies that can import grain avoid having to mobilize scarce freshwater from their own resource base to produce wheat themselves. By the year 2000, the Middle East and North Africa were importing fifty million tons of grain annually, satisfying the largest demand for water in the region—food production. **The remaining 10 percent of water demand for drinking, domestic, and industrial use may soon be met through low-cost desalinated seawater**. The global political economy of water use and trade has had important impacts on the way water is perceived in the Middle East. But at the same time, the impact of the global system has been perverse in that the availability of virtual water has slowed the pace of reforms intended to improve water efficiency.

**No water war- Co-op solves**

**Allen 2** (J.A., African Studies @ University of London, muse.jhu.edu/journals/sais\_review/v022/22.2allan.html, DA 7/9/11)

The Middle East is the most water-challenged region in the world, with little freshwater and negligible soil water. 1 Water is therefore a key strategic natural resource, and realist theory, as [End Page 255] well as popular intuition, has it that the scarcity of water in the region will lead to water wars. **Despite growing water demand, the Middle East has shown no signs of a water war since some minor military events in the northern Jordan Valley in the early** 19**60s**. 2 On the contrary, **there is much evidence of cooperation over scarce water resources in the region**, especially in the Jordan River Basin, where freshwater is scarcest. 3 **Water is too important to be left to the uncertainties of rapports de force.**

**Despite low fresh water reserves- plenty of soil water means that there is an abundance of water in the middle east.**

**Allen 2** (J.A., African Studies @ University of London, muse.jhu.edu/journals/sais\_review/v022/22.2allan.html, DA 7/9/11)

Many **Middle Eastern economies must use fresh surface and groundwater resources for food production. In contrast, in temperate regions, up to 90 percent of the water used in food production comes from naturally occurring water in soil profiles, called soil water.** Soil water differs from freshwater in that it can only be used in agriculture to produce crops. Freshwater can be used by all sectors (for domestic, industrial, and agricultural activities) and can be lifted, pumped, and transported. It can therefore be assigned an explicit value in commercial transactions. Although **soil water can only physically be used in situ, it can also be "moved" and exported through agricultural production and trade**. Indeed**, at the global level, soil water resources are in surplus**. **Fortunately for the water-short economies of the Middle East, this soil water can be made accessible via trade in staple food commodities such as grain**. Every year, farmers and traders in the Middle East move volumes of water equivalent to the flow of the Nile into Egypt, or about 25 percent of the region's total available freshwater. The water "imported" in this way can be called "virtual water." 5 To produce one ton of wheat requires one thousand tons (cubic meters) of water. **Importing a ton of wheat therefore relieves a community from having to harness one thousand tons of its own water resources.** The purpose of this analysis is to show, first, that the **perceptions of water resources in the Middle East are constructed, namely that the notion of water scarcity is based on too narrow an interpretation of freshwater availability**. Second, the reason this constructed perspective has endured thus far lies in the effectiveness of the international political economy, which has in fact [End Page 256] solved the region's water resource problems, albeit invisibly and silently. Finally, it is important to draw attention to the impact of the international political economy on the region, which has been perverse as well as favorable. Indeed, the global trade system has slowed the pace of water policy reform and has distorted international relations where shared freshwater resources are in contention.

AT: Water – Impact – No Wars

**There won't be wars over water – even in face of shortages, realism means states won't attack.**

**Wolf 99** (Aaron T., Oregon State Uni. Dept. Geo., [http://www.humansecuritygateway.com/documents/ UCOWR\_waterandhumansecurity.pdf](http://www.humansecuritygateway.com/documents/%20UCOWR_waterandhumansecurity.pdf), accessed 7/9/11) CJQ

**If one were to launch a war over water, what would be the goal?** Presumably, **the aggressor would have to be both downstream and the regional hegemony** – an upstream riparian nation would have no cause to launch an attack and a weaker nation would be foolhardy to do so. **An upstream riparian nation,** then, **would have to initiate an action, which decreases either quantity or quality, knowing that doing so will antagonize a stronger down-stream neighbor**. The down-stream power would then have to decide whether to launch an attack – if the project were a dam, destroying it would result in a wall of water rushing back on down-stream territory. Were it a quality-related project, either industrial or waste treatment, destroying it would probably result in even worse quality than before. Furthermore, **the hegemony would have to weigh not only an invasion, but an occupation and depopulation of the entire watershed in order to forestall any retribution** – otherwise, it would be simple to pollute the water source of the invading power. It is unlikely that both countries would be democracies, since the political scientists tell us that democracies do not go to war against each other, and the international community would have to refuse to become involved (this, of course, is the least far-fetched aspect of the scenario). All of this effort would be expended for a resource that costs about one U.S. dollar per cubic meter to create from seawater.

AT: Water – Impact – No Wars

**Water wars won't define the 21st century—treaties check conflict escalation, and skirmishes will stay limited to the tribal level.**

**Wolf 99** (Aaron T., Oregon State Uni. Dept. Geo., [http://www.humansecuritygateway.com/documents/ UCOWR\_waterandhumansecurity.pdf](http://www.humansecuritygateway.com/documents/%20UCOWR_waterandhumansecurity.pdf), accessed 7/9/11) CJQ

**The** global **water crisis has led to a large** and growing **literature warning of** future “**water wars,” and pointing to water** not only as a cause of historic armed conflict, but **as the resource which will bring combatants to the battlefield in the 21st century**. The historic **reality has been quite different – we** have not, and probably **will not, go to war over water**. In modern times, **only seven minor skirmishes have been waged over international waters. Conversely, over 3,600 treaties have been signed** over different aspects of international waters – 145 in this century on water qua water – many showing tremendous elegance and creativity for dealing with this critical resource. This is not to say that armed conflict has not taken place over water, only that such **disputes generally are between tribes**, water-use sectors, **or** states/**provinces**. What we seem to be finding, 36 in fact, is that **geographic scale and intensity of conflict are inversely related.**

AT: Refugees – SQ solves hurricane mitigation

**Planes can be used to remote sense for disaster mitigation**

**Fire science 9** (firescience.gov/projects/briefs/01-1-4-15\_FSBrief57.pdf, July, DA 7/8/11, OST)

With an increase in the risk of largeHiﬁ res across much of the Western United States, along with a growing variety of fuel types that result from changes in the landscape and management strategies, there has never been a more pressing need for accurate, cost-efﬁcient, large scale forest fuel maps. **Emerging remote sensing technologies may yield exactly the kind of large scale maps needed** to more accurately predict forest fuel loads, ﬁ re risk, and ﬁ re behavior. With the Greater Yellowstone Ecosystem as their backdrop, Don Despain, Sasaan Saatchi, Kerry Halligan, Richard Aspinall, and Robert Crabtree worked together to acquire a detailed catalogue of remote sensing data for estimating forest fuel load, and creating subsequent maps. **They retrieved passive** (optical) **and active** (radar and LiDar) **remote sensing data from a variety of sensors, interpreted the data, combined the data, and created maps—all with the intent of ﬁnding the most accurate remote sensing data in terms of its correlation with their “on the ground” ﬁeld data. They found remarkably close accuracy with their airplane-retrieved radar data, showing that particular sensors could achieve about 70 percent accuracy** compared to ﬁeld data in predicting fuel load. This work helps mark a new era of potentially more accurate and cost-effective remote sensing technology speciﬁcally in regards to estimating forest fuel load, and related mapmaking.

**Airplanes can fill in**

**Fire science 9** (firescience.gov/projects/briefs/01-1-4-15\_FSBrief57.pdf, July, DA 7/8/11, OST)

**There has** never **been a** more pressing **need for an efﬁcien**t fuel **mapping system** that crosses state, administrative, and park boundaries and that is based on common data and methods. Many small scale mapping techniques rely on passive visual (optical) sensing data that can be mapped. But large scale mapping cannot rely on optical imagery alone as it is too cost prohibitive and not detailed enough at larger scales to accurately portray fuel load. To create such maps requires that researchers ﬁrst accurately estimate forest fuel load. This can be thorny and complex, as it consists of many variables that may include canopy height, canopy biomass, moisture content and others. Then **there are the various ways that researchers can choose to acquire this varied information.** To get “on the ground” estimates of all the variables needed for wildﬁre models is expensive, labor intensive, and not very efﬁcient. But **sensing many of these variables remotely**—**via** satellite or **airplane—can increase efﬁciency and cut down** **cost**. The question is can remote sensing estimate these variables well enough to give managers and planners an accurate idea of actual fuel load in their models? If so, what are the best ways to use the various remote sensing options now available?

**Airplanes give more accurate data**

**Fire science 9** (firescience.gov/projects/briefs/01-1-4-15\_FSBrief57.pdf, July, DA 7/8/11, OST)

Despain and his colleagues wanted to ﬁnd better ways to get accurate fuel load maps of large areas. Despain says, “Remote sensing has been tried in different ways—for instance **satellites can sense large areas with fairly low cost. Airplanes** may **give more accurate data** but they tend to be expensive and cost-prohibitive over large areas.”

**Airplanes can use lidar and similar sensors**

**Fire science 9** (firescience.gov/projects/briefs/01-1-4-15\_FSBrief57.pdf, July, DA 7/8/11, OST)

Since they wanted to asses and combine passive and active remote sensing data, they were careful to use appropriate and comprehensive sensor types for their work. According to their ﬁnal JFSP report, the passive optical data (hyperspectral and multispectral data) tend to accurately portray surface features in a two dimensional way, since they use “illumination of features with photons from sunlight (hence passive)” and as such, they simply cannot penetrate and assess three dimensional vegetation structure. So, they acquired the passive optical data for the 2-D surface (airborne and hyperspectral, LiDar, and satellite based multispectral ASTER), and then, according to the report**, airborne polarimetric and interferometric Synthetic Aperture Radar (SAR) to access the third dimension**. Both SAR and LiDar are capable of acquiring three-dimensional data on fuel structure, and according to the report, **the team used airplane acquired SAR data “to conduct the bulk of the fuel load retrieval.” They were also fortunate to include an analysis of high resolution LiDar data as an added boon to the original intent of the research.** Meanwhile, says Despain, “We took a lot of on the ground measurements to compare to our radar measurements.”

AT: Refugees – SQ solves Hurricane mitigation

**Airplanes and radar can solve**

**Fire science 9** (firescience.gov/projects/briefs/01-1-4-15\_FSBrief57.pdf, July, DA 7/8/11, OST)

“**We did ﬁnd a high level of accuracy from our radar remote sensing**,” he adds. “**When we compared our ﬁeld measurements to what the airplane ‘saw’ we got close to 70 percent accuracy...that’s pretty good correlation for remotely sensed data**.” To ﬁnd this correlation the team took the data from the sensors and compared it to the ﬁeld data. But they had to do it one piece at a time—and one sensor-type at a time. The sheer range and scale of the detailed results the team achieved is largely beyond the scope of this article. As a case in point, their ﬁnal report says, “Given the large quantity of datasets, data types and analysis approaches used in this research we attempt here to provide a useful summary of our ﬁndings as a companion to the ﬁnal data products.” Many of these ﬁnal data products, as well as a roadmap for managers and planners are available in the JFSP ﬁnal report.

**Airplanes have more frequencies**

**Fire science 9** (firescience.gov/projects/briefs/01-1-4-15\_FSBrief57.pdf, July, DA 7/8/11, OST)

“One thing to note,” says Despain, “is that **we used an airplane to get the SAR data. Satellite data does not have as many frequencies as we can get with an airplane**. It would be nice to know whether satellites can get a useable answer relative to an aircraft. We did not test this, but in the future it would be good information to know. I’m looking ahead to when satellites that use more frequencies (like their radar study) can be used over even larger areas.

**Airplanes can use laser scanners to map and predict disasters**

**Vosselman et al 1** (George Vosselman & Sander Dijkman, Department of Geodesy, Delft University of Technology, International Archives of Photogrammetry and Remote Sensing, Volume XXXIV-3/W4 Annapolis, MD, 22-24 Oct., DA 7/8/11, OST)

With the increasing point densities that can be achieved by modern laser scanners, the detection of planar roof faces in the generated point clouds has become easier. Many **laser scanners mounted in aeroplanes can nowadays achieve point densities of up to one point per square meter. Surveys with systems mounted in helicopters have been conducted with point densities of five to ten points per square meter** [Baltsavias, 1999]. **These high point densities usually result in a large number of points on a single roof face. By analysis of the point clouds these roof faces can be detected automatically. Due to the overwhelming evidence provided by the large number of points, the detection of planar roof faces is quite reliable**. For the detection of planar point clouds we extended the well-known Hough transform to a three dimensional transformation [Vosselman, 1999].

**Airplanes can map high density information**

**Vosselman et al 1** (George Vosselman & Sander Dijkman, Department of Geodesy, Delft University of Technology, International Archives of Photogrammetry and Remote Sensing, Volume XXXIV-3/W4 Annapolis, MD, 22-24 Oct., DA 7/8/11, OST)

**The point density of the dataset was reduced from 5-6 points per m2 to 1.25-1.5 points per m2 to study the possibility to reconstruct the same buildings from datasets that can nowadays be acquired by laser scanners in aeroplanes.** Obviously, the amount of detail that can be reconstructed is lower (figure 15). It was further found that six more buildings could not be reconstructed. The other 77 buildings were reconstructed correctly, be it with less details.

AT: Refugees – Solvency – Can’t Mitigate

**Can’t mitigate disasters- Alt causes**

**Ripley 6** (Amanda, Author, members.sovereigndeed.com/PDF/articles\_time\_whywedontprepare.pdf, August 20, DA 7/9/11, OST)

Because **the real challenge** in the U.S. today **is not predicting catastrophes. That we can do. The challenge that apparently lies beyond our grasp is to prepare for them**. Dennis Mileti ran the Natural Hazards Center for 10 years, and is the country's leading expert on how to warn people so that they will pay attention. Today he is semiretired, but he comes back to the workshop each year to preach his gospel. This July, standing before the crowd in a Hawaiian shirt, Mileti was direct: "How many citizens must die? How many people do you need to see pounding through their roofs?" Like most people there, Mileti was heartbroken by Katrina, and he knows he'll be heartbroken again. "**We know exactly--exactly--where the major disasters will occur**," he told me later. **"But individuals underperceive risk**."

**Even with advance knowledge preparation won’t happen**

**Ripley 6** (Amanda, Author, members.sovereigndeed.com/PDF/articles\_time\_whywedontprepare.pdf, August 20, DA 7/9/11, OST)

Historically, **humans get serious about avoiding disasters only after one has just smacked them across the face.** Well, then, **by that logic, 2006 should have been a breakthrough year for rational behavior**. **With the memory of 9/11, the worst terrorist attack in U.S. history, still fresh in their minds, Americans watched Katrina, the most expensive disaster in U.S. history, on live TV**. Anyone who didn't know it before should have learned that bad things can happen. And they are made much worse by our own lack of ambition--**our willful blindness to risk as much as our reluctance to work together before everything goes to hell.** Granted, some amount of delusion is probably part of the human condition. In A.D. 63, Pompeii was seriously damaged by an earthquake, and the locals immediately went to work rebuilding, in the same spot--until they were buried altogether by a volcano 16 years later. But a review of the past year in disaster history suggests that **modern Americans are particularly, mysteriously bad at protecting themselves from guaranteed threats.** We know more than we ever did about the dangers we face. But it turns out that in times of crisis, **our greatest enemy is rarely the storm, the quake or the surge itself. More often, it is ourselves.**

**Even with advanced knowledge we won’t do anything**

**Ripley 6** (Amanda, Author, members.sovereigndeed.com/PDF/articles\_time\_whywedontprepare.pdf, August 20, DA 7/9/11, OST)

In fact, **91% of Americans live in places at a moderate-to-high risk of earthquakes, volcanoes, tornadoes, wildfires, hurricanes, flooding**, high-wind damage or terrorism, according to an estimate calculated for TIME by the Hazards and Vulnerability Research Institute at the University of South Carolina. But Americans have a tendency to be die-hard optimists, literally. It is part of what makes the country great--and vincible. "**There are four stages of denial**," says Eric Holdeman, director of emergency management for Seattle's King County, which faces a significant earthquake threat. "**One is it won't happen. Two is, if it does happen, it won't happen to me. Three: if it does happen to me, it won't be that bad. And four: if it happens to me and it's bad, there's nothing I can do to stop it anyway**."

AT: Refugees – Solvency – Can’t mitigate

**Preparedness wouldn’t happen even with information**

**Ripley 6** (Amanda, Author, members.sovereigndeed.com/PDF/articles\_time\_whywedontprepare.pdf, August 20, DA 7/9/11, OST)

In the 12 months since Katrina, the rest of **the U.S. has not proved to be a quicker study than the Gulf Coast. There is still no federal law requiring state and local officials to plan for the evacuation of the sick, elderly, disabled or poor.** But in the past few months, both houses of Congress triumphantly passed bills that require locals to plan for the evacuation of pets. In June **the** Department of Homeland Security (**DHS) released an unprecedented analysis of state and urban emergency plans around the country, including assessments of evacuation plans and command structures. The report concluded that most "cannot be characterized as fully adequate, feasible, or acceptable**." **Among the worst performers: Dallas, New Orleans and Oklahoma City**. (The best by far was the state of Florida.) But it's not just bureaucrats who are unprepared for calamity. **Regular people are even less likely to plan ahead**. In this month's TIME poll, about half of those surveyed said they had personally experienced a natural disaster or public emergency. But **only 16% said they were "very well prepared" for the next one. Of the rest, about half explained their lack of preparedness by saying they don't live in a high-risk area**

**People choose not to prepare for disasters**

**Ripley 6** (Amanda, Author, members.sovereigndeed.com/PDF/articles\_time\_whywedontprepare.pdf, August 20, DA 7/9/11, OST)

Here's one thing we know**: a serious hurricane is due to strike New York City**, just as one did in 1821 and 1938. **Experts predict that such a storm would swamp lower Manhattan, Brooklyn and Jersey City, N.J., force the evacuation of more than 3 million people and cost more than twice as much as Katrina**. An insurance-industry risk assessment ranked New York City as No. 2 on a list of the worst places for a hurricane to strike; Miami came in first**. But in a June survey measuring the readiness of 4,200 insured homeowners living in hurricane zones, New Yorkers came in second to last.** They had taken only about a third of eight basic steps to protect themselves from a major storm (such as getting flood insurance or putting together a disaster evacuation plan or kit).

**People choose not to evacuate even in the face of assured disaster**

**Ripley 6** (Amanda, Author, members.sovereigndeed.com/PDF/articles\_time\_whywedontprepare.pdf, August 20, DA 7/9/11, OST)

The conventional wisdom after Katrina was that most of the people who failed to evacuate were too poor to do so. But **a recent survey of more than 2,000 respondents in eight hurricane-prone states showed that other forces may also be at play**. The survey, led by Robert Blendon, professor of health policy and political analysis at the Harvard School of Public Health, attempted to determine what, if anything, would pry people from their homes in the face of another Katrina. Overall, **33% said they would not leave or were not sure whether they would leave if an evacuation order was given. But it was homeowners, at 39%, who were particularly stubborn. Lack of funds or transportation does play a role for stay-behinds, but according to the poll, a greater consideration is a vague belief that their home is built well enough to survive a storm--a justification offered by a whopping 68%**

AT: Refugees – Solvency – Can’t mitigate

**Even with knowledge prevention can’t happen**

**Ripley 6** (Amanda, Author, members.sovereigndeed.com/PDF/articles\_time\_whywedontprepare.pdf, August 20, DA 7/9/11, OST)

People cherry-pick the lessons of Katrina to avoid taking action. **Fifty-four percent of those who say they wouldn't evacuate are worried that the roads would be too crowded, and 67% believe shelters would be dangerous**. That's understandable, unfortunately. One of the most damaging legacies of Katrina might be the TV images of looting and the graphic rumors of violence that crystallized our belief that we turn into savages in a disaster--a notion that is demonstrably untrue; after most disasters, including Katrina, the crime rate goes down. Ironically**, 66% of those surveyed were also confident that if they stayed at home, they would eventually be rescued--a faith hardly justified by the Katrina experience**. Ours is a strange culture of irrational distrust-- buoyed by irrational optimism. **Heat waves bring out the same kind of self-delusion**. Scott Sheridan, professor of geography at Kent State University, has studied heat-wave behavior--focusing particularly on seniors, who are at special risk in hot weather--in Philadelphia; Phoenix, Ariz.; Toronto; and Dayton, Ohio. He found that less than half of people 65 and older abide by heat-emergency recommendations like drinking lots of water. Reason: they don't consider themselves seniors. "Heat doesn't bother me much, but I worry about my neighbors," said an older respondent. That optimism helps explain why construction along the Gulf Coast of Mexico and both coasts of Florida continues to boom, even though hurricane season is an annual affair. Keep in mind that dense coastal construction is the main reason storms are causing more and more damage every year in the U.S. **More than 50% of Americans live in coastal areas, which means heavy weather increasingly runs into people and property**. Also, the elimination of wetlands to make room for development means there's less and less of a buffer zone to absorb storm surges and mitigate damage. So our biggest problem is not the weather but our romantic urge to live near water.

**Americans won’t evacuate- people know the government will help in recovery**

**Ripley 6** (Amanda, Author, members.sovereigndeed.com/PDF/articles\_time\_whywedontprepare.pdf, August 20, DA 7/9/11, OST)

**When Americans cannot be trusted to save themselves, the government does it for them--at least that's the story of mandatory car insurance, seat-belt laws and smoking bans. But when it comes to preventing disasters, the rules are differen**t. The message, says Paul Farmer, executive director of the American Planning Association, is consistent: "We will help you build where you shouldn't, **we'll rescue you when things go wrong, and then we'll help you rebuild again in the same place.**" In New Orleans, for example, many people in positions of power knew full well that the entire city should not be rebuilt after Katrina. They were quietly counting on the Federal Government to play the heavy. FEMA was expected to release new building rules for the first time since 1984. The rules would determine which areas and structures the Federal Government would insure against floods. Everything else would be lost, and the feds would be the perfect scapegoats. In April FEMA released its new guidelines. **But instead of banning development in areas that are extremely likely to flood again, FEMA blinked. The major new requirement was that some houses be built 3 ft. off the ground--even though Katrina flooded up to 20 ft. in some neighborhoods. Nationwide, only 20% of American homes at risk for floods are covered by flood insurance**. Private insurers largely refuse to offer it because floods are such a sure thing. In certain flood-prone areas, the Federal Government requires people to buy policies from the government's National Flood Insurance Program to get a mortgage loan. But the program has never worked even remotely as insurance should. It has never priced people out of living in insanely risky areas. Instead, too few places are included in the must-insure category, and premiums are kept artificially low**. This year, despite brave talk about finally fixing the program, caved in to short-sighted constituents and real estate interests and failed to make major changes**.

AT: Refugees – Solvency – Can’t mitigate

**Warning doesn’t solve- No mitigation**

**Ripley 6** (Amanda, Author, members.sovereigndeed.com/PDF/articles\_time\_whywedontprepare.pdf, August 20, DA 7/9/11, OST)

It may not be reassuring to hear that America's handicaps in this area are as old as the country itself. **A federal system like ours is not built to plan for**--or respond to--**massive disasters**, concedes George Foresman, the country's new Under Secretary for Preparedness. **"Everything we're trying to do goes counter to how the Founding Fathers designed the system,"** he says, sitting in his office on the DHS campus in Washington, surrounded by pie charts documenting what needs fixing. Unlike other, more centralized governments, ours cannot easily force states or companies to act. And when the feds try to demand changes anyway, state and local officials bristle at the interference. Like teenagers, we resent paternalism--until we're in trouble. Then we expect to be taken care of. Before he was appointed by President Bush to the new, post-Katrina preparedness job, Foresman spent more than 22 years in emergency-management in Virginia. His hiring in December was one of the few bright spots of the past 12 months, say veteran emergency planners who know him. He understands the importance of preparing for all kinds of disasters, not just terrorist attacks. But he does not soft-sell the challenge ahead. "Frankly, **the American public doesn't do well with being told what not to do**," he says. With reason: before James Lee Witt became FEMA director under President Bill Clinton, he was county judge in Yell County, Ark. In 1983 he made the mistake of trying to get the county to participate in the national flood-insurance program. "I **almost got cremated by farmers. [They were] saying, 'Ain't no way in hell I'm going to let the Federal Government tell me where I can build a barn,**'" he says.

**Panning fails**

**Glass 1** (Thomas, PHD @ John Hopkinsncbi.nlm.nih.gov/pmc/articles/PMC1497258/pdf/11880676.pdf, DA 7/9/11, OST)

**Disasters are not chaotic, but things don’t usually go as planned. Formal response systems tend to break down. Communication systems notoriously fail. Plans are not implemented in the expected way**. Dr. Rubin’s remarks regarding hospitals not functioning within the system were substantiated repeatedly. Now this is not always a bad thing. **When we do top-down planning, we tend to set up overly rigid planning frameworks, and sometimes it’s better that hospitals and individual emergency medical system** (EMS) personnel, and so on, improvise, because sometimes that emergent flexibility can be very useful

**AT: Refugees – Solvency – preparation attempts fail**

**Preparation fails**

**Glass 1** (Thomas, PHD @ John Hopkinsncbi.nlm.nih.gov/pmc/articles/PMC1497258/pdf/11880676.pdf, DA 7/9/11, OST)

**There is a tendency to plan for the wrong things. In most disaster drills, particularly in community hospitals, we tend to prepare for a lot of heavy trauma.** That’s what we expect, and that’s what we plan for. In our experience, the vast majority of injuries after disasters are minor**. Disasters tend to be, for the most part, primary care events**. With Hurricane Andrew, more people were injured in clean-up than during the actual event itself. **Although all hospitals and emergency systems** (e.g., EMS**) conduct disaster drills, they don’t usually include the externalities to make real disasters challenging. So drills are rarely done when the staff isn’t expecting them, at night, during bad weather, or when vital personnel are on vacation. Drills rarely are designed to include communications failures, and this is one recommendation that comes out of our study:** You need to prepare for communication failures because they are almost ubiquitous. In addition, drills don’t take advantage of the fact that the hospital infrastructure and the personnel are often directly impacted by the event itself. Drills tend to be mandatory for nursing staff and house officers, but I’m not speaking here of Top Off and the high-visibility drills. However, in exercises in smaller places, the senior medical staff tend not to go. **As a result, the disaster event occurs, and so does the typical convergence on the hospital:** Here come the psychiatrists and all of the various other personnel who hear about the disaster and converge on the hospital**. The medical director of the facility takes command in the emergency room but has not been to the exercises and doesn’t know the procedures, and things get rather mixed up at that level.** An example of this is the crash of US Air Flight 405 at LaGuardia Airport in March 1992. In that event, they had done a disaster drill one year earlier of a similar event, exactly in the same location that the plane skidded off the runway. However, in the drill, there was no traffic because people weren’t flooding to the airport on news of the air crash. In fact, on the day of the event, the incident commander needed 2.5 hours to get to the airport because of traffic. They didn’t anticipate that. The actual event occurred at night, so when the first-responders got to the plane part, primary care events. With Hurricane Andrew, more people were injured in clean-up than during the actual event itself. Although all hospitals and emergency systems (e.g., EMS) conduct disaster drills, they don’t usually include the externalities to make real disasters challenging. So drills are rarely done when the staff isn’t expecting them, at night, during bad weather, or when vital personnel are on vacation. Drills rarely are designed to include communications failures, and this is one recommendation that comes out of our study: You need to prepare for communication failures because they are almost ubiquitous. In addition, drills don’t take advantage of the fact that the hospital infrastructure and the personnel are often directly impacted by the event itself.

**The public responds poorly to institutionalized support and preparation**

**Glass 1** (Thomas, PHD @ John Hopkinsncbi.nlm.nih.gov/pmc/articles/PMC1497258/pdf/11880676.pdf, DA 7/9/11, OST)

Mistrust of the public’s ability to participate effectively in EMS response is widespread. Disaster planning has tended to emphasize centralized high-tech Disaster Medical Assistance Teams (DMAT), Urban Search and Rescue Teams (USAR), and other kinds of highly professionalized groups. The result is that **professionals treat the public as an unwanted nuisance, as part of the problem. I call this the yellow tape effect. In other words, EMS personnel tend to try to establish a kind of physical and psychological perimeter around an event demarcated by that famous yellow tape. This is supposed to be a fence keeping the public out. Although this is overall a useful and functional strategy in a typical emergency, in a disaster, when by definition the resources and capacities of local formal EMS responders are insufficient to handle the needs of the problem, then this yellow tape phenomenon becomes a tremendous difficulty because it relegates the public and the lay bystander to a secondary rol**e. Overall, the evidence suggested that victims tend to respond effectively and creatively. What we saw repeatedly in disasters was that victims formed spontaneous groups that have roles, rules, leaders, and a division of labor. This is the phenomenon of emergent collective behavior talked about extensively in the literature on the social science side.

AT: Genocide – No Solve

**Technology isn’t being implemented to stop genocide**

**Hargreaves & Hattotuwa 10** (Caroline & Sanjana, ict4peace.org/wp-content/uploads/2010/11/ICTs-for-the-Prevention-of-Mass-Atrocity-Crimes1.pdf, DA 7/4/11, OST)

Totten (2006) argues that “**no single early warning system has been established whose express purpose is tracking each and every conflict simmering across the globe in order to detect the earliest signs of genocide** in the making”9 , and stresses that even though it existed, the need for the political will to address the crisis from spiralling into a genocidal conflict is paramount. As a recent OECD report warns, “The humanitarian community is no better positioned today to prevent another Rwandan genocide than we were in 1994, (…) in sum, **the use of technology in conflict settings requires a different set of solutions to overcome existing challenges, and lags some years behind the evolution of natural disaster early warning systems**.”10 The report also notices that the field of conflict early warning is witnessing a shift away from stateUcentric, topUdown approaches to more decentralized, peopleUcentred initiatives, a shift which is further accentuated by the availability of digital technology and new media, which is more decentralized and distributed than traditional technologies. Here arises the challenge of leveraging these new technologies to empower individuals affected by conflicts. Here too lies great potential for the work of the Office of the UN Special Adviser on the Prevention of Genocide11 , the Special Adviser on the Prevention of Genocide, Mr. Francis Deng12 and the related work of the Special Adviser who focuses on the responsibility to protect, Mr. Edward Luck13 . Meetings the ICT4Peace Foundation held New York over 2010 with both Mr. Deng and Mr. **Luck confirmed the multifaceted challenges they face in establishing a more robust system able to prevent mass atrocity crimes**. At the same time, they recognise the potential of new technologies to, inter alia, bring perpetrators to justice, complement UN alerts and early warning, focus, over the long term, scrutiny on precarious communities, report on ground conditions, help in confidential information generation, strengthen the protection of those who bear witness and disseminate their own critical output to the international community and member states.

**Landsat 5 can’t see individual houses**

**NASA 9** (landsat.gsfc.nasa.gov/news/news-archive/dyk\_0013.html, 3/1, DA 7/4/11, OST)

Those images are much more than pretty pictures. They provide robust scientific information about a changing planet. **The** Thematic Mapper (**TM) instrument on Landsat 5 was built in the late 1970s with a resolution fine enough to resolve blocks of land about 100 feet wide per pixel**—at a time when most people didn't know what a pixel was. It was a second-generation imaging instrument in the Landsat program, flying alongside and eventually surpassing the older Multispectral Scanner System (MSS), which had a resolution of about 250 feet. **TM cannot resolve individual houses or trees**, but it can see areas where houses have been constructed or forests have been cleared. If the resolution were any finer, Landsat might not have been able to capture large-scale land changes. The satellite's resolution has been called "just-right" by Earth systems scientists.

**Technical barriers exist to gathering images for humanitarian efforts**

**Katayama 7** (Lisa, Staff Writer NYT, wired.com/techbiz/people/magazine/15-12/st\_bromley, 11/27, DA 7/4/11, OST)

As the protests in Burma escalated, he submitted an order for shots of Rangoon and Mandalay from two satellites. **It takes a few days to program the cameras, and each satellite flies over Burma only once every five days, so he crossed his fingers and hoped that it wouldn't be too cloudy when they passed**. Bromley received his first image a week later, and by then the cities were already in total lockdown. "**The streets were completely empty," he says, "except for large vehicles surrounding the monasteries." To catch human rights abusers in the act, Bromley will need a heads-up from the NGOs, who usually know what's about to go down. "If enough groups learn of the satellites," he says, "the odds increase that we can collect useful pictures"** — pretty much anywhere in the world. Though the impact of such photos is uncertain, **in** **matters of human rights abuse, global attention is never a bad thing**. "Right now, we take what the NGOs already know and prove it," Bromley says. "But my job's not done until we put a stop to it.

AT: Genocide – No Solve – AT: Political Deterrence

**Genocide isn’t deterred as it isn’t triggered but prepared for over a long period of time**

**Sankore 4** (Rotimi, International Journalist, pambazuka.org/en/category/features/21207, 4/1, DA 7/6/11, OST)

In answering this question, the most important point to make is that **genocide does not just happen. It is prepared for, consciously executed and is based on reasonably identifiable social, political and economic conditions**. What differs is the extent to which these conditions apply or exist, and the degree of preparation by the perpetrators. The second most important point to make is that **genocide is not ‘triggered’ by a single event that pushes the perpetrators over the brink. On the contrary, the so-called ‘trigger events’ are excuses for setting in motion the logical end to a process prepared for well in advance**. Only when the world appreciates the fact of these processes can we collectively identify the signs or beginnings of what is likely to end in genocide and douse the fire before it becomes an all-consuming flame. **In the case of Rwanda, it is a popularly held myth that the shooting down of the plane** carrying the then Head of State Juvenal Habyarimana and the Burundian President Cyprien Ntayamira on 6th April 1994 **triggered the genocide that followed** over the next 12 weeks and left well over 700,000 dead (nearly 10% of the country’s population of over 8 million). **Nothing can be further from the truth. Before the shooting down of the airplane by yet unidentified persons, the social and political conditions had been prepared by various factors.** One key factor was the dictatorship established following the seizure of power by General Juvenal Habyarimana in 1973. Habyarimana ruled in the name of the “majority” and imposed a dictatorship on the entire country. In addition, the official discrimination against the Tutsi minority was so much that within two decades, half a million had fled the country.

AT: Genocide – Privates Solve

**Private individuals are setting up satellites to monitor risk areas for genocide**

**Freccia 10** (Tim, Journalist NYT, time.com/time/magazine/article/0,9171,2040211,00.html, 12/28, DA 7/8/11, OST)

**Clooney**, the actor, and Prendergast, a human-rights activist with 25 years of experience in Africa, **had heard enough on their seven-day visit to know that a new round of atrocities could follow the January referendum** on independence. If it did, the likelihood was that no one would be held accountable. **Why not, Clooney asked, "work out some sort of a deal to spin a satellite" above southern Sudan** and let the world watch to see what happens? Three months later, **Clooney's idea is about to go live**. Starting Dec. 30, the Satellite Sentinel Project — a joint experiment by the U.N.'s Operational Satellite Applications Programme, Harvard University, the Enough Project and **Clooney's posse of Hollywood funders — will hire private satellites** to monitor troop movements starting with the oil-rich region of Abyei. **The images will be analyzed and made public** at www.satsentinel.org (which goes live on Dec. 29) within 24 hours of an event to remind the leaders of northern and southern Sudan that they are being watched. "**We are the antigenocide paparazzi," Clooney tells TIME**. "We want them to enjoy the level of celebrity attention that I usually get. If you know your actions are going to be covered, you tend to behave much differently than when you operate in a vacuum."

**Private firms and individuals are already launching satellites for the purpose of genocide monitoring**

**Freccia 10** (Tim, Journalist NYT, time.com/time/magazine/article/0,9171,2040211,00.html, 12/28, DA 7/8/11, OST)

You don't have to be a spook to have an eye in the sky anymore**. Private firms with names like GeoEye, DigitalGlobe and ImageSat International have a half-dozen "birds" circling the globe every 90 minutes in low-Earth orbit**, about 297 miles (478 km) up. **The best images from these satellites display about 8 sq. in.** (50 sq cm) of the ground in each pixel on a computer screen. That is not enough granularity to read a car's license plate or ID a person, but analysts can tell the difference between cars and trucks and track the movements of troops or horses. "It is Google Earth on lots of steroids," says Lars Bromley, a top U.N. imagery analyst. (See pictures of southern Sudan preparing for nationhood.) But you need money for it. A hurry-up order of what Bromley calls a "single shot" from a satellite covers an area of about 105 sq. mi. (272 sq km) and costs $10,000. A rush job on a "full strip" image of land roughly 70 miles (115 km) long and 9 miles (14 km) wide could run nearly $70,000. **Sentinel is launching with $750,000 in seed money from Not On Our Watch, the human rights organization Clooney founded** along with Don Cheadle, Matt Damon, Brad Pitt, David Pressman and Jerry Weintraub**. Clooney predicted he won't have much trouble raising more money once the project goes live**. (See the top 10 world news stories of 2010.) Prendergast's group, the Enough Project, is the human-rights arm of the liberal Center for American Progress; it recruited Bromley's team at the U.N. and brought in analysts from the Harvard Humanitarian Initiative to pore over the images as they arrive. "Generally, what we have done in the past is an after-the-fact documentation exercise," Bromley explains. "This is proactive, wide-area monitoring," he says. Clooney, who has made four trips to Sudan since 2006, believes Sentinel might have applications in other global hot spots. "This is as if this were 1943 and we had a camera inside Auschwitz and we said, 'O.K., if you guys don't want to do anything about it, that's one thing,'" Clooney says. "But you can't say you did not know."

**Private companies are expanding their domain**

**Osbourne 9** (David, Writer, geek.com/articles/news/for-the-first-time-a-private-company-places-a-satellite-in-orbit-20090715/, 7/4, DA 7/8/11, OST)

It is my belief **that the private sector will play a even bigger role in space exploration** and moon colonization **in the near future**. Because, let’s face it, **with the economy in recovery mode for years to come, it will take companies that can do the same job as NASA, at a lower price, to keep the prospect of space travel aliv**e. **Overall, we will have to keep watching the skies to see how many space companies will be popping up in the next few years that can get the job done like SpaceX.** After all, the moon landing happened because of the competition created by the Space Race with the the Russians and I would suspect that a little competition between space companies will be a good thing to help drive innovation. The result could be that we will get humans to places like the Moon and Mars faster than if the job was left to NASA alone.

AT: Genocide – Privates Solve

**Private companies have landsat equivalents up already**

**Osbourne 9** (David, Writer, geek.com/articles/news/for-the-first-time-a-private-company-places-a-satellite-in-orbit-20090715/, 7/4, DA 7/8/11, OST)

Eat your heart out NASA. **On July 13th**, for the first time ever, **a private rocket company has successfully placed a satellite in orbit. SpaceX, which is a company that specializes in lower-cost space access vehicles, triumphantly launched Falcon 1** from the Marshall Islands on Monday, **which sent the two stage rocket into space. From there, Falcon 1 slipped into a parking orbit near the equator, in order to drop off it’s precious payload. The payload that was delivered is named RazakSAT, and is a high resolution picture taking satellite.** And with thanks to the successful launch of Falcon 1, **RazakSAT is scheduled to photograph hi-res images** of the country of Malaysia. **But SpaceX doesn’t have time to rest on its laurels for too long.** The company is scheduled to start delivering supplies to the International Space Station in 2010 thanks to its space vehicles, Falcon 9 and Dragon. **The company hopes to have these vehicles also deliver crew as well as cargo** which could save taxpayers millions of dollars per seat and create thousands of jobs in the US.

AT: Genocide – Inevitable – Alt Cause

**Genocide is inevitable- alt causes of perceived differences**

**Sankore 4** (Rotimi, International Journalist, pambazuka.org/en/category/features/21207, 4/1, DA 7/6/11, OST)

**During colonial rule, the artificial classification and imposition of a minority elite created the basis for long lasting resentment seized upon after independence** by Hutu extremists to build a power base. S**imilar creation of artificial borders, cynical divisions of ethnic nationalities, imposition of artificial elites and so forth by colonial powers have provided the basis for many conflicts in Africa**. Simply put, **genocide has become the method though which organised groups within society, whether based on ideology, race, nationality, ethnicity, religion or language, consciously pursue a strategy of achieving or consolidating power, through manipulating economic, social or political conditions and insecurities to unite significant sections of society behind them and against a real or artificially created enemy whose extermination or repression is promoted as vital to the “survival of the species.”** The main tools are hate speech, use of mass propaganda to spread lies, insecurity and create myths promoting a climate of simultaneous fear and dehumanisation of the intended targets; and the organisation of armed bodies of men in preparation for, or to actually direct, instigate or carry out violence and mass murder. **All of these factors and those mentioned earlier are clearly identifiable and if left unchallenged build up to make genocide** almost **inevitable**

**Intervention can’t solve- too many underlying causes**

**Sankore 4** (Rotimi, International Journalist, pambazuka.org/en/category/features/21207, 4/1, DA 7/6/11, OST)

However, while sharp economic, social and political inequalities remain a characteristic of human society there will always be a possibility that people will be open to manipulation by those that see such cynical manipulation as their path to power and the trappings that go with it**. Interventions** by United Nations forces or others **may stop specific cases of genocide from playing out, but this cannot be a permanent solution**. In Africa, **the legacy of colonialism, serious economic problems, deepening inequalities and ongoing conflicts mean that there is a possibility that an increasing number of incumbent governments or powerful groups could promote religious, racial, ethnic or social differences and conflict as a way of acquiring or consolidating their hold on power rather than addressing the root causes of desperation**. History shows that **once set in motion conflicts are difficult to stop**. How civil society and pro democratic forces tackle the issues is crucial to the future of Africa.

**Genocide goes deeper than surface level prevention underlying cycles ensure continued violence**

**Sankore 4** (Rotimi, International Journalist, pambazuka.org/en/category/features/21207, 4/1, DA 7/6/11, OST)

The genocide in Rwanda in April 1994 must not distract from the fact that **genocide is a global phenomenon that knows no racial or geographical boundaries**. In its modern form, **genocide was perfected by the fascist Nazi regime** led by Adolph Hitler in Germany from 1933 to 1945. **The Khmer Rouge also demonstrated in** the killing fields of **Cambodia** from 1975 to 1979 **that genocide could be carried out as efficiently in a different social and political contex**t.  **In more recent times the world watched live on satellite television in the 1990’s while genocide was perpetuated in the heart of Europe as Serbia, Croatia and Kosovo became household names for the grimmest reasons known to history**. **Going back even further, the transatlantic slave trade has been described as genocidal, though the mass murder of millions of Africans** over 400 years was more a by product of plunder, exploitation and repression rather than the specific goal of slave dealers and the states that backed the slave trade.

**AT: Genocide – Intervention won’t happen – Empty rhetoric**

**Even with knowledge intervention won’t happen due to lack of political will and no consequences for in action**

**GIN 9** (Genocide intervention network, genocideintervention.net/our\_programs, 12/18, DA 7/8/11, OST)

In the past, **the United States and the international community have failed to prevent and stop genocide because of a lack of political will in our elected officials and among our citizens**. **There has been no political consequence for our leaders when they did not take action**. Our programs provide citizens with the resources to educate, organize, and advocate in their communities. GI-NET provides hands-on opportunities for citizens of the world to make genocide prevention a domestic political issue. We believe that if given the tools, all citizens of the global community can become daily active upstanders against genocide

**Nations fail to intervene due to political posturing**

**Williamson et al 7** (Partner, Mayer, Brown, Rowe and Maw; Former U.S. Representative to the U.N., litigation-essentials.lexisnexis.com/webcd/app?action=DocumentDisplay&crawlid=1&doctype=cite&docid=5+Nw.+U.+J.+Int'l+Hum.+Rts.+344&srctype=smi&srcid=3B15&key=165825cc7e0b42b55199af046626c10b, OST)

Tragically, by now "**the genocide in slow motion" in Darfur has become too familiar. For some time the United Nations has labeled the situation in Darfur as "the worst humanitarian crisis in the world." It is man made. It is horrific. It is preventable. Yet the carnage continues while the international community engages in political posturing and diplomatic half-measures. It's a disgrace. The echoes of this failure will long linger** in the hallways of history. This mayhem and destruction must end.

**Actors prefer talk to intervention**

**Barnet 3** (Michael, U.S. Mission to the United Nations, Eyewitness to a genocide, OST p.x)

My views were hardly idiosyncratic. Others were arguing that peacekeeping was appropriate only when there was a peace to keep. They too held that the reality of the situation dictated that the UN withdraw its peacekeepers. Some in the Security Council argued for intervention, but I distinctly remember sitting there and wondering how long before they too would succumb to the inevitable. **Two weeks into what most were defining as a "civil war," the council unanimously voted to withdraw all but a few hundred peacekeepers from Rwanda**. After that vote **it rapidly became clear that Rwanda was no run-of-the-mill ethnic conflict**. Any moral imperative I felt was now smothered by a creeping cynicism born from the realization that **the UN preferred talk to action. The council now was attempting to assemble, piece by piece, an intervention force. At the time I looked upon this effort as all theater and public relations**. **There was an anxiety at the UN, but it seemed to originate less from genuine urgency and more from a desire to play the role expected of it. The UN had slim hopes of fielding a rescue party, but going through the motions would certainly take the edge off the criticism.** At this point the U.S. government was alone in publicly denying that the killing in Rwanda constituted a genocide and was virtually isolated in opposing intervention. Watching politics played at its cynical finest in the midst of a genocide left me feeling relieved that I could leave the "real world" and return to academia.

**The UN can’t intervene in genocides**

**Barnet 3** (Michael, U.S. Mission to the United Nations, Eyewitness to a genocide, OST p.x)

For the next year I occasionally wrote and lectured on UN peacekeeping and Rwanda**. I emphasized that while the UN's decision might seem heartless to those on the outside, to many on the inside it was proper and correct—and the only available choice given the reality on the ground, what member states were willing to do, the rules of peacekeeping, and the ail-too-clear limits of the UN. Rwanda was beyond those limits.**

AT: Genocide – Intervention won’t happen – Empirics

**No state is willing to intervene in genocides regardless of information**

**Barnet 3** (Michael, U.S. Mission to the United Nations, Eyewitness to a genocide, OST p.x)

**The United States used its considerable power in the Security Council to help muzzle the call for intervention and later obstructed those who wanted to intervene.** While everyone else at the UN put on their best funereal faces, not the United States. **It responded to the subsequent barrage of criticism by swerving from one justification to another. At the time of the genocide U.S. officials argued aggressively that there was no basis for intervention because there was no peace to keep in a country in the midst of a civil war.** Later President Bill Clinton insisted that he was unaware of the genocide and would have acted had he known. It was quickly shown that the United States was not nearly as dull-witted as it pretended to be. At other times the United States objected to the insinuation that it should provide troops for every humanitarian emergency. And, it was frequently added, **the United States was only behaving like other states: sure, it did not care enough to send troops, but no state did. American behavior was excusable because everyone behaved badly**.

**Lack of political will prevents intervention**

**Barnet 3** (Michael, U.S. Mission to the United Nations, Eyewitness to a genocide, OST p.x)

A subsequent wave of investigations revealed a more complex story, shifting the drama away from the United States and toward the Security Council and the Secretariat.2 **In the council, isolated voices had appealed for troops, but their words were drowned out by the clamor for withdrawal and they, too, eventually favored scaling back the UN's involvement**. The council's reasons were many, including the simple fact that there were no troops available for intervention. Immediately after the council had voted to reduce the United Nations Assistance Mission for Rwanda (UNAMIR) to a shadow of its former self, die genocide became clearly discernible. But the council's duplicitous reaction was to refuse to call the events by their proper name—genocide—for fear of being compelled to act. Once genocide became publicly undeniable in early May, the UN quickly jerry-built a proposal for intervention. One glaring problem, however: the requisite troops could not be located. **The council was noisy with passionate speeches on behalf of dying Rwandans but fell quickly silent when the Secretariat asked for volunteers. This collective silence from the UN from start to finish can be attributed to a "lack of political will."**3 Sometimes this platitude is code used to single out particular, powerful states. In this instance, however, practically the entire council can be credited for "failing" Rwanda.

**The UN and member states won’t intervene**

**Barnet 3** (Michael, U.S. Mission to the United Nations, Eyewitness to a genocide, OST p.x)

**The inescapable conclusion from these accounts is that the UN responded to the genocide with willful ignorance and indifference**. States allowed an almighty realpolitik to smother their faint humanitarianism—a depressingly familiar story that reinforces the time-worn view that cold-hearted strategic calculations always trump noble ideals. **Member states did not have a monopoly on duplicity and moral shallowness, for UN staff also knew what was transpiring on the ground yet still favored detachment until it was too late**. Confronted by the greatest of all moral imperatives, the UN had delivered a whimper of a response. Inquiries into this international indifference have seemingly exhumed an entire system that is rotten and, to paraphrase the philosopher G. W. F. Hegel, run by "men without chests."7

**Governments and international organizations will avoid intervention**

**Barnet 3** (Michael, U.S. Mission to the United Nations, Eyewitness to a genocide, OST p.x)

My decision to give prominence to the UN's culture crystallized after I reflected on my personal experiences and listened carefully to the accounts and testimonies of various participants. **The UN was not a totalizing institution that transformed fairly independent-minded diplomats and international civil servants into bloodless bureaucrats, but it did profoundly influence how they looked at and acted upon the world. Government officials and UN staff came to know Rwanda as members of bureaucracies; the bureaucratic culture situated and defined their knowledge, informed their goals and desires, shaped what constituted appropriate and inappropriate behavior, distinguished acceptable from unacceptable consequences, and helped to determine right from wrong.** Bureaucracy is not only a structure; it is also a process. Bureaucracies arc orienting machines. They have the capacity to channel action and to transform individual into collective conscience. The existing stock of knowledge, the understanding of what constitutes proper means and ends, and the symbolic significance of events were organizationally situated.9

AT: Genocide – Intervention won’t happen – Empirics

**No intervention- structure of the international community**

**Barnet 3** (Michael, U.S. Mission to the United Nations, Eyewitness to a genocide, OST p.x)

Finally, **some states and UN staff judge their primordial interests as far more compelling than transnational commitments or obligations to others, in this case the Rwandans**. Not everyone at the UN desperately sought a way to balance their desire to help the Rwandans with their other obligations and responsibilities. This was not "Sophie's choice" played on an international stage**. In some cases, the lack of concern for Rwandans was arrestingly callous, with an easy willingness to sacrifice the victims when they became inconvenient**. **The French have the distinction of calling the killers their friends and allies. The American role was less intimate but clearly insensitive.** During this period the United States was ready to make examples of delinquent operations, notwithstanding the severe consequences for those on the ground. It publicly held that this position was justified given the UN's scarce resources, and privately confessed it was motivated by a desire to avoid a domestic headache. Also on the roll call of shame should be the vast majority of governments that held perfunctory conversations before politely declining to contribute troops to an intervention. UN staff also acted in ways that suggest that they believed the organization's interests (and perhaps their own careers) would be better served by remaining distant. Any account of the genocide must preserve the abundance of politically expedient and strategically calculated indiscretions.

**Genocides can’t be prevented and intervention won’t happen**

**Guarino 8** (Kia, Media relations @ Amnesty international, bc.edu/content/dam/files/schools/cas\_sites/communication/pdf/thesis09.guarino.pdf, DA 7/8/11, OST)

**In an analysis of public statements delivered by American Presidents on the genocides in Cambodia, Bosnia, and Rwanda, a few significant similarities** and differences **were apparent**. To begin with, **in each** of the three genocides **the violence** arguably **emerged from deep-seated ethno-political divisions**. Secondly, the aggression was characterized by large-scale execution and extensive human rights abuses. The final similarity is **the United States’ repeated inability or unwillingness to take action against the suffering in spite of numerous promises. Beyond these circumstantial similarities, there are also significant parallels in the rhetoric surrounding each of the genocides**. From these parallels, a new method of generic criticism was developed.

**Public won’t force intervention**

**Guarino 8** (Kia, Media relations @ Amnesty international, bc.edu/content/dam/files/schools/cas\_sites/communication/pdf/thesis09.guarino.pdf, DA 7/8/11, OST)

By using diffusing language**, the public becomes more willing to forgive a lack of military intervention in humanitarian crises, and the President does not appear immoral.** His rhetoric essentially removes the crisis from that categorization and urgency. It is an important and powerful tactic that**, based on the analyses of the three genocides, has been used throughout the 20 th Century to avoid engaging in undesired military interventions**.

**The government won’t intervene and the populace will be placated**

**Guarino 8** (Kia, Media relations @ Amnesty international, bc.edu/content/dam/files/schools/cas\_sites/communication/pdf/thesis09.guarino.pdf, DA 7/8/11, OST)

The establishment of a smaller, more manageable crisis that the United States is able to ‘solve’ characterizes the second primary line of argument. However, **this rhetorical strategy generally discounts the continuation of the genocide**. Each small crisis varies depending on the specific genocide, but the basic concept remains the same. **In some cases, this is characterized by the emphasis of more pressing issues and the redirection of blame, such as the prevention of expanding Communist influence. By quickly and efficiently resolving this new issue, the American public is placated for the time being, having been satisfied by a small but tangible solution, even if the problem is not the most significant one. It is generally quite effective because it allows the American public the opportunity to feel relief from guilt while absolving the President from engaging in potentially undesirable military interventions.**

AT: Genocide – No Solve – Shutter control

**Doesn’t solve- the footage will be censored**

**Bjorgo 1** (Einar, United Nations High Commissioner for Refugees, 74.125.155.132/scholar?q=cache:HF5pLHdthbEJ:scholar.google.com/+hurricanes+landsats+refugees+einar&hl=en&as\_sdt=0,48, DA 7/6/11, OST)

The topic of shutter-control, i.e. the restriction on distribution of satellite imagery through government directives, is a much-discussed topic. However, until now, shutter-control has not been widely used, with the exception of **during the Gulf-war when the public was denied access to several types of updated imagery over Iraq and Kuwait. The idea behind shutter control is that, according to the license granted to commercial US satellite operators, the distribution of imagery “during periods when national security or international obligations and/or [US] foreign policies may be compromise**d, as defined by the Secretary of Defense or the Secretary of State” falls under strict restrictions of the US government. With more and more non-US satellites becoming available, UN humanitarian agencies will be able to access non-US imagery should the **US government impose shutter control on satellite companies operating under US licenses**. Of course, satellites operated under other nation’s licenses may also be restricted, such as the case with the French SPOT system during the Gulf war. Compared to the cost of data and copyright restrictions, shutter-control should not be considered a major limitation – at least not for the moment. More in-depth discussion on shutter-control can be found in the recently published Secrets for Sale (Dehqanzada and Florini 2000).

**Satellite imaging can’t solve- US will prevent images from going public**

**NSSC 3** (National Space Studies Center, space.au.af.mil/control.htm, 10/22, DA 7/6/11, OST)

In March 1994, President Clinton signed Presidential Decision Directive 23 (PDD-23) which, for the first time, established an industrial policy permitting U.S. firms to obtain licenses to market imagery products and systems commercially. **The stated goal of this policy was to "enhance U.S. industrial competitiveness in the field of remote sensing space capabilities while at the same time protecting U.S. national security and foreign policy interests." Under the terms of the directive, the U. S. Government retains "shutter control" of any commercial imagery systems** licensed for sale to foreign purchasers by U.S. firms outside of a government-to-government agreement. This means the U.S. Government would retain the right to curtail the use of any imaging system sold by a U.S. firm to a foreign purchaser when it perceived its national security interests were affected. It was felt that this authority was needed in the event a domestic or foreign purchaser sought to use the system contrary to U.S. interests. **Any proposed sale or transfer by a foreign recipient of sensitive components or subsystems also would be subject to U.S. Government approval**.

**Reliance on government controlled information from satellite will inevitably lead to extinction**

**Maavak 5** (Mathew, Writer, maavak.net/maavak/maavak035.html, 2/22, DA 7/6/11, OST)

**Shutter Control** - Ground Zero: **Imagine a battleground with satellite imageries bought up and targeted websites actively cut off? Add in news censorships and blackouts? You expect an unprecedented international outcry without sufficient access to information? Societies implode through rumors during an information blackout**. The “guardians” of dissent will be there to air their views first, and make the first cleaving impressions. Here is where the little brothers -- **from national leaders to editors and pseudo-dissidents -- would be huffing and blowing overtime to titillate an Uncle Samael gone berserk. Sure, the guardians would wave the perfunctory red flags while they subtly help eliminate vestiges of resistance, before being eliminated themselves**.

AT: Genocide – Natives – Rights

**LandSats violate the rights of indigenous peoples**

**Madsen 94** (Wayne, Lead Sci, Comp Sci Corp, spatial.maine.edu/~onsrud/tempe/madsen, DA 7/7/11, OST)

This paper investigates **the problems associated with remote sensing from space-based platforms as they relate to the protection of the rights of indigenous peoples** around the world. Many nations and international organizations recognize a right of individual privacy. This paper advances **the notion of a right to collective privacy, what can best be described as a "communal right of privacy," especially as it relates to the rights of indigenous people to be free of wanton exploitation from data on their lands and waters that are collected from orbiting surveillance and sensing platforms.** Indigenous peoples argue that since they are the direct descendants of the original peoples who settled their lands before conquest by outsiders, they have an "inalienable" right to their territories and the natural resources contained therein (Nagengast, Stavenhagen, and Kearney, 1992, 31). Clearly, **the sparse number of international treaties and other regimes that seek to protect the rights of indigenous people to their lands and resources must be strengthened to address privacy protections against wanton snooping from overhead surveillance satellites**.

**GIS infringes on the rights of native Americans**

**Madsen 94** (Wayne, Lead Sci, Comp Sci Corp, spatial.maine.edu/~onsrud/tempe/madsen, DA 7/7/11, OST)

**Satellite-based** geographic information systems (**GIS)**, if not properly regulated, **could infringe on indigenous rights to privacy**. As early as 1983 the Bureau of Indian Affairs (BIA) established a GIS for ten tribes across the United States. The system, called the Indian Integrated Resource Information Program (**IIRIP**), **was designed to allow the ten tribes to promote the use of GIS in the management of their lands**. However, the system was used more heavily by the IIRIP's National Center and the BIA than by the Indian tribes concerned (Marchand and Winchell, 1994, 49-51). **This inevitably leads to the question of who benefits more from such "wampum" technology, the native Americans or the Federal government acting as forward scouts for exploitative industry**? The Colville Confederated Tribe in Washington State was faced with the dilemma of the BIA refusing to relinquish control of some GIS-derived information to the tribal confederacy. The confederacy was concerned that GIS maps detailing archeological and cultural sites might fall into the wrong hands, thus disrupting the sites. It was decided that the confederacy's Physical Resource Department would be the central authority for administering the GIS data resources (Marchand and Winchell, 1994, 50).

**GIS data is used to deny right to Indian nations**

**Madsen 94** (Wayne, Lead Sci @ Comp Sci Corp, spatial.maine.edu/~onsrud/tempe/madsen, DA 7/7/11, OST)

**GIS data** used indiscriminately **can be used to deny Indian nations their rights under existing** international **treaties**. For example, **the U**nited **S**tates government **and the Nez Perce tribe signed a treaty** in June 11, 1855 **that preserved the right of the Nez Perce to hunt, gather roots and berries, and raise livestock on "open and unclaimed lands" outside the reservatio**n. Subsequent treaties squeezed the tribe into smaller parcels of land so that presently the Idaho reservation territory resembles a patchwork not unlike the recently disestablished South African "Bantustans." **GIS data can be used** by outside exploiters **to deny tribes like the Nez Perce access to their rightful lands and squeeze them onto unproductive tracts.** The Nez Perce also stress security and privacy for data contained within their GIS systems in hopes of preventing any wrongful exploitation (Meyers, 1993, 35-37). A recent Canadian study concluded that Canadian Indian tribes or "band councils" have a right and a duty to adopt their own data protection codes and fair information practices (Peladeau, 1994, 15). **Such legislation could be tailored to include as personal information that data which collectively applies to the tribe or band at large.** Non-traditional data concerning cultural affairs and natural resources might be included in an expanded definition of what constitutes collective privacy information. Any Canadian data protection and fair information code of practice for Indian bands might also serve as a useful model for indigenous peoples in the United States and other parts of the world. Indigenous peoples have historically reviled attempts by central governments to collect information on them. **Many native groups have felt "abused" by intrusive** population censuses and other types of **surveys affecting their land and activities.** Many enumerators and surveyors considered indigenous respondents as nothing more than "sample units" and not as people (Casley and Lury, 1987, 123). **Subjecting indigenous peoples to remote space-based imagery and surveillance without proper guarantees of their rights to privacy and self-determination can only exacerbate existing strained feelings**.

AT: Genocide – Natives – Oppression

**GIS helps in oppression of indigenous populations**

**Madsen 94** (Wayne, Lead Sci, Comp Sci Corp, spatial.maine.edu/~onsrud/tempe/madsen, DA 7/7/11, OST)

**In those countries where repressive governments have used census information to forcibly assimilate and transfer indigenous populations, GIS technology could be used to assist in such programs.** The bitter experience of several ethnic minorities in Russia serves as dramatic cases in point. **The neo-nationalist Russian government has spoken of disestablishing ethnic republics originally set up during the time of Lenin**. Russia's sophisticated satellite surveillance system could be used to identify resource-rich lands in these republics. **This may lead to the forced removal of ethnic groups in a manner reminiscent of Stalin's forced migrations of the 1920s and 1930s**. The Sakha Republic's nomadic reindeer herding population could be the first victims of such a policy. The Sakha control territory with some of the largest diamond deposits in the world. Their republic is also rich in silver and timber. **The Japanese conglomerates that have used GIS data to deforest Sarawak have also expressed an interest in exploiting the natural resources of Sakha**.

**Satellite imagery is used to abuse the freedoms of indigenous people**

**Madsen 94** (Wayne, Lead Sci, Comp Sci Corp, spatial.maine.edu/~onsrud/tempe/madsen, DA 7/7/11, OST)

**The United States has used its satellite imagery capabilities to combat the illicit international narcotics trade. While such efforts seem laudable on the surface, a detailed examination often points to ulterior motives behind such surveillance. Data extracted on the location of narcotics production areas often coincides with the location of repressed national minority groups and indigenous tribes**. For example, **in 1989 American imagery satellites began to discover an increase in opium production in Burma's Golden Triangle area**. U.S. Drug Enforcement Administration (DEA) and Burmese military officials began to share intelligence based on the satellite imagery**. One of the benefactors of this intelligence was Brig. Gen. Tin Hla, the commander of Burma's 22nd Light Infantry Division, a unit not involved with counter-narcotics operations but, in fact, responsible for stamping out ethnic rebellions among the Shan, Kachins and Karens in northern and eastern Burma** (Lintner, 1993,23-24). In 1991, the DEA and Pakistan cooperated in an anti-narcotics operation using satellite imagery and GIS technology. Some computer surveillance equipment was provided to Pakistan by the Agency for International Development (AID), an agency better known for assisting underdeveloped peoples to attain self-sufficiency in agriculture and light industry. Although 42.3 metric tons of drugs were seized by the DEA-Pakistani team, the fact that the operation was conducted against the Baluchis, **a repressed indigenous minority in southwest Pakistan, raised concerns over the future use of satellite imagery to target specific groups of indigenous peoples**. The U.S. and Pakistan subsequently established a second "drug monitoring" operation in northern Pakistan, this time directed against another minority group, the Pashtoon people inhabiting the Pakistani-Afghan border (Forcht, 1994, 184-185).

**AT: Genocide – Natives – Oppression**

**Imagery is used to oppress minority groups and prop up dictators**

**Madsen 94** (Wayne, Lead Sci, Comp Sci Corp, spatial.maine.edu/~onsrud/tempe/madsen, DA 7/7/11, OST)\

The United States, as one of the two most advanced remote sensing nations in the world, bears a special responsibility to prevent remote sensing data from being used for purposes of exploitation and violations of human rights. The other major remote sensing nation is France. It, too, has demonstrated a willingness to permit the abuse of remote sensing data as it affects indigenous peoples. In 1994, France announced that it had captured the international terrorist "Carlos the Jackal" in Khartoum, Sudan. **This feat ironically involved the trading of** **French imagery intelligence to the Sudanese, a trade which ultimately resulted in more Sudanese "state terrorism" against the black African minority in the south of the country**. The southern Sudanese believed that the north wanted to drain their swamps by building the Jonglei Canal which would increase the flow of water through the White Nile. One southern Sudanese, Dr. John Garang, wrote his doctoral thesis on the negative environmental impact of the Jonglei Canal. In 1985 the southern Sudanese revolted against the north and demanded independence (Moszynski, July 1, 1994, 25**). The Sudanese wanted an end to the revolt. They agreed to hand over Carlos to the French in return for high-grade French SPOT imagery photographs of the positions of southern Sudan guerilla forces. Using the satellite imagery provided by the French and analyzed by Iraqi imagery analysts, the Sudanese launched a massive ground and air offensive against the southerners including a faction led by Dr. John Garang, native environmentalist turned leader of the Sudan People's Liberation Army** (SPLA). British MP Tony Worthington was one of a few Western politicians who expressed his outrage, saying "Obviously we can understand that the French were keen to capture Carlos, but does it have to be at the expense of the Sudanese people who have been brutally murdered by the appalling regime in Khartoum whom the French have assisted by providing military intelligence to help the slaughter?" (Moszynski, Oct. 1994, 32)

AT: Genocide – Natives – Exploitation – Resource locating

**GIS leads to exploitation of native lands**

**Madsen 94** (Wayne, Lead Sci, Comp Sci Corp, spatial.maine.edu/~onsrud/tempe/madsen, DA 7/7/11, OST)

**The use of GIS technology to identify indigenous lands ripe for exploitation has been particularly acute in southeast Asia's deforestation programs**. Japanese industrial conglomerates with the latest satellite data at their disposal have, along with their Malaysian, Philippine and Indonesian counterparts, helped to displace thousands of indigenous peoples in Sarawak, Sabah, Luzon and Sumatra. The Sarawak Ibans, Achehnese of Sumatra, Kadazans of Sabah and Igorote of Luzon have been driven virtually underground in their battles against the central governments and the huge logging companies. **Many indigenous activists have been jailed and killed. Presently some 30 percent of Sarawak's rain forests have been logged. Spatial-derived maps have pinpointed the location of another 14.3 million acres - 60 percent of Sarawak's rain forests and these have been conceded to logging firms. Like their North American Indian counterparts, the Ibans believe the rain forests are spiritually "alive."** The Ibans say, "From the forest, we get our life." (Cultural Survival, 1993, 26-27). Of course the same situation exists in the Amazon rain forests where Indian tribes such as the Yanomami have faced deforestation at the hands of exploitative central and state governments, hostile timber companies and an indifferent band of international financiers including the World Bank. Although GIS-derived data has been informative in identifying the damage already done to the Amazon forests, the same data has been used to further exploit Amazon resources. All this has come at the expense of the indigenous rain forest dwellers some of whom have been forced to migrate to squalid cities and towns. Satellite data was used by five Latin American governments to decide on going ahead with the Parana-Paraguay River Project. The indigenous Guarani were the first victims of the World Bank-funded project. Native lands that were not flooded were soon occupied by exploitative real estate developers. The Guarani were herded into Bantustan-like reservations.

AT: Genocide – Natives – Impact – Genocide/Relocation

**GIS used to force relocation of indigenous people**

**Madsen 94** (Wayne, Lead Sci, Comp Sci Corp, spatial.maine.edu/~onsrud/tempe/madsen, DA 7/7/11, OST)

**GIS data may have been instrumental in locating petroleum reserves in the southern Mexican state of Chiapas** in the 1970s. The Mexican state oil company, **PEMEX, quickly forced native Mayans off their land.** Oil production also brought other development projects in Chiapas. **Two dams were built along the Grijalva River in Chiapas, flooding Mayan land. Road construction to accommodate the oil industry resulted in the influx of non-Mayan farmers**. **This resulted in yet other native land being commandeered for deforestation and cattle ranching** (Cancian and Brown, 1994, 23). In January 1994, the Mayan Indians, squeezed into small parcels of unproductive land, revolted against the Mexican government. 1994 heralded Mexico's entry into the North American Free Trade Agreement (NAFTA). The Mayans' Zapatista National Liberation Front saw NAFTA differently. "NAFTA is the death certificate for the indigenous peoples of Mexico," thundered one Zapatista commander (Nations, 1994, 33). The Mayans resented the role the World Bank played in the loss of their lands in the 1970s and 1980s. **Free access for American mega-businesses, armed with tools like GIS reconnaissance, was a potential fatal blow for the Mayans. The Mayan revolt was bloody and the Mexican government was forced into negotiations with the Zapatistas.**

**Satellite imaging leads to exploitation of native lands and genocide**

**Madsen 94** (Wayne, Lead Sci, Comp Sci Corp, spatial.maine.edu/~onsrud/tempe/madsen, DA 7/7/11, OST)

**Large multinational firms using local and central government proxies have used GIS data to define lands to be targeted for exploitation**. Not only has this had a negative ecological impact but **the native peoples have suffered by being forcibly evicted from their lands either into unfamiliar urban settings or unproductive lands**. Other **groups have faced cultural assimilation from central governments eager to wipe out any notion that some groups have of being bonded to their land. In** yet other **cases, native groups have been the victims of extermination through genocide**. International legal regimes should take into account the right of indigenous peoples to be let alone, i.e., a right to collective privacy. Africans, for example, are said to be communally-oriented and not as individualistic as Westerners. The traditions of the Amharas of Ethiopia include strictures against depriving peasants of their land. Kings and chiefs are also required to share their wealth with their subjects (Howard, 1990, 163). Establishing a modern legal baseline for protecting indigenous lands from wrongful exploitation and sharing the wealth when indigenous lands are developed will enable indigenous groups to advance their legal rights to their lands and resources to the highest levels of international bodies, including the World Court and World Bank.

AT: Surveillance – Landsats Unreliable

**Remote sensing satellites are unreliable—depend on clear weather**

**Fingas & Brown 2 (**MF & CE, Emergencies Science and Technology researchers, environment Canada, 5/22, <http://www.ecy.wa.gov/programs/spills/response/taskforce/Veridian%20Miami%20Fingas.pdf>, accessed 7-4-11, CH)

**There are several problems associated with relying on satellite imagery**, especially in the visible spectrum, for oil spill remote sensing. **The first is the timing and frequency of overpasses and the absolute need for clear skies to perform optical work. The chances of the overpass and the clear skies occurring at the same time give a very low probability of seeing a spill on a satellite image**. This point is well illustrated in the case of the EXXON VALDEZ spill. Although the spill covered vast amounts of ocean for over a month, there was only one clear day (April 7, 1989) that coincided with a satellite overpass. **Another disadvantage of satellite remote sensing is the difficulty in developing algorithms to highlight the oil slicks and the long time required to do so.** For the EXXON VALDEZ spill, it took over two months before the first group managed to “see” the oil slick in the satellite imagery, although its location was precisely known.

**Imaging fails, usually obscured by atmosphere**

**Davenport et al 00** (Michael, Hans Wen, Ian Burke, Deputy Head of Mission Embassy of the United Kingdom to the Arab Republic of Egypt, 7/31, NATO Research & Technology Organization, <http://ftp.rta.nato.int/public//PubFulltext/AGARD/CP/AGARD-CP-594///28SE5-25.pdf>, accessed 7-4-11, CH)

**Visual imagery is often partially obscured or discolored by atmospheric effects such as haze, smoke, absorption, or back- scattering**. The goal of radiometric calibration algorithms is to modify the color of an image so that it looks, as much as possible, as it would if the sensor was ideal and there was no air between the landscape and the sensor**. This cannot, in general, be achieved precisely** unless radiometric control points (places on the ground with well-known spectra) are available.

**Status quo intelligence satellites solves better—Landsat is low resolution**

**Best & Elsea 8** (Richard & Jennifer, Specialist in National defense & Legislative Attorney, CRS Report for Congress, 3/21, <http://assets.opencrs.com/rpts/RL34421_20080321.pdf>, accessed 7-4-11, CH)

**Although the precise capabilities of intelligence satellites is classified, they are known to have greater resolution than anything available in commercial markets, such as Google Earth, SPOT, or Landsat. Their usefulness would appear to be unquestionable for map-making and related civilian uses**. Satellite information has continued to have important civil applications in such disparate areas as the movement of glaciers in Yakutat Bay in Alaska, forest fires in Montana, and near Mount Pinatubo in the Philippines. **They are regularly relied on to provide coverage of environmental events. Information from intelligence satellites supplements other sources of overhead imagery available to government agencies — from NASA satellites**, commercial satellites, or from manned aircraft or unmanned aerial vehicles (UAVs)

AT: Surveillance – Non-Inherent – MASINT

**MASINT solves surveillance**

**Best & Elsea 8** (Richard & Jennifer, Specialist in National defense & Legislative Attorney, CRS Report for Congress, 3/21, <http://assets.opencrs.com/rpts/RL34421_20080321.pdf>, accessed 7-4-11, CH)

**Satellites are also capable of supporting measurement and signature analysis (**MASINT), which is an important, but little known, intelligence **discipline, involving information derived from the analysis of radar, laser, infrared, and other emanations. MASINT** could be useful for domestic applications in some circumstances; in particular, it **might provide evidence of the existence and location of** weapons of mass destruction (**WMD) materials or WMDs themselves prepared or smuggled in by hostile individuals or groups. The capabilities that satellite-derived information might add to homeland security and law enforcement efforts are inevitably classified but could be investigated and assessed by congressional committees.**

**AT: Surveillance – Non-Inherent – Military Satellites**

**DSP solves—military detection, disaster detection, earth observation**

**Pack et al 00** (Dee, DSP researcher, Carl J. Rice, Barbara J. Tressel, Carolyn J. Lee-Wagner, and Edgar M. Oshika, Aerospace, Winter, <http://www.aero.org/publications/crosslink/winter2000/01.html>, accessed 7-5-11, CH)

**Every 10 seconds nearly the entire Earth's surface is scanned by Defense Support Program (DSP) infrared surveillance satellites looking for the telltale signs of hostile missile launches.** The Aerospace Corporation has been investigating the feasibility of using this existing capability to detect natural disasters and other related environmental phenomena. For the past 6 years, **Aerospace researchers have pursued a systematic program to explore the possibilities of using DSP satellites to detect and study fires and volcanic activity. Case** studies have included wildfires such as Southern California's Topanga-Malibu fire of 1993, biomass burning in the Southern African savannas, volcanic eruptions and the spread of ash clouds from Mount St. Helens in Washington and Columbia's Nevado El Ruiz, and recent activity at the volcano Popocatapétl in **Mexico. These results are being used to assist in the development of the Hazard Support System, a new disaster detection and mitigation program recently established by the National Reconnaissance Office (NRO) and the United States Geological Survey (USGS).** The DSP Satellite System First launched in 1970, **DSP satellites are the space-based component of the nation's missile early-warning system. These geosynchronous satellites observe Earth, using a spinning array of infrared detectors that are sensitive to emissions from hot point sources at or near Earth's surface.**

**Military surveillance solves heg**

**Shearer 98** (SR, US Intelligence Officer, International Security, 11/28, <http://www.cephas-library.com/nwo_the_revolution_in_military_affairs.html>, accessed 7-7-11, CH)

**The revolution in military affairs now in progress is no less far-reaching in its consequences for the United States** (the one and only possessor of this technology), and the world at large. The **technological bases of the ongoing revolution are** (1) the dramatic improvements in the accuracy and range of weaponry (i.e., the development of "smart weapons"), (2) **the acuity of reconnaissance and surveillance (i.e., spy satellites and other reconnaissance aircraft**), (3) **the ease of deception (i.e., stealth technology**), (4) the ease of suppressing enemy defenses (again, "stealth technology and the development of "cruise missiles), and (5) the effectiveness of command and control (which the "computer revolution" has unleashed). **This technology,** when implemented effectively - and, again, only one nation possesses the means and "know how" of doing this - **has the effect of reducing to impotence the military establishments of the other nations of the earth;** hence the somber warning of Scripture against the proud possessor of this technology: "... who is like unto the beast? who is able to make war with him?" (Rev. 13:4) RMA TECHNOLOGY PROMISES TO EASE RESTRAINTS ON THE USE OF MILITARY POWER AND CONTRIBUTE TO AMERICAN WORLD-HEGEMONY **This technology promises to both ease the restraints against the use of force by the United States while at the same time increasing substantially American world-hegemony.** **We have only to look at the effects of this technology in the Gulf War to appreciate its capabilities**. Although the information revolution in warfare was only in its initial stages in 1991 (since then, it has advanced immeasurably) this war provided ample evidence of its efficacy. The most impressive weapon in action during the Gulf conflict was the F-117A fighter-bomber. The F-117As flew only 2 percent of U.S. sorties in the Gulf War, but accounted for 40 percent of the damage done to strategic targets. Overall, more than 80 percent of the bombs dropped by F-117As hit their target, and none of the aircraft was shot down. And it wasn't just the F117As, but all the aircraft which utilized "smart bombs." As one U.S. Air Force officer remarked, the question was no longer even which building to target, but which room in the building - or in some instances, which part of the room.

AT: Surveillance – Non-Inherent – Military Satellites

**Landsats not key—military satellites maintain US dominance**

**Posen 3**(Barry, Prof Political Sciences MIT, International Security, <http://muse.jhu.edu/journals/international_security/v028/28.1posen.html>, Issue 28.1, accessed 7-7-11, CH)

Though **the United States** is not yet committed to actual combat in or from space, it **spends vast amounts on reconnaissance, navigation, and communications satellite**s. 25 **These satellites provide a standing infrastructure to conduct military operations around the globe.** According to Gen. Michael Ryan, the chief of staff of the U.S. Air Force, **the United States had 100 military satellite**s and 150 commercial **satellites in space in 2001, nearly half of all the active satellites in space**. 26 According to Air Force Lt. Gen. T. Michael Moseley, air component commander in the U.S.-led invasion of Iraq in March 2003, more than 50 satellites supported land, sea, and air operations in every aspect of the campaign. 27 Secretary of Defense Donald Rumsfeld plans to emphasize the military exploitation of space, and has set the military the mission of "space [End Page 12] control." 28 For fiscal years 2002-07, the Pentagon plans to spend $165 billion on space-related activities. 29 Other states can and do use space for military and civilian purposes. Though there is concern that some commercial satellites have military utility for reconnaissance and communications, many belong to U.S. companies or U.S. allies, and full exploitation of their capabilities by U.S. enemies can be severely disrupted. 30 T**he** NAVSTAR/GPS (global positioning system**) constellation of satellites,** designed and **operated by the U.S. military** but now widely utilized for civilian purposes, **permits highly precise navigation and weapons guidance anywhere in the world**. Full exploitation of GPS by other military and civilian users is permitted electronically by the United States, but this permission is also electronically revocable. 31 It will not be easy for others to produce a comparable system, though the European Union intends to try. GPS cost $4.2 billion (in 1979 prices) to bring to completion, significantly more money than was originally projected. 32

**Military satellites high now**

Ratnam 10 (Gopal, staff, Bloomberg, 8/23, <http://www.bloomberg.com/news/2010-08-23/boeing-sees-2-billion-in-u-s-military-satellite-orders-under-new-accord.html>, accessed 7-7-11, CH)

**Boeing** Co. **the second-largest U.S. satellite maker, said it expects at least $2 billion of orders for military communications satellites** stemming from a Defense Department contract announced last week. **The U.S. Air Force** said Aug. 19 that it **awarded a $182 million contract to Boeing** to buy parts for a Wideband Global Satcom satellite used for military communications. That may lead to orders for as many as six new satellites, Ken Torok, a vice president at Chicago-based Boeing’s Space and Intelligence Systems unit, said in a telephone interview**. Those would add to a 2007 contract for six of the Wideband satellites that are used by the U.S. Air Force, Army and Navy for tactical military communications and allow soldiers on the battlefield to access the Internet**. The company has delivered three, and the Air Force is looking to order up to six more to replace older systems, Torok said. “One Wideband has 10 times the capacity” of the Pentagon’s earlier Defense Satellite Communications satellites, Torok said. “The difference is like going from dial-up to broadband for your Internet.”

**DoD satellites monitor military activities—meets all military requirements**

**Martin 7** (Donald, Senior Engineering Specialist, Aerospace, 11/23, <http://www.aero.org/publications/crosslink/winter2002/01.html>, accessed 7-7-11, CH)

**As the U.S. space program grew** in the 1960s, **the** Department of Defense (**DOD) began developing satellite communication systems that would address the special requirements of military operations**. In addition to protection against jamming, these needs included the flexibility to rapidly extend service to new regions of the globe and to reallocate system capacity as needed**. The goal of these systems has been to provide communications between, and to supply information to, military units in situations where terrestrial means of communication are impossible, unreliable, or unavailable. This goal was** partly **realized with** the earliest **DOD communication satellites**, and as satellite and communications technology has improved, the goal has been realized to a much greater extent. Early DOD satellite communication experiments led to initial operational systems, **which evolved to a complete military satellite communication**s (milsatcom) architecture **encompassing DOD's unique requirements**. Within this milsatcom architecture, different systems were developed for three broad populations of users: wideband, tactical, and protected. Each is characterized by its own satellite designs, Earth terminals, and applications.

AT: Surveillance – Non-Inherent – Military Satellites

**Military satellites solve US hegemony—surveillance, navigation, operational flexibility**

**Smith 2** (Terence, U.S. Army Space and Missile Defense Command in the Office of the Deputy Chief of Staff for Intelligence, Space Control, Summer, <http://www.armyspace.army.mil/spacejournal/Article.asp?AID=24>, accessed 7-7-11, CH)

The U.S. military is more dependent on Space-based assets than any other military on earth. The mission of the national Space programs includes launching **military satellites** designed to: 1) **provide worldwide command, control, and communications between deployed elements and their respective command structures,** 2) provide extremely precise na**vigational aid to maneuvering military forces and guidance assistance to advanced weapon systems and** 3) **conduct Reconnaissance, Surveillance, and Target Acquisition (RSTA) of enemy military bases, assets, and deployments.** The RSTA element of the national military Space program permitted the collection of various types of intelligence in order to rapidly assess a potential adversary’s military current order of battle and capabilities, and to provide insight into their intentions or to provide warning of impending hostile action. **As the level of technology and the capability of satellites increases, these assets will continue to be increasingly more important to all aspects of U.S. military operations. Satellite support is critical to the U.S. military**, especially taking into account the fact that the United States could be and often is conducting military operations in several different theaters at any one time. These theaters of operations can be located on opposite sides of the globe from one another. U.S. **military satellites provide increased flexibility while increasing overall efficiency and effectiveness of U.S. military forces, operations, and weapon systems.**

**Defense Satellite Communications System solves Navy, Air Force, ground, and State Department assistance**

**USAF 11** (2/23, <http://www.losangeles.af.mil/library/factsheets/factsheet.asp?id=5322>, accessed 7-7-11, CH)

As the backbone of the U.S. military's global satellite communications capabilities, the Defense Satellite Communications System (**DSCS) constellation provides nuclear-hardened, anti-jam, high data rate, long haul communications to users worldwide. DSCS supports: the defense communications system, the Army's ground mobile forces, the Air Force's airborne terminals, Navy ships at sea, the White House Communications Agency, the State Department, and special users**. Overall DSCS responsibility resides in the United States Strategic Command.

**Military satellites cover surveillance, Landsats and LEO are vulnerable to ASATS**

**Pandey 10** (BK, Air Marshal, Indian Defence Review, 10/6, <http://www.indiandefencereview.com/military-and-aerospace/Space--the-emerging-battleground.html>, accessed 7-7-11, CH)

Space warfare capabilities are applicable across the range of conflict scenarios both at the strategic and tactical levels, serving most effectively as “deterrence” or to bring about a speedy conclusion to a ground war. In the prevailing scenario, space based assets i.e. **satellites for military use are employed for purposes of reconnaissance, surveillance, communications, navigation, monitoring of weather and a variety of alert warnings. Some of these activities such as reconnaissance and surveillance are carried out by satellites placed in Low Earth Orbits (LEO**) that are polar, and are in the nature of intelligence gathering thereby enhancing the speed and accuracy of decision making at all levels of command. **Development of anti-satellite weapon systems is likely to render satellites in LEO quite vulnerable.**

**Military satellites solve heg**

**Yuan 8** (Jing-Dong, Dir of Research for the East Asia Nonproliferation Program @ the Center for Nonproliferation Studies, Jamestown Foundation, 4/16, [http://www.jamestown.org/programs/chinabrief/single/?tx\_ttnews[tt\_news]=4852&tx\_ttnews[backPid]=168&no\_cache=1](http://www.jamestown.org/programs/chinabrief/single/?tx_ttnews%5btt_news%5d=4852&tx_ttnews%5bbackPid%5d=168&no_cache=1), accessed 7-8-11, CH)

As widely acknowledged**, space is increasingly being militarized as more and more states place military satellites into orbit and use space as a force multiplier for military operations. Space control provides the key to military victories in modern warfare, as** **amply demonstrated by the Gulf War** of 1990-91, where the U.S. military first demonstrated how it relied on and made full advantage of its space assets in support of its military operations’ precision strikes. Since then, China’s military leadership has increasingly focused on the importance of high-tech warfare and the ability of sophisticated command, control, communications, computers, and intelligence (C4I) systems to link land, sea, air, and space forces [13**]. Military use of space has become a key component of information warfare** and is focused on two key considerations: How to use space to enhance one’s own offensive capabilities, and how to use space to deny one’s potential adversaries those similar capabilities.

**AT: Surveillance – Non-Inherent – Military Satellites**

**Military spy satellites solve observation, surveillance, data collection**

**Center for Ecological Security 3** (5/23, <http://ces.iisc.ernet.in/hpg/envis/Remote/introfile31.htm>, accessed 7-7-11, CH)

Looking down and out (as from a mountain) to survey the battlefield for information useful to military leaders goes back to ancient times. In Napoleonic times, the French used observation balloons to scan their foes before and during battles. This technique was often a factor in the U.S. Civil War. By the First World War, airplanes and dirigibles were employed over enemy lines and their staging areas and cities as platforms from which aerial photography provided reconnaissance and intelligence pertinent to the content of battle. This approach was much expanded during the Second World War, as for example the follow-ups to a bombing raid to assess damage to the target. **With the advent of rockets and then satellites, observations of both military and political activities on the ground became possible, ushering in the so-called Age of Spy Satellites. Besides surveillance of a wide variety of targets of interest to military intelligence** units (in the United States, these include the Department of Defense, the CIA, the National Security Agency, and Homeland Defense), **satellites can now assist in areas other than simply observing features on the ground - this includes communications, meteorology, oceanography, location** (Global Position Systems [GPS]), and Early Warning Systems (none of these latter applications will be discussed on this page). In addition to satellites, manned aircraft continue to be platforms and in recent years UAV's (Unmanned Aerial Vehicles) such as drones have assumed some of the intelligence-gathering tasks.

**New military satellites solve surveillance, and more to come**

**Indian Military 11** (5/8, <http://www.indian-military.org/news-archives/indian-air-force-news/1559-new-us-military-satellite-launched-into-space-.html>, accessed 7-7-11, CH)

CAPE CANAVERAL**: A new military satellite has been launched into space.** An unmanned Atlas 5 rocket lifted off into a cloudless sky on Saturday afternoon from Cape Canaveral Air Force Station. It carried the Space-Based Infrared System geosynchronous satellite**. The spacecraft will provide missile warning, missile defence, battlefield reconnaissance and technical intelligence for the United States and its allies**. The space infrared network includes four satellites that orbit the Earth at the same speed as the planet rotates 35,400 kilometres above the ground. **More satellites will be added.**

**Government plans for new satellites guarantee dominance in remote sensing**

**Ball 9** (Matt, editor, vector1media.com, 4/8, <http://www.vector1media.com/spatialsustain/dod-plans-next-generation-spy-satellite-network.html>, accessed 7-7-11, CH)

President **Obama approved a new classified defense remote sensing strategy this week that calls for the construction of** at least one **electro-optical/infrared imaging satellite and the purchase of more commercial imager**y from GeoEye and Digital Globe. A statement yesterday from National Intelligence Director Dennis Blair outlined **a plan for government-owned satellites** **that will push the capabilities currently being deployed** by commercial vendors. The commercial satellites are called “less-complex” in the release, **pointing toward a research and development effort to give the military an information advantage**. The release also mentions the role of the National Geospatial-Intelligence Agency as the integrator to bring together the imagery from all sources and serve it to military, intelligence, foreign policy and civilian users.

AT: Surveillance – Non-Inherent – ORS

**ORS solves—reconnaissance satellites deliver fast warfighting info, solves surveillance readiness**

**Space.com** (6/28, http://www.space.com/12094-nasa-rocket-launch-military-satellite-preview-ors-1.html, accessed 7-5-11, CH)

**The United States Air Force is planning to launch a new tactical reconnaissance satellite this evening to help deliver fast, accurate information to warfighters on the ground.** The satellite, called ORS-1, is slated to blast off atop a Minotaur 1 rocket at 8:28 p.m. EDT (0028 GMT) from a NASA launch range at the Wallops Flight Facility and Mid-Atlantic Regional Spaceport in Virginia. The spacecraft is outfitted with a customized version of the SYERS-2 sensor — advanced snooping gear that’s also carried by the Air Force’s high-flying U-2 spy planes. The reconnaissance satellite will be the first for the Air Force’s Operational Readiness Space (ORS) office, which was created in 2007. It costs a reported $226 million, according to Spaceflight Now. “**The inaugural flight of the ORS spacecraft is historic, and even more important is the significant capability it will provide to the warfighter in the next year**,” said ORS director Peter Wegner in a statement. If the sunset rocket launch goes off as planned tonight, skywatchers in much of the eastern United States could get quite a show. However, Mother Nature may not cooperate; forecasts call for scattered thunderstorms around the launch site, with only a 30 percent chance of good weather, NASA Wallops officials have said. Battlefield recon satellite **The new satellite’s SYERS-2 is the Air Force’s most advanced intelligence, surveillance and reconnaissance sensor,** according to the Goodrich Corporation**, which built it and integrated it into the satellite. The sensor provides high-resolution imagery day and night, and it can peer through haze and light fog**. Once ORS-1 is in orbit, it will undergo a 30-day checkout, validation and calibration procedure, Air Force officials said. Then it will begin its reconnaissance mission, which should last one to two years. **The satellite will beam information gathered by the modified SYERS-2 sensor down to Earth, where analysts will take a look and send relevant data along to the military’s Central Command for nearly real-time use by warfighters. Small, fast satellites**

AT: Surveillance – Non-Inherent – Reconnaissance

**Reconnaissance satellites solve intel and international cooperation**

**Hastedt 10** (Glenn, Prof Political Sciences @ James Madison University, 10/7, NASA, <http://history.nasa.gov/sp4801-chapter19.pdf>, accessed 7-5-11, CH)

**Reconnaissance satellites have contributed in a number of ways to the changing face of intelligence** within the national security policy arena. **Their influence has been considered not so much as an isolated variable forcing change, but as one force of many**. This is because the national security policy arena into which reconnaissance satellites entered already existed as a stream of activity. Reconnaissance satellites entered this stream and helped change it. **The impact of reconnaissance satellites on intelligence and national security policy does not end because the cold war is over. They will continue to shape intelligence and national security policy as this policy arena moves further downstream**. in the cold war period, two particular areas of impact were, first, on the changing fortunes of the CIA within the intelligence community, and second, on the development of a framework for managing superpower cold war relations. From the outset, the CIA faced challenges in establishing a position of leadership within the intelligence community. The advent of reconnaissance satellites, combined with the CIA’s own failings in the areas of covert action and human espionage, helped bring into existence an intelligence community whose key organizational players lay beyond its effective control and whose key intelligence collection methodologies were rooted in science and technology. The resulting situation proved to be a mixed blessing. On one hand**, reconnaissance satellites produced unprecedented insight into the national security policies of the Soviet** Union. On the other hand, collection silos arose, human intelligence capabilities declined, costs rose dramatically, and managerial problems festered. **Reconnaissance satellites also helped usher in an era of conflict management between the united States and Soviet Union. They were instrumental in transforming an area of competition into one of conflict management by providing each side with a largely unilateral means of verifying the behavior of the other. Students of international relations have long commented that it is the absence of trust and the fear of cheating that makes cooperation so difficult in world politics. Reconnaissance satellites showed that, with proper motivation, technology can provide a mechanism allowing states to cooperate in the absence of trust.** The changed atmosphere of the Cold War during the Reagan administration also showed the limits of technology as a proxy for trust.

**Surveillance satellites solve intelligence**

**Global Research 10** (10/13, <http://ce399.wordpress.com/2011/04/14/the-threat-of-satellite-surveillance-global-research-131010/>, accessed 7-5-11, CH)

Unknown to most of the world, satellites can perform astonishing and often menacing feats. This should come as no surprise when one reflects on the massive effort poured into satellite technology since the Soviet satellite Sputnik, launched in 1957, caused panic in the U**.S. A spy satellite can monitor a person’s every movement, even when the “target” is indoors or deep in the interior of a building or traveling rapidly down the highway in a car, in any kind of weathe**r (cloudy, rainy, stormy). **There is no place to hide on the face of the earth. It takes just three satellites to blanket the world with detection capacity**. Besides tracking a person’s every action and relaying the data to a computer screen on earth**, amazing powers of satellites include reading a person’s mind, monitoring conversations, manipulating electronic instruments and physically assaulting someone with a laser beam**. Remote reading of someone’s mind through satellite technology is quite bizarre, yet it is being done; it is a reality at present, not a chimera from a futuristic dystopia! To those who might disbelieve my description of satellite surveillance, I’d simply cite a tried-and-true Roman proverb: Time reveals all things (tempus omnia revelat).

**Surveillance satellite system in development now**

**Clark 9** (Colin, staff, DoD Buzz, 4/7, <http://www.dodbuzz.com/2009/04/07/president-approves-new-satellite-system/>, accessed 7-7-11, CH)

After more than a decade of false starts by the intelligence community, **President Barack Obama has approved a new constellation of highly capable electro-optical surveillance satellites. “When it comes to supporting our military forces and the safety of Americans, we cannot afford any gaps in collect**ion,” Director of National Intelligence Dennis Blair said in a press statement. “**We are living with the consequences of past mistakes in acquisition strategy, and we cannot afford to do so again**. We’ve studied this issue, know the right course, and need to move forward now.” The National Reconnaissance Office will manage acquisition of the system and operate the new constellation. Lockheed Martin will build the systems. They will be roughly similar in capabilities to the existing spy satellite constellation, a senior intelligence official told reporters Tuesday evening. **The new satellites should launch within the next decade**

AT: Surveillance – Non-Inherent – Reconnaissance

**KH-8 solves—best resolution, maneuverability**

**Day 9** (Dwayne, space historian & analyst, The Space Review, 1/12, <http://www.thespacereview.com/article/1283/1>, accessed 7-5-11, CH)

There was good reason for the intelligence community to want the find to remain as secret as possible**. The KH-8 was the highest resolution reconnaissance satellite ever built**. Even today, **it apparently holds the record for the best reconnaissance photographs returned from orbit by any spacecraft, a combination of both a powerful camera and the ability to dramatically lower its orbit, to “swoop” in over a target** at altitudes of apparently only 70 nautical miles (130 kilometers). **The KH-8 could apparently see objects on the ground as small as a baseball and had the ability to photograph people with enough resolution to see their arms and legs. Later satellites** had bigger mirrors, but flew at higher altitudes and **could not return pictures as good.**

**Reconnaissance satellites now solve—solved cold war crises**

**Hastedt 10** (Glenn, Prof Political Sciences @ James Madison University, 10/7, NASA, <http://history.nasa.gov/sp4801-chapter19.pdf>, accessed 7-5-11, CH)

**Reconnaissance satellites, along with their predecessor, the U-2 reconnaissance aircraft, were quick to demonstrate their value as instruments for preventing strategic surprise**. Beginning in the mid 1950s, **political forces within the U.S. intelligence communit**y (led by the Air Force**) raised the specter of a bomber gap** in which the Soviet union held a decided and threatening lead over the united States in the development of a large strategic bomber force, creating an American vulnerability to a surprise **attack. U-2 overlights in 1956 provided visual evidence that this gap did not exist. Satellite reconnaissance photographs would do the same just a few years later when they provided visual evidence that led to a repudiation of the charge that a missile gap now existed.**

**Reconnaissance satellites solve military advantage**

**Hastedt 10** (Glenn, Prof Political Sciences @ James Madison University, 10/7, NASA, <http://history.nasa.gov/sp4801-chapter19.pdf>, accessed 7-5-11, CH)

**The impact of reconnaissance satellites on intelligence and national security policy did not end with the passing of the cold war.** Instead, **the policy stream in which reconnaissance satellites now operate has altered course**. In most cases the changes now evident were present as ripples in the latter part of the cold war, and subsequently have gained in strength. As was the case with the cold war national security policy stream, **we can expect reconnaissance satellites and the content of this policy to affect one another.** Several indicators already point in directions where this interactive effect is likely to be most pronounced over time. **One notable and already evident area of impact on national security policy is the increased use of reconnaissance satellite imagery for tactical military purposes. Satellites had provided support for military operations on a limited scale prior to the end of the cold war, in the 1986 bombing campaign against Libya, and operation Just cause in 1989.** A quantum leap in the reliance on satellites took place in 1991 **with the persian Gulf War. Satellite intelligence was used to provide warning of Scud attacks, target patriot anti-tactical ballistic missile rockets, provide weather data, aid with land navigation and aerial bombardment, and serve as a communication channel**. The war against terrorism also has seen a heavy reliance upon satellite imagery and electronic intelligence in efforts to trace the movements of key terrorist leaders and identify targets.

**Reconnaissance solves Landsats—has civilian sensing, environmental monitoring, and military capabilities**

**Eisendrath 6** (Craig, Senior fellow @ the Center for International Policy, bNET, Nov, <http://findarticles.com/p/articles/mi_m1272/is_2738_135/ai_n27059686/pg_3/?tag=mantle_skin;content>, accessed 7-8-11, CH)

**There also is a healthy crossover between military and nonmilitary technology.** For instance, **reconnaissance satellites** originally **developed for military use can be employed for environmental monitoring and other civilian or commercial purposes**. Equally, satellites used to "verily compliance have made it possible to get agreement on arms control treaties to limit and reduce nuclear weapons without much, if any, reliance on expensive and intrusive on-site inspections--**but the information collected by those satellites could be used to target the other side's retaliatory forces in a pre-emptive attack.**" concludes Gallagher.

AT: Surveillance – Non-Inherent – Landsats Solve Now

**LandSats not key—size, infrequent launches, cost—newer satellites solve**

**Sweeting 11** (Martin, Dir Surrey Space Center, NDU Press, 5/18, <http://www.ndu.edu/press/space-Ch29.html>, accessed 7-3-11, CH)

Figure 29–1 illustrates the regions of the surveillance performance envelope that are occupied by different classes of satellite. **Satellites for traditional Earth resources missions, such as Landsat** and Spot, **are large and expensive, are launched infrequently, and have 2-week orbital revisit cycles. It is a measure of the increasing capability of small satellites** (which employ far more modern detector technology**) that similar resolutions can now be achieved with much smaller and cheaper space hardware**. Uniquely, as a result of the lower costs associated with small satellites, they can be proliferated in constellations, such as DMC and RapidEye. As a result of having five satellites, these constellations offer daily global imaging capability, moving their performance envelope significantly lower in the diagram. By contrast, existing military satellites are located somewhere to the left of the red region representing the capabilities of commercial remote sensing satellites such as Quickbird and Ikonos

**New Landsat LDCM program solves—new thermal imaging, allocated funding, high-quality processing**

**USGS 10** (7/6, <http://pubs.usgs.gov/fs/2007/3093/pdf/fs20073093.pdf>, accessed 7-6-11, CH)

**The LDCM is planned as a 5-year mission and will include enough fuel for 10 years of operation.** NASA and the USGS share responsibility for LDCM implementation. **NASA will develop the flight systems including the spacecraft, the instrumentation, the mission operations element, and the mission launch, and perform on-orbit checkout. The USGS will develop, implement, and operate the ground-data acquisition network and image-processing and archive facilitie**s, and will provide data products to the user community. In addition, the USGS will be responsible for satellite flight operations following launch. The centerpiece of the LDCM space segment is the OLI. By **collecting land-surface data with spatial resolution and spectral band specifications consistent with historical Landsat data, the OLI instrument will advance future measurement capabilities. The OLI will feature** two additional spectral channels**: an “ultra-blue” band for coastal and aerosol studies, and a** band for cirrus cloud detection**. A thermal infrared sensor (TIRS) will collect data in two long wavelength bands** that will be co-registered with OLI data. A key feature in the ground segment being planned by the USGS is the provision of high-quality LDCM standard data products. **About 400 scenes per day will be imaged and processed over global land and coastal areas.** All acceptable scenes will be terrain corrected to a geographic projection and made available at no cost to users via the Internet. The planned specifications for the LDCM standard products are listed in the following table

AT: Surveillance – Non-Inherent – Status Quo Solves

**Current system of satellites solve—heavily funded, addresses civilian and military concerns**

**The Economist 11 (**6/30, <http://www.economist.com/node/18895010?story_id=18895010&fsrc=rss>, accessed 7-5-11, CH)

**Much of the money goes on satellites—spy satellites for keeping tabs on other countries,** **communications satellites for soldiers to talk to each other, and even the Global Positioning System satellites, designed to guide soldiers and bombs to their targets, and now expanded to aid civilian navigation**. But there are more exotic programmes. **The air force runs one for anti-satellite warfare, designed to destroy or disable enemy birds.** Another includes experimental aircraft, such as the X-37, a cut-down, unmanned descendant of the space shuttle. The air force will not say what the X-37 is for. **One theory is that it is a spy plane, designed to catch savvy targets that know how to go to ground when spy satellites—which have predictable orbits—are overhead. Another is that it is intended to destroy satellites, or to drop bombs from orbit.**

**Status quo solves—fast satellite production, efficient warfighting information delivery, critical imagery**

**Cordes 11** (Henry J., Staff, World-Herald, 1/25, <http://www.omaha.com/article/20110625/NEWS01/706259909/-1>, accessed 7-5-11, CH)

The U.S. Strategic Command relishes one of its most critical jobs: recognizing the emerging tactical needs of fighters on the battlefield and advocating for solutions**. The** long **wars in Afghanistan and Iraq would bring home many urgent requirements, including finding a way to more quickly deploy new satellite-based surveillance, communications and war-fighting systems. To meet that goal, the Pentagon has created the Operationally Responsive Space Office**, dedicated to quickly answering military space needs. And next week, **the unit is set to send its first operational satellite into orbit. “The launch will represent an important improvement in more responsive support … to enhance the war fighters' tool kit,''** said Gen. C. Robert Kehler, the commander of StratCom. Defense officials say **the expedited development** and deployment of the ORS-1 satellite — with 32 months passing from conception to launch — **demonstrates the nation's heightened ability to meet space needs of fighters**. History had shown such systems were extremely expensive and difficult to get off the ground, often taking a decade to go from the drawing board into orbit. StratCom, based at Bellevue's Offutt Air Force Base, has been an important partner in this ORS project from the start. ORS-1 was initiated in 2008 as the result of a specific request that StratCom brought to the ORS: a new visual surveillance system for U.S. Central Command, which directs war efforts in Afghanistan and Iraq. Defense officials are giving few specifics about the capabilities of the new system, other than **it will provide critical new imaging technology for fighters on the ground.**

**Comprehensive satellite program now**

**Jensen 11** (Carl, Founder and director emeritus of Project Censored at Sonoma State University, Daily Censored, 4/19, <http://dailycensored.com/2011/04/19/censored-in-1978-space-pollution-hits-home/>, accessed 7-5-11, CH)

**NASA’s current agenda alone calls for domestic communications satellites, weather satellites, new military communications and surveillance satellites,** a satellite to test the magnetosphere, one to study propulsion principles, experimental TV broadcast satellites, ocean surface monitoring satellites, one to measure the shape of the earth, **some to study atmospheric radiation, and at least one satellite to study satellites. And this is only for the U.S.**

AT: Surveillance – No Solve – Public Data

**Landsats can’t solve competitive security advantage—too public**

**National Science and Technology Council 7** (8/7, <http://www.landimaging.gov/fli_iwg_report_print_ready_low_res.pdf>, accessed 7-3-11, CH)

Land imaging represents several coinciding trends that are poised to transform how technology might be used for the benefit of human society. **Just as the convergence of** computational and **communications technologies transformed human interpersonal** and professional **correspondence** with the advent of email and the Internet, l**and imaging promises to transform how image-based information about the Earth** can be used to better understand, regulate, and manage societal affairs upon the Earth’s surface. Borne of many decades of research and operational application using surveillance and reconnaissance balloons and aerial systems, satellite imagery has been used since the dawn of the space age to support and often to redefine many aspects of how societies are managed, including mapping, resource management, and national security. Typically, these applications are hidden from public view since they are practiced by technical communities (e.g., remote sensing and photogrammetry, geographic information systems, and defense and intelligence analysis). But **increasingly, general public awareness of the utility of satellite images of the Earth has grown and today applications such as GoogleEarth™ and Microsoft’s Virtual Earth™ have become accepted tools for everyday use in households throughout the world**

**No secret surveillance—all Landsat 7 data is public**

**EOS-Webster 5** (2/7, <http://eos-webster.sr.unh.edu/data_guides/landsat_dg.jsp;jsessionid=C29270422E37887A030E531726398406>, accessed 7-6-11, CH)

**With the launch of Landsat 7, data are no longer copyright protected and these data may be freely distributed. EOS-WEBSTER**, in an effort to provide access to earth science data**, has designed an interim system to make Landsat data** that we have in our database **available to other users.** In many cases, in-house **researchers have acquired these data directly from the USGS** EROS Data Center (EDC) for their research projects. They have provided copies of their data to EOS-WEBSTER for distribution to a wide audience. Therefore, our data holdings come from several different sources and can have a variety of different processing levels associated with them. **We have attempted to document,** to the best of our ability, **the processing steps each Landsat scene has been through**. Our data are currently served in two output formats: BSQ and ERDAS Imagine, and three different spectral types (when available): multispectral, panchromatic, and thermal. A header file is provided with each ordered image giving the specifics of the image.

**Basra proves, no security intelligence advantage to Landsat—data’s too public**

**Heller 9** (Thomas, Captain in the Marines, DTIC, 1/5, <http://www.dtic.mil/dtic/tr/fulltext/u2/a514948.pdf>, accessed 7-7-11, CH)

**Another concern of the U.S. military are the easily accessible websites that provide anyone who knows how to use computers, imagery of any military installation**, nuclear power plants, government buildings, etc. **In January 2007, British troops confiscated images of their military base in Basra, Iraq, while conducting raids on various insurgents’ homes**. 6 The images depicted Land Rovers, buildings, tents, and bathroom facilities inside the Basra military compound (Hearn). These images do not necessarily give sensitive information with regard to personnel numbers, fire power, types of equipment, or the Command Operations Center, but **they provide information that could be used by the enemy to make some educated assumptions on command and control locations**. Once the British troops complained to Google about the images, Google went back and posted the images of Basra, Iraq, prior to the war in 2003 (Hearn).

AT: Surveillance – No Solve—Public Data

**Landsats don’t give the US an intel advantage—UN requires international information-sharing**

**Slonecker et al 98** (E. Terrence, representative for the EPA, Denice M. Shaw, and Thomas M. Lillesand, American Society for Photogrammetry, June, <http://www.geog.ubc.ca/courses/geob373/lectures/Handouts/PERS_Remote_Sensing_Ethics.pdf>, accessed 7-6-11, CH)

Further, **there is a noteworthy and surprising lack of comprehensive policy development with respect to high-resolution remote sensing technology**. Major unaddressed concerns still exist relating to such fundamental issues as national security, military intelligence, and terrorist activity (Bingaman, 1995). And **while the Land Remote Sensing Policy Act of 1992** (LRSPA**) establishes comprehensive data and regulatory policies for Landsat and follow-on systems**, the Act's basic assertion that private space-based systems are not currently viable has been challenged by the licensing of several commercial vendors, creating the possibility of large commercial remote sensing markets that were not envisioned, or covered, by this particular law (Gabroynowicz, 1993). Further, as pointed out by Gabrynowicz (1996), the next generation of Unpiloted Aerial Vehicles is likely to operate at altitudes that were not envisioned or addressed in the LRSPA. **The United Nations has issued general guidance titled "Principles Relating to Remote Sensing of the Earth From Space," which promotes international cooperation and data sharing between countries,** but does not directly address issues of privacy or data misuse at the level of the individual. **The coming advances in remote sensing technology, coupled with the corresponding changes in commercial restructuring and global information distribution, will, within the next decade, drastically change the nature and utilization of imagery and will result in the flow of data and information products outside of traditional jurisdictional and national boundaries that once regulated access, distribution, and appropriate use.**

**Commercial firms provide surveillance intel—undermines US advantage**

**Bruggeman 9** (David, researcher for Government-University-Industry Research Roundtable of the National Academies , GWU, 10/20, <http://www.gwu.edu/~spi/assets/docs/spacemil11.html>, accessed 7-6-11, CH)

Today, **Taiwan, China, Japan, North and South Korea are clearly aware of the possible advantages of high-resolution remote sensing**, for commercial, civil, and military applications. However, none of these nations yet have an indigenous capability, though **Japan and China are fairly close to achieving** it. Until the **Asian nations** develop their own capabilities, they will continue on **depend on commercial firms to meet some of their imagery needs.** Doing business with US firms implies the necessity of abiding by significant restrictions. As these restrictions have not been fully tested, there is still uncertainty about how much the US government will exploit its control over the commercial sector in order to achieve US foreign policy objectives. Thus, the degree to which the Pacific Rim nations, especially China and North Korea, can rely on access to commercial remote sensing firms to pursue their own foreign policy objectives is still unclear. Commercial remote sensing firms will face risks in doing business in the East Asian countries, particularly in times of conflict. In times of conflict, diplomatic pressures regarding shutter control could become intense, and firms will be faced with a decision about where they draw the line between free commerce and government pressure. Commercial space assets or space assets of a non-participating government may be casualties of regional conflict. **As remote sensing grows and becomes more commercial in nature, the industry is likely to face significant challenges**. Since satellite remote sensing inherently serves both civil and national security applications, **commercial remote sensing firms will be faced with issues beyond those that face other international businesses. Political and security concerns, as well as business plans, will shape the remote sensing industry**. Nowhere is this as clear as in the Asia-Pacific, a region increasingly prepared to use remote sensing data, whether both commercially procured or indigenous, as a tool for peace or a weapon of war.

**AT: Surveillance – Impact N/U—Space Race Now**

**Space race now—China developing new capabilities and US racing to counter**

**Reid 7** (Tim, staff, the Times, 1/19, <http://www.timesonline.co.uk/tol/news/world/asia/article1294519.ece>, accessed 7-7-11, CH)

**Washington’s concerns over the threat to its satellites as China embarks on its “Star Wars” programme triggered an aggressive revision of its national space policy** in October that asserted America’s right to deny access to space to anyone hostile to its interests. In a speech about the policy last month, Robert Joseph, **the State Department’s chief arms control and international security official, said that other nations and possibly terrorist groups were “acquiring capabilities to counter, attack and defeat US space systems**”. He added: “No nation, no non-state actor, should be under the illusion that the United States will tolerate a denial of our right to the use of space for peaceful purposes.” **China** insists that its military policy is purely defensive, but its repetitions appear intended to allay fears among its neighbours that it is developing an increasingly formidable array of weaponry. Less than two weeks ago, **military manufacturers unveiled China’s home-made fighter jet, the Jian-10. China has just released its first defence White Paper in two years that sets out ambitious goals for the P**eople’s **L**iberation **A**rmy. The paper focused heavily on the need for technological modernisation. **The US has been researching “satellite-killing” technology of its own, experimenting with lasers on the ground that could disable and destroy spacecraft.**

**Space build-up and loss of US space primacy inevitable—challengers and tech diffusion**

**Eberhart 9** (Dave, editor, Newsmax, 1/6, <http://www.newsmax.com/Newsfront/china-threatens-US-space/2009/01/06/id/327493>, accessed 7-7-11, CH)

**Ambitious nations, and China** in particula**r, are challenging U.S. space supremacy with research programs that have led to their first deployments in space — and eventually could station deadly military prowess miles above Earth.** “Perhaps the ultimate asymmetrical strategy against the United States lies in the possibility of a nuclear detonation at an altitude between 40 and 400 kilometers designed both to disable and destroy U.S. satellites and to have devastating EMP effects against infrastructure on Earth,” warn study authors. “The Space and U.S. Security Net Assessment (January 2009)” surveyed the status of U.S. space activities and drew comparisons with other countries that have developed space programs in recent decades. “**The growing commercialization of space will create a more level playing field as additional actors gain greater access to the products and services of the commercial space sector and to the enabling technologies as well,**” says the report, which the Institute for Foreign Policy Analysis just published. Most ominous, however, is what the capture of these technologies by old and new enemies may mean to U.S. security in the 21st century. Given present trends, several important conclusions emerge from the net assessment, conclude the authors: There is substantial agreement that the United States can avoid the “weaponization” of space by restricting its future space-related national security programs, including foregoing deployment of space-based missile defense. **The ability to destroy or disable satellites from Earth, which the Chinese demonstrated in 2007, eventually will be available to others as a result of proliferating rocket and other technologies.**

**Space inevitable**

**Pena 2** (Charles, senior defense policy analyst, Cato Institute, 7/1, “U.S. COMMERCIAL SPACE PROGRAMS:

FUTURE PRIORITIES AND IMPLICATIONS FOR NATIONAL SECURITY”, accessed 7-7-11, CH)

**Control of space is at the crux of the debate about the future of U.S. military space policy. It** is important to point out that **the issue is not whether the United States should militarize space. The militarization of space has already occurred and will continue. Space assets are currently used to great effect to support terrestrial** (ground, sea, and air) **military operations**. The more immediate issue is whether the United States should weaponize space, at least in the near- or mid-term, and more important, whether military uses and requirements in space should be the driving force behind how we think about space and space policy. **Advocates of a more aggressive U.S. military policy for space argue that the United States is more reliant on the use of space than is any other nation, that space systems are vulnerable to attack**, and that U.S. space systems are thus an attractive candidate for a “space Pearl Harbor.” Critics of such a policy shift are concerned that weaponizing space could trigger a dangerous arms race. **They are quick to point out that no country currently has an operational** anti-satellite (**ASAT) weapon that threatens U.S. satellites or weapons in space and that a U.S. move to deploy weapons (either offensive or defensive) would only provide unneeded impetus for other countries to follow suit.**

AT: Surveillance – Threat Perception – Economy

**Landsats not competitor-neutral—perceived as economic threat**

**De Saussarie 77**(Alexander, Prof @ Akron Law School, American Journal of International Law, Dec., “Remote Sensing Satellite”, accessed 7-4-11, Heian Online, CH)

Even though fact-gathering is politically a neutral activity, **earth resource satellites are often perceived as an economic threat,** because of the satellite's potential for providing economically useful data to other states. Such data may provide information which is closely held by the subjacent state and not subject to public access. **A state's resources, its population distribution, and the level of its activities may be sensitive information. One noted space lawyer and technical expert has suggested one way in which information derived through remote sensing may be utilized to the detriment of the subjacent state. He suggested a situation where a state's economy might depend heavily upon the sale of a certain agricultural commodity on the world market. If the existence of an oversupply of that commodity became worldwide knowledge, it could produce an undesirable effect on pri**ces.37 On the other hand, **worldwide knowledge of an abnormally small supply might equally affect prices and divert customers to the disadvantage of the sensed state.** The effect of the sale of grain to the Soviet Union four years ago was to drive up the price of grain in the United States. At the same time, there was apparently no critical shortage of wheat in the Soviet Union, since the grain purchased from the United States was partly sold to Third World countries at a profit. Had the data and analyzed information derived from remote sensing been available then, it could have shown there was no shortfall of wheat production in the Soviet Union and that the sale of grain, which turned out to be a disaster to the American consumer and farmer alike, could have been avoided.

AT: Surveillance – Threat Perception – Space Race

**US intelligence dominance triggers a space race**

**Chen 8** (David, research analyst, Young Professionals in Foreign Policy, 3/14, <http://www.ypfp.org/forestalling_an_anti_satellite_arms_race_with_china>, accessed 7-7-11, CH)

By **obscuring the assets that provide U.S. information dominance**, “the shot” on February 20 **can be more than a step toward confrontation in space. It also can be the first step in avoiding an arms race** that is heavily weighted against the incumbent space power. The task is to build a robust, diversified, and redundant system of service delivery platforms, which until now had been provided by satellites only. **This is a technical policy, and, perhaps especially, diplomatic challenge that should be taken up now. U.S. national security and international stability depend on it.**

**Empirically, surveillance information exaggerated and used to justify arms build-up**

**U of Oregon 5**(12/5, <http://abyss.uoregon.edu/~js/space/lectures/lec09.html>, accessed 7-8-11, CH)

Interestingly, **the main purpose of Corona was to estimate the number of Soviet missiles**, the so-called missile gap that dominated the 1960's Presidential election. However, **Corona found far few missiles than thought, but the US government perpetuated the threat, promoting an arms build-up and an accelerated military program.** By the end of Corona, satellites had imaged every Soviet missile base, imaged each Soviet submarine class, revealed the presence of Soviet missiles protecting the Suez Canal and identified Soviet nuclear assistance to China. **With the declassification of Corona images, comparison of images from the 1960's to the present day assist in several scientific programs. For example, comparison of Corona and Landsat image** of the Aral Sea from August 1987 shows the extent of the environmental disaster that has occurred there. Excessive use of pesticides and unwise irrigation practices have poisoned and shrunk this once large and bountiful sea.

AT: Surveillance – Turn – Countesurveillance

**Intelligence gathering spurs counter action—France, UAE prove**

**Thomson 95** (Allen, senior scientist of defense analysis, Space Policy, Feb, <http://www.fas.org/spp/eprint/at_sp.htm>, accessed 7-8-11, CH)

**It has been public knowledge for many years that the U.S. possesses photoreconnaissance satellite**s in low earth orbit (LEO).[1] There are also sources which assert that American space-based reconnaissance resources include imaging radars and signals intelligence (SIGINT) satellites in various orbits, from LEO to geosynchronous orbit (GEO).[2] In the words of one Russian author, [3] The orbital grouping which supported the operations of multinational forces [during Desert Storm] included more than 20 spacecraft of imaging ('KH-11', 'Lacrosse') and SIGINT ('Ferret', Chalet', 'White Cloud', 'Aquacade') reconnaissance... While this information has long been in general circulation, up until the Desert Storm operation of 1991 there was an aura of remoteness about the subject. Despite occasional indications that reconnaissance satellites might be used for tactical purposes, there seems to have been a general perception that satellite- derived intelligence only pertained to the arena of 'superpower' affairs -- monitoring strategic arms control treaties or supporting political and military confrontation between the U.S. and the U.S.S.R. **The wide and often official publicity given satellite reconnaissance during Desert Storm marks a fundamental and extremely important break in the world's perception of the use of spacebased intelligence**. 'Lessons learned' from the Gulf War by all the world's military commands must include an appropriate assessment of the tactical use of space.[4] **Heightened international interest in offensive**, or at least **proactive, use of satellite reconnaissance has been manifested in the increased activity by France in designing the Helios photoreconnaissance satellite. The recent interest of the United Arab Emirates in acquiring a one-meter-resolution reconnaissance satellite probably is due to the impression US imagery made on the Coalition partners** during the Gulf War.[5] **Of greater concern for American intelligence planners is that Desert Storm has prompted states which might find themselves in conflict with the USA in the future to develop countermeasures against US space-based reconnaissance**.[6]

AT: Surveillance – Turn – Democracy

**Surveillance kills democracy**

**Chance 6** (Gary D., former member of the USAF Security Service, 1/16, <http://garydchance.tripod.com/surveillance/>, accessed 7-6-11, CH)

In a democracy where the people's representatives make laws to ensure that the social order is preserved and society functions as optimally as possible **there are grave risks from surveillance activities carried out by organisations** operating outside the law and the legal justice system. **This activity poses a grave threat and danger to freedom and the institutions of such a democracy**, namely, **the legal justice system, proper functioning by law enforcement and the very process of law making itself. Complexity and problems abound when surveillance activity is undertaken especially in light of the newest technology used toward that end.** There are many **complex issues** which **need to be addressed** immediately in light of world events **to** preserve and **protect the freedoms enjoyed by all in such democracies while ensuring that the security of all those in such democratic states is simultaneously preserved.**

**Democracy solves nuclear and biological warfare, genocide, and environmental destruction**

**Diamond, Hoover Institution, Stanford University 95**

(Larry, December, Promoting Democracy In The 1990s, 1p.http://www.carnegie.org//sub/pubs/deadly/diam\_rpt.html )

**Nuclear, chemical and biological weapons continue to proliferate. The very source of life on Earth, the global ecosystem, appears increasingly endangered. Most of these** new and unconventional **threats** to security **are associated with** or aggravated by **the weakness or absence of democracy, with its provisions for legality, accountability,** popular sovereignty **and openness.** The experience of this century offers important lessons. **Countries that govern themselves in a truly democratic fashion do not go to war with one another**. They do not aggress against their neighbors to aggrandize themselves or glorify their leaders. **Democratic governments do not ethnically "cleanse" their own populations, and they are much less likely to face ethnic insurgency. Democracies** do not sponsor terrorism against one another. They **do not build weapons of mass destruction to use on** or to threaten **one another.** Democratic countries form more reliable, open, and enduring trading partnerships. In the long run they offer better and more stable climates for investment. **They are more environmentally responsible because they must answer to their own citizens, who organize to protest the destruction of their environments**. They are better bets to honor international treaties since they value legal obligations and because their openness makes it much more difficult to breach agreements in secret. Precisely because, within their own borders, they respect competition, civil liberties, property rights, and the rule of law, democracies are the only reliable foundation on which a new world order of international security and prosperity can be built.

AT: Surveillance – Turn – East Asia Conflict

**Landsats key to remote sensing**

**Astronet 99** (4/ 9, <http://carlkop.home.xs4all.nl/landsat.html>, accessed 7-6-11, CH)

**Landsat's 27-year collection of land images serves those who observe and study the Earth**, those who manage and utilize its natural resources, and those who monitor the changes brought on by natural processes and human activities. The images provide information applicable to the broad and diverse needs of business, science, education, and government. **The data from Landsat spacecraft constitutes the longest, relatively high spatial resolution, multispectral record of Earth's continental surfaces as seen from space.** The record is unmatched in quality, detail, coverage, and value. **Landsat is the central pillar of the national remote sensing capability**. The Landsat-7 spacecraft was built to complement the research of NASA's Earth Science Enterprise, a long-term research program designed to study Earth's land, oceans, atmosphere, ice and life as a total integrated system. NASA's Goddard Space Flight Center manages the development of Landsat for the Earth Science enterprise, NASA Headquarters, Washington, D.C.

**Surveillance threatens East Asia war—tensions now create a unique brink that would demand US entanglement**

**Bruggeman 9** (David, researcher for Government-University-Industry Research Roundtable of the National Academies , GWU, 10/20, <http://www.gwu.edu/~spi/assets/docs/spacemil11.html>, accessed 7-6-11, CH)

**Future remote sensing issues extend beyond US** license **restrictions. Given the long-standing tensions inherent in East Asia, and the** recent added stress of North Korean missile development, **the potential for conflict is** moderately **high. Possible sources of conflict include missile launches by China over Taiwan, or North Korea over any country; territorial disputes in the Spratley or Kiril islands; or an armed conflict between China and Taiwan. Each potential conflict is problematic even without the complications added by use of remote sensing imagery.** Remote sensing imagery is an increasingly important source of intelligence. **While increasing** transparency can lessen tensions, it **might also escalate tensions and widen the scope of conflicts**. Some issues to consider: **Countries within the region may place pressure on the United States to exercise shutter control in times of tension**. The impact and implications of damage to commercially owned satellites and/or ground facilities during a conflict. Whether nations have indigenous imagery analysts, or whether they are dependent upon others for imagery analysis. **The mixed uses of imagery - it could be used either to provoke conflict, or to help defuse conflicts.**

AT: Surveillance – Turn – Human Rights

**Surveillance relinquishes all human rights**

**Chance 6** (Gary D., former member of the USAF Security Service, 1/16, <http://garydchance.tripod.com/surveillance/>, accessed 7-6-11, CH)

**The worst aspect of surveillance activity is its perversion by an abuse of its power wherein it is used to create the very outcome which it purports to be objectively observing. This is the real danger which has been the essence of this particular surveillance activity throughout its usag**e. Abuse of the surveillance process itself becomes the critical issue because **surveillance operates outside the legitimate democratic institutions putting absolute power into the hands of just a few individuals. That power is easily abused for its own sake.** There is no apparent redress for an individual in a democratic society subjected to such surveillance. This means that **the basic ideals of democracy are open to subversion from within resulting in the loss of freedom, justice, legitimate law enforcement and the proper function of government.**

**Human rights outweigh war**

**Shattuck 94 (**JOHN SHATTUCK, ASSISTANT SECRETARY OF STATE FOR HUMAN RIGHTS AND HUMANITARIAN AFFAIRS, 4/19/94 (*Federal News Service*, l/n)

I would like to start my testimony, Mr. Chairman, which I will summarize -- obviously, you have an extended statement, and I do apologize for the fact that it arrived perhaps later than it should have -- I'd like to start by offering some brief observations about what it means to advocate human rights and democracy in the post-Cold- War world, which is where we are today, of course. We are confronted by extraordinary changes all around us that are at once profoundly inspiring and deeply disturbing. Alongside a worldwide movement for human rights and democratization, which I think has transformed in many ways the political shape of the globe, we see stirrings of deep cultural and ethnic tensions. The principle of self-determination is being pursued and yet is itself a source of very deep human rights questions. These are not academic questions**. Around the world we are witnessing ugly and violent racial, ethnic and religious conflict** in Bosnia, Central Asia, Africa, most vividly, perhaps, right now in Rwanda, in the Sudan, but elsewhere, too, away from the cameras. The **international community clearly has not developed an adequate response** to these problems. **Why,** then, if they are so daunting, **has this administration made protecting human rights** and promoting democracy **a major part of our foreign policy agenda?** I think the answer lies not only in our American values but in also the strategic benefits to the United States. We know from historical experience that democracies are more likely than other forms of government to respect human rights, to settle conflict peacefully, to observe international law and honor agreements, to go to war with great reluctance, and rarely against other democracies, to respect the rights of ethnic, racial and religious minorities living within their borders, and to provide the social and political basis for free market economics. By contrast, Mr. Chairman, **the costs to the world of repression and authoritarianism are painfully clear**. In the 20th century, the **number of people killed by their own governments under authoritarian regimes is four times the number killed in all this century's wars combined. Repression pushes refugees across borders and triggers wars; unaccountable governments are heedless of environmental destruction, and the agenda for repression goes on in a very negative way. These, then, are the reasons why promoting democracy and human rights are at the forefront of our foreign policy agenda**. What are our strategic objectives? In a word, Mr. Chairman, **we aim**, perhaps not yet successfully, **to incorporate human rights and democracy into the mainstream of our foreign policy-making.**

**AT: Surveillance – Turn – Inefficiency**

**More surveillance undermines intel—excess information decreases ability to effectively detect and shift through real threats and kills liberty**

**Greenwald 10** (Glenn, civil rights litigator, Salon, 9/27, <http://www.salon.com/news/opinion/glenn_greenwald/2010/09/27/privacy>, accessed 7-6-11, CH)

**Leave aside the fact that endlessly increasing government surveillance is not only ineffective in detecting Terrorist plots and other crimes, but is actually counterproductive, as it swamps the Government with more data than it can possibly process and manage.** What **these Obama proposals illustrates is just how far we've descended in the security/liberty debate, where only the former consideration has value, while the latter has none.** Whereas it was once axiomatic that the Government should not spy on citizens who have done nothing wrong, that belief is now relegated to the civil libertarian fringes. Concerns about privacy were once the predominant consensus of mainstream American political thought. Justice Louis Brandeis famously wrote in dissent in the 1928 case Olmstead v. United States (emphasis added): **The makers of our Constitution undertook to secure conditions favorable to the pursuit of happiness**. They recognized the significance of man's spiritual nature, of his feelings, and of his intellect. They knew that only a part of the pain, pleasure and satisfactions of life are to be found in material things. They sought to protect Americans in their beliefs, their thoughts, their emotions and their sensations. **They conferred, as against the Government, the right to be let alone -- the most comprehensive of rights, and the right most valued by civilized men.**

AT: Surveillance – Turn – Uncertainty Backlash

**Secrecy of Landsat usage undermines itself—rivals will assume the worst, triggers their impacts**

**Hecht 6** (Jeff, space reporter, New Scientist, Sept, <http://www.spacetransparency.org/Space_Transparency/Home_files/bulletinofatomic.pdf>, accessed 7-8-11, CH)

Still, despite these concerns, some **defense analysts worry** less about dual use per se than **about how such technology is evolving.** “Dual use is great,” says Michael Katz-Hyman, a research associate at the Stimson Center. “NASA should work on how to repair and inspect satellites, but **you want to be sure no one misinterprets what you’re doing.” If the United States is unclear about its intentions, other nations may assume the worst.** KatzHyman says an international code of conduct is needed to spell out procedures in space, similar to what the 1972 Incidents at Sea Agreement did for maritime concerns. For example, if a nation wanted to send a robot to inspect another country’s spacecraft, it would need to give advance notice and explain its actions.

Imperialism – Link – Control

**Surveillance kills individual privacy**

**Kane 11**(Brian, Associate Prof of Theological Ethics, Allentown College, 4/28, <http://www.stthomas.edu/cathstudies/cst/conferences/puebla/papers/kane.pdf>, accessed 7-6-11, CH)

**With this wealth comes a plethora of individual and social justice issues. For individuals, concerns about privacy predominate.** **2 Employees may presently be monitored for e-mail use, and some businesses are taking steps to regulate at work behavior** 3 As private . **citizens, individuals fear a loss of privacy, as witnessed by the strong response to the data collection** features of the Intel Pentium III chip. Worldwide, nations have begun to consider the possible ways in which the needs of the individual person intersect with the common good.

**The US uses intelligence to exercise control—causes social injustice**

**Kane 11**(Brian, Associate Prof of Theological Ethics, Allentown College, 4/28, <http://www.stthomas.edu/cathstudies/cst/conferences/puebla/papers/kane.pdf>, accessed 7-6-11, CH)

Perhaps **one of the most significant changes of the past millenium that will have profound implications for the future is the increasing complexity of our information technology. Developments in computers, and information infrastructures have changed the way in which we are able to access, collect, and use information**. Both the technology and the information itself must increasingly be thought of in terms of wealth. Presently, according to Forbes, the world's richest person is William H. Gates, III, founder of Microsoft, who has a net worth of approximately $92.73 Billion 1 What is . particularly fascinating about this is that **this wealth comes largely from the ability to control and process information**. As opposed to previous ages, **wealth in our time comes not so much from the ability to exploit natural resources, but rather in the ability to use information**. The raw materials for computers, silicon, sand and some metals, are not especially valuable as natural resources. It is in the use of these materials to create machines that can process information that they have some value.

**Data distribution causes US imperialism and ethical conflict**

**Kane 11**(Brian, Associate Prof of Theological Ethics, Allentown College, 4/28, <http://www.stthomas.edu/cathstudies/cst/conferences/puebla/papers/kane.pdf>, accessed 7-6-11, CH)

**With this wealth comes a plethora of individual and social justice issues. For individuals, concerns**

**On a broad, social level, control of the resources for collecting information and distributing it, the channels by which the information is collected, and the ultimate end uses of the information are all areas where ethical conflicts can occur. If some groups are able to monopolize the ability to collect information, it could mean that only some people in the world would have the means by which they can control resources**, perhaps to **the detriment of others**. A coherent theory of the ethical use of information is therefore essential.

Imperialism – Link – Environmental Exploitation

**Landsats surveillance used for environmental exploration**

**Brown 92** (George, Former Rep of California on Committee on Science, Space, and Technology, Journal of Soil and water Conservation, April, <http://www.jswconline.org/content/47/2/126.extract>, accessed 7-6-11, CH)

TWENTY years ago this summer, the United States launched the world's first civilian satellite designed to collect images of Earth from space. This marked the beginning of **the Landsat program**, which has encompassed five satellites during the past two decades. These **satellites collect multispectral images that are used throughout the federal government by both civilian and national security users**, broadly within the private sector, and **around the globe for such purposes as environmental management, crop assessments, and oil and gas exploration.** The continuous 20-year record of Landsat data represents an invaluable component of global change research. **This data base provides a unique record of environmental conditions on the planet over the past two decades-a record that will be vital for such applications as tracking the rate of deforestation in the tropics and the extent of desertification in Africa**. In fact, the design of the U.S. Global Change Program was predicated on the continuation of the Landsat program.

**Their advocacy of environmental control is another example of neo-imperialism**

**Roka 6** (Krishna, Teaching Assistant Sociology, Mahedra M.C. Baglung, 12/5, “Emergence of Neo-imperialism and The Perils Confronting Natural Resources of Developing Nations”, accessed 7-6-11, CH)

**The** two **important areas adversely affected by both the old and new imperialism forces are natural resources** and culture. Of these two areas this paper focuses on natural resources. **History is abundant with the loss of natural wealth and cultural value in the conquered nations. Tracts and tracts of forests disappeared across the globe, millions of animals were killed in land and sea, hundreds species have become extinct, many pristine areas were converted to plantations and agricultural** lands; and amassing of the valuable and income by the conquerors, are just a few of the many. Culturally**, hundreds of indigenous culture and people have either disappeared or have been forced to change to the new culture of the Europeans**. The best example for both can be found in South America, where the nations lost both their natural resources and cultural values with the presence of Europeans; collapse of the Inca and Mayan empire is the best example of the impact of the conquistadors.

**Landsats data enables the exploitation and deforestation of South America**

**New Scientist 87** (10/22, “New Scientist”, accessed Google Books, 7-6-11, CH)

In Brazil and Argentina deforestation is a deliberately planned policy for economic and industrial expansion, a strategy that many scientists deplore. **Landsat pictures enable the governments to strip jungle and forest areas more effectively. Industrialists** also **use satellite data to exploit natural resources more effectively for export. One example is the artificial inflation of the price of coffee to boost profit for the few major cartels that control offshore markets. The cartels can do this because they receive Landsat data, which is more accurate than the information received by financial institutions. The combined effect of increased deforestation and enhanced industrialisation is creating a major impact** on Brazil **that** some scientists say **will adversely affect the whole of South America**. Neighbouring countries have begun to use evidence from satellites to show Brazil how damaging its policies of internal development have become.

Imperialism – Link – General

**Landsats are another instance of US imperialism**

**Lindgren 88** (David T., Prof @Dartmouth and remote sensing consultant, Bulletin of the Atomic Scientists, April, “Commercial Satellites Open Skies”, accessed 7-3-11, ebsco, CH)

But the idea of open skies, even for earth resources management, did not evolve smoothly. **Objections to Landsat were brought before the United Nations legal subcommittee of the Committee on the Peaceful Uses of Outer Space. Several nations,** including Argentina and Brazil, **felt that sovereignty over natural resources extended to the dissemination of information about** them. Accordingly, **they proposed that information on natural resources should not be made public without prior consent of the country in which the resources were located. Third World nations, in particular, feared that the more industrially developed nations could negotiate leases for mineral exploration at an advantage since the latter had greater technical expertise to analyze the data. The United States held ou**t, however**, on the grounds that there were no legal restrictions on the right to remotely acquire earth data** as long as it was for peaceful purposes. Furthermore, t**he United States argued, open dissemination of the data was more likely to enhance than diminish the ability of a state to control development of its resources**. As nations began using Landsat data and constructing their own receiving stations, the controversy temporarily subsided.

Imperialism – Link – Resource Mapping

**Landsats lead to resource mapping**

**Lauer et al 97** (Donald, researcher for USGS, Stanley A. Morain, and Vincent V. Salomonso, American Society for Photogrammetry, July, <http://www.asprs.org/a/publications/pers/97journal/july/1997_jul_831-838.pdf>, accessed 7-6-11, CH)

Civilian **land remote sensing satellite systems** are currently being operated by the United States, France, India, Japan, Canada, Russia, and the European Space Agency. On command, all of them **make measurements of the land surface,** transmitting data to a global network of strategically located ground receiving stations. Data from **these Earth-observing satellites are used to map, monitor, and manage Earth's natural and cultural resources.**

**Geographic knowledge is a tool of imperialism**

**Hudson 72** (Brian, contributor, Antipode, 12/9, <http://www.praxis-epress.org/CGR/13-Hudson.pdf>, accessed 7-6-11, CH)

**The resources of a world now undergoing complete partition were regarded in Europe as “the gifts the gods provide as the white man‟s opportunity for acquiring wealth and power”** (Holdich, 1916, 243). Naturally, the colonial powers were anxious to discover the economic potential of the territories which they had acquired or whose annexation they were considering. **Here again geographical knowledge was recognized as an invaluable tool of imperialism**. Clements Markham observed in 1893, “The time for desultory exploring expeditions is past” (Markham, 1893, 487). A sound scientific approach involving appropriately trained workers in the field has now required. Geographers could not only provide useful information about a country‟s resources but were also able to advise how these might best be exploited. **Richthofen**, for example, **was sent** by his government **on trade and resource mapping missions** in Asia and America. He became an influential adviser to the Prussian Government and a member of the Kolonialrat [Colonial Advisory]. As a result of his work in China he appreciated the importance of the Shantung Peninsula with its coalfield and favourable trading position, and he was largely responsible for Germany‟s acquisition of Kiaochow (Crone, 1970, 33). The “Geographical Factor in Imperial Problems” was stressed by Herbertson in his presidential address to Section E of the 1910 British Association meeting in Sheffield (Herbertson, 1910, 447-8). Here he advocated the use of university trained geographers in mapping the economic value of different parts of the world and went further to suggest that geographical laws should be applied to forecast future economic development. Herbertson foresaw the establishment of Geographical Statistical Departments in various countries to undertake research of this kind. **This he claimed was greatly needed in Britain and its Empire for which an Imperial Intelligence Department could be developed.** The universities were expected to provide the trained men for this research, and the necessity for geographical education at university level was thus further emphasized (Herbertson, 1910, 478).

**Mapping justifies the geographic violence that strips the colonized of their rights**

**Taylor 5** (Julie J, PhD Candidate for a Degree of Philosophy in Development Studies, St. Antony’s College, April, <http://www.iapad.org/publications/ppgis/julie_taylor_thesis.pdf>, accessed 7-6-11, CH)

As Crush emphasizes, **imperialism itself was an act of geographical violence through which space was explored, reconstructed, re-named and controlled** (Crush 1994: 337). Amongst others, **maps have been the weapons of this violence**, as land was cut through with geographic lines, often blind to the presence of its indigenous inhabitants, in order to create space as an exploitable resource (McHaffie 1995). **Maps were produced to create property registers, garner knowledge about ‘national resources’, modernize and develop ‘the hinterlands’, and present the nation as a graphically real proposition for colonizing and investing** (Craib 2000: 28), such that “**When overlaid with an abstract grid, land became a socially and historically flat surface for possession and control, a surface that was static and ahistorical**” (ibid 2000: 20). Although these interpretations of maps as colonizing tools are sometimes over-simplified, **they point to the fundamental relationship between maps and power.**

Imperialism – Impact – War

**Pursuit of US empire justifies endless war**

**McLaren and Kincheloe in 5** (Peter Professor of Education, Graduate School of Education and Information Studies @ UCLA and Joe, professor and Canada Research Chair at the Faculty of Education, McGill University in Montreal, Quebec, Canada. The Sage Handbook of Qualitative Research, Third Edition, Eds Norman Denzin and Yvonna Lincoln)

In this context, it is important to note that **we understand** a **social theory as a** map or a **guide to the social sphere**. In a research context, **it** does not determine how we see the world but **helps us devise** questions and **strategies for exploring it**. **A critical** social **theory is concerned** in particular **with issues of power and justice and the ways** that the economy; matters of race, class, and gender; **ideologies; discourses**; education; religion **and other** social **institutions**; and cultural dynamics **interact to construct a social system** (Beck-Gernsheim, Butler, & Puigvert, 2003; Flccha, Gomez, & Puigvert, 2003). Thus, in this context we seek to provide a view of an evolving criticality or a reconceptualized critical theory. **Critical theory is never static**; it is always evolving, changing in light of both new theoretical insights and new problems and social circumstances. The list of concepts elucidating our articulation of critical theory indicates a criticality informed by a variety of discourses emerging after the work of the Frankfurt School Indeed, some of the theoretical discourses, while referring to themselves as critical, directly call into question some of the work of Horkheimer, Adorno, and Marcuse. Thus, diverse theoretical traditions have informed our understanding of criticality and have demanded understanding of diverse forms of oppression including class, race, gender, sexual, cultural, religious, colonial, and ability-related concerns. The evolving notion of criticality we present is informed by, while critiquing, the post-discourses—for example, postmodernism, poststructuralism, and postcolonialism. In this context, critical **theorists become detectives of new theoretical insights, perpetually searching for new and interconnected ways of understanding power and oppression and the ways they shape everyday life** and human experience. In this context, **criticality and the research it supports are always** evolving, always **encountering new ways to irritate dominant forms of power, to provide more evocative and compelling insights.** Operating in this way, an evolving criticality is always vulnerable to exclusion from the domain of approved modes of research. **The forms of social change it supports always position it in some places as an outsider, an awkward detective always interested in uncovering social structures, discourses, ideologies, and epistemologies that prop up both the status quo and a variety of forms of privilege. In the epistemological domain**, white, male, class elitist, heterosexist**, imperial, and colonial privilege often operates by asserting the power to claim objectivity and neutrality.** Indeed**, the owners of such privilege often own the "franchise" on reason and rationality.** **Proponents of an evolving criticality possess a variety of tools to expose such oppressive power politics.** Such proponents assert that critical theory is well-served by drawing upon numerous liberatory discourses and including diverse groups of marginalized peoples and their allies in the nonhierarchical aggregation of critical analysts {Bello, 2003; Clark, 2002; Humphries, 1997). **In the present era, emerging forms of neocolonialism and neo-imperialism in the United States move critical theorists to examine the wavs American power operates under the cover of establishing democracies all over the world. Advocates of an evolving criticality argue**—as we do in more detail later in this chapter—**that such neocolonial power must be exposed so it can be opposed in the United States and around the world. The American Empires justification in the name of freedom for undermining democratically elected governments** from Iran (Kincheloe, 2004), Chile, Nicaragua, and Venezuela to Liberia (**when its real purpose is to acquire geopolitical advantage for future military assaults, economic leverage in international markets, and access to natural resources) must be exposed by critical-ists for what it is—a rank imperialist sham** (McLaren, 2003a, 2003b; McLaren & Jaramillo, 2002; McLaren & Martin, 2003). **Critical researchers need to view their work in the context of living and working in a nation-state with the most powerful military-industrial complex in history** that is shamefully using the terrorist attacks of September 11 to advance a ruthless imperialist agenda fueled by capitalist accumulation by means of the rule of force (McLaren & Farahmandpur,2003). Chomsky (2003), for instance, has accused the U.S. government of the "supreme crime" of preventive war (in the case of its invasion of Iraq, the use of military force to destroy an invented or imagined threat) of the type that was condemned at Kuremburg. Others, like historian Arthur Schlesinger (cited in Chomsky, 2003), have likened the invasion of Iraq to Japan's "day of infamy'' that is, to the policy that imperial Japan employed at the time of Pearl Harbor. David G. Smith (2003) argues **that such imperial dynamics are supported by particular epistemological forms. The United States is an epistemological empire based on a notion of truth that undermines the knowledges produced by those outside the good graces and benevolent authority of the empire.** Thus, in the 21 st century, **critical theorists**

Politics – Landsat Unpopular – Spending

Landsat is perceived as wasteful spending – not within the USGS mission

Lamborn 3/9 (Doug, Republican, Chairman, Subcommittee on Energy and Mineral Resources, hearing on USGS spending priorities, 2011, http://naturalresources.house.gov/UploadedFiles/LambornOpeningStatement03.09.11.pdf, accessed 7-9-11, JMB)

We will be reminded today that the important mission of the Survey to combat and address geologic hazards is slated for a reduction in funding. As we were reminded just over a year ago in Haiti, earthquakes can and do kill hundreds of thousands of people, in the case of Haiti a magnitude 7 earthquake killed over 230,000 people. We were also reminded of the importance of mitigation as an equally devastating magnitude 8 earthquake in Chile killed approximately 500 people. Many folks are deeply concerned that the Administration's proposal to reduce funding for the geologic hazards program will hinder the Nation's ability to prepare and mitigate for potential natural disasters. More troubling is the proposed budget includes significant spending increases for well-intended but questionable scientific endeavors with no measurable benefit to society. In addition, as the Survey is stretched thinner, the traditional core responsibilities such as mapping, geologic mapping and ensuring "adequate, stable, and economical materials supplies essential to national security, economic well-being, and industrial production;" are displaced with fashionable programs with limited if any measurable benefit to society. As we see the Survey gaining greater responsibility for the Landsat satellites that help us understand our earth, we also see the Survey failing to help keep duplication of mapping efforts from wasting our precious lax dollars. This is an area that I am particularly concerned about; in 2009 this Subcommittee heard testimony identifying billions of dollars wasted in the stimulus bill on duplicative mapping efforts. I expect today we will hear that such duplication and waste continue in our federal agencies. It is the mission of this Subcommittee to find opportunities to root out waste, duplication and streamline government. You can be assured this committee will be examining this issue in more depth in the future. Finally, I'm wondering where the "geology" is at the United States Geological Survey. It's been completely swallowed up by all the 'new missions and reorganization' at USGS. If I was to guess the name of your agency by looking at your budget it would be called the United States Ecosystem Restoration and Climate Monitoring Service not the United States Geological Survey. It's time that the survey get back to its roots providing the foundational knowledge of the nation's geology, energy and mineral resources, geologic structure and hazards, and a functional map base for the United States; knowledge that allows slates, local governments, tribal nations, territories and the private sector to make informed decisions regarding economic development, private sector investment, conservation and job creation.

 No turns – even if observation is popular in the abstract, congress doesn’t want to spend more

Werner 9 (Debra, 12/31, http://www.spacenews.com/civil/091231-nasa-budget-earth-science-lags-behind.html, accessed 7-9-11, JMB)

That success has led to increasing pressure to extend NASA’s Earth monitoring program by launching new spacecraft and instruments, but not to the funding needed to carry out the new missions, said Michael Freilich, director of NASA’s Earth Science Division at the agency’s Washington headquarters. “There is relentless pressure to expand the scope of our contributions,” Freilich said Dec. 17, during a meeting here of the American Geophysical Union. “People want us to do more. They for some reason don’t see a way of getting us additional resources.”

Landsat contentious

Loarie et al 8 (Scott R. Loarie, Lucas N. Joppa and Stuart L. Pimm

Nicholas School of the Environment and Earth Sciences, http://www.earthaudit.org/Climate\_Velocity/Loarie/Reprints/2008/Loarie\_et\_al\_TREE\_2008.pdf, accessed 7-9-11, JMB)

Neither set of authors commented on our main concern – the slow accumulation of high-resolution imagery in environmental priorities. Clearly, it is Landsat that is contentious

Politics – Earth Observation Unpopular

Pol cap key to Earth Observation

Lambright 10 (W. Henry, professor of political science and public administration and director of the Center for Environmental Policy and Administration, 10/7, http://history.nasa.gov/sp4801-chapter16.pdf, accessed 7-9-11, JMB)

The dilemma NASA now faces in designing a post-EOS future is shared with other agencies associated with the global change initiative of the early 1990s this interagency initiative never was fully implemented, coordinated, or led. There is a need to re-energize the vision many of the early advocates of EOS and USGCRP had—a strong earth system science and a capacity to predict global change (especially climate change)—that can be put to policy use. Achieving such a vision requires a planetary perspective and that is NASA’s distinctive environmental competence. It is based on NASA’s mission to the home planet and the comparative approach derived from its work beyond earth. That perspective needs renewal and advocacy for a twenty-first century setting, that setting almost surely will be influenced, perhaps dramatically, by events involving climate change, remaking NASA’s environmental mission, with resources to match, and connecting that role to other agencies and nations is a challenge. It is less a problem in science and technology, however, and much more a challenge of political will.

Politics – USGS Unpopular – Repubs

Repubs don’t like USGS spending – volcano monitoring

CNN 9 (Feb 25, http://articles.cnn.com/2009-02-25/politics/jindal.volcanoes\_1\_volcano-wasteful-spending-monitoring?\_s=PM:POLITICS, accessed 7-9-11, JMB)

Louisiana Gov. Bobby Jindal's swipe at federal spending to monitor volcanoes has the mayor of one city in the shadow of Mount St. Helens fuming. "Does the governor have a volcano in his backyard?" Royce Pollard, the mayor of Vancouver, Washington, said on Wednesday. "We have one that's very active, and it still rumbles and spits and coughs very frequently." Jindal singled out a $140 million appropriation for the U.S. Geological Survey as an example of questionable government spending during the GOP response to President Obama's address to Congress Tuesday night.

Politics – Environment Unpopular – Repubs

Republicans oppose ecosystem and climate programs within USGS

Kronig 3/23 (David A., 2011, American Institute of Physics, http://www.aip.org/fyi/2011/038.html, accessed 7-9-11, JMB)

Republicans on the Energy and Mineral Resources Committee zeroed in on whether USGS was too focused on climate change monitoring and ecosystem restoration at the expense of its natural hazards and mineral resources programs, which they said can save lives and create jobs. In his opening statement, Subcommittee Chairman Doug Lamborn (R-CO) said “I’m wondering where the ‘geology’ is at the United States Geological Survey. It’s been completely swallowed up by all the ‘new missions and reorganizations’ at USGS. If I was to guess the name of your agency by looking at your budget it would be called the United States Ecosystem Restoration and Climate Monitoring Service not the United States Geological Survey.” Lamborn opened his questioning of USGS Director Marcia McNutt by quoting the day’s oil and gas prices and their impact on the U.S. economy. “How can the Geological Survey in its budget continue to support cuts in the energy and minerals programs while at the same time increasing significantly the budgets for ecosystem restoration and climate change?” McNutt answered by saying that tough choices had to be made in order to keep the budget to an appropriate level, but that there is not necessarily the bright-line distinction between the various missions that the Chairman’s question implied. By way of example, she cited the Survey’s ability to use ecosystem restoration funds to determine appropriate siting of wind and solar energy production facilities. Rep. Chuck Fleischmann (R-TN) echoed a theme raised by Lamborn, asking why USGS would cut its natural hazards program, which he said could save lives in the near future, while maintaining its climate change program. McNutt answered that in fact the climate change program will take a substantially larger cut than the natural hazards program under the proposed budget.

Politics – Climate Unpopular – Republicans

Republican perception of climate change research causes backlash

The Space Review 2/14 (Space Politics, 2011, http://www.spacepolitics.com/2011/02/14/congressional-reaction-to-the-budget-request/, accessed 7-9-11, JMB)

Rep. Pete Olson (R-TX) criticized the budget’s perceived emphasis on climate change research over human spaceflight and said he had a solution: I have a plan to preserve the human space flight budget by transferring money from NASA’s unneeded climate research programs, while keeping NASA’s overall budget at 2008 levels. Climate research is not a NASA mission and there are plenty of other agencies already doing this work. My plan is a win for America and a win for the taxpayers. I’m working with NASA allies, the House budget and spending committees and the Republican leadership to enact these priorities. In the same release Olson also claimed that, “We fought this battle last year and won, and I believe we will do so again.” Rep. Bill Posey (R-FL), who ,like Olson, signed a letter last week to House appropriators asking them to transfer climate change funds within NASA to human spaceflight, made a similar call in his own reaction to the budget: After the Administration let NASA flounder for the past two years, a flawed NASA authorization bill was finally agreed to and signed into law. Now the Administration is proposing to ignore this law, placing a higher priority on global warming research and making cuts to the next generation launch vehicle.

Politics – New Agency Unpop

**Creating a new agency for remote sensing costs a lot of political capital**

**Szajinfarber et al 9** (Zoe Szajnfarber,i Thomas G. Beatty,ii Matthew W. Petersen,iii Anna Vasilyeva,iv D. Brent Whitev and Annalisa L. Weigelvi Massachusetts Institute of Technology, i Doctoral Research Assistant, Engineering Systems Division, 17-110; Cambridge MA, 02139, AIAA Student Member ii Graduate Research Assistant, Department of Physics, iii Undergraduate Research Assistant, Department of Aeronautics & Astronautics, iv Graduate Research Assistant, Department of Aeronautics & Astronautics, v Doctoral Research Assistant, Department of Aeronautics & Astronautics, vi Assistant Professor of Aeronautics and Astronautics and Engineering Systems, 11/3, http://seari.mit.edu/documents/preprints/SZAJNFARBER\_SP\_AIAA09.pdf, accessed 7-5-11, JMB)

Precedence for creating a new agency to address a new problem can be found in the case of the creation of NASA in the 1950s. Most scholars agree that the NASA Act was successful; it created an agency dedicated exclusively to space and likely enabled the success of project Apollo. 20 However, as a basis for assessing the new agency option in the context of remote sensing, there exist important differences to between NASA and the hypothetical “remote sensing agency” that are worth highlighting. Firstly, **whereas space was a new enterprise in the 50s, remote sensing is already a mature domain today. The question** at hand **is** not where to develop a new set of competencies, rather **how to organize existing competencies**. Second, at the time of NASA’s inception, space was an issue of primary policy. While satellite remote sensing can inform many of the central policy issues today, **labeling remote sensing as a hot policy topic today would be significantly overstating matters. Setting aside for a moment the practical reality that enacting a new agency requires an act of congress, to make the new agency viable, existing expertise**, which are currently scattered across the multiplicity of agencies involved, **would either have to be centralized or duplicated. As a result**, however the restructuring were to happen, **several agencies would either be losing one of their core competencies, or find themselves contracting to another federal agency. Neither scenario will be readily accepted. Thu**s, while structurally speaking, this is the most efficient option, **since it** also **requires the most political capital, it would be hardest to implement. The requisite political inertia** likely **does not exist at this time,** but it may in the future.

Politics – Obama Gets the Blame for Landsat

Obama will get the blame – supports NLIP

McNutt 3/17 (Marcia, USGS director, congressional hearing on 2012 USGS budget, http://findarticles.com/p/news-articles/political-transcript-wire/mi\_8167/is\_20110320/rep-mike-simpson-holds-hearing/ai\_n57124204/?tag=mantle\_skin;content, accessed 7-9-11, JMB)

The President's 2012 budget does include provision to begin the National Land Imaging Program as you've mentioned. It's a home for Landsat's series of satellites. Landsat over its nearly 40 year history of continuous monitoring of Earth from space has become the gold standard for revealing land use from space on a planetary scale at 30 meter resolution.

Link – Space Debris

**LandSats over-crowded now—new developments would cause space debris**

**USGS 11** (US Geological Survey, 3/10, <http://landsat.usgs.gov/documents/about_LU_Vol_5_Issue_1.pdf>, Vol. 5, Issue 1, accessed 7-3-11, CH)

 **Both Landsat 5 and Landsat 7 orbit the earth** at 705 km above the surface (about 435 m) **and travel at around 17,000 miles per hour. At these speeds, crashing into something else, like another orbiting satellite or space debris, could do major damage**. When a communication satellite owned by Iridium (a U.S. company) collided with a non-functioning Russian satellite (COSMOS 2251) in February 2009, it created over 2,500 pieces of debris, and that doesn’t count the small pieces! **In July of 2010, two pieces of debris from the Iridium/Cosmos 2251 collision came close enough to the Landsat spacecrafts to cause some concern** (called conjunctions). **While maneuvers can be done to avoid collisions, it uses fuel which is vital for normal operations**. In these instances, the closest debris was 1.7 km, considered far enough away to avoid a maneuver. In August however, Landsat 5 was heading within 56 m (183 ft) of COSMOS 2251 debris, so an avoidance maneuver was conducted on August 24 th **In all, there were 12 conjunctions in August that required monitoring to ensure spacecraft safety.**

AT: Only NASA Has Capabilities

NASA no longer key to space -- Japan and other international actors all have the capability

Sterner 7/8 (Eric, fellow at the George C. Marshall Institute, Kennebec Journal, <http://www.kjonline.com/opinion/columnists/5-myths50-years-from-moon-goal-to-last-shuttle-flight_2011-07-07.html>, accessed 7-9-11, CH)

Those days are over. Nine countries, including India, Israel and Iran, have placed payloads in orbit. More than 50 nations design, deploy, own or operate satellites without U.S. involvement. China and Brazil, for example, have been co-developing Earth observation satellites for years. Japan and China have mapped the moon in considerable detail. India launched its own robotic moon mission in 2008, with a planned follow-up mission in cooperation with Russia. The United States may still have the largest, most ambitious civil program in the world, but it no longer solely charts the world's future in space.

Japan CP – Solvency

JAXA ALOS satellite monitors the environment

JAXA 11 (5/12, <http://www.jaxa.jp/projects/sat/alos/index_e.html>, accessed 7-8-11, CH)

The Advanced Land Observing Satellite "DAICHI" (ALOS) has been developed to contribute to the fields of mapping, precise regional land coverage observation, disaster monitoring, and resource surveying. It enhances land observation technologies acquired through the development and operation of its predecessors, the Japanese Earth Resource Satellite-1 (JERS-1, or Fuyo) and the Advanced Earth Observing Satellite (ADEOS, or Midori). ALOS has three sensors: the Panchromatic Remote-sensing Instrument for Stereo Mapping (PRISM), which is comprised of three sets of optical systems to measure precise land elevation; the Advanced Visible and Near Infrared Radiometer type 2 (AVNIR-2), which observes what covers land surfaces; and the Phased Array type L-band Synthetic Aperture Radar (PALSAR), which enables day-and-night and all-weather land observation. "DAICHI" will be used not only for cartography, but also for regional and disaster monitoring. DAICHI's remote-sensing equipment enables precise land coverage observation and can collect enough data by itself for mapping on a scale of 25,000 to 1. without relying on points of reference on the ground. It is expected to play an important role in cartography by providing maps of Japan and other countries, including those in the Asia-Pacific region, which is one of ALOS's main objectives. Other objectives include regional observation for harmonization between the environment and development on Earth, domestic and overseas disaster monitoring and resource surveys. Its contributions to the mitigation of environmental destruction and natural disasters will make it an essential satellite for our future. It was launched by the H-IIA launch vehicle No.8 from the Tanegashima Space Center (TNSC) in January 24, 2006. Along with the start of the regular operations, JAXA also started providing observation data (called "ALOS data") to the public on October 24, 2006.

Technologically feasible—Japan monitoring Earth since 2005

Clark 5 (Stephen, staff, Space.com, <http://www.space.com/1978-japanese-earth-observing-satellite-begins-mission.html>, accessed 7-8-11, CH)

A first-class, four-ton Earth remote sensing satellite was orbited by Japan Monday, setting off on a mission to help cartographers create more precise maps on a global scale, scientists in their search for natural resources and officials in response to disasters. The Advanced Land Observation Satellite was launched into space by an H-2A rocket that came to life with a thunderous roar before climbing into cloud-filled skies above the Yoshinobu complex on Tanegashima Island in the southern part of Japan. Liftoff of the 174-foot tall booster was on time at 0133 GMT (8:33 p.m. EST Monday), or in the mid-morning hours at the launch site. Fitted with two large solid rocket boosters and a pair of smaller strap-on motors, the H-2A launcher quickly sped away from Tanegashima on a southerly ground track. After a flight of 16 minutes and 30 seconds, the H-2A second stage deployed ALOS into the planned Sun-synchronous orbit with an altitude of around 430 miles above Indonesia's eastern islands.

Japanese EOS equivalent to any US technology

Space Activities Commission 5 (Special Subcommittee for Earth Observation, July, <http://www.mext.go.jp/b_menu/shingi/uchuu/reports/05120701/002.pdf>, accessed 7-9-11, CH)

Japan has developed and operated six geostationary satellites from the development of Himawari, based on the technologies introduced by the United States, up to the Multifunctional Transport Satellite 1 Replacement (MTSAT-1R), Himawari No. 6 in 2005. Japan also developed and operated five orbiting satellites up to the Advanced Earth Observing Satellite II (ADEOS-II), “Midori II” in 2002 and an additional three types of Earth observation sensors for orbiting satellites. These sensors are the Precipitation Radar (PR) on the Topical Rainfall Measuring Mission (TRMM), the Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) on Terra, and the Advanced Microwave Scanning Radiometer for EOS (AMSR-E) on Aqua. Procurement and operation of a geostationary satellite by the Ministry of Land, Infrastructure and Transport was achieved as “Himawari No. 6” through collaborative development and operation between the Japan Meteorological Agency, under the former Ministry of Transport as the user organization, and the former National Space Development Agency of Japan (NASDA) as a R&D organization. In contrast, no domestically-produced orbiting satellites have been operated since the accident of “Midori II” and only three sensors (PR, ASTER, and AMSR-E), which are flying on orbiting satellites operated by foreign organizations, are in operation.

Japan CP – Solvency

JAXA has the technical capabilities—leading global EOS now

Ochiai 11(Osamu, Associate Senior Administrator of Satellite Applications, JAXA, 3/28, <http://www.jaxa.jp/article/special/geo/ochiai_e.html>, accessed 7-8-11, CH)

Q. What kind of organization is the Group on Earth Observations (GEO)? Tropical Rainfall Measuring Mission TRMM GEO is an intergovernmental organization that is aiming to build the Global Earth Observation System of Systems (GEOSS), which was approved at the third Earth Observation Summit in 2005. As of November 2010, 85 countries and 61 international organizations, such as the European Commission and the World Meteorological Organization had joined GEO. GEOSS is an effort to make global-scale Earth observations in nine societal benefit areas: disasters, health, energy, weather, water, climate, ecosystems, agriculture, and biodiversity. Its aim is to observe the Earth in a comprehensive manner from space, from airplanes, on the ground and from oceans, and to integrate all the data in order to provide detailed and accurate scientific information to policymakers. GEOSS is currently at the mid-point of its 10-year implementation plan. JAXA is contributing to GEOSS by sharing data from its Earth observation satellites. Our Advanced Land Observing Satellite DAICHI, Greenhouse Gases Observing Satellite IBUKI, and Tropical Rainfall Measuring Mission (TRMM) are showing successful results in the fields of disaster management, weather and water. Q. What kind of program is GEO’s Carbon Project? GEO encourages participating countries to follow the GEOSS implementation plan, which consists of 241 goals to be achieved at the 2-, 6- and 10-year marks. The Carbon Project is one of those, in the area of climate change. It aims to research the current state of global carbon circulation through observations from satellites and ground facilities. Japan, led by JAXA, is collaborating on this project with the United States and European countries. The Carbon Project has three elements: to observe and monitor forest and carbon from satellites and from ground observation stations to take advantage of international synergies to observe greenhouse gases from space using satellites to establish international cooperation between scientists, and to coordinate observations according to the needs of users such as policymakers. We are working on identifying the users’ future needs, in order to reflect these in the plan. These include observation targets and methods, sensor resolution and frequency, and data processing and analysis technology. Q. How does JAXA contribute to GEO’s Carbon Project? Advanced Land Observing Satellite DAICHI Greenhouse Gases Observing Satellite IBUKI JAXA is involved in two elements of the GEO Carbon Project: Global Monitoring of Greenhouse Gases from Space, and Forest Carbon Tracking. IBUKI is expected to contribute to Global Monitoring of Greenhouse Gases from Space. One of its features is the ability to measure carbon dioxide and methane on a global scale within three days, if the observed areas are not covered by clouds. So we expect that once we complete further verification of its performance, IBUKI will provide valuable data for this project. DAICHI provides observation data for the Forest Carbon Tracking project. More specifically, in 2009 DAICHI created a classification image of the forest and non-forest areas of the globe with 10-meter resolution. It was the first satellite in the world to image all the forests of the Earth with such high resolution. Forests are crucial to curbing global warming because they absorb carbon dioxide. By measuring the world’s forest cover, we can find out how much carbon dioxide can be stored in forests, and this becomes very important when we think about global warming. DAICHI is one of several satellites monitoring the world’s forests. These include the European Space Agency’s Envisat and others. We are working on verifying the consistency of the data from all these satellites by observing the same locations at the same time. We have reported these observation results to organizations such as the United Nations Framework Convention on Climate Change (UNFCCC.) Q. What kind of expectations do GEO members have of JAXA? Expectations are growing for data from JAXA’s satellites. In particular, DAICHI and IBUKI are highly rated by many GEO participating countries and organizations. DAICHI not only contributes to climate studies through Forest Carbon Tracking; it has also been providing large amounts of data on natural disasters to the Sentinel Asia program, which monitors disasters in the Asia-Pacific area, and the International Disaster Charter, which performs global disaster monitoring. We also expect DAICHI to contribute to GEO’s work on ecosystems, agriculture and biodiversity. For example, just last fall a cooperation agreement was signed to use DAICHI for wetland research. Its data will be used in biodiversity research on birds that make their habitat in wetlands. As for IBUKI, many requests are coming in from all over the world to use its data for climate change research and other projects.

Japan CP – Solvency

Full JAXA EOS system now and developing new radars

Shimoda 9 (Haruhisa, Prof @Tokai U, SPIE, 9/22, <http://spie.org/x648.html?product_id=831136>, accessed 7-9-11, CH)

Five programs, i.e. TRMM, AMSR-E, ASTER, ALOS and GOSAT are going on in Japanese Earth Observation programs. ASTER has lost its short wave infrared, but other satellites/sensors are operating well, and TRMM operation will be continued at least to 2012. ADEOS2 was failed, but AMSR-E on Aqua is operating. ALOS (Advanced Land Observing Satellite) was successfully launched on 24th Jan. 2006. ALOS carries three instruments, i.e., PRISM (Panchromatic Remote Sensing Instrument for Stereo Mapping), AVNIR-2 (Advanced Visible and Near Infrared Radiometer), and PALSAR (Phased Array L band Synthetic Aperture Radar). PRISM is a 3 line panchromatic push broom scanner with 2.5m IFOV. AVNIR-2 is a 4 channel multi spectral scanner with 10m IFOV. PALSAR is a full polarimetric active phased array SAR. PALSAR has many observation modes including full polarimetric mode and scan SAR mode. GOSAT (Greenhouse Gas Observation Satellite) was successfully launched on 29, January, 2009. GOSAT carries 2 instruments, i.e. a green house gas sensor (TANSO-FTS) and a cloud/aerosol imager (TANSO-CAI). The main sensor is a Fourier transform spectrometer (FTS) and covers 0.76 to 15 μm region with 0.2 to 0.5 cm-1 resolution. After the unfortunate accident of ADEOS2, JAXA still have plans of Earth observation programs. Next generation satellites will be launched in 2011-2014 timeframe. They are, GCOM-W and GCOM-C (ADEOS-2 follow on), and GPM (Global Precipitation Mission) core satellite. GPM is a joint project with NASA and will carry two instruments. JAXA will develop DPR (Dual frequency Precipitation Radar) which is a follow on of PR on TRMM. Another project is EarthCare. It is a joint project with ESA and JAXA is going to provide CPR (Cloud Profiling Radar). ALOS F/O satellites are divided into two satellites, i.e. SAR and optical satellites. The first one of ALOS F/O is called ALOS 2 and will carry Lband SAR, while second one is called ALOS3 and will carry optical sensors.

Japanese studies and programs for earth observation satellites

National GCOS Activities in Japan 8 (9/22, <http://www.wmo.int/pages/prog/gcos/scXVI/08.3.3%20National%20GCOS%20Activities%20in%20Japan.pdf>, accessed 7-9-11, CH)

The Government of Japan has established and operates observation networks for atmospheric, oceanic and terrestrial essential climate variables on both operational and research bases, with a wide variety of platforms, such as surface observing stations, ships, aircraft and satellites. The Japan Meteorological Agency (JMA) operates some international centers in the framework of GCOS in order to promote exchange of observation data and to ensure high-quality datasets. The Government of Japan is actively participating in international earth observation programmes by satellites, operating a geostationary meteorological satellite and earth observation satellites.

Japan CP – Solvency – International Cooperation

Japan leads to international cooperation, solves best for aiding developing countries

Space Activities Commission 5 (Special Subcommittee for Earth Observation, July, <http://www.mext.go.jp/b_menu/shingi/uchuu/reports/05120701/002.pdf>, accessed 7-9-11, CH)

Japan has so far played a leading role in international cooperation concerning Earth observation, primarily in the field of satellites, through the Committee on Earth Observation Satellites (CEOS) and Integrated Global Observing Strategy (IGOS). Japan should enhance its leadership in the future to respond to expectations held by international society. It is important for Japan to introduce proposals for the global Earth observation plan and the data integration and provision system configuration plan when discussing GEO to lead the realization of the GEOSS 10-year implementation plan. It is also necessary for the Asia-Pasific regions to promote cooperation among nations in developing the Earth observation system and to positively promote capacity building in Earth observations, primarily to those of developing countries, through data delivery and other means

Japan leading international collaboration on GEO

Japan-EU Workshop on Climate Change Research 5 (1/21, <http://ec.europa.eu/research/environment/pdf/joint_statement_en.pdf>, accessed 7-9-11, CH)

It was noted with satisfaction that various valuable collaborations had been initiated and are ongoing following the first Japan-EU Workshop/Symposium on Climate Change held in Hakone/Tokyo in 1999 and the second EU-Japan Symposium on Climate Research in Brussels in 2003. Collaborations such as on climate modelling research using the Earth Simulator facility as being promoted between the Japanese ‘Kyousei Project 1-1 (K-1)’ group and the Hadley Centre of the UK Met Office were particularly welcomed and encouraged. Such collaboration is contributing to the forthcoming Fourth Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (IPCC). Moreover, EU and Japan are playing a leading role in the Group on Earth Observations (GEO) aiming at comprehensive, coordinated and sustained observations of the Earth system in order to provide better data support for effective decision making with regard to sustainable development and the use of natural resources.

Japan leads international EOS cooperation

Space Activities Commission 5 (Special Subcommittee for Earth Observation, July, <http://www.mext.go.jp/b_menu/shingi/uchuu/reports/05120701/002.pdf>, accessed 7-9-11, CH)

These circumstances exist not only in Japan but everywhere in the world. International society has recognized the necessity of enhanced efforts toward a comprehensive Earth observation system and has taken a large step toward establishing the system. The urgent necessity of coordinated observations of the Earth system was emphasized at the World Summit on Sustainable Development (WSSD) held in Johannesburg in September 2002. Reinforcement of international cooperation for global Earth observations was advocated at the G8 Evian Summit in June 2003. Japan expressed its willingness to positively contribute to forming an international cooperation framework for global Earth observations by proposing to hold a ministerial meeting in Tokyo. It was agreed at the 1 st Earth Observation Summit held in Washington, DC, in July 2003 that nations will cooperate to establish a comprehensive, coordinated, and sustained Earth observation system. The framework for a 10-year implementation plan to build up GEOSS (Global Earth observation System of Systems) was agreed upon at the 2 nd Earth Observation Summit held in Tokyo in April 2004. The GEOSS 10-year implementation plan was approved at the 3 rd Earth Observation Summit held in Brussels in February 2005. In response, each country now starts to implement GEOSS. Based on such international activities, the Council for Science and Technology Policy in Japan issued the “Earth observation Promotion Strategy” in December 2004 to clearly state the Japan’s basic policy in Earth observation and important issues to be strategically resolved.

Japan CP – Solvency – International Cooperation

Japanese soft power in international cooperation key to successful Earth monitoring

Council for Science and Technology Policy 5 (Government of Japan, 12/4, <http://www8.cao.go.jp/cstp/project/envpt/english/pub/eops_finnal1.pdf>, accessed 7-9-11, CH)

The current situation Contemporary Earth observation requires a large-scale infrastructure including observation platforms such as artificial satellites, ships and aircraft; observation networks including ground based observatories, radars, sondes (observation balloons), and oceanographic observation buoys; networks for the observation of solid Earth relating earthquakes, volcanoes, geodetic and geomagnetic phenomena; the accompanying information and telecommunication systems; and data systems for the management, storage and provision of observation data. While we need to use an observation system containing this large-scale infrastructure in order to meet the changing and diverse requirements of Earth observation, there are also indications that we will have to make substantial improvements and progress in the following areas: 1) the parameters of observation; 2) the quality of the data; 3) continuity and consistency; 4) time-space resolution, 5) time-space data coverage; and 6) convenience of access to data and information. Japan, Asia’s key nation, must take advantage of its geographical position, look beyond domestic needs and fulfill its share of responsibilities in the implementation of international Earth observation plans

Japan CP – Solvency – Funding

Funding for satellites—government push for space prominence

Japan Today 11 (1/12, <http://www.houseofjapan.com/aeronautics/japan-promotes-satellite-industry>, accessed 7-9-11, CH)

The government has decided to provide funding for developing countries’ space satellite projects under its official development assistance, government sources say. The first such aid funds are expected to be offered to Vietnam to help Japanese companies secure business related to a planned satellite launch by the Southeast Asian country. The government had previously opposed disbursing ODA funds for satellite projects on the grounds that the ODA program should primarily serve the goal of eradicating poverty. But Tokyo has changed its mind after seeing European countries successfully use ODA funding to benefit their aerospace industries. Japan now plans to extend low-interest, yen-denominated loans to emerging economies to support Japanese firms in the race to secure satellite-related deals abroad, they said. Since Seiji Maehara became foreign minister, the ministry has shifted its position on funding foreign satellite projects with aid funds as Maehara believes the government should help to promote Japanese infrastructure exports. Vietnam earlier asked Japan for loans to carry out its 30 billion yen project to build a space center and launch a weather satellite. Among Japanese companies, NEC Corp and Mitsubishi Electric Corp manufacture satellites. French and Belgian firms have already been awarded contracts in connection with the Vietnamese space program, apparently aided by their respective countries’ ODA. Japanese companies are afraid of falling behind Western competitors and only one Japanese satellite, with key components made by Japanese firms, has been delivered to a foreign buyer. Japan is aiming to export five to 10 satellites in five years’ time. The government earmarked funding for the development of advanced small satellites in its draft budget for the year from April. It will also send a delegation of government and corporate officials to Mongolia and Cambodia in February in the hope of winning satellite-related business.

Japan CP – Solvency – Spurs New Development

Japan leads space development—solves social and environmental problems that cause extinction

Space Activities Commission 5 (Special Subcommittee for Earth Observation, July, <http://www.mext.go.jp/b_menu/shingi/uchuu/reports/05120701/002.pdf>, accessed 7-9-11, CH)

“Ohsumi,” the first satellite in Japan, was launched in February 1970 together with the dreams of the nation. Space development in Japan has subsequently proceeded steadily, contributing to the evolution of science and enhancing the convenience of national life. This aspect will never change. The importance of ensuring the safety and security of society through wide-area environment monitoring and real-time understanding of the damage from disasters has increased rapidly in recent years. At the same time, obtaining information regarding land vegetation and ocean condition will enable more efficient and effective implementation of production activities, including agriculture and fisheries. Thus, the wide-range and continuous observing system is indispensable for social and economic development and for environmental preservation of Japan. Its implementation as part of the social infrastructure is crucial. Taking a global view of present conditions reveals that mankind is facing serious problems that may threaten its existence, such as global warming and widespread environmental destruction. Abnormal weather conditions and water shortages in various countries may cause a security problem in Japan which relies on overseas resources for much of its food supply. The Earth observation system will play an important role in predicting these problems on a global scale and will prevent or reduce the influences of such problems. It is therefore important for Japan to make positive efforts to develop this system, not only to fulfill our duties in international society but to firmly establish a base for Japan’s future existence.

The push for Japanese satellites will lead to innovation

Space Activities Commission 5 (Special Subcommittee for Earth Observation, July, <http://www.mext.go.jp/b_menu/shingi/uchuu/reports/05120701/002.pdf>, accessed 7-9-11, CH)

Japan is actively facilitating the promotion of global Earth observation and is expected to make positive contributions to the establishment of GEOSS. Efforts to achieve an Earth observation system with integrated satellite observations and in-situ observations can only be enhanced through an initiative of the government. Therefore, a basic policy must be implemented to continuously promote the development of Earth observation satellites under the initiative of the government. However, it is necessary to establish and promote a satellite development plan by considering the Earth observation system to be part of the social infrastructure of Japan and to propose long-term continuity and independent operation of data acquisition and provision. Japan should also further develop its unique technology by making the best use of its technological advantage and display international leadership in cooperation with the satellite development plans of other countries. It is crucial that Earth observation satellites that play an important role as part of the social infrastructure be reliable, and thus it is necessary to implement their development based on the policy found in “Measures to Be Taken in the Future for Improving the Reliability of Satellites” (March 2005, Promotion Subcommittee, Space Activities Commission). A well designed development strategy for sensors should place the highest priority on meeting the technical requirements for long-term observations. The development strategy should also consider that advanced technologies will lead to further sophistication and diversification of data utilization, which may ultimately produce a technical development breakthrough.

Japan CP – Solvency – Water Adv

Japan solves global resource and water management

Council for Science and Technology Policy 5 (Government of Japan, 12/4, <http://www8.cao.go.jp/cstp/project/envpt/english/pub/eops_finnal1.pdf>, accessed 7-9-11, CH)

(1) Prioritization perspectives Japan must clarify the pressing needs to be addressed as a nation in line with the points presented below, and strategically implement a prioritized program that can precisely respond to these needs. Since Earth observation, as a part of basic research, leads to the accumulation of intellectual assets common to all of mankind, we need to carefully consider both the long-term and short-term perspectives. 1) Ensuring the public’s ease of mind and security Reducing the risks incurred by natural and human-induced activities, and securing the health and welfare of the citizens are the government’s responsibilities, and a government-led approach to these is essential. Comprehensive observation and monitoring of the global environment in order to conserve it, and steady observation and monitoring that will lead to the reduction of natural disasters and better crisis management, are an important part of the government’s efforts to ensure the public’s ease of mind and security, and are vital to government policy decisions in this area. 2) Development of economic society and improving quality of life The stable supply of energy and mineral resources and the appropriate management of water, agricultural, forestry and fishery resources provide support for all sorts of economic activity. Reducing uncertainties surrounding their sustainable supply, and ensuring stability is important, and will require the preparation of comprehensive information as a result of Earth observation

Japan CP – Solvency – Water Adv

Japan working to address climate, pollution, and water allocation now

Council for Science and Technology Policy 5 (Government of Japan, 12/4, <http://www8.cao.go.jp/cstp/project/envpt/english/pub/eops_finnal1.pdf>, accessed 7-9-11, CH)

(2) Strategic prioritization to address needs Looking at the three perspectives outlined above, the areas of global environmental conservation, water resource management and the reduction of damage caused by natural disasters can be identified as example areas which need to be addressed urgently through governmental promotion of Earth observation. The following is a detailed outline of the five areas that need to have a prioritized approach over the next ten years or so. Chapter IV of this volume, which explains the promotion strategy field-by-field, also shows what issues and matters should be systematically dealt with in each observation area in order to gain a comprehensive understanding of the Earth and its systems. 1) Elucidation of phenomena related to global warming, predictions of its effects, and mitigation and adaptation methods It is predicted that the effects of the global warming caused by human activity will become more conspicuous as it advances. The advance of global warming is evident not just in direct effects such as rising temperatures in atmosphere and surface ocean, rising sea levels, or changes in the cryosphere, but is also thought to wreak massive indirect effects on precipitation volumes and distribution, agricultural productivity, ecosystems, and human health. Perceived as the major environmental problem of the 21st Century, global warming is a matter of grave concern; measures to redress it will need to be implemented with accuracy and timeliness. The Kyoto Protocol, which sought to contain greenhouse gas emissions, was adopted in 1997 at the 3rd Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC-COP3) in Kyoto, and was scheduled to come into force in February 2005. Policy decisions about the timing and extent of global warming countermeasures require reliable forecasting about future climate change, based on a deepened appreciation of the current meteorological situation. Improving the reliability of the global system model for attaining the projection of future climate change requires comprehensive observation data on many matters relating to greenhouse gases and climate change. Likewise, it is important to detect the direct and indirect effects of global warming at an early stage through observations to estimate the future effect and appropriately implement measures. From this perspective, the worldwide and comprehensive understanding of global warming phenomena clearly needs to be conducted through international cooperation. Japan in particular needs to focus its efforts on the Asian and Oceania regions by conducting atmospheric, terrestrial and oceanic observation of greenhouse gases, terrestrial and oceanic observation of carbon cycles and ecosystems, and by observing the effects of global warming on coastal, cryospheric and other regions vulnerable to climate change. 2) Understanding water cycles, and water management Water-related problems such as water shortages, pollution, and the damage caused by floods are occurring on a worldwide basis, particularly affecting developing countries. It is expected that food shortages, the spread of infectious diseases and the deterioration of ecosystems due to water-related problems will become increasingly apparent and international conflicts over water increasingly severe. The mutual interaction of the atmosphere, land and oceans intricately affects fluctuations in water cycles, and these effects can occur on many different spatiotemporal scales. The coordinated implementation of comprehensive water cycle observation and the provision of valid data for appropriate water management help to ensure the safety of the public’s everyday lives, and political and economic stability. We therefore need to develop a system that will promote the collecting, sharing and provision of comprehensive water cycle data and associated data. In particular, if we are to solve the water problems afflicting Asia, which is home to 60 % of the world’s population, we must develop comprehensive observation system for the Asian monsoon regions, deepen our understanding of the fluctuations in the monsoons, help to improve the predictive accuracy of water cycle changes for the appropriate management of water resources, and reduce the damage caused by natural disasters.

Japan CP – AT: DAICHI Dead

Japanese Ibuki satellite system still solves EOS climate detection

Talmadge 9 (Eric, Japan correspondent, Huffington Post, 1/23, <http://www.huffingtonpost.com/2009/01/23/japan-launches-satellite-_n_160413.html>, accessed 7-9-11, CH)

The satellite named "Ibuki," which means "breath" was sent into orbit along with seven other piggyback probes on a Japanese H2A rocket. Japan's space agency, JAXA, said the launch was a success, and officials said they were monitoring the satellites to ensure they entered orbit properly. Ibuki, which will circle the globe every 100 minutes, is equipped with optical sensors that measure reflected light from the Earth to determine the density of the two gases.

Ibuki satellite expanding to solve DAICHI capabilities

JAXA 10 (8/20, <http://www.jaxa.jp/press/2010/08/20100820_ibuki_e.html>, accessed 7-9-11, CH)

The Japan Aerospace Exploration Agency (JAXA), the National Institute for Environmental Studies (NIES), and the Ministry of the Environment (MOE) (hereafter referred to as the "Three Parties" collectively) are jointly promoting the Greenhouse Gases Observing Satellite "IBUKI" (GOSAT) Project. The spacecraft was launched successfully on January 23, 2009, and has been operating properly since then. The GOSAT observational data and its processed products are released to the public. The Three Parties would like to accept research proposals for the third time for the purpose of facilitating the data quality evaluation, including calibration, validation, and the utilization of the GOSAT data. As appeared in the first and the second Research Announcement (RA), which adopted 88 research proposals in total, the Three Parties would like to accept research proposals in any of the following five specific topics also in the third RA: 1) Calibration, 2) Data processing algorithm, 3) Carbon balance estimation / Atmospheric transport modeling, 4) Validation, and 5) Data application.

Japan CP – AT: US Key to Refugees

Japan leads humanitarian efforts, increasing role in post-conflict scenarios specifically

Watanabe 4 (Makiko, Japan International Cooperation Agency, Humanitarian Practice Network, March, <http://www.odihpn.org/report.asp?id=2617>, accessed 7-9-11, CH)

Japan’s humanitarian assistance dates back to 1953, when the government started funding UN relief work for Palestinian refugees. Since then, Japan has provided a vast amount of assistance worldwide, including financial aid, emergency supplies and personnel. This was primarily in response to natural disasters: Japan only became actively involved in conflict-related emergencies in 1992. Legally, humanitarian assistance for natural disasters remains distinct from humanitarian assistance in response to conflict. Nonetheless, Japan is starting to play a larger role in post-conflict environments, such as post-war Iraq, where Japanese troops were deployed in January 2004.

ESA CP – Solvency

ESA solves for disasters, environment, and resource security planning

Space Activities Commission 5 (Special Subcommittee for Earth Observation, July, <http://www.mext.go.jp/b_menu/shingi/uchuu/reports/05120701/002.pdf>, accessed 7-9-11, CH)

The European Space Agency (ESA) and European Union (EU) are planning to integrate the satellites that are already in operation and those that will be launched in the future to establish the Global Monitoring for Environment and Security (GMES), with the objective of autonomous monitoring of the global environment and security issues. ESA is currently implementing the Earth Watch missions as the first phase of that plan. The Earth Watch missions were designed to perform observations for application fields related to strategically and economically important fields (agriculture, forestry, geology, environment monitoring, risk management, marine and coastal monitoring, cartography, utilities and planning, and security). Though the development and initial operation of the system, including satellites, will be implemented by ESA, essential to the system is the concept of guaranteed provision of services in the long-term outside ESA. The Earth Explorer missions, which are also implemented by ESA, are research and development plans to contribute to Earth sciences providing advanced observation for ice sheets, gravity field, three-dimensional wind vector, soil moisture, ocean salinity, geomagnetic field, and other areas.

ESA CP – Solvency – Satellite Recovery

ESA means superior solvency—most innovative in solving technical issues

Wagenseil 5 (Paul, reporter@ Fox News, MSNBC, <http://www.msnbc.msn.com/id/43647936/ns/technology_and_science-space/>, accessed 7-9-11, CH)

Proving once again that not all hackers are bad, engineers from the European Space Agency performed a "dirty hack" to revive a dying scientific satellite. Samba is one of four identical satellites that were launched in 2000 as part of the Cluster mission to study Earth's magnetosphere, the largely invisible blanket of charged particles that surrounds the planet and, not incidentally, shields us from deadly radiation. Ground controllers at the ESA's mission center in Darmstadt, Germany, were dismayed to discover in March that Samba wasn't responding to commands. Apparently all five power relays had locked into the "closed" position. The engineers searched the manuals for a fix, only to find none. But leaving Samba for dead would have meant scrapping the entire Cluster mission, since Samba and its siblings — Tango, Salsa and Rumba — need to dance in the sky as a foursome. So the German rocket scientists put their heads together and devised a way to get around the problem. They rewrote some software, uploaded it to one of Samba's sisters and found that it opened the power switches. Ground control then uploaded the same code to Samba itself, took a deep breath and pressed "Enter." The power switches opened and Samba came back to life. "The solution was based on a 'dirty hack' — jargon referring to any non-standard procedure — but we really had no other option," Cluster operations manager Juergen Volpp said in an ESA press release. "When everything goes as planned, flying a mission can be routine," said head of mission operations Manfred Warhaut. "But when unexpected trouble occurs, and there's nothing in the manuals, you really want to have an experienced and talented team on hand to solve the problem."

ESA CP – Solvency – Water Wars

ESA Synthetic Aperture Radar Satellites solve water resource monitoring

Carbon Capture Journal 6/22 (<http://www.carboncapturejournal.com/displaynews.php?NewsID=804>, accessed 7-9-11, CH)

Since 1991, European Space Agency satellites (ERS-1, ERS-2 and Envisat) carrying Synthetic Aperture Radar (SAR) instruments have been consistently acquiring data across the world, establishing an archive of over 1.5 million images. These systems have since been augmented by a number of other SAR satellites operated by a other agencies (in particular the Canadian, German, Italian and Japanese space agencies), providing yet further opportunity for analyses. SAR images contain information about the position of the terrain at the time of image acquisition. As subsequent images are acquired over the same location they can be compared and used to map relative terrain-motion. This principal forms the basis of InSAR. A range of InSAR techniques have been developed to extract optimal information from SAR imagery. Of particular importance for the CCS industry is a hybrid technique known as Persistent Scatterer InSAR (PSI). PSI allows relative sub-millimetric measurements to be made against individual, radar-reflective terrain-features that provide a persistent response in each SAR image. These ‘persistent scatterers’ (or ‘virtual GPS points’) generally correspond to parts of man-made structures, though they can also include bare rocks and outcrops. They act as persistent scatterers because of their serendipitous geometry, surface-roughness and electrical conductivity. The exact location of persistent scatterers cannot, therefore, be accurately predicted in advance of processing, but over urban areas their densities are usually measured in the hundreds per square kilometre (thousands with the latest high-resolution SAR imagery). The unique products derived from PSI include average annual motion maps and the motion history of individual scatterers, both covering the time-span of the dataset used, e.g. 1992 to the present day. The capability of PSI allows users to uniquely interrogate historical information (although PSI can also be used for up-to-date monitoring campaigns), an ability not possible with conventional surveying methods. The PSI technique was rigorously validated during a specific campaign over sites in the Netherlands during Stage 2 of the ESA Global Monitoring for Environment & Security (GMES) project Terrafirma, and is now widely used by dozens of national geoscience organisations across Europe. The idea of using InSAR for the monitoring of CCS reservoirs first evolved from results obtained monitoring the inverse, i.e. gas and oil production where depletion of certain reservoirs cause a surface expression of subsidence. Such measurements proved to be of use to practitioners in understanding ‘compaction-drive’ and fluid dynamics. It was a natural progression to apply similar techniques to the reverse, to the inject

ESA’s SMOS monitors water availability, key to tracking water resources

Yale Environment 360 9 (Clean Techies, 11/5, <http://blog.cleantechies.com/2009/11/05/european-space-agency-smos-satellite-monitor-water/>, accessed 7-9-11, CH)

The European Space Agency (ESA) has launched a 315 million Euro ($465 Million) satellite that will monitor soil moisture, plant growth, and the salt content of sea water, all of which will be useful in tracking environmental changes as the planet warms. The satellite, called SMOS — Soil Moisture and Ocean Salinity — has the capacity to measure the water content of soil across the planet every three days to a depth of seven feet, enabling it not only to gauge surface water sources but also to monitor photosynthesis and plant growth. The data also will be valuable to scientists interested in forecasting drought and flood risk. The SMOS satellite also will measure the salt content of ocean waters, crucial information in not only tracking an increase in freshwater in oceans from melting glaciers and ice sheets, but also valuable in understanding global ocean circulation patterns, which are partially driven by water temperature and salinity.ion of fluids into reservoirs, where the natural elasticity of the cap rock would heave in sympathy with increased reservoir pressure.

ESA CP – Solvency – Water Wars

SMOS key to water monitoring and climate change

Kramer 7/4 (Herbert, author of *Earth Observation and Its Environment: Survey of Missions and Sensors*, Sharing Earth Observation Resources, <http://events.eoportal.org/presentations/182/7316.html>, accessed 7-9-11, CH)

Known as ESA’s ‘Water Mission’, SMOS will improve our understanding of Earth’s water cycle, providing much-needed data for modelling of the weather and climate, and increasing the skill in numerical weather and climate prediction. One of the highest priorities in Earth science and environmental policy issues today is to understand the potential consequences of modification of Earth’s water cycle due to climate change. The influence of increases in atmospheric greenhouse gases and aerosols on atmospheric water vapor concentrations, clouds, precipitation patterns and water availability must be understood in order to predict the consequences for water availability for consumption and agriculture. 6) The main science objective of the SMOS mission is to demonstrate observations of SSS (Sea Surface Salinity) over oceans and SM (Soil Moisture) over land to advance climatologic, meteorologic, hydrologic, and oceanographic applications. Soil moisture is a key variable in the hydrologic cycle. Over land, water and energy fluxes at the surface/atmosphere interface are strongly dependent upon soil moisture. SM is an important variable for numerical weather and climate models as well as in surface hydrology and in vegetation monitoring. Knowledge of the global distribution of salt in the oceans and of its annual and inter-annual variability, is crucial for understanding the role of the ocean and the climate system. Ocean circulation is mainly driven by the momentum and heat fluxes through the atmosphere/ocean interface, it is dependent on water density gradients, which in turn can be traced by the observation of SSS and SST (Sea Surface Temperature). 7) 8) 9) 10) 11) 12) 13) 14) 15)

ESA CP – Solvency – Famine

ESA Sentinel-1 solves crop monitoring and food production

ESA 5/25 (<http://www.esa.int/esaEO/SEMGQCNSNNG_index_0.html>, accessed 7-9-11, CH)

Sustainable food production remains a pressing challenge, so scientists have been assessing the potential of the future Sentinel-1 mission to deliver new methods of monitoring crops grown around the world from space. Sentinel-1, expected to be launched in 2013, is one of the five missions that ESA is developing for Europe's Global Monitoring for Environment and Security programme. While the design of the Sentinel-1 mission is primarily based on marine applications such as ship detection and sea-ice mapping, there is increasing interest in using it for land applications. To this end, ESA carried out the major international AgriSAR field campaign in 2009 as part of the mission's preparatory activities. Since spaceborne radar data are not currently used operationally for crop monitoring, the campaign investigated the extent to which frequent coverage from the C-band radar on Sentinel-1 could deliver essential information to improve agricultural practices. Scientists have spent the last two years analysing the data collected in the campaign and recently gathered at ESA's centre in the Netherlands to compare findings. Dr Heather McNairn from Agriculture and Agri-Food Canada explained, "The main objective of the AgriSAR campaign was to simulate Sentinel-1 data from Radarsat-2 data to get a 'first look' at what Sentinel-1 will give us for agricultural monitoring. "This information is important for regional monitoring, in that the data will be used to estimate crop acreage, see what is being grown and forecast yields."

SMOS detects soil moisture, key to crop yield monitoring

ESA 5/12 (<http://www.esa.int/esaEO/SEM7NKJSDNG_index_0.html>, accessed 7-9-11, CH)

ESA's Soil Moisture and Ocean Salinity (SMOS) mission has been orbiting Earth for 18 months now, making global observations of the moisture held in the top layers of soil and salt in the surface waters of the oceans. These data are much-needed for a better understanding of the water cycle and, in particular, the exchange processes between Earth's surface and the atmosphere. Although soil holds only a small percentage of Earth's total water budget, it plays an important role in the water cycle. Soil moisture is crucial for regulating water and energy exchanges between the land and the atmosphere. As a variable in the weather and climate system, data on soil moisture are used by hydrologists, soil scientists, meteorologists and ecologists. Since the amount of water present in soil dictates plant growth and crop yield, these data can also be used for applications areas such as agriculture. For many of us, the unusually dry and warm weather that western Europe has been experiencing this spring is to be enjoyed. However, the drought is also causing serious problems for farmers and those managing water resources. In addition, dry earth and vegetation is posing a risk of forest fire. Local authorities in some countries, such as France, the Netherlands and the UK, have introduced restrictions on crop irrigation. Other responses to the dry weather have included the Swiss canton of Zurich removing trout from the river Toess before their habitat dried up and the Dutch banning barbecues over Easter in the eastern part of the country. The maps of France, generated by CESBIO using SMOS data, show a clear difference between April 2010 and April 2011 in the amount of moisture present in the soils. The blue and green colours represent wetter and the yellows show drier surfaces. Prior to the launch of SMOS, there were relatively few global datasets on soil moisture. However, now the mission is filling this gap, along with valuable datasets on ocean salinity. Soil moisture is a critical component in temperature, humidity and precipitation forecasts and the objective of the SMOS mission is to provide a global image of surface-soil moisture every three days. These data, together with numerical modelling techniques, result in estimates of soil-water content down a depth of one to two metres. This layer is known as the 'root zone', which is the reservoir from which plants can extract water and eventually release it to the atmosphere through their leaves by the processes of transpiration. This estimation of soil moisture in the root zone is valuable not only for farmers growing crops, but also vital for improving short- and medium-term meteorological forecasting.

ESA CP – Solvency – Funding

European support for space despite economy, new spending approved

Taverna 8 (Michael A, European editor, Aviation Week, 11/26, <http://www.aviationweek.com/aw/generic/story.jsp?id=news/ESA112608.xml&headline=ESA%20Funding%20Hike%20Accord%20Near%20&channel=space>, accessed 7-9-11, CH)

Director General Jean-Jacques Dordain said the members had OK'd two issues - funding of the Kourou launch center and streamlining ESA's decision-making procedure and industrial/procurement policy to prevent gridlock as the agency expands in the coming years. French space minister Valerie Pecresse said there was already basic, if not formal agreement on increasing the science budget by 3.5 percent per year. "The summit will be a great success, with a financial envelope at least 15 percent higher than agreed at the last ministerial summit in Berlin in 2005," she said. Pecresse indicated a number of optional programs have been agreed to informally, including definition of a new upper stage and sustaining engineering for the Ariane 5 launcher, the third-generation geostationary weather satellite system MTG, the next phase of the Global Monitoring for Environment and Security network, enhancements in the Galileo Satellite Navigation System and a Space Situational Awareness system. She said the Artes telecom demonstrator program also has been approved, but the fate of the European Data Relay System, which France does not support, remains unknown. Also still unclear is the amount of funding approved for these programs. Dordain said two big optional programs remain to be decided - the ExoMars lander/rover mission and funding for International Space Station (ISS) utilization, including the acquisition of four additional Automated Transfer Vehicles. According to Pecresse, Germany wants to boost ISS spending to 1.8 billion euros, from 1.4 billion euros proposed, to ensure an efficient ATV production rate - a position France disagrees with. But Dordain, too, was upbeat overall, expressing confidence that "a consensus on all issues will be reached" despite the global financial crisis. In fact, Dordain said, the crisis served as a motivating factor to invest in space, with its long-term economic return.

Funding for ESA satellite data collection

Taverna 11 (Michael A, European editor @Aviation Week, Aerospace Daily, 1/31, “Europe Approves Development Of Data Relay Satellite System”, accessed LN, 7-9-11, CH)

PARIS — The European Space Agency (ESA) has approved the launch and contracting of the European Data Relay Satellite (EDRS) network, filling a long-standing gap in Europe’s space capability. The U.S. and Russia have had extensive data relay systems in place for some time, and Japan and China have begun developing similar networks. Magali Vaissiere, ESA’s communications director, said Jan. 28 that a program board had gathered sufficient financing commitments to cover the agency’s share of the €370-million ($504-million) project, which will be run by a private operator and financed through a public/private partnership. This permitted the agency’s industry board to authorize the award of a phase C/D full-scale development contract. The European Union’s (EU) Global Monitoring for Environment and Security (GMES) Earth observation program will be the anchor tenant. The operator will be able to market unneeded capacity to third-party customers in return for its investment. EADS Astrium was downselected in December to negotiate development and operations contracts for EDRS. ESA expects to conclude the development award in the next few weeks, but the operations agreement may take months or even years to negotiate, Vaissiere says. The EU has yet to agree to permanent funding and governance structures for operating, maintaining and replenishing GMES. A total of €280 million was committed for system development, almost half by Germany, which will have a lead role in the undertaking. German aerospace center DLR said it would invest €120 million in EDRS and the state of Bavaria and the city of Cologne, another €7 million. The Netherlands and Norway also agreed to support the program, joining eight other nations who had previously committed to development (Aerospace DAILY, Jan. 18). EDRS will consist of two geostationary payloads—a small dedicated satellite, based on the Small Geo satellite bus developed by Germany’s OHB System, and a hosted payload to be piggybacked on a commercial communications satellite. Each payload will include a laser-optical terminal supplied by Tesat Spacecom, a German unit of EADS. A series of secondary payloads, intended to test new technologies or communications services, also will be carried on the dedicated spacecraft, ESA member states agreed on Jan. 25. The EDRS-hosted payload will enter service on an unnamed commercial spacecraft in 2013, when ESA’s existing experimental relay on the Artemis technology satellite is due to reach the end of its operations and the first two GMES spacecraft, Sentinel 1A and 2A, are due to enter service. The dedicated relay satellite will be put into service in late 2014 or early 2015. The laser relay terminals will have a capacity of 1.8 Gbps., sufficient to permit near-real-time transmission of remote-sensing data, something existing data relay satellite systems such as the U.S. Tracking and Data Relay Satellite system cannot do. EDRS also will be the first data relay satellite network funded with private as well as public funds. It will be ESA’s fourth public/private partnership, after Avanti Communications’ Hylas-1 broadband satellite, launched in November; Alphasat/Inmarsat I-XL, to be orbited in 2012, and Small Geo/Hispasat AG1, also set for launch in 2012.

ESA CP – Solvency – Funding

High ESA funding—seen as an economic stimulus

O’ Neill 8 (Ian, staff, Universe Today, 12/12, <http://www.universetoday.com/22271/what-about-the-space-exploration-crisis-nasa-budget-could-be-cut-to-save-money/>, accessed 7-9-11, CH)

To finish off, let’s look at the European Space Agency. Although ESA is a completely different entity from NASA–it is not politically-driven (although some leaders want it to be), it is a consortium of many nations and its budget is smaller than NASA’s–its outlook for Europe’s efforts in space are far more optimistic. Rather than trying to cut funding to save money, ESA appears to have a renewed vigour toward using space exploration as a means to stimulate the economy: These decisions have particular relevance at the present time, showing as they do Europe’s determination to invest in space as a key sector providing for innovation, economic growth, strategic independence and the preparation of the future. – ESA press release

ESA can garner new space funds—allocates from military landscaping

Berner 5 (Steven, National Security Researcher, RAND, 7/8, <http://www.rand.org/pubs/technical_reports/2005/RAND_TR184.pdf>, accessed 7-9-11, CH)

With its pacifist constitution, Japan’s defense budget has been limited. The Japanese defense budget in 2004 is 4,903 billion yen, or about 45.8 billion dollars. By comparison the U.S. defense budget for 2004 is about 400 billion dollars. The major U.S. aerospace firms, Boeing, Lockheed Martin, and Northrup Grumman, also are leading defense contractors. Significant portions of their space capabilities derive from government investments in national security space programs. Some capabilities, including most historical U.S. launch vehicles, are directly traceable to earlier military programs. The new generation of Evolved Expendable Launch Vehicles is being developed with government funding. U.S. Department of Defense (DoD) spending on space in 2003 was over $17 billion, and is projected to grow to $25 billion in 2010. 31 The $17 billion figure represents about 4% of the defense budget. To a lesser but still significant extent Europe’s leading space firm, Astrium, has benefited from the defense aerospace work of its parent company EADS. European space firms also have been able to leverage their space investments through jointly funded ESA programs.

ESA CP – AT: US Key to Refugees

EU can solve refugee protection

Allard 10 (Silas W., Editor-in-Chief, Emory International Law Review; 6/28, <http://www.law.emory.edu/fileadmin/journals/eilr/24/24.1/Allard.pdf>, accessed 7-9-11, CH)

This rebuke to the industrialized nations of the world was delivered in 2005 by United Nations High Commissioner for Refugees, António Guterres, on the occasion of World Refugee Day. 2 High Commissioner Guterres’s remarks serve to remind the industrialized world that protection must be the paramount value in considerations of asylum. However, in its most recent discussion of asylum policy in Europe, the European Union (“EU”) reiterated its dual commitments to protection and solidarity. 3 The EU is committed to “high protection standards” for asylum seekers, 4 which it has described elsewhere as protection to “any persecuted foreigner.” 5 However, the EU has placed equal importance on solidarity and burden sharing among member states. 6 This collective attempt to negotiate the values of protection and solidarity has come to be known as the Common European Asylum System (“CEAS”). 7

EU will invest in tracking and mapping out genocides—military efforts to solve now prove

Security & Defence Agenda 7 (10/9, <http://www.securitydefenceagenda.org/Contentnavigation/Library/Libraryoverview/tabid/1299/articleType/ArticleView/articleId/1122/EU-on-course-for-Chad-force-to-aid-Darfur-refugees.aspx>, accessed 7-9-11, CH)

The European Union is on course to agree this month on the deployment of a military mission in Chad to help protect refugees from Sudan's Darfur conflict, the United Nations' peacekeeping chief said on Monday.Jean-Marie Guehenno, a U.N. assistant secretary-general, briefed EU ambassadors on talks in Sudan, Chad and Libya and told reporters all regional players backed a European operation to protect civilians and help stabilise eastern Chad. "Things are moving in the right direction," Guehenno said. He said he expected the U.N. Security Council to give a green light for a 3,000-strong EU mission in mid-month, clearing the way for a final decision by the 27-nation EU in late September. The European deployment and support for a joint U.N.-African Union peacekeeing force in Darfur would help create the security conditions for renewed peace talks on the confict, due to begin in Libya on Oct. 27. Guehenno said he was also looking to Europe to help provide armoured and transport helicopters for a joint U.N.-African Union peacekeeping force in Darfur, to deploy troops quickly and deter attacks on humanitarian workers and civilians. "We don't have all the helicopters we need," he said, adding that Middle Eastern states had offered some armed helicopters. Some 380,000 civilians are sheltering in eastern Chad. Most fled the civil war in Sudan but about 150,000 are local people forced from their homes as ethnic conflict has spilled over the border.