# Earth Science Spending Tradeoff DA

Note – this is file should be used in conjunction with main spending file for both the aff and the neg.

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## 1NC

### NASA budget is shifting from space to Earth science now. The plan would reverse that trend.

Space Travel.com 6/8/11 NASA Spending Shift to Benefit Centers Focused on Science and Technology http://www.space-travel.com/reports/NASA\_Spending\_Shift\_to\_Benefit\_Centers\_Focused\_on\_Science\_and\_Technology\_999.html

Euroconsult along with the consulting firm Omnis have announced the findings of a study foreseeing a significant shift in NASA spending toward Earth science and R and D programs and away from legacy spaceflight activities. According to the report "NASA Spending Outlook: Trends to 2016," NASA's budget, which will remain flat at around $18.7 billion for the next five years, will also be characterized by significant shifts from space operations to technology development and science. With the shift in budget authority, NASA Centers focused on Earth observation, space technology, and aeronautics will see increases in funding, while those involved in human spaceflight will see major funding reductions. Indeed, the termination of the Space Shuttle program will lead to a budget cut over $1 billion for Space Operations, resulting in a 21% budget cut for the Johnson Space Center. Overall, the agency's budget for R and D will account for about 50% of all NASA spending.

### Space Ex defunds Earth science – new space research empirically trades-off

Berger, 5 [Brian, Space.com Staff Writer, 02 May 2005, “ NASA's Exploration Focus Blamed for Earth Science Cuts,” <http://www.space.com/1028-nasa-exploration-focus-blamed-earth-science-cuts.html>]

 WASHINGTON -- House Science Committee Chairman Sherwood Boehlert (R-N.Y.) expressed alarm over recent budget cuts and delays in NASA's Earth science program that a recent National Research Council report attributed to the U.S. space agency's shift in focus toward lunar and Mars exploration. "This report has to be a red flag for all of us," Boehlert said during an April 26 hearing examining how Earth science programs fare in NASA's 2006 budget request. "We need to stop, examine what's happening, and make sure that the fiscal 2006 budget for NASA - whatever its top-level number - includes adequate funding to keep Earth science moving forward for the foreseeable future." NASA merged its Earth science and space science programs into a single organization, the Science Mission Directorate, in 2004 and no longer maintains separate budgets for the two activities. But according to a House Science Committee analysis of NASA's budget request, of the $5.47 billion included for the Science Mission Directorate, only $1.36 billion would be spent on Earth science activities, a drop of 8 percent below the 2005 level and 12 percent less than the 2004 level. Earth science spending would continue to decline in 2007, NASA projections show, even as overall science funding would grow by $500 million. The National Research Council report, written by an expert panel and released the day of the hearing, says the budget trend for Earth science already is translating into program delays and cancellations. The report, "Earth Science Applications from Space: Urgent Needs and Opportunities to Serve the Nation," points out that NASA has "canceled, descoped, or delayed at least six planned missions" and has nothing in the pipeline to replace the fleet of Earth Observing System satellites the agency has spent more than a decade putting on orbit. "At NASA, the vitality of Earth science and application programs has been placed at substantial risk by a rapidly shrinking budget that no longer supports already-approved missions and programs of high scientific and societal relevance," the report states. "Opportunities to discover new knowledge about Earth are diminished as mission after mission is canceled, descoped, or delayed because of budget cutbacks, which appear to be largely the result of new obligations to support flight programs that are part of the Administration's vision for space exploration."

### NASA Earth Science programs are key to solve warming

Lewis et. al, 10 [ James A. Lewis, senior fellow and director of the Technology and Public Policy Program at CSIS Sarah O. Ladislaw, senior fellow in the Energy and National Security Program at CSIS Denise E. Zheng , June 2010, “ Earth Observation for Climate Change,” <http://csis.org/files/publication/100608_Lewis_EarthObservation_WEB.pdf>]

 Climate change will have pervasive and unavoidable effects on economic and national security. Managing these consequences and mitigating them when possible are new and difficult tasks for governments. Progress in mitigating and adapting to climate change will require the world’s countries to agree to coordinate their actions. Reaching such agreement will be no easy task. That said, climate change offers a unique opportunity for the United States to engage other nations in pursuing common interests and addressing future challenges. Not only is the United States well positioned to lead on this issue because of its significant space and scientific capacity, it also faces global expectations that it should shoulder the leadership burden for climate change. A commitment to building the space and information infrastructure needed to manage climate change could demonstrate the U.S. leadership, based on competence and advancing the global good, that the world respects and admires. Operationalization is the next step for dealing with climate change—to make the data and knowledge generation by satellites and science easier to use in policymaking. Operationalization requires a new approach. Climate change has largely been an issue of science. The existing vehicles for international cooperation and data sharing are aimed at the scientific community. Effective global management of climate requires a new approach with three integrated elements—space, networks, and collaboration. Our belief is that a concerted effort to analyze and share data from the many national efforts could significantly advance our understanding of the risks and causes of climate change, better measure the effects of mitigation policies, and guide planning on how to adapt to changes in the environment. Achieving such a concerted effort will require coordination must occur on several different levels if it is to have a meaningful effect. The first—the collection and measurement of relevant data—depends largely on satellites. Without the proper data, it would be very difficult to develop and aggregate a global picture of climate change and its nature and pace. It would be difficult to measure the effects of mitigation efforts, determine when or whether policies are effective, or predict when and how climate effects will affect local communities. The second level is to expand the analysis and sharing of information. In some ways, we are only in the early stages of developing a global enterprise for assessing climate change. Much of the research and analysis conducted thus far has been focused on understanding the nature and pace of climate change, forecasting future changes in Earth’s natural systems based on changes in differ-14 | earth observation for climate change ent variables, and substantiating theories about how human efforts to reduce the effects of climate change might actually have some effect. More work is needed in each area to improve our understanding and update it as the natural environment continues to change. Finally, data must move from the scientific community to the policy community—to governments and policymakers—if data are to guide change. While the UN’s Intergovernmental Panel on Climate Change tailored analysis to meet policymakers’ needs in the hopes of reaching a global consensus for action, the challenge today is to extend and strengthen connections between the science and policy communities. A coordinated multinational effort to better inform the policy process can change this. Our belief is that a concerted effort to analyze and share data from the many national efforts could significantly advance our understanding of the risks and causes of climate change, better measure the effects of mitigation, and guide planning on adapting to changes in the environment. To this end, our recommendations follow: The U.S. approach to climate change policy needs to inform decisionmakers and planners in both government and the private sector by providing understandable metrics and analyses of the effectiveness of, and compliance with, mitigation programs and adaption plans. The customers for this should include federal agencies, state and local governments, private sector users, and other nations. To better serve the national interest, the United States should increase its Earth observation capabilities—especially space-based sensors for carbon monitoring—to improve our ability to understand the carbon cycle and to inform any future international agreement. This means that until these capabilities are adequate for monitoring climate change, investment in Earth observation satellites should take precedence over other space programs. Increased spending on earth observation satellites specifically designed for climate change should be maintained until the current capability shortfall is eliminated.

### Warming is real and causes extinction

Henderson 2006[Bill, environmental scientist, “Runaway Global Warming Denial.” Countercurrents.org August 19,. [http://www.countercurrents.org/cc-henderson190806.htm](https://webmail.whitman.edu/horde/services/go.php?url=http%3A%2F%2Fwww.countercurrents.org%2Fcc-henderson190806.htm)]

The scientific debate about human induced global warming is over but policy makers - let alone the happily shopping general public - still seem to not understand the scope of the impending tragedy. Global warming isn't just warmer temperatures, heat waves, melting ice and threatened polar bears. Scientific understanding increasingly points to runaway global warming leading to human extinction. If impossibly Draconian security measures are not immediately put in place to keep further emissions of greenhouse gases out of the atmosphere we are looking at the death of billions, the end of civilization as we know it and in all probability the end of man's several million year old existence, along with the extinction of most flora and fauna beloved to man in the world we share.

## NASA - Earth Science Uniqueness

### Budget re-allocation to Earth Science Now.

Space Travel.com 6/8/11 NASA Spending Shift to Benefit Centers Focused on Science and Technology http://www.space-travel.com/reports/NASA\_Spending\_Shift\_to\_Benefit\_Centers\_Focused\_on\_Science\_and\_Technology\_999.html

"Budget allocation across Centers will vary greatly," said Steve Bochinger, President of Euroconsult North America. "As NASA shifts priorities for human spaceflight from Shuttle operations to Human Exploration Capabilities and commercial spaceflight, the budget will be redirected to a range of technology development programs. Likewise, as NASA shifts its science mission focus away from space science to Earth science, the science budget will be redistributed among centers."

### Earth based NASA projects are key to climate change research.

Space Travel.com 6/8/11 NASA Spending Shift to Benefit Centers Focused on Science and Technology http://www.space-travel.com/reports/NASA\_Spending\_Shift\_to\_Benefit\_Centers\_Focused\_on\_Science\_and\_Technology\_999.html

This shift in NASA's priorities will also affect the agency's contract spending. As large legacy programs end, new research and development programs will be initiated. This turnover of programs should provide many new contracting opportunities over the next five years, especially at Research Centers. The Euroconsult/Omnis report details these changes. "The uniqueness of this report is that it brings together in one picture NASA's budget, spending and contracting, providing insights into opportunities created by the new NASA direction," said Bretton Alexander, Senior Consultant for Omnis. Some of the findings include: Following an 11% increase in 2011, the Science Mission Directorate budget will remain at the $5 billion level through 2016. This increase, however, is entirely within the Earth science theme, reflecting the Administration's priority on climate change research. Goddard Space Flight Center and Langley Research Center, which manage and implement Earth science projects, will thus benefit from this increase as will contractors who develop Earth observation spacecraft and instruments.

## Space Ex Trades off

### Earth science and space missions will tradeoff.

Foust, 11 [Jeff, aerospace analyst, journalist and publisher. He is the editor and publisher of The Space Review and has written for Astronomy Now and The New Atlantis.[1]

He has a bachelor's degree in geophysics from the California Institute of Technology and a Ph.D in planetary sciences from the Massachusetts Institute of Technology, Feb. 9, 2011, “Human spaceflight versus Earth sciences?” http://www.spacepolitics.com/2011/02/09/human-spaceflight-versus-earth-sciences/]

A letter signed by several members of Congress is the latest evidence that a new battle line is forming over NASA funding: human spaceflight versus Earth sciences. In a letter to House Appropriations committee chairman Rep. Hal Rogers and CJS subcommittee chairman Frank Wolf, six Republican members of Congress asked the appropriators to prioritize NASA funding on what they consider to be the agency’s primary mission, human spaceflight. To do that, they argue that funding for NASA’s climate change research be redirected to human spaceflight accounts. “With your help, we can reorient NASA’s mission back toward human spaceflight by reducing funding for climate change research and reallocating those funds to NASA’s human spaceflight accounts, all while moving overall discretionary spending towards FY2008 levels,” the letter’s authors—Reps. Bill Posey (R-FL), Pete Olson (R-TX), Rob Bishop (R-UT), Jason Chaffetz (R-UT), Sandy Adams (R-FL), and Mo Brooks (R-AL)—argue. There are a number of issues with the letter. They claim that NASA spent “over a billion dollars” on “studying global warming/climate change” in FY2010. The agency got about $1.4 billion for all Earth sciences research in FY10, according to agency budget documents. There’s no breakout for how much of that went specifically to climate change research, though. The letter also claims that the “lion share” of NASA’s share of stimulus funding went to climate change studies. In fact, only about a third of the agency’s stimulus funding, $325 million, went to Earth sciences programs, to accelerate development of Earth science spacecraft. Human spaceflight got even more: $400 million, including $50 million for the CCDev program. And their claim that NASA’s core mission is human spaceflight is not supported by other documents, ranging from the National Aeronautics and Space Act from 1958 to the latest NASA authorization act, which declared that NASA “is and should remain a multi-mission agency with a balanced and robust set of core missions in science, aeronautics, and human space flight and exploration” and that “NASA plays a critical role through its ability to provide data on solar output, sea level rise, atmospheric and ocean temperature, ozone depletion, air pollution, and observation of human and environment relationships”. A bigger issue, though, is that this letter may be indicative of a bigger battle some in Congress want to wage between human spaceflight and Earth science. Some members have openly expressed their skepticism about the validity of climate change research, questioning either the existence of global warming or the role of human activities in causing climate change. The letter to appropriators makes no judgment on the quality of validity of such research, only NASA’s role in supporting it, but some might see that unspoken argument there. For example, one of the letter’s signers, Rep. Brooks, said last week in regards to NASA funding that there would be “hearings soon on global warming” by the House science committee without going into more details. An attack on Earth sciences funding to support human spaceflight could create or reinvigorate opponents of human spaceflight programs, reminiscent of previous debates between human spaceflight and robotic space exploration advocates—a battle that the agency presumably would want to avoid.

### Bush administration proves increases in space science directly lead to decreases in earth science

Lawler, 4 [Andrew, senior writer with Science Magazine, and freelance writer for Smithsonian, National Geographic, Discover, Archaeology, Audubon, American Archaeology, Air & Space, Columbia Journalism Review, and other magazines, “ Scientists Fear Collateral Damage From NASA's Revised Vision,” Science 26 March 2004: Vol. 303 no. 5666 pp ]

 NASA currently spends nearly $4 billion on space science, with another $1.5 billion for earth science and $965 million for biological and physical research. Bush's January call for robotic and human exploration of the moon and Mars would mean new monies for the Mars robotic effort, a new line of lunar orbiters and landers costing $1.3 billion through 2009, and more biological research on the space station tailored to the needs of future astronauts (see table). Under the new plan, space science budgets would grow from $3.9 billion this year to $5.5 billion by 2009. A host of projects not directly related to such exploration, however, face significant changes. The Laser Interferometer Space Antenna, for example, would be launched in 2012, a year later than planned, and Constellation-X, also slated for launch after 2010, would face a 2-year delay. NASA is halting preliminary work on a series of probes named after Einstein and designed to examine mysteries such as dark energy. In earth science, the Global Precipitation Mission would be delayed 2 years, a probe to measure ocean winds would be postponed indefinitely, and a series of small earth science platforms would be put on hold for a year. “This is a massive shift in direction,” said Yale University astronomer Meg Urry. “It is a little disorienting.” She and several board members called these and other changes “collateral damage” from the new exploration plan. “We're ending up with a very narrowly focused science program,” complained James Burch, vice president of the Southwest Research Institute in San Antonio, Texas, and a former NASA space physicist.

### Science programs trade-off internally

Lawler, 9 [Andrew, senior writer with Science Magazine, and freelance writer for Smithsonian, National Geographic, Discover, Archaeology, Audubon, American Archaeology, Air & Space, Columbia Journalism Review, and other magazines, “ Trouble on the Final Frontier,” Science 3 April 2009: Vol. 324 no. 5923]

The $273 million Orbital Carbon Observatory's plunge into the Southern Ocean shortly after launch last month was a sobering reminder of the unforgiving nature of space exploration. But the ability to put a spacecraft safely into orbit is the least of the pressing issues facing NASA's $4.5 billion science program. A bigger challenge than the rare but dramatic rocket failure is finding the money to pay for an ambitious, complex, and unique set of missions. The squeeze on NASA's science budget arrives as researchers in a host of disciplines (see graphic below) begin planning the next generation of missions. No one—lawmaker, NASA manager, or senior scientist—seems to have an answer to the ballooning cost of space science projects. “There's no simple fix, or the situation would have been resolved long ago,” said a frustrated Representative Gabrielle Giffords (D-AZ), the new chair of the House of Representatives science committee's space panel, during a 5 March hearing that covered both science and space-flight overruns. The community is anxiously awaiting word on who will be the next NASA administrator. Last year on the campaign trail, President Barack Obama promised to increase the monitoring of global climate from space and support a new generation of robotic probes to other planets without throttling back on preparations for returning humans to the moon. The president's preliminary 2010 budget request, released in February and lacking details, proposes a modest boost to funding for both science and human space flight efforts as part of the agency's overall $18.7 billion budget. But those increases do not begin to cover what NASA's science program needs just to keep pace with the demands of researchers. The agency's science honcho, Edward Weiler, says he needs $900 million more every year just to keep up with current earth science projects. “There is no greater thing than starting a new, sexy science mission,” he says. “We all love it. The thing that prevents me is I've also got new, sexy missions started 5 years ago that are costing more than they were supposed to.”

## Nasa spending trades off internally

### New NASA spending trades off internally in NASA’s budget.

Space Politics.com 5-18-11 Commercial space advocates sound the alert http://www.spacepolitics.com/2011/05/18/commercial-space-advocates-sound-the-alert/

Advocacy groups, concerned about the effect of potential budget cuts in fiscal year 2012 on NASA’s commercial crew and space technology programs, are rallying support for those programs on Capitol Hill this week. Late yesterday the Space Access Society (SAS) sent out an alert about these programs, asking people to contact their representatives by Friday morning “and ask that they tell the Appropriations Committee that they support full funding for the NASA Commercial Crew and Space Technology programs.” The Space Frontier Foundation also sent our a similar alert last night. Their concern is rooted in the the FY12 appropriations allocations released last week that could result in significant budget cuts for NASA in the coming year. “It’s going to get messy. Any item not strongly defended could be vulnerable,” the SAS alert warns. The alert continues that the leadership of the Commerce, Justice, and Science appropriations subcommittee, whose jurisdiction includes NASA, has decided to ask members of Congress this week what programs they believe should have their funding increased in decreased. A push now for programs like commercial crew and technology development—potentially vulnerable to cuts—could have “a considerable impact” on what the subcommittee decides in its markup in July. Previous lobbying efforts by SAS and others may have already had an effect: the alert notes that the subcommittee “is now definitely aware there’s opposition” to the Space Launch System, which the organization dismisses as an “earmark”.

### NASA will have to make hard decisions about what to fund.

Jeremy Hsu 6/27/11 “Space on a budget balances risk vs. innovation” Sr. Writer at Innovation News Daily [http://www.msnbc.msn.com/id/43555581/ns/technology\_and\_science-innovation/#](http://www.msnbc.msn.com/id/43555581/ns/technology_and_science-innovation/)

Finding solutions NASA might provide a bigger budget cushion for both reusing heritage tech and new innovations by making the "hard decisions" about funding only a few missions well, said Dave Bearden, principal director for NASA at the Aerospace Corp. and a member of the panel. "What I see is an equal amount of unreasonable pressure being applied to all mission sets, rather than making really hard choices about what the true priorities are and funding at level of consistency and phasing that makes sense," Bearden said. The U.S. space agency might also consider the time spent on mission reviews and evaluate which reviews actually help prepare a low-risk, effective mission, said Andy Dantzler, a program area manager at the Johns Hopkins Applied Physics Laboratory. Similarly, planetary scientists must make tough choices about how much science they can afford in low-cost missions without endangering the mission's overall chances, said Susan Niebur, a consultant and former Discovery program scientist at NASA Headquarters. She also urged scientists to stay aware of how much risk NASA is willing to accept. "We still are not coming back to the days when we accept that one out of three or four missions fail and we can try again," Niebur said. "We in the community have to read the tea leaves at NASA Headquarters about not only what is risk tolerance now, but also in the future."

## Asteroids - Spending Link

### No budget for Asteroid detection now – the plan triggers new spending.

MPR News – 2009 (“Report: NASA lacks funding to track asteroids,” Minnesota Public Radio News, 12 August. [Online] http://minnesota.publicradio.org/display/web/2009/08/12/nasa-asteroid-watch/) Accessed 06.11.11 jfs

Disaster movies like "Armageddon" and near misses in previous years may have scared people and alerted them to a serious issue. But when it comes to doing something about monitoring the threat, the academy concluded "there has been relatively little effort by the U.S. government." And the U.S. government is practically the only government doing anything at all, the report found. "It shows we have a problem we're not addressing," said Louis Friedman, executive director of the Planetary Society, an advocacy group. NASA calculated that to spot the asteroids as required by law would cost about $800 million between now and 2020, either with a new ground-based telescope or a space observation system, Johnson said. If NASA got only $300 million it could find most asteroids bigger than 1,000 feet across, he said. But so far NASA has gotten neither sum. It may never get the money, said John Logsdon, a space policy professor at George Washington University. "The program is a little bit of a lame duck," Logsdon said. There is not a big enough group pushing for the money, he said.

### Asteroid surveys steal funds from other NASA programs

National Academies, 09 [Over many decades, the National Academy of Sciences, National Academy of Engineering, Institute of Medicine, and National Research Council have earned a solid reputation as the nation's premier source of independent, expert advice on scientific, engineering, and medical issues. “Near-Earth Object Surveys and Hazard Mitigation Strategies:

Interim Report” http://www.nap.edu/catalog.php?record\_id=12738]

Currently, the U.S. government spends a relatively small amount of money funding a search and survey program to discover and track near-Earth objects, and virtually no money on studying methods of mitigating the hazards posed by such objects.3 Although Congress has mandated that NASA conduct this survey program and has established goals for the program, neither Congress nor the administration has sought to fund it with new appropriations. As a result, NASA has supported this activity by taking funds from other programs, while still leaving a substantial gap between the goals established by Congress and the funds needed to achieve them.

### Asteroid programs trade-off within the budget

Johnston, 9 [Casey, associate writer Ars Technica - graduate of Columbia University with a B.S. in Applied Physics. She joined Ars Technica as an intern in June 2009, and is now a regular contributor, “ NASA asteroid-tracking program stalled due to lack of funds,” 8/2009, <http://arstechnica.com/science/news/2009/08/nasa-asteroid-tracking-program-stalled-due-to-lack-of-funds.ars>]

The risk of an asteroid rending civilization into bits is a favorite scenario in disaster movies, but it has been none too popular with the United States government. Eleven years ago, Congress tasked NASA with detecting, tracking, and classifying large asteroids and comets that pose a threat to Earth; these are generically termed near earth objects, or NEOs. Since then, save for a small grant, NASA has funded the project on its own. Now Congress has created new goals for the program and requested that they be achieved by 2020. The National Research Committee has put out an interim report on the NEO project, and it indicates that very little progress has been made since 2005, primarily due to a lack of funding. Congress kicked off the NEO-tracking project in 1998, requiring that NASA's equipment be able to locate and identify at least 90 percent of all NEOs one kilometer in diameter or larger. Congress selected this size as the lower bound because it is the smallest size that might be globally catastrophic if it ran into Earth. To guarantee a catastrophe, an asteroid would have to be even larger, perhaps 1.5 to 2 kilometers. On impact, an asteroid of this size would create a fireball the size of a continent and a crater fifteen times the asteroid's diameter; if it hits the ocean, there would be an enormous tsunami. Congress awarded NASA a $1.6 million grant in 1999 to put towards the NEO discovery program. Unfortunately, this was the only funding Congress gave to NASA to pursue this goal; nonetheless, NASA continued the project on its own, and has since successfully achieved the objective of a 90 percent track rate for 1km NEOs. The problem now, the NRC report asserts, is that we shouldn't be satisfied with this. What NASA has accomplished so far will largely enable us to at least attempt to prevent any impacts that would ultimately cause the majority of humans that survive the initial blow to die of starvation. However, asteroids smaller than 1km in diameter are not sufficiently less disastrous than their larger counterparts that we can happily ignore them. For example, the NRC report states that the body that caused the 1908 Tunguska explosion and destroyed 2,000 square kilometers of Siberian forest was only 30-40 meters in diameter. This realization is what led Congress to change its mind and decide that NASA should track even smaller asteroids. The new goal: track 90 percent of NEOs 140 meters or larger in diameter by 2020. The NRC report primarily takes issue with the lack of action on this goal from anyone involved: Congress has not volunteered funding for their mandate, and NASA has not allotted any of their budget to it, either. The equipment currently in use to track NEOs can easily see the 1km monsters, but it's not sensitive enough to track the 140m asteroids. As a result, if a Tunguska-sized body were headed for Earth today, its arrival would probably be a complete surprise.

## A2: No Link - New Appropriations

### No appropriations – NASA budget is frozen for five years – new projects must trade-off

Harwood, 11 [William, CNET Blog Network author, “ NASA 2012 budget reflects 'tough choices,' uncertain outlook,” 2/14/2011, http://news.cnet.com/8301-19514\_3-20031912-239.html]

Faced with reduced funding and an uncertain outlook, NASA's $18.7 billion fiscal 2012 budget prioritizes the Obama administration's major goals and objectives, focusing on maintaining the International Space Station, retiring the shuttle and ramping up efforts to spur development of commercial manned spacecraft. The budget also reflects the administration's commitment to building a new heavy-lift rocket and a crew capsule that could be used for deep-space exploration. But the budget follows the administration's proposal to freeze federal funding at 2010 levels for the next five years, resulting in a $276 million decrease for NASA compared to the agency's 2011 budget. Until Congress weighs in with actual funding, it's not clear when a viable United States manned spacecraft will emerge to service the station or when eventual deep-space missions might occur. In the meantime, with the shuttle's retirement looming after a final three missions, NASA will continue to rely on Russia to provide transportation to and from the space station aboard Soyuz spacecraft at about $55 million a seat. "This budget requires us to live within our means so we can invest in our future," NASA Administrator Charlie Bolden told reporters. "It maintains our strong commitment to human spaceflight and new technologies. It establishes critical priorities and invests in excellent science, aeronautics research and education programs that will help us win the future." Because "these are tough fiscal times, tough choices had to be made," he said. "Our No. 1 priority is safely flying out the shuttle and maintaining the safety and well being of the American astronauts currently living and working in space."

## Impact – Earth Science Key Warming

### NASA earth observation is essential to mitigating massive warming

Lewis et. al, 10 [ James A. Lewis, senior fellow and director of the Technology and Public Policy Program at CSIS Sarah O. Ladislaw, senior fellow in the Energy and National Security Program at CSIS Denise E. Zheng , June 2010, “ Earth Observation for Climate Change,” <http://csis.org/files/publication/100608_Lewis_EarthObservation_WEB.pdf>]

Climate change poses a dilemma for space policy. If we accept that climate change poses credible and major risks to regional stability, national security, and economic health, the United States needs to reconsider how it spends its money for civil space. Earth observation data are critical to understanding the causes and effects of climate change and quantifying changing conditions in the environment. The shortage of satellites actually designed and in orbit to measure climate change is unacceptable if we are serious about climate change. Until this year, U.S. space policy was on autopilot. The Bush space policy did not differ markedly from the space policy of Jimmy Carter. The hallmark of this period was heavy investment in the shuttle and space station. The commitment to these 1970s technologies eroded public interest in space. A science reporter for a national newspaper said that when he wrote on the unmanned Mars explorers, thousands of readers would look at the story on the newspaper’s Web site, but when he wrote about the shuttle, there would be only a few hundred “hits.” The overlong commitment to the shuttle and the station ended in final years of the Bush administration, but unfortunately it was replaced with an unworkable vision for manned exploration that would have consumed a major portion of the space budget. In fact, a mission to Mars is beyond the technical capabilities of any nation. Leonardo da Vinci could draw helicopters and aircraft, but they were made of wood and cloth. Until breakthroughs in materials, chemistry, and physics, his ideas could not be implemented. The same is now true for manned planetary exploration. Our propulsion and life support systems will not support a manned flight to Mars. In contrast, a return to the Moon is achievable. The dilemma is that NASA would need another $150 billion to return to the moon more than 40 years after the first visit. There is no doubt that a return to the moon would bring prestige to the United States and that if another nation such as China was to get there beforehand it will be interpreted as another sign of U.S. decline. Years of a static approach to space policy have put us in this uncomfortable situation. From the perspective of the national interest, however, the United States would be better served by building and maintaining a robust space capacity for monitoring climate change. This is a question of priorities. Manned flight should remain a priority, but not the first priority. Earth observation data is critical to understanding the causes and effects of climate change and quantifying changing conditions in the environment. The paucity of satellites actually designed and in orbit to measure climate change is disturbing. The United States does not have a robust climate-monitoring infrastructure. In fact, the current infrastructure is in decline. Until that decline is reversed and an adequate space infrastructure put in place, building and launching satellites specifically designed for monitoring climate change should be the first priority for civil space spending. Manned spaceflight provides prestige, but Earth observation is crucial for security and economic well-being. The United States should continue to fund as a priority a more robust and adequate space infrastructure to measure climate change, building and orbiting satellites specifically designed to carry advanced sensors for such monitoring. Satellites provide globally consistent observations and the means to make simultaneous observations of diverse measurements that are essential for climate studies. They supply high-accuracy global observations of the atmosphere, ocean, and land surface that cannot be acquired by any other method. Satellite instruments supply accurate measurements on a near-daily basis for long periods and across broad geographic regions. They can reveal global patterns that ground or air sensors would be unable to detect—as in the case of data from NASA satellites that showed us the amount of pollution arriving in North America from Asia as equal to 15 percent of local emissions of the United States and Canada. This sort of data is crucial to effective management of emissions—the United States, for example, could put in place regulations to decrease emissions and find them neutralized by pollution from other regions. 15 Satellites allow us to monitor the pattern of ice-sheet thickening and thinning. While Arctic ice once increased a few centimeters every year, it now melts at a rate of more than one meter annually. This knowledge would not exist without satellite laser altimetry from NASA’s ICESat satellite. 16 Satellite observations serve an indispensable role—they have provided unprecedented knowledge of inaccessible regions. Of the 44 essential climate variables (ECV) recognized as necessary to support the needs of the parties to the UNFCCC for the purposes of the Convention, 26 depend on satellite observations. But deployments of new and replacement satellites have not kept pace with the termination of older systems. Innovation and investment in Earth observation technology have failed to keep pace with global needs for monitoring and verification. Much of our data comes from satellites put in orbit for other purposes, such as weather prediction and monitoring. The sensors on these weather satellites provide valuable data, but they are not optimized for monitoring climate change or for adequately assessing the effect of mitigation efforts. More precise and specialized data are needed to understand and predict climate change, and getting these data will require new orbital sensors. Countries have improved many of their climate observation capabilities, but reports suggest little progress in ensuring long-term continuity for several important observing systems. The bulk of system missions has provided the climate-quality data used to establish trends in sea level, ozone concentrations, ocean color, solar irradiance, Earth’s energy balance, and other key variables. While this investment has made an invaluable contribution, it is not an operational system. Many satellites currently in orbit are operating well past their planned lifetimes. In the next eight years, half of the world’s Earth observation satellites will be past their useful life. One reason for this is that many of the satellites that provide critical data for monitoring climate change are experimental satellites (such as TRMM—the Tropical Rainfall Measuring Mission). Satellites built as research efforts provide real benefit, but if they are not replaced when their service life ends and if a permanent operational capability for Earth observation is not put in place, we will face insurmountable problems for observing capabilities and our ability to manage climate change. Many missions and observations for collecting climate data are at risk of interruption. These include measurements of ocean color that are critical for studying phytoplankton bloom and the role of ocean biomass as a carbon source and sink and data on the role of forests in the carbon cycle. Perhaps the most important shortcoming involves the monitoring of carbon dioxide (CO2 ) emissions and greenhouse gases. Reduction and regulation of CO2 emissions are part of every discussion on how to manage climate change, but the crash of NASA’s Orbiting Carbon Observatory (OCO) satellite left the world essentially bereft of the ability to make precise measurements to assess emissions reduction efforts. OCO cost approximately $278 million, 17 which was about 2 percent of NASA’s annual budget for manned space flight in 2009. Its loss will cripple global carbon monitoring until we have its replacement, finally funded this year and scheduled for launch no later than February 2013. Existing GHG monitoring networks and programs are predominantly ground-based, but they are not truly adequate to the task. Ground-based networks are limited because they can only provide disjointed pieces of a larger picture. Moreover, these systems are aging, and investment for replacement has declined. We now rely on Japan’s GOSAT, the European Space Agency’s SCIAMACHY sensor, and Canada’s microsatellite, CanX-2, for observations of atmospheric concentrations of carbon; however, these sensors are not advanced enough to meet data requirements needed to understand critical aspects of the carbon cycle, and they are highly constrained by their range of coverage. For example, the carbon produced from a fossil fuel power plant is too small to measure with GOSAT, and low spatial resolution and high uncertainty of measurements limit the monitoring capabilities of SCIAMACHY. 18 The implications are serious for measuring the effectiveness of climate policies. If reduction in GHG emissions (the most significant being carbon dioxide) is the centerpiece of mitigation efforts and a goal for both national legislation and international agreement, we are woefully unprepared to assess the effectiveness of these measures. It will be difficult to assess and adjust CO2 -reducing measures without greater investment in orbiting sensors. 19 The need for information has never been greater, but there are significant gaps in global Earth monitoring capabilities. 20 Although more than 50 nations operate or plan to operate Earth observation satellites, most of these are basic electro-optical satellites, essentially orbiting digital cameras that lack the necessary sensors for precise climate monitoring. There are only a handful of dedicated satellites for monitoring climate change, and the time has passed when general-purpose weather satellites can meet our informational needs. Japan, Europe, and the United States operate satellites with some of the sensors needed to monitor climate change, but a recent National Academies study found that of the 26 essential climate variables that can be monitored from space, we have coverage of only 16. 21 Only a coordinated federal policy and investment, including revised priorities for our civil space programs, can change this. For most of the last decade, NASA was unable to replace its climate-monitoring satellites. Replacing these satellites is crucial to avoid a drastic decline in collecting the most valuable information for monitoring climate change. The Obama administration has proposed a budget for NASA’s Earth science programs of $2.4 billion in new funding over the next five years, an increase of more than 60 percent. The new funding, which requires congressional approval, will help replace OCO and allow NASA to replace the twin GRACE satellites that make detailed measurements of Earth’s gravity field that can provide important climate data. The request for NOAA’s budget for climate-related activities has been increased as well. NOAA will be spending $2.2 billion to maintain and further develop satellites and to support climate research; $435 million has been requested to support the U.S. Global Change Research Program, with $77 million in new increases for core climate services and observations. Spending on space has always been a question of priorities. Until recently, those priorities were frozen in time, reflecting political needs that were decades out of date. Our national priorities have changed. A new priority, reflecting the new challenges to our security and national interest, involves monitoring and understanding climate change. Debate over climate change is fierce and there are many skeptics, but the signs of major changes are undeniable. Warnings of catastrophe are likely overblown, but we do not fully understand the implications of climate change or the utility of various measures to mitigate it. Climate change is occurring, and it creates new risks. In this context, the recent decision to scale back spending on human space flight and increase spending on Earth observation is a better match for national priorities and interests. It updates a space policy that has been badly out of date for years. Observation of climate change began more than a century ago with simple measurements of the Earth’s average temperature. These were interesting, but inadequate. The breakthrough in understanding climate change came with Earth observation satellites. Satellites provide global awareness in ways that other technologies cannot match. The monitoring needed for a serious effort requires observations that can only be done from space

## Warming turns war

### Warming makes future wars inevitable – Earth observation is a pre-requisite to mitigating conflicts

Wigbels et. al, 8 [Lyn Wigbels, G. Ryan Faith, Vincent Sabathier, “Earth Observations and Global Change,” July 2008, http://csis.org/files/media/csis/pubs/080725\_wigbels\_earthobservation\_web.pdf]

The stresses on the Earth's systems are growing more severe at an ever-increasing pace, adding to the already significant economic variability arising from current challenges such as weather forecasting and resource management. The effects of these added pressures are already being felt and will have major implications for national security, the economy, natural resource management, and the security of water, food, and energy for decades to come. Today, U.S. public- (civil and national security) and private-sector users who want to understand global change or identify ways to predict, prevent, and mitigate its impacts are all intrinsically reliant on civil Earth observation systems (used in modeling, computation, and decision support tools) and data (collected from sensors on satellites, unpiloted aircraft, buoys, and other platforms). Earth observation products— including satellite weather information—provide, at a minimum, an additional S30 billion to the U.S. economy annually. In the future, Earth observation capabilities will be even more critical for governments and industry to monitor, understand, and adapt more quickly to global change and track and respond to consequences of past, present, and future policy choices. The national security community is increasingly concerned about the impacts of global change leading to instabilities and conflicts within, between, and among nations. This applies to stable as well as volatile regions. The national security community is increasingly working with the Earth observation community to better understand these challenges.

## 2NC - Climate change Outweighs Asteroids

### Climate change outweighs asteroid impacts

Boslough, 10 [Mark, Mitigation Panel Member of Committee to Review Near-Earth-Object Surveys and Hazard Mitigation Strategies, Minority Opinion, “Defending Planet Earth: Near-Earth Object Surveys and Hazard Mitigation Strategies,” pp 126-127, http://www.nap.edu/catalog.php?record\_id=12738]

 The original draft of the table entitled “Expected Fatalities per Year, Worldwide, from a Variety of Causes” (Table 2.2 in Chapter 2 of this final report) included the World Health Organization (WHO)1 estimate of 150,000 deaths per year from climate change. The steering committee made a decision to remove the climate data, giving as reasons (1) caution about having any debate on climate change distract from the issue at hand and (2) irrelevance of climate change numbers to the near-Earth object (NEO) threat. The first reason is inappropriate. Data should not be removed from a report to avoid the potential for political controversy. The second reason is incorrect. Climate change is more relevant than the other causes in the table, for several reasons: The portion of the threat above the global catastrophe threshold—which in the model we quote2 constitutes about one half of the expected annual death rate—is primarily a climate change threat. Estimates of deaths from a large impact are largely based on our model-derived scientific understanding of climate change. The 91 deaths per year assumes a catastrophe threshold significantly lower than the current best estimate (3 kilometer-diameter asteroid). It implicitly assumes a high-sensitivity climate and/or strong dependence of death rate on climate change. Asteroids and climate change are the only two threats in the original table that can have abrupt and global consequences, and to which everyone on the planet is exposed, regardless of their lifestyle or personal behavior. They are also both to some extent preventable, and in both cases mitigation requires international agreements and cooperation. The climate change death rate is therefore more appropriate to compare to the asteroid death rate than the other threats are. Climate can and has changed abruptly. Evidence from Greenland ice cores and other paleoclimate data show that these spontaneous changes take place much more frequently than do large impacts and on time scales that can exceed human adaptive capacities.3 Asteroids and climate change are the only two threats in the original table that include global catastrophe as a possibility. The best estimate of the global catastrophe threshold diameter for an asteroid is 3 km, but according to Alan Harris,4 all NEOs above this threshold, except for long-period comets, have been discovered. The best estimate of the probability of a global catastrophe this century from an asteroid impact is therefore zero. If Earth and its inhabitants are assumed to be much more sensitive to global change, then a low threshold of 1.5 km (a factor of 8 lower in kinetic yield) can be assumed. Harris estimates around 30 undiscovered asteroids larger than 1.5 km. The probability of impact by one of these before the end of the century is 0.0005 percent. However, recent models5,6 suggest a 2 percent probability of global catastrophe from anthropogenic climate change this century, assuming realistic greenhouse gas emissions scenarios and a threshold temperature change or sensitivity of 8°C. If the threshold sensitivity is 4°C, the probability of global catastrophe exceeds 20 percent. With sensitive assumptions, it is therefore 40,000 times more probable that Earth will be faced with an anthropogenic climate change catastrophe than with an asteroid catastrophe. With best assumptions it is infinitely more probable. The WHO climate change estimate of 150,000 deaths per year is a lower bound, because of its conservative assumptions that do not include increasing temperatures since 2000. It also does not consider the probability of global catastrophe from human-triggered abrupt climate change comparable to the speed or magnitude of the Bölling/Allerød or Younger Dryas boundaries, which are not impact related.7 The Harris (2009) asteroid estimate of 91 deaths per year is an upper bound, because it assumes a low catastrophe threshold. The inclusion of these figures for intercomparison is the only way to provide policy makers with an objective basis for the prioritization and allocation of resources that is commensurate with the relative threat from various causes.

### Stats prove global warming is 1000 times more threatening than asteroids

Boslough and Harris, 9 [Mark, Sandia National Laboratories, Harris, Space Science Institute, “ U41D-0034: Global Catastrophes in Perspective: Asteroid Impacts vs Climate Change,” https://cfwebprod.sandia.gov/cfdocs/CCIM/docs/AGU-2008-poster\_SAND2009-1143P.pdf]

When allocating resources to address threats, decision makers are best served by having objective assessments of the relative magnitude of the threats in question. Asteroids greater than about 1 km in diameter are assumed by the planetary impact community to exceed a "global catastrophe threshold". Impacts from smaller objects are expected to cause local or regional destruction, and would be the proximate cause of most associated fatalities. Impacts above the threshold would be expected to alter the climate, killing billions of people and causing a collapse of civilization. In this apocalyptic scenario, only a small fraction of the casualties would be attributable to direct effects of the impact: the blast wave, thermal radiation, debris, ground motion, or tsunami. The vast majority of deaths would come later and be due to indirect causes: starvation, disease, or violence as a consequence of societal disruption related to the impact-induced global climate change. The concept of a catastrophe threshold comes from "nuclear winter" studies, which form the basis for quantitative estimates of the consequences of a large cal observations and statistical analysis. Much of impact. The probability estimates come from astronomi the impact threat, at its core, is a climate-change threat. Prior to the Spaceguard Survey of Near-Earth id impact was estimated to be 1 in 25,000 (Chapman Objects (NEOs), the chance of dying from an astero & Morrison, 1994). Most of the large asteroids have now been discovered, and none is on an impact trajectory. Moreover, new data show that mid-sized asteroids (tens to hundreds of meters across) are less abundant than previously thought, by a factor of three. We now estimate that the lifetime odds of being killed by the impact of one of the remaining undiscovered NEOs are about one in 720,000 for individuals with a life expectancy of 80 years (Harris, 2008). One objective way to compare the relative magnitude imate change is to estimate the long-term worldwide of the impact threat to that of anthropogenic cl fatality rate. For asteroids, the average is about a hundred deaths per year–about half of which are climate-change related. By contrast, the World Health Organization (WHO) has estimated that 150,000 deaths per year are currently attributable to anthropogenic climate change. Both estimates are similarly impacted by uncertainty in our understanding of climate change and statistical attribution of indirect causes. The WHO estimate is a lower bound, because it does not account for the unknown probability of a human-triggered abrupt climate change comparable to the speed or magnitude of the Bolling/Allerod or Younger Dryas boundaries, which are not impact related. Nevertheless, by any objective measure the impact threat is minuscule (by a factor of at least a thousand) compared to the threat from anthropogenic climate change

# Aff Answers

### See also main Spending file

## No Trade off

### No trade-offs – empirics prove

Landis, 95 [Geoffrey, NASA John Glenn Research Center, “ Footsteps to Mars: An incremental approach to Mars exploration,” Journal of the British Interplanetary Society, Vol. 48, pp. 367-342 (1995); <http://www.geoffreylandis.com/Footsteps.pdf>]

Recently there has been an alarming tendency in the scientific and space advocacy communities for advocates to attack one project, in the belief that if that project could be canceled, the money saved would be used for their own, more desirable projects. This is false. Quoting from senate staffer Steve Palmer [17]: “What space station and ASRM [advanced solid rocket motor] add up to is a drop in the bucket. If Congress cuts out both space station and ASRM, will the money be used for other programs of interest to the space industry? The short answer is no”. Arguments to cancel space projects are eagerly picked up in Congress, by people who have agendas and pet projects that have nothing to do with space. Further, attacking space projects has the result of making enemies out of allies. When we attack someone else’s project, we can count on having them attack ours. The result is that the arguments against both projects will be remembered by a money-starved Congress. It is not true that manned missions eclipse funds for unmanned science missions. In fact, there is an excellent case to be made for precisely the opposite correlation: the presence of large manned missions increases the funding and opportunities for unmanned science missions. Historically, the science budget of NASA has been a roughly constant fraction of the total budget; any major new initiative which increases the overall space budget is likely to increase the funding for science. If Mars advocates adopt the approach of pushing our initiatives by tearing down other space programs, the likely result is that nothing, neither Mars nor other programs, will be accomplished.

### No link - Funds come from human exploration and boost both programs

Kerr, 11 [Richard, staff writer, Science Magazine, “ A Windfall for Defenders of the Planet,” Science 18 February 2011: Vol. 331 no. 6019 p. 843 ]

 Planetary defense may be in line for a boost, but the present Congress is in a serious budget-cutting mood. That's where the human exploration of space could come in. If NASA hopes to meet the president's goal of sending humans to an NEA by 2025, the search for small NEAs will have to be at least as fast as that required to meet the 2020 planetary defense goal. That's because NASA would need to identify potential exploration targets before 2020. And the asteroids easiest for astronauts to reach happen to be the ones most likely to strike Earth. So human exploration could pick up the half-billion-dollar-or-more tab for an NEA search that the NASA task force recommended. In addition, the precursor robotic missions needed to inspect potential targets for later astronaut visits would provide information on the physical makeup of NEAs crucial to deciding how to nudge a threatening NEA off its collision course with Earth.

## Can’t solve warming

### Impossible to cut emissions – no modeling or momentum

**Mead 10** (Walter Russell, senior fellow for U.S. foreign policy at the Council on Foreign Relations, The Death of Global Warming, February 1, <http://blogs.the-american-interest.com/wrm/2010/02/01/the-death-of-global-warming/>)

The global warming movement as we have known it is dead. Its health had been in steady decline during the last year as the once robust hopes for a strong and legally binding treaty to be agreed upon at the Copenhagen Summit faded away. By the time that summit opened, campaigners were reduced to hoping for a ‘politically binding’ agreement to be agreed that would set the stage for the rapid adoption of the legally binding treaty. After the failure of the summit to agree to even that much, the movement went into a rapid decline. The movement died from two causes: bad science and bad politics. After years in which global warming activists had lectured everyone about the overwhelming nature of the scientific evidence, it turned out that the most prestigious agencies in the global warming movement were breaking laws, hiding data, and making inflated, bogus claims resting on, in some cases, no scientific basis at all. This latest story in the London Times is yet another shocker; the IPCC’s claims that the rainforests were going to disappear as a result of global warming are as bogus and fraudulent as its claims that the Himalayan glaciers would melt by 2035. It seems as if a scare story could grab a headline, the IPCC simply didn’t care about whether it was reality-based. With this in mind, ‘climategate’ — the scandal over hacked emails by prominent climate scientists — looks sinister rather than just unsavory. The British government has concluded that University of East Anglia, home of the research institute that provides the global warming with much of its key data, had violated Britain’s Freedom of Information Act when scientists refused to hand over data so that critics could check their calculations and methods. Breaking the law to hide key pieces of data isn’t just ‘science as usual,’ as the global warming movement’s embattled defenders gamely tried to argue. A cover-up like that suggests that you indeed have something to conceal. The urge to make the data better than it was didn’t just come out of nowhere. The global warmists were trapped into the necessity of hyping the threat by their realization that the actual evidence they had — which, let me emphasize, all hype aside, is serious, troubling and establishes in my mind the need for intensive additional research and investigation, as well as some prudential steps that would reduce CO2 emissions by enhancing fuel use efficiency and promoting alternative energy sources — was not sufficient to get the world’s governments to do what they thought needed to be done. Hyping the threat increasingly doesn’t look like an accident: it looks like it was a conscious political strategy. Now it has failed. Not everything that has come out of the IPCC and the East Anglia Climate Unit is false, but enough of their product is sufficiently tainted that these institutions can best serve the cause of fighting climate change by stepping out of the picture. New leadership might help, but everything these two agencies have done will now have to be re-checked by independent and objective sources. The global warming campaigners got into this mess because they had a deeply flawed political strategy. They were never able to develop a pragmatic approach that could reach its goals in the context of the existing international system. The global warming movement proposed a complex set of international agreements involving vast transfers of funds, intrusive regulations in national economies, and substantial changes to the domestic political economies of most countries on the planet. As it happened, the movement never got to the first step — it never got the world’s countries to agree to the necessary set of treaties, transfers and policies that would constitute, at least on paper, a program for achieving its key goals. Even if that first step had been reached, the second and third would almost surely not have been. The United States Congress is unlikely to pass the kind of legislation these agreements would require before the midterm elections, much less ratify a treaty. (It takes 67 senate votes to ratify a treaty and only 60 to overcome a filibuster.) After the midterms, with the Democrats expected to lose seats in both houses, the chance of passage would be even more remote — especially as polls show that global warming ranks at or near the bottom of most voters’ priorities. American public opinion supports ‘doing something’ about global warming, but not very much; support for specific measures and sacrifices will erode rapidly as commentators from Fox News and other conservative outlets endlessly hammer away. Without a commitment from the United States to pay its share of the $100 billion plus per year that poor countries wanted as their price for compliance, and without US participation in other aspects of the proposed global approach, the intricate global deals fall apart. Since the United States was never very likely to accept these agreements and ratify these treaties, and is even less prepared to do so in a recession with the Democrats in retreat, even “success” in Copenhagen would not have brought the global warming movement the kind of victory it sought — although it would have created a very sticky and painful political problem for the United States. But even if somehow, miraculously, the United States and all the other countries involved not only accepted the agreements but ratified them and wrote domestic legislation to incorporate them into law, it is extremely unlikely that all this activity would achieve the desired result. Countries would cheat, either because they chose to do so or because their domestic systems are so weak, so corrupt or so both that they simply wouldn’t be able to comply. Governments in countries like China and India aren’t going to stop pushing for all the economic growth they can get by any means that will work — and even if central governments decided to move on global warming, state and local authorities have agendas of their own. The examples of blatant cheating would inevitably affect compliance in other countries; it would also very likely erode what would in any case be an extremely fragile consensus in rich countries to keep forking over hundreds of billions of dollars to poor countries — many of whom would not be in anything like full compliance with their commitments. For better or worse, the global political system isn’t capable of producing the kind of result the global warming activists want. It’s like asking a jellyfish to climb a flight of stairs; you can poke and prod all you want, you can cajole and you can threaten. But you are asking for something that you just can’t get — and at the end of the day, you won’t get it. The grieving friends and relatives aren’t ready to pull the plug; in a typical, whistling-past-the-graveyard comment, the BBC first acknowledges that even if the current promises are kept, temperatures will rise above the target level of two degrees Celsius — but let’s not despair! The BBC quotes one of its own reporters: “BBC environment reporter Matt McGrath says the accord lacks teeth and does not include any clear targets on cutting emissions. But if most countries at least signal what they intend to do to cut their emissions, it will mark the first time that the UN has a comprehensive written collection of promised actions, he says.”

### Existing CO2 makes warming inevitable

**AP 9** (Associated Press, Six Degree Temperature Rise by 2100 is Inevitable: UNEP, September 24, <http://www.speedy-fit.co.uk/index2.php?option=com_content&do_pdf=1&id=168>)

Earth's temperature is likely to jump six degrees between now and the end of the century even if every country cuts greenhouse gas emissions as proposed, according to a United Nations update. Scientists looked at emission plans from 192 nations and calculated what would happen to global warming. The projections take into account 80 percent emission cuts from the U.S. and Europe by 2050, which are not sure things. The U.S. figure is based on a bill that passed the House of Representatives but is running into resistance in the Senate, where debate has been delayed by health care reform efforts. Carbon dioxide, mostly from the burning of fossil fuels such as coal and oil, is the main cause of global warming, trapping the sun's energy in the atmosphere. The world's average temperature has already risen 1.4 degrees since the 19th century. Much of projected rise in temperature is because of developing nations, which aren't talking much about cutting their emissions, scientists said at a United Nations press conference Thursday. China alone adds nearly 2 degrees to the projections. "We are headed toward very serious changes in our planet," said Achim Steiner, head of the U.N.'s environment program, which issued the update on Thursday. The review looked at some 400 peer-reviewed papers on climate over the last three years. Even if the developed world cuts its emissions by 80 percent and the developing world cuts theirs in half by 2050, as some experts propose, the world is still facing a 3-degree increase by the end of the century, said Robert Corell, a prominent U.S. climate scientist who helped oversee the update. Corell said the most likely agreement out of the international climate negotiations in Copenhagen in December still translates into a nearly 5-degree increase in world temperature by the end of the century. European leaders and the Obama White House have set a goal to limit warming to just a couple degrees. The U.N.'s environment program unveiled the update on peer-reviewed climate change science to tell diplomats how hot the planet is getting. The last big report from the Nobel Prize-winning Intergovernmental Panel on Climate Change came out more than two years ago and is based on science that is at least three to four years old, Steiner said. Global warming is speeding up, especially in the Arctic, and that means that some top-level science projections from 2007 are already out of date and overly optimistic. Corell, who headed an assessment of warming in the Arctic, said global warming "is accelerating in ways that we are not anticipating." Because Greenland and West Antarctic ice sheets are melting far faster than thought, it looks like the seas will rise twice as fast as projected just three years ago, Corell said. He said seas should rise about a foot every 20 to 25 years.