Tradeoff DA GFCA Novice Packet

NASA TOFF DA

1nc: tradeoff DA (1/2)

NASA's budget levels will demand difficult choices, but the Administration is committed to Earth science programs.

Holdren 11 – Director office of Science and Tech policy (John, Director – Office of Science and Technology Policy, "The Budget for the White House Office of Science and Technology Policy", http://www.whitehouse.gov/sites/default/files/microsites/ostp/jph-house-sst-testimony-2-17-11.pdf, 2-17)

National Aeronautics and Space Administration (NASA) This past October, the President signed the 2010 NASA Authorization Act (the "Act", Public Law 111-267), which stands as a statement of bipartisan agreement by Congress and the Administration regarding NASA and its many programs. NASA's programs not only support the grand and inspiring adventures of space exploration, scientific discovery, and aeronautical advancement, but also provide an indispensable platform for observing the Earth to ensure that we have the information we need to cope with weather-related and other environmental threats to human well-being. NASA programs also fuel new technology development and innovation and help launch new products, services, businesses, and jobs with enormous growth potential. The Act will further our joint goal of placing NASA's programs on a more stable footing and enhancing the long-term sustainability of these exciting endeavors as we chart a new path forward in space. The FY2012 NASA budget reaffirms the Administration's commitment to a bold and ambitious future for NASA. Every initiative called for in the Act is funded, including: a robust program of space science and Earth science, including a commitment to invest in new satellites and programs of Earth observation; a strong aeronautics research program; the Space Launch System (SLS) heavy-lift launch vehicle and Multi-Purpose Crew Vehicle (MPCV) needed to support human spaceflight and exploration missions beyond Earth's orbit; a vigorous technology development program; extension of International Space Station (ISS) activities through at least 2020, coupled with a plan to use this orbiting outpost more effectively; and the development of private-sector capabilities to transport cargo and crew into low Earth orbit, thus shortening the duration of our reliance solely on Russian launch vehicles for access to the ISS. Within the context of a difficult budget environment and the President's decision to freeze non-security discretionary spending at 2010 levels for five years, NASA's budget remains at $18.7 billion in the 2012 Budget. This budget level demands difficult choices, and those choices were made while keeping in mind the priorities of the Act as well as the collective desire of the Congress and the Administration to have a balanced program of science, research, technology development, safe spaceflight operations, and exploration. One such difficult choice was limiting the budget for the James Webb Space Telescope, keeping the project funded at $375 million in 2012, to assure NASA the opportunity to begin work on new scientific opportunities identified in the National Academies' most recent decadal survey in astronomy and astrophysics. Similarly, the 2012 Budget reduces the planned increases in Earth-science research outlined in the 2011 Budget. The Budget demonstrates the President's continued commitment to our shared 5 priorities even when difficult decisions are required, providing $1.8 billion in FY2012 funding for the Space Launch System and $1.02 billion for the Multi-Purpose Crew Vehicle, thereby laying the critical foundation for these exploration programs. As NASA reported in January of this year, it is still in the process of shaping these efforts and will discuss them in more detail in a report to Congress this spring. Similarly, the Budget provides a solid foundation for the commercial crew and cargo transportation programs that are necessary to provide safe and costeffective access to low Earth orbit, including sufficient support for the operations of the ISS.

NASA has cut its space programs and has a flat budget for the next 5 years. That means any new space policy comes at the expense of Earth Science.

Space Travel.com 6/8/11(NASA Spending Shift to Benefit Centers Focused on Science and Technology NASA Spending Shift to Benefit Centers Focused on Science and Technology)

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.

1nc: tradeoff DA (2/2)

Earth science is critical to US climate leadership and building a global response to climate change

Lewis, Ladislaw, and Zheng 10- James A. Lewis, senior fellow and director of the Technology and Public Policy Program at CSIS, worked in the federal government as a Foreign Service officer; Sarah O. Ladislaw, senior fellow in the Energy and National Security Program at CSIS, where she concentrates on climate change, the geopolitical implications of energy production and use, energy security, energy technology, and sustainable development; Denise E. Zheng, program coordinator and research assistant in the CSIS Technology and Public Policy Program, June 2010, "Earth Observation for Climate Change", http://csis.org/files/publication/100608_Lewis_EarthObservation_WEB.pdf

Better climate information has helped us move beyond the question of whether action to manage climate change is warranted to what types of actions and polices are needed. Information is key to an effective approach to climate change. At a national and international level, many countries are preoccupied with how to ensure that decisionmakers and user communities have access to the types of information that will make the climate efforts successful. This includes coordinated systems for Earth observation, enhanced modeling capabilities, an organizational structure that allows science to be more responsive to relevant policy questions or functions, and places where information can be gathered and made accessible to broad-based user communities. Meeting the needs of climate policy requires a transformation in how climate research is incorporated into public policymaking.4 "Operationalizing" information systems—investing in the Earth observation systems necessary for producing the right data over the right time and space horizons, coordinating data collection, interpreting and sharing to maximize the data's benefits, focusing on the human and social science effects of climate change, improving modeling capabilities, and making this information accessible and relevant for a wide range of users—is a necessary step in designing effective U.S. climate policy. It also represents an opportunity **for America to demonstrate global leadership** and contribute to building global capacity to understand and more effectively respond to the climate. The climate negotiations in Copenhagen, Denmark, in December 2009, failed because of differences over how to share responsibilities and burdens. The challenges inherent in these negotiations will not be easily overcome. However, the troubled negotiations in Copenhagen present the United States with an opportunity. The 2008 CSIS report, CSIS Commission on Smart Power: A Smarter, More Secure America, called for the United States to use its technology and scientific prowess to engage other nations in efforts that serve both U.S. interests and the interests of the global community. This report identifies Earth observation and climate change as one such opportunity and provides recommendations on how the United States can, working with other nations, acquire the technology and build the institutions needed to assess and manage climate change. It suggests three steps that the United States can take: ■■ expand international cooperation, ■■ consolidate and strengthen its national effort, and ■■ launch civil space policy in a new direction.

Warming leads to extinction

Mazo 10 – PhD in Paleoclimatology from UCLA

Jeffrey Mazo, Managing Editor, Survival and Research Fellow for Environmental Security and Science Policy at the International Institute for Strategic Studies in London, 3-2010, "Climate Conflict: How global warming threatens security and what to do about it," pg. 122

The best estimates for global warming to the end of the century range from 2.5-4.~C above pre-industrial levels, depending on the scenario. Even in the best-case scenario, the low end of the likely range is 1.goC, and in the worst 'business as usual' projections, which actual emissions have been matching, the range of likely warming runs from 3.1--7.1°C. Even keeping emissions at constant 2000 levels (which have already been exceeded), global temperature would still be expected to reach 1.2°C (O'9""1.5°C)above pre-industrial levels by the end of the century." Without early and severe reductions in emissions, the effects of climate change in the second half of the twenty-first century are **likely to be catastrophic** for the stability and security of countries in the developing world - not to mention the associated human tragedy. Climate change could even undermine the strength and stability of emerging and advanced economies, beyond the knock-on effects on security of widespread state failure and collapse in developing countries.' And although they have been condemned as melodramatic and alarmist, many informed observers believe that unmitigated climate change beyond the end of the century could pose an **existential threat** to civilisation." What is certain is that there is no precedent in human experience for such rapid change or such climatic conditions, and even in the best case adaptation to these extremes would mean profound social, cultural and political changes.

Neg: Uniqueness (1/2)

NASA's science program will continue, but there is strong pressure to stay within the budgets

Space Daily 7-20-11, " FY12 House Funding Bill for NASA" http://www.spacedaily.com/reports/FY12_House_Funding_Bill_for_NASA_999.html NEH)

On July 13, the House passed a bill that addresses the FY12 NASA budget. The total recommended amount is $16.81 billion. Here are a few details on this budget. For FY11 the NASA appropriation was $18.448 billion. The Administration's FY12 request was $18.724 billion. But, the new recommended budget represents a decline of 8.9 percent or $1.638 billion. The budget report includes a key statement about NASA's future: "After several years of debate and compromise, the Congress and the Administration have finally settled on a consensus program for NASA in the form of the NASA Authorization Act of 2010 (Public Law 111-278). In order to successfully accomplish everything outlined in that Act, NASA needs to develop and pursue new and different ways of operating that will promote efficiency and economy; annual budget increases can no longer be counted on as the means for achieving mission goals." The message to NASA from the House seems clear; "Clean up your act and get more efficient." In view of the current debt crisis, retirement of the Space Shuttle and transfer of low-orbit cargo and crew space transportation functions to the private sector, NASA is going to be pressured to skinny down to fighting weight and find ways to do more with less. This may seem difficult for an established and bloated bureaucracy. Nevertheless, a continued viable space science program is going to have to adjust to the new reality of smaller budgets, and possibly fewer civil servants at NASA. Remember, when times are tough and elections are approaching, the space community represents only a small part of the voting public. Without structural changes and innovative improvements in productivity within the NASA and contractor community, the future of U.S. space exploration could be very dim.

Earth Science will maintain dominance in funding now

Motl 7-27-11, Luboš PHd of Philosophy from Rutgers University and has been a Harvard Junior Fellow (2001–2004) and assistant professor (2004–2007) at Harvard University " NASA: astrophysics vs Earth science budget" The Reference Frame, http://motls.blogspot.com/2011/07/nasa-astrophysics-vs-earth-science.html NEH)

NASA stands for "The National Aeronautics and Space Administration". You would associate it with astronauts, perhaps pilots, space research, and the Universe. Some young readers may even be ignorant about those things but NASA brought the first men to the Moon and has done lots of other fascinating things. But look at this graph of funding from Nature: Between 2011 and 2012, the astrophysics budget is expected to drop from $1.1 to $0.65 billion, i.e. by 40 percent. Astrophysics would become almost as small as heliophysics (physics of the Sun) which keeps its $0.6 billion. Meanwhile, planetary sciences are proposed to grow by one or a few percent to $1.5 billion and the Earth science should only drop by less than 5 percent to $1.7 billion, preserving its dominant position.

Increase in earth science programs

Morrissey 11 - PHD in Chemistry (Susan R., "NASA: Funding Is Flat, But Earth Science Programs Grow", 02/28/11 http://pubs.acs.org/cen/coverstory/89/8909cover7.html)

The President's 2012 request holds the National Aeronautics & Space Administration's budget flat at $18.7 billion. The agency is not reporting budget breakdowns for 2011. Instead, gains and losses are being measured against the 2010 budget. The request provides continued support for the International Space Station (ISS), setting its 2012 budget at $2.8 billion, a 22.8% increase from 2010. The support would allow expanded use of the station's research capabilities. The request also outlines a plan for research oversight by a nonprofit organization. Earth science programs would also see growth—increasing 24.9% from 2010 to $1.8 billion in 2012. This boost would enable continued development of Earth-observing satellites such as the *Orbiting Carbon Observatory-2,* which would provide information about the planet's carbon cycle, and the *Ice, Cloud & Land Elevation Satellite-2,* which is an orbiting laser altimeter. Funding for the space shuttle will drop significantly. The shuttle is set to fly its last mission this summer, and then the program will be ramped down. Therefore, the budget slates $665 million for the program in 2012, a $2.4 billion drop from 2010. These funds will go into other programs.

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."

Neg: Uniqueness (2/2)

Earth science funding is appropriated

Connell 6/2 (Kathleen, CEO @ Mission to Humanity, San Diego State UniversityGreen Energy Program

The current five-year government spending plan should allow NASA to substantially ramp up its Earth science program. The program faced constraints and uncertainty just a year ago, but the new spending plan provides an additional $2.4 billion over the previous blueprint. This could allow NASA to fly a few missions each year instead of one every couple of years, one official said

Science spending is up – however, funding isn't guaranteed

Wakeman 6/8 (Nick, editor @ Washington Tech, http://fcw.com/articles/2011/06/08/nasa-budget-priorities-shift.aspx)

As budgets tighten and priorities shift, NASA is cutting $1 billion from its pace operations budget, but spending more on other science and technology areas that will reshape the agency's mission, a new study shows. "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," said Steve Bochinger, president of Euroconsult North America. The firm and its partner Omnis Inc. have released a new study, NASA Spending Outlook: Trends to 2016, which analyzes NASA's budget. As space operations shrink, the science budget will be redistributed among NASA centers, Bochinger said. Among the findings: The Science Mission Directorate saw an 11 percent bump in 2011 and will have a $5 billion through 2016. Goddard Space Flight Center and Langley Research Center will benefit because of the work on Earth science projects. The Exploration Systems Mission Directorate will hold steady at about $3.9 billion but funds will shift away from human exploration activities. The new Space Technology Directorate will get $1 billion a year from 2012 to 2016. Langley, Glenn and Ames research centers will benefit because of their work on new technologies for exploration and robotic spaceflight. NASA is restructuring the Aeronautics Research Mission Directorate to focus on fundamental aeronautics and development of technologies for the Next Generation Air Transportation System.

Science is being funded now

PRWeb 6/20 (http://www.sfgate.com/cgi-bin/article.cgi?f=/g/a/2011/06/20/prweb8584611.DTL)

NASA budget highlights: The 2011 NASA budget is up slightly at $18.7 billion, from 2010. 26.3% of NASA's budget ($5 billion) is in the "Science" category. "Science" includes Astrophysics, Earth Science (36% of the Science budget), Heliophysics, James Webb Space Telescope and Planetary Science. The Science budget slightly exceeds the Space Operations budget (25.4%) Space Operations has been cut drastically ($6.1 billion to $4.3 billion), due to ending the Space Shuttle program. However, Space Technology has been increased ($275 million to $1.1 billion).

2012 fiscal spending blueprint generous towards earth science

Click Orlando 11 Monday, February 14, 2011 (http://atlanta.pointslocal.com/story/atlanta/184044/budget-freeze-slows-nasa-development)

NASA's budget would be frozen for the foreseeable future under the fiscal 2012 spending blueprint President Barack Obama released Monday. The freeze would mean slower rocket development, which is expected to anger members of Congress, Local 6 News partner Florida Today reported. The biggest winner in the president's spending plan would be the International Space Station, which already has been extended from 2015 to 2020. Other winners would be earth science, including research on carbon emissions that many lawmakers have criticized, and planetary science, with the launch of a Mars science lab scheduled later this year. But essentially, last year's freeze on overall domestic spending that exempted NASA now covers the space agency, too.

2012 NASA budget boosts Earth Science

Lawler 11 Andrew Lawler 14 February 2011 (*Andrew Lawler* is a senior writer with Science Magazine)

NASA will have to live with a stagnant budget—again. The $18.7 billion proposed by the Administration is the same amount as 2010 and 2011, and science funding would continue to hover at about $5 billion. But in the details are significant winners and losers. Earth science would grow from $1.439 billion to $1.797 billion in 2012, though House of Representatives Republicans are sure to attack a program focused on understanding global change. Meanwhile, Mars exploration—which this year stands at $438 million—would spike at $602 million next year, but plummet to less than half that amount by 2016. Funds for near-Earth object observations would quadruple to $20.4 million. And NASA Chief Financial Officer Elizabeth Robinson said the agency will kill a dark-energy mission in the hope that it can collaborate more cheaply with the European Space Agency. She added that details on how the agency will fund a massive cost overrun in the James Webb Space Telescope won't be ready until this summer.

Neg: Link – general

NASA's funds are a zero sum game

Chameides 09 - Professor of the Environment, PhD, Yale University, MS, Yale University, BA, SUNY Binghamton [Bill, "Is NASA Spacing Out?" http://www.nicholas.duke.edu/thegreengrok/moonwalk]

Now there's a plan afoot to again send humans where only 12 men have boldly gone before. The new mission would first send people to the Moon for weeks and weeks at a time, and graduate to a manned mission to Mars. Cool, just like landing men on the moon was cool back in the '60s and '70s, even to a long-haired college student crisscrossing Europe. But I have to ask, given today's budget crunch and the advancements in robotics, is cool enough of a reason to send humans to the moon and beyond? Don't get me wrong; learning about the planets and stars, dark matter and dark forces is one of humanity's greatest intellectual endeavors. Not only should we fix our gaze on space; we must. But manned missions are not the only way to learn about our world. Virtually all of the aforementioned information about the Earth was obtained using unmanned space-borne platforms. And unmanned missions to the planets have provided us with a wealth of information (at a fraction of the cost) — for example we've been able to do detailed, complex analyses of soil from Mars without the benefit of a human hand. Deciding what NASA does with its funds has always been somewhat of a zero sum game. Doing more of one thing generally means doing less of another. And there's a clear trade-off between high-visibility, manned, space exploration and unmanned missions that are able to bring home the scientific bacon without all the hoopla.

Empirically, NASA will cut funding from existing programs to pay for new projects

Stern 8 – Astrophysicist and planetary scientist (Alan - an astrophysicist and planetary scientist, was an associate administrator in charge of the NASA Science Mission Directorate from 2007 to 2008, "NASA's Black Hole Budgets," November 27, The New York Times, Lexis)

Endemic project cost increases at NASA begin when scientists and engineers (and sometimes Congress) burden missions with features beyond what is affordable in the stated budget. The problem continues with managers and contractors who accept or encourage such assignments, expecting to eventually be bailed out. It is worsened by managers who disguise the size of cost increases that missions incur. Finally, it culminates with scientists who won't cut their costs and members of Congress who accept steep increases to protect local jobs. The result? The costs of badly run NASA projects are paid for with cutbacks or delays in NASA projects that didn't go over budget. Hence the guilty are rewarded and the innocent are punished. Consider these examples: In NASA's astronomy program, the James Webb Space Telescope's $4 billion in cost increases have prevented the development of other important astronomy missions. In NASA's Earth science program, the ballooning price tags of missions already being built have severely delayed proposed missions to study global climate change and to pioneer early-warning systems for earthquakes, among others. In NASA's human exploration program, cost increases have slowed the development of a shuttle replacement, extending the looming multiyear gap in America's ability to launch human spaceflight missions. This is not to the benefit of science, or space exploration, or the nation. And this is not the only damage being done. Our once-broad planetary program that has launched missions to the Moon, comets, asteroids and five planets since the mid-1990s has been so reduced -- largely by years of Mars overrun -- that all that remains in hardware development are just one lunar and one outer-planet mission. Even those two missions are endangered now by the Mars Science Laboratory's spiraling cost.

NASAs budget is allocated – funding comes from internal trade-offs

Moskowitz 11 (Clara, writer @ space.com, 2/14/11, http://www.msnbc.msn.com/id/41582976/ns/technology_and_science-space/t/white-house-freezes-nasas-budget-level/

The Obama administration has announced its 2012 budget request, which if approved would freeze spending for NASA and other federal agencies at 2010 levels for the next fiscal year. The 2012 budget request allocates $18.7 billion for NASA, the same amount the agency received in 2010. That's about $300 million less than NASA was alloted in the president's 2011 budget request. "The times today are very difficult fiscally, and we're going to live within a budget," NASA Administrator Charles Bolden said at a press conference Monday. "What we do has to be affordable, sustainable, and it has to make sense."

Neg: Link – general

New NASA funds would be reallocated from other NASA projects

CBO 4 (Congressional Budget Office, Sept, http://www.cbo.gov/doc.cfm?index=5772&type=0&sequence=3, accessed 7-2-11, CH)

CBO assumed in its analysis that funding for farther-term robotic support missions (those envisioned for beyond 2009, for which there is little detailed planning) and activities from the other categories (the space shuttle, the ISS, and aeronautics and other science programs) would not experience cost growth but would remain at their planned levels. NASA's budget projection incorporates the assumption that through 2020, the number and content of those activities will be adjusted to fit within their projected annual funding levels--in the case of the farther-term robotic support missions, funding held constant at the level projected for the missions for 2009, or about $1.9 billion per year. The agency plans to accommodate any increases in the funding required for those longer-term projects by extending schedules or reallocating funds, either within the category or between categories. Alternatively, the number of missions or the content of missions could be scaled back to reduce costs. In some cases, however, NASA's ability to make such adjustments might be limited--in particular, if the knowledge or experience that NASA expects to obtain from the yet-to-be-defined robotic support missions is critical to conducting the human exploration mission. (CBO addresses the possible implications of cost growth in all robotic support missions in the analysis described in Chapter 3.)

NASA budget zero-sum—competition and cuts between ISS, Constellation, shuttle program prove

Thangavelu 9 (Madhu, Prof. Department Of Aerospace Engineering@USC, Space News, 8/24, http://www.spacenews.com/commentaries/consortium-for-the-international-space-station.html, accessed 7-1-11, CH)

Now, a most poignant exchange between Augustine Committee members and NASA's ISS manager reveals that NASA's current budget, including stimulus funds, will still not allow us to keep the shuttle flying, the ISS operations rolling, and simultaneously provide enough resources for building the systems in the Constellation program for returning people to the Moon. Crawley points to the direct impact of this zero sum situation by suggesting that the Constellation program will have to be delayed until the ISS is decommissioned.

NASA funds limited—new programs would trade-off

Space Weather 9 (5/1, http://www.solarstorms.org/SWChapter10.html, accessed 7-1-11, CH)

NASA, and the space scientists that advise this agency, are not interested in building a follow-on satellite to ACE just to supply private industry with a forecasting tool, unless it can be justified on solely scientific terms of advancing our understanding. Even so, any prospective follow-on to ACE will have to compete with astronomy satellites such as the Next Generation Space Telescope to secure its funding, and with MAP, AXAF and Hubble Space Telescope to maintain their year-to-year operating budget. NASA has been forced into a zero-sum, or even declining, fiscal game by Congress, at a time when space research has exploded into new areas and possibilities. Whether the power industry gets a GIC-forecasting tool to keep Boston lights turned on, or NOAA's Space Environment Center can help satellite owners prevent another major communication satellite outage, hinges on whether investigating quasars is deemed more important than studying the physics of solar magnetic field reconnection.

Neg: Link - general

Nasa spending trades off internally

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, leading to tradeoff's

Hsu 6/27/**11,** Jeremy, Sr. Writer at Innovation News Daily "Space on a budget balances risk vs. 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."

Neg: Link – Constellation

Constellation funding directly trades off with Earth Science funding

Berger and Klamper 10 (Brian, correspondent for Space News and Amy, correspondent for Space News and political commentator for Fox News, "NASA Budget Beneficiaries: Science, Research and Technology", Space News, February 2, http://www.spacenews.com/policy/100205-nasa-budget-beneficiaries-science.html)

WASHINGTON – U.S. President Barack Obama's decision to scrap the Constellation program and rely on commercial firms to deliver astronauts to low Earth orbit leaves the agency's science and technology research and development programs big winners in his 2011 budget request. Obama is asking the U.S. Congress for $19 billion for NASA for the year ahead, a 1.5 percent increase over the agency's 2010 budget. While Congress approves federal spending only on an annual basis, Obama's proposal lays out a five-year budget for NASA that totals $100 billion, some $6 billion more than he included in the budget he sent Congress last year. White House officials said the president's budget provides for a renewed commitment to Earth observation, expands commercial space initiatives and enhances utilization of an international space station the United States intends to keep supporting through at least 2020. It also includes sustained investments in new technology programs, robotic missions, propulsion research and so-called green aviation. Science Earth observation fared best in Obama's budget for NASA's Science Mission Directorate, which also manages the agency's robotic planetary probes and space-based astronomy telescopes. Obama is asking Congress for $5 billion for NASA science programs in 2011, an 11 percent increase over this year's budget of $4.49 billion. The biggest chunk of the $512 million increase would be used to boost the Earth Science Division's budget to $1.8 billion, a 27 percent increase over 2010. The Planetary Science Division would get the second-biggest increase, 11 percent, to $1.485 billion. NASA's heliophysics budget would grow by around 2 percent to $641.9 million, while the agency's astrophysics budget — which funds the Hubble Space Telescope and other space-based observatories — would see its $1.1 billion budget shrink by about $28 million. Ed Weiler, NASA's associate administrator for science, said the budget request includes an additional $2 billion for the Science Mission Directorate over the next five years, compared with Obama's previous budget projections. "It's a major increase to the science budget," Weiler told reporters during a Feb. 2 teleconference, adding that the boost for Earth Science in particular makes up for years of declining budgets over the last decade at a time when scientists were learning how important Earth monitoring is to climate research. NASA's planetary science budget, in contrast, fared slightly better in last year's budget, with about $60 million more between 2011 and 2014 than the division stands to receive now. Weiler said the additional Earth science money, meanwhile, would accelerate new climate monitoring satellites and expand a recently initiated Venture-class program of modestly priced, scientist-led missions. The 2011 budget proposal also includes money for building a duplicate of the Orbiting Carbon Observatory satellite destroyed in a February 2009 launch failure.

Constellation directly trades off with earth sciences

Fang 10 (Janet, Contributing Editor at SmartPlanet, Columbia University - Graduate School of Journalism, "Obama budget backs basic science", Nature News, Nature online database)

NASA - NASA's overall budget would rise by 1.5% to $19 billion. But in a radical shift, Obama's administration would give up a government-developed replacement for the space shuttle and would abandon the goal of returning humans to the Moon. Constellation was deemed to be too far behind schedule and too expensive to justify adding to the $9 billion that has already been spent on it. "We are not on a sustainable path to get back to the Moon's surface," said NASA administrator Charles Bolden in a briefing on 1 February. Instead, NASA would spend $6 billion over five years to stimulate the development of commercial rockets that would ferry not just cargo but also crew up to the International Space Station. These rockets could be ready by 2016, says the agency's deputy administrator Lori Garver. Marcia Smith, a former director of the Space Studies Board at the US National Research Council, says the shift is another "topsy turvy" change in NASA's goals. "The big challenge for NASA is to convince everyone that, now, they have the right plan," says Smith. Bolden has vowed to leave NASA science untouched by the shifting winds in the human-exploration programme, and in 2011, the agency's science budget would grow by 11% to $5 billion. Earth-science programmes would reap most of the gains, including more money to rebuild the Orbiting Carbon Observatory, a failed satellite that would have tracked global carbon dioxide levels. The astrophysics division saw a 2.6% decrease, which will hurt all the more because its biggest project, the James Webb Space Telescope due for launch in 2014, is vastly over budget. Science may also benefit from the billions to be devoted to technology development in the human programme. Bolden says that $3 billion over five years would be spent on robotic precursor missions such as a Moon rover or an unmanned factory to mine the Moon or asteroids. Smith says these missions could be similar to the Lunar Reconnaissance Orbiter (LRO), whose costs have been shared by the human programme and the science division. However, she notes, most scientific destinations are chosen by peer review, whereas missions such as the LRO were dictated by the policy to return humans to the Moon.

Neg: Link – SPS

There is ZERO room in NASA's budget for SPS. Will require trade-off's

Dinerman, 8 – DOD space consultant, and senior editor at the Hudson Institute's New York branch (Taylor, "NASA and space solar power," The Space Review, 5/19, http://www.thespacereview.com/article/1130/1)

NASA has good reason to be afraid that the Congress or maybe even the White House will give them a mandate to work on space solar power at a time when the agency's budget is even tighter than usual and when everything that can be safely cut has been cut. This includes almost all technology development programs that are not directly tied to the Exploration Missions System Directorate's Project Constellation. Not only that, the management talent inside the organization is similarly under stress. Adding a new program might bring down the US civil space program like a house of cards. In the mid-1990s, urged on by the new chairman of the House Science Committee's space subcommittee, Dana Rohrabacher (R-CA), NASA did conduct a so-called "Fresh Look" study of space solar power. According to John Mankins, one of the world's greatest authorities on space solar power, "Several innovative concepts were defined and a variety of new technology applications considered including solid state microwave transmitters, extremely large tension stabilized structures (both tether and inflatable structures), and autonomously self assembling systems using advanced in-space computing systems." Concluding his 2003 paper on the study, Mankins wrote: The economic viability of such systems depends, of course, on many factors and the successful development of various new technologies—not least of which is the availability of exceptionally low cost access to space. However the same can be said of many other advanced power technologies options. There was no follow-up to this study, partly because of a lack of urgency in the era of cheap energy that existed a decade ago and also because NASA did not, and does not today, see itself as an auxiliary to the Department of Energy. NASA does science and exploration and not much else. Along with its contractors it can develop new technologies that apply directly to those two missions, but outside of that it will resist being forced to spend money on projects that it does not see as falling within those two missions. Technology development in general has been cut back. The NASA Institute for Advanced Concepts has been closed. There is a minimal ongoing effort to build up some technologies that may in the future be useful for reusable launch vehicle development, but it is hard to see how this fits into a coherent future program. The agency has its priorities and is ruthlessly sticking to them. NASA is not the US Department of Spatial Affairs: it does not have the statutory authority to control, regulate, or promote commercial space activities such as telecommunications satellites, space tourism, space manufacturing, or space solar power. Such powers are spread throughout the government in places like the FAA's Office of Commercial Space Transportation, the Department of Commerce, and elsewhere. Even if NASA were somehow to get the funds and the motivation to do space solar power, these other institutions would resist what they would recognize as an encroachment on their turf. Until the shuttle is retired and NASA has a new and secure method of getting people into space, either with the Orion capsule on top of the Ares 1 or perhaps another rocket, or using the SpaceX Dragon capsule and Falcon 9 combination, there is no room for any other major programs. It will require all they can do to cope with their current programs and to deal with a new president and his or her administration. They don't need any more distractions right now.

SPS requires tons of money: trades off with Earth Science

Rapp 07 [Donald Rapp, Polytechnic Institute of New York: Associate Professor of Chemistry, 2003-2009, JPL Consultant, Research Professor, Viterbi School of Engineering, University of Southern California, Ph.D. Chemical Physics, University of California (Berkeley) "Solar Power Beamed From Space" Astropolitics vol 5 iss. 1 in 2007]

It is widely agreed that costs for launch and delivering to GEO will constitute a major part of the total cost of any SPS. These transportation costs depend directly on the mass that must be transported to space. Hence, the mass of a SPS is a critical factor in estimating the installation cost, which in turn, affects the viability of SPS concepts. Several SPS concepts have been put forward, but most of the detailed analyses of SPS were done on early concepts in the late 1970s. Furthermore, it is difficult to project the mass of systems that lie so far in the future. A NASA study3 estimated the mass of a five GW SPS Reference System to be in the range 34,000 to 51,000 metric tons (MT). This was based on a system with an overall efficiency of 7% (i.e., 7% of the solar energy impinging on the arrays of the SPS ends up as power fed to the grid on Earth). This implies that to provide 5GW of power on Earth, 70GW of solar power must be intercepted by a large solar array. Using the solar intensity at one Astronomical Unit (AU), about 1367W=m2 (watts per meter squared), suggests that the size of such a solar array is about 50km2 (kilometer squared) or 77 km. Assuming that the solar array has an efficiency of 13%, this would imply Solar Power Beamed from Space 65 that it generates about nine GW (0.1370GW) of electric power in space. Current solar arrays have specific power of 50 to 80W=kg (watts per kilogram). Some studies assumed that in the future, this may be increased to say, 400W=kg using thin film arrays. With this assumption, a 70-GW array with a conversion efficiency of say 13% would weigh approximately 9109 (W)=400(W=kg) or 22,500 MT. The mass of the associated microwave antenna has been estimated to be about 13,000 MT, so the mass of a SPS to deliver 5GWat Earth would be estimated on this basis to be about 35,500MT without contingency allowance. Using currently available solar arrays, it would be a good deal higher. Current costs to deliver mass to GEO are around forty dollars per MT, so the cost to merely deliver such a SPS to GEO would be a prohibitive at 1400 billion dollars.4 Most advocates of SPS assume that launch costs can be reduced by factors of up to 100 in the future. With this assumption, the cost to deliver such a SPS to GEO would be reduced to fifteen billion dollars. However, the basis for assuming such reductions in launch costs is a generic expectation that costs go down as activity increases.

Neg: Link – Asteroid mining

Asteroid mining will cost billions – will trade off

Gerlach, 05 – founder and CEO of Gerlach Space Systems LLC [Charles Gerlach, 5/19-5/22/05, International Space Development Conference: "Profitably Exploiting Near Earth Object Resources," http://abundantplanet.org/files/Space-Ast-Profitably-Exploiting-NEO-Gerlach-2005.pdf] WSX

Little work has been done on investment requirements and the economics of developing and launching a mining operation. What analysis has been done tends to assume the traditional development processes used by government space programs to project huge development costs and very long payback periods. Estimates of the capital costs for asteroid mining equipment have used custom aerospace industry cost models originally developed for lunar mining equipment.93 For example, Blair94 notes that a simple calculation using the Advanced Missions Cost Model95 developed to estimate costs for human planetary exploration missions yields an estimated cost of between $500 million and $1 billion to construct a two-ton prototype spacecraft. He goes on to note that determination of reliability and equipment service lifetimes will require engineering studies and full-scale equipment testing in a relevant environment, contributing significantly to the cost. Gertsch and Gertsch96 proposed a project equivalent in scale to the Anglo-French Channel Tunnel. They estimated that the project would cost at least $5 billion and requiring up to 12 years to complete. The study assumed that the asteroid mined would be made up of 150 parts per million of PGMs, a concentration thought to occur in about one in 10 platinum-bearing asteroids. Finding a suitable asteroid and mounting a mission would consume up to four years of the project, the Gertsches reasoned. On arrival, miners would need to sift through 500 million metric tons of material in order to extract enough platinum-some 68 thousand metric tons, at an assumed price of about $13 per gram-to generate a return of 100 percent on the project. However, even a 100 percent return rate would not attract the needed billions in risk capital, given the 12-year timetable and the high probability of failure, the Gertsches concluded. As noted earlier, Sonter97 creates an integrated model for comparing the economic viability of different types of missions, but he does not produce an estimate of the potential investment levels required to execute a successful mining operation. Wingo98 has created an investment model for retrieving hypothesized asteroidal platinum from the Moon that would optimistically require investment of $15 billion over a decade before it would see the recovery of the first gram of platinum.

New tech development means asteroid mining would be really expensive: trades off

Gerlach, 05 – founder and CEO of Gerlach Space Systems LLC [Charles Gerlach, 5/19-5/22/05, International Space Development Conference: "Profitably Exploiting Near Earth Object Resources," http://abundantplanet.org/files/Space-Ast-Profitably-Exploiting-NEO-Gerlach-2005.pdf] WSX

Technology issues present many of the greatest challenges to successfully and economically executing an asteroid mining mission. The prohibitively high costs of sending astronauts and potentially long communications delays require that all operations be highly automated. Automated machinery must work perfectly; even minor failures can cause mission failure. However, terrestrial mining experience with automation has generally been poor, and operations will be complex and hard on equipment. New equipment will have to be developed and integrated. To handle industrial quantities of materials, bench-top processes are not sufficient. Developing industrial mining and refining processes will ultimately hinge on deployment of actual working equipment to learn what works and what does not. These systems will be different from those used in traditional robotic space science missions that essentially consist of one-of-a-kind instrument collections designed for generating very specific types of scientific data.

Neg: Impact – Air pollution

Earth Sciences solve air pollution.

Seshan 11 – Journalist for International Business Times (Balasubramanyam, July 1st 2011, NASA to Monitor Ground-Level Air Quality from Space; Glimpse Research Aircraft Photos, http://www.ibtimes.com/articles/172701/20110701/nasa-discover-aq-air-quality-pollution-satellite-space-earth-maryland-traffic-corridors-roadway-low.htm) NAR

NASA has planned about 14 DISCOVER-AQ flights through July for a mission to enhance the capability of satellites to measure ground-level air quality from space. DISCOVER-AQ, which stands for Deriving Information on Surface conditions from Column and Vertically Resolved Observations Relevant to Air Quality, is a NASA Earth Science Division research effort conducted in collaboration with the Maryland Department of the Environment, the U.S. Environmental Protection Agency and several universities. The campaign will employ NASA aircraft to make a series of flights, with scientific instruments on board to measure gaseous and particulate pollution, beginning in 2011. NASA will announce each DISCOVER-AQ flight by 5 pm the day before the aircraft is scheduled to fly. The flights will occur between 6 a.m. and 8 p.m. The series of flights -- which will be made by NASA Langley's King Air and NASA's P-3B – will commence over Baltimore-Washington, D.C. in 2011. Other future flights may include Houston (2013); Sacramento (2013); and a final site in 2014 to be determined. The measurements will be taken in concert with ground observations in order to shed light on how satellites could be used to make similar, consistent measurements over time, with the ultimate goal of putting *better data in the hands of policymakers* and elected officials. NASA's DISCOVER-AQ air quality field campaign is scheduled to take to the skies over the Baltimore-Washington traffic corridor on Friday, July 1, from 10:30 a.m. to 6:30 p.m. EDT. NASA's P-3B research aircraft will fly at low altitudes over the northeast Maryland study region. NASA's P-3B is a large, 117-foot, four-engine turboprop, which is carrying nine scientific instruments. It will fly as low as 1,000 feet above the ground along a route that will take it over major roadway traffic corridors. The P-3B also will make spiral ascents and descents over six locations where air-quality measurements are being made from ground stations. In recent years, progress in reaching air quality goals has begun to plateau for many locations. Furthermore, near-surface pollution is one of the most challenging problems for Earth observations from space. However, with an improved ability to monitor pollution from satellites from DISCOVER-AQ, scientists could make better air quality forecasts, more accurately determine the sources of pollutants in the air and more closely determine the fluctuations in emissions levels. In short, the more accurate data scientists have at hand, the better society is able to deal effectively with lingering pollution problems. DISCOVER-AQ will focus on NASA's goals to study the Earth from space to increase fundamental understanding and to enable the application of satellite data for societal benefit. DISCOVER-AQ aligns with priorities for both the Atmospheric Composition Focus Area and the Applied Sciences Air Quality Program at NASA. Fundamentally, DISCOVER-AQ will provide data needed to critically examine the ability to determine surface air quality conditions from space.

Air pollution will lead to extinction

Driesen 3 – Associate Professor, Syracuse University College of Law. J.D. Yale Law School (David, 1989, Fall/Spring, 10 Buff. Envt'l. L.J. 25, p. 26-8)

Air pollution can make life unsustainable by harming the ecosystem upon which all life depends and harming the health of both future and present generations. The Rio Declaration articulates six key principles that are relevant to air pollution. These principles can also be understood as goals, because they describe a state of affairs that is worth achieving. Agenda 21, in turn, states a program of action for realizing those goals. Between them, they aid understanding of sustainable development's meaning for air quality. The first principle is that "human beings. . . are entitled to a healthy and productive life in harmony with nature", because they are "at the center of concerns for sustainable development." While the Rio Declaration refers to human health, its reference to life "in harmony with nature" also reflects a concern about the natural environment. Since air pollution damages both human health and the environment, air quality implicates both of these concerns. Lead, carbon monoxide, particulate, tropospheric ozone, sulfur dioxide, and nitrogen oxides have historically threatened urban air quality in the United States. This review will focus upon tropospheric ozone, particulate, and carbon monoxide, because these pollutants present the most widespread of the remaining urban air problems, and did so at the time of the earth summit. 6 Tropospheric ozone refers to ozone fairly near to the ground, as opposed to stratospheric ozone high in the atmosphere. The stratospheric ozone layer protects human health and the environment from ultraviolet radiation, and its depletion causes problems. By contrast, tropospheric ozone damages human health and the environment. 8 In the United States, the pollutants causing "urban" air quality problems also affect human health and the environment well beyond urban boundaries. Yet, the health problems these pollutants present remain most acute in urban and suburban areas. Ozone, carbon monoxide, and particulate cause very serious public health problems that have been well recognized for a long time. Ozone forms in the atmosphere from a reaction between volatile organic compounds, nitrogen oxides, and sunlight. Volatile organic compounds include a large number of hazardous air pollutants. Nitrogen oxides, as discussed below, also play a role in acidifying ecosystems. Ozone damages lung tissue. It plays a role in triggering asthma attacks, sending thousands to the hospital every summer. It effects young children and people engaged in heavy exercise especially severely. Particulate pollution, or soot, consists of combinations of a wide variety of pollutants. Nitrogen oxide and sulfur dioxide contribute to formation of fine particulate, which is associated with the most serious health problems. 13 Studies link particulate to tens of thousands of annual premature deaths in the United States. Like ozone it contributes to respiratory illness, but it also seems to play a [*29] role in triggering heart attacks among the elderly. The data suggest that fine particulate, which EPA did not regulate explicitly until recently, plays a major role in these problems. 16 Health researchers have associated carbon monoxide with various types of neurological symptoms, such as visual impairment, reduced work capacity, reduced manual dexterity, poor learning ability, and difficulty in performing complex tasks. The same pollution problems causing current urban health problems also contribute to long lasting ecological problems. Ozone harms crops and trees. These harms affect ecosystems and future generations. Similarly, particulate precursors, including nitrogen oxide and sulfur dioxide, contribute to acid rain, which is not easily reversible. To address these problems, Agenda 21 recommends the adoption of national programs to reduce health risks from air pollution, including urban air pollution. These programs are to include development of "appropriate pollution control technology . . . for the introduction of environmentally sound production processes." It calls for this development "on the basis of risk assessment and epidemiological research." It also recommends development of "air pollution control capacities in large cities emphasizing enforcement programs using monitoring networks as appropriate." A second principle, the precautionary principle, provides support for the first. As stated in the Rio Declaration, the precautionary principle means that "lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation" when "there are threats of serious or irreversible damage." Thus, lack of complete certainty about the adverse environmental and human health effects of air pollutants does not, by itself, provide a reason for tolerating them. Put differently, governments need to address air pollution on a precautionary basis to ensure that humans can life a healthy and productive life.

Neg: Impact – Heg & Competitiveness

Cuts to earth science kill competitiveness

House Committee SSTD 11 (Science, Space, and Tech Democrats, 2011, http://democrats.science.house.gov/committee-report/committee-report-title) JPG

The budget resolution that these Views and Estimates are intended to inform is being developed even while the FY 2011 budget remains in play. The House consideration of the FY 2011 budget has been marked by severe cuts to important research and development (R&D) initiatives in order to meet arbitrary fiscal goals. The end result of those cuts, if enacted into law, would be thousands of layoffs and furloughs among the best and brightest of our scientists and engineers; curtailment of critical research activities to protect the public from environmental hazards; fewer innovative technologies to enable the industries of the future; and serious damage to our core scientific and technological capabilities. The President's FY 2012 budget request, on the other hand, recognizes that even in these challenging economic times, we need not—and should not—sacrifice our future for the sake of crippling cuts to a small fraction of the total federal budget. With vision and perseverance, we can be both fiscally responsible and make the necessary investments to keep the American economy competitive in the coming decades while keeping our people and our environment healthy.

US technological leadership and economic competitiveness is key to hegemony

Khalilzad 95 (Zalmay, fellow at RAND, "Losing the moment? The United States and the World after the Cold War?" *Washington Quarterly*, volume: 18, Spring) HD

The United States is unlikely to preserve its military and technological dominance if the U.S. economy declines seriously. In such an environment, the domestic economic and political base for global leadership would diminish and the United States would probably incrementally withdraw from the world, become inward-looking, and abandon more and more of its external interests. As the United States weakened, others would try to fill the Vacuum. To sustain and improve its economic strength, the United States must maintain its technological lead in the economic realm. Its success will depend on the choices it makes. In the past, developments such as the agricultural and industrial revolutions produced fundamental changes positively affecting the relative position of those who were able to take advantage of them and negatively affecting those who did not. Some argue that the world may be at the beginning of another such transformation, which will shift the sources of wealth and the relative position of classes and nations. If the United States fails to recognize the change and adapt its institutions, its relative position will necessarily worsen.

Heg collapse causes nuclear war

Khalilzad 95 [Zalmay, Former RAND Fellow, Current US Ambassador, "Losing the Moment?" The Washington Quarterly, Vol. 18, No. 2, pg. 84, Spring, Lexis]

<Under the third option, the United States would seek to retain global leadership and to preclude the rise of a global rival or a return to multipolarity for the indefinite future. On balance, this is the best long-term guiding principle and vision. Such a vision is desirable not as an end in itself, but because a world in which the United States exercises leadership would have tremendous advantages. First, the global environment would be more open and more receptive to American values -- democracy, free markets, and the rule of law. Second, such a world would have a better chance of dealing cooperatively with the world's major problems, such as nuclear proliferation, threats of regional hegemony by renegade states, and low-level conflicts. Finally, U.S. leadership would help preclude the rise of another hostile global rival, enabling the United States and the world to avoid another global cold or hot war and all the attendant dangers, including a **global nuclear exchange**. U.S. leadership would therefore be more conducive to global stability than a bipolar or a multipolar balance of power system.

Neg: Impact – Disease (1/2)

NASA satellites can track and predict the spread of cholera

Peeples 7/6 [Lynne – writer for the Huffington Post. "Satellite Images May Help Predict The Next Cholera Outbreak" July 6, 2011 ayc http://www.huffingtonpost.com/2011/07/06/cholera-outbreak-prediction-prevention_n_891756.html]

As cholera continues to ravage parts of Sub-Saharan Africa, South Asia and Latin America -- reportedly reaching Puerto Rico and Hong Kong this week **-- public health researchers are looking to the skies in hopes of anticipating future outbreaks. Satellite images of the oceans, researchers say, could soon forecast where and when cholera is most likely to strike. C**ertain developing countries, such as Bangladesh and Mozambique, already know to expect the unwelcome visitor almost every year and typically have measures in place to minimize its impact. Cholera's recent arrival in Haiti and Pakistan, however, caught the nations by surprise. It had been a century since either faced an outbreak of the disease, which causes severe diarrhea and a 50 percent chance of death due to dehydration if not treated quickly. According to Shafiqul Islam, an expert in environmental engineering and water diplomacy at Tufts University in Medford, Mass., this left the Haitian people vulnerable and their health officials unprepared. Over 6 percent of Haitians initially infected succumbed to cholera, compared to just 0.1 percent of victims in Bangladesh. "That's amazing, and extremely troubling," said Islam, highlighting the similarly poor economic conditions in the two nations and the fact that cholera has such an easy and cheap cure: clean water with some sugar and salt. If Haiti had been warned a couple of months in advance to prepare large quantities of this simple solution, along with other treatments and vaccines, it might have been a different story, Islam said. Ever since John Snow first identified cholera in London 150 years ago, researchers have focused primarily on understanding the microbiology of the bacteria, Vibrio cholera, and how to help the human body combat it. Despite substantial progress made on this front, the disease continues to be a global threat, affecting 3 to 5 million people annually and killing more than 100,000 of its victims, according to the World Health Organization. Experts don't expect it to go away any time soon. But if science takes a step back to evaluate the timing and places that can set the stage for a cholera epidemic, suggested Islam, we might better coexist with the stubborn strains. "If you can use this information to make a prediction, then you can mobilize the necessary resources," he said. In a study published in the the May issue of Water Resources Research, Islam and his colleagues describe how large-scale environmental conditions can be conducive to the initiation, transmission and propagation of cholera. The team looked at data from Bengal Delta in Bangladesh, identifying two annual peaks for cholera cases: one in the spring and one in the fall. The first peak appeared to be triggered by a "low flow," in which long-term drought conditions resulted in a mix of salt and fresh water off the Bangladesh coast. Cholera thrives in such brackish conditions, where it hitches rides on tiny marine mammals called zooplankton. These hosts can multiply rapidly over a period of a couple of months -- especially when stimulated by an algal bloom -- and eventually introduce cholera to coastal cities via seafood or drinking water. A few months later, just as an affected region is sighing a breath of relief for a waning outbreak, the heavy rains and flooding of monsoon season can revive and spread cholera bacteria inland. This second peak is most common in regions with poor water and sewer systems. (A total of 44 cases of cholera have been reported in the U.S. over the last five years, but good water infrastructure continues to keep the disease in check.) Although the timing and number of peaks can vary between regions, the components that lead to a cholera outbreak can likely be generalized beyond Bangladesh, suggested Islam. **NASA satellites could identify the chlorophyll abundant in phytoplankton within the Earth's oceans, he explained. Since zooplankton feed on phytoplankton and also carry the toxic bacteria, satellites could be used to develop prediction models that forecast cholera outbreaks two to three months in advance**. "If you want to make predictions, three days or even three weeks in advance is not enough," said Islam. "You need at least two to three months in order to warn the public and allow professionals enough time to get ready." **Satellite monitoring could be even more crucial in the years ahead as current climate models point to both increased drought and severe flooding.** "If these models are correct," said Islam, "then cholera will get more intense." A separate study published in the June issue of the American Journal of Tropical Medicine and Hygiene linked a 1 degree Celsius (1.8 degrees Fahrenheit) rise in the average monthly minimum temperature to a doubling in the number of cholera cases within four months in Zanzibar, Tanzania. A substantial increase in cases was also seen two months after a 200-millimeter (7.9-inch) rise in monthly rainfall. Downpours may not only affect the spread of the disease, but could also help initiate its growth. "In general, warmer sea surface temperatures and a warmer atmosphere lead to increasingly frequent and heavy rain," said Dr. Paul Epstein, associate director of the Center for Health and Global Environment at Harvard Medical School. "These intense rains can flush nutrients, organisms and chemicals into coastal marine habitat and trigger an algal bloom." Non-environmental factors may play a role, too. A catastrophic earthquake hit Haiti in January 2010, damaging already poor sanitary systems. That, along with the possible introduction of the bacteria by United Nations peacekeepers, are hypothesized to have played a significant role in the country's outbreak, which first manifested in October. But Islam doesn't think those factors tell the whole story. A very large earthquake struck Pakistan in 2005, and cholera was not one of the consequences. Meanwhile, when floods struck the same country this year, a massive cholera outbreak did result. "The right environmental conditions must be present for the disease to spread," explained Islam. Once a cholera outbreak is predicted for a region, he added, "a multi-pronged approach" should be initiated. It's not feasible to vaccinate everyone given the $10-to-$15 price tag and limited production. What's more, a dose is only effective for one or two seasons. Antibiotics can help in the fight, noted Epstein, but he highlighted the greater importance of stocking up on clean water, salt and sugar. Other preparations include protecting and treating the water supply -- often a more long-term solution requiring improvements in the division between water and sewer infrastructure. Of course, it takes time for any measures to be mobilized. And once the first cases appear, it's often too late. Fortunately, cholera is particularly "amenable to early warning," noted Epstein. Over the next several years, Islam expects that potential to be realized with the widespread use of satellite-based prediction. "We hope this will change the game," he said

Neg: Impact – Disease (2/2)

Disease can cause extinction – scientific studies prove "hyperdisease conditions"

Viegas 08 [Jennifer – writer for Discovery News and MSNBC. "How disease can wipe out an entire species" http://www.msnbc.msn.com/id/27556747/ns/technology_and_science-science/t/how-disease-can-wipe-out-entire-species/ 11/5/2008 ayc]

Disease can wipe out an entire species, reveals a new study on rats native to Australia's Christmas Island that fell prey to "hyperdisease conditions" caused by a pathogen that led to the rodents' extinction. The study, published in the latest issue of the journal PLoS One, presents the first evidence for extinction of an animal entirely because of disease. **The researchers say it's possible for any animal species, including humans, to die out in a similar fashion**, although a complete eradication of Homo sapiens would be unlikely. "I can certainly imagine local population or even citywide 'extinction,' or population crashes due to introduced pathogens under a condition where you have a pathogen that can spread like the flu and has the pathogenicity of the 1918 flu or Ebola viruses," co-author Alex Greenwood, assistant professor of biological sciences at Old Dominion University in Norfolk, Va., told Discovery News. The 1918 flu killed millions of people, while Ebola outbreaks have helped to push gorillas close to extinction. For the Christmas Island study, Greenwood and his colleagues collected DNA samples from the island's now-extinct native rats, Rattus macleari and R. nativitatis, from museum-housed remains dating to both before and after the extinction event, which occurred between 1899 and 1908. Co-author Ross MacPhee, a curator of vertebrate zoology at the American Museum of Natural History in New York, N.Y., explained that Charles Andrews of the British Museum documented at the time that black rats were first brought to the island via the S.S. Hindustan in 1899. The ship-jumping black rats then carried a protozoan known as Trypanosoma lewisi. A related organism causes sleeping sickness in humans. "Fleas are the intermediate host for one of the developmental stages of Trypanosoma, and the only likely method (of disease spread) is infected fleas crossing from black rats to endemic rats," MacPhee told Discovery News. After the Hindustan's arrival, the native island rats were observed staggering around deathly "The general explanation for islander susceptibility would presumably be that island denizens live in a sort of bubble, protected by water barriers from diseases prevalent on mainlands or elsewhere," MacPhee explained. "But when the bubble is broken -- think measles epidemics in Iceland in the 19th century -- the mortality can be extreme." Karen Lips, associate professor of zoology at Southern Illinois University, told Discovery News that the new research was "well done and convincing, despite the limited number of samples available." She also pointed out that island-like conditions exist within mainland areas. "I work up on mountaintops, another kind of island with high endemism, which is greatly affected by emerging infectious disease," she said. Elk in North America, for example, have suffered worrisome population losses due to wasting diseases induced by prions. Various South Pacific fruit bats and amphibians are also under threat now due to infectious diseases. "What can be done?" asked MacPhee. "Probably nothing other than captive conservation," he added. "Most wildlife biologists are hoping that such diseases, although severe, will eventually accommodate and the species will pull through." ill on footpaths. Shortly thereafter, they were never seen again. The museum DNA samples showed that Christmas Island native rodents collected before the black rats invaded the island were not infected with the protozoan, but six out of 18 collected post-contact were infected. Eight great extinct species"Not every rat would have to be infected," Greenwood explained. **"If you push a population down to an unsustainable number then it will collapse**. In addition, if a substantial number of reproducing individuals became infected and ill, even if they survived the infection, their reproduction rate may be lowered and lead to a population crash." Given the rats' fate, scientists are concerned about Tasmanian devils, which have been dying in record numbers due to devil facial tumor disease, a contagious cancer for which the carnivorous marsupials appear to have no immunity. Such island species seem to be more vulnerable to extinction by disease. In a prior study, MacPhee determined that at least 80 percent of all species-level losses during the past 500 years have occurred on islands.

Neg: a2 – Earth Science doesn't solve warming

Earth Science can solve global warming: Empirics prove Earth science helped inspire Ozone policy in the past and it's key to creating new technologies now

Killeen 5 – Phd. , Director of the National Center for Atmospheric Research (Timothy, 28th April 2005, "Senate Hearing on NASA's Earth Science Program", http://www.spaceref.com/news/viewsr.html?pid=16382) NAR

It is clear after decades of pioneering satellite observations that Earth is a system of tightly coupled parts that interact in complex ways to produce the whole. The study of such interactions has become known as Earth system science, and has led to numerous insights about how the Earth functions and how it is evolving and changing over time. To understand how the atmosphere supports and protects life, for example, one must appreciate the complex and tightly coupled circulation dynamics, chemistry, interactions with the oceans, ice, biosphere, and land surface: all driven by solar radiation. And today, the natural system is clearly susceptible to changes due to human activity, creating still more complexity and variability over many scales of time and space. In any foreseeable future, we will have to understand this "system of systems" in order to help create, maintain, safeguard, and guide human societies. Earth system science, based on comprehensive and accurate ground- and space-based observations*, is the toolkit* that enables such investigation. Furthermore, the manner in which we explore other worlds will be informed by the understanding of our own. For me personally, this "blue marble" photograph taken over 30 years ago by Apollo 17 astronauts on the way to the moon perfectly represents this complex system. You have all seen this incredible picture hundreds of times in advertisements, reports and public media. It is perhaps one of the most significant, but under-sung, societal icons we possess. At NCAR, it is featured in a wall mural. There are many ways to illustrate the importance of NASA's role in supporting Earth system science in the U.S. In sheer budgetary terms, NASA is the single largest environmental science program supported by the federal government. The widely respected budget analyses of the American Association for the Advancement of Science (AAAS) indicate that NASA provided 34 percent of the total funding for the environmental sciences in 2004. Much of this spending is devoted to the design, development, and operation of scientific instruments, the spacecraft that carry them, and the data systems required to process, analyze, archive, and distribute data to the scientific community and other users. But it should also be remembered that NASA provides significant resources to university investigators through the research and analysis component of its program. In fact, leaving spacecraft and data system costs aside, AAAS analyses show that NASA was the third largest provider of competitively awarded extramural funding for the university environmental science community in 2004, trailing only the National Science Foundation and the National Institutes of Health. Even small reductions in the NASA program have large effects in the university community. This matters both because research and analysis is the process by which useful information is derived from remote sensing systems, and because university-based research activities provide the human capital (undergraduates, graduate students, young researchers and engineers) that underpins the entire space program. The effects of funding perturbations reach far beyond the year in which they occur. The design and development of an Earth observation satellite takes a decade or more, and keeping young scientists and engineers engaged in such work requires some degree of steady ongoing support. Another way of showing NASA's importance to this field is by looking at what has been accomplished. The scientific and practical results from NASA's Earth science program are much too extensive for me to catalogue here, but two examples can illustrate the unique contribution that NASA has made to our understanding of the Earth's atmosphere and its variations. Example 1: Ozone depletions The first example is probably well known to you. The ozone "holes" in the Antarctic and Arctic were monitored from space by various NASA satellite systems, including the Total Ozone Mapping Spectrometer (TOMS). The diagnosis of the physical and chemical mechanisms responsible for these dangerous changes to our protective ozone shield was made possible by the combination of observations, modeling, and theory supported by NASA. In fact**, it was a NASA high-altitude aircraft that made the "smoking gun" measurements that convinced the scientific and policy communities that chlorine compounds** produced by various human activities **were centrally responsible for** the observed **ozone loss**. Following these observations, international protocols were put in place that are beginning to ameliorate the global-scale ozone loss. The TOMS instrument has provided an ongoing source of data that permits us to track the level of ozone in the stratosphere, the annual opening and closing of the "ozone hole," and how this phenomenon is changing over time. **These continuing measurements** and analyses and the effective regulatory response have **led**, among other things, **to a reduction in** projected **deaths from skin cancer** *worldwide*. Example 2: Air Pollution Observations Last week, President Bush mentioned proposed rules to limit air pollution from coal-fired power plants. Air pollution is clearly an important concern. NASA has played a major role in the development of new technologies that can monitor the sources and circulation patterns of air pollution *globally*. It is another tremendous story of science serving society through innovation. In this case, through an international collaboration, NASA deployed a one-of-a-kind instrument designed to observe global carbon monoxide and its transport from the NASA Terra spacecraft. These animations show the first global observations of air pollution. Sources of carbon monoxide include industrial processes (see, for example, source regions in the Pacific Rim) and fires (for example in Amazonia). These global-scale data from space have helped change our understanding of the relationship between pollution and air quality we now know that pollution is not solely or even primarily a local or regional problem. California's air quality is influenced by industrial activity in Asia, and Europe's air quality is influenced by activities here in America. From such pioneering work, operational systems can now be designed to observe pollution events, the global distribution of chemicals and particulate matter in the atmosphere, and the ways in which these substances interact and affect the ability of the atmosphere to sustain life such a system will undoubtedly underpin future efforts to understand, monitor, and manage air quality globally. Without NASA's commitment to innovation in the Earth sciences, it is hard to believe that such an incredible new capability would be available today. B. The Promise of Earth Observations in the Next Decade The achievements of the last several decades have laid the foundation for an unprecedented era of discovery and innovation in Earth system science. Advances in observing technologies have been accompanied by vast improvements in computing and data processing. When the Earth Observing System satellites were being designed, processing and archiving the data was a central challenge. The Terra satellite produces about 194 gigabytes of raw data per day, which seemed a daunting prospect at the time of its definition. Now laptop memories are measured in gigabytes, students can work with remote

Neg: a2 – Earth Science doesn't solve warming (cont.)

(Killeen 5 continuing…)

sensing datasets on their laptops, and a large data center like NCAR increases our data holdings by about 1000 gigabytes per day. The next generation of high performance computing systems, which will be deployed during the next five years or so, will be petascale systems, meaning that they will be able to process millions of gigabytes of data. The ongoing revolution in information technology has provided us with capabilities we could hardly conceive of when the current generation of Earth observing satellites was being developed. We have just begun to take advantage of the synergies between these technological areas. The U.S., through NASA, is uniquely positioned to take advantage of this technological opportunity. Example 3: Weather Forecasting Weather forecasting in the Southern Hemisphere has been dramatically improved through NASA's contributions, and this experience illustrates the power of remote sensing for further global improvements in weather prediction. The lack of surface-based data in the Southern Hemisphere once meant that predictive skill lagged considerably behind that achieved in the Northern Hemisphere. The improvement in the accuracy of Southern Hemisphere weather forecasting is well documented and almost entirely due to the increased use of remote-sensing data. But improvements in the quality of satellite data were not sufficient. Improvements in data assimilation a family of techniques for integrating observational results into predictive models were also necessary. The combination has resulted in rapid improvement in Southern Hemisphere forecasting, which is now nearly equal to that in northern regions. Data assimilation capabilities continue to advance rapidly. One can now easily conceive of forecast systems that will fuse data from satellites, ground-based systems, databases, and models to provide predictions with unprecedented detail and accuracy perhaps reaching natural limits of predictability. A new generation of weather forecast models with cloud-resolving spatial resolution is coming on line, and these models show significant promise for improving forecast skills across the board. Use of new NASA remote sensing data from upcoming missions such as Calipso (Cloud-Aerosol and Infrared Pathfinder Satellite) and CloudSat will be essential to fully validate and tune these new capabilities which will serve the nation in providing improved hurricane and severe storm prediction, and in the development of numerous decision support systems reliant on state-of-the-art numerical weather prediction capabilities. Example 4: Earth System Models Data from NASA missions are central to constructing more comprehensive and detailed models that will more realistically represent the complexity of the Earth system. Cloud observations from MODIS (the Moderate Resolution Imaging Spectroradiometer) and precipitation measurements from GPM (the Global Precipitation Mission), for example, are critical to improving the representation of clouds and the water cycle in such models. Observations from MODIS and Landsat are fundamental to the development of more sophisticated representation of marine and terrestrial ecosystems and atmosphere land surface interactions. The inclusion of this detail will help in the creation of true Earth system models that will enable detailed investigation of the interactions of Earth system processes and multiple environmental stresses within physically consistent simulated systems. In general terms, Earth system observations represent the only means of validating Earth system model predictions. Our confidence in short-term, regional-scale weather predictions is based on how closely they match observed regional conditions. Assessing the performance of global-scale, longer-term model predictions likewise depends on comparing model results with observational records. Scientific confidence in the ability of general circulation models to represent Earth's climate has been greatly enhanced by comparing model results for the last century with the observational records from that period. At the same time, the sparse and uneven nature of past observational records is an ongoing source of uncertainty in the evaluation of model results. The existence of much more comprehensive and consistent global measurements from space such as the data from the NASA Terra, Aqua, and Aura satellites is a giant step forward in this regard, and, if maintained, will enable much more rigorous evaluation of model performance in the future. In summary, Earth system models, with increasing temporal and spatial resolutions and validated predictive capabilities, will be used by industry and governmental decision makers across a host of domains into the foreseeable future. This knowledge base will drive *new economies and efficiencies* within our society. I believe that requirements flowing from the needs and capabilities of sophisticated Earth system models will be very useful for NASA in developing strategic roadmaps for future missions. C. The Importance of Careful Planning The central role of NASA in supporting Earth system science, the demonstrated success and impact of previous and current NASA missions, and the promise of continued advances in scientific understanding and societal benefits all argue for a careful, analytical approach to major modifications in the NASA Earth science program. As noted above, the development of space systems is a time-consuming and difficult process. Today's actions and plans will have long-term consequences for our nation's capabilities in this area. The link between plans and actions is one of the most important points I want to address today. From the outside, the interagency planning process seems to be experiencing substantial difficulties in maintaining this link. The NASA Earth science program is part of two major Presidential initiatives, the Climate Change Science Program (CCSP) and the Global Earth Observation System of Systems (GEOSS). With regard to the CCSP, it is not apparent that the strategies and plans developed through the interagency process are having much impact on NASA decision-making. In January 2004, then-Administrator of NASA, Sean O'Keefe, called for acceleration of the NASA Glory mission because of the direct relevance of the mission to understanding the roles of aerosols in the climate system, which is one of the highest-priority science questions defined in the CCSP research strategy. NASA is now proposing cancellation of the mission. As I have emphasized throughout this testimony, the progress of and benefits from Earth system science research are contingent upon close coordination between research, modeling, and observations. The close coordination of program planning among the agencies that support these activities is also a necessity. This coordination currently appears to be fragile. The effect of significant redirections in NASA and reduction in NASA's Earth science effort are equally worrisome in the case of the Administration's GEOSS initiative, which is focused on improving the international coordination of environmental observing systems. Both NASA and NOAA satellite programs are vital to this effort. The science community is very supportive of the GEOSS concept and goals. There are over 100 space-based remote-sensing systems that are either operating or planned by various nations for the next decade. Collaboration among space systems, between space- and ground-based systems, and between suppliers and users of observational data is critical to avoiding duplication of effort and to getting the most out of the investments in observing technology. The tragic example of the Indian Ocean Tsunami demonstrates the need for such coordination. The tsunami was detected and observed before hitting land, but the absence of effective communication links prevented warnings from reaching those who needed them in time. A functioning GEOSS could lead to major improvements in the rapid availability of data and warnings, and the U.S. is right to make development of such a system a priority. But U.S. *credibility and leadership* of this initiative will be *called into question* if our nation is unable or unwilling to coordinate and maintain the U.S. programs that make up the core of our proposed contribution. **D**. Answers to Questions Posed by the Committee My testimony to this point has outlined my views on a series of key issues for the NASA Earth science program. Much of the text found above is relevant to consideration of the specific questions posed by the Committee in its letter of invitation. In this section, I provide more direct answers to these questions to the extent possible and appropriate. How should NASA prioritize currently planned and future missions? What criteria should NASA use in doing so? I believe that NASA should work with the scientific and technical community and its partner agencies to define a NASA Earth science plan that is fully compatible with the overall CCSP and GEOSS science strategies. In my view, the interaction with the scientific and technical community should include both input from and review by the National Research Council (NRC) and direct interaction with the strong national community of Earth science investigators and the aerospace industry who are very familiar with NASA capabilities and developing technological opportunities. Competitive peer review processes should be used appropriately in assessing the merit of competing approaches and in key decision-making. I believe NASA should also find a means of involving users and potential users of NASA-generated data in this process, perhaps through public comment periods or a series of workshops. Sufficient time should be allotted to this process for a careful and deliberative evaluation of options. This science plan should then guide the process of setting mission priorities. Defining criteria to use in comparing and deciding upon potential missions would be an important part of this planning exercise. I would recommend consideration of a set of criteria that include: * compatibility with science priorities in the CCSP and GEOSS science plans * potential scientific return from mission * technological risk * direct and indirect societal benefits * cost. I believe that the decadal planning activity underway at the NRC in response to a request from NASA and NOAA is a valuable step in this process. What are the highest priority unaddressed or unanswered questions in Earth science observations from space? I believe this question is most appropriately addressed through the community process suggested above. There are many important Earth science questions, and prioritizing among them is best done in a deliberative and transparent process that involves extensive input from and discussion by the science community. I would personally cite soil moisture, three-dimensional cloud characteristics, global vector tropospheric winds, pollutant characteristics and transport, carbon fluxes, and aerosol distributions as all high priority measurements to make on a global scale. What have been the most important contributions to society that have come from NASA Earth sciences over the last decade (or two)? NASA Earth science programs have played a key role in developing our understanding of the Earth as a coupled system of inter-related parts, and in the identification and documentation of a series of global-scale changes in the Earth's environment, including ozone depletion, land use and land cover change, loss of biodiversity, and climate change. Other examples of societal contributions include improved weather forecasting, improved understanding of the large-scale climate variations, such as the El Nino-Southern Oscillation and the North Atlantic Oscillation that alter seasonal patterns of rainfall, and improved understanding of the status of and changes in marine and terrestrial ecosystems that contributes to more effective management of natural resources. What future benefits to the nation (societal applications) are possible that NASA Earth sciences could provide? What gaps in our knowledge must we fill before those future benefits are possible? In a broad sense, NASA Earth science activities are part of developing a global Earth information system that can provide ongoing and accurate information about the status of and changes in the atmosphere, oceans, and marine and terrestrial ecosystems that sustain life, including the impact of human activities. The continued development of observation systems, sophisticated Earth system models, data assimilation methods, and information technologies holds the promise of much improved predictions of weather and climate variations and much more effective prediction and warning of natural hazards. Much has already been accomplished to lay the groundwork for such a system, but many important questions remain. Some of the most important have to do with the functioning and human alteration of the Earth's carbon, nitrogen, and water cycles, and how these cycles interact; the regional manifestation of global scale climate change; and the reactions of ecosystems to simultaneous multiple stresses.

Neg: A2 no impact to warming

Warming is real & humans are creating it – it will lead to extinction

Deibel 7 (Terry L, Professor of IR @ National War College, "Foreign Affairs Strategy: Logic for American Statecraft", Conclusion: American Foreign Affairs Strategy Today)

Finally, there is one major existential threat to American security (as well as prosperity) of a nonviolent nature, which, though far in the future, demands urgent action. It is the threat of global warming to the stability of the climate upon which all earthly life depends. Scientists worldwide have been observing the gathering of this threat for three decades now, and what was once a mere possibility has passed through probability to near certainty. Indeed not one of more than 900 articles on climate change published in refereed scientific journals from 1993 to 2003 doubted that anthropogenic warming is occurring. "In legitimate scientific circles," writes Elizabeth Kolbert, "it is virtually impossible to find evidence of disagreement over the fundamentals of global warming." Evidence from a vast international scientific monitoring effort accumulates almost weekly, as this sample of newspaper reports shows: an international panel predicts "brutal droughts, floods and violent storms across the planet over the next century"; climate change could "literally alter ocean currents, wipe away huge portions of Alpine Snowcaps and aid the spread of cholera and malaria"; "glaciers in the Antarctic and in Greenland are melting much faster than expected, and…worldwide, plants are blooming several days earlier than a decade ago"; "rising sea temperatures have been accompanied by a significant global increase in the most destructive hurricanes"; "NASA scientists have concluded from direct temperature measurements that 2005 was the hottest year on record, with 1998 a close second"; "Earth's warming climate is estimated to contribute to more than 150,000 deaths and 5 million illnesses each year" as disease spreads; "widespread bleaching from Texas to Trinidad…killed broad swaths of corals" due to a 2-degree rise in sea temperatures. "The world is slowly disintegrating," concluded Inuit hunter Noah Metuq, who lives 30 miles from the Arctic Circle. "They call it climate change…but we just call it breaking up." From the founding of the first cities some 6,000 years ago until the beginning of the industrial revolution, carbon dioxide levels in the atmosphere remained relatively constant at about 280 parts per million (ppm). At present they are accelerating toward 400 ppm, and by 2050 they will reach 500 ppm, about double pre-industrial levels. Unfortunately, atmospheric CO_2 lasts about a century, so there is no way immediately to reduce levels, only to slow their increase, we are thus in for significant global warming; the only debate is how much and how serious the effects will be. As the newspaper stories quoted above show, we are already experiencing the effects of 1-2 degree warming in more violent storms, spread of disease, mass die offs of plants and animals, species extinction, and threatened inundation of low-lying countries like the Pacific nation of Kiribati and the Netherlands at a warming of 5 degrees or less the Greenland and West Antarctic ice sheets could disintegrate, leading to a sea level of rise of 20 feet that would cover North Carolina's outer banks, swamp the southern third of Florida, and inundate Manhattan up to the middle of Greenwich Village. Another catastrophic effect would be the collapse of the Atlantic thermohaline circulation that keeps the winter weather in Europe far warmer than its latitude would otherwise allow. Economist William Cline once estimated the damage to the United States alone from moderate levels of warming at 1-6 percent of GDP annually; severe warming could cost 13-26 percent of GDP. But the most frightening scenario is runaway greenhouse warming, based on positive feedback from the buildup of water vapor in the atmosphere that is both caused by and causes hotter surface temperatures. Past ice age transitions, associated with only 5-10 degree changes in average global temperatures, took place in just decades, even though no one was then pouring ever-increasing amounts of carbon into the atmosphere. Faced with this specter, the best one can conclude is that "humankind's continuing enhancement of the natural greenhouse effect is akin to playing Russian roulette with the earth's climate and humanity's life support system. At worst, says physics professor Marty Hoffert of New York University, "we're just going to burn everything up; we're going to heat the atmosphere to the temperature it was in the Cretaceous when there were crocodiles at the poles, and then everything will collapse." During the Cold War, astronomer Carl Sagan popularized a theory of nuclear winter to describe how a thermonuclear war between the Untied States and the Soviet Union would not only destroy both countries but possibly end life on this planet. Global warming is the post-Cold War era's equivalent of nuclear winter at least as serious and considerably better supported scientifically. Over the long run it puts dangers from terrorism and traditional military challenges to shame. It is a threat not only to the security and prosperity to the United States, but potentially to the continued existence of life on this planet.

Aff: Non-Unique

NASA Earth Science is already being cut – including climate monitoring systems.

Borenstein 11- National Science writer for The Associated Press (Seth, , "Lost satellite deals heavy blow to climate research", March 4th 2011 http://www.msnbc.msn.com/id/41895904/ns/technology_and_science-space/t/lost-satellite-deals-heavy-blow-climate-research/) NAR

NASA's environmental division is getting used to failure, cuts and criticism. In 2007, a National Academy of Sciences panel said that research and purchasing for NASA Earth sciences had decreased 30 percent in six years and that the climate-monitoring system was at *"risk of collapse*." Just last month, the Obama administration canceled two major satellite proposals to save money. Also, the Republican-controlled House has sliced $600 million from NASA in its continuing spending bill, and some GOP members do not believe the evidence of manmade global warming. Thirteen NASA Earth-observing satellites remain up there, and nearly all of them are in their *sunset years*. "Many of the key observations for climate studies are simply *not being made*," Harvard Earth sciences professor James Anderson said. "This is the nadir of climate studies since I've been working in this area for 40 years." Scientists are trying to move climate change forecasts from ones that are heavily based on computer models to those that rely on more detailed, real-time satellite-based observations like those that Glory was supposed to make. *The satellite's failure makes that harder*. Ruth DeFries, the Columbia University professor who co-chaired the 2007 National Academy of Sciences panel, said in an e-mail that this matters for everyone on Earth. "The nation's *weakening* Earth-observing system is dimming the headlights needed to guide society in managing our planet in light of climate change and other myriad ways that humans are affecting the land, atmosphere and oceans," DeFries wrote. NASA Earth Sciences chief Michael Freilich said it is not that bad. "We must not lose sight of the fact that we in NASA are flying 13 research missions right now, which are providing the fuel for advancing a lot of our Earth science," Freilich told The Associated Press. He said airplane missions, current satellites and future ones can pick up much of the slack for what Glory was going to do. However, Freilich, at a budget briefing a year ago, described the Earth-watching satellites as "all old," adding that 12 of the 13 "are well beyond their design lifetimes." "We're losing the ability to monitor really key aspects of the climate problem from space," said Jonathan Overpeck, a climate scientist at the University of Arizona. "Just about *every climate scientist in the world* has got to be sad right now."

Earth Science funds for battling climate change has already been slashed.

Brinton 11 – Space News Writer (Turner, "NASA Cuts 2 Earth Science Missions on White House Order", March 7th 2011 http://www.space.com/11050-white-house-nasa-earth-science-cuts.html) NAR

Even though NASA's Earth science budget is slated to rise next year, the U.S. space agency has been ordered by the White House to shelve a pair of *big-ticket climate change missions* that just last year were planned for launch by 2017. With U.S. President Barack Obama under pressure to rein in federal spending, the White House *eliminated funding* for the Climate Absolute Radiance and Refractivity Observatory (CLARREO) and Deformation, Ecosystem Structure and Dynamics of Ice (DESDynI) missions, Steve Volz, associate director for flight programs at NASA's Earth Science Division, said in a Feb. 24 interview. The cuts came *before* the failed launch of the Glory satellite Friday (March 4), NASA's latest Earth-observing mission to study Earth's atmosphere, due to a rocket malfunctions. So the White House orders are unrelated to NASA's loss of the Glory satellite. The multiyear budget plan NASA sent Congress a year ago called for spending $1.2 billion between 2012 and 2015 to develop CLARREO and DESDynI, two of the four top-tier missions recommended by the National Research Council's 2007 Earth Science decadal survey. But the White House Office of Management and Budget specifically removed these funds from the agency's 2012 budget request, Volz said in an interview. "Removal of these missions was not what we desired and not what the administration desired, but it was a clear recognition and acknowledgement of the budget issues we face as a nation," Volz said. "It's cleaner to be allowed to delete the scope that goes along with the dollars than to have to figure out how to do more with less." The other two top-tier Earth science missions — Soil Moisture Active-Passive and ICESat-2 — remain budgeted for launch in 2014 and 2016, respectively.

Good parts of Earth Science are on indefinite hold

Brinton 11 – Space News Writer (Turner, "NASA Cuts 2 Earth Science Missions on White House Order", March 7th 2011 http://www.space.com/11050-white-house-nasa-earth-science-cuts.html) NAR

While NASA's Earth Science Division fared better in the president's 2012 budget proposal than other parts of the agency, the division stands to receive some $1.7 billion less between 2010 and 2015 than forecast just last year. That spending plan, which called for giving Earth science a growing share of a NASA budget expected to surpass $20 billion within four years, included enough funding to build and launch all four top-tier decadal survey missions by the end of 2017. The NASA budget plan unveiled Feb. 14 puts last year's growth plans on hold. The agency's overall spending would be frozen at $18.7 billion, and Earth science, after receiving a $400 million boost for 2012, *would remain flat* at $1.8 billion through at least 2016. Adding to NASA's budget woes, the president's 2011 budget was never enacted, leaving the agency and the rest of the federal government funded at typically lower 2010 levels under stopgap spending measures, the latest of which expires March 4. Richard Anthes, president of the Boulder, Colo.-based University Corporation for Atmospheric Research and a co-chairman of the committee that produced the Earth science decadal survey, said he was disappointed to learn CLARREO and DESDynI have been indefinitely deferred. But he said tabling the two missions ispreferable to requiring every Earth science mission to make due with less. "They've decided to basically reduce the funding greatly to these two missions and put them on the side of the road," Anthes said in a Feb. 25 interview. "I think that strategy at least makes sense. If you don't have enough money to do everything, cancel some of them or put some of them on *indefinite hold* and continue making good progress on the others."

Aff: No link

No trade off - Climate changing missions are NASA's main focus, money would come from somewhere else

Pittman 10 - B.S. in Chemistry, Contributing Editor (David, "NASA Is Late On Climate Missions", 12/20/10, Government and Policy; Volume 88, Number 51 pp. 32 – 33, http://pubs.acs.org/cen/government/88/8851gov1.html) NAR

Further delays could hit several National Aeronautics & Space Administration (NASA) research missions—important in *advancing climate observation* and already years in waiting—because of how Congress is handling passage of the 2011 budget. The projects would cost roughly $1.5 billion and benefit NASA, the National Oceanic & Atmospheric Administration (NOAA), and the U.S. Geological Survey. They would measure solar radiation, soil moisture, and ice-sheet thickness, among other things, to provide researchers a deeper understanding of changes in climate and the atmosphere. A 2007 National Research Council decadal survey of earth sciences highlighted the importance of these missions. A 19-member committee urged NASA to focus on 15 high-priority climate-observing missions and to start the four most important ones, dubbed "Tier 1," as early as 2010. Even though NASA requested the NRC review, the space agency has yet to move beyond the design phase, and earlier this year, it delayed the scheduled launch of the first of the four Tier 1 missions to 2014. "Perhaps our committee's recommendations were too optimistic in terms of the schedule," says Richard A. Anthes, president of the University Corporation for Atmospheric Research in Boulder, Colo., and cochairman of the NRC committee that issued the 2007 study. He attributes the delay in mission starts to *lack of congressional funding*. The report assumed that NASA had the resources to begin the missions and that everything would go smoothly, he says. "NASA, at the time in 2007, did not have enough money to implement these missions on the schedule that we recommended." Scott Pace, director of the Space Policy Institute at George Washington University and associate NASA administrator for program analysis and evaluation in 2007, says the space agency took the recommendations seriously. But "programming them into the NASA budget is an agency responsibility," he adds, "and that *depends* on what funding NASA is authorized and appropriated by Congress." The Tier 1 missions do have the support of President Barack Obama, who provided funding in his fiscal 2011 budget request to meet an initial launch date of 2014 for one of the missions and for the rest to be operational by 2017. But Congress is still ironing out federal funding for fiscal 2011, which started on Oct. 1. As C&EN went to press, Congress was still working on budget legislation that would fund agencies in 2011. "Because the action of Congress on the FY11 budget is so unclear at this point, we really can't speculate on what might happen to these NASA missions," **NASA spokesman Steve Cole says.** The agency, however, has plans that are based on the President's requested budget. In June, NASA released its updated review of funding for the 15 NRC-recommended climate-observing missions. The review hinged on NASA receiving more than $10 billion in funding for its earth science missions from 2011 to 2015, as much as a 30% jump from current levels. "This funding allows for the acceleration and expansion of activities across the entire, coordinated Earth Science program—in the areas of flight missions, research, applications, and Earth Science mission technology development—thus advancing the balance and scope that have been hallmarks of NASA Earth System Science," the review reads. The first program to launch under NASA's updated plan would be a satellite that contains an infrared radiation detector and high-resolution radar to measure and analyze global soil moisture and freeze-thaw states. The $300 million mission, called Soil Moisture Active & Passive (SMAP), would Nate Hall made this file improve long-range weather and seasonal forecasting, as well as models for predicting floods and droughts. SMAP would take flight in late 2014 according to the June plan. Next up would be the late 2015 launch of a $300 million project called Ice, Cloud & Land Elevation Satellite-2 (ICESat-2). This mission would use laser altimetry—an accepted form of measuring terrain elevation from aircraft—to assess changes in thickness and volume of the Greenland and Antarctic ice sheets. The study would clarify the glaciers' contribution to sea-level rise. The most expensive of the four programs—at $700 million—is called Deformation, Ecosystem Structure & Dynamics of Ice, scheduled to launch in 2017. It would involve building a satellite that allows scientists to track sea-level rise, changes in Arctic ice cover, carbon sequestration efforts, and other climate variables. The technology would fuse light and radio detection and ranging systems—lidar and radar measurements—to provide glimpses into changes in Earth's atmosphere. The fourth Tier 1 mission, called the Climate Absolute Radiance & Refractivity Observatory (CLARREO), would include the launch of three satellites that together would assess the infrared radiation emitted from Earth's atmosphere and the solar radiation reflected from Earth to space. The data could be used to *improve climate models*, which are affected by radiation entering and leaving the atmosphere. This joint program between NASA and NOAA would cost NASA $200 million and NOAA $65 million. NASA is now waiting to see how the budget appropriations play out. In the continuing resolution (H.R. 3082) passed by the House of Representatives on Dec. 8, NASA was slated to receive a budget increase. The bill met the President's 2011 budget request of $5 billion for NASA science programs, up $500 million from what it received last year. The Senate was still working on a budget resolution for fiscal 2011. "Since NASA is under a continuing resolution and may be for many months, they *cannot initiate new starts*," Pace says. "If they are eventually appropriated less money than expected, then they may have to *reduce* the number of *programs* they do start." The late implementation of the NRC recommendations has caught the attention of NASA's Office of Inspector General, which is reviewing the four-year delay. "Our audit will examine the technological readiness and the adequacy of development efforts for the Tier 1 Earth Science missions supporting the decadal survey," states a semiannual report released by the inspector general's office on Nov. 22. The office declined to elaborate beyond the report. "Because it is an ongoing investigation, it's very premature to comment," NASA Inspector General Executive Officer Renee N. Juhans says. Despite NASA's lag in implementing NRC's recommendations—seven years if the current schedule holds—Anthes says the programs are still valid and not outdated. "The observations are still needed," Anthes says. "These are very basic observations, and you really need them for a long time." Anthes says NRC will likely begin an update to the 2007 survey next year. The update, due in 2012, will examine changes in the science, technology, and costs to the originally recommended programs

Aff: No trade offs

No intra-NASA trade-off—innovation creates new funding

McLane 10(James, Associate Fellow in the American Institute of Aeronautics and Astronautics , Space Review, 7/1, http://www.thespacereview.com/article/1635/1, accessed 7-1-11, CH)

Naysayers claim the country can't afford to send a person to Mars, but they forget we've successfully funded expensive space programs before and in tough economic times. Our space agency has relatively few direct government employees and distributes most of its money into the private sector all over the country. Some incorrectly believe that spending on NASA might divert funds from other needy government programs. One thing that keeps wealth in the US from being a "zero sum game" (where for some to win, others must lose) are those scientific developments that enable us to produce more output with less input. NASA is on the tip of this technology spear. Spending on the scientific segment of America is what keeps our standard of living moving ahead in a world of ever-diminishing natural assets.

Politicians will defend NASA

Smith 11 (Josh, technology reporter, National Journal, 2/14, http://www.nationaljournal.com/nationalsecurity/nasa-largely-spared-big-cuts-in-obama-budget-20110214, accessed 7-1-11, CH)

Funding for NASA's Exploration directorate got a bump, funneling dollars to the programs developing the next generation of space vehicles and technology. Last year, Obama scuttled a Bush-era plan to return to the moon and called for more privatization, as well as missions to an asteroid and Mars. To meet those goals, however, the president proposed a $6 billion surge in funding over the next five years. Without any of that money, analysts say the current plan amounts to a budget cut. The question now is how Obama's NASA plan will fare in the budget-slashing frenzy in Congress, where House Republicans have called for a $379 million cut for the space agency's budget. However, politicians traditionally have been loathe to cut the jobs the space program provides, a concern that crosses party lines.

Aff: Earth science can't solve warming

Earth science can't solve warming: NASA innovation is failing

NAST 8 - non-profit organization comprised of community leaders, business leaders and former NASA officials (NASA'S ROLE IN THE 21ST CENTURY, Fall 2008, http://nastus.org/documents/NASARole.21stCentury.pdf**) N**AR

The Space and Earth Science Programs of NASA continue to do remarkable things with robotic spacecraft including the amazing success of the Spirit and Opportunity rovers on Mars and the exciting new earth observation satellites such as CALIPSO probing the planet's clouds and aerosols with lasers. These programs are, however, experiencing strong budget pressures and infrequent missions force a spirit of low risk taking which diminishes the opportunity for innovation. The NASA program under the most severe budget pressure, Aeronautics, has completely backed away from an innovation agenda, and now focuses itself on basic research which is less expensive to conduct5. This program's ties to aviation innovation have completely atrophied leaving the Small Aircraft Transportation System as its last contribution of significance. With the nation in dire need of a complete reinvention of its air traffic management system, NASA has walked off the field as a potential contributor to the innovations required6. The agency has devolved to this state over the time period since the end of the Cold War. The graying staff of the agency, which created the legacy of innovation, is rapidly retiring or being attracted away from NASA by industries or challenges more suited to their abilities. The agency has done very little hiring of young scientists and engineers during this period of decline as well7. Also, absent the image of real excitement and challenge from the broad aerospace for nearly two decades, young people are not being attracted to the industry. So as NASA's workforce leaves the agency behind, its heart and soul of innovation and ability to respond to almost impossible challenge will leave with them. Once this capacity has completely gone, recovery will become very difficult if not *impossible*.

Aff: No impact to warming

No Impact to warming, and it doesn't exist

Lehr 2005 (Jay, Science Director of the Heartland Institute a national nonprofit think-tank on climate change and other public policy issues , 1-12-2005, Yearbook of Experts)

EVIDENCE THAT THE TEMPERATURE OF THE EARTH IS NOT INCREASING SIGNIFICANTLY AS A RESULT OF MAN'S ACTIVITY ON THE PLANET 1 - Our most reliable sources of temperature data show no global warming trend. Satellite and weather balloon readings of temperatures in the lower troposphere (an area scientists predict would immediately reflect any global warming) show no warming since readings began 25 years ago, when the satellite system was first launched. Only land based temperature stations show a warming trend, and these stations do not cover the entire globe as satellite readings do, and these are often affected by heat generated by nearby urban development. 2 - All predictions of global warming are based on computer models not historical data. In order to get their models to produce predictions that are close to their designers expectations, modelers make adjustments to unknown variables that are many times greater than the effect of doubling carbon dioxide concentrations in the atmosphere. For example, knowledge of the amount of energy flowing from the equator to the poles is uncertain by an amount equivalent to 25 to 30 Watts per square meter (W/m2) of the earth's surface. the amount of sunlight absorbed by the atmosphere or reflected by the surface is also uncertain by as much as 25 W/m2. The role of clouds is uncertain by at least 25 W/m2. The heat added to the atmosphere by a doubling of CO2 is not uncertain. It is easily measured in laboratory experiments and amounts to only 4 Watts per square meter (4 W/m2) of the earth's surface. Obviously the uncertainties are many times larger than the input of energy resulting from a doubling of carbon dioxide in the atmosphere. 3 - When scientists analyzed the relationship between atmospheric CO2 levels and temperatures dating back 250,000 years in ice cores from Greenland and Antarctica, they found that sometimes concentration of CO2 was high when the temperature was low and sometime CO2 was low when temperature was high. 4 - While we hear much about one or another melting glaciers, a recent study of 246 glaciers around the world between 1946 and 1995 indicated a balance between those that are losing ice, gaining ice and remaining in equilibrium. There is no global trend in any direction. 5 - The gases in the atmosphere that absorb outgoing radiation forming the greenhouse effect are water vapor (absorbing 90% of outgoing heat), methane (4%), nitrous oxide (2%), carbon dioxide (4%). Thus a doubling of CO2 would not achieve a significant change in heat retained. 6 - Temperature fluctuations during the current 300 year recovery from the Little Ice Age which ended around 1700AD, following the Medieval Warming Period correlate almost perfectly with fluctuations in solar activity. This correlation long predates human use of significant amounts of fossil fuels such as coal, oil and natural gas. 7 - In defining the tremendous impact the sun has on climate one must really understands the actual movement of the earth around the sun. There are three variables, orbit shape, tilt and wobble which profoundly affect weather patterns. The earth's orbit does not form a circle as it moves around the sun - it forms an ellipse passing further away from the sun at the one end of the orbit than at the other end. During the 100,000 year cycle the tug of other planets on the earth causes its orbit to change shape. It shifts from a short broad ellipse that keeps the earth closer to the sun to a long flat ellipse that allows it to move farther from the sun and back again. 8 - There is no consensus of scientists in favor of human caused global warming. While opinion polls do not determine truth in science, more than 17,000 American scientists signed a petition drafted by the Oregon Institute of Science and Medicine which stated: "There is no convincing scientific evidence that human release of carbon dioxide, methane, or other greenhouse gases is causing or will, in the foreseeable future, cause catastrophic heating of the Earth's atmosphere and disruption of the Earth's climate. Moreover, there is substantial scientific evidence that increases in atmospheric carbon dioxide produce many beneficial effects upon the natural plant and animal environments of the Earth." 9 - A modest amount of global warming, should it occur would be beneficial to the natural world. The warmest period in recorded history was the Medieval Warm Period roughly 800 to 1200AD when temperatures were 7 to 9 degrees Fahrenheit warmer than today allowing great prosperity of mankind. 10 - Carbon dioxide is NOT a pollutant. On the contrary it makes crops and forests grow faster. Mapping by satellite shows that the earth has become about 6% greener overall in the past two decades, with forests expanding into arid regions. The Amazon rain forest was the biggest gainer, despite the much advertised deforestation caused by human cutting along their edges. Certainly climate change does not help every region equally, but careful studies predict overall benefit, fewer storms (not more), more rain, better crop yields, longer growing seasons, milder winters and decreasing heating costs in colder climates. The news is certainly not all bad and on balance may be rather good. 11 - Energy is the currency of technological progress. Billions of people in the Earth's poor countries are trying to lift themselves from poverty through use of simple technology. Hundreds of millions of these people are so close to the bottom rungs of the ladder of existence that loss of hydrocarbon fuels can cause their deaths. Many international elitists understand this well as they attempt to use the myth of global warming as a means of "population control". 12 - Global warming is a major industry today. Between 1992 and 2000 the U.S. Government spent $18 Billion on climate change research and now contributes $6 billion a year. This finances jobs, grants, conferences, international travel and academic journals. It not only keeps a huge army of people in comfortable employment, but also fills them with self righteousness and moral superiority regardless of the fact that real science did not support it.

Aff: Earth science can't solve

Earth Science can't solve anything

Borenstein 11 (Seth, staff, MSNBC, 3/4, http://www.msnbc.msn.com/id/41895904/ns/technology_and_science-space/t/lost-satellite-deals-heavy-blow-climate-research/, accessed 7-2-11, CH)

NASA's environmental division is getting used to failure, cuts and criticism. In 2007, a National Academy of Sciences panel said that research and purchasing for NASA Earth sciences had decreased 30 percent in six years and that the climate-monitoring system was at "risk of collapse." Just last month, the Obama administration canceled two major satellite proposals to save money. Also, the Republican-controlled House has sliced $600 million from NASA in its continuing spending bill, and some GOP members do not believe the evidence of manmade global warming. Thirteen NASA Earth-observing satellites remain up there, and nearly all of them are in their sunset years. "Many of the key observations for climate studies are simply not being made," Harvard Earth sciences professor James Anderson said. "This is the nadir of climate studies since I've been working in this area for 40 years."

Aff: Earth Science can't solve warming

Earth Science can't solve global warming – 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 CO_2 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."

Aff: A2 Air pollution impact

Air pollution doesn't lead to extinction

Schwartz 03 - Adjunct Scholar, Competitive Enterprise Institute (Joel, "Particulate Air Pollution: Weighing the Risks," April, http://cei.org/pdf/3452.pdf)

Nonetheless, both the Bush Administration and congressional Democrats have proposed sweeping new measures to further crack down on power plant emissions. The Administration's Clear Skies Initiative and a more stringent Democratic alternative are largely justified by claims that current levels of particulate matter (PM) pose a serious public health threat. Supporters of these bills promise substantial benefits from additional PM reductions. Nevertheless, the benefit claims for PM reductions rest on a weak foundation. EPA based its new annual fine PM (PM2.5) standard on a study known as the American Cancer Society (ACS) study of PM and mortality, which assessed the association between the risk of death between 1982 and 1998 with PM2.5 levels in dozens of American cities. Although the ACS study reported an association between PM and mortality, some odd features of the ACS results suggest that PM is not the culprit. For example, according to the ACS results, PM increased mortality in men, but not women; in those with no more than a high school degree, but not those with at least some college education; in former- smokers, but not current- or never-smokers; and in those who said they were moderately active, but not those who said they were very active or sedentary. These odd variations in the relationship between PM2.5 and mortality seem biologically implausible. Even more surprising, the ACS study reported that higher PM2.5 levels were not associated with an increased risk of mortality due to respiratory disease; a surprising finding, given that PM would be expected to exert its effects through the respiratory system. EPA also ignored the results of another epidemiologic study that found no effect of PM2.5 on mortality in a cohort of veterans with high blood pressure, even though this relatively unhealthy cohort should have been more susceptible to the effects of pollution than the general population. The evidence therefore suggests that the existing annual standard for PM2.5 is unnecessarily stringent. Attaining the standard will be expensive, but is unlikely to improve public health.

Aff: A2 Heg impact

No heg collapse: US military force is the best in the world, economic competitiveness doesn't matter

Debusmann 10 (Bernd, Reuters columnist, "U.S. military power: When is enough enough?", Reuters, 2/5, http://blogs.reuters.com/great-debate/2010/02/05/u-s-military-power-when-is-enough-enough/, JK)

The numbers tell the story of a superpower addicted to overwhelming military might: the United States accounts for five percent of the world's population, around 23 percent of its economic output and more than 40 percent of its military spending. America spends as much on its soldiers and weapons as the next 18 countries put together. Why such a huge margin? The question is rarely asked although there is spirited debate over specific big-ticket weapons systems whose conception dates back to the days when the United States was not the only superpower and large-scale conventional war against the other superpower, the Soviet Union, was an ever-present possibility. Those days are over. Now, the U.S., deep in deficit and grappling with the aftermath of the worst recession since the 1930s, is reaching a point where the only way the country can maintain its role as the world's towering military giant is to borrow monethis is nate'y from the country many military planners see as a potential future adversary – China. "Obviously, this is not a tenable arrangement over the long run," says Loren Thompson, CEO of the Lexington Institute, a think tank with close ties to defense contractors. The Pentagon, he says, must wean itself from the idea that the American military can go anywhere and do anything equally well. Whether that weaning process will ever happen is open to doubt. "America's interests and role in the world require Armed Forces with unmatched capabilities," according to the just-published Quadrennial Defense Review (QDR), a report required by Congress on the future of U.S. national security strategy. "Unmatched" is one thing, dwarfing the rest of the world is another. The U.S., for example, has 11 aircraft carriers in service; the rest of the world has eight. China is building one but analysts say it won't be completed before 2015. "The United States," notes the QDR, "remains the only nation to project and sustain large-scale operations over extended distances." That it can do so is largely thanks to weapons systems developed during and for the Cold War, from aircraft carriers and nuclear submarines to long-range bombers. During his campaign for the presidency, Barack Obama frequently pledged to reform the defence budget "so that we are not paying for Cold War era weapons systems that we don't use." He repeated that pledge in his first State of the Union message. But his defence budget, released in the same week as the QDR, shows no distinct departure from the spending habits perpetuated in the budgets of his predecessor, George W. Bush. It allotted more funds for special forces, helicopters, missile-launching drones and other equipment for the "asymmetric wars" in Afghanistan and Iraq but it also provided for a new aircraft carrier and attack submarines.

Aff: A2 Disease Impact

Extinction from disease is genetically impossible and empirically disproven

Posner 2005 (Richard A., Judge U.S. Court of Appeals 7th Circuit, Professor Chicago School of Law, January 1, 2005, Skeptic, Altadena, CA, Catastrophe: Risk and Response, http://goliath.ecnext.com/coms2/gi_0199-4150331/Catastrophe-the-dozen-most-significant.html#abstract)

Yet the fact that Homo sapiens has managed to survive every disease to assail it in the 200,000 years or so of its existence is a source of genuine comfort, at least if the focus is on extinction events. There have been enormously destructive plagues, such as the Black Death, smallpox, and now AIDS, but none has come close to destroying the entire human race. There is a biological reason. Natural selection favors germs of limited lethality; they are fitter in an evolutionary sense because their genes are more likely to be spread if the germs do not kill their hosts too quickly. The AIDS virus is an example of a lethal virus, wholly natural, that by lying dormant yet infectious in its host for years maximizes its spread. Yet there is no danger that AIDS will destroy the entire human race. The likelihood of a natural pandemic that would cause the extinction of the human race is probably even less today than in the past (except in prehistoric times, when people lived in small, scattered bands, which would have limited the spread of disease), despite wider human contacts that make it more difficult to localize an infectious disease. The reason is improvements in medical science. But the comfort is a small one. Pandemics can still impose enormous losses and resist prevention and cure: the lesson of the AIDS pandemic. And there is always a lust time. That the human race has not yet been destroyed by germs created or made more lethal by modern science, as distinct from completely natural disease agents such as the flu and AIDS viruses, is even less reassuring. We haven't had these products long enough to be able to infer survivability from our experience with them. A recent study suggests that as immunity to smallpox declines because people am no longer being vaccinated against it, monkeypox may evolve into "a successful human pathogen," (9) yet one that vaccination against smallpox would provide at least some protection against; and even before the discovery of the smallpox vaccine, smallpox did not wipe out the human race. What is new is the possibility that science, bypassing evolution, will enable monkeypox to be "juiced up" through gene splicing into a far more lethal pathogen than smallpox ever was.

Intervening actors solve disease—SARS proves.

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There has been an intensive assessment of the different public health interventions that contributed substantially to the eventual curtailing of the epidemic in Hong Kong.[27] It is well known that an effective strategy requires aggressive public health measures in combination with stringent hospital infection control practices that meet the recommendations of World Health Organisation.[29 30] The SARS pandemic has shown that governments and public health officials need to consider the use of quarantine as a public health tool to prevent the spread of infectious diseases, particularly when other preventive interventions (for example, vaccines and antibiotics) are unavailable.[31] From our study, it is shown that either 100% effective precautionary measures or quarantine would lead to decline in the incidence. Both of them reduce R0 in a linear way unlike the practice of isolation. The importance in the coverage should be therefore emphasised. Although recent studies with modelling[14 15] provided us with dynamics of SARS including transmissibility as well as the impact of quarantine and isolation, the role of precautionary steps was not taken into consideration. Precautionary measures themselves are quite important especially in hospital settings because a high proportion of the SARS patients were healthcare workers as was pointed out.