

Bush Pledges Increased Science Research and Education Funding

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In his 31 January State of the Union address, U.S. President George W. Bush announced two new initiatives aimed at galvanizing scientific research and education.

For the American Competitiveness Initiative, Bush proposes to “double the federal commitment to the most critical basic research programs in the physical sciences in the next 10 years... [and to] make permanent the research and development tax credit to encourage bolder private-sector initiative in technology.”

The aim of these measures is to promote innovation in fields such as nanotechnology, supercomputing, and alternative energy sources, the President said.

The initiative would “encourage children to take more math and science and to make sure those courses are rigorous enough to compete with other nations,” Bush said. His plan proposes to train 70,000 high school math and science teachers so that they will be qualified to lead Advanced Placement and International Baccalaureate courses. In addition, 30,000 math and science professionals would be recruited to teach in classrooms.

If approved by Congress, the initiative would provide \$136 billion over 10 years to these science education and research goals.

In a statement released after Bush's address, the U.S. National Academy of Sciences applauded the proposal, citing it as “an important step in what we hope will be a multi-year bipartisan commitment to

enhance the nation's innovation system.” The NAS 2005 report, *Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future*, helped to inform Bush's initiative.

AGU itself, and through the Coalition for National Science Funding and the Science, Technology, Engineering, and Math Education Coalition, has been actively seeking this kind of recognition of the need for a stronger scientific enterprise.

A second proposal announced by Bush, the Advanced Energy Initiative, calls for a 22 percent increase in clean-energy research at the U.S. Department of Energy. The initiative aims to decrease the United States' reliance on petroleum.

—MOHI KUMAR, Staff Writer

Report Evaluates Importance of Coral Reefs and Mangroves

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Thirty percent of the world's coral reefs are seriously damaged, and possibly no pristine reefs remain, according to a 24 January report by the World Conservation Monitoring Centre of the United Nations Environment Programme (UNEP) issued in the wake of the 26 December 2004 Indian Ocean tsunami.

“The Indian Ocean tsunami brought a lot of attention to coral reefs and mangroves,” said Sue Wells, lead author of the report, *In the Front Line: Shoreline Protection and other Ecosystem Services from Mangroves and Coral*

Reefs. “Were they badly damaged? Did they play a role in buffering damage on shore?”

Wells, an advisor to UNEP on marine conservation issues, said that such questions brought into focus the importance of these ecosystems and the need for information on them to be centralized.

The report compiled research on the current status and economic value of coral reefs and mangrove swamps, including assessments of their ability to mitigate coastal erosion from storm surges.

Sixty percent of reefs will be lost by 2030, according to the report. The remaining reefs

are suffering from contamination by invasive species and algal blooms, among other factors. An estimated 35 percent of mangrove forest have disappeared over the last two decades.

The report also notes that the value of coral reefs is estimated at between US\$100,000 and \$600,000 per square kilometer per year; mangroves are valued as much as US\$900,000 per square kilometer per year. If healthy, both ecosystems help to absorb 70–90 percent of storm surge energy from hurricanes and tropical storms.

—MOHI KUMAR, Staff Writer

FORUM

Are Claims of Global Warming Being Suppressed?

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Over the last few years, I have heard many rumors that climate science relevant to the global warming discussion is being suppressed by the Bush Administration. One cannot do much about third-hand information. However, on 29 January, the *New York Times* published a front page article on NASA efforts to suppress statements about global warming by James Hansen, director of the NASA Goddard Institute for Space Studies.

A claim by one government scientist, though, no matter how distinguished, still requires examples from other scientists before a general conclusion can be drawn about the overall scope of the problem. But if the charges are more widespread, then

some government scientists might be reluctant to make such claims, because they might feel that their positions were jeopardized. Therefore, an alternate way may be needed to determine the scope of the issue, while still safeguarding government workers from possible retaliation.

The following proposal may meet these means for testing: if government scientists are, in fact, harassed, they should record this in a timely manner, on their own time and their own computers, in order to avoid any later government claims as to intellectual or property rights to the material. Information that is classified obviously should not be recorded, but it is hard to imagine much climate information as being in that category.

At some later point, when there is less concern about the harassment charges, it

would therefore be possible for science historians to request private files of people who kept records, in order to test whether there was a sufficient number to make a general statement about administration intimidation.

If only a handful of scientists or other administrators came forward, historians could justifiably conclude that there is not sufficient evidence to support such a charge. If many more came forward, then historians would have some justifiable reasons for concluding that government harassment was more systemic in nature.

Harassment is a serious charge and jeopardizes the concept of free exchange of ideas and information. As scientists, we are obligated to develop a method to test such a charge, rather than accept or reject it according to our disposition. There may be better ways to conduct such a test, and readers are invited to make such recommendations. But it is important for the community to at least get started in considering a more specific strategy to addressing this simmering issue.

—THOMAS J. CROWLEY, Division of Earth and Ocean Sciences, Nicholas School for the Environment, Duke University, Durham, N.C.

On 30 January, Rep. Sherwood Boehlert (R-N.Y.), chairman of the U.S. House of Representatives Committee on Science, wrote a letter to NASA Administrator Michael Griffin addressing many of the concerns Crowley has raised.

Boehlert wrote, "It ought to go without saying that government scientists must be free to describe their scientific conclusions and the

implications of those conclusions to their fellow scientists, policymakers and the general public."

He continued, "Good science cannot long persist in an atmosphere of intimidation. Political figures ought to be reviewing their public statements to make sure they are consistent with the best available science; scientists

should not be reviewing their statements to make sure they are consistent with the current political orthodoxy."

I commend Rep. Boehlert for his quick and clear statement of the importance of unfettered communication of science.

—FRED SPILHAUS, Editor

Keep Religion Out of National Space Policy

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In an *Eos* forum last spring, Robert Frodeman (University of Texas, Denton) suggested that "it is time that we draw more consciously upon the expertise of scholars trained in the areas of art, philosophy, and religion in the design of our space policy" [2005]. I would agree that artists and philosophers may help the public to appreciate the true grandeur of the universe and thus increase popular support for the exploration of space, but I cannot think of a potentially more disastrous step than to bring "scholars trained in...religion" into the development of our national space policy, as Frodeman advocates.

My concerns have nothing to do with the First Amendment of the U.S. Constitution—I simply think that the potential negatives far outweigh the potential benefits.

Consider, for example, the recent results of politicians listening to 'religious scholars' on the practice of medicine and medical research in America. The executive and legislative branches of the Florida and U.S. federal governments actually passed laws to intercede in the treatment of one specific patient, Terri Schiavo. Fortunately, the judicial branch of the federal government defended medical science against this attack by misguided religious and political leaders.

U.S. President George W. Bush opposes stem cell research—a field in which human cells are cloned to develop improved methods of treating severe diseases and injuries—based on the opinion of religious scholars that each individual cell is the moral equivalent of an adult human being. Stem cell and cloning research will, of course, go forward, because of the likelihood that ultimately thousands of patients will be relieved of pain and suffering through the

use of stem cells, cloned cells, and even cloned organs.

Admittedly, forming a national space policy is very different from determining the ethical bounds of medical treatment and research. But what might religious scholars be expected to contribute to the formation of our national space policy?

NASA has posed three logical questions to seek answers to: How does life begin and evolve? Does life exist elsewhere in the universe? What is the future of life on Earth and beyond? Finding answers to these questions is an appropriate goal for our space agency because the questions focus on gathering factual information about the universe—past, present, and future.

To these three questions, which are amenable to investigation through the scientific method, Frodeman wants to add a fourth: "How might such a discovery [such discoveries?] affect our sense of ourselves and our cultural institutions?" Many would likely agree that this is a valid question for individuals, politicians, and cultural institutions to explore and come to terms with now, rather than to wait until the first extraterrestrial life is discovered. But does that make it a necessary or valid component of our national space policy? Is Frodeman suggesting that somehow we might change the goals of space exploration if religious scholars expressed concerns over the discovery of life elsewhere in the universe?

Guy J. Consolmagno, who earned a Ph.D. in planetary science at the University of Arizona and taught at the Massachusetts Institute of Technology before becoming a Jesuit and being assigned to work at the Vatican Observatory, wrote in his book, *Brother Astronomer: Adventures of a Vatican Scientist*, that "Finding any sort of life off planet Earth,

either bacteria or extraterrestrials, would pose no problem for religion....God created the whole universe. There's nothing that makes one place more special than another....To insist that 'God could not have made other worlds' was declared a heresy in the thirteenth century—so this even covers alternate or parallel universes!" [2000].

It appears that at least one 'religious scholar' sees no problem with goal two stated above, i.e., that our space policy should include searching for life in other parts of the universe. But it is the later part of Consolmagno's statement that concerns me. If he means simply that Catholics should not insist that there could not be intelligent life elsewhere in the universe, that is one thing. But if he means that a scientist who may find evidence suggesting that Earth is the only place in the universe where life has developed should not report that finding for fear of being accused of heresy, that is quite another. Scientists must be free to explore the universe without religious coercion of any sort.

I am not suggesting that religious scholars would resort to coercion to influence our national space policy, but I see no reason to take the risk that they might, by inviting their opinions on an endeavor that has nothing to do with religion—collecting the scientific data required to answer the three well-posed questions that are already a part of our space policy.

References

- Consolmagno, G. (2000), *Brother Astronomer: Adventures of a Vatican Scientist*, 227 pp., McGraw-Hill, New York.
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