Cuts to NASA budget gut space research

By Frank Gaglioti
20 May 2006

In a far-reaching reorientation of its programs, the US National Aeronautic and Space Administration (NASA) budget has effectively capped science spending for the five-year period from 2007 to 2011. Programs designed to investigate more fundamental scientific questions about the character of the solar system and the universe are being sacrificed to enable NASA to carry out President George Bush’s grandiose scheme to establish a permanent settlement on the moon in preparation for a manned mission to Mars.

NASA’s announcement in February was part of Bush’s budget cuts to federal science spending by 1 percent to $59.8 billion. The changes to NASA’s program are mirrored in the overall science budget, which is focussed more narrowly on projects with commercial payoffs or to strengthen the US military. Bush’s “American Competitive Initiative,” which is aimed at bolstering US corporate interests at the expense of their rivals, will consume $5.9 billion. Presidential science adviser John Marburger bluntly declared: “The point is, we’re prioritising.”

Several NASA programs have been delayed, including:

* The Global Precipitation Measurement (GPM) mission would have launched a satellite to accurately measure all forms of precipitation on Earth. The study was aimed at developing a more accurate scientific understanding of earth’s weather system and its response to natural and human-induced changes. The satellite was due for launch in 2010 and will now be delayed by 30 months.

* The Space Interferometry Mission PlanetQuest (SIM) planned for launch in 2015, which has now been delayed by three years. SIM is designed to more accurately map the positions and distances of stars throughout the galaxy and to probe nearby stars for Earth-sized planets with the possibility of life. The satellite was due for launch in 2010 and will now be delayed by 30 months.

* Other projects such as the Orbiting Carbon Observatory, the Landsat Data Continuity Mission, the Space Interferometry Mission and the Wide-Field Infrared Explorer (WISE) have been delayed for one to three years but their future is uncertain.

Many other NASA projects have been deferred indefinitely or scrapped altogether, including:

* The Terrestrial Planet Finder (TPF) mission was to launch two space telescopes designed to explore the formation of planets in stellar dust clouds.

* A mission to Europa, one of Jupiter’s moons thought to possibly contain liquid water and life, has also been axed. The cancellation of the project is a huge blow to the science of astrobiology—the search for extra terrestrial life. NASA’s budget for projects in this field has been slashed by 50 percent. Reta Beebe, an astronomer at New Mexico State University, commented: “The proposed budget transforms an existing, vibrant program into a stagnant holding pattern ... the damage is immediate and increasingly irreversible.”

Four locations in the solar system are believed to have the potential to harbour primitive life forms: Mars, Jupiter’s moon Europa, Saturn’s moon Titan and Saturn’s moon Enceladus, where scientists have just discovered a plume of water. Most of these discoveries have resulted from previous NASA probes. Any follow up will be impossible under the current funding regime.

* The Laser Interferometry Space Antenna (LISA) was to search for gravity waves as predicted by Einstein’s theory of General Relativity. Gravity waves could potentially be used to map the warped space-time around black holes and to further our understanding of the nature of space, time and gravity.

* The Constellation-X Observatory was to have been a array of orbiting X-ray satellites linked together to act as one giant X-ray telescope. The observatory was to investigate black holes, galaxy formation and the evolution of the universe scales as well as more perplexing phenomena such as dark matter and dark energy.

* The Mars Sample Return was intended to pick up rock samples from Mars and return them to Earth for analysis.

* The NuSTAR project was a high-energy X-ray telescope intended to survey the sky in a section of the electromagnetic spectrum never before explored. It had the potential to find previously unobserved objects.

* The Stratospheric Observatory for Infrared Astronomy (SOFIA) was a joint project with the German Aerospace Centre (DRL). The plan was to fly a 2.5 metre reflecting telescope to observe infrared radiation at a height of 12 kilometres, above any interfering atmospheric moisture. SOFIA was aimed at determining the composition of planetary atmospheres and surfaces; investigating the structure, evolution and composition of comets; determining the physics and chemistry of the interstellar medium; and exploring the formation of stars and other stellar objects.
NASA's administrator, Michael Griffin, joined the Reagan administration's Strategic Defense Initiative Organisation or “Star Wars” program in 1986 as the deputy for technology and led the efforts to develop a missile defence shield. Defence Secretary Donald Rumsfeld is known for his advocacy of American superiority in space warfare.

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The NASA cuts produced a furore among scientists in the US and internationally. Executive Director of the Planetary Society, Louis Friedman commented in February: “Space science was not just cut; it was eviscerated. Planetary exploration was savagely pruned. The budget would delay or cancel several long-awaited missions and proposed major decreases in scientific research.” The society has launched a “Take Action Alert” to mobilise scientists against the measures.

An editorial in Nature entitled “NASA in reverse” stated: “NASA is undergoing a historic shift in direction without consulting scientists or paying attention to their advice. Projects with great appeal to scientists and to the public—including the search for planets around other stars and the study of dark energy—are being abandoned so that NASA can return astronauts to the moon half a century after the Apollo landings.”

Associate Administrator for Science Mary Cleave justified the cuts in a statement on March 13, saying: “We all plan and conduct our scientific explorations in a constrained Federal budget environment made more so by recent events on the national and international stage largely beyond the realm of science.” Her guarded reference to US occupations in Iraq and Afghanistan underscores the priorities of the Bush administration, which will have spent $500 billion on these criminal enterprises by the end of 2006.

At a briefing for space scientists at NASA headquarters on March 14, Cleave declared: “We’re going to have to do some surgery, so to speak.” Curator at the Museum of Natural History in Washington, D.C. Glenn MacPherson, responded: “There has been no consultation with the science community. The science cuts hurt everyone in this room.” The Space.com website commented on the meeting that “the fury... was not kept within US borders. Scientists from Europe also cautioned that the NASA budget is damaging international cooperation.”

The elimination of programs that have taken decades to establish is a massive setback to scientific research, particularly into fundamental questions of physics and cosmology. The disbanding of teams of scientists, engineers and technicians will result in the loss of accumulated experience and expertise as well as significantly narrow the opportunities from training a new generation.

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