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At the National Oceanic and Atmospheric Administration, R&D funding rose 7.6%, to \$573 million. At the National Institute of Standards and Technology, total R&D funding rose nearly 5% to \$514 million, but within that the agency's main research programme drops 0.8% from \$372 million in the previous year.

NASA saw a 5.7% increase in its overall R&D budget, to \$12.5 billion. But much of that money is tied to completion of the International Space Station and for rockets to return astronauts to the Moon. Within the \$5.5-billion science directorate, Earth sciences received the biggest boost — of 4.4%, to \$1.5 billion — while planetary science suffered the most, with a 1.4% cut, to \$1.4 billion.

The NIH, which had been set to receive a 3.1% boost in a budget bill vetoed by Bush in November (see *Nature* 450, 470; 2007), will instead get a 0.5% increase of \$133 million, bringing its effective budget to \$28.9 billion. That will make 2008 the fifth consecutive year of effectively flat funding for the NIH.

The 0.5% increase drew sharp rebukes from advocates for biomedical research, who criticized Bush for forcing Congress to shave more than half-a-billion dollars from what it had allotted to the NIH in November. "That was a really big hit," says David Moore, senior associate vice-president at the Association of American Medical Colleges in Washington DC. "We're extremely disappointed," adds Jon Retzlaff, the senior lobbyist at the Federation of American Societies for Experimental Biology.

Still, some corners of the NIH will have reason to celebrate, such as the once-embattled National Children's Study, which Bush had tried to eliminate but which ended up growing by \$42 million, to \$111 million. Open-access advocates also applauded a provision in the bill that will require NIH-funded investigators to submit — or have submitted for them — their peer-reviewed manuscripts to the National Library of Medicine's PubMed Central when they are accepted for publication. The manuscripts will be made publicly available no later than 12 months after publication.

Meanwhile, Speaker of the House Nancy Pelosi (Democrat, California) sent out a letter to the research community, saying that "her commitment to the innovation agenda remains strong and steadfast". And advocates of the physical sciences vowed to keep fighting. Charles Vest, president of the National Academy of Engineering, says that other countries are proceeding apace with research investments. "If we keep doing business as usual," he says, "we're going to get our lunch eaten." ■

Eric Hand, with additional reporting by Meredith Wadman and Jeff Tollefson

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Airgun ban halts seismic tests

Geologists hoping to study Earth's crust off the coast of British Columbia have reached an impasse with the Canadian government, delaying their long-planned research projects. Canada has not issued permits for geological work using airguns — which fire bursts of air into the ocean — on the basis that it may disturb marine life, including whales. The dispute is so intense that one long-planned US\$2.5-million project is "dead in the water". A second study, meant to facilitate a Can\$100-million (US\$99-million) Canadian seafloor observatory system, has been delayed at least three months, if not indefinitely.

The researchers are exasperated, arguing that they have done "everything right" to comply with environmental protection laws. They say that Canadian agencies have capitulated to environmental organizations.

Canada has a moratorium on oil and gas development, which also involves airguns to locate reserves, along its western coastal waters. Fears that a scientific airgun cruise could open the waters to oil and gas exploration sunk the research projects' chances, says Lincoln Hollister, a geoscientist at Princeton University in New Jersey. Hollister has spent more than four years trying to win Canadian approval to use airguns to map the crust beneath the mountains and coastal fjords of Queen Charlotte Sound in northern British Columbia.

In 1994, he led a similar cruise without causing any environmental harm, he says. The team has footage of a humpback whale basking undisturbed in the distant background while airguns were fired.

Anecdotes aside, there is

no definitive data yet available on the effects such seismic tests have on marine animals. Results from a US study on this conducted in summer 2007 have yet to be published.

In March, the Natural Sciences and Engineering Research Council of Canada (NSERC) killed plans to provide Can\$300,000 for the Canadian members of Hollister's team. NSERC environmental officer Diane Fraser in Ottawa says that this was done on advice from scientists at the Department of Fisheries and Ocean (DFO). "There were not enough scientific data to be able to determine one way or another if airguns would be harmful," says Fraser.

Since that rejection, Hollister says he has attempted repeatedly to learn from the DFO and NSERC what could be done to remedy the situation, but no one responds. Adam Silverstein, an environmental-assessment manager at the DFO in Vancouver, denies knowledge of such requests. Hollister counters that Silverstein was repeatedly copied in on e-mail. "It is widely recognized that everything was done right to get the permits," Hollister claims.

Margot Venton, a legal consultant for environmental group Ecojustice in Vancouver, acknowledges that the potential for oil and gas exploration was a concern, and

says that as Canadian agencies failed to show the acoustic study would not cause harm to animals, it shouldn't proceed.

At the US National Science Foundation (NSF), which funds the US component of Hollister's study, there is dismay, notes William Lang, who secures environmental permits for NSF-funded scientists in foreign waters. "The very high-value proposal didn't get a fair hearing in the public forum," he says.

The airgun issue is also thwarting plans for the *Marcus Langseth*, a US\$20-million research vessel operated by the Lamont-Doherty Earth Observatory at Columbia University in New York City. The ship was intended to be in Canadian waters next July to measure seismic velocities in preparation for the installation of Neptune Canada — a seafloor observatory — in the summer of 2009, says Douglas Toomey, a geologist at the University of Oregon in Eugene. But the US\$2-million cruise has now been delayed until at least October.

A Lamont-Doherty spokesman says that US state department officials are seeking "reasonable assurance" that the Toomey project will secure a permit before an expensive Canadian application process is initiated. ■

Rex Dalton



Concerns about whales have blocked use of airguns in Canada.

C. ANDRONICOS