Scientists Warn of Diminished Earth Studies From Space

By ANDREW C. REVKIN
Published: January 16, 2007

The nation's ability to track retreating polar ice and shifting patterns of drought, rainfall and other environmental changes is being put "at great risk" by faltering efforts to replace aging satellite-borne sensors, a panel convened by the country's leading scientific advisory group said.

Enlarge This Image

NASA

An artist's rendering of NASA's Quick Scatterometer, which was launched in 1999 to replace a satellite that lost power.

By 2010, the number of operating Earth-observing instruments on NASA satellites, most of which are already past their planned lifetimes, is likely to drop by 40 percent, the National Research Council of the National Academies warned in a report posted on the Internet yesterday at www.nas.edu.

The weakening of these monitoring efforts comes even as many scientists and the Bush administration have been emphasizing their growing importance, both to clarify risks from global warming and natural hazards and to track the condition of forests, fisheries, water and other resources.

Several prominent scientists welcomed the report, saying that while the overall tightening of the federal budget played a role in threatening Earth-observing efforts, a significant contributor was also President Bush's recent call for NASA to focus on manned space missions.

"NASA has a mission ordering that starts with the presidential goals — first of manned flight to Mars, and second, establishing a permanent base on the Moon, and then third to examine Earth, which puts Earth rather far down on the totem pole," said F. Sherwood Rowland, an atmospheric chemist at the University of California, Irvine, who shared a Nobel Prize for identifying threats to the ozone layer.

In an e-mail statement, John H. Marburger III, President Bush's science adviser and director of the Office of Science and Technology Policy, acknowledged that there were many challenges to maintaining and improving Earth-observing systems, but said the administration was committed to keeping them a "top science priority."

The report, "Earth Science and Applications From Space: National Imperatives for the Next Decade and Beyond," proposed spending roughly $7.5 billion in constant 2006 dollars on new instruments and satellite missions through 2020, saying that would satisfy various scientific and societal priorities while holding annual costs around what they were, as a percentage of the economy, in 2000.

"We're trying to present a balanced, affordable program that spans all the earth sciences," said Richard A. Anthes, the co-chairman of the committee that wrote the report and the new president of the American Meteorological Society.

The report is the latest in a string of findings from such panels pointing to dangers from recent disinvestment in the long-term

Related Web Links

The Report From NAS

The Group on Earth Observations

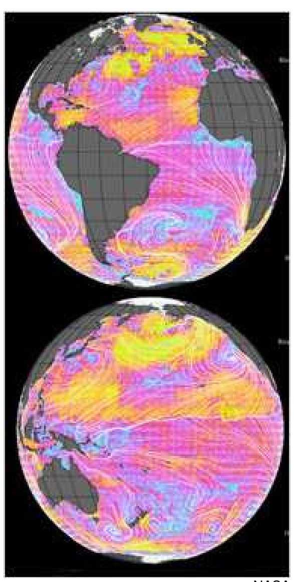
The National Research Council's Interim Report on Satellites Studying Earth

NASA's Earth-Oriented Missions

European Space Agency's Earth Observations Program

Readers' Opinions

Forum: Space and the Cosmos



NASA

USEFUL DATA NASA's Quick Scatterometer carries the SeaWinds instrument, which produced these images.

monitoring of a fast-changing planet.

"This is the most critical time in human history, with the population never before so big and with stresses growing on the Earth," Dr. Anthes said. "We just want to get back to the United States being a leader instead of someone you can't count on."

Satellite-borne instruments, using radar, lasers and other technology, have revolutionized earth and climate science, allowing researchers to accurately and efficiently track parameters like sea level and tiny motions of the Earth from earthquakes, the amount of rain in a cyclone and moisture in air, and the average temperature of various layers of the atmosphere.

The committee identified significant gaps in instrumentation or plans for satellites orbiting over the poles, around the Equator, and positioned so that they remain stationary over spots on the rotating Earth.

One of the most important aspects of such monitoring is launching new satellites before old ones fail. Without this overlap, it is hard to assemble meaningful long-term records that are sufficiently precise to uncover trends, the report's authors said.

The report went beyond discussing ailing hardware and said the White House science policy office should do more to ensure that society and science were benefiting fully from the reams of data flowing from orbiting instruments.

Senior officials at NASA and the National Oceanic and Atmospheric Administration welcomed the report and said it would be considered as they sought to sustain Earth observations in a time of tight budgets.

Next Article in Science (4 of 8) »

Tips

To find reference information about the words used in this article, hold down the ALT key and click on any word, phrase or name. A new window will open with a dictionary definition or encyclopedia entry.

Related Articles

- More Satellites to Explore Clouds' Most Intimate Secrets (April 20, 2006)
- Scientists Say Next Solar Cycle Will Be Strong but Delayed (March 7, 2006)
- Water, Water Everywhere. And When It Shifts, So Does Earth's Gravity. (August 3, 2004)
- Will Compasses Point South? (July 13, 2004)

Related Searches

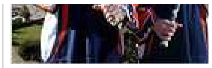
- Satellites
- Earth
- Space
- National Aeronautics and Space Administration

Not a Front-Runner, but Ahead in the Polls

In Death as in Life, a Personalized Space

Taking Power, Sharing Cereal

Speaking Chic to Power



Vecsey: Titans Return