

Is NASA in Outer Space? Not After a Surprise Round of Budget Cuts

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In 1996, for the first time since Balboa spotted the shimmering Pacific from a high Panamanian hill in 1513, a vast new ocean was discovered -- an ice-covered body of water that entirely envelops Jupiter's enigmatic moon Europa. The divining of a huge extraterrestrial ocean in our very solar system seemed both improbable and fortuitous, as the robot Galileo -- named after the astronomer who first discovered Jupiter's four largest moons nearly 400 years ago -- was the first spacecraft ever to orbit one of the outer planets.

Then just last month, the second outer-planets orbiter, Cassini, currently looping around Saturn, sent back headline news. Cassini scientists announced they'd spotted unmistakable evidence of liquid water venting from the south polar region of Saturn's moon Enceladus.

Given the clear signs of organic compounds, sources of energy and liquid water on Europa, many believe life to be more likely there than on Mars. And preliminary analysis of Enceladus's south pole indicates that it, too, may well have been warm enough, for long enough, that sub-surface water could have fostered life there.

In other words: Eureka! We've discovered not one, but two, potential extraterrestrial biospheres. Enceladus will now be a prime focus of Cassini's attention for the rest of its mission, which should last many more years. And it would seem a no-brainer that NASA should be using its scientific and engineering talent to launch a mission dedicated to further exploring Europa. After all, finding life there wouldn't just be one of the most monumental discoveries in human history; it could surely provide a massive boost to all our space exploration efforts. (Failing to find it, on the other hand, would give us something else to chew over: how a liquid water ocean could exist for millennia and not give rise to life.)

Given the stakes, and that NASA receives almost \$17 billion a year for the

specific purpose of exploring the cosmos -- not to mention that the agency's own mission statements emphasize the search for extraterrestrial life -- we should probably be reading about such a mission right now, correct? Unfortunately, we're not. NASA unveiled its 2006 budget with a sharp intake of breath in February, and among other things, it immediately became clear that the agency had canceled plans for a dedicated mission to Europa -- for the third time in less than a decade.

To the consternation of scientists everywhere, the agency plans to slash its science budget, which covers deep space exploration, by a total of as much as 25 percent over this year and next, with a massive \$3 billion cut in the projected budget over the next five years. If you cut off one-quarter of a table's legs, it tends to fall down. And that means a lot of damage.

Among the broken crockery is NASA's much-anticipated Terrestrial Planet Finder, a fascinating mission designed to discover possible abodes for life orbiting other stars. It is being "indefinitely deferred" -- a crafty way of saying "canceled." Also in fragments is the agency's Space Interferometry Mission, a key project in the search for other planetary systems; it will be "delayed indefinitely." These are among the missions the scientific community has had the highest hopes for, and has been gearing up to supply with personnel.

By effectively robbing its Science Directorate to the benefit of spaceflight involving astronauts, NASA is creating a catastrophe for American solar system and deep space exploration. For the past three decades, true space exploration, which is by far the most popular of NASA's activities, has been conducted by the crewless missions of the Science Directorate.

If allowed to go forward, these cuts will result in the immediate and long-term loss of key scientific personnel. A generation of young people who could train to become planetary scientists and astronomers is in danger of moving on to other careers. And what's at stake isn't just American leadership in space science. Without a credible alternative (because the European Space Agency, for all its achievements, doesn't have anything like NASA's budget or experience), it's the very future of such explorations.

So why are the cuts considered necessary? NASA officials point to the costs of developing a new Crew Exploration Vehicle, or CEV, as well as the higher-than-expected costs of the remaining years of the space shuttle program and the completion of the International Space Station. The shuttle program is clearly doomed, and while the space station may continue to

be a destination for U.S. astronauts following its completion (to the tune of \$100 billion), it will most likely be handed over to the Russians to manage. In short, NASA is making the inexplicable decision to transfer funds from highly popular, productive and cost-effective programs to extremely expensive ones of little scientific value that are scheduled for termination.

Although a good case can be made for continuing human spaceflight -- particularly if astronauts are sent out of low Earth orbit to conduct true exploration for the first time in three decades -- this doesn't have to involve gutting NASA's science programs. In fairness to agency Administrator Michael Griffin, he has been put in the impossible position of being asked to accomplish all these ambitious goals simultaneously and without a substantial budget increase. But since only six months ago he said that "not one thin dime" would be taken from the agency's science programs to accommodate human spaceflight, it's a bit much to hear him now characterize those warning of the dire effects of the proposed cuts as "hysterical."

Something's broken at NASA if such important and forward-looking goals as studying Europa's ocean and searching for planets with signs of liquid water elsewhere in our galaxy are canceled in favor of programs that are clearly on their way out. Congress should direct the agency to restore its science programs, and it should establish a firewall protecting them from the fiscal demands of crewed spaceflight.

Yes, let's send human beings into deep space again. But let's also follow the water, investigate Europa and see what we can discover about extraterrestrial life. To do otherwise wouldn't just be a bad mistake -- it would violate NASA's own stated reasons for existing.
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