SPACE SCIENCE

Europe Tries 'Fast and Cheap' Missions

The European Space Agency (ESA) has taken a leaf out of NASA's book: It has created a class of "fast and cheap" missions to test new technology and keep researchers busy during the long run-up to major missions. Last week, ESA's Science Program Committee (SPC), consisting of scientific and political representatives from the 14 member states, acknowledged the need for a "new spirit" in the agency's Horizon 2000 science program, with its firm timetable of large and medium-sized missions. Accordingly, it endorsed a plan that moves in two opposite directions at once: Two big projects will be consolidated into one giant mission, while several smaller missions will be carved out of the Horizon 2000 budget. "It is an attempt, despite the bad financial situation, to maintain a lively program," says SPC chair Hans Balsiger of Bern University.

Giacomo Cavallo, ESA's head of science programming, says the basic components of Horizon 2000 will not change: "It is not a revolution in the objectives, but in the means to achieve them." ESA plans to save money by putting the medium-sized Planck mission—a millimeter-wave sky survey—and the Far Infrared Space Telescope (FIRST) on a single spacecraft. "This will give us considerable leeway in our budget," says astronomer Lodewijk Woltjer, chair of ESA's Space Science Advisory Committee. The reallocation of small parts of the budgets of ESA's large missions will also help make room for small, flexible missions, dubbed "Smart" missions.

Although the Smart missions will not have a high scientific content, they "will give the community waiting for a [mission] a certain amount of confidence that things are still happening," says Balsiger. Their chief aim will be to prove technologies that could make ESA space flights cheaper. The first in this new series will test solar electric propulsion—the use of ion beams powered by solar energy to propel a spacecraft after launch. Smart 1's $55 million budget will come out of the allotment for ESA's Mercury mission, due to be launched after 2010. If successful, it would give the Mercury mission much greater freedom in launch dates. A second Smart mission will test microthrusters to compensate for the resistance of the upper atmosphere in low-Earth orbits.

While researchers welcome the chance to try out new techniques, the merging of Planck and FIRST has generated some discontent because both may have to compromise on performance. Moreover, if the merger cannot be made to work, "ESA will have to rethink its program, and that is a dangerous situation for the missions that are already supposed to be approved," says astronomer Michael Rowan-Robinson of Imperial College London.

One certain casualty would be the Mars Express mission, a project to explore the Martian surface planned for 2003, whose $170 million budget is made possible by the Planck-FIRST merger. That would be a big disappointment because "the failure of [the Russian Mars '96 mission] has created a scientific window, with a number of very interesting things that have to be done," says Woltjer. Also in doubt would be Europe's involvement in the Next Generation Space Telescope (NGST). Participation in this project is a "must," according to George Miley of Leiden University in the Netherlands: "It would be a disaster for European astronomy if we didn't."

HORIZON 2000 PROGRAM

Launch	Mission	Description	Notes
1997 (Oct.)	Cassini/ Huygens	Titan probe	Joint mission with NASA
1999	XMM	X-ray observatory	Unchanged
2000	Cluster 2	Magnetosphere mission	Relaunch
2001	Integral	Gamma-ray observatory	Unchanged
2001		Solar electric propulsion	Smart mission
2003	Rosetta	Cometary rendezvous	Unchanged
2003	Mars Express	Mission to Mars	New mission
2004	Ministep	Equivalence principle	Smart mission
2005	FIRST/ Planck	Infrared observatory/ cosmic background	Two missions combined
2006			Smart mission
2007	NGST	Space telescope	With NASA
2008		Solar system mission	

ESA

–Alexander Hellemans

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UNITED KINGDOM

Observatory's Fate Hangs in Balance

LONDON—Britain's most senior astronomer has made a plea to save one of the country's oldest scientific institutions, the Royal Greenwich Observatory (RGO). Following press reports that a secret recommendation has been made to close the RGO and concentrate resources at the Royal Observatory Edinburgh (ROE), Sir Martin Rees, who holds the honorary title of Astronomer Royal, wrote last week to Ken Pounds, chief executive of the Particle Physics and Astronomy Research Council (PPARC), calling for a reprieve. "By closing either observatory, you would be damaging ongoing projects and sending a negative signal about the U.K.'s future in astronomy," he told Pounds.

Britain's astronomy community has been abuzz with rumors since PPARC's highest level committee reached a decision last month on a restructuring program for the two observatories and sent its recommendation to the government. PPARC's committee normally publishes the outcome of its meetings, but this time the council has refused to say what the recommendation is. "There's no news forthcoming," says RGO head Jasper Wall. "The rumors, however, of a recommended closure of the RGO are being taken very seriously," says astronomer Phil Charles of the University of Oxford, who has written to the science minister, John Battle. "There's a need to exploit the complementarity of both observatories," he says.

The Royal Observatories, which trace their origins to the 17th and 18th centuries, play a key role in Britain's $26 million a year ground-based astronomy program. The RGO manages and builds instruments for the Isaac Newton group of telescopes on Las Palmas, one of Spain's Canary Islands, while the ROE has similar functions at the Joint Astronomy Center in Hawaii. They have been under threat for several years, however, because of increasing pressure on PPARC's budget.

Two years ago, a review committee suggested merging the two observatories to cut administrative costs and free more money for research, but the process led to a heated north-south squabble and got nowhere. "PPARC's stewardship has, frankly, not been such to inspire confidence in the wisdom of any recommendations it may make," says Rees. "The observatories could be managed by a consortium of universities according to the successful model followed in other countries for similar facilities."

PPARC officials decided earlier this year to conduct their own internal review and asked observatory heads to submit proposals. Press reports say that this review recommended focusing resources on just one center, with a loss of up to 100 posts out of a total of 160 and $12 million budgeted for restructuring. The deafening silence following the council's decision is unsettling, but familiar, to observatory staff. "We are becoming used to this uncertainty, but fortunately we are extremely busy at present," says Wall.

–Nigel Williams