

'Quick' Mars mission proposal puts pressure on ESA's plans

[MUNICH] Proposals by the European Space Agency (ESA) to launch a relatively quick, cheap mission to Mars have sharply divided Europe's space science community over how to determine ESA's scientific priorities.

Last week, ESA's Space Programme Committee (SPC) approved the continuation of a feasibility study of the so-called Mars Express mission, which would analyse the surface of the planet, and might also collect surface samples (see *Nature* 387, 112; 1997).

But scientists working on the Planck Surveyor, a spacecraft that will survey the cosmic microwave background, fear that the Mars mission would either compromise the scientific content of or delay their own mission, because it competes for ESA's dwindling funds.

The Planck mission was selected last year as ESA's next medium-sized mission through the agency's rigorous system of peer-reviewed competition. In contrast, Mars Express has not undergone a formal selection procedure, but was proposed by ESA's science director, Roger Bonnet, for a variety of reasons, some of which are being seen as pragmatic rather than scientific.

One is that it could help to restore the frequency of missions in ESA's long-term Horizons 2000 science plan, whose scope has recently been reduced to meet budgetary pressures. It could also be done relatively cheaply, using spares of instruments destroyed when the Russian Mars 96 mission failed last year.

But Mars Express would have to be developed quickly, as the positioning of planets opens a route to Mars in 2003. And the agency has no spare cash, in particular following its decision to re-fly Cluster, the multisatellite mission that was lost when its Ariane-5 launcher exploded a year ago.

ESA's member states are already demanding changes in Horizons 2000 to allow the agency to launch small 'fast' missions — such as Mars Express which is politically attractive because of popular interest in the life-on-Mars issue — partly to keep data flowing to all parts of the space science community. These extra missions must be accommodated within ESA's fixed science budget, so the agency has been investigating ways of reducing the costs of all missions in the planning phase.

In particular, Bonnet has asked scientists and technical staff working on Planck and the 'cornerstone' Far Infrared Space Telescope (FIRST) to consider options for merging their missions, with a joint launch in 2005. Bonnet argues that a merged mission could save up to ECU400 million (US\$450 mil-

lion), nearly half of the planned costs of the individual missions. Although no formal link has been made, this would just cover the cost of the Cluster reflight and Mars Express.

Because they share some important characteristics, such as the need for deep cooling and an orbit far from Earth, the proposal to merge Planck and FIRST looked promising. But detailed studies now suggest that such a merger may be technically too difficult; for example, it seems unlikely that Planck instruments could directly share FIRST's liquid-helium cooling system.

Furthermore, even if the missions could be combined, scientists foresee arguments about which satellite should operate first; they cannot operate simultaneously, as Planck must conduct its year-long survey at a fast spin, which is incompatible with FIRST observations.

Studies of a possible merger are continuing. But, as a fall-back, the SPC has asked ESA to conduct a second study to determine whether the missions could be launched separately for the same level of saving without cutting back on the science, something Planck scientists fear may be impossible. Planck scientists fear they will come under pressure to reduce the scientific scope of the mission if they cannot make the savings, and that the mission may even be cancelled.

Lodewijk Woltjer, chairman of ESA's Space Science Advisory Committee, is an advocate of Mars Express. He points out that since last year's competition, two planetary missions — Mars 96 and Cluster — have been lost. He argues that the opportunity to make up for this at low cost justifies the fact that Mars Express was not reviewed in the normal way. "There was no time," he says.

But George Efstathiou, professor of astronomy at the University of Oxford and one of Planck's principal investigators, says that ESA should not have proposed a new project before plans for those already approved had been finalized. "Mars Express puts Planck in a very vulnerable position financially," he says. He also warns that ESA should not rely on potential financial savings on FIRST and Planck to expand Horizons 2000, "because we may not be able to do this".

Even if ESA did find money to cover its Horizons 2000 plans, astronomers would not have a clear path. While the ESA science budget provides launchers, satellites and technical support, participating member states are responsible for providing the sophisticated scientific instruments the satellites will carry.

At the SPC meeting last week, France, Germany, Italy and the United Kingdom expressed doubts about keeping up with the new-look Horizons 2000 plans. The issue will be discussed further at a special SPC meeting in September. This problem adds further uncertainty to the Planck and FIRST missions. FIRST was originally scheduled for launch in 2007, and member states might not be able to pay for the expensive FIRST instruments if a combined mission were brought forward by two years.

At last week's meeting, the SPC also approved a contribution of ECU15 million towards a new instrument for the Hubble Space Telescope as part of a scheme to ensure ESA's continuing involvement after 2001, when the current Memorandum of Understanding expires. Under the present arrangements, a minimum of 15 per cent viewing time is allocated to European scientists.

Alison Abbott

Move in sight for Greenwich observatory?

IMAGE
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REASONS

[LONDON] The Royal Greenwich Observatory (above), which moved to Cambridge in the 1980s, may be moving yet again — this time

to Edinburgh — if reported proposals from the Particle Physics and Astronomy Research Council are accepted (see page 646). □