

US Mars scientists look to possible 2018 mission

NASA mulls a \$700-million mission to the red planet despite news of massive potential budget cuts.

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It is the job of a federal bureaucrat to put a good face on bad budget news, and on Monday, NASA science chief John Grunsfeld, just two months into his job, did his best to buck up a reeling Mars community. He announced that the agency would redesign its Mars exploration programme, and that the new architecture would include input — and money — from the human programme as well as the space-technology division. Grunsfeld tasked Orlando Figueroa, the former deputy director for space and technology at Goddard Space Flight Center in Greenbelt, Maryland, with heading up a seven- or eight-person committee and to start developing mission concepts in the next month.

One of those concepts would be a possible \$700-million mission launching in 2018, a particularly auspicious year from the standpoint of orbital mechanics. “This is an opportunity we shouldn’t miss,” Grunsfeld told a group of more than 100 Mars scientists attending the annual meeting of the Mars Exploration Program Analysis Group (MEPAG) at a hotel conference centre near Dulles Airport in Virginia. But even as Grunsfeld tried to make the best of a crummy situation, some of the attendees seemed dazed, bitter or both. “Is this the end of the Mars programme?” asks Jack Mustard, a geologist at Brown University in Rhode Island, and one of the members of Figueroa’s ad hoc committee. “I hope not.”

By now, the calamitous news for Mars scientists, contained in the NASA budget request released by President Barack Obama on 13 February, was two weeks old. But for those attending the meeting on Monday, the pain of those proposed cuts — which would gut the Mars programme from \$587 million in 2012 to \$189 million in 2015 — was being felt afresh. “People are sitting there with their jaws dropped open, trying to absorb what this means,” says Scott Hubbard, an aeronautical engineer at Stanford University in California and former Mars programme director. Hubbard contends that the cuts, if enacted, would be the largest ever to any science division at NASA, an agency that sees its share of budget swings.

Hubbard and others at the meeting worry that one of the crown jewels of NASA is in jeopardy. They lament the loss of a strategic programme, which benefits not just from sequential missions, each asking science questions based on its predecessors, but also from the regular refreshing of data-relay satellites. Because of the cuts, NASA has pulled out of ExoMars, two missions it had been pursuing with the European Space Agency: an orbiter in 2016 that would have measured trace gases in the atmosphere, and a rover in 2018 that would have cached rock samples as a first step in a three-pronged set of sample-return missions that could cost \$8.5 billion over the course of a decade. Budget minders for Obama ultimately decided that there was no room for such an expensive commitment, given the tendency for agency flagships such as the [James Webb Space Telescope to run drastically over budget](#).

Grunsfeld hopes that a scraped-together mission in 2018 will at least keep the Mars programme going. What would such a mission look like? A budget envelope of \$700 million, including a launch rocket, would probably limit the mission to an orbiter. David Des Marais, MEPAG chair and a Mars scientist at NASA Ames Research Center in Moffett Field, California, says that, at that price, an orbiter could still do much of the science that the 2016 trace-gas orbiter was meant to accomplish. And it could also have instruments that gather data appealing to the human exploration programme as that division would need more details about the red planet’s atmospheric dynamics before any attempt to put a person down precisely on the surface.

Hubbard isn’t yet ready to give up on a caching rover in 2018 or 2020 as that was expressly the [number one priority of a two-year undertaking of a planetary-wide decadal survey](#). He notes that although the Obama administration has laid out its priorities with the budget request, the purse strings are ultimately held by Congress. “Now the action moves to Capitol Hill,” he says.

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