

NASA's chief scientist on Mars, moons and money

Ellen Stofan looks to send scientists to the red planet.

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13 December 2013

Planetary geologist Ellen Stofan joined NASA in August as the agency's chief scientist, an overarching role in which she advises on the science of all NASA programmes. *Nature* caught up with Stofan at a meeting of the American Geophysical Union in San Francisco, where she was taking in a raft of discoveries, from developments on Mars to the possibility of water on Jupiter's moon Europa.

Why should NASA send humans to Mars when robots have been so successful?

We're not sending generic people to Mars — we're sending scientists to Mars, we're sending explorers. While robotic explorers are important and gain you amazing information, if you think of the ground that's been covered by the rovers Opportunity and Spirit, or by *Curiosity* — that could be covered by humans in a fraction of the time. I have a personal bias that if we're truly going to understand Mars as a habitable planet, it's going to take human geologists and human astrobiologists on the surface to find that out.

Is planetary science at NASA really in dire financial straits?

Whenever you get more than US\$1 billion of US taxpayer money, in my mind the situation is never dire. It maybe is not the programme you would like to execute, but it's a lot of money. We spend it wisely and we have a very vigorous programme. We just launched the Mars orbiter *MAVEN*, and we have many missions on the books. With the budget that we have, we feel we are returning significant science.

What has been the best part of the job so far?

Learning about the utilization of the International Space Station and some of the scientific results that have come out of that. But it is a finite asset. Right now it's only running through 2020, and NASA is looking at extending its life through 2028. Are we making the best case that the space station is a critical asset for this nation? Are we maximizing scientific research there to the best extent that we can? In spring we'll be launching the first rodent laboratory up to the station, and there will be a lot of exciting stuff going on.

What has been the worst part?

Probably the *budget uncertainty*. We are looking at the possibility of another budget sequester in January. A second sequester will have huge effects on the agency. It's a distraction that's depressing. This is the greatest space agency in the world, and we can't plan the way we should be able to.

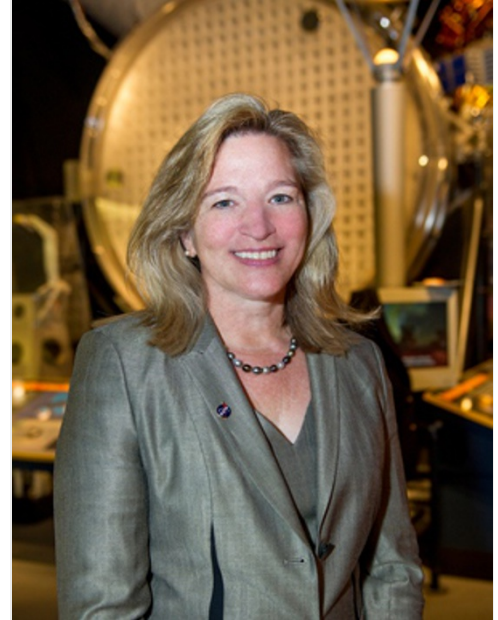
You have proposed a mission to Saturn's moon Titan. When is NASA going there?

Not soon enough. One of my focuses coming into the job is to see how we can utilize the assets that we have and the money that we have to try to get as much access to scientific data as we can. These might be small mission lines, infusing new technology to bring the cost down, or looking at problems differently. I was really proud of the concept of going to a sea on Titan. People said it would cost a huge amount of money and we demonstrated that it could be done for far less.

NASA associate administrator John Grunsfeld has suggested that the next call for ideas for a small discovery mission would be in 2015, and for a bigger mission under the New Frontiers Program in 2022. Why so long?

The decadal survey [of community priorities] had hoped for a faster cadence of missions. This is the cadence that's possible with the current budget.

How can NASA do things differently?



Bill Hrybyk/Goddard Space Flight Center/NASA

Ellen Stofan was named chief scientist at NASA in August.

If we're innovative and if we apply new technologies. One of the big frustrations, which drives up overall mission cost, is launch cost. What if you had a bigger rocket and could cut the travel time to Titan in half?

Nature | doi:10.1038/nature.2013.14350