

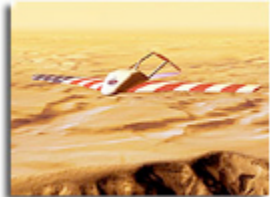
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**Robotic Space Missions Will Be Multi-tiered**

Submitted by Anonymous on Tue, 2005-10-18 16:13.



**Intelligent, science-driven robotic space missions are a decade or two in the future, they will be international, and they will have significant corporate and private sponsorship.**

Remote-sensing orbiters, probes, landers and rovers are returning astonishing discoveries about our solar system. But some of the most exciting geological and potentially astrobiological places in our family of planets and moons are dangerous and difficult to explore.

University of Arizona, California Institute of Technology, and U.S. Geological Survey Flagstaff researchers propose a novel space mission concept for finding and exploring the most scientifically important surfaces and subsurfaces throughout the solar system.

These next-generation robotic missions will simultaneously explore distant locales at several levels - from orbit, from the air and on the ground - to home in on important geology, hydrology, climate and possibly astrobiology in distant worlds, said James M. Dohm of The University of Arizona. Dohm, a planetary geologist in UA's department of hydrology and water resources, has mapped Mars at local to global scales. He is involved with autonomous long-range roving, sensor web and orbiting spacecraft experiments.

Wolfgang Fink, a visiting associate at Caltech, Dohm and others discuss the new mission concept in an article, "Next-generation robotic planetary reconnaissance missions: A paradigm shift," to be published in Elsevier's journal of [Planetary and Space Science](#). They spearheaded a team effort that includes Mark Tarbell, who is Fink's associate in Caltech's Visual and Autonomous Exploration Systems Research Lab; Trent Hare of the U.S. Geological Survey office in Flagstaff; and Victor Baker, Regents' Professor of the UA departments of hydrology and water resources, planetary sciences and geosciences.

The new mission concept would feature orbiting spacecraft, blimps and balloons at planets or moons with sufficient atmospheres, such as Titan, and numerous simple, deployable mobile and immobile ground sensors. These spaceborne, airborne, and ground agents would be programmed to look smartly at the environment and interact with each other, offering a true "tier-scalable" perspective needed for a science-driven mission, Dohm said.

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