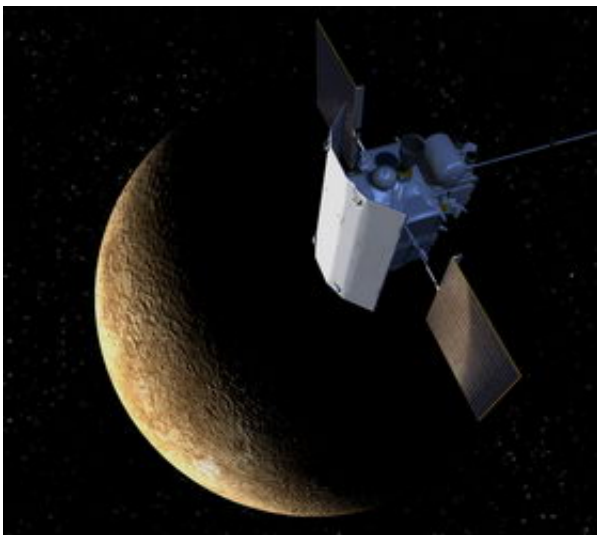


# NASA's Messenger Spacecraft Returns To Mercury

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This artist's impression shows NASA's Mercury-bound MESSENGER from the sunshade side. The sunshade shields the spacecraft's instruments from heat and solar radiation. Image Credit: Johns Hopkins University Applied Physics Laboratory

(PhysOrg.com) -- A NASA spacecraft will conduct the second of three flybys of Mercury on Oct. 6 to photograph most of its remaining unseen surface and collect science data.

The MErcury Surface, Space ENvironment, GEochemistry, and Ranging, or MESSENGER, spacecraft will pass 125 miles above the planet's cratered surface, taking more than 1200 pictures. The flyby also

will provide a critical gravity assist needed for the probe to become, in March 2011, the first spacecraft to orbit Mercury.

"The results from MESSENGER's first flyby of Mercury resolved debates that are more than 30 years old," said Sean C. Solomon, the mission's principal investigator from the Carnegie Institution of Washington. "This second encounter will uncover even more information about the planet."

During the spacecraft's first flyby on Jan. 14, its cameras returned images of approximately 20 percent of Mercury's surface never before seen by space probes. Images showed that volcanic eruptions produced many of Mercury's plains, its magnetic field appears to be actively generated in a molten iron core, and the planet has contracted more than previously thought.

"This second flyby will show us a completely new area of Mercury's surface, opposite from the side of the planet we saw during the first," said Louise M. Prockter, instrument scientist for the spacecraft's Mercury Dual Imaging System at the Johns Hopkins University Applied Physics Laboratory, or APL, in Laurel, Md.

The second flyby is expected to yield more surprises about the unique physical processes governing Mercury's atmosphere, as well as additional information about the charged particles located in and around Mercury's dynamic magnetic field. An altimeter on the spacecraft will measure the planet's topography, allowing scientists, for the first time, to correlate high-resolution topography measurements with high-resolution images.

A major goal of the orbital phase of the mission is to determine the composition of Mercury's surface. Instruments designed to make those measurements will get another peek at Mercury during this flyby.

"We will be able to do the first test of differences in the chemical compositions between the two hemispheres viewed in the two flybys," said Ralph McNutt, the mission's project scientist at APL. "Instruments also will provide information about portions of Mercury's surface in unprecedented detail."

The spacecraft is more than halfway through a 4.9-billion-mile journey to enter orbit around Mercury that includes more than 15 trips around the sun. In addition to flying by Mercury, the spacecraft flew past Earth in August 2005 and past Venus in October 2006 and June 2007.

Provided by NASA

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