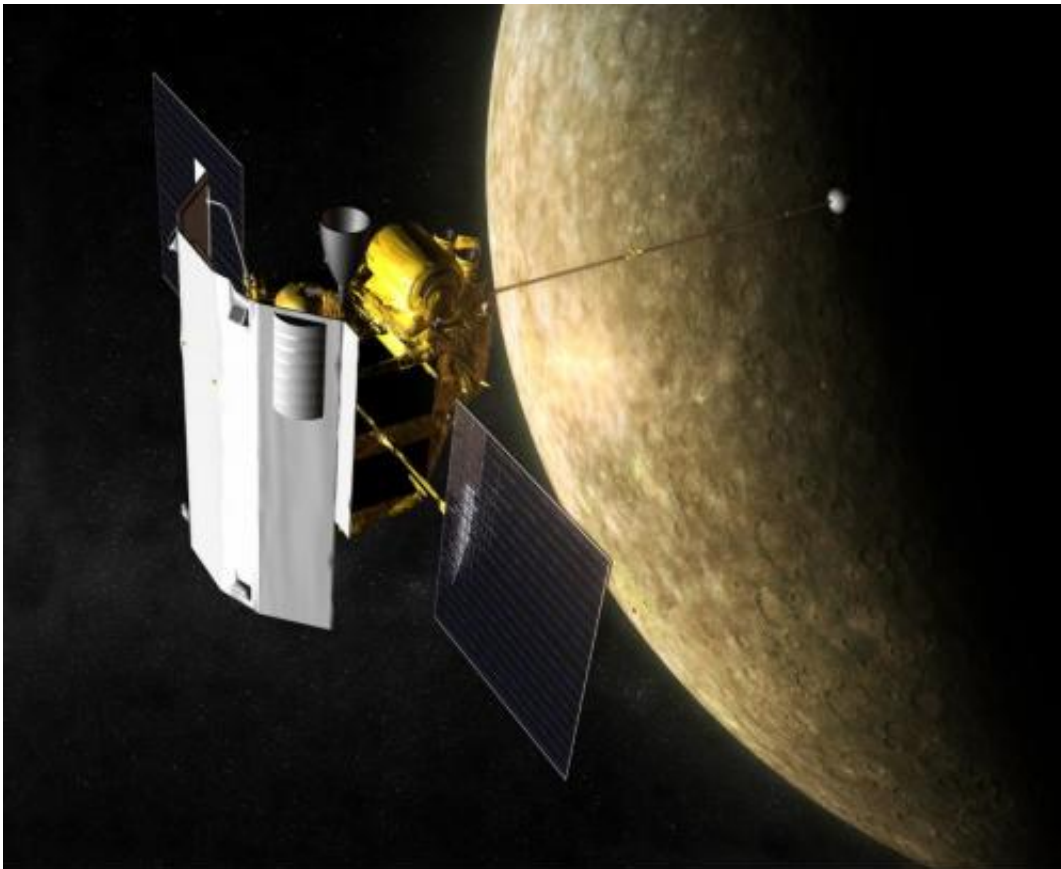


MESSENGER completes 4,000th orbit of Mercury

March 30 2015



Artist depiction of the MESSENGER spacecraft in orbit around Mercury.
Credit: NASA / JHU/APL

On March 25, the MESSENGER spacecraft completed its 4,000th orbit of Mercury, and the lowest point in its orbit continues to move closer to

the planet than ever before. The orbital phase of the MESSENGER mission, which was originally designed to collect data for one Earth year, just completed its fourth year of operation around Mercury. The mission has received a final extension to allow scientists to gather specific low-altitude data over an additional several weeks.

"When we completed our first Mercury flyby on January 14, 2008, after months of preparations and testing, we were amazed and perhaps even a little skeptical when the science team told us that the orbital phase could be characterized as two flybys of data collection every Earth day (and eventually three per day starting in April 2012)," said MESSENGER Mission Operations Manager Andy Calloway, of the Johns Hopkins University Applied Physics Laboratory (APL) in Laurel, Md. "Now that we have surpassed 4,000 orbits and more than 17 Mercury years since [Mercury orbit insertion](#), we know just what was meant by that prediction."

"Thanks to requisite optimization tools and techniques—such as the SciBox science planning tool, customized downlink rate stepping during Deep Space Network contacts, and automated prioritization of data playback with the use of the Consultative Committee for Space Data Systems (CCSDS) file delivery protocol, to name just a few—we have captured more than 275,000 images and downlinked more than four Earth years of data from our comprehensive suite of instruments," he continued. "MESSENGER really is the little spacecraft that could."

Last week, [mission](#) operators conducted the [first of five final adjustments](#) to MESSENGER's orbit to delay the inevitable impact onto the surface of Mercury. During these last several weeks (for which the project uses the term XM2' hover campaign), the spacecraft is maintaining an unprecedented range of periapsis altitudes between 6 and 38 kilometers (3.7 to 24 miles) above Mercury's surface, allowing scientists to continue to collect and return novel data until the final

moments before impact.

"The MESSENGER milestone of 4,000 orbits around Mercury in just over four years is a testament to the talent and dedication of the teams that designed, built, and operated a spacecraft for which the original plan was to complete about 740 orbits during a single year after Mercury orbit insertion," said APL's James McAdams, MESSENGER's Mission Design Lead Engineer. "An exemplary science team and supportive NASA sponsorship and oversight have made the most of the mission extensions, leading to numerous new insights into the processes that formed and subsequently transformed our solar system's nearest planet to the Sun."

Provided by Johns Hopkins University

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