

NASA's OSIRIS-REx completes final tour of asteroid Bennu

April 8 2021, by Rani Gran



Credit: NASA's Goddard Space Flight Center

NASA's OSIRIS-REx completed its last flyover of Bennu around 6 a.m. EDT (4 a.m. MDT) April 7 and is now slowly drifting away from the asteroid; however, the mission team will have to wait a few more days to find out how the spacecraft changed the surface of Bennu when it grabbed a sample of the asteroid.

The OSIRIS-REx team added this flyby to document [surface](#) changes resulting from the Touch and Go (TAG) sample collection maneuver Oct. 20, 2020. "By surveying the distribution of the excavated material around the TAG site, we will learn more about the nature of the surface and subsurface materials along with the mechanical properties of the asteroid," said Dr. Dante Lauretta, principal investigator for OSIRIS-

REx at the University of Arizona.

During the flyby, OSIRIS-REx imaged Bennu for 5.9 hours, covering more than a full rotation of the asteroid. It flew within 2.1 miles' (3.5 kilometers) distance to the surface of Bennu—the closest it's been since the TAG sample collection event.

It will take until at least April 13 for OSIRIS-REx to downlink all of the data and new pictures of Bennu's surface recorded during the flyby. It shares the Deep Space Network antennas with other missions like Mars Perseverance, and typically gets 4–6 hours of downlink time per day. "We collected about 4,000 megabytes of data during the flyby," said Mike Moreau, deputy project manager of OSIRIS-REx at NASA's Goddard Space Flight Center in Greenbelt, Maryland. "Bennu is approximately 185 million miles from Earth right now, which means we can only achieve a downlink data-rate of 412 kilobits per second, so it will take several days to download all of the [flyby](#) data."

Once the mission team receives the images and other instrument data, they will study how OSIRIS-REx jumbled up Bennu's surface. During touchdown, the spacecraft's sampling head sunk 1.6 feet (48.8 centimeters) into the asteroid's surface and simultaneously fired a pressurized charge of nitrogen gas. The spacecraft's thrusters kicked up a large amount of surface material during the back-away burn—launching rocks and dust in the process.

OSIRIS-REx, with its pristine and precious asteroid cargo, will remain in the vicinity of Bennu until May 10 when it will fire its thrusters and begin its two-year cruise home. The mission will deliver the asteroid sample to Earth Sept. 24, 2023.

Provided by NASA's Goddard Space Flight Center

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