

OSIRIS-REx's final four sample site candidates in 3-D

August 29 2019, by Nancy Neal Jones

This animated flyover of each of the four candidate sample collection sites on asteroid Bennu, selected by NASA's OSIRIS-REx asteroid sample return mission, was produced using close-range data from the OSIRIS-REx Laser Altimeter (OLA), an instrument contributed by the Canadian Space Agency. It illustrates the location of each site on Bennu, the topography of each site, and the potential sampling regions that the spacecraft will target, which are 10 meters in diameter.

The [laser altimeter](#) on NASA's OSIRIS-REx spacecraft has produced the highest resolution [topographic maps](#) ever of any planetary body. These maps of asteroid Bennu provide three-dimensional, detailed views of the OSIRIS-REx mission's final four candidate sample collection sites, which are designated Nightingale, Kingfisher, Osprey and Sandpiper.

OLA is equipped with two lasers and uses a steerable mirror to rapidly scan the asteroid's surface to produce detailed images of boulders, craters and other geological features. OLA collected scans using its low-energy laser transmitter (LELT) during the spacecraft's low altitude orbit—approximately 700 meters above Bennu's surface. The LELT is designed to fire 10,000 [light pulses](#) per second at the asteroid, and three-dimensional terrain models of the four sites were produced using these light pulses.

High-resolution maps of the four potential sample sites will allow the OSIRIS-REx team to assess the safety and accessibility of each region, locate landmarks that will help the spacecraft navigate during sample

collection and identify areas of fine-grained material compatible with OSIRIS-REx's sampling mechanism. These maps will be crucial for selecting the final two sample collection sites in December.

OLA's LETT will continue to gather Bennu data in tandem with the other instruments on the OSIRIS-REx spacecraft. The final selection of a primary and backup sample collection site will be announced in December 2019, and sample collection is scheduled for the latter half of 2020.

Provided by NASA's Goddard Space Flight Center

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