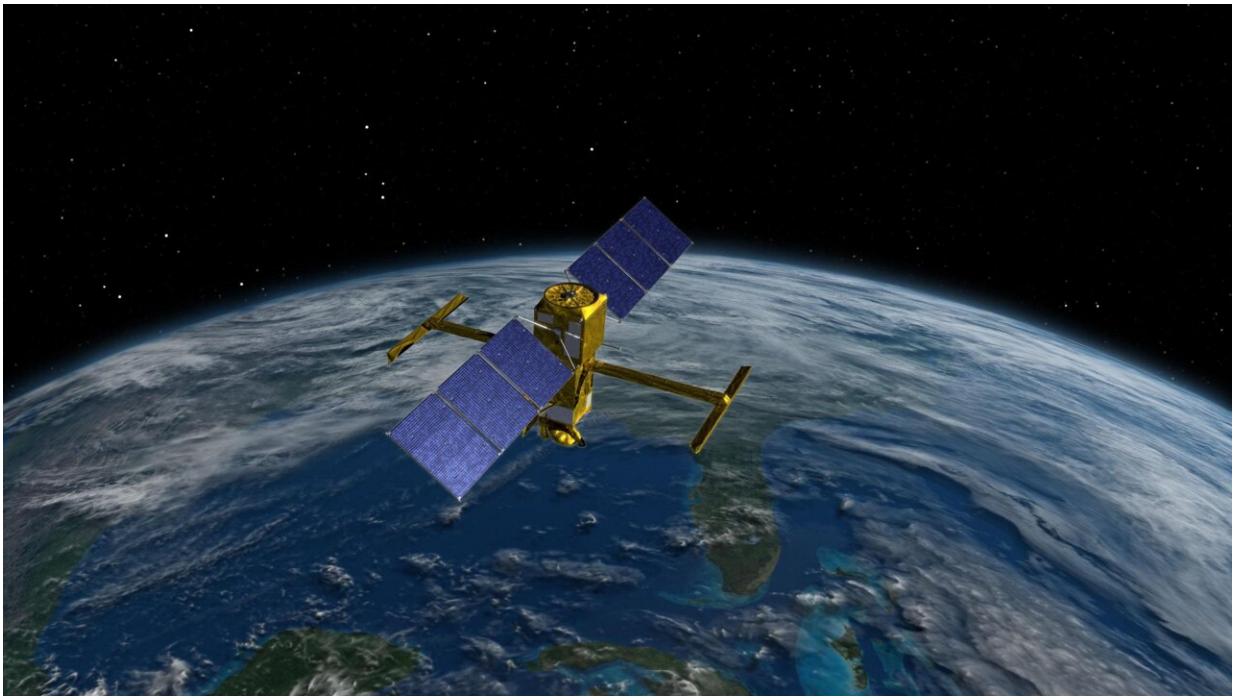
Watch the latest water satellite unfold itself in space

December 29 2022



This illustration shows the SWOT spacecraft with its antenna mast and solar arrays fully deployed. Credit: NASA/JPL-Caltech

The Surface Water and Ocean Topography (SWOT) satellite launched into Earth orbit on Friday, Dec. 16, from Vandenberg Space Force Base in central California, and engineers are working to prepare the mission to begin measuring the height of water on over 90% of Earth's surface, providing a high-definition survey of our planet's water for the first time.

But before it can do that, the satellite would need to unfold its large mast and antenna panels (see above) after successfully deploying the solar panel arrays that power the spacecraft. The mission monitors and controls the satellite using telemetry data, but it also equipped spacecraft with four customized commercial cameras to record the action.

The solar arrays fully deployed shortly after launch, taking about 10 minutes.

The antennas successfully deployed over four days, a process that was completed on Dec. 22. The two cameras focused on the KaRIn antennas captured the mast extending out from the spacecraft and locking in place but stopped short of capturing the antennas being fully deployed (a milestone the team confirmed with telemetry data.)

Thirty-three feet (10 meters) apart, at either end of the mast, the two antennas belong to the groundbreaking Ka-band Radar Interferometer (KaRIn) instrument. Designed to capture precise measurements of the height of water in Earth's freshwater bodies and the ocean, KaRIn will see eddies, currents, and other ocean features less than 13 miles (20 kilometers) across. It will also collect data on lakes and reservoirs larger than 15 acres (62,500 square meters) and rivers wider than 330 feet (100 meters) across.

KaRIn will do this by bouncing radar pulses off the surface of water on Earth and receiving the signals with both of those antennas, collecting data along a swath that's 30 miles (50 kilometers) wide on either side of the satellite.

The data SWOT provides will help researchers and decision-makers address some of the most pressing climate questions of our time and help communities prepare for a warming world.

Provided by Jet Propulsion Laboratory

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