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SURFACE WATER AND OCEAN TOPOGRAPHY (SWOT) MISSION READINESS STATUS

**Abstract**

The SWOT mission, due to launch in 2022, will map the elevation of water surfaces on Earth at a resolution that has not been possible before. It will improve estimates of sea surface elevations and the volumes of water stored in lakes, reservoirs, wetlands, and rivers around the world.

U.S. National Aeronautics and Space Administration and France's Centre National d'Etudes Spatiales have joined forces to develop this new mission to make the first global survey of Earth's surface water, observe the fine details of the ocean's surface topography, and measure water bodies change over time.

SWOT will revolutionize oceanography by detecting ocean features with 10 times better resolution than present technologies. The higher resolution will reveal small-scale features that contribute to the ocean-atmosphere exchange of heat and carbon, major components in global climate change, and will improve the understanding of the ocean environment including motion of life-sustaining nutrients and harmful pollutants. SWOT data will be used to improve ocean circulation forecasts, benefiting ship and offshore commercial operations, along with coastal planning activities such as flood prediction and sea level rise.

The change in water stored in lakes, reservoirs, and the discharge of streams and rivers, are poorly observed globally. SWOT will provide the very first comprehensive view of Earth's freshwater bodies from space and will allow to determine changing volumes of fresh water across the globe. These measurements are key to understanding surface water availability and in preparing for important water-related hazards such as floods and droughts. SWOT will contribute to a fundamental understanding of the terrestrial branch of the global water cycle.

With an orbit altitude of 970 km, SWOT provides a high-resolution swath width of 120 km enabling global coverage of the world's ocean's and fresh water bodies. It has is being designed to provide a spatial resolution of 1 km pixels for the oceans (after on-board processing), and 50m pixels for land water, both at centimetric accuracy.

To enable this challenging measurement performance, SWOT mission concept is designed to overcome several challenges, such as very high instrument data rate (320 Mbps), large on-board data volumes, high power demand, stringent pointing and stability requirements, and mass processing ground systems, to produce meaningful science data products to the worldwide user community.

The purpose of the presentation is to present SWOT Launch Readiness status, including satellite and ground system preparations, and post launch activities including the Calibration and Validation Plan.