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# Hydrologic Research for the SWOT Mission

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The Surface Water and Ocean Topography satellite mission (SWOT, http://swot.jpl.nasa.gov/) is designed to measure the elevations of the world's water surfaces including both terrestrial surface waters and the oceans. CNES, NASA, and the CSA are partners in the mission, which is now in Phase A with a launch date of 2020. The mission teams have already made exciting advances, most notably the formation of the Science Definition Team. The SDT consists of three-dozen lead investigators and their research teams, spanning Europe and the U.S. and across oceanography and hydrology. The group will address hydrologic issues such as: What are the spatial resolutions, temporal samplings, and height accuracies required to address SWOT's hydrologic science questions? Can these be relaxed or improved from preliminary designs and thus what are the expected impacts on mission power requirements? To help address these issues, an airborne platform called "AirSWOT" has been developed. While AirSWOT flights are still in the planning stages, it is hoped that measurements will occur over several U.S. and French rivers, including some braided Alaskan rivers and some tropical rivers. These various hydrogeomorphic regimes will provide different settings in which to test discharge algorithms. Based on the results of a workshop held in June 2012, it is thought that river reaches, rather than river cross-sections, are optimum for SWOT estimates of discharge. As the SDT works through these important mission design issues, they will also help to further refine the mission hydrologic goals. For example, reservoirs around the world impact the water cycle via storage and release. Yet, a global comprehensive understanding of these changes remains unknown. What role will SWOT have in solving this problem, e.g., what are the fluvial geomorphic environments best suited for SWOT measurements of reservoirs?