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International Collaboration: Early Adopters for the Surface Water and Ocean Topography (SWOT) Mission Applications

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Successful strategies to enhance science and practical applications of the proposed Surface Water and Ocean Topography (SWOT) mission data streams will require engaging with and facilitating between representatives in the science, societal applications, and mission planning communities. NASA and the French Space Agency, CNES, with contributions from partner Canadian and UK space agencies, are collaborating on elements of an applied approach to identifying communities of potential and practice and engaging these applications-oriented users and organizations to enable them to envision possible applications and end-user needs as a way to increase the benefits of the mission to national interests.

The SWOT Applications program is supported at the U.S. space agency level by the NASA Applied Sciences Program and the SWOT Project, and at the programmatic and Project levels at CNES. The science goals of the mission include producing the first global inventory of fresh water storage and discharge on land, measurements that may revolutionize hydrologic science in many areas of the world where little to no data is currently available. Other mission-critical science objectives include the first global determination of ocean circulation, ocean kinetic energy, and dissipation of ocean energy at mesoscale and submesoscale spatial scales.

Applications and operational objectives for SWOT hydrology data products, and for models developed from these data, include serving as new tools for science and applications fields such as river engineering, flood hazard assessment and mitigation, drought monitoring, reservoir storage, transboundary river issues, as well as climate studies, and coastal zone management. There may also be benefits for informing decision makers on aspects of water demands from agriculture, potential agricultural impacts from water resource changes, and from potential climate impacts on water resources.

The international SWOT Applications Working Group (SAWG) is working alongside science and programmatic leaders to implement a mission Early Adopters program. By the time SWOT launches in 2021, the SWOT user community, founded by the SWOT Early Adopters, will be well-established, and mission data streams will be readily incorporated into key operational, commercial, and national-interest-based applications for the benefit of society on multiple levels.