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Addressing User Needs for Societal Benefit From Ocean Altimetry Missions

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The applied science community continues to expand the science outcomes from satellite missions. This group is an important and growing focus of international space agencies wishing to inform and educate existing and potential users of data from satellite missions. The cost of developing, launching and operating these missions is large, but the high value of the data and information products that result provide a rich resource for operational agencies, commercial interests, as well as for the research community. More than twenty-six years of time series data from a suite of ocean altimetry missions, beginning with TOPEX/Poseidon and continuing through the Jason-series, have facilitated broad utility of the data, which demonstrates the high value of the science and data/information products derived from these missions to address societal needs. Societal benefit areas include safety, commercial and operational interests, and decision-making. Future planned missions, such as Jason-CS/Sentinel-6A and B, and the Surface Water and Ocean Topography (SWOT) mission, will extend the value and applications potential of mission data even further. In particular, a broad range of applications derived from the science and engineering advances of novel technologies developed for SWOT, and the resulting data and information products that come from it, are anticipated.

The ocean altimetry missions, and the hydrology applications from SWOT, will continue international partnerships between the U.S. and European space agencies. The expanding time series of measurements of changes in these ocean and surface water bodies will continue to allow scientists and operational users to monitor the hydrologic cycle, flooding, small scale features of ocean circulation, and the climate impacts of a changing environment. In coastal regions, it is anticipated that SWOT surface water measurements may inform a broad range of applications in support of coastal and estuarine managers, marine operators, and decision makers interested in offshore conditions and the ocean state relevant to their regions. NASA's Physical Oceanography Distributed Active Archive (PO.DAAC) is a key component of the success of these missions, by making data products discoverable, accessible, and useful to a broad user community. Efforts to better understand the needs of a diverse user base, and to provide improved user engagement and access to data, information products, and training are being developed by PO.DAAC, and will offer practical and enhanced options to both science research and applications users. This includes an effort to provide data through a Cloud computing environment, which is expected to support big data analytics and expand the use of the ever-growning amount of remotely sensed earth science data.