

1. Abstract

In order to effectively address the applications requirements of future Surface Water and Ocean Topography (SWOT) mission data users, we must understand their needs with respect to latency, spatial scales, technical capabilities, and other practical considerations. We have developed the 1st SWOT User Survey for broad distribution to the SWOT applications community to provide the SWOT Project with an understanding of and improved ability to support users needs.

Actionable knowledge for specific applications may be realized when we can determine the margins of user requirements for data products and access. The SWOT Applications team will be launching a SWOT Early Adopters program and are interested in identifying a broad community of users who will participate in pre-launch applications activities including meetings, briefings, and workshops.

The SWOT applications program is designed to connect mission scientists to end users and leverage the scientific research and data management tools with operational decision-making for different thematic users and data requirements. SWOT is scheduled to launch in 2021, so simulated hydrology and ocean data sets have been and will continued to be developed by science team members and the SWOT Project in order to determine how the data will represent the physical Earth systems targeted by the mission.

SWOT will produce the first global survey of Earth's surface water by measuring sea surface height and the heights, slopes, and inundated areas of rivers, lakes, and wetlands. These coastal, lake and river measurements will be used for monitoring the hydrologic cycle, flooding, and climate impacts of a changing environment. The oceanographic measurements will enhance understanding of submesoscale processes and extend the capabilities of ocean state and climate prediction models.

2. Objectives

Purpose: To identify the ways in which SWOT may be used by operational, private, institutional, and other individuals and organizations. The SWOT Applications team will be launching a SWOT Early Adopters program in 2016 and are interested in identifying a broad community of users who will participate in pre-launch applications activities including meetings, briefings, and workshops. The information provided can help NASA, CNES and mission partners (CSA, UKSA) to better support applications activities in the future.

Survey: To clearly measure effective means of communicating with our future user community, and optimal ways to disseminate information, this survey will help us understand how the future SWOT data will support decisions and processes and will be used as an important benchmarking component of SWOT's Applications program.

Data Products: SWOT is scheduled to launch in late 2020, so the data products identified are notional and anticipated, but not final. The final data products, as well as the attributes of those products, will be determined by the SWOT Project Team prior to launch.

3. Methodology

Target: Professionals in hydrology or oceanography, potential users with insight into how SWOT data may be used after launch, industry, academic, civic leaders, water managers and anyone who may find SWOT advantageous for their system or process.

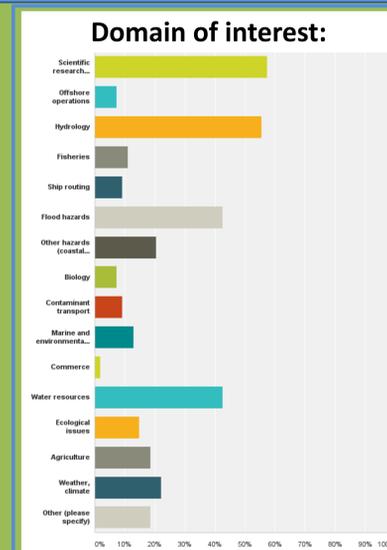
Development: Developed jointly with SWOT Project, international partners, and SWOT Applications Working Group and deployed in September 2015.

Distribution: To SWOT Applications potential user database, Global Flood Working Group, and PODAAC email lists.

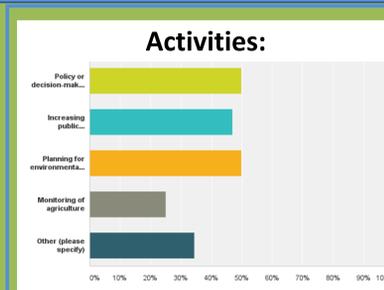
Responses: 69 responses as of 9 June 2016.

Visit: <http://www.surveymonkey.com/r/SWOTusersurvey2015>

4. Current Findings & Conclusions

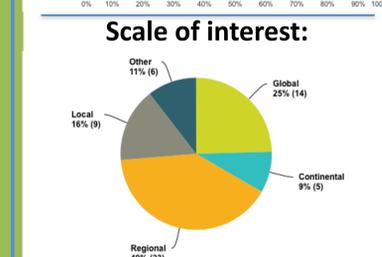
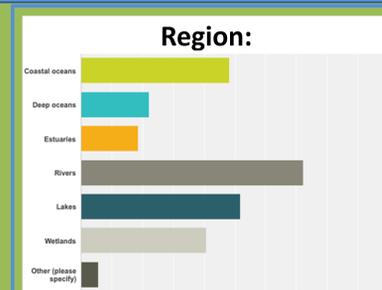


Broad range of interests from users in hydrology applications including flood hazards, water resources such as storage fluctuations, and related areas. Many ocean applications areas are represented, including offshore operations, shipping, fisheries and other marine activities. Cross-cutting domains include weather, climate, coastal hazards, and ecological issues.

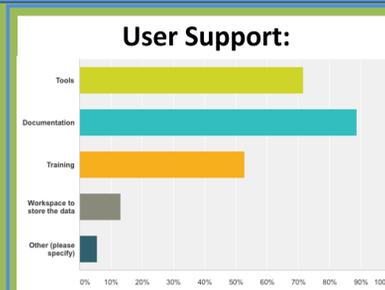


Besides the application areas noted in the figure, the range of activities for potential SWOT users encompasses a broad water resources community and includes monitoring of global water resources, forecasting military maritime environmental conditions, operational weather forecasting, climate change monitoring, planning, policy issues, and capacity building to improve the ability of organizations to use remotely sensed data.

This demonstrates the high potential value of SWOT information products to benefit society and provide important resources for local to global agencies and companies.

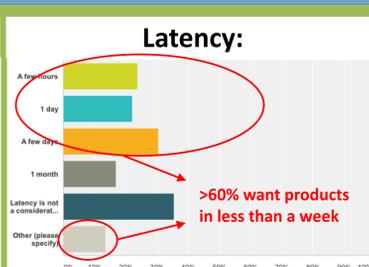
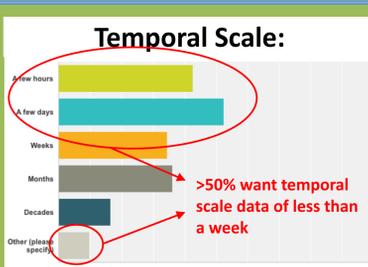
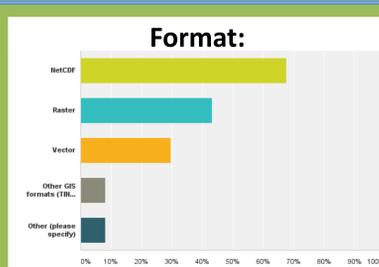
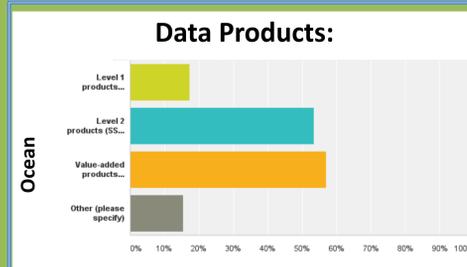


SWOT will be an important resource for both regional and global hydrology applications and users as demonstrated in the foci of these two charts identifying geographic regions of interest as well as data area coverage. Interest in regions from local to continental to global scale regions.



User services will be an important consideration for applied users of SWOT data. Training events are already being planned by the SWOT Applications Team. In this preliminary assessment of needs a majority of responses indicates that tools and documentation are high priorities.

Other responses identified specific data applications platforms and communication opportunities with other users for information and support. These aspects will be important as we develop the SWOT Early Adopter program.



Results indicate that for both ocean and hydrology applications, the main interest is in Level 2 and value-added products. However, a majority of respondents were interested in hydrology, reflecting the high value of SWOT for water resource-related applications. Accessible data formats of NetCDF, raster and vector format products may indicate a higher level of familiarity with data management by the early respondents. Virtually all of the 38 respondents who answered a question on desired spatial scales find 1 kilometer resolution acceptable. A broad range of temporal scales, leaning towards hours to days was indicated, an a roughly even distribution of data latency is acceptable, with a significant number of responses indicating that latency is not an issue for their application.

SWOT Science Team Meeting – June 2016 - Pasadena