Mission Applications Support at NASA:

Surface Water and Ocean Topography Mission*

National Aeronautics and Space Administration

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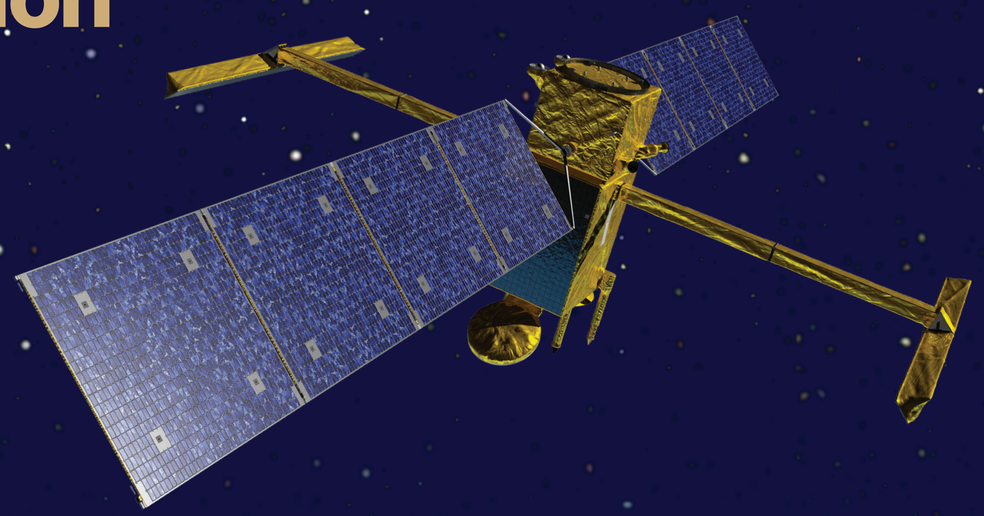


Abstract

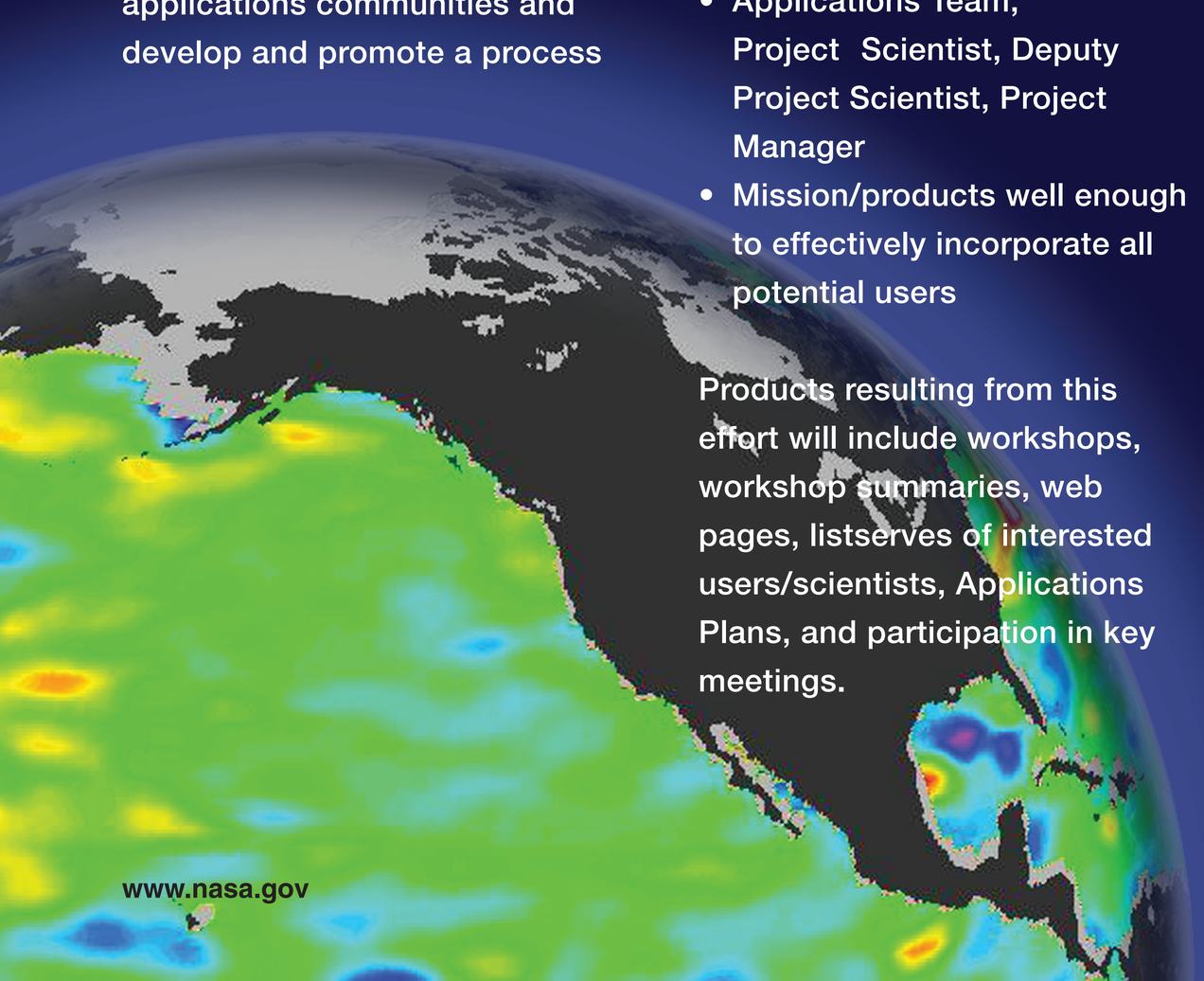
The NASA Applied Sciences Program is actively supporting an agency-wide effort to formalize a mission-level data applications approach. The program goal is to engage early-phase NASA Earth satellite mission project teams with applied science representation in the flight mission planning process. The end goal is to "to engage applications-oriented users and organizations early in the satellite mission lifecycle to enable them to envision possible applications and integrate end-user needs into satellite mission planning as a way to increase the benefits to the nation."

Two mission applications representatives (Deputy Program Application Leads, or DPA) for each mission, including the proposed Surface Water and Ocean Topography (SWOT) mission, are tasked with identifying and organizing the applications communities and develop and promote a process for early-phase missions to optimize the reach of existing applications efforts to enhance the applications value of the missions. There is high value in project-level awareness of mission planning decisions that may increase or decrease the utility of data products to diverse user and potential user communities (communities of practice and communities of potential, respectively).

Successful strategies to enhance science and practical applications of the proposed SWOT and GRACE-FO mission data streams would require engaging with and facilitating between representatives in the science, societal applications, and mission planning communities. Some of the elements of this program include identifying;

- Early adopters
- Applications Team; Project Scientist, Deputy Project Scientist, Project Manager
- Mission/products well enough to effectively incorporate all potential users

Products resulting from this effort will include workshops, workshop summaries, web pages, listserves of interested users/scientists, Applications Plans, and participation in key meetings.



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Science Goals

Hydrology: First global inventory of fresh water storage and discharge on land.

Oceanography: First global determination of the ocean circulation, kinetic energy and dissipation at mesoscales and submesoscale processes.

NASA Earth Science Directorate, Applied Sciences Program

NASA supports applications activities for early phase missions based on the 2007 NRC Decadal Survey objectives to "enhance economic competitiveness, protect life and property, and assist in the stewardship of the planet for this and future generations."

- SWOT – Tier 2 Decadal Survey proposed mission
- ESD Applied Science Deputy Program Applications Leads identified for SWOT (JPL, Stennis)
- Implement Decadal Survey & 'NASA Climate-Centric Architecture' goals related to applications
- Goal: ensure a sustained interaction with mission project leads, scientists, users to maximize impact of NASA Earth science investments

SWOT* Applications Near-Term Plans

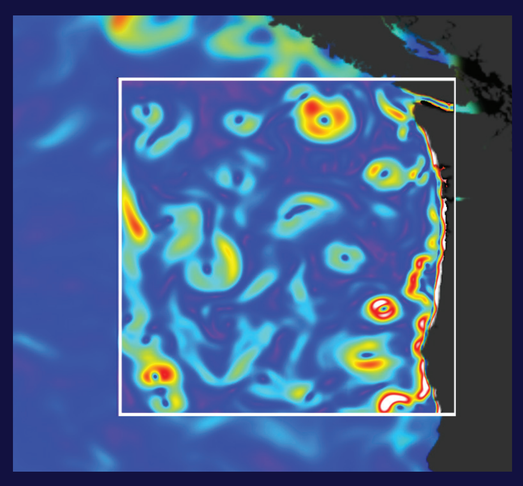
- Identify Community of Practice, beginning with key SWG members
- Develop SWOT applications plan, working group, webpage, and collaborate with SWOT SWG (hydrology, ocean, coastal) for links to operational users
- Characterize and summarize key applications and existing or potential users
- Promote AirSWOT, seek opportunities to enhance data usability as 'simulated SWOT data'
- Collaborate with European colleagues on joint applications efforts
- SMAP, GPM, GRACE-FO*, SWOT joint workshop; Hydrology applications focus

20 Years of Progress in Radar Altimetry, Venice
24-28 September 2012

Surface waters in the Arctic.
Image; L. Smith, UCLA

SWOT* Mission Applications Concentrations

- Water management: reservoirs, floods, ecology
- International rivers: flood and drought management
- Insurance: hydrodynamics and flood risks
- Transportation: shipping, barges
- Agriculture: water management to support irrigation
- Energy: water availability in new regions
- Spills and pollution: mapping of potential spill
- Ocean and coastal circulation models
- Climate studies: ocean circulation, heat content, regional sea level studies
- Operational users: NOAA, Navy, USGS, international weather/climate



Simulated SWOT data off the coast of Oregon, USA.
Image; C. Ubelman, J. Howard, NASA

For more information:
swot.jpl.nasa.gov

* Proposed mission

Pre-decisional - for Planning and Discussion Purposes Only

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