

SWOT Early Adopters Guide

February 2014

Edited by:

Margaret Srinivasan¹, Craig Peterson¹, Alice Andral², Michel Dejus², SWOT Applications Working Group members

¹NASA SWOT Deputy Program Applications Leads, ²CNES Application Leads



swot.jpl.nasa.gov/applications

SWOT Early Adopter Program Guide

Responsible persons: Margaret Srinivasan & Craig Peterson, SWOT Applied Sciences Deputy Program Applications Leads (DPAs), and Alice Andral & Michel Dejus, CNES SWOT Applications Leads

DEFINITIONS:

Applications are defined as innovative uses and integration of future SWOT data products and simulated SWOT data products in decision-making activities and operational activities for societal benefit. This may include, but is not limited to, the use of future SWOT data in modeling, forecasting and/or operational activities.

Applied research will provide fundamental knowledge of how SWOT data products would be scaled and integrated into users' policy, business and management activities to improve decision-making efforts.

Early Adopters (EAs) are a subset of users who have a direct or clearly defined use for future SWOT-like lake, reservoir, and river levels and sea surface height and other ocean data, and who are planning to apply their own resources (funding, personnel, facilities, etc.) to demonstrate the utility of SWOT data for their particular system, model or application.

SWOT Applications Working Group (SAWG) is a group comprised of the SWOT Applications Coordinators, SWOT science team members, project personnel, and representatives from key user communities who come together to coordinate and organize efforts to promote the use of SWOT simulated datasets for current and future applications, and to identify and reach out to and educate potential user communities about the utility and accessibility to future SWOT data.

Users include individuals or groups in the public or private sectors who may have specific uses for future SWOT data for applications at local to global scales.

PROGRAM DESCRIPTION:

The goal of the SWOT Early Adopter program is

- 1) to expand the user communities with tangible and potential applications that would benefit from the use of SWOT data sets,
- 2) to facilitate feedback on SWOT data products *pre-launch*, and
- 3) to accelerate the use and integration of SWOT products into applications *post-launch* by providing specific support to Early Adopters who commit to engage in pre-launch applied research.

This is a non-funded activity for projects to be completed with quantitative metrics prior to launch.

Potential Early Adopters may review the SWOT Applications Plan (available at <http://swot.jpl.nasa.gov/applications/>) for relevant information on the proposed SWOT mission objectives, applications focus areas, the SAWG members, and more. Additional information about the mission and science objectives may be found at the following links;

- SWOT web site; <http://swot.jpl.nasa.gov>
- SWOT Science Definition Team, science objectives, and science plan; <http://swot.jpl.nasa.gov/science/sdt/>
- AVISO+ website : <http://www.aviso.altimetry.fr/en/home.html>

In order to optimize our efforts we will concentrate on following focus areas of relevant applications;

SWOT Applications Focus Areas

- Hydrology:
 - Water governance (transboundary river) and estuaries management
 - Developing world water problems (water supply, drinking water, health)
 - Food security (flooding & drought) risk management:
 - Reservoir storage and water management (energy, agriculture, civil engineering)
 - Transport
- Oceanography:
 - Coastal circulation, coastal erosion
 - Marine operations, open ocean issues
 - Fisheries
- Climate and Weather forecast:
 - Regional capabilities
 - Coastal impacts
 - Agricultural impacts

Early Adopters agree to:

- 1) Engage in pre-launch research that would enable integration of SWOT data after launch in their application;
- 2) Complete the proposed project with quantitative metrics prior to launch;
- 3) Partner with a SWOT Science Definition Team (SDT) member working in a supporting or auxiliary field;
- 4) Participate in SWOT Applications Team discussions of SWOT mission data products related to specific application needs; and
- 5) Participate in the implementation of the SWOT Mission Applications Plan by taking lead roles in SWOT applications research, meetings, workshops, and related activities.

The SWOT Project agrees to:

- 1) Incorporate the Early Adopter contributions into the SWOT Mission Applications Plan;

- 2) Provide Early Adopters with simulated SWOT data products via the SWOT Science Data System (SDS) Testbed or via the NASA Physical Oceanography Distributed Active Archive Center (PODAAC, podaac.jpl.nasa.gov); and/or AirSWOT data sets;
- 3) Provide Early Adopters with planned pre-launch calibration and validation (cal/val) data, modeling, and synergistic studies;
- 4) Provide opportunities for the Early Adopter to participate and present their contributions at SWOT applications research, meetings, workshops, and related activities.

NOMINATION PROCESS:

Prospective Early Adopters may request nomination to the SWOT Early Adopters Program from the SAWG on the SWOT website <http://swot.jpl.nasa.gov/applications/>. The opportunity will also be sent to relevant email listserves. The first announcement follows 1) the establishment of the SWOT Applications Working Group and 2) the first SWOT Applications Workshop. Subsequent announcements are made semi-annually, at a minimum. Announcements are made with an end-of-February deadline, to coordinate with the selection at the Spring SDT meeting. The time between announcement and submission deadline is no shorter than 6 months (generally announced in the Fall timeframe). The last announcement will be no later than 2 years before the launch date.

Nomination:

The nomination process is simple. Early Adopters fill out the *Summary of Activities (SOA)* form (see SWOT Applications web site) including a one-page description of the applied research. The SOA is submitted directly to the Chairs of the SAWG. The SOA provides the following information:

1. Title of Early Adopter application and Contact information;
2. Name of SDT member affiliate ([SWOT Science Definition Team](#))
3. Description of system or model, including data currently used and ancillary data needs;
4. Approach to solve basic challenges in applying SWOT products and/or to move SWOT products into routine operations;
5. Foreseeable requirements for pre-launch simulated data products and plans for field experiment demonstration;
6. Milestones and quantitative metrics that will assess impacts of SWOT products on the application during the pre-launch phase; and
7. Post-launch implementation strategy (if any).

SELECTION

Selections are made by the SAWG, the SWOT Project Manager, and the SWOT Project Scientists. The selection criteria are;

- Exceptionally strong end-user connection
- Potential for reaching ARL Level 7-9 post-launch (see <http://www.nasa.gov/sites/default/files/files/ExpandedARLDefinitions4813.pdf>)
- High chance of success
- Good metrics (reasonable and justifiable)

- High impact application
- Basic understanding of SWOT

The desired topics of accepted Early Adopter proposals would cover

- Diverse topics and societal needs
- Diverse SWOT products
- Diverse geography

The SAWG Chairs organize the nominations, creates a summary table, and distributes all the nominations to the selection committee approximately 45 days prior to the next SDT meeting following the selection process. The SAWG meets immediately following the SDT meeting to review proposals and make decisions. The process is confidential until the selections are announced.

Announcing selections:

After the SAWG makes decisions on the nominations, the SAWG Chairs write a report that includes

- Meeting attendees and discussion notes
- A table of the nominations submitted
- A table of the nominations selected with the SWOT SDT contact identified
- Draft emails that can be sent by NASA Headquarters to each nominee

The SAWG approves the report and NASA Headquarters sends all emails. At that time, the table of Early Adopters, affiliations, titles and SWOT SDT contacts is posted on the SWOT website. This happens within approximately 3 weeks of the decision.

CONTACTING THE NEW EA:

After the announcement, the SAWG Chairs contact each EA individually to finalize the SOA Exhibit 1 to the mutual agreement of the PI and the SWOT Project. The PIs arrange for signature by the representative of the institutions and returns the SOA to the SAWG Chairs. The SAWG Chairs arrange for signatures by the SWOT Project Scientist. Copies of the fully signed SOA are forwarded to the PI and all signatories.

The SWOT SDT contact assigned to each new Early Adopter are expected to:

- 1) Help the Early Adopters get access to and resolve issues with SWOT pre-launch data sets;
- 2) Facilitate their research and receive feedback to the SWOT project on research metrics;
- 3) Report on EA successes, challenges and progress during SWOT SDT meetings (in person when possible, or by proxy); and
- 4) Attend quarterly conference calls with all EA and the SAWG. This will be a chance for feedback from EA and updates on their research.

The SWOT Algorithms Working Group Chair and SWOT Data Systems Engineer are tasked to be the point of contact for algorithm and data questions (respectively), when necessary. The

SAWG Chairs are responsible for encouraging frequent and productive communications between Early Adopters and their SWOT Project contacts.

SWOT Early Adopter program is integrated with SAWG activities and is carried out mainly through emails, telecons, workshops, tutorials and focus sessions organized by the SWOT Project and the SAWG. The SAWG also takes advantage of member attendance at conferences such as AGU and IGARSS to meet in person when possible.

SWOT Applications activities; Workshops and Tutorials are designed for large, broad attendances. Focus Sessions are designed for small thematic groups:

- **SWOT Applications Workshop:** A workshop is set up yearly or every 2 years and provides feedback to the NASA and CNES SWOT Mission about SWOT product applications. The workshop is designed to give an update of the mission to the community and to provide information about SWOT hydrology and oceanography data products on a broad scale. Users and Early Adopters are included in the program to provide examples of SWOT Applications. Workshops are held on-site (e.g., at NASA, NOAA or USGS, AVISO), open to everyone, and organized by the SAWG and SWOT scientists. Reports are posted on the SWOT website.
- **NASA Applications Tutorial:** Tutorials differ from the SWOT Applications Workshop by including multiple NASA Decadal Missions. Tutorials are designed to discuss products and applications of multiple NASA Decadal Missions and address similar and/or complementary application opportunities to leverage and combine data sets. Like workshops, Tutorials are held on-site (e.g., at USGS), open to everyone, and organized by the Applications Teams and Scientists from multiple missions. Reports are posted on multiple mission websites.
- **SWOT Applications Focus Session:** Focus Sessions are generally half-day events added to already-organized meetings that have a concentration of SWOT users (such as the SDT, EGU, AGU, etc.). The goal is to provide user-specific support and information on SWOT products, related directly to the users' mission objectives. In this case, the users organize the event and SWOT Scientists make presentations and facilitate discussions. Action items are summarized and distributed for follow-up.