



National Aeronautics and
Space Administration

Jet Propulsion Laboratory
California Institute of Technology
Pasadena, California



Surface Water and Ocean Topography (SWOT) Mission

<http://swot.jpl.nasa.gov>

SWOT Science Team Meeting

Algorithm Definition Team (ADT)- Science Team Interaction

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How we work together



- There is no Algorithm working group. Rather, there is an algorithm team that has members from the project and science team.
 - We welcome science team participation
- In addition personal participation, a structure has been formed so that communications between the science team and the algorithm development team can be made more agile: there are official Science team representatives in the Algorithm Development Team
 - Ocean Science Team Representatives:
 - ◆ Tom Farrar
 - ◆ Gerald Dibarboure
 - Hydrology Science Team Representatives
 - ◆ Mike Durand
 - ◆ Sylvain Biancamaria
- Project leads
 - Phil Callahan (JPL)
 - Roger Fjortoft (CNES)



Phase B Hot Topics



- High resolution pre-summing factor
 - Sensitivity studies and additional resources made available by the project
- River, lake and oceans products definition
 - Draft definitions for most of the products
 - Some additional definition needed in Phase C with ST input (e.g., synergistic science)
- A priori databases definition
 - Required data sets and production leads identified
 - However, some of these data sets and their updates need further study (e.g., water probability mask)
- Simulations over inland water
 - Multiple studies by science team members, as presented by Brent Williams, Sylvain Biancamaria, Mike Durand
- Pepsi Challenge
 - A prime example of science team and ADT interaction: multiple papers and multiple algorithmic avenues
- Importance of the 250 m data over ocean
 - Project has responded



Phase C Hot Topics



- Definition of ocean data products and algorithms that utilize the high resolution data (250 m posting) enabled by the project
 - Robustness algorithms
 - What grids, resolutions, and interpolation schemes will be used for the ocean data products?
 - What are the “expert” products? (e.g., waveform for altimetry)
- Layover characterization and flagging
 - AirSWOT data collected March for topographic layover
 - Vegetation layover experiments with simultaneous lidar measurements over the Mississippi Delta being planned for October (TBC)
- Geophysical corrections models over ocean : tides, internal tides, MSS, MDT, EM bias,...
- A priori databases generation
- River, lake and oceans products prototyping
 - Wetland and Lake data products are immature compare to others
- Pepsi Challenge (ADT meeting in October 2016)
- Multi temporal processing (next ADT meeting in Toulouse September 2016)
- Measurement phenomenology on all surfaces (ocean ADT meeting in Paris November 2016)
- Simulations over inland water and ocean surfaces (we strongly need to have more simulations and better use cases)



Missing Component so Far: Synergistic Science Representation



- The ADT and science definition teams did not have representation from non-hydrology or oceanography science:
 - Sea Ice
 - Continental Ice Sheets
 - Ocean bathymetry/gravity
- There are no specific products for these communities, but the project must ensure that the products that are produced do not preclude scientists from these communities making applicable data products.
- These communities can help in the definition and justification of expert data products that will optimize their science returns
- Geophysical and instrument corrections over the cryosphere must also be considered
- Need to interact with the high resolution working group