

**Summary of:
Meeting of the SWOT Science Working Group
February 1st, 2008 in CNES HQ, Paris**

Your edits are welcomed. Date of this document is February 14, 2008

Our meeting brought together a group from the US, UK and France (attendance is listed below). It was decided that the Mission Name should now use “SWOT” instead of “WATER HM” for consistency with Decadal Survey, U.S. Congressional actions, and CNES. A summary of ideas developed and recommendations made during the meeting is provided below. → this is a draft, please don’t hesitate to provide inputs, Nelly ←

1. **Meeting:** This is the follow-up meeting to the October 29th and 30th, 2007 SWG “inaugural” meeting where the French participation was reduced because of an Air France strike. The agenda was thus similar to the Washington D.C. agenda with reports on the status of the different programmatic, scientific and technical issues.
2. **Pascale Ultré-Guérard** started the meeting by talking about the need for CNES/NASA and CNES/NOAA meetings at CEO/Administrator level with SWOT being a high priority in France/US space cooperation. CNES had a formal review end of September, 2007 where SWOT was ranked first for entering phase A studies in 2008. A cooperation/coordination with NASA needs to be discussed and the preliminary responsibility/task sharing needs to be agreed upon.
3. **Tony Freeman** indicated that there was NASA ‘08 funding for first 7 Decadal Survey missions (including SWOT) and discussed possible Division of Responsibilities Amongst Partners
4. **Science questions** are prioritized but are not as well articulated as needed.
 - a. The oceanographic questions: Several presentations about assimilation in ocean models were made and the possibility of adding or changing the wording of the questions to include models requirements was discussed. It was also suggested to add a question about internal tides. The oceanographic questions will be examined thoroughly during the oceanography workshops organized in 2008.
 - b. The status for different hydrology “Virtual Missions” was presented. The possibility of adding or changing the wording of the questions to include models requirements was discussed. It was also discussed the added value that will be brought by a combination with other satellite in orbit at the same time, this applies to both hydrology and oceanography.
 - c. A presentation on SWOT water resources applications was made, stressing the challenges in global water management and the opportunities the SWOT mission will provide with a list of actions to start.
5. **Risk reduction studies** are needed to further refine the mission and keep it on track for a launch in the 2013-2016 timeframe. Coupled studies linking the Science, Technology and Spacecraft issues with the Cost issues are necessary. The programmatic role is important to insure the synergy between the CNES and NASA/JPL studies. The mission concept study includes deliverables for the Ocean and Hydrology Science Study to write in the Science

Definition Document. Besides the Risk Reduction Studies already defined during the October 2007 SWG meeting, the following requirements were discussed:

- a. "Level 1" requirements are needed for the engineering teams.
- b. Data product definition is needed for onboard processing.
- c. Orbit definition is needed as the main driver for the engineering studies.
- d. Error budgets over ocean and over land need to be examined.

As a reminder are the risk reduction studies outlined during the October SWG meeting

- e. WSOA was not designed as a Ka-band system, thus the extensive JPL studies conducted for WSOA need to be expanded to include Ka-band.
 - f. Given that all early DS missions will produce overwhelming amounts of data, it is possible that additional downlink capacity will be available by launch. Nevertheless, on-board processing to reduce data volumes might be required. Such processing needs to be prototyped.
 - g. Corrections for the wet and dry troposphere are needed. What are the risks associated with newly developed radiometers as well as their power requirements? Conventional radiometers are viable for WATER HM over the open oceans, thus what are the alternatives to advanced radiometers for making corrections over coastal and land areas?
 - h. The Ka-band radar studies over three Ohio water bodies were useful for demonstrating that KaRIN will record off-nadir returns. It would be beneficial to have a more extensive study of the surface conditions, wind advection, and resultant backscatter strength and signal correlation. Perhaps adding beamwidth and pulse size to the study would help delineate the implications of small "flat patches" along river surfaces.
6. **The Mission Document** for the SWOT mission will be circulated amongst the SWG in the next two month. This preliminary document will be a summary still incomplete but necessary to provide the inputs, the motivating science questions, the requirements, and the accuracies that will allow the mission to move from the phase 0 studies to the phase A studies.
7. **Programmatic:** There was a sidebar meeting involving Pascale Ultré-Guérard, Eric Lindstrom, Eric Thouvenot, Jim Graf, and Tony Freeman during the SWG meeting.

Meeting Attendees: Aaron Boone, Alain Mallet, Alix Lombard, Anny Cazenave, Anthony Freeman, Bruno Cugny, Bruno Lazard, Dennis Lettenmaier, Doug Alsdorf, Eric Dombrowsky, Eric Lindstrom, Eric Thouvenot, Ernesto Rodriguez, Florent Lyard, Gregg Jacobs, Jacques Verron, Jim Graf, Juliette Lambin, Nelly Mognard, Pascale Ulte-Guerard, Parag Vaze, Paul Bates, Pierre de Mey, Sylvain Biancamaria.