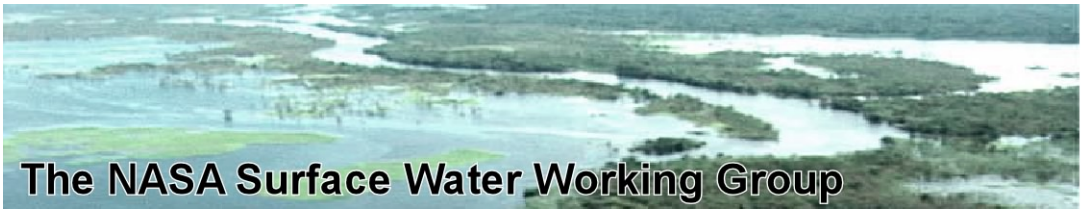

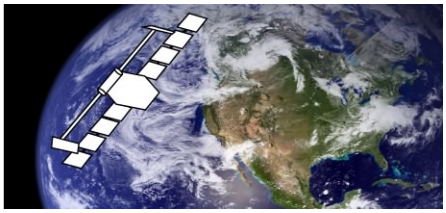

Doug Alsdorf, SWWG Chair; Ohio State University; Dept. of Geology; Mendenhall Lab; Columbus, OH 43210

March 27, 2006

Dear Working Group Colleagues,

As usual at the beginning of the year, I would like to update you on the progress made in the past year by our NASA Surface Water Working Group (SWWG). Your participation in our group is critical for our continued success toward the vitality of remote sensing of surface waters and related funding opportunities. NASA's Terrestrial Hydrology Program (THP) funds our activities and has actively sought individual PI proposals and provided grants to researchers that focus on hydrologic understanding of surface waters via remotely sensed measurements. We thank Jared Entin, program manager of the THP, for the continued support.

A key role of the SWWG is to facilitate connections between surface water hydrology and the potential role of remote sensing. We have already articulated one fundamental goal: defining the spatial and temporal variability of water stored on and near the surface of all continents. Toward that end, we joined with colleagues around the world to propose the Water Elevation Recovery mission (WatER) to the European Space Agency. There is much more to be done, particularly before WatER data are ever available. These points are highlighted below.

Accomplishments:

The following list of bullets, noting our accomplishments during 2005, is assembled in chronological order. Also, this letter is available from our web page (link provided below).

(1) January 23rd and 24th Meeting with USGS: Jared Entin and I were invited to USGS HQ to meet with colleagues in the Water Division. Jared and I discussed the important role that satellite based measurements of surface waters can have for the global perspective. It is through such meetings that we are able to hone our remote sensing ideas and find collegial goals. We continue to seek commonalities with our USGS colleagues. Presentations made at USGS are available on the SWWG web page.

(2) May 13th Submission of WatER to NRC Decadal Survey: The National Research Council has been asked by NASA to "generate prioritized recommendations from the Earth and environmental science and applications community regarding a systems approach to the space-based and ancillary observations that encompasses the research programs of NASA". In response to this call we submitted a concept paper on WatER, which is available from the U.S. WatER web page. I am very pleased that several of our SWWG members also submitted concept papers on water cycle research, reaching beyond our SWWG focus on surface water. Our hydrologic community representation in this extremely important Decadal Survey is vital.

(3) May 25th AGU Presentation: Unfortunately, I was not able to attend the Spring AGU but I am grateful to Eric Wood who presented our SWWG abstract on "Tracking Freshwater from Space". This presentation is available on the SWWG web page.

(4) July 28th Submission of WatER to ESA: This was a great day! An international group assembled together to write and submit the first proposal for the Water Elevation Recovery

mission. The proposal is presently in review with the Earth Explorer opportunity with an expected May 2006 decision which will define missions that move forward to the next step.

(5) December 5th, Informational Meeting at Fall AGU: We had an informational meeting after the "Hydrology from Space" session convened by Dennis Lettenmaier and Larry Smith. The meeting was well attended by about 40 people. We discussed future directions for the SWWG, particularly now that the WatER mission is moving forward. The informational presentation is available on our SWWG web page. Please see "The Future" section below for more details.

(6) December, New web page: With the transition of our web pages to Ohio State University, we made a massive overhaul of the SWWG web page. A brand new design was created along with a host of options for downloading our presentations, letters, proposals, etc. Our web page is regularly updated and I encourage you to contact me with your thoughts on improvements.

(7) Throughout the year, Job Opportunities! Hydrologic science, and particularly surface water research, offers wonderful job opportunities. I encourage anyone who is interested to review the jobs posted in *EOS*. As part of a SWWG web page update this year, jobs have routinely been posted on our web page (click on the "Jobs" button at the top).

(8) Presentations throughout the year: A number of us continue to make presentations regarding surface water science, remote sensing, and the SWWG. If you would like to make a presentation, then please let me know because we have many PowerPoint slides that you will find useful. Please know that I very much encourage you to make these presentations!

The Future:

The development effort for WatER is a ***major*** accomplishment that the SWWG is pleased to have been closely linked. I am very proud of our completely international collegial effort to build and eventually launch WatER. As a unified, international community I believe we will be successful! The SWWG is now ready to turn our attention to new goals. These goals are not well defined thus the following actions are designed to move us forward.

(9) Meeting in Summer, 2006: Our last meeting was in October of 2004. It is time to meet again to discuss and agree upon our future goals. The informational meeting at the Fall 2005 AGU was helpful to begin our discussions, but a clear resolution was not formed, nor sought. The next meeting will be timed with the release of ESA's decision about WatER, which is due in May. My best guess is that the meeting will be held in the Summer and likely in Chicago.

(11) Future Goals of the SWWG: We all have concepts and ideas for the future, especially ideas which we believe are exciting and will be a foundation of strong research. The following are some of my thoughts and I am very open to your ideas:

A. I think there are opportunities in remote sensing of sediment concentrations, nutrient content, and temperature.

B. Global water cycle modeling is not ready for the enormous quantities of data that will eventually be available from future satellite missions, thus model improvements are warranted.

C. We also need stronger ties and activities with THP's soil moisture and cold land processes working groups – field experiments are potential avenues of collaboration.

D. Perhaps the most important immediate future lies with understanding the possibilities from measuring surface water elevations using conventional altimetry. Such approaches are spatially limited by the ~100+ km gaps between orbits as well as the >100+ m along track samplings and thus are severely limited in their ability to answer global hydrologic questions. Nevertheless, these profiling approaches should be exploited in the near-term, before WatER data are available. The overarching problem with them is that these methods provide only a water surface elevation, but no rating curves to convert the elevations to discharge. Research is needed to expand these simple elevation measurements to the more complex discharge estimates.

(12) Federal Government Memos and Reports: Although these memos and reports are not "accomplishments" of the SWWG nor are we planning deep involvement in the construction of future government directives, these documents demonstrate that the U.S. Federal Government has a keen interest in hydrology and remote sensing. Thus these documents help guide us in our future directions. Links to the documents are noted below.

A. In 2004, OSTP and OMB issued a memo stating, "The ability to measure, monitor, and forecast the U.S. and global supplies of fresh water is another high-priority concern."

B. In 2005, OSTP and OMB restated their 2004 memo and now included, "Significant progress on this plan, including stakeholder input, is expected during the next two years."

C. In 2004, OSTP issued a report on Fresh Water Availability in the United States that stated, "Does the United States have enough water? We do not know." And went on to say, "What should we do? Use modern science and technology to determine how much water is currently available …". Given this situation in the U.S. it is easy to imagine the difficulty of answering the availability question for nearly anywhere in the world. Thus, our remote sensing hydrologic goals are *globally* oriented.

(13) Technological Development: It is important that our future science directions are closely tied with technologies that have the potential to collect measurements necessary for answering key questions. We will continue to work closely with colleagues who design and build spaceborne instruments, particularly in our upcoming meetings.

I hope you share with me in an enthusiastic vision for the future of hydrology and the measurements provided by spaceborne remote sensing. I look forward to hearing from you.

Sincerely,

Doug Alsdorf
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Links on next page

Links:

National Academies “Decadal Survey” for NASA and NOAA committee:
http://qp.nas.edu/decadalsurvey

OSTP & OMB memos:
http://www.whitehouse.gov/omb/memoranda/fy04/m04-23.pdf
http://www.ostp.gov/html/budget/2007/ostp_omb_guidancememo_FY07.pdf
http://www.ostp.gov/NSTC/html/swaqreport_2-1-05.pdf

ESA’s satellite mission opportunities:
http://www.esa.int/export/esaLP/earthexplorers.html

Our SWWG location:
http://www.geology.ohio-state.edu/swwg

WatER:
www.geology.ohio-state.edu/water
www.legos.obs-mip.fr/recherches/missions/water