

MEETINGS

Satellite Mission to Study Ocean Salinity and the Global Hydrological Cycle

**4th Aquarius/SAC-D Science Workshop;
Puerto Madryn, Argentina, 3–5 December 2008**

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Important aspects of climate change in the 21st century will involve interactions between ocean circulation and the global hydrological cycle, and their links to land surface hydrology, the cryosphere, the atmosphere, and other realms. The Aquarius/Satellite Aplicaciones Cientificas-D (SAC-D) satellite mission is a multidisciplinary observatory that will provide measurements of ocean salinity, ocean winds, rain, sea ice, land/sea surface temperatures, soil moisture, nighttime light sources, atmospheric temperature/humidity soundings, and the space environment, as well as autonomous data relay from remote ground stations. Scheduled for launch in May 2010, the project involves international contributions by Argentina, the United States, Italy, Canada, France, and Brazil, and has an active public awareness and education program (see <http://www.conae.gov.ar/satelites/sac-d.html> and <http://aquarius.gsfc.nasa.gov>).

The 4th Aquarius/SAC-D Science Workshop was convened to further prepare the scientific community for the mission and scientific applications, and to enhance cooperation between scientists

from different countries in order to form an Aquarius/SAC-D mission user's network. More than 90 scientists attended, representing Argentina, the United States, Italy, Canada, France, Spain, Brazil, Chile, and Uruguay. The conference also provided a special tribute to F. Raul Colomb, original principal investigator for Argentina's SAC-C and SAC-D missions, who passed away on 4 May 2008 after a yearlong illness.

The opening day of the workshop featured a presentation of Argentine government support for sponsored research, followed by plenary lectures on broader scientific themes relevant to the Aquarius/SAC-D measurements, including (1) salinity, climate, and the hydrological cycle; (2) South Atlantic Climate Variability and Predictability (CLIVAR) activities; (3) ocean environment, biological resources, and fishing; (4) sea ice and the polar ocean climate; (5) soil moisture; and (6) natural hazards and emergency management.

The second day of the conference was devoted to technical briefings about each sensor, calibration methods, and algorithms, as well as synergy with the European Soil Moisture and Ocean Salinity (SMOS) mission. On the third day, working groups discussed ocean, climate, and land processes; as well as instruments and algorithms. A

tutorial on passive microwave remote sensing was also presented.

Throughout the conference, participants analyzed the synergies among all the observatory instruments and with other missions, and considered a comprehensive list of applications. These applications include, for example, studies of water cycle, evaporation minus precipitation, rivers, sea surface salinity, ocean fronts and eddies, El Niño–Southern Oscillation prediction, hydrological applications and water resources management, flood and drought cycles, soil moisture, detection of environmental variables for plague and pest monitoring and forecasting, fire risks, heat islands in urban environments, hot spots for carbon flux, extreme event fires, and volcano monitoring.

The workshop also fostered international collaborations and the formation of investigator partnerships that could be proposed for the Aquarius/SAC-D mission science team. The open process for soliciting proposals and selecting the international science team through coordinated announcements between NASA, the Argentine space agency (Comisión Nacional de Actividades Espaciales (CONAE)), the Argentine Ministry of Science, Technology and Productive Innovation (MinCyT), and the Italian Space Agency (Agenzia Spaziale Italiana (ASI)) is publically available at http://www.conae.gov.ar/SAC-D_AQ_AO/index.html. Monica Rabolli (CONAE) was the principal organizer of the workshop. Meeting presentations and working group summaries are posted on the workshop Web site (http://www.conae.gov.ar/AQ_SAC-D_4thScienceWS/Agenda.pdf).

—GARY LAGERLOEF, Earth & Space Research, Seattle, Wash.; E-mail: lager@esr.org; SANDRA TORRUSIO, Comisión Nacional de Actividades Espaciales, Buenos Aires, Argentina

Largest Early Career Scientists Workshop on Polar Marine Research

**IMPETUS 2008: Polar Observation and Monitoring;
Saint Petersburg, Russia, 19–22 November 2008**

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Eighty-five young researchers from 20 countries met in Russia to learn about the latest techniques in polar ocean observation and monitoring and to discuss the advantages and limits of various techniques, methods of data transmission, and joint research projects. IMPETUS 2008, the largest workshop ever held for early career scientists in polar marine research, was organized by the Otto Schmidt Laboratory for Polar and Marine Research at the Arctic and Antarctic Research Institute, in Saint Petersburg; the Association of Polar Early Career Scientists; and the Permafrost Young Researchers Network.

IMPETUS 2008 provided early career scientists with knowledge and training in the latest techniques used in research fields including nutrient and primary production monitoring, data transmission, remote sensing in oceanography and meteorology, sea ice monitoring, seafloor mapping and Arctic drilling, coastal sediment dynamics, and climate modeling. It brought together a variety of experts to provide young researchers with a cross-border and cross-disciplinary perspective in polar ocean research, a needed approach in a field characterized by the presence of many partially overlapping areas of study. IMPETUS 2008 strengthened existing collaborations and built up new networks that include scientists from a

range of career stages, from early career to senior scientists.

The success of IMPETUS 2008 highlighted the value of improved communication between disciplines, approaches, and research levels. Participants discussed the need to meet beyond the traditionally established venues and build up new networks, which contribute to early development of cross-cutting projects, methods, and relevant scientific questions. In addition, the poster session, which included more than 60 posters covering all fields in polar marine research, fostered through discussion the development of new scientific networks and projects aimed at facing the challenge of a changing Arctic environment.

IMPETUS 2008 also served as an important step toward the international interdisciplinary dialogue necessary to make the marine science plans developed by the Second International Conference on Arctic Research Planning (ICARP II) a reality. The early career scientists at IMPETUS 2008 were encouraged to join the effort of the

ICARP II Marine Roundtable (MRT; www.aosb.org/programs.html) to initiate a pan-Arctic, multidisciplinary science plan on Arctic marine research.

IMPETUS 2008 was financially supported by the International Bureau of the German Federal Ministry of Education and Research, the Arctic Ocean Sciences Board, the U.S. Arctic Research Commission, the Gordon and Betty Moore Foundation, the British Antarctic Survey, the Arctic and Antarctic Research Institute (AARI), the Leibniz Institute of Marine Sciences

at the University of Kiel (IFM-GEOMAR), the Alfred Wegener Institute for Polar and Marine Research (AWI), the Integrated School of Ocean Sciences, the International Arctic Science Committee, the Scientific Committee on Antarctic Research, the Climate and Cryosphere Project, and Arcticnet, as well as Aanderaa Instruments and the Norwegian Polar Institute.

Presentations and speaker biographies are available on the conference Web site (http://www.otto-schmidt-laboratory.de/?Events:Past_Events).

We thank J. A. Hoelemann (AWI), N. van Nieuwenhove (IFM-GEOMAR), L. Timokhov (AARI), Hugues Lantuit (AWI), J. Baeseman (Association of Polar Early Career Scientists), and the Otto Schmidt Laboratory for Polar and Marine Research for their support during the IMPETUS 2008 workshop.

—CAROLYN WEGNER and HEIDEMARIE KASSENS, Leibniz Institute of Marine Science at University of Kiel (IFM-GEOMAR), Kiel, Germany; E-mail: cwagner@ifm-geomar.de

ABOUT AGU

Lundquist Receives 2008 Cryosphere Young Investigator Award

Jessica D. Lundquist received the 2008 Cryosphere Young Investigator Award at the 2008 AGU Fall Meeting Honors Ceremony, held 17 December in San Francisco, Calif. The award is for a significant contribution to cryospheric science and technology.

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Citation

I want to introduce to you Jessica Lundquist, of the University of Washington, selected this year for the AGU Cryosphere Young Investigator Award. Jessica has addressed critical questions in cryospheric science and linked her work to the sciences of hydrology and climate.

Jessica originally came to Scripps (part of the University of California, San Diego, even though they don't like to admit it) to study coastal fog! But her love of the outdoors and her associations with Dan Cayan and Mike Dettinger led her to the study of snow, particularly in the spring when runoff occurs and when the Sierra Nevada is most pleasant, especially before the mosquitoes hatch.

As a graduate student, and as an assistant professor at the University of Washington, Jessica has published an impressive list of journal articles in the highest-impact journals in snow science and hydroclimatology, including *Water Resources Research*, *Journal of Geophysical Research*, and *Journal of Hydrometeorology*. I first got to know her through her work that explained diurnal variability in snowmelt runoff, what she called the "pulse of the mountains," at a variety of scales, a problem I had worked on without much success. She has shown innovation in field methods, especially in the use of small temperature and pressure sensors for characterizing snowmelt runoff in the high-elevation basins. Her recently developed technique for implanting small temperature sensors high in the forest canopy is amazing; essentially it is a high-end slingshot.

To summarize, Jessica's contributions include the importance of snowpack spatial

heterogeneity to streamflow timing; the effect of the interplay between climate warming, earlier snowmelt, and spatial heterogeneity; a model of cold air pooling in mountainous terrain; cross-disciplinary research that promotes the important role of the mountain snowpacks in climate, hydrology, atmospheric science, and ecology; and communicating her results to the lay public.

Congratulations, Jessica, from all of us. We look forward to reading your work for many years.

—JEFF DOZIER, University of California, Santa Barbara

Response

Thank you, Jeff, for your kind introduction, and to AGU and the National Snow and Ice Data Center for supporting this award. I am honored.

My childhood goals were to grow up to be like John Muir, hiking and writing in Yosemite National Park of the Sierra Nevada, California. That changed during undergraduate studies at University of California, Davis, when Jim McClain, Terry Nathan, Jeff Mount, and many other professors convinced me to change my major from nature-literature to meteorology; they showed me that science is fun and worthwhile.

Inspired by Jim Edson and Wade McGillis at a National Science Foundation Research Experience for Undergraduate program at Woods Hole Oceanographic Institution, I went to Scripps Institution of Oceanography (SIO) at University of California, San Diego, to study marine meteorology with David Rogers. After my M.S. degree on coastal fog, I stumbled across Mike Dettinger and Dan Cayan, who were studying snow and



Jessica D. Lundquist

climate in Yosemite. I thank Dan and Mike for encouraging creativity, whether swapping labor for instruments, or smiling when the abominable snowman appeared on an AGU poster or two. I also thank the students and professors of SIO. Fellowships from National Defense Science and Engineering Technology, California Institute for Telecommunications and Information Technology (Cal-IT2), and Canon provided essential support for me as SIO's first "high-altitude oceanographer."

Following my Ph.D. I joined Randy Dole, Marty Ralph, and David Kingsmill, who mentored me at the National Oceanic and Atmospheric Administration's Earth Science Research Lab (ESRL) in Boulder, Colo. ESRL is a wonderfully close-knit and friendly community of scientists. I thank Mark Losleben and Dave Clow for helping me establish my Rocky Mountain field research and Nick Pepin for partnering with me to understand mountain temperatures. I especially thank Connie Millar for serving as my "science mom" during this time period, as my best female role model of how to be both a successful scientist and a well-rounded person.

In 2006, I joined the University of Washington, where Steve Burges took me under