# MEETING

## Improving Observations of High-Latitude Fluxes Between Atmosphere, Ocean, and Ice

***Surface Fluxes: Challenges at High Latitudes; Boulder, Colorado, 17–19 March 2010***

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Tracking high-latitude climate change requires an understanding of the fluxes between the atmosphere, ocean, and ice. However, efforts to determine surface fluxes at high latitudes face formidable challenges. Observations are sparse and difficult to obtain. In high latitudes, cold temperatures, high winds, and sea spray and riming (which can cover instruments with ice) combine to make conditions hostile for in situ observations. The unique conditions in high-latitude regions mean that lessons learned in equatorial and subtropical regions do not necessarily translate into improvements in high-latitude fluxes. Satellite wind speed calibrations are unreliable due to insufficient in situ data in high-wind conditions. Low air temperatures and humidities are problematic for satellite estimates, and more calibration data are needed. Radiative fluxes are problematic over grids containing ice and ocean. The temporal resolution achieved by satellites (often no more than one or two measurements per day in a given location) also generates large uncertainties associated with fast moving storms. Given these challenges, it is not surprising that available flux products differ significantly from each other.

These concerns provided the motivation for a workshop run jointly by the U.S. Climate Variability and Predictability (CLIVAR) High Latitude Surface Flux Working Group and by the SeaFlux Project, which brought specialists in high-latitude regions together with researchers focused on satellite-derived air-sea fluxes. The workshop served both as a forum for exchange about the leading-order difficulties and new advances in surface flux products and as an opportunity to strategize about potential improvements. Workshop participants discussed a full range of surface fluxes (i.e., momentum, energy, moisture, and carbon dioxide), both in open water and in ice-covered regions, determined from in situ and satellite observations or from numerical reanalyses.

Recommendations that emerged from the workshop emphasized a need for more flux observations, both in situ and from satellites. The need to understand differences between the satellite products and model reanalyses was highlighted, as was the continued need for studies that globally integrate the energy and water cycle budgets, along with regional studies to identify problematic locations. Long-term monitoring from moored buoys and from vessels that operate routinely at high latitudes was recommended as a priority. Fieldwork targeted at understanding physical processes is also important, and participants advocated projects in both the Antarctic and Arctic.

Although routine observations are not possible through all of the world's high-latitude regions, they are particularly important for providing calibration/validation data for satellites and as inputs for analyses and reanalyses. The group supported development of a coordinated series of satellite sensors aimed at inferring heat and momentum fluxes, via either a single satellite or a multi-satellite formation. Participants also emphasized the importance of improving access to both observations and reanalyses and of releasing flux products with quality control and uncertainty information.

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# ABOUT AGU

## *Eos* Interviews Robert Van Hook, Former AGU Interim Executive Director

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Robert Van Hook, who served as AGU's interim executive director since January 2009, led the organization during a transition period that began with the retirement of long-serving executive director A. F. ("Fred") Spilhaus Jr. Van Hook's tenure concluded on 30 August when Christine McEntee assumed her position as AGU's new executive director (see *Eos, 91*(17), 153, 156, 2010). During his tenure at AGU, which overlapped with a global economic recession, Van Hook helped to guide the organization through key structural governance changes, strategic planning, and upgrades in technology, human resources, and accounting. He also helped to revitalize public outreach and member services, among many other efforts.

Van Hook, president of Transition Management Consulting, recently reflected upon his tenure, the transition period, and the future of AGU. Van Hook credits AGU's strong volunteer leadership—including past presidents Tim Killeen and Tim Grove, current president Mike McPhaden, and president-elect Carol Finn—for courage in moving the organization through a successful transition. "They were the ones who shoved the boat off from the shore. I was lucky enough to be invited into the boat," he said. He also credits the staff for their resiliency and commitment to supporting AGU's science.

As McEntee takes charge, Van Hook said the organization has a number of strengths, including its broad base of science with a number of disciplines represented. He told *Eos* that AGU is a great organization with an accomplished history that deals with "incredibly relevant science." That science, he said, "is so important to our life here as humans on this planet and to our understanding of space."

*Former AGU interim executive director Robert Van Hook addressing the AGU leadership transition dinner in June. Original color image appears at the back of this volume.*

Van Hook pointed to other strengths as well, including the organization's well-regarded publications and meetings, its leaders, and its staff. AGU members, whom Van Hook called good, grounded people, also have made a deep impression on him. "They are people who, although they are science geeks, have a real groundedness about them. It's beer-drinking reality. They are solid