

**University:** University of California, Berkeley

**Name of University Researcher Preparing Report:** Fotini Katopodes Chow

**NWS Office:** Grand Junction, CO

**Name of NWS Researcher Preparing Report:** Michael Meyers

**Type of Project (Partners or Cooperative):** Partners

**Project Title:** Mountain meteorology short course: bridging the gap between research and forecasting

**UCAR Award No.:** S08-68829

**Date:** 2/27/09

## **Section 1: Summary of Project Objectives**

A 4-day Mountain Weather Workshop was offered August 5-8, 2008 in Whistler, British Columbia, the site of the 2010 Winter Olympics. The workshop took place the week prior to the 2008 AMS Mountain Meteorology conference and provided a unique learning opportunity for faculty, forecasters, graduate students, and others interested in mountain meteorology. One of the main goals of the short course was to bridge the gap between the research and forecasting communities by providing a forum for extended discussion and joint education. The workshop consisted of lectures given by 13 distinguished speakers, several group discussion opportunities, and concluded with a day of laboratory exercises designed for forecaster training for the Olympics.

## **Section 2: Project Accomplishments and Findings**

The Mountain Weather Workshop was attended by 99 participants from 12 countries. Roughly one third of the attendees were weather forecasters, one third were graduate students, and one third were researchers, providing an excellent opportunity to "bridge the gap" between research and operations. The workshop was sponsored by AMS, UCAR's COMET program, the National Science Foundation, and the Meteorological Service of Canada (MSC). Workshop presentations, recorded by UCAR's COMET program, may eventually be converted to web-based learning modules. Student travel awards were given for this workshop in coordination with organizers of the 13th Conference on Mountain Meteorology. A new *Meteorological Monograph* on mountain meteorology is now being organized by the workshop co-organizers, Fotini Chow, Stephan De Wekker and Brad Snyder, with chapters contributed by the presenters at the Mountain Weather Workshop. This monograph is intended to be a book suitable for use in graduate mountain meteorology programs and will have an important focus on operations and forecasting.

The workshop agenda is attached and included ~13 presentations and 3 discussion sessions, as well as a reception on the first day and a dinner banquet on the last full day. During the presentations, the attendees used audience response devices (commonly known as “clickers”) to respond interactively to questions posed by the speakers. For the discussion sessions, the participants were split into 10 groups of 10. The first discussion session was an “ice breaker” session for the group members to get to know each other and discuss issues related to “bridging the gap”. The second session involved a mock Olympics forecasting activity, where the groups were asked to design an optimal experimental setup to nowcast for the Olympics ski jump event. The final session was a “wrap-up” session to discuss future directions for forecasting and research in mountain meteorology. A final questionnaire asked the attendees to evaluate the workshop; a large fraction of attendees indicated that they particularly enjoyed the group activities and that as a result of the workshop they were more motivated to work to bridge the gap between research and operations.

### **Section 3: Benefits and Lessons Learned: Operational Partner Perspective**

The workshop brought together a variety of mountain meteorology topics, presented by world-renown subject matter experts in this field. The added benefit for all groups, including the operational partner, was the broad exposure to a diverse mixture of research scientists, students, and other operational forecasters at the workshop. The three discussion sessions were very useful in promoting interactions between the researcher, the scientists and the forecasters and facilitated the goal of bridging the gap between the research and operational communities. It is an expectation to use the web-based learning modules from the workshop and the Mountain Meteorology Monograph for training of mountain meteorology for NWS personnel. The operational partners encountered no problems with the project.

### **Section 4: Benefits and Lessons Learned: University Partner Perspective**

This Partners project supported the Mountain Weather Workshop which had a theme of “bridging the gap between research and forecasting.” The collaboration between Mike Meyers (NWS) and Fotini Chow (UC Berkeley) (see Section 6) worked directly to bridge that gap. Many planning discussions were needed to ensure that the workshop was beneficial to both the researchers and forecasters in attendance. This was an eye-opening experience for the university PI, who learned much about the forecaster perspective and has become more motivated to pursue efforts that continue to bridge the gap. One of these efforts will be the publication of a monograph whose theme is also to bridge the gap.

### **Section 5: Publications and Presentations**

This funding provided workshop support and did not directly result in any publications or presentations. However, the workshop presentations, recorded by UCAR's COMET program, may eventually be converted to web-based learning modules. In addition, a



new *Meteorological Monograph* on mountain meteorology is now being organized by the workshop co-organizers. The chapters will be based on contribution by the presenters at the Mountain Weather Workshop.

## **Section 6: Summary of University/Operational Partner Interactions and Roles**

The workshop was co-organized by Fotini K. Chow (University of California, Berkeley), Stephan De Wekker (University of Virginia), and Brad Snyder (Meteorological Service of Canada). The co-organizers worked closely with the AMS Mountain Meteorology 2008 conference co-chairs, Mike Meyers (NWS) and Lisa Darby (NOAA).

This Partners proposal was administered through UC Berkeley (Fotini Chow) and NWS (Mike Meyers). Mike Meyers (NWS) was co-chair of the 2008 Mountain Meteorology conference and thus heavily involved in the planning of the workshop which preceded the conference. Fotini Chow (UC Berkeley) and Stephan de Wekker (University of Virginia) were both members of the AMS mountain meteorology committee and co-chairs of the workshop. Doug Wesley (at COMET) facilitated COMET's participation through speaker funding and development of online features for the monograph, e.g. through recording of presentations during the short course. Mike Meyers worked directly with the workshop co-chairs and COMET, to facilitate the workshop planning and subsequent publication of the Monograph.

# MOUNTAIN WEATHER WORKSHOP:

## BRIDGING THE GAP BETWEEN RESEARCH AND FORECASTING

5-8 AUGUST 2008

TELUS CONFERENCE CENTRE

WHISTLER, BC, CANADA

### ORGANIZERS

Tina Chow, Univ. of California, Berkeley, CA; Stephan De Wekker, Univ. of Virginia, Charlottesville, VA;  
and Brad Snyder, Environment Canada, Vancouver, BC, Canada

### SPONSORS

(AMS) The American Meteorological Society, (UCAR) The University Corporation for Atmospheric Research  
acting on behalf of (COMET) The Cooperative Program for Operational Meteorology, Education and Training,  
(MSC) The Meteorological Service of Canada, (NSF) The National Science Foundation, and Campbell Scientific Canada

## PROGRAM (SKY BALLROOM C)

### TUE 5 AUG

**8:00 A.M.**      **OPENING REMARKS**

**8:15 A.M.**      **TOPIC 1: Overview: analysis and prediction of flow over complex terrain.** Jim Steenburgh, Univ. of Utah, Salt Lake City, UT and Mike Meyers, NWS, Junction, CO

**9:30 A.M.**      **INTRODUCTIONS: Breaking the Ice**

**10:00 A.M.**      **COFFEE BREAK (Foyer)**

**10:30 A.M.**      **DISCUSSION**

**10:45 A.M.**      **TOPIC 2: Thermally-forced flows.** David Whiteman, Univ. of Utah, Salt Lake City, UT

**12:00 P.M.**      **QUESTIONS AND DISCUSSION**

**12:30 P.M.**      **LUNCH BREAK**

**2:00 P.M.**      **TOPIC 3: Boundary layers, air quality and dispersion.** Douw Steyn, Univ. of British Columbia, Vancouver, BC, Canada

**3:15 P.M.**      **QUESTIONS AND DISCUSSION**

**3:45 P.M.**      **COFFEE BREAK (Foyer)**

**4:15 P.M.**      **TOPIC 4: Dynamically-driven winds.** Peter Jackson, Univ. of North British Columbia, Prince George, BC, Canada

**5:30 P.M.**      **QUESTIONS AND DISCUSSION**

**6:00 P.M.**      **WORKSHOP ADJOURNS FOR THE DAY**

**6:00 P.M.**      **RECEPTION (Foyer)**

### WED 6 AUG

**8:30 A.M.**      **TOPIC 5: Orographic precipitation: observations and theory.** Brian Colle, State Univ. of New York, Stony Brook, NY

**9:45 A.M.**      **QUESTIONS AND DISCUSSION**

**10:15 A.M.**      **COFFEE BREAK (Foyer)**

**10:45 A.M.**      **TOPIC 6: Orographic precipitation: microphysics and transition regions.** Mark Stoelinga, Univ. of Washington, Seattle, WA and Ron Stewart, McGill Univ., Montreal, PQ, Canada

**12:00 P.M.**      **QUESTIONS AND DISCUSSION**

**12:30 P.M.**      **LUNCH BREAK**

**2:00 P.M.**      **TOPIC 7: Observational techniques: sampling the mountain atmosphere.** Bob Banta, NOAA/ESRL, Boulder, CO

**3:15 P.M.**      **QUESTIONS AND DISCUSSION**

**3:45 P.M.**      **COFFEE BREAK (Foyer)**

**4:15 P.M.**      **WORKSHOP ADJOURNS FOR THE DAY**

**THU 7 AUG**

**8:30 A.M.**      **TOPIC 8: Observational techniques: data assimilation and observational uncertainty.** Reinhold Steinacker, Univ. of Vienna, Vienna, Austria

**9:45 A.M.**      **QUESTIONS AND DISCUSSION**

**10:15 A.M.**      **COFFEE BREAK** (Foyer)

**10:45 A.M.**      **TOPIC 9: Numerical modeling in complex terrain: basic theory and overview.** James Doyle, NRL, Monterey, CA

**12:00 P.M.**      **QUESTIONS AND DISCUSSION**

**12:30 P.M.**      **LUNCH BREAK**

**2:00 P.M.**      **TOPIC 10: Numerical modeling in complex terrain: successes and challenges.** Sharon Zhong, Michigan State Univ., East Lansing, MI

**3:15 P.M.**      **QUESTIONS AND DISCUSSION**

**3:45 P.M.**      **COFFEE BREAK** (Foyer)

**4:00 P.M.**      **QUESTIONS AND DISCUSSION**

**6:00 P.M.**      **WORKSHOP ADJOURNS FOR THE DAY**

**7:00 P.M.**      **WORKSHOP BANQUET** (Hilton Whistler)  
This event is included in your registration

**FRI 8 AUG**

**8:30 A.M.**      **TOPIC 11: Numerical modeling in complex terrain: operational applications.** Brad Colman, NOAA/NWS, Seattle, WA

**9:45 A.M.**      **QUESTIONS AND DISCUSSION**

**10:15 A.M.**      **COFFEE BREAK** (Foyer)

**10:45 A.M.**      **WRAP UP: Bridging the gap**

**12:30 P.M.**      **MOUNTAIN WEATHER WORKSHOP ADJOURNS**

