

# **Final Announcement**

## **Lower Atmospheric Observing Facilities Workshop**

### *Meeting the Challenges of Climate System Science*

**18-19 June 2012, Boulder CO USA**

*Richard Carbone (NCAR) and Xubin Zeng (UAZ), Program Co-Chairmen*

To better serve the climate system science community, the National Science Foundation will sponsor a Lower Atmospheric Observing Facilities (LAOF) Workshop on emerging observational needs in climate system science (CSS). The workshop will be hosted by NCAR's Earth Observing Laboratory on the Center Green campus. Registration is free but limited to approximately 100 participants, owing to space and budgetary limitations. All prospective participants must be preregistered by 31 May. We anticipate domestic and foreign national experts representing several disciplines within CSS and the intersection of weather, chemistry and climate. Invited oral presentations will inform participants of current and emerging LAOF facilities, as well as major research challenges. Topical breakout sessions will be the heart of the Workshop. Contributed posters and data displays are welcome and will be exhibited for the entire meeting. A Synthesis Committee, by invitation, will meet on 20 June to integrate topical findings and begin the reporting process.

#### **BACKGROUND INFORMATION**

Periodically, the Earth Observing Laboratory of NCAR has held workshops for users of NSF's Lower Atmospheric Observing Facilities (LAOF). LAOFs are offered through competitive awards by the National Science Foundation, Division of Atmospheric and Geospace Sciences, and also as part of collaborative programs with other agencies and institutions. The working definition of "lower atmosphere" may be described as extending from the planetary surface through the lower stratosphere. In some instances, the use of such facilities may be provided in support of middle or upper atmosphere research objectives. LAOF assets are currently located at NCAR/EOL, Center for Severe Weather Research, Colorado State University, and the University of Wyoming. Additional coordinated observing systems and platforms are located at universities, government agencies and other institutions.

Traditional strengths of LAOF instruments, platforms and services have tended to emphasize, microscale, mesoscale and synoptic meteorology, tropical meteorology, cloud and precipitation physics, airborne tropospheric chemistry, and other tropospheric airborne science not fitting these descriptions. Over the past decade atmospheric science has evolved rapidly toward interdisciplinary studies in response to advances in CSS as part of a broader impetus to understand the entire Earth System. In response to this trend there is increasing engagement of LAOF resources in climate system motivated research, often including oceanic, hydrologic, biogeosciences, upper troposphere and lower stratosphere (UTLS), cryospheric and related discipline applications. Such campaigns have become increasingly international, multifaceted, and often explore remote regions, literally from pole to pole. The purpose of this workshop is to examine the LAOF assets in light of these trends; identify weaknesses in the capabilities of existing and emerging tools, and in the modes of deployment supported by these systems. To the extent that gaps need to be filled, the findings and recommendations of this workshop will be evaluated by the NSF/AGS and institutions involved in support of LAOF.

**AGENDA**  
**Lower Atmospheric Observing Facilities Workshop**  
**National Center for Atmospheric Research**  
**Center Green Campus**  
**18-19 June 2012**

**Monday 18 June**

- 0800 Brief Opening Remarks** – L. Avallone, NSF; V. Grubišić, EOL
- 0815 Current NSF/AGS Lower Atmospheric Observing Facilities and Services (25+5)**  
Surface-based facilities (EOL, CSU, CSWR) S. Cohn, EOL  
Aircraft (WYO, NPS/CIRPAS, NCAR) A. Rodi, U. Wyoming  
Data Services M. Daniels, EOL
- 0945 Break**
- 1010 Emerging Technologies/Platforms (12+3)**  
A10 aircraft H. Jonsson, NPS/CIRPAS  
COSMOS M. Zreda, U. Arizona  
DIAL Thermodynamic Profiling K. Repasky, MT State U.  
CASA D. McLaughlin, U. Mass.  
HCR, HSRL J. Vivekanandan, EOL
- 1125 Atmospheric Chemistry Instrumentation (20+5)** A. Guenther, NCAR/ACD
- 1150 Other Agency Facilities (15+5)**  
DOE ARM Beat Schmid, Pacific NW Nat'l. Laboratory  
NOAA Russ Schnell, NOAA ESRL
- 1230 Buffet Lunch\*** (payment required for NCAR and federal employees)
- 1315 Topical Lectures (30+5)**  
Terrestrial Interface (ABL, Bio, Hydro, Urban) D. Baldocchi, U. California, Berkeley  
Ocean Interface (Phys, Chem, Biochem) R. Weller, Woods Hole Oceanographic Inst.  
FreeTroposphere Physics C. Bretherton, U. Washington
- 1500 Break 25min**
- 1525 Topical Lectures (30+5)**  
UTLS D. Hartman, U. Washington  
Tropical Free Waves C. Zhang, U. Miami  
Cryosphere Interface N. Molders, U. Alaska
- 1710 End Oral Presentations**
- 1800 Reception and Poster Session** (food and refreshments will be served)
- 1930 End Reception and Poster Session**

**Tuesday, 19 June**

**Topical Breakout Sessions, Co-Chairpersons**

**Terrestrial Interface (ABL, Bio, Hydro, Urban)**

Ana Barros, Duke U.

Helen Cleugh, CSIRO/CAWCR

**Ocean Interface (phys, chem, biochem)**

Chris Fairall, NOAA ESRL

P. Sullivan, NCAR/MMM

**Cryosphere Interface, Polar Studies**

Glen Liston, Colorado St. Univ.

Mark Serreze, Nat'l. Snow, Ice Data Cntr., CU

**Free Tropospheric Physics (cloud, precipitation, aerosol, radiation)**

Alan Blyth, Leeds U.

Kimberly Prather, Scripps Inst. Oceanography

**Tropical Free Waves, Cyclones**

Shuyi Chen, U. Miami, RSMAS

Stephan Tulich, U. Colorado/NOAA

**UTLS Region (phys, dynam, chem)**

Marv Geller, Stoneybrook U.

Laura Pan, NCAR/ACD

**0830 Plenary “marching orders”**

**0840 Breakout Sessions A** - distillation of prominent science questions, experimental methodologies

**Break As you wish** - refreshments available 0945-1030

**1110 Brief Remarks** Roger Wakimoto, NCAR Director

**1115 Summary Reports –Breakout Sessions A** (5+2 min ea.)

**1200 Buffet Lunch\*** (payment required for NCAR and federal employees)

**1300 Breakout Sessions B** – priority objectives, observing facility gaps, applicable technologies

**Break As you wish** – refreshments available 0200-0245

**1530 Breakout B - Summary Reports**

**1615 Plenary Discussion** - explore common ground, low hanging fruit, trans-disciplinary requirements

**1715 Adjourn Open Sessions**

**Wednesday 20 June, 0900 -1330, Synthesis Committee Meeting** (by invitation)

**The synthesis committee will engage in structured discussions for the following purposes:**

- **Integrate findings and recommendations derived from the topical inputs**
- **Provide overarching findings and recommendations derived from considerations such as scientific and technological readiness, urgency, breath of applications, other pivotal considerations.**
- **Draft a report that summarizes highlights and recommendations for distribution to participants and other interested parties.**
- **Distill a high-level summary for a widely circulated publication and website postings.**

### **Synthesis Committee Members**

#### *Community Representatives*

Bruce Albrecht, UM/RSMAS  
Ana Barros - Duke  
Fred Carr, OU  
Ken Davis, PSU  
Marv Geller, Stony Brook  
Nicole Molders, UAK  
Bill Randel, NCAR/ACD  
Ron Smith, Yale, *Chairman*  
Ed Zipser, Utah

#### *LAOF Facility Managers*

Steve Cohn, NCAR/EOL  
Mike Daniels, NCAR/EOL  
Haf Jonsson, NPS  
Wen-Chau Lee, NCAR/EOL  
Al Rodi, WY  
Steve Rutledge, CSU  
Jeff Stith, NCAR/EOL

#### *Ex Officio*

Rit Carbone, NCAR/EOL  
Xubin Zeng, UAZ