University of North Dakota

On 4 April 2011, the UCAR membership site team (Lourdes Aviles, Plymouth State University; Bill Beasley, University of Oklahoma; and Jack Fellows, UCAR) visited the University of North Dakota (UND) as part of the process of evaluating the application by UND for full membership in UCAR. UND was a charter member of the UCAR Academic Affiliate program. We were hosted at UND by Professor Mike Poellot, a long term and active Academic Affiliate representative from UND. Mike was awarded the UCAR Science Advocacy award in both 2009 and 2010.

We were welcomed and provided a brief introduction to UND by Drs. Bruce Smith (Dean of the John D. Odegard School of Aerospace Sciences) and Joseph Benoit (Dean of the Graduate School). The UND Department of Atmospheric Science is located within the Odegard School. The UCAR site visit team provided a brief overview of UCAR and there was a general discussion with the faculty and students throughout the visit on how UCAR membership could benefit UND and how UND could further contribute to the UCAR community.

During the course of the day, UND faculty gave a broad range of presentations highlighting the UND graduate program, faculty research, and research facilities. We also toured the campus, research facilities, and met with approximately 20 graduate students. We ended the day with a reception at the home of UND President, Dr. Robert Kelly and many UND faculty attended from the department and the Odegard School. Presentations and meetings included:

- **Curriculum Overview.** Dr. Fred Remer and Professor Leon Osborne outlined the undergraduate and graduate curriculum.
- **Facilities Overview.** We were briefed on UND’s dual-polarization 5-cm Doppler NorthPol radar, computation resources, a fully instrumented Cessna Citation II jet aircraft, the Glacier Ridge Atmospheric Observatory instrumented field site, the Regional Information Weather Center, and the Surface Transportation Weather Research Center.
- **Faculty Research Presentations.** We heard presentations on the research being conducted by Drs. Xiquan Dong, Jianglong Zhang, Gretchen Mullendore, Mark Askelson, and Matthew Gilmore.

**Program of Studies and Research.** The UND Department of Atmospheric Science currently has ten faculty members. Eight of these faculty members are actively involved in research and are in tenured or tenure-track positions. There are also two full-time research faculty members. All the tenured, tenure-track, and research faculty are members of the UND Graduate Faculty. Research support staff includes a radar engineer, research instrumentation technician, and research pilot. UND offers B.S. (since 1981), M.S. (since 1998), and Ph.D. (since 2006) degrees in the atmospheric sciences. Over the past five years, they have graduated 56 B.S. and 22 M.S. students. UND currently has 23 graduate students, 17 M.S. and 6 Ph.D. students. They expect to graduate their first two Ph.D. students in 2011 (August and December). Their
Ph.D. students are required to be lead author on three papers and co-author on three papers before they can graduate. Almost none of the graduate students are from North Dakota.

**Progress in the Atmospheric Sciences.** UND conducts a program of basic and applied research in the atmospheric sciences through a range of observational, modeling, and theoretical studies. Their emphasis includes: clouds, radiation, and climate; aerosol remote sensing and forecasting; polarimetric radar measurements; data assimilation; surface transportation weather; GIS/geospatial applications; mesoscale dynamics and modeling; precipitation studies; regional climate change; applications of unmanned airborne systems to atmospheric science; satellite meteorology; convective transport; severe convective weather; cloud microphysics; and weather modification. The research efforts have led to the publication of nearly 60 articles in refereed journals over the past 5 years. Many more scholarly presentations were made at conferences. In addition, the field observational studies have created a number of quality-controlled and quality-assured data sets that are available to the scientific community.

**Participation in UCAR Activities.** UND has been involved in UCAR governance (via the Academic Affiliates program) and research collaborations with both NCAR and UCAR members, including:

- With Marcia Politovich (NCAR RAL) through participation of the UND Citation in the 2004 Winter Icing and Storms (WISp04) project.
- With Andy Heymsfield (NCAR MMM) through operation of the UND Citation in the Mixed-Phase Arctic Cloud Experiment (MPACE, 2004) and the upcoming Midlatitude Continental Convective Cloud Experiment (MC3E, 2011)
- With Paul Kucera (NCAR RAL) through operation of the NorthPol radar, Citation aircraft, aerosol sensors, and data analysis in the Polarimetric Cloud Analysis and Seeding Tests 2 and 3 (POLCAST 2 and 3).
- Funded by NCAR/RAL for flight scientist, data quality control and assurance, data analysis, and training efforts as part of weather modification research and training programs in Mali (2007, 2008), Saudi Arabia (2007, 2008), and Burkina Faso (2007).
- With Paul Kucera on radar/model comparisons and with NCAR Scientist Mary Barth (ACD/MMM) through the Upper Troposphere/Lower Stratosphere group and the DC3 Experiment working group
- UCAR Visiting Scientist Program
- Conducted the SNOwD UNDER project (Student Nowcasting and Observations with the DOW at UND: Education through Research) (http://www2.ucar.edu/magazine/features/different-kindsnow-day)
- UND has collaborative research activities with University of Maryland, Colorado State University, Texas A&M, UCLA, University of Oklahoma, University of Illinois Urbana-Champaign, University of Alaska Fairbanks, University of Utah, University of Michigan, Central Michigan University (Affiliate), Jackson State University (Affiliate), Howard University, University of Minnesota, Georgia Institute of Technology, and the Naval Postgraduate School.

**Recommendation:** The Membership Committee concludes that the University of North Dakota clearly meets the UCAR membership criteria, and accordingly recommends that the Member Representatives elect the University of North Dakota a UCAR member.

End of Memorandum