Ladies and Gentlemen:

Welcome to the 48th annual meeting of the UCAR Members! In this, my annual report to you, I summarize a few of UCAR’s program highlights over the past year, which include a sample of science, facilities, field programs, education, service, and management activities. My report (as well as Eric Barron’s and Jack Fellows’ reports for NCAR and UOP, respectively) contains additional examples of progress in the areas of science, facilities, and service to the universities and broader community:

NCAR report:  [http://www.ucar.edu/governance/meetings/oct08/ncar_report.pdf](http://www.ucar.edu/governance/meetings/oct08/ncar_report.pdf)

UOP report: [http://www.ucar.edu/governance/meetings/oct08/uop_report.pdf](http://www.ucar.edu/governance/meetings/oct08/uop_report.pdf)

I would like to start my report by welcoming Eric Barron as the new NCAR Director. Eric, the former Dean of the Jackson School of Geosciences at the University of Texas-Austin and Dean of the College of Earth and Mineral Sciences at Penn State, was selected after a thorough international search and joined us on 1 July 2008.

Eric began his career at NCAR in 1976 on a CRAY Supercomputing Fellowship. He brought his experience as a geologist to NCAR at that time and began working with NCAR climate scientists on paleoclimate research, a topic of great interest to him today.
As Eric joins us, we say thank you and farewell to Tim Killeen who served ably as NCAR Director for eight years. Tim had many accomplishments as NCAR Director, including a major reorganization, initiation of plans for an upgraded supercomputer center in Wyoming, bringing HIAPER on line, and hiring many new scientists to rejuvenate NCAR, all while pursuing an active research program of his own. Tim moves on to another important community leadership position as Assistant Director for Geosciences at the National Science Foundation, where we all wish him the very best.

Tim Killeen and Larry Winter at Tim’s farewell party

1.0 SEVERAL HIGHLIGHTS OF THE PAST YEAR

The following are some of the highlights since the 2007 UCAR meetings.

1.1 UCAR Wins Competition to Manage NCAR

As you know, NSF announced four years ago that it would compete the management and operation of NCAR, for the first time in NCAR’s over 40-year history. After more than four years of preparation, UCAR submitted a proposal to NSF in August 2007. The proposal was reviewed well by anonymous reviewers who said:

“Since its founding in 1960, UCAR has provided management oversight during which time NCAR has evolved into a world-class institution that has provided outstanding science, increasingly fostered diversity within the community it serves, and provided a range of community-wide scientific infrastructure and facility needs of the atmospheric and related science community in the U.S.  The Review Panel wants to note that the UCAR/NCAR proposal is intellectually comprehensive and impressive in its detail.”

“The review panel, therefore, based on nine individual reviews submitted by Review Panel Members and the discussions and determinations made during the October Review Panel meeting, recommends unanimously and without reservation that NSF make an award for five years (that as outlined in Solicitation 07-542 is extensible after appropriate review to ten years) for the management and operation of the National Center for Atmospheric Research by the University Corporation for Atmospheric Research.”

I thank the many UCAR staff who helped prepare the proposal and the UCAR Board of Trustees for critical advice and support.
1.2 NCAR Budget Shortfalls Continue to Cause Reductions in Programs

For the past several years, NCAR, like many universities and research laboratories, has suffered from federal science budgets that have not kept up with programmatic needs. NCAR’s base NSF budget, for example, has increased at an average rate of 2.6% a year since FY04, which is well below inflation. This, coupled with new, high priority programs, has resulted in a cumulative shortfall of about $14M over the period FY04-FY08. Over the past five years we have had to make painful cuts in all areas of our scientific and facilities programs – including climate, weather, atmospheric chemistry, solar physics, social sciences, and certain computational and observational facilities and services. In addition, this year we have postponed all UCAR and NCAR raises from FY08 to FY09. Despite these negative impacts, NCAR, together with the UCAR Board of Trustees and the National Science Foundation, have worked to support important priorities in computing, observing facilities, modeling, and other areas that are essential for a national center. A more detailed statement on NCAR’s budget challenges is available at: [www.ucar.edu/news/releases/2008/reductions.jsp](http://www.ucar.edu/news/releases/2008/reductions.jsp).

As described below in Section 2.3, UCAR is working hard with the community to increase the federal funding for science and education in the U.S. In particular, we have led a community effort to produce a transition document for the new Administration and Congress ([www.ucar.edu/td](http://www.ucar.edu/td)). This document highlights the importance of weather and climate to the U.S. and makes recommendations to increase society’s resilience to severe weather and climate change.

1.3 NCAR Computer Progress and Challenges

NCAR provides robust, reliable, and secure high performance computing resources as part of its mandate to offer an end-to-end research environment for over 1300 users in a wide variety of disciplines including climatology, meteorology, oceanography, astrophysics, fluid dynamics, and turbulence. The constantly increasing demands of the scientific community require NCAR’s Computational and Information Systems Laboratory (CISL) to increase the computational capacity of its supercomputer resource at regular intervals. CISL took delivery and deployed an IBM Power 575 hydro-cluster supercomputer, based upon IBM’s POWER6 dual core microprocessor chip technology. Named bluefire the supercomputer went into full production on 2 July 2008. It was ranked the 30th most powerful computer in the world at the time of its commissioning. The new IBM POWER6 bluefire nearly tripled the computing capacity previously available to the NCAR/UCAR scientific community.

Over the past year, NCAR worked with NSF and partners in Wyoming to secure approval for the NCAR Supercomputing Center (NSC) project. As part of an internal project review process, NSF commissioned a subcommittee of the NSF Geosciences Advisory Committee (GEO-AC) in Fall 2007 to examine and make recommendations regarding the supercomputing needs of the atmospheric sciences community. This panel of community experts completed their work in Winter 2008 and delivered its final report to the GEO-AC in April. The panel found that “the National Center for Atmospheric Research (NCAR) plays a critical role in providing high-end computing facilities, leadership in developing community models, and data curation for the ATM research community, and will continue to do so in the future.” The panel also found that “the computing needs of the ATM research community are rapidly outstripping the ability to provide them within the NCAR Mesa Lab” and that “any additional computing facilities aimed at supporting ATM science must be tightly integrated with the existing facilities provided by NCAR, e.g. by means of high-speed networks and shared file systems.”
Supercomputing power at NCAR and some of the community models supported by NCAR

In response to the panel findings and recommendations, NSF decided to request a proposal from NCAR, UCAR, and Wyoming for the development of the NSC. NCAR and UCAR are discussing with NSF the exact pathway to be followed for proposal submission and formal project approval. Meanwhile, NCAR and UCAR are working with the Wyoming partners to develop a process that will allow for the start of the formal facility design process as soon as possible this fall.

1.4 New COMET Satellite Modules

Two newly published satellite meteorology modules have been developed: "Creating Meteorological Products Using Satellite Data" and "Microwave Remote Sensing: Land and Ocean Surface Applications". The first module is an hour in length and presents an overview of how satellite data are turned into the satellite products used by operational forecasters and the research and educational communities. It may be accessed at: http://www.meted.ucar.edu/EUMETSAT/products/.
The second of these two satellite meteorology related modules is two-hours long and reviews the advantages of microwave remote sensing from polar-orbiting platforms and briefly highlights some of the unique spectral characteristics that allow for differentiation of varying surface types and properties. It also includes more in-depth discussion of snow cover and water equivalent, sea ice, surface wetness and soil moisture, and sea surface temperature. The module is available at: http://www.meted.ucar.edu/npoess/microwave_topics/land_ocean/.

1.5 Weather Research and Forecast Model (WRF)

The Weather Research and Forecast (WRF) model (www.mmm.ucar.edu/modeling/wrf/index.php) is now being used by more than 7,700 users in 113 different countries worldwide for research and operational forecasts.

![Locations of countries that have users of WRF. Blue dots are countries which use WRF in operational real time weather forecasting. Red dots are research users. A total of 7,742 users from 113 countries were registered as of 15 July 2008.](image)

2.0 UCAR CORPORATE ACTIVITIES

2.1 Governance and Membership

UCAR Board of Trustees. Chairman: Eric Barron (University of Texas at Austin until 1 July); Acting Chairwoman: Rana Fine (University of Miami RSMAS from 1 July - present):
The UCAR Board continues its schedule of three meetings per year – one each in February, May and October. The May meeting is held at the National Science Foundation in Arlington, VA. The Personnel and Audit and Finance Committees of the Board each meet twice a year just prior to the February and May meetings and conduct additional business by conference call, if necessary.
This past year, in addition to its regular responsibilities, the Board has been primarily concerned with the on-going budget issues, the NCAR Supercomputer Center in Wyoming, and the UCAR proposal to NSF to manage NCAR. In addition, the Board was very pleased to approve the search committee’s recommendation and my choice for new NCAR Director, Eric Barron.

UCAR Trustees 27 February 2008

The President’s Advisory Committee on University Relations (PACUR).
Chairwoman: Lisa White (San Francisco State University):

The PACUR, a committee that is advisory to the UCAR President on a range of issues, meets twice a year – once in the fall after the Annual Members’ Meeting in Boulder and again at a university campus in the spring. This past spring, we were hosted by then Chairman of the UCAR Board of Trustees, Eric Barron, at the University of Texas at Austin.

At the Austin meeting, the committee planned this year’s Annual Meeting and heard reports from the subcommittee on the non-core proposal review. The PACUR is an active group ably led by Lisa White. I value their advice, and the meetings are very interesting, lively and helpful to me and to UCAR.

PACUR and UCAR staff at the University of Texas at Austin, 15 April 2008

Members’ Nominating Committee. Chairman: Bob Ellingson (Florida State University):

The Members’ Nominating Committee met in Boulder this past June to consider the nominations sent in response to the solicitation for candidates from the UCAR Members, Affiliates, PACUR and NCAR
and UCAR management. The Nominating Committee report with candidate biographies and personal statements, along with a list of committee nominees is available at: http://www.ucar.edu/governance/meetings/oct08/nom_comm_rpt.shtml.

Membership Committee. Chairman: Robert Weller (WHOI):
The Membership Committee conducted the work of reviewing renewal application materials and writing its report by email this year. You can see the report of the committee at: http://www.ucar.edu/governance/meetings/oct08/memb_comm_rpt.shtml.

We welcomed our 71st UCAR Member, the University of Delaware, in October 2007 and were honored to have the University of Connecticut and Brown University apply for Membership to UCAR. I am grateful to Jack Fellows, Jim Miller and John Merrill for taking the time to visit those institutions to let them know of the work being done and opportunities available at UCAR, as well as to hear about the programs at their institutions. The Membership Committee will recommend that the Members vote to approve them as our 72nd and 73rd UCAR Members at our October meeting.

The Membership Committee also approved the University of Texas at Arlington and Creighton University as new Academic Affiliates. Membership Committee approval of the application is all that is required for Academic Affiliation.

2.2 Communications

Media (http://www.ucar.edu/news/):

At this writing, NCAR’s budget problems and layoffs are getting national media attention, with articles in the New York Times and Nature and a longer piece appearing in Science the week of 22 August (http://www.sciencemag.org/cgi/content/full/321/5892/1032). This has been a baptism of fire for Eric Barron, who has worked closely with UCAR Communications and me to be as responsive as possible to reporters’ questions. Both Eric and I have spent hours analyzing budget data and making ourselves very available to the press. We have tried to redirect the media focus to the overall health of NCAR in particular and science funding in general. A press teleconference on the transition document, laying out recommendations for the new administration and Congress, occurred on 20 August (http://www.ucar.edu/news/releases/2008/recommendationsconf.jsp).

In broader terms, UCAR Communications’ media activities continue to diversify, in line with the evolution of science journalism away from print and toward cable and the Web. We are producing more visuals to accompany our press releases and holding more media events like the teleconference mentioned above. We also continue to collaborate with other institutions in publicizing our work. This year we held media days on the Sunrise balloon launch and the acquisition of our bluefire supercomputer. We held a national teleconference in conjunction with the AMS on weather modification and another with NASA on Arctic cloud cover and ice melt. We worked with NOAA and the USDA to publicize reports on climate change as well.

Our 37 press releases for the past twelve months (http://www.ucar.edu/news/releases/index.jsp) covered news of a broad range of research and technologies, from Alfven waves to aviation turbulence, coral reefs, geoengineering, wildfire emissions, and field programs. One of our most widely covered stories was Project Budburst, a citizen science program through which families can chart on line the arrival of
Spring in their own backyards. Thanks to new, analytic software we are now able to better quantify our work. At right is a graph of media pick-up for the first six months of 2008.

The spike in April reflects articles on Simone Tilmes’ research on the potential harm of geoengineering to the ozone layer, Kathleen Miller on climate change and water impacts, Jennifer Kay on Arctic ice vulnerability, and Kevin Trenberth and Jerry Mahlman on the death of Ed Lorenz. A UCAR Communications tornado safety tip sheet was picked up by a number of media outlets. Spikes in May reflect the USDA report (spokesperson Peter Backlund) and the new IBM supercomputer. In June a number of media outlets covered the CCSP report with commentary by Jerry Meehl about changes in weather and climate extremes.

As we produce more graphics and animations, we are hearing anecdotally that our visuals are often used in scientific presentations; potential collaborators frequently contact researchers after seeing publicity on their work.

Print and Electronic Publications:

We have begun an examination of all of our print products to be sure we are optimizing the balance between print and Web information, taking into account new technologies, costs, and readers’ preferences. Following a readers’ survey we are redesigning our employee newsletter Staff Notes to appear less often but in color, with more timely features appearing between issues on the Web. The first of the new issues will appear in October. A UCAR Quarterly redesign will follow.

The 2007 edition of Highlights, which debuted at the time of this report last year, has gone on to win third place in the Society for Technical Communication international competition, after winning a first place for both design and content in the regional competition. Staff Notes won a second place internationally and was commended for using a “clear, concise journalistic style to convey a wide range of technical news and research information.”

Web:

Since the debut of the new NCAR website last summer, the need for Web collaborations within NCAR and between NCAR and UCAR has intensified. We are in the final stages of implementing a new content management system that will allow users across the institution to upload and share information easily and in a consistently organized fashion. UCAR Communications continues to provide much of the content for the upper level NCAR and UCAR sites. We are currently developing an opportunities site that will pull together visitor programs, postdoctoral openings, and other collaborative activities. It will also be available on DVD for use in outreach venues such as booths as meetings.
In March, through a collaboration with NSDL, taped NCAR lectures and other educational materials became available through iTunes U. Seminars will be added as soon as technical and permissions issues are worked out.

Photography:

With the growing importance of television and the Web, demand for our photographs and video footage is also increasing. This year, with joint support from EOL, our staff photographer Carlye Calvin documented four field programs: three national and one international. Two more are on the near horizon. Her photos and video footage enhance our websites, are picked up by the press, and become virtual photo albums available to collaborators. Most prominent photos are highlighted on the Digital Image Library (http://www.fin.ucar.edu/ucardil/), where thousands of photos can be downloaded for free in multiple resolutions.

Archives:

This spring we received an original architectural model of the Mesa Laboratory through a gift from I.M. Pei. It will form the heart of a new architectural exhibit, being produced jointly by Archives/Communications and Education and Outreach and due to open at the end of October. We have also received scans of a number of original architectural plans and early photographs.

Through a collaboration with the NCAR library, we have put Warren Washington’s archival papers online (http://www.ncar.ucar.edu/washington/). The collection, when completed, will include a sample of correspondence, memoranda, reports, speeches and lectures, articles, teaching materials, clippings, awards, photographs, and other materials.
The strategic direction for this office is based in large part on the FY09 Advocacy Goals and Actions document which may be found at: http://www.ucar.edu/oga/pdf/Advocacy_Plan_FY09.pdf. Progress is dependent upon the involvement of the broad atmospheric sciences community, and I would like to thank all of you who participated this year in our efforts to educate Congress about our science and the resources needed for the community to serve the country most effectively. This makes an enormous difference on Capitol Hill, especially when federal dollars are as hard to come by as they are now. The interest in and awareness of our work is at an all-time high – resources will surely follow if we are creative and persistent.

As you are painfully aware, the federal budget process for FY08 was distinguished as being one of the most frustrating for science in memory. Community efforts to garner support from both the White House and Congress met with great success up to the very last minute when excellent increases for NSF (in particular) and NOAA were traded off in final Omnibus Bill negotiations. The FY09 process is equally frustrating to date with even better increases being supported, but a Continuing Resolution at FY08 levels is almost guaranteed until just after the inauguration, if not for the entire year. Numerous activities detailed below are targeted toward communicating the urgency of the situation. This community cannot sustain flat budgets for years on end without serious consequences for this country.

Congressional Activities:

The OGA staff works closely with the staff of Lewis-Burke Associates in DC throughout the year to make the activities listed below possible. April Burke and her staff (Joel Widder, in particular) provide advocacy strategy, agency and Hill contacts, leadership with alliances, and assistance with events in Washington. They alert us to relevant issues concerning legislation as well as provide us with analysis of pending bills which we are then able to share with all of you.

Partnerships:

Teaming with other organizations to make our case to the White House and Congress provides effective leverage on the Hill when those partners are known and respected. On behalf of the community, UCAR is an active member of the Friends of NOAA (multiple letters drafted and signed onto this year), the Coalition for National Science Funding (participation in the annual exhibition), the Congressional Hazards Caucus Alliance, and NASULGC’s Board on Oceans and Atmosphere (BOA). We hold additional memberships in the Alliance for Science and Technology Research in America, Friends of the STEM Ed Congressional Caucus (www.stemedcaucus.org/), and the U.S. Geological Survey Coalition. UCAR continues to staff the Weather Coalition (http://www.weathercoalition.org/), the membership of which has grown this year through the addition of Northrop Grumman Corporation and Education Research Services. The Coalition submitted FY09 Appropriations testimony, joined in numerous community advocacy activities, actively supported hurricane research legislation, and hosted a Town Hall at the January 2008 AMS Annual Meeting titled, “Is the Weather Enterprise Ready for the Next Administration?”

In an effort to reach out to non-governmental organizations doing work in climate change research and policy, the UCAR Board of Trustees held a discussion during the May meeting in DC with NGO staff. The main focus was how NCAR’s research can help to inform relevant policy work. The NGOs
participating included the World Resources Institute, the Pew Center on Global Climate Change, the Union of Concerned Scientists, the Natural Resources Defense Council, Resources for the Future, The Heinz Center, and the Western Governors’ Association (at later meetings). To continue the discussion and work toward possible collaboration on climate adaptation issues, the NGOs are being invited to participate in the UCAR annual meeting in October.

In order to continue encouraging private sector partners and the public to support the work of federally funded laboratories, UCAR led the effort to create a new non-profit organization, CO-LABS (www.co-labs.org). The overall mission of CO-LABS is to educate the public, businesses, educational organizations, and government entities about the value of federally funded research.

Legislative Issues:

On behalf of the UCAR community, OGA submitted testimony on FY09 Appropriations for NSF, NOAA, NASA, the DOE Office of Science, the Federal Aviation Administration, and the Federal Highway Administration. UCAR also advocated for increased science budgets for the final resolution of the FY08 Omnibus Bill and the subsequent supplemental appropriation. In addition, UCAR devoted advocacy efforts towards legislation addressing ocean acidification, creation of a national climate service, reauthorization and reorganization of federal climate research, climate modeling, hurricane research, and inclusion of science research support in greenhouse gas emission reduction legislation. OGA has launched a page on its website to give the community information on climate legislation – please see http://www.ucar.edu/oga/html/climate/index.html.

Action Alerts:

This year to date (18 August), I have issued Action Alerts to the UCAR community requesting full funding for the FY09 CJS Appropriations Bill for NSF, NOAA, and NASA; support for a Dear Colleague Letter on the FY09 DOE Office of Science increase; a letter to the President and Congressional Leadership on disappointment with and the potential impacts of the FY08 Omnibus Bill; a request to add $500 million for basic research in the FY08 Supplemental Bill; and support for the Cardin Amendment for a climate science fund in the Climate Security Act. Thanks to all of you who answered these requests with your own letters or through allowing the use of your signature. I urge all of you to participate as the FY09 budget process continues.

Congressional Hearing Witnesses from UCAR:

- 28 March 2008: Rick Anthes, before the Commerce, Justice, Science Appropriations Subcommittee on the FY09 budgets for NSF, NASA and NOAA.
5 June 2008: Joanie Kleypas before the House Science and Technology Committee’s Subcommittee on Energy and Environment on the Federal Ocean Acidification Research and Monitoring Act (HR 4174).

22 July 2008: Kevin Trenberth testified before the full Senate Environment and Public Works Committee on “An Update on the Science of Global Warming and Its Implications.”

Visits to Capitol Hill:

UCAR staff and leadership and Lewis-Burke Associates staff meet with Congressional and Executive Office staff (Office of Management and Budget in particular) regularly throughout the year. In May, while in Washington, DC for the annual spring Board of Trustees meeting, UCAR Trustees and leadership devoted the majority of a day to advocacy and education efforts on the Hill. UCAR Trustees had numerous meetings with key science research Appropriations and Authorization Committee staff to address issues of concern to the whole community. Several Trustees met with Members of the House Energy and Commerce Committee, which is actively considering global warming legislation, in order to provide input on recent science findings and science priorities. Along with UCAR senior staff, the following board members participated in Hill visits in May and at other times during the year: Len Pietrafesa, Steve Ackerman, Dennis Hartmann, Eric Barron, Bob Palmer, Frank Nutter, Steve Rutledge, Richard Truly, Bob Dickinson, and Kerry Cook.

Visits to UCAR/NCAR/UOP from Washington, DC:

- **Representative Diana Degette**, CO District 1 and member of the House Energy and Commerce Committee.
- **Representative Mike Simpson**, ID District 2.
• **Kathleen Frangione**, the Energy and Environment Legislative Assistant for Senator John Kerry (D-MA).
• **Leslee Gilbert**, the Minority Staff Director of the House Science and Technology Committee.
• **Ann Zulkosky**, Majority Professional Staff on the Senate Commerce, Science, and Transportation Subcommittee on Oceans, Atmosphere, Fisheries, and Coast Guard.
• Candidate **Jared Polis** (CO District 2) is likely to take Mark Udall’s seat in Congress.
• **Ben Brown**, Senator Salazar staffer.
• **United Power**, Board and Senior Management.
• **Department of State's International Visitor Leadership Program**, Canadian Delegation.
• **Congressman John Hall** (D-NY), member of the Select Committee for Energy Independence and Global Warming will visit us 26 August.

**Capitol Hill Briefings Organized by UCAR:**

On 24 June 2008 “The Energy Challenge of Climate Change: More Urgent Than We Thought.” Speakers were Tom Wigley, NCAR, and Jae Edmonds, Pacific Northwest National Laboratory and University of Maryland.

An additional briefing is now being planned for September. The focus will be the Transition Document (see below) and the science that sets the context for the recommendations to the new Administration and new Congress.

**Transition Document:**

Every four or eight years, we have an opportunity to influence a new Administration and Congress. UCAR, under the leadership of Jack Fellows, has led a highly leveraged effort this year that includes a broad and growing group of partners including the American Meteorological Society, the American Geophysical Union, the Weather Coalition, the Alliance for Earth Observations, the Consortium for Ocean Leadership, the National Association of State Universities and Land-Grant Colleges, and the Consortium of Universities for the Advancement of Hydrologic Science. To see the document, including community priorities as well as an implementation plan and budget, and to make nominations for key weather and climate leadership positions in the new Administration, please go to:

[www.ucar.edu/td](http://www.ucar.edu/td).

### 3.0 UCAR FINANCE AND ADMINISTRATION

UCAR Finance and Administration (F&A) provides human resources support; accounting and financial management; IT support; and safety, facility, and business services for UCAR.

F&A organized and hosted the second *Measuring Up* conference in April 2008. The conference focused on presentations and workshops uniquely suited to organizations doing federally funded research and the administrative issues and challenges facing them. Attendance was over 140 and included financial, administrative, and facilities staff from universities, federal labs, and other non-profits.
3.1 Business Services

In November 2007 NSF issued a competitive solicitation for the management and operation of NCAR. Upon completion of its competitive process, NSF notified UCAR in May 2008 that it had been selected for the award of a new cooperative agreement to manage NCAR. Since that announcement, UCAR F&A and the NCAR Directorate have been negotiating the terms and conditions of the new agreement with NSF. Under the new agreement, UCAR will continue to manage NCAR for another five years, through FY2013, with the proviso that the agreement can be extended for an additional five years after appropriate reviews.

UCAR F&A and UOP’s COSMIC program negotiated a three-year extension to the program with the NSF, NOAA, NASA, the U.S. Air Force, and Taiwan’s National Space Organization. The extension will continue ground station and data analysis support for the highly successful GPS radio occultation (RO) satellite program and keep RO data flowing to the more than 800 users from over 42 nations. F&A and COSMIC are now working with these same sponsors to develop a follow-on mission to replace the COSMIC constellation in 2012.

The space planning office implemented a long awaited “hoteling” program for the institution. Under this program, divisions and programs can reserve furnished visitor space at each of our campuses on an as-needed basis. Formerly, divisions and programs had to accommodate visitors within the confines of their existing space. The program is intended to maximize the use of available space for all visitors and staff.

Business reengineering is one of F&A’s strategic goals. As a result of its streamlining efforts, the Contracts Office has realized cost savings for the institution in excess of $2 million this past year. One of the projects that resulted in cost savings as well as improved efficiency was a project to consolidate software purchasing and “harvest” software licenses that may have been underutilized and to reduce redundancy by using existing licenses rather than purchasing new ones.

3.2 Human Resources Support

The highly successful Executive Leadership Program (aimed at senior levels of UCAR/NCAR/UOP management) had its third class complete the program. To date, over 50 senior managers have taken advantage of the program. ELP is complementary to UCAR’s Leadership Academy program, which is geared toward middle managers. Both programs have been shown to improve professional effectiveness. Human Resources continues to develop programs to manage rising health care costs and has introduced a new approach to reduce the cost of health insurance for retirees and UCAR. A major review of management compensation was completed to match the current organization of NCAR.

The UCAR Childcare Center continues to thrive, becoming the first eco-friendly childcare facility in Colorado. The Eco-Healthy Childcare Program certifies that the center staff is proactively using eco-healthy practices, while at the same time instilling earth-friendly practices, such as recycling all possible materials, to the children in the Center.
3.3 Financial Management and IT Support

UCAR Finance and Administration continues to work closely with NCAR and UOP in the development of a suite of new financial management tools through the Financial Management Tools (FinTools) Project. FinTools will integrate with UCAR’s existing accounting and human resources information systems, providing state-of-the-art financial management tools that will enable managers to make informed decisions on how best to allocate resources, maintain the financial health of their programs, and anticipate future opportunities and challenges.

Following an extensive requirements definition process, in June 2008 stakeholders formally approved business requirements for the following high-priority areas:

- Budget Projections and Analysis
- Staffing Projections and Analysis
- NCAR Annual Budget Review
- Proposals and Awards
- Purchasing and Payments (Including Travel)
- Accounts Administration

The project is now moving into the planning and procurement phase. During this phase UCAR will decide which systems to purchase and which to develop in-house as well as evaluate and select vendors and refine architectural designs. The FinTools lead team expects to implement the new system throughout the organization within the next 18–24 months.
3.4 Safety Programs

In June 2008 UCAR’s Safety and Site Services provided management of safety, security and medical emergencies for over 500 people attending the GLOBE Learning Expedition (GLE) 2008 and Annual Meeting. The event was held in Cape Town, South Africa and involved housing, securing, and transporting attendees between university dorms, classrooms, and potentially hazardous and dangerous field sites. Attendees included 275 students, ages 12-18, as well as an additional 250 adults/teachers and chaperones. Risks included social unrest, aggressive baboons, poisonous snakes, and weather (heat/rain/wind). No serious accidents or injuries occurred. Critical life saving medical treatment was provided to one attendee who had a pre-existing medical condition and to several students who suffered from travel related illnesses. All attendees left the conference in good health.

4.0 Community Building

In April 2007 UCAR launched a pilot community building program (www.cbp.ucar.edu) in order to catalyze and coordinate activities that contribute to UCAR’s strategic goal of developing a diverse atmospheric science workforce. Activities in 2008 have focused on the SOARS program, the UCAR Africa Initiative, partnership with the American Indian community around climate change issues, and planning a Diversity Summit for the Science of Global Change.

4.1 Significant Opportunities in Atmospheric Research and Science (SOARS)

SOARS is dedicated to increasing the number of students from historically under-represented groups enrolled in graduate programs in the atmospheric and related sciences, with the goal of increasing diversity within the scientific community of the future. In recent years SOARS has adopted an inclusive definition of diversity and welcomed students with disabilities, gay and lesbian students, and first-generation college students.

SOARS is a multiyear undergraduate-to-graduate bridge program that is equal parts research internship, mentoring program, and learning community. At the heart of SOARS is a ten-week summer immersion program at UCAR or the laboratories of a SOARS sponsors. In addition to performing original research, protégés prepare a scientific paper, participate in an eight-week scientific writing and communication workshop, and present their results to the scientific community.
Protégés are supported by up to four mentors including a research mentor, writing and communication mentor, community mentor (to help welcome protégés to Boulder), and a peer mentor – a returning SOARS protégé who models effective scientific and professional practices. SOARS protégés are also part of a supportive learning community of diverse peers that live and work together.

In addition, protégés are supported throughout the academic year, including ongoing mentoring and career advice, need-based tuition assistance, and funds so they can attend conferences and present their summer research.

2008 Summer Highlights:

Twenty SOARS protégés from across the United States completed the 2008 summer program. Twelve protégés returned for their second and fourth SOARS summer, while eight were brand new to SOARS. Thirty-seven UCAR/NCAR/UOP employees participated as SOARS mentors, along with 11 scientists from outside UCAR. A complete listing of summer 2008 protégés, mentors, and research topics is available online at: http://www.soars.ucar.edu/protegementors.php.

**SOARS protégé Roque Céspedes (seated) interacts with (from the left) Asuka Suzuki-Parker, a graduate student from Georgia Tech visiting NCAR, and mentors Greg Holland and Rich Loft**
Summer 2008 included a number of innovations. We welcomed a student with cerebral palsy and our first student from a tribal college. Following the suggestion of last year’s protégés, we focused our seminar series on topics about scientific careers – including topics like Bringing Culture to Work, Faith and Science, The Future of Science, and Myths and Misconceptions about Doing Science. We continued to expand the scope of research opportunities available to protégés; in addition to research in the physical sciences, SOARS projects included a curriculum development project about hurricanes, field research on social influences on the ecological conditions in the Galapagos, and an investigation of the impact of climate change on water resources and policy for the Kickapoo nation.

In spite of the strong performance of most protégés, two protégés (one SOARS and one RESESS) were unable to meet program requirements and contribute positively to the SOARS community. We are considering a number of changes to the program, including enhanced emphasis on conflict resolution skills, drug and alcohol awareness training, roommate contracts, and contracts covering program expectations and professional responsibilities. In the next years, SOARS staff will also undergo training to better recognize signs of emotional or psychological distress and refer protégés to appropriate resources.

In the fall of 2008, seven SOARS protégés will enter graduate programs, including atmospheric sciences at Cornell, Purdue, Howard, and North Carolina A&T State; climate and society at Columbia; energy and geo-environmental engineering at Penn State; and computational science at University of Texas at Austin.
1996-2008 Program Results:

Since the 1996 inaugural summer, 122 protégés have participated in SOARS. Over 90% of the SOARS protégés and alumni are members of underrepresented groups, and 60% are female. Tables 1 and 2 track the protégés’ pathways and their scientific contributions as of September 2007. A summary of protégé contributions to the scientific community, with links to complete lists of oral presentations, panels, posters, and peer-reviewed publications, are available at: http://www.soars.ucar.edu/fundersoverview.php.

Table 1: Protégé Pathways as of August, 2008

<table>
<thead>
<tr>
<th>Pathway Description</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entered STEM workforce with a Ph.D.</td>
<td>5</td>
</tr>
<tr>
<td>Including a faculty member at a UCAR member and an NCAR project scientist</td>
<td>6</td>
</tr>
<tr>
<td>Earned an M.S. in science or engineering</td>
<td>49</td>
</tr>
<tr>
<td>Are currently in graduate programs</td>
<td>38</td>
</tr>
<tr>
<td>Have completed a B.S. in STEM</td>
<td>95</td>
</tr>
<tr>
<td>Are presently undergraduates</td>
<td>13</td>
</tr>
<tr>
<td>Left program to pursue other fields</td>
<td>9</td>
</tr>
<tr>
<td>Failed to meet program requirements</td>
<td>13</td>
</tr>
</tbody>
</table>

Table 2: Protégé Scientific Contributions as of August, 2008

Since 1996, protégés have contributed or earned:

<table>
<thead>
<tr>
<th>Contribution Description</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presented at national or regional conferences</td>
<td>193</td>
</tr>
<tr>
<td>Made oral presentations or panel participants at STEM conferences</td>
<td>71</td>
</tr>
<tr>
<td>Refereed, co-authored papers from summer research</td>
<td>18</td>
</tr>
<tr>
<td>AMS graduate fellowships</td>
<td>3</td>
</tr>
<tr>
<td>NSF graduate fellowships</td>
<td>3</td>
</tr>
<tr>
<td>NASA pre-doctoral fellowships</td>
<td>4</td>
</tr>
</tbody>
</table>

Current Funding and Future Directions:

In 2008 SOARS sponsors included NSF-ATM, NOAA's Office of Global Programs, NOAA's National Ocean Service, CIRES, and Colorado State University’s “Multi-Scale Modeling of Atmospheric Processes” project. SOARS continued its partnership with Research Experience in Solid Earth Science for Students (RESESS), which seeks to adapt the SOARS model for the solid Earth community.

In the next year SOARS will continue to collaborate with the growing number of internship programs in NCAR to share recruiting and applications and placing students appropriately. As a long-term goal, SOARS would like to work with an oceanography partner to develop a similar mentoring program in physical oceanography, which faces similar demographic challenges.

4.2 The Africa Initiative

The purpose of the Africa initiative (www.africa.ucar.edu) is to build a sustainable partnership between UCAR and African institutions in order to pursue research and applications for the benefit of the African people. The initiative is built on the following values:

- Involve genuine collaboration with African institutions.
- Focus on institutional capacity building and research support.
- Explore science research themes that are critical to Africa and important for the world.
- Leverage UCAR/NCAR/UOP infrastructure and resources to improve lives in Africa.
Fred Semazzi Sabbatical:

In August 2007 Professor Fred Semazzi, from North Carolina State University, began a nine-month sabbatical at UCAR to help lead the Africa Initiative. Fred focused on building connections between UCAR/NCAR/UOP activities and the university community in the U.S. and abroad. His research focused on further developing WRF as a test-bed for numerical weather prediction research in Africa and on investigating rainmaking weather systems over Africa. He also worked on radar and GPS data assimilation over Africa with NCAR's Advanced Study Program and COSMIC scientists, respectively.

Fred also collaborated with UNAVCO (a UCAR-like consortium of universities dedicated to advancing Earth science using GPS techniques to measure the Earth’s crust) and UCAR’s own COSMIC program to help locate a GPS ground receiver in Entebbe, Uganda. In addition to solid Earth data, this receiver – with an additional instrument pack funded by the Community Building Program – allows real-time monitoring of perceptible water, an important supplement to the sparse network of meteorological observations in Africa.

Proposal to Use Weather Prediction to Manage Meningitis Vaccinations:

As of August 2008 Google.org is entering final negotiations to support a UCAR/NCAR proposal to design and implement a pilot decision support model that integrates short-time scale weather predictions with up-to-date epidemiological information to guide the deployment of meningitis vaccines in central Africa. This proposed decision support model is built on the well-documented correlation of the onset of Meningitis epidemics and the dusty season, and the cessation of the epidemic with the start of the monsoon. This system will also serve as a pilot-node and test-case for Google.org’s vision of an Earth-gauging network that incorporates environmental and other data into an integrated early-warning system to improve health, food security, development, and conservation outcomes.

By collaborating with Africa partners, North Carolina State University, and Columbia’s International Research Institute for Climate and Society, we will build a small-scale pilot of the decision support model to produce a measurable decrease in meningitis deaths, identify the critical paths from data integration to public health outcome, and evaluate the economic value of such data integration. The proposal is important because it positions UCAR to leverage additional resources for research and capacity building in Africa, develops collaborative relations with African scientists, and pioneers UCAR’s relationship with foundations.

4.3 Partnering with Indigenous Communities around Climate Change

The goal of these partnerships is to support North American tribal efforts to enhance their own scientific and adaptive capacity around climate change. Success depends on UCAR playing a supporting role in an Indian-led agenda for climate change research and education.

In the early stages of this partnership, we have learned some important things about working in Indian country:
Climate change, like all things related to the landscape, is intimately connected to identity and sovereignty.

Scientific expertise is one among many skills indigenous peoples employ in relation to their homelands.

Climate change research and education are embedded in decision-making about economic development, energy, public health as well as cultural preservation, language, and tribal sovereignty.

Planning for Seven Generations Conference:

UCAR and NCAR, along with the American Indian Alaska Native Climate Change Working Group (http://www.haskell.edu/aiianccwg/Working%20Group%20Site.html), hosted the Planning for Seven Generations Conference in March, 2008. This conference approached climate change from two perspectives: one rooted in indigenous experiences and one born of present-day science. The overarching goal was to investigate opportunities for the two perspectives to share strategies for understanding, adapting to, and mitigating climate change, with a particular focus on American Indian Lands. The conference was named in honor of the American Indian tradition that decisions are made with an eye towards their impact on the next seven generations.

Over 150 people attended the conference, and it provided a rare venue to bring together climate scientists, elders, tribal college professors, and students at UCAR universities and tribal colleges. The conference website (http://www.cbp.ucar.edu/tribalconfhome.html) includes videos of conference activities as well as links to media coverage of the conference. A key lesson from this conference is that the American Indians and Alaska Native representatives considered climate change in the context of broader cultural, economic, and development issues and are interested in integrating scientific tools and approaches to contribute to their own sovereignty. In the words of one elder “don’t send us your scientists, let us learn to use your tools.”

Conference outcomes included:

- A joint letter with UCAR/NCAR and the American Indian Alaska Native Climate Change Working Group (co-authored by NCAR scientist and IPCC author, Elizabeth Holland), asking IPCC to include indigenous representation in the next assessment. This letter will serve as a template for additional letters.
• A joint proposal to host a workshop introducing tribal college science professors to climate change. This workshop is intended to help TCU faculty understand and access UCAR resources, provide a venue for outlining an indigenous atmospheric science curriculum and UCAR partnerships that could support that curriculum, and identify collaborative research opportunities for NCAR scientists and TCU faculty.

• Sinte Gleska and Haskell Indian Nations are preparing applications to become UCAR affiliate members.

5.0 UCAR OFFICE OF EDUCATION AND OUTREACH

5.1 Highlights

UCAR’s Office of Education and Outreach (EO) continues to implement and leverage several long-term, successful programs while building new partnerships on this foundation. New activities include development of educational resources for the International Polar Year, a new educational collaboration with the NSF Office of Legislative and Public Affairs, and continuing rapid growth in our outreach and interactions with the Hispanic community and educators in Spanish-speaking countries.

5.2 Professional Education for Teachers

Professional Development Workshops:

EO provided professional development (PD) opportunities for over 2300 educators this past year through a variety of venues. EO workshops, presentations, and share-a-thon activities at regional and national NSTA (National Science Teachers Association) conferences continue to be in high demand, and they receive high scores on evaluation metrics gathered independently by NSTA. A total of 1875 informal and formal educators from around the country attended the EO professional development events at the NSTA 2007 regional conferences in Birmingham (50), Denver (425), Detroit (350), and the 2008 NSTA national conference in Boston (1098). Science topics offered at the NSTA conferences provided educators with hands-on experience using Windows to the Universe (W2U); UCAR lesson plans; and content related to climate and global change including polar science, meteorology, magnetism, space weather, and innovative ways to enhance literacy in science instruction. A short course, Climate and Global Change: A Toolkit for Teaching About Our Ever-changing World, was attended by 35 educators at the Denver regional conference. Through our continued emphasis since 2001, UCAR EO has developed a reputation as a recognized leader in climate change professional development for teachers.

The Bilingual Science Teachers Annual Resources Symposium (BSTARS) expanded this year with support from the NSF Geoscience Education Program. BSTARS, which was founded in December 2006 with a one-day conference, became a more extensive program including a November 2007 conference, an additional one-day workshop in February, a five-month long Climate Discovery online course, and a Family Geoscience Day on a Saturday in May. Participating teachers worked with students to develop “Learning Fair” projects related to the geosciences, and these projects were presented at the Family Geoscience Day in May. The target audience for the program was teachers in schools reaching large populations of Spanish speaking, English language learning students. The syllabus emphasized best practices in teaching science to English Language Learners, with an emphasis on Weather, Climate, Sun-Earth connections, and Earth system science education in middle and high
BSTARS participants at the 10 May Family Geoscience Fair

participants have successfully completed one or more of these innovative, online courses during the year, designed to bring climate science content in an Earth system science perspective to middle and high school classroom teachers and informal educators. Feedback from teachers shows that the courses are extremely valuable in helping them to not only understand the science behind climate change but also to implement effective pedagogical approaches that integrate this content in their classrooms. The online courses use Moodle, an open-source course management software. Participants in the courses receive a "materials kit" in the mail that allows them to explore the hands-on activities as part of the course instruction. A central component of all three online courses is the development and support of an online learning community designed to leverage the collective teaching expertise of the participants. EO collaborates with the Colorado School of Mines to provide graduate level continuing education credits. With the completion of the final course in the series, EO will offer each of the three courses three times a year.

I decided to take these classes because I had attended an NCAR workshop at a NSTA meeting and was so impressed with the information I received. I love studying the Earth and its ever-changing climate. I love the way the facilitators present information in this course. Not only are they knowledgeable, but they answer questions, give feedback, do not embarrass when you are wrong, but help along the learning curve..., and it is easy to work with MOODLE. I have enjoyed every class and am sorry we are in the last portion of the course. I use questions from the course with my 8th graders -- we do journaling every class -- and they are amazed at the knowledge I have gotten from the class also -- we always discuss the current theme even though we may not be working in Earth's Climate Change in school. I want to thank the staff who put this course together and for all the information you have put into our hands to share with kids. It's just amazing!!

Pat, 8th grade science teacher, Granger, IN

During the past year, EO staff completed development of the third and final course in the Climate Discovery online course series (http://ecourses.ucar.edu/). Ninety-one
school grades. This year’s BSTARS engaged 17 teachers and most received 4.0 graduate re-licensure credits from the Colorado School of Mines for their participation. Partners included the Colorado Department of Education’s (CDE) Migrant Education Program and the Colorado MESA (Math, Engineering, and Science Achievement) Program. During the 10 May Family Geoscience Day at the Mesa Lab, about 75 primarily Hispanic family members supported their students and teachers as NCAR, CIRES, and NOAA scientists engaged in constructive dialogue with students about their science learning project displays. Opportunities for expanded outreach to this community through new partners developed as a result of this year-long program, and we will continue to develop these relationships further over the coming year.

NCAR Online Education Climate Discovery Course Sequence:
UCAR and NCAR’s affiliation with the National Earth Science Teachers Association (NESTA), through the efforts of EO Director, Roberta Johnson, has provided new opportunities to support and engage with classroom K-12 geoscience educators across the country. This association is a nonprofit educational organization, founded in 1983, whose purpose is the advancement, stimulation, extension, improvement, and coordination of Earth Science education at all educational levels. Over the past year, our efforts have enabled NESTA to make progress on development of a new website for the organization (with support from NSF Geoscience Education), complete an efficient election of officers, and offer a record 20 events in conjunction with NSTA regional and national conferences. The Winter issue of NESTA’s quarterly journal, *The Earth Scientist*, highlighted educational resources and programs associated with the International Polar Year and climate change.

5.3 **Partnerships**

EO continues to partner with universities and other organizations as it works to accomplish UCAR’s EO goals. We have completed our second year as an education and outreach partner in the Colorado State University-based **Center for Multi-Scale Modeling of Atmospheric Processes (CMMAP)**, an NSF Science and Technology Center. With CMMAP support, the W2U website has added or revised well over 50 pages spanning content about clouds, weather, climate, and modeling. New collections include the cloud image gallery, clouds in art, and weather-themed poetry and mythology. CMMAP scientists and graduated students are serving as role models for careers in the atmospheric sciences through the posting of their informal bios on the People pages. In addition to supporting several SOARS protégés each year, this grant is funding EO to collaborate with two Front Range School Districts, CSU’s Little Shop of Physics, Colorado College, and other educational programs in creating and delivering K-12 instructional materials related to clouds and climate, teacher training workshops, classroom visits by scientists, public outreach through local events, and dissemination of educational content on the W2U website.

EO has completed its sixth year as a partner in the **Center for Integrated Space Weather Modeling (CISM)**, led by Boston University. Over the past year, **Windows to the Universe page features clouds and CMMAP**

EO’s efforts for CISM have focused on continuing development and expansion of space weather content on the W2U website as well as offering professional development workshops for educators at venues across the country.

5.4 **Public Education Program**

*Events and Exhibits:*
Now in its eleventh year, last October's Super Science Saturday, NCAR’s premiere public science event, attracted more than 5,000 students, teachers, and parents to another day-long, hands-on science education extravaganza. The theme of over 20 exhibitors from local science education institutions explored “Cool Science: International Polar Year and Climate Change.” A live teleconference was held with scientists and educators in the ANDRILL, Antarctic Geological Drilling Project. UCAR Science Wizards wowed the crowded with demonstrations, visualizations, and just plain fun. Earth Day is going strong at NCAR, especially last April when families and young professionals from the Front Range Community flocked to the Mesa Lab to learn from local organizations about Green technologies, regional climate and ecosystems, and wildlife. In June, the Mesa Lab and Center Green 1 became the location for the North American debut of the Italian Reggio Emilia exhibit, One Hundred Languages of Children, concurrent with the convening of over 600 early childhood educators here for a conference. Great excitement has been generated by the gift this spring of the original Mesa Lab architectural model to the UCAR archives by the I.M. Pei Architecture firm. EO is collaborating with UCAR Communications and the Office of Government Affairs in the final planning phase for a new exhibit on the history and design of the Mesa Lab which will be unveiled in October 2008 with support from the Friends of UCAR Fund.

**Sketch of the new I.M. Pei Mesa Lab Architecture exhibit**

Reggio Emilia exhibit, One Hundred Languages of Children, concurrent with the convening of over 600 early childhood educators here for a conference. Great excitement has been generated by the gift this spring of the original Mesa Lab architectural model to the UCAR archives by the I.M. Pei Architecture firm. EO is collaborating with UCAR Communications and the Office of Government Affairs in the final planning phase for a new exhibit on the history and design of the Mesa Lab which will be unveiled in October 2008 with support from the Friends of UCAR Fund.

**Public Visitor Program:**

During the 2007/2008 fiscal year, the Public Visitor Program (PVP) served approximately 15,557 individuals: 15,105 on scheduled tours and onsite school programs, and another 452 individuals through off-site events such as the Annual Water Festival workshops for Boulder County fifth-grade students held at the University of Colorado (CU) each spring. This represents slightly more than a three percent increase in PVP visitors as compared to 2006/2007.

The largest increase in visitors over the last year comes from special visits requiring event planning, from 150 in the previous year to over 700 in the current year. Examples include the June 2008 visit of 150 broadcast meteorologists and the two-day visit in March from faculty and graduate students from the University of Nebraska’s School of Natural Resources and the University’s Graduate School of Geosciences. Other prominent visitors include a group of Chevron executives, a United Nation advisory panel, embassy personnel, broadcasters and scientists. PVP staff continue to work side-by-side with the Advanced Study Program (ASP) postdoctoral students on the bi-annual (May, September) Girl Scouts at NCAR Day – now in its fifth year, as well as for Exhibit staff to develop the annual Super Science Saturday Wizard Show.
5.5 **Web-based Outreach**

*Windows to the Universe (W2U):*

W2U ([http://www.windows.ucar.edu/](http://www.windows.ucar.edu/)) continues to be the most highly visited website within the entire ucar.edu domain and is one of the most popular science education websites in the world. Over the past year, W2U traffic has continued to grow dramatically. The number of visitors to the site during the past 12 months exceeds 20 million visitors. Traffic to the Spanish-language portions of the site is responsible for ~25% of the traffic to the website as a whole. The W2U project offers a free monthly newsletter for teachers around the world which now reaches over 9400 teachers in 149 countries.

In a continuing and growing service to the scientific community, the W2U Postcards from the Field capability brings the excitement of science in action and careers in science to learners around the world. To date, we have supported nine lines of postcards through this venue, developed originally with NSF support for the MILAGRO campaign. We are now developing a new science education portal to highlight the VAMOS (Variability of the American Monsoon Systems) Ocean-Cloud-Atmosphere-Land Study (VOCALS) campaign this fall, with support from the NSF Climate Dynamics and Paleoclimate Program, and will support postcards submitted by over a dozen scientists participating in the campaign. Over the past year, postcards have been submitted from three campaigns in the Antarctic and in the Bahamas. This fall/winter we will expand our offerings to include additional postcard lines from the Antarctic as well as from Annapurna and Chile (VOCALS). In an exciting development, we are working with colleagues at Google Earth to implement mapping capability associated with the postcards, which can then be extended more broadly across the website. We have recently updated our content on climate change (following the recent IPCC reports). We are also developing a new section of the website on “Poles in Space”, which highlights our understanding of the poles of major bodies in the solar system, with support of the NASA IPY Education program.

W2U is also collaborating with the NSF Office of Legislative and Public Affairs to bring news of NSF-supported research to learners and educators around the world. We have developed a dedicated portal for this project on the W2U website and are regularly adding interlinked news releases, podcasts, videos, and multimedia interactive programs to highlight NSF-supported research.

5.6 **Undergraduate Education**

2008 Undergraduate Leadership Workshop: For the seventh year, from 16-20, June EO coordinated the NCAR Undergraduate Leadership Workshop with support from the NCAR Education and Outreach Strategic Initiative. The purpose of the ULW is to inform students entering senior year about exciting research and career opportunities in the atmospheric and related sciences. The five-day program establishes informal dialogue between students and research
scientists as the students explore the laboratories, instrumentation, and computing facilities that support studies on weather, climate change, solar dynamics, the Sun-Earth system, and impacts of severe weather and climate change on societies around the world. Since its founding in 2001, the ULW has hosted over 140 students from 50 universities, including 36 UCAR Members and ten Academic Affiliates. The vast majority of the students have reported being highly impressed by the experience and very motivated to pursue graduate degrees in the atmospheric sciences.

6.0 UCAR FOUNDATION AND TECHNOLOGY COMMERCIALIZATION

UCAR Foundation technology transfer activity has decreased significantly over the past three years as subsidiary companies mature and move out from under the Foundation. Of the four recent subsidiary operations that were created by the Foundation, only Peak Weather Resources (100% owned by the Foundation) and Advanced Radar Corporation (61.25% owned by the Foundation) remain under the Foundation umbrella. WSDM Technologies, LLC, was sold to Vaisala, Inc. and the STAR Institute has become an independent operation. Royalty payments from technology licensing contracts continue to provide income to the Foundation, the inventors, and UCAR/NCAR/UOP. In FY2007 combined total royalty payments of $111,673 were received. As of August 2008 royalty income was $110,926 for FY2008.

6.1 ARC

In November 2006 the Foundation created the Advanced Radar Corporation (ARC) to market and install the Hi-Q Radar Processor worldwide. This upgrade board allows the acquisition of research quality data from existing radars deployed around the world that currently have limited capabilities. ARC has subsequently expanded its product line to provide complete radar systems. ARC’s products have been installed in Indonesia, Mali, Burkina Faso, and Saudi Arabia. ARC has signed contracts for work in Turkey and Korea. ARC has proposed new work in Argentina, Costa Rica, Saudi Arabia, Taiwan, and Indonesia. ARC’s original business plan had projected a modest loss for FY2007, but its actual performance resulted in a $600K gross profit. For FY2008, ARC is poised to almost double its revenue over its original projections (from $2.4M to $4.2M).

6.2 Peak Weather

Through most of FY2008 Peak continued to provide DICast data services to DTN/Meteorlogix, a weather solutions provider. DICast (Dynamic Integrated Forecast System) is an automated consensus forecast system that generates weather forecasts at specified sites using statistical and fuzzy logic techniques to enhance data obtained from a variety of sources. However, Meteorlogix has now acquired the system through a direct license with UCAR and is operating it for themselves. Peak is looking at other opportunities for commercializing the DICast system and is currently in negotiations with another company to form a joint venture using the technology. Peak will continue to function as an incubator for new start-up companies that may present themselves for commercializing UCAR technology.
6.3 FY 2008 Intellectual Property Highlights

The Foundation continues to actively promote tech transfer by making newly patented technologies available for licensing and commercialization. As of July 2008 UCAR has 65 patents and 17 trademarks.

The year 2008 was a relatively quiet one for invention disclosures and patents. UCAR received one invention disclosure from the Earth Observing Laboratory entitled: “Generalized VTD Retrieval of Atmospheric Vortex Kinematic Structure.” Two patents were awarded in 2008, both to the Research Applications Laboratory: the “Precipitation Measurement Device,” named inventors, Frank Hage and Roy Rasmussen; and the “De-Icing Information System,” also Frank Hage and Roy Rasmussen as named inventors. UCAR filed a patent application on behalf of EOL/Design and Fabrication Services, “A Novel Method for the Study of Near-Surface Turbulence Using 3-D Hot File Anemometry.”

ACKNOWLEDGMENTS

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-END OF REPORT-