MEMORANDUM

TO:
Board of Trustees
Members’ Representatives
UCAR University Relations Committee
UCAR Academic Affiliates

FROM: Richard A. Anthes

SUBJECT: President's Report for the October 2006 Meetings of the Board of Trustees, UCAR Members' Representatives, University Relations Committee, and Academic Affiliates

Ladies and Gentlemen:

I hope this report finds you well, and I look forward to seeing most of you at the meetings next month. In this annual report, I summarize a few of UCAR’s program highlights over the past year, which include a rich and productive mix of science, facilities, field programs, education, service, and management activities. My report (and Tim Killeen’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:

NCAR report: http://www.ucar.edu/governance/meetings/oct06/ncar_report.pdf
UOP report: http://www.ucar.edu/governance/meetings/oct06/uop_report.pdf

I would like to take this opportunity to thank NSF and our other sponsors for supporting our programs.

1.0 Several Highlights of the Past Year

In the following sections I briefly summarize a few highlights from the past year. Additional information on COSMIC, MIRAGE and T-REX may be found at the indicated websites; in addition, the Spring 2006 issue of the UCAR Quarterly contains articles about these activities (www.ucar.edu/communications/quarterly/spring06/).

1.1 COSMIC Launch

After more than ten years of preparation, six micro-satellites carrying three instruments were successfully launched into orbit at 01:40 UTC April 15, 2006 from Vandenberg AFB. The primary scientific goal of the COSMIC-FORMOSAT-3 (Constellation Observing System for Meteorology, Ionosphere and Climate - Formosa Satellite #3) mission is to obtain vertical profiles in near-real time of temperature, pressure, and water vapor in the neutral atmosphere and electron density in the
ionosphere. The observations will be used to support operational global weather prediction, climate monitoring and research, space weather forecasting, and ionospheric research.

Fig. 1: (left) Launch of COSMIC from Vandenberg Air Force Base 01:40 UTC April 15, 2006. Photo courtesy of Orbital Sciences Corporation. Right: Locations of COSMIC soundings that penetrate to at least 6 km on August 27, 2006. The colors show the lowest levels reached by the soundings. More than half of the 1112 soundings reach to within 1 km of sea level.

The mission is a collaborative project of the National Space Organization (NSPO) in Taiwan and UCAR. Expected to last for five years COSMIC provides the first satellite constellation for observing global weather using the Global Positioning System (GPS) radio occultation (RO) technique.

During the first 13 months following launch, the six satellites will gradually separate as they rise from their initial altitude of 512 km to their final orbit at an altitude of ~ 800 km. In their final orbits, COSMIC satellites will produce approximately 2500 soundings globally every day, in all weather. Two data centers are receiving and processing the data: (1) the COSMIC Data Analysis and Archive Center (CDAAC, which developed the data processing algorithms) located at UCAR, and (2) the Taiwan Analysis Center for COSMIC (TACC) at the Central Weather Bureau in Taiwan. The processed results will be ready for distribution within three hours from the time of data collection. All data and products are being made freely and openly available to the international science and operational communities from CDAAC and TACC. Data product users are required to register at the TACC website at: http://tacc.cwb.gov.tw/. Between August 1-28, 106 different users downloaded 519 Gb of data (1.7 million files) from CDAAC, and we now have 224 registered.

Each satellite carries a GPS receiver developed by the Jet Propulsion Laboratory. The receiver measures the radio signals from a GPS satellite to a COSMIC satellite. As the radio waves pass through the atmosphere, they are slowed and refracted, with the degree of bending a measurement of atmospheric density. The vertical profiles of bending angles, or refractivity, which is derived from the bending angles, can be assimilated into numerical weather prediction models, yielding information on
temperature, pressure, and water vapor. Vertical profiles of temperature (water vapor) can be deduced from the refractivity profiles with values of water vapor (temperature) obtained from an independent source, such as a weather analysis or prediction.

COSMIC is using an advanced open-loop signal tracking technique, which allows the RO soundings to penetrate deep into the lower troposphere at all latitudes (Fig. 1), observing planetary boundary layer heights and structure and providing valuable information on low-level moisture.

In addition, COSMIC is providing vertical profiles of electron density. The ~2500 electron density profiles between 90 and 800 km will define the ionospheric structure as well as scintillation and electron density irregularities. Another instrument aboard each satellite is the Tiny Ionospheric Photometer (TIP), which will monitor the density of emissions that result from the recombination of oxygen ions with electrons at ionospheric altitudes and will also be helpful for improving the ionospheric occultation inversions. The satellites are further equipped with a Tri-Band Beacon (TBB). TBB data will be used to retrieve the satellite-to-ground Total Electron Content (TEC), allow for high-resolution tomography of the electron density distribution, and monitor phase and amplitude scintillations induced in radio waves propagating through the ionosphere.

Additional information about COSMIC may be found at: http://www.cosmic.ucar.edu/.

1.2 T-REX Experiment

Fig. 2. HIAPER on its first research mission during the T-REX Experiment.

Led by project director Vanda Grubišić (Desert Research Institute), the Terrain-induced Rotor Experiment (T-REX) was carried out around California’s Owens Valley in the spring of 2006 to explore the structure and evolution of atmospheric rotors that form along an axis parallel to, and downstream of, a mountain ridge crest, as well as associated phenomena in complex terrain. T-REX brought 60 scientists, technicians, and students from across the United States and Europe to this sparsely settled area from March 1st to April 30th (www.eol.ucar.edu/projects/trex/).

T-REX was the first major deployment for the NSF/NCAR High-performance Instrumented Airborne Platform for Environmental Research (HIAPER). HIAPER's ability to fly at altitudes up to 51,000 feet
(about 17,000 meters) made the aircraft ideal for probing the high-level features studied in T-REX. The better knowledge of breaking waves and rotors that is likely to result from T-REX will help improve turbulence forecasts for aviation. The project will also shed light on chemical processes at high altitudes, especially the ways in which breaking waves can help foster the mixing of constituents between the troposphere and stratosphere.

The most senior participant in T-REX was UCAR distinguished scientist Joachim Kuettner, one of the Principal Investigators. Celebrating his 97th birthday in September, Joach first explored mountain waves in Germany in the 1930s as part of his doctoral research and later set world altitude records for open sailplanes. In the 1950s, Kuettner led the Sierra Waves Project. Joach made several flights in HIAPER, one which experienced a 20 m/s updraft followed by a 10 m/s downdraft, all in less than a second.

![Figure 3: Joach Kuettner after flight during T-REX experiment.](image)

### 1.3 MIRAGE (Megacity Impacts on Global Environments)

One of the by-products of the global trend toward urbanization is new and more concentrated forms of air pollution, which has important human health effects. Led by NCAR senior scientist Sasha Madronich, investigators from 49 universities (35 in this country) carried out an intensive observing campaign in Mexico City during March 2006. MIRAGE was joined by three other studies of Mexican air quality on different scales and with different goals. The four projects are collectively known as the Megacity Initiative: Local and Global Research Observations, or MILAGRO (Spanish for "miracle"). For more information on MIRAGE please see: [http://mirage-mex.acd.ucar.edu/](http://mirage-mex.acd.ucar.edu/).
1.4 Nested Regional Climate Modeling and Tropical Cyclogenesis

In a collaborative project between the Climate and Global Dynamics (CGD) and the Mesoscale and Microscale Meteorology (MMM) Divisions, NCAR and collaborators are carrying out an experiment to see how well the climate of the tropics can be simulated given observed conditions on the northern and southern boundaries, which are in the middle latitudes. A version of the Weather Research and Forecast (WRF) model covers a band extending from 45° N to 35° S, and the boundary conditions are provided by the NCEP re-analysis. The WRF model was integrated for five years (1996-2001) at 36-km resolution using the observed lateral boundary conditions and observed SST. One of the goals is to see how well the model predicts tropical storms under these conditions.

NCAR Regional Climate Modeling:
3-y Simulated Tropical Cyclone Development

Fig. 5. Observed and predicted tropical cyclone frequency in different basins for the three-year period 1996-1998. The color figure is the simulated precipitable water on May 19, 1997 and shows several tropical disturbances.
1.5 *NCAR Computer Progress*

The final supercomputer acquisition under the ARCS subcontract with IBM was put into production in January 2006 in the NCAR’s Mesa Laboratory computing facility. Named **bluevista**, the IBM POWER5 p575 model supercomputer has a peak computational capacity of 4.7 TeraFLOPs, and it brought our peak production computing capacity to over 15 TeraFLOPs. In the three months prior to January, **bluevista** was used exclusively for the Nested Regional Climate Model project (see above).

Also in 2006, CISL and UCAR released a request for proposal for the acquisition of a new supercomputer system to replace the POWER4 **bluesky** supercomputer at the end of calendar year 2006. The Integrated Computing Environment for Scientific Simulation (ICESS) is expected to provide at least a three-fold increase in the sustained computing capacity at NCAR (Fig. 6).

![Sustained TeraFLOPs at NCAR](image)

Figure 6: Peak teraflops in NCAR’s production systems since 1987

In June 2006 NCAR joined the NSF TeraGrid, a network of supercomputers and other devices that comprise the nation’s most advanced infrastructure for open scientific research. As a TeraGrid partner site, NCAR will offer atmospheric researchers increased access to the organization’s high-performance computing, climate data, and tools for data analysis and visualization.

The TeraGrid, sponsored by the National Science Foundation (NSF), uses high-performance networks and grid middleware to integrate supercomputers, data repositories, and special-purpose data analysis facilities around the country. A common set of specifications, software, and physical equipment creates a
coordinated work environment that enables researchers throughout the United States to collaborate on especially challenging scientific questions.

Figure 7: The TeraGrid is a facility that integrates computational, information, and analysis resources at the San Diego Supercomputer Center, the Texas Advanced Computing Center, the University of Chicago / Argonne National Laboratory, the National Center for Supercomputing Applications, Purdue University, Indiana University, Oak Ridge National Laboratory, the Pittsburgh Supercomputing Center, and the National Center for Atmospheric Research.

2.0 UCAR's Corporate Activities

2.1 Strategic Planning

The past year or so has seen an unprecedented amount of strategic planning. A new strategic plan for NCAR was approved by the Trustees in December 2005 and published in early 2006. The Trustees approved strategic plans for UOP and UCAR’s Finance and Administration department in May 2006. UCAR began developing its new strategic plan in January and after much review and discussion with the University Relations Committee and the Trustees is nearing completion. I sent the July 13th draft to the presidents of all UCAR Member universities and Academic Affiliates, and the reaction of those who have responded so far has been extremely positive. Finally, the UCAR Office of Education and Outreach is nearing completion of its strategic plan, and a draft will be available for the October meetings. All of these plans are available at: http://www.ucar.edu/strat_plan/.

2.2 Preparation for the Competition for the Management of NCAR

As you know, NSF has announced that it will compete the continued management of NCAR. UCAR has been the manager of NCAR since both NCAR and UCAR were created in 1960. In recent years it has become NSF’s policy to compete all management agreements of this type. NSF feels that
peer-reviewed competition assures the highest quality management and the best use of NSF funds. Information about the competition from NSF may be found at: http://www.nsf.gov/news/news_summ.jsp?cntn_id=106795&org=GEO&from=news. Following NSF guidelines, UCAR submitted a capability statement in April 2006. We expect NSF to issue a program solicitation in late October 2006, with a preliminary proposal due on or about January 31, 2007. According to NSF, applicants will be notified of the evaluation outcome of preliminary proposals by mid May 2007. Organizations successful in this stage would then be invited to submit full proposals, with an expected due date of August 1, 2007. The UCAR Trustees have been discussing the competition over the past year and will play an active role in developing the proposal.

2.3 Classified Research at UCAR and NCAR

As you recall, at the October 2005 meeting of the UCAR Members, I summarized a draft UCAR policy on classified research. At their February 8, 2006 meeting, the UCAR Trustees adopted a policy that no classified research will be done within UCAR, including NCAR. Research projects that require classification of parts of the research may be done in partnership with universities, private companies or federal laboratories that do classified research and are experienced in mitigating against the risks.

3.0 UCAR Office of Education and Outreach (EO) Activities

3.1 Highlights

This year UCAR’s Office of Education and Outreach (EO) has charted new pathways in integrating science and research by further bridging its services to internal programs and external collaborators. EO developed a web portal for educational outreach for MILAGRO during NCAR’s March 2006 field campaign in Mexico City, involving scientists and educators creating Spanish/English language resources that explain research about atmospheric chemistry and the transport of urban air pollutant plumes. EO has led in updating the UCAR Education and Outreach Strategic Plan: 2001 – 2006 with goals and objectives that will guide activities through 2011.

EO Director Roberta Johnson’s appointment as executive director of the National Earth Science Teachers Association (NESTA) has deepened UCAR’s affiliation with educators who can help to enhance K-12 learning in the geosciences. EO's leadership in pre-collegiate professional development has expanded in two significant ways: 1) offering teacher workshops on Magnetism, Sun-Earth Connection, and Climate Change at the Center for Research on Environmental Disease at the M.D. Anderson Cancer Center at the University of Texas, and 2) our ongoing presentations at the National Science Teachers Association (NSTA) conferences. Building on content shared by scientists with teachers in previous summer workshops, EO prototyped a distance learning course for middle and high school science educators on Climate and Global Change, which is now being implemented into a three-course sequence.

3.2 Professional Education

Professional Development Workshops. Over 1,400 teachers participated in EO’s professional development offerings this year. Of this number, 925 took advantage of the convenient location of our workshops at the National Science Teacher Association (NSTA) meeting in Anaheim, California and the regional meeting in Chicago. Topics offered at NSTA provided teachers with hands-on experience using Windows to the Universe (W2U) and UCAR web-based lesson plans and content related to climate and
global change, meteorology, watershed hydrology, magnetism, space weather, and innovative Earth science assessment techniques. EO educators were invited to offer the Spring AGU’s Geoscience Instruction For Teachers workshop for K-12 teachers in Baltimore on Sun-Earth Connection science. Teachers in Veracruz, Mexico, joined a workshop offered by W2U staff about the MILAGRO field campaign’s atmospheric chemistry and air quality research and the GLOBE at Night program.

GLOBE. The EO GLOBE team developed a number of educational resources including Elementary GLOBE, an instructional unit designed to introduce K-4 students to the study of Earth System Science (ESS). Elementary GLOBE is comprised of five modules that address ESS and interrelated subjects including weather, hydrology, phenology, and soils. Each Elementary GLOBE module contains a science based storybook, classroom learning activities that complement the science content covered in each book, and teacher’s notes. For more information, please see: www.globe.gov/elementaryglobe. In addition, the EO GLOBE team facilitated an international citizen science effort, GLOBE at Night. Over 18,000 people participated in this light pollution study, including individuals from 96 countries and all fifty states (www.globe.gov/globeatnight).

NESTA. In April 2006, Roberta Johnson was selected as the new Executive Director of the National Earth Science Teachers Association. 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. Collaboration with NESTA will facilitate communication and support of classroom geoscience educators with the UCAR community.

EWOC 2006 Conference. The Seventh International Conference on School and Popular Meteorological and Oceanographic Education (also known as EWOC 2006) was held in Boulder, CO from July 3 -7, 2006 using UCAR’s Center Green Conference facilities and the Mesa Lab and offering field trips to many scientific and ecological landmarks in the region. A total of 136 persons from 12 different countries registered for the conference, representing schools, universities, nonprofit organizations, and government agencies dedicated to educating students, teachers, and the public about weather, ocean, and climate sciences. Co-sponsors of EWOC included the America Meteorological Society, World Meteorological Organization, Royal Meteorological Society, and European Meteorological Organization.

3.3 Partnerships with Scientific Community

HIAPER Video Documentation Project. EO documented in High Definition Video (HDV) the first field campaign using HIAPER (T-REX, mentioned previously). T-REX scientists were filmed by Geoffrey Haines-Stile Productions, as they planned complex logistics, identified ideal weather conditions for rotors, made observations using ground-based and airborne instruments, and reviewed the campaign’s scientific findings and their safety implications for the aviation industry and air quality. With support from NSF, NCAR, and Gulfstream Aerospace Corporation, EO also arranged for the first ever aerial photography of HIAPER as it soared over the snowcapped peaks of the Sierra Nevada range.

MILAGRO. Beginning the second week of January 2006, the W2U project initiated an effort to develop web-based content to support dissemination of information about the MILAGRO campaign to students, teachers, and the public in English and Spanish. This effort built upon the extensive existing web-based content available through W2U in both languages, as well as its large international bilingual audience. A total of 56 new web pages were developed for the project on topics in atmospheric chemistry, dynamics,
impacts of air pollution and links to climate change, as well as biographies of scientists participating in the outreach effort. Each content page was reviewed by at least one scientific participant in the campaign. In addition, a format for “Postcards from the Field” was developed, which campaign participants could use to send reports to website visitors about what was going on during the campaign. Information about the website and the campaign was disseminated through numerous educator networks, including the W2U Educator Newsletter, which focused on the MILAGRO campaign during the month of March, as well as through contacts at NASA, NSF, AGU, and other informal networks. Traffic on the MILAGRO portal rapidly grew to over 60,000 visitors per month in Spring 2006, reaching over 250,000 people between March and May.

**Partnership in the Center for Multi-Scale Modeling of Atmospheric Resources.** Over the next five years, EO will be a partner in the education and outreach program supporting the new Colorado State University-based Center for Multi-Scale Modeling of Atmospheric Processes (CMMAP), a five-year $11 million NSF Science and Technology Center. CMMAP will enable scientists to study cloud microphysics, improve cloud modeling efforts, and enhance understanding of the role clouds play in regulating climate. In addition to supporting two SOARS protégés each year, this grant will fund 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.

### 3.4 Public Education Program

**Events and Exhibits.** Last October, Super Science Saturday (SSS), NCAR’s premiere public science event, attracted more than 4,000 students, teachers, and parents to a day-long, hands-on celebration in 2005. In addition, two “Science Saturdays” and “Wild Earth Day” were continued through 2006 in collaboration with the Wild Bear Center for Science Discovery. A city-wide event, called EcoArts, brought a consortium of arts and science groups from Boulder and Denver to the Mesa Lab for an evening talk by NCAR senior scientist Mickey Glantz and special Saturday tours of “Climate Discovery,” including Q&A sessions with climate scientists. UCAR’s newest exhibit will open to the public this October at the Twenty Ninth Street Project, the first of its kind retail center which includes seven giant science exhibits and information kiosks designed by UCAR, NOAA, NIST, NREL, SSI, LASP, and CU/JILLA. UCAR’s interactive exhibit is a giant granite sphere fountain that displays etching of the continents accented with reflective paints representing the satellite view of the Earth’s lights seen at night. Participants in the AMS-UCAR Heads and Chairs meeting are invited to attend a special reception and celebration on the evening of Thursday, October 12, 2006.
Public Visitor Program. The EO Public Visitor Program welcomes diverse audiences to the NCAR Mesa Lab. During the first ten months of the 2005/2006 fiscal year, PVP hosted approximately 7,700 pre-K-16 students and their teachers – the primary source of PVP visitors – for hands-on science explorations, tours, and exhibits. Many also learned about modeling the Earth System followed by presentations in NCAR’s Scientific Visualization Laboratory. Approximately 1,300 other students were served through on- and off-site events such as the ASP/EO Girl Scouts at NCAR Days, high school career fairs, the Science is Everywhere program, school assemblies, and public library presentations. In addition to student tours and activities, PVP staff has also hosted 4,000 people on daily public noon tours plus many other tours throughout the week that serve diverse audiences. PVP staff continues to develop inquiry-based K-12 learning activities and kits that align with national and state science content standards and build upon our Climate Discovery exhibit, the W2U website, and other curricula materials.
PVP staff collaborates with educators across the nation and internationally through affiliations with the Center for Informal Learning and Schools coordinated by the San Francisco Exploratorium, the Astronomy Society of the Pacific’s Astronomy from the Ground Up program, and the W2U web portal to the NCAR MILAGRO campaign to Mexico City. Outstanding local collaborations are growing with the Science is Everywhere program reaching schools with Spanish speaking students and the Girls Exploring Science, Engineering and Technology (GESET) conference. For a third year, PVP has coordinated in partnership with the NCAR Advanced Studies Program, the Girl Scouts at NCAR Day which brings female scientists and post docs together with middle and upper elementary school girls.

3.5 Web-based Outreach and Distance Learning

Windows to the Universe. Windows to the Universe (http://www.windows.ucar.edu/) continues to be the most highly visited website within the entire ucar.edu domain. Over the past year, W2U traffic has grown dramatically. The number of visitors to the site during the past twelve months (August 2005 through July 2006) grew by 49% to more than 12 million visitors, while page view tallies grew by 70% to more than 122 million page views during the same period. Traffic to the Spanish-language portions of the site grew even more dramatically. Visitors were up about 93% to almost 3.5 million, while page view counts more than doubled to over 20 million.

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Overall site traffic growth is in part due to swelling popularity of the Spanish-language pages. However, the increase in use of the English versions of the pages actually exceeds that achieved on the Spanish pages, indicating further penetration of site usage in formal and informal geoscience education venues. Translation of the site into Spanish continues, with about three-quarters of the content now completed. Comments from users of the Spanish website are extremely positive, showing appreciation for the resources as well as recognition of the high quality of the translation. We are actively disseminating information about this resource to local, national, and international Spanish-speaking and bilingual communities. We have forged ties with the Mexican Ministry of Education and with numerous classroom teachers in Mexico, largely as a result of our involvement with the MILAGRO field campaign. We are also discussing expanded activities in other parts of Latin American, especially Chile, with science educators at UNESCO and in several countries in Central and South America.

Distance Learning Course. EO is developing a sequence of online courses on Climate and Global Change, based on the successful workshop series held in 2002 – 2005 at NCAR. A pilot course in Fall 2005 documented the successful implementation of course materials in an online format. The first of three six-week courses will be offered in Fall 2006 for middle and high school educators, with graduate credit available through partnering universities.
4.0 Corporate Affairs

UCAR Corporate Affairs activities include three components: governance, communications, and development and government affairs.

4.1 Governance

UCAR Board of Trustees, Chairman: Kelvin Droegemeier (University of Oklahoma). The UCAR Board held its three regularly scheduled meetings: October 2005 and February 2006 in Boulder – the latter scheduled to precede the National Science Board Retreat held at NCAR, and in May 2006 in the Washington, DC area.

The Board considered a number of issues and opportunities this past year, including development of the new UCAR Strategic Plan and plans for the NCAR Data Center, a new facility planned to help move the geoscience community to the next level of computing support.

The Board tackled a number of other issues. Trustee Shirley Malcom (AAAS), has encouraged UCAR to join with AAAS to explore furthering scientific associations on the African continent. This has engendered a good deal of interest throughout UCAR, where a number of activities have been ongoing and will continue to grow, albeit with increased coordination and focus on creating partnerships with African institutions to advance weather and climate work there.

This is one of the strongest Boards I’ve worked with in my time at UCAR – I am very glad to be working with such a thoughtful set of people as we go into the competition for the management of NCAR.

University Relations Committee, Chairman: Jim Hansen (Naval Research Laboratory). This committee is advisory to me and at the same time and serves as a conduit for issues from the university community to UCAR and NCAR management – an especially important role. I value the time they spend on behalf of UCAR as they provided advice on the agenda for the Members' Meeting, reviewed the NCAR and UOP non-NSF proposals to ensure that there is no unfair competition, and worked with special projects like the strategic plan, metrics, etc.

The Committee holds two meetings a year. One is held immediately following the UCAR Members' Meeting, and the other is in the spring at a Member or Academic Affiliate institution. The committee held its Spring 2006 meeting at San Francisco State University, graciously hosted by Lisa White. The central focus of this meeting was the new UCAR Strategic Plan. The URC has been instrumental in the development of the plan, and I am grateful for the time the committee spent with an early draft – it is all the better for their involvement.

Membership Committee, Chairman: Chuck Wash (NPGS). I’m pleased to say that SUNY Stony Brook has applied for Membership in UCAR. You will vote on their membership at the upcoming meeting. Their program is a strong one, and we’re honored that they have taken the time and effort to submit materials for Membership. 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/oct06/memb_comm_rpt.html.
The Scientific Programs Evaluation Committee (SPEC), Chairwoman: Mary Jo Richardson (Texas A&M). SPEC Chairwoman, Mary Jo Richardson, and SPEC member, Berrien Moore (UNH), participated in the NSF panel review of NCAR's management on 20-22 March 2006. The SPEC involvement in this on-site review was in all open meetings and some informal panel conversations. The SPEC found that the management of NCAR was exceptional and that the UCAR/NCAR partnership works very well in the effective and efficient management of NCAR as an NSF FFRDC. The committee report can be found at: http://www.ucar.edu/governance/meetings/oct06/spec.pdf.

Members’ Nominating Committee, Chairwoman: Kerry Cook (Cornell University). In a departure from their customary meeting just prior to the May Board of Trustees Meeting in Washington DC, the Members’ Nominating Committee met for one day in Boulder this past June. The time was well spent in thoughtful and careful deliberations of the nominees for governance committees. The result is that we have a formidable and very well-respected slate of Trustee nominees and an equally strong slate for new members of the committees. I am always gratified to learn of the committee and trustee nominees’ willingness to serve – these are very busy people, and we are fortunate to have their good counsel, help and support. 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/oct06/nom_comm_rpt.html.

4.2 Communications

Figure 10: The Weather Channel filming an interview for their upcoming 25th anniversary series “100 Greatest Moments in Weather History,” to be broadcast next spring. The crew filmed over a dozen UCAR and NCAR staff during their three-day visit in August.

Media. This has been a busy year for media coverage of NCAR, UCAR, and broader climate and weather issues. The role of global warming in fueling hurricane intensity is garnering enormous press interest; our press release on the subject was one of the top ten science stories nationally for the month
of June according to an online service. Roughly half of our releases this year were jointly made with other institutions, either universities, labs, or professional societies; and virtually all are issued in collaboration with NSF.

Top stories in recent months:

- Global change (hurricanes, heat waves, coral reef damage, Arctic melting)
- Solar cycles (new forecast technique)
- COSMIC launch
- Field programs (MIRAGE, T-Rex, REFRACTT)

Press clippings (summaries of newspaper, magazine, radio, television, and Web news coverage) are now uploaded daily onto our “News Center” website: www.ucar.edu/news/pressclips).

New on the Web. UCAR Communications and NCAR’s computing division collaborated with the NCAR Director’s Office on a redesign of the NCAR site (www.ncar.ucar.edu), which emphasizes NCAR news and brings descriptions of NCAR research to the forefront.

Our Community Tools page (www.ucar.edu/tools/) was in beta testing during last year’s October meetings. Since that time it has been upgraded and made more user friendly. This portal provides one-stop shopping for applications, models, data sets, and collaborative opportunities without needing to know where in the organization these resources reside. New this year is a community calendar of events and deadlines, to which everyone can submit their institution’s offerings. A new student spotlight and diversity section are in development. The former will contain profiles of undergraduates, graduates, and postdocs visiting NCAR or participating in community activities such as field programs. The diversity section will highlight activities across NCAR/UCAR/UOP and in collaboration with the community.

Print and Electronic Publications. The UCAR Quarterly continues to feature news of interest to the broad community. Recent issues have covered CSU’s new cloud climate center; the new weather center set to open in Norman, OK; the Community Climate System Model; Weather Research and Forecasting model; the Weather Enterprise public-private collaboration; and the proposed data center, among other topics. The current issue, Fall 2006, will contain a readers’ survey, and we welcome your input.

UCAR Updates is an email newsletter of “news you can use” (www.ucar.edu/news/update). It continues to gain in popularity; we’re getting a steady flow of new subscribers and encourage readers to forward the newsletter to interested colleagues. Effective with the August issue it also incorporates Washington Update from the Office of Government Affairs; the intent is to streamline our communication with the members by giving them one central source for timely information from us.

The next edition of UCAR Highlights is in the planning stages and is likely to focus on research and interactions with the broader community.

Images. Our Digital Image Library (www.ucar.edu/imagelibrary) has been completely overhauled and updated. Nonprofit users can browse, save, and download any of several thousand images for free in either jpg or high resolution tif. Most recently we have added images of HIAPER’s maiden voyage and of the T-REX field project. The digital library includes the best of our photographic collection gathered
over the history of the institution. Users are also welcome to contact UCAR Communications for images beyond the digital collection.

Archives. This year the Archives has been used extensively by two historians writing about the history of atmospheric science. We have acquired papers from Warren Washington, added new materials from the Walter Orr Roberts' estate, and are gathering materials from a number of scientists in the process of retiring. We are in discussions with I.M. Pei’s firm about the exciting possibility of acquiring their materials on the design and construction of the Mesa Lab. In our ongoing collaboration with the AMS, we have added interviews with Jerry Mahlman, Margaret Smagorinsky, Mel Shapiro, and Don Lenschow to our oral history collection. These histories and the rest of the Archives are open to any interested members of the community.

4.3 Office of Development and Government Affairs (ODGA)

Congressional Activities. Many UCAR government affairs activities are accomplished with the extensive involvement and/or guidance of Lewis-Burke Associates (LBA) in Washington, DC. April Burke and her staff (Joel Widder, in particular) provide advocacy strategy, agency and Hill contacts, and assistance with UCAR events held in Washington. They alert us to relevant issues concerning legislation, as well as provide us with analysis of pending bills. The Office of Government Affairs (OGA) recently welcomed Jeff Fiedler to its staff. Prior to joining UCAR, Jeff was a climate policy specialist with the Climate Center at the Natural Resources Defense Council, one of the oldest and largest environmental NGOs in the U.S. He holds a bachelor’s degree in chemistry and a master’s in environmental studies, both from Brown University.

UCAR is an active member of the Weather Coalition, the Coalition for National Science Funding, the Council on Competitiveness, the Congressional Hazards Caucus Coalition, the Alliance for Science and Technology Research in America, and the U.S. Geological Survey Coalition. UCAR is a founding member of the recently created Friends of NOAA coalition, a group of supporters, stakeholders, employees and partners of the National Oceanic and Atmospheric Administration (NOAA). We have signed several Friends letters this year requesting a better budget for NOAA.

The Weather Coalition continues to be an active advocacy organization for the weather enterprise community. OGA and LBA’s Joel Widder staff the coalition, which has grown to almost 40 institutions from the diverse weather enterprise community, with increased representation of the commercial sector and end-users. See www.weathercoalition.org for the full list of members as well as advocacy activities. This year, the Coalition sent letters regarding continued operation of the NOAA Profiler Network, the NOAA Organic Act, the President’s Budget Request for FY07, and a recommendation for NOAA to establish a federally chartered advisory committee as called for in the NRC Fair Weather report. The Coalition co-sponsored the Second Annual Summer Community Meeting with the AMS Commission on the Weather and Climate Enterprise, holding a special session on reaching consensus on legislation and advocacy affecting our community. From that discussion, members of the Weather Coalition’s Executive Committee in Washington created a working document outlining strategic advocacy priorities, which is available at: http://www.weathercoalition.org/Priorities_8-06.pdf. A version of this document will form the basis of discussion at a town hall at the AMS annual meeting in January 2007.
Written and Oral Testimony on the President’s Budget Request. On behalf of our community, UCAR provided written testimony (http://www.ucar.edu/oga/html/advocacy/index.html) on the President’s FY 2007 request regarding the budgets of NSF, NASA, NOAA, and the DOE’s Office of Science.

Action Alerts. This year to date (September 3rd), I have issued the following Action Alerts to:

- The UCAR community asking for signatures for separate letters to House and Science Appropriations Committee members regarding the FY07 Budget Request for NSF, NOAA, and NSF. Over 60 members of our community signed these letters, which can be found at: http://www.ucar.edu/oga/html/advocacy/index.html.

- UCAR Members from California and Iowa to write letters to their representatives regarding harmful visa-related amendments to the immigration bill. (Their congressional members sat on a strategic committee for this issue.)

- The UCAR community asking them to contact their representatives to sign a “Dear Colleague” letter to Chairman Wolf and Ranking Member Mollohan supporting the FY07 request for NSF.

- The UCAR community to collect signatures for a letter to the House Appropriations Subcommittee on Science; the Departments of State, Justice, and Commerce and Related Agencies regarding cuts to NASA’s research and analysis grants program; and to NASA’s Earth Sciences account. This letter to the leadership included over 40 UCAR Members’ signatures.

As the final phase of the FY 2007 budget process kicks into high gear, we will issue additional alerts. We will urge Congress to complete their work on appropriations quickly and ask them to support the highest levels for NSF, NASA and NOAA. We heard from several staffers that the multiple signature approach proved very effective this year. As a result, at the upcoming UCAR Members’ meeting, you will be asked to provide OGA with your signature, if you are comfortable with that, so that we may continue to produce letters that will leverage broad community participation. We will use signatures solely for our letter-writing campaign to members of Congress, when appropriate, and only after we get your approval for each letter. We thank those of you who have responded to our Action Alerts this year and urge all of you to participate as the budget process continues.

Capitol Hill Briefings. In an effort to educate policy makers about atmospheric sciences research and issues, UCAR coordinates educational briefings for Hill staffers. We held the following luncheon briefings during this past year:

“U.S. Water Resources on the Regional Scale: Prediction, Change and Tools for Mitigation.”
Speakers were:
Roy Rasmussen and David Yates, NCAR
John Wilson, New Mexico Institute of Mining and Technology

“Boosting Private Sector Competitiveness Through Federally Funded Weather & Environment R&D”
Speakers were:
Frank Nutter, Reinsurance Association of America
Maria Pirone, Atmospheric and Environmental Research, Inc. (AER)
Walter Dabberdt, Vaisala Group
Philip Ardanuy, Raytheon Information Solutions

“Tornadoes: How They Form and How Well We Can Forecast Them,” cosponsored by UCAR and the Congressional Hazards Caucus Alliance
Speakers were:
Joshua Wurman, Center for Severe Weather Research
Mark Tew, NOAA’s Public Weather Warning Program
Greg Forbes, The Weather Channel

Visits to UCAR. In addition to quite a few people from the Colorado Delegation, the following congressional and agency staff visited UCAR:

- Frank Cushing, Clerk and Staff Director, House Committee on Appropriations
- Corey McDaniel, Senior Professional Staff Member, Senator Chuck Hagel (the senator’s energy/science/climate advisor)
- Brigadier General John (Jack) Kelly, Jr., NOAA’s Deputy Undersecretary for Oceans and Atmosphere
- Garret Graves, Staff Director for the Subcommittee on Global Climate Change and Impacts, Senate Committee on Commerce, Science, and Transportation.
- Chad English, Professional Staff Member, Environment, Technology, and Standards Subcommittee of the House Science Committee.
- Denise Edwards, Legislative Director for Representative Robert Cramer, Jr. (D-AL)

Figure 11: Katy Schmoll (UCAR VP for F&A), Frank Cushing (Clerk and Staff Director for the House Appropriations Committee), and Jeff Stith (NCAR, EOL) after touring HIAPER aircraft
Visits to the Hill. UCAR staff and leadership meet with Hill and Executive (Office of Management and Budget and Office of Science and Technology Policy) staff and the Colorado Delegation quite regularly. Of particular note this year, visits were made with Appropriations staff to discuss the budgets for NSF, NASA (Earth Sciences in particular), NOAA, and with the House Science Committee to talk about a number of issues including NOAA’s reauthorization bill.

In May, while in D.C. for the annual spring Board of Trustees meeting, UCAR Trustees met with General D.L. Johnson, Director of the National Weather Service. At a special breakfast hosted by Congressman Mark Udall of Colorado, the board met with Mr. Udall, Congressman Joe Schwarz (R-MI), and many staffers of the House Science Committee. Along with UCAR senior staff, the following UCAR Trustees made visits to their delegation’s or Appropriations Committee offices during the May meeting to address issues of concern to the whole community: Kelvin Droegemeier, Len Pietrafesa, Rana Fine, Frank Nutter, Rosina Bierbaum, Hemant Shah, Neal Lane, Eric Barron, Robert Palmer, and Berrien Moore.

Events/Meetings. UCAR played a major role in organizing the summer Community meeting on the future of the weather research enterprise. UCAR also participated in the annual Coalition for National Science Funding (CNSF) exhibit and reception for Members of Congress and staff. This year’s exhibit, showcasing NSF-sponsored research, was on forecasting Sunspot cycles. A highlight of the year was the visit of the National Science Board (NSB) to UCAR. NSB members toured facilities, heard presentations on programs, and attended receptions that featured HIAPER and UCAR education programs. An additional unusual event for us was the visit of Queen Noor to NCAR. Her Majesty is chairing the honorary committee for the campaign to establish the Najeeb E. Halaby Distinguished Fellow position at NCAR. She was interested, not only in the position being named in honor of her father, but in our broad environmental work.
Congressional Science Fellow and AMS-UCAR Summer Policy Colloquium. UCAR co-sponsors a congressional science fellowship program with the AMS. The 2006-2007 Congressional Fellow is James Bradbury from the University of Massachusetts’ Department of Geosciences (Climate System Research Center); he has just started his year but has not chosen a congressional office yet.

Publications. OGA supports a number of publications, including:

- **OGA Web Page.** This site, www.ucar.edu/oga/index.html, includes federal budget information, testimony, news and updates; advocacy priorities; and useful links.

- **Weather Coalition Web Page.** This site, www.weathercoalition.org, disseminates recent advocacy activities and current issues of importance to the weather research and operations community.

- **Washington Updates.** These emails provide information on appropriations activities as well as current information on relevant bills and initiatives. In an effort to minimize the number of emails sent to the community, OGA’s Washington Update is now being incorporated into the monthly UCAR Updates and is posted on OGA’s website: [http://www.ucar.edu/oga/index.html](http://www.ucar.edu/oga/index.html).

- **Science Briefs.** The year-end 2005 issue, highlighting community programs and projects, was emailed to science legislative assistants and committee staff and may be found at: [http://www.ucar.edu/oga/pdf/Science%20Briefs%20Fall-Winter%202005.pdf](http://www.ucar.edu/oga/pdf/Science%20Briefs%20Fall-Winter%202005.pdf). The fall issue is about to be published and will be made available at the October meetings.

- **In Session with Congress: A Guide for Scientists.** This brochure is available to anyone who communicates with Members of Congress and their staff. Copies will be available at the October meeting.
5.0 UCAR Finance and Administration

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

5.1 Human Resources Support

In August UCAR was selected as one of the Best Companies to Work for in Colorado in the large-size company category (over 200 employees). The competition, sponsored by the Society for Human Resources Management, honors organizations that show a dedication to their employees’ growth and quality of life. UCAR placed sixth out of 25 finalists in the large company category and was the only non-profit to make the list. The rankings were based largely on an anonymous employee survey. We were particularly pleased that, in response to the statement “The work of this organization is important and makes a difference,” 97% of the employees answered positively.

UCAR’s Childcare Center continues to thrive, breaking even over a year before projected. The Center received accreditation from the National Association for the Education of Young Children. The accreditation is very prestigious within the childcare industry and reflects the high quality of operations at the UCAR Center.

UCAR began a new employee development program this year, the Executive Leadership Program (ELP). The program is aimed at the senior levels of UCAR management, including NCAR Lab, Division and Institute Directors; UOP Program Directors; and senior managers in UCAR Finance and Administration. ELP provides executives with a better understanding of their own strengths and impact on others. It also provides models and tools for leading successful teams and encouraging appropriate stakeholder involvement. It also focuses on how to lead an effective organization. This course was developed at the request of UCAR’s senior executives, who were looking for an executive level development program similar to the UCAR Leadership Academy.

5.2 Facilities and Space Planning

The new Atmospheric Chemistry Laboratory Building, FL-0, was ready for occupancy in December 2005. FL-0 is over 85,000 square feet and has state-of-the-art laboratory facilities. The new bicycle path officially opened in February 2006. The path connects the Foothills Lab and Center Green campuses. It also provides easy access to City of Boulder bike paths. The final phase of the Mesa Lab Refurbishment project will begin in late October, with completion expected in the summer of 2007.
5.3 Financial Management

UCAR Finance and Administration is working closely with NCAR and UOP in the development of a financial planning, budgeting and reporting tool. This ambitious project has involved interviews with over 100 staff to gather requirements and discuss problems and issues with current services. The project was started in response to NCAR’s needs for tools with which to conduct their annual budget review.

6.0 Significant Opportunities in Atmospheric Research and Science (SOARS)

SOARS (http://www.soars.ucar.edu) was launched in 1995 to support the national goal of “a diverse, internationally competitive, and globally engaged workforce of scientists, engineers, and well-prepared citizens.” 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 ethnic diversity within the scientific community of the future.

SOARS is a multiyear undergraduate-to-graduate bridge program that is equal parts learning community, mentoring program, and research internship. At the heart of SOARS is a ten-week summer immersion program at UCAR/NCAR/UOP or the laboratories of a SOARS sponsor, where SOARS students (protégés) do research and participate in an eight-week scientific writing and communication workshop. Protégés help define their individual project, conduct research, write a formal research paper, and present their results at a colloquium.

As part of the summer research experience, protégés are supported by a strong, formal mentoring structure. All SOARS protégés have a science mentor who guides their research and a writing mentor to help them improve their scientific communication skills. First-year protégés also have a community mentor to help them navigate scientific and local culture and a peer mentor – a protégé who has participated in the program in previous summers – to model effective scientific and professional practices.
During the summer, a strong and supportive community develops from the critical mass of diverse protégés living together; working on related scientific projects; and collaborating to develop and refine their leadership, professional, and communication skills. This community is an important component of SOARS' long-term success. This past summer a two-day leadership training workshop prepared the protégés with skills such as communication, conflict resolution, and peer mentoring.

### 6.1 2006 Summer Highlights

Twenty-three protégés from across the United States and Puerto Rico completed the 2006 summer program. Fourteen protégés returned for their second, third, or fourth SOARS summer; nine were brand new to SOARS. Two of the new protégés and one returning protégé participated through our partner program, Research Experience for Students in Solid Earth Science (RESESS), which seeks to broaden participation in geological sciences. Forty-nine UCAR/NCAR/UOP employees participated as SOARS mentors, along with 15 scientists from outside UCAR.

A complete listing of summer 2006 protégés, mentors, and research topics is available online at: [http://www.soars.ucar.edu/protegementors.php](http://www.soars.ucar.edu/protegementors.php).

### 6.2 1996-2006 Program Results

Since the 1996 inaugural summer, 104 protégés have participated in SOARS. Participants’ ethnicity and gender are outlined in Table 1. Tables 2 and 3 track the proteges pathways and their scientific contributions as of September, 2006, respectively.
Table 1: Ethnicity and Gender Representation of SOARS Protégés, 1996-2006

<table>
<thead>
<tr>
<th>Ethnicity and gender</th>
<th>Number of protegés</th>
<th>Percent of protegés</th>
</tr>
</thead>
<tbody>
<tr>
<td>African American or Black</td>
<td>43</td>
<td>41%</td>
</tr>
<tr>
<td>Hispanic or Latino</td>
<td>36</td>
<td>35%</td>
</tr>
<tr>
<td>American Indian, Alaskan Native, or Native Hawaiian</td>
<td>13</td>
<td>12.5%</td>
</tr>
<tr>
<td>Asian American</td>
<td>6</td>
<td>5.8%</td>
</tr>
<tr>
<td>White</td>
<td>6</td>
<td>5.8%</td>
</tr>
<tr>
<td>Female</td>
<td>63</td>
<td>61%</td>
</tr>
<tr>
<td>Male</td>
<td>41</td>
<td>39%</td>
</tr>
</tbody>
</table>

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 2: Protégé Pathways as of September, 2006

Of the 104 protégés that have participated in the program since its inception in 1996:
- 4 entered STEM workforce with a Ph.D.
- 1 faculty member in Atmospheric sciences
- 17 currently in Ph.D. graduate programs
- 43 earned an M.S. in science or engineering
- 17 currently in M.S. graduate program
- 69 have completed B.S. in STEM
- 16 are presently undergraduates
- 9 left program to pursue other fields
- 10 failed to meet program requirements

Table 3: Protégé Scientific Contributions as of September, 2006

Since 1996, protégés have contributed or earned:
- 139 posters presented at national or regional conferences
- 69 oral presentations or panel participants at STEM conferences
- 14 refereed, co-authored papers from summer research
- 3 AMS graduate fellowships
- 3 NSF graduate fellowships
- 4 NASA pre-doctoral fellowships

In addition, SOARS received the Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring in 2001.
6.3 Current Funding and Future Directions

In 2006, NOAA's Office of Global Programs, NOAA's National Ocean Service, and the University of Colorado Cooperative Institute for Research in Environmental Sciences (CIRES) joined NSF and UCAR in continuing their sponsorship of SOARS. Continued funding for 2006 included NCAR’s Earth Observing Lab (EOL) and NCAR’s Biogeosciences Initiative. These two sponsors continued investing in a new model for SOARS: partnering with NCAR divisions or projects to support their long-term workforce needs or to provide an educational component to competitive grants. In FY06 Colorado State University included support for one protégé a year in its five-year, NSF funded “Multi-Scale Modeling of Atmospheric Processes” project. This year SOARS grew its partnership with Research Experiences in Solid Earth Science for Students (RESESS) to adapt the SOARS model for the solid Earth community. The three-year, NSF funded project uses a "mentor the mentoring program" model; RESESS protégés will participate in SOARS activities over the next three years as the RESESS program grows. At the end of three years, RESESS will be a completely independent program with between eight and 13 participants.

In FY06 NSF renewed its support through 2010. In addition to supporting 12 protégé positions, the renewed award expands support for SOARS administrative staff, introduces undergraduate funding, and allows protégés to pursue opportunities in education and policy research.
7.0 UCAR Foundation and Technology Commercialization

The UCAR Foundation is celebrating its 20th year since incorporation and has seen many opportunities and challenges during this time. The vision of its founders, that the Foundation be UCAR’s technology transfer partner, has been largely fulfilled. Over these past twenty years, the Foundation has brought in over $5 million in licensing fees, royalties and contract revenue and helped generate over $15 million in sponsored research for NCAR. In addition, our inventors have received approximately $250,000 in direct payments from royalties.

More important than the dollar figures is that the Foundation has facilitated technology transfer to universities and industry in many instances where it might not have otherwise occurred. As UCAR’s technology transfer affiliate, the Foundation is able to enter into partnerships and relationships that UCAR cannot. One example of this is the formation of the WSDM Technologies, LLC in 2003, which the Foundation participates in through its for-profit subsidiary, Peak Weather Resources.

Other examples of technology transfer over the past twenty years include numerous systems, instruments and software developed throughout the organization, but primarily coming from the Earth Observing Laboratory (EOL) and Research Applications Laboratory (RAL). Scientists and engineers in EOL have developed an eye safe lidar (REAL) that has been used in several field projects, including one known as the Pentagon Shield Protection Project. EOL is also home to the dropwindsonde technology, radar upgrade packages and research aviation patents, many of which are used by government entities on a daily basis and also sold through commercial vendors. RAL has continued its strong tradition of research in aviation weather with de-icing systems, wind shear alert systems, turbulence warning systems, thunderstorm tracking, autonowcasting and other decision support tools. The Hotplate snow and precipitation gauge (with seven patents) was the result of a joint collaboration with the Desert Research Institute. It has been in the field for research purposes for several years and is now in production at a commercial manufacturer.

The UCAR Office of Programs has also been active in technology transfer over the years. COMET modules were originally marketed to the private sector through the Foundation. More recently an aerial data sampler and temperature probe developed in JOSS have been licensed to a private company. Additionally, there have been a number of important patents relating to water vapor measurements and GPS technology that have been awarded to UOP scientists and engineers.

On an operational basis, the UCAR Foundation still has a for-profit subsidiary, Peak Weather Resources, Inc., that allows the Foundation to undertake business development opportunities beyond basic licensing. For example, Peak is a member of the WSDM (Weather Supported Decision Making) Technologies LLC, which was formed in 2003 to commercialize the Weather to Support Deicing Decision Making System (WSDDM). In 2005, the original three members of the entity were consolidated into just two members: Peak and Vaisala Inc. Prior to the formation of Peak, the Foundation had created WITI Corporation, which marketed aviation weather systems and weather forecasting technology. WITI was sold in 2002 for approximately $20 million in cash and stock.

In other business, Peak continues to offer DICast data services, with Meteorlogix as the primary customer. Meteorlogix has been using this data service for the past two years, and we expect the relationship to continue into the foreseeable future.
The Foundation also anticipates the formation of another company in 2006, the Advanced Radar Corporation (ArC), which will enable the rapid deployment of the Hi-Q Radar Processor Upgrade. This upgrade board and other EOL developed technology allow for the acquisition of research quality data from existing radars deployed around the world that currently have limited capabilities. The business activity has evolved to the point where it is necessary to form a legal entity to support the sales and deployment of ArC’s products, with current contracts in the advanced stages for Indonesia, Mali and Burkina Faso, Alberta, Canada, and Saudi Arabia.

In Fiscal Year 2006, seven new intellectual property disclosures were received, two patents were issued and five new patent applications were filed: *Lidar System for Remote Determination of Calibrated Absolute Aerosol Backscatter Coefficients, Receiver for an Eye Safe LIDAR System, UV Channel for Laser Induced Fluorescence in REAL, Device for Correcting Satellite Imagery for Earth Curvature,* and the *Demodulation of Open Loop Radio Occultation Signals.*

Information about these and other UCAR technologies available for licensing can be found on the Foundation’s website at: [http://www.ucar.edu/research/techtransfer/](http://www.ucar.edu/research/techtransfer/).

- END OF REPORT -

Back to the UCAR October 2006 Meeting site