MEMORANDUM

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

FROM:      Richard A. Anthes 

SUBJECT: President's Report for October 2002 Meetings of Board of Trustees, UCAR 
            Members' Representatives, University Relations Committee and Academic 
            Affiliates 

Ladies and Gentlemen:

This report includes some of the highlights of UCAR's corporate, education and outreach activities 
since the October 2001 meetings. It’s been a busy and productive year. NCAR completed its new 
strategic plan, and you may read it at: http://www.ncar.ucar.edu/stratplan/. NCAR also made 
significant progress on the acquisition of two major community facilities – HIAPER (High-
Performance Instrumented Airborne Platform for Environmental Research) and ARCS (Advanced 
Research Computing System), which now has a peak performance of about two teraflops. NCAR and 
UCAR received excellent reviews from the National Science Foundation (NSF) and the UCAR 
Members Scientific Programs Evaluation Committee (SPEC). Warren Washington was elected 
Chairman of the National Science Board. A major field program, IHOP (International H₂0 experiment) 
was successfully carried out from May 12 to June 25, 2002. We spent a large amount of effort in 
planning new space in the Boulder area and wrote our first strategic plan for space needs, Strategic 
Analysis of Space Needs for UCAR and NCAR in the Boulder Area (http://www.ncar.ucar.edu/SPEC/spaceplan.pdf). We made good progress in refurbishing the Mesa 
Lab and acquired a new campus, Center Green, near the Foothills Laboratory.

This report, and the NCAR and UOP reports, contain 
additional details on the above items  
NCAR report:  
http://www.ucar.edu/governance/meetings/oct02/ncar_report.pdf  
UOP report:  
http://www.ucar.edu/governance/meetings/oct02/uop_report.pdf 

IHOP Radar
1.0 UCAR's Corporate Activities

1.1 Graduate Student Applications and “Recruiting For The Discipline”

During the past several years the UCAR Trustees have spent considerable time studying an issue regarding the decline in quantity, and possibly quality, of graduate student applications to UCAR universities. About a year ago we sent a request to the UCAR Member institutions, asking them to update the information in our original survey carried out in 2000. The results of that survey were summarized in a January 2002 article in the Bulletin of the American Meteorological Society, “Wanted: More Ph.D.s” by Gabor Vali, Dennis Thomson, David Houghton, Jack Fellows, Susan Friberg, and myself. The results of the updated survey showed a continuation in the downward trend in applications, but a slight upward trend in admissions and in students entering (see figure).

Trends in applications, admissions, and entering students in UCAR universities who responded to our surveys in 2000 and 2001 (Courtesy Gabor Vali).

To assist universities in recruiting, and to help potential graduate students in selecting a university that will best meet their needs, UCAR is developing a website that is aimed at recruiting undergraduate students into graduate studies in the atmospheric sciences. Gabor Vali will report on this effort at the Members meeting. (http://www.ucar.edu/student_recruiting/).

In addition, we have been working with AMS to finish the next generation AMS/UCAR Curricula Guide. You’ll be receiving information about submitting the data on-line from your department this fall. This should serve as a valuable resource to potential undergraduate and graduate students as well as for all of you. And, in addition to being a stand-alone resource for the research and academic community and students, it will be linked to the student recruiting website.
1.2 Review of NCAR and UCAR

The NSF and UCAR SPEC (Scientific Programs Evaluation Committee) reviews of NCAR and UCAR occurred in 2001, the third year of the present five-year cooperative agreement with NSF. All NCAR divisions were reviewed separately, after which NCAR and UCAR management and the overall NCAR program was reviewed. The Chairman of the SPEC, Bob Duce, will report on the reviews at the October meeting (http://www.ucar.edu/governance/meetings/oct02/member_reports/spec.pdf).

The NSF management review process was comprehensive and thorough and involved extensive written materials from UCAR and NCAR; a set of external written reviews solicited by NSF; and a two-day site visit. We are gratified by the overwhelmingly positive nature of the review. The recommendations will challenge us and our primary partners—the NSF, other federal funding agencies, and the university community—to build on the successful NCAR program and, in the words of the panel, “take the national center concept to a new level”—one that exerts an even more profound influence on the national and international agenda for atmospheric sciences.

As a unique, university-based institution, UCAR and NCAR have a responsibility to help shape the national and international agenda in the atmospheric and related sciences. In particular, we agree with the following (paraphrased) comments of the review Panel:

*NCAR should lead the development of a national agenda in the atmospheric and related sciences that includes the capabilities of the various federal agencies.*

NCAR will reach out to other institutions and agencies to help develop this agenda, by taking on such issues as linking research and operations; in forecasting climate, weather, and space weather; intellectual property rights; and full and open access to data.

The Panel made several helpful recommendations concerning programmatic issues, paraphrased below.

*The Environmental Societal Impacts Group (ESIG) should grow to reflect the importance of the societal implications of NCAR’s work.*

We have set in motion a multi-year plan to augment ESIG with a series of new hires (approximately one per year). Two early career scientists were appointed during 2001 and 2002, and a search is under way for a Scientist III with a social science background interested in the societal implications of severe weather.

*Efforts in Education and Outreach should grow.*

Several new programs are being developed, including a new summer leadership workshop for undergraduates, an improved educational Web presence, a series of geosciences workshops for middle and high school teachers, an early-career faculty fellowship program, augmentations to public tours and exhibits, an enhanced graduate fellowship program, and educational supplements to existing programs.

*Efforts to increase diversity should be enhanced.*
UCAR and NCAR are extremely proud of the SOARS (Significant Opportunities in Atmospheric Research and Science) program and will continue to support this award-winning effort. In addition, we will intensify our efforts to increase the diversity of people and ideas at the center. We have made diversity an explicit goal of center-wide recruitment and have hired four female Scientist Is in the past year, significantly increasing the representation of females in the NCAR scientific and engineering work force. In 2002 50% of the Advanced Study Program (ASP) postdoctoral fellowships were awarded to women.

The Panel highlighted several key management challenges for UCAR and NCAR.

**NCAR and UCAR should continue to pay attention to the design and construction of the new High-Performance Instrumented Airborne Platform for Environmental Research (HIAPER).**

HIAPER is the single most complex and costly acquisition that UCAR has ever attempted. As such, prudent and effective technical and financial management is essential. The NCAR director appointed a program manager who reports directly to him, thus ensuring high-level visibility and support for the program. A HIAPER Office website has been set up at: [http://www.hiaper.ucar.edu/](http://www.hiaper.ucar.edu/).

**UCAR should carefully consider a comprehensive plan for the acquisition of land and construction of new buildings to serve UCAR and NCAR into the future. UCAR should take advantage of its excellent bond ratings and ability to develop the most cost-effective approach to address the space issues.**

As discussed above, UCAR has developed a strategic plan for space needs that will serve NCAR and UCAR for the next decade. This plan will take advantage of UCAR’s excellent bond ratings and ability to obtain cost-effective and efficient space.

**NCAR should develop links with other FFRDC’s [Federally Funded Research Development Centers] (such as JPL – [Jet Propulsion Lab]) and other institutions to identify “best practices.”**

We will convene fairly regular meetings of relevant laboratory directors to discuss issues of common concern and develop “best practices.” We held an initial meeting of this type during the American Meteorological Society annual meeting in January 2002. The Lawrence Berkeley Laboratory (an FFRDC of the DOE) is in the process of reviewing both NCAR and JPL to determine administrative best practices applicable to the DOE setting.

**1.3 Proposal for the Next Cooperative Agreement**

Following the 2001 reviews NSF decided not to compete the next cooperative agreement for the management and operation of NCAR, but rather to ask UCAR for a proposal as they did in 1997. We will submit our proposal to NSF in early October 2002 to continue the management of NCAR for another five years, beginning in FY 2004. NSF will send the proposal out for anonymous peer review, and an NSF-appointed panel will carry out a site review in December 2002.

**1.4 Legislation Affecting the UCAR Community**
UCAR monitors and has some input into pending legislation that would affect the university community. Given this fall’s election and the attention being placed on the flagging economy as well as the creation of a Department of Homeland Security, it is unlikely that many pieces of legislation of interest to our community will become law this year. Nevertheless, the following list includes the status of relevant legislation that will either be dealt with before the end of the year or will likely continue to receive attention in the next congressional session:

**Student Visa Regulations.** In large measure because of the events of September 11th, the regulation of student visas has received a tremendous amount of interest on Capitol Hill this year, with several bills being introduced by Congress and the President proposing a new system to evaluate foreign students wishing to major in areas of interest deemed “sensitive.” In the coming year, the academic community will be faced with critical stages in the student visa process, which UCAR will follow and on which we will report.

**National Science Foundation Funding.** The Senate may mark up the NSF reauthorization bill before the 107th Congress adjourns. The House passed their version of the reauthorization bill, which recommends that the NSF budget be doubled in five years. The Senate Appropriations Committee approved a 12 percent increase for NSF in FY 2003, an amount consistent with the doubling effort. The House VA-HUD Appropriations Subcommittee has not yet marked up its version of the bill, so no final numbers are available.

**The National Weather Service Mission.** Over the last several years, there have been repeated congressional attempts to restrict the National Weather Service (NWS) from providing any service or product that a private sector company might be able to provide. Last year, the National Research Council formed the Committee on Partnerships in Weather and Climate Services with John Armstrong (ret. IBM) and me as co-chairs. Our report will be issued in December. In Congress, this issue now resides within the House Science Committee for possible action, but no legislation is likely to appear during this congressional session.

**Climate Change/National Energy Policy.** The President’s FY 2003 budget request included $40 million for the interagency Climate Change Research Initiative (CCRI), to be managed under NOAA with Dr. James Mahoney, NOAA Deputy Administrator, charged with sorting out the scientific and management relationship between CCRI and the U.S. Global Change Research Program (USGCRP). The House and Senate have held a number of hearings on the Administration’s plan. The only climate change legislation that has any chance of passing this year is included in the energy bill, versions of which have been passed by both the House and Senate. Conferencing on a final bill has begun, however, many Members feel that the two sides are too far apart on key issues for there to be any resolution this session.

**Information Technology Research Funding.** The Networking and Technology Advancement Act was introduced in the House to authorize significant funding for NSF, NASA, NOAA, DOE, EPA, and NIST for long-term basic research in information technology. The bill has been placed on the legislative calendar of the House, but the Senate has not yet addressed it. It is unclear if it will be considered prior to the end of the year, but UCAR will monitor and report on any movement.

**Remote Sensing Applications Legislation.** Given information provided to Congressman Udall (D CO) by both UCAR and NOAA, a bill was introduced on the House side last year to encourage the development and integrated use by the public and private sectors of remote sensing and other geospatial
information. The bill was referred to the House Science Committee, but there is no companion legislation in the Senate.

*Database Legislation.* There has been no legislative action on this issue this year.

### 2.0 Education and Outreach Activities

In partnership with the university community, UCAR’s office of Education and Outreach (EO) promotes scientific literacy and advances all levels of education and training in subjects related to Earth’s atmosphere. Activities completed this year were guided by the EO Strategic Plan ([http://www.ucar.edu/educ_outreach/stratplan.html](http://www.ucar.edu/educ_outreach/stratplan.html)), adopted in June 2001. While informal science events, exhibits, and tours of the Mesa Lab for K-12 students, the public, and visiting dignitaries remain the cornerstones of the education and outreach program, our web outreach continues to strengthen. New activities have been successfully implemented this year with special emphasis on providing undergraduate students and middle and high school teachers with access to the breadth of topics, technologies, and research methodologies in Earth system science.

#### 2.1 Undergraduate Leadership Workshop

EO is dedicated to encouraging undergraduate students who excel in science to attain higher degrees in the atmospheric and related sciences. In January science department chairs in UCAR member universities were asked to nominate gifted college juniors to participate in the first NCAR Undergraduate Leadership Workshop. During the second week of June, students representing 15 universities convened for the five-day program. Participants had the opportunity to explore the concept of leadership throughout the week while exploring NCAR’s and NOAA’s laboratories, facilities, and research topics and engaging in discussions with scientists about their interests. A comprehensive evaluation of the workshop is under way, and the results will inform revisions to this successful program which will be held again on June 17 – 21, 2003. Information about the program is available at: [www.ucar.edu/educ_outreach/ulw/](http://www.ucar.edu/educ_outreach/ulw/).

#### 2.2 Geoscience Education Workshop on Global and Climate Change

Global and climate change was the theme for a new two-week workshop held in late July ([http://www.ucar.edu/educ_outreach/gew/](http://www.ucar.edu/educ_outreach/gew/)). Nineteen participants were selected from over 170 applications, resulting in a highly-skilled, articulate, and enthusiastic group. The program was carefully designed to provide a balance of experiences including field studies, web-based resources, hands-on inquiry activities, computer modeling tutorials, lectures, and visits to scientific laboratories relating to global and climate change and supporting concepts. Communication with teachers will be sustained throughout the next school year, during which they are expected to disseminate what they have learned to colleagues. A comprehensive evaluation of the workshop is underway and will inform revisions to this successful program, which will be held again July 17 – August 2, 2003. EO’s long-term strategy is to have educators across the country obtain a similar training, by means of a distance-learning version of the workshop, and assisted by a growing team of trained workshop participants across the country.
2.3 Informal Science Education

2.3.1 Events and exhibits

Super Science Saturday. Nearly 3,000 students, teachers, and family members participated in Super Science Saturday on October 25, 2001. The outreach event, designed to promote public science literacy and enrich the science experiences of area students and teachers, is held every fall at the Mesa Laboratory. NCAR, UCAR, and UOP staff presented "Frighteningly Good Science" demonstrations to enthusiastic audiences throughout the day, and a 30-foot interactive rope spider and biodiversity exhibit dominated the Mesa Lab Fountain Plaza. Multiple workshops on the scientific process, science photography, and science fair projects rounded out the event. Last year’s Super Science Saturday event was funded in part by Friends of UCAR. This year’s event is scheduled for October 26th.

Science Exhibits. Several exhibits, including the Flow Tank, Control Tower, and the Mesa Lab Theater have been upgraded and signage throughout the Mesa Lab has been systematically improved. A physical and scientific assessment of all exhibits was undertaken in January, and a five-year Strategic Plan for Exhibits was developed with the assistance of the newly-formed Science Advisory Committee. Climate change and the Sun-Earth system were identified as content deficiencies. Plans are under way to develop a Climate and Global Change exhibit that will be highly visual and rich in artifacts. The new exhibit is scheduled for installation on the Mesa Lab lobby’s second floor in Spring 2003 following the building’s refurbishment.

Donor Mural. A Donor Mural for the Mesa Laboratory was designed and fabricated. It will be installed when refurbishment of the Mesa Lab’s front entrance is completed. The tile mural features an image of the I.M. Pei building created by Boulder artist Gayle Crites. This image is surrounded by the names of companies and individuals who have contributed to the exhibits and educational initiatives at NCAR/UCAR.

Art Exhibits. Exhibits by 15 local and regional artists were displayed in the Mesa Laboratory's two public galleries as a part of the NCAR Community Art Program, one of the institution’s oldest and best received outreach programs. Many of the works highlight natural phenomena and the connection between science and art. In addition, the April Student Art Showcase brings the Boulder Valley School and the St. Vrain Valley School Districts together annually at NCAR to honor student artists. Over 150 art pieces inspired by environmental themes were displayed, and award-winning artists and their families were honored at an evening reception.
2.3.2 Education and tour program

NCAR’s on-site visitor program has grown in the past year. Although the total number of visitors on guided tours was down slightly during the fiscal year, the number of guided tours offered has actually increased. We have made many of our presentations more inquiry-based, including demonstrations and hands-on activities as a regular part of school children’s visits. This and other information is being compiled into a number of web-based atmospheric science-oriented educational resources that will be distributed on-site and on the Internet. Our science and technology educator has drawn from his recent participation in an international weather field project in Australia to launch a new website that will teach students about the scientific process as well as the specific project’s focus.

2.3.3 Web-based outreach

Windows to the Universe. The Windows to the Universe (W2U) internet site (http://www.windows.ucar.edu/) brings together Earth and space sciences with the arts and humanities. W2U provides a rich, educational tool that satisfies the curiosity of a wide spectrum of learners as they seek to understand the world and space around us. A primary thrust of the project is to emphasize the interdisciplinary nature of the geosciences and their relevance to history and culture. With three levels of content, W2U has become a major educational resource for millions of learners from around
the world, including students (K-12 through undergraduate), teachers, and adults who seek scientific content and inquiry activities on the internet. In the year 2001, 4.3 million users visited W2U, and we expect to serve about the same number in 2002.

Throughout this year, we have continued to maintain W2U by editing and updating pages and responding to our users. A major area of emphasis for development this year has been in the Earth section of the website. We are in the process of implementing a comprehensive geology and Earth system science section to it, supplementing curricula developed jointly between the NASA Goddard Earth Science Education program and the Anne Arundel, Maryland public schools. In addition, we continue to develop new hydrology content supporting the HIGH TIDE project at Old Dominion University, as well as maintaining and developing new space weather content and activities supporting several projects with the University of Michigan. We are developing new content on upper atmospheric chemistry and dynamics and noctilucent clouds through separate collaborations with NCAR and UCAR scientists on NASA proposals. In addition, we will begin to translate the entire website into Spanish over the next two years.

Web Weather for Kids (http://ucar.edu/educ_outreach/webweather) is designed to motivate middle school children to explore and experiment with the exciting body of scientific knowledge contributing to our understanding of dramatic and severe weather events. Web Weather for Kids’ award-winning prototype site has expanded this year to include inquiry activities and information about thunderstorms, lightning, tornadoes, hurricanes, and blizzards, as well as human-interest stories, games, safety information, and teacher tips.

3.0 Corporate Affairs

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

3.1 Corporate Affairs Governance Activities

The UCAR Governance office plans and manages the activities, responsibilities, and requirements of the UCAR Board of Trustees and Members and their respective governance committees. This office is also involved in such projects as the student recruiting website, the joint AMS/UCAR curricula guide database development, and the UCAR top-level website. UCAR governance activities undertaken since the October 2001 meeting are as follows:

The Board of Trustees. (Otis Brown, University of Miami, Chairman) The Board held three regular meetings over the past year: October 2001 and February 2002 meetings in Boulder and the June 2002 meeting in Washington D.C. For further information on these meetings, please see the Board minutes at: http://www.ucar.edu/governance/bot/bot_minutes.html.

Last October the Trustees welcomed three new members: Kelvin Droegemeier (University of Oklahoma), Neal Lane (Rice University), and Orlando Taylor (Howard University); Paola Rizzoli (MIT) was elected for a second three-year term. In January, Trustee and Treasurer, Patricia Woodworth (formerly of the University of Chicago) resigned from the Board when she took a new position at another institution. At their June meeting, the Board elected Barbara Feiner (Washington
University) as Trustee and Treasurer of the corporation. As Vice Chancellor for Finance at Washington University, Barbara brings extensive financial experience to the Board as Treasurer, an increasingly important position. We are delighted that she has agreed to join the Trustees, and to stand for election this fall to serve out Woodworth's term.

Otis Brown will report on Board activities during his Chairman's Report at the October Meeting.

**University Relations Committee.** (Chris Bretherton, University of Washington, Chairman). In a break with custom, the URC met in Boulder (rather than on a university campus) this past April to hear from many of the UCAR, NCAR, and UOP divisions, programs, and projects. The Committee spent a full day and a half “kicking the tires” of the organization—a very worthwhile couple of days for us at UCAR and hopefully for the committee.

The URC standing subcommittee, tasked with reviewing NCAR and UOP non-NSF proposals for university involvement and competition issues, also reported to the Committee during the April meeting. They determined that the proposals for the past six months have met the established guidelines. Chris Bretherton will report in more detail at the upcoming Members’ Meeting. Detailed summaries of each of the meetings can be found in the URC report at: [http://www.ucar.edu/governance/meetings/oct02/member_reports/urc_report.htm](http://www.ucar.edu/governance/meetings/oct02/member_reports/urc_report.htm).

For further information on the URC, the Committee website can be found at: [http://www.ucar.edu/governance/committees/urc/index.html](http://www.ucar.edu/governance/committees/urc/index.html).

**The Membership Committee.** (Arthur Few, Rice University, Chairman) This year the Committee conducted its renewal application review work by email since there were no new UCAR membership applications this coming year.

The Committee's report can be found at: [http://www.ucar.edu/governance/meetings/oct02/membership_committee/](http://www.ucar.edu/governance/meetings/oct02/membership_committee/).

**The Members’ Nominating Committee.** (Mary Jo Richardson, Texas A&M, Chairwoman) The Committee met in June prior to the UCAR Board Meeting in Washington, D.C. to determine the slate of candidates you will vote on during Wednesday morning’s election of Trustees and Member Committees. There is a very fine slate of candidates from which you will choose new Trustees.

Last year at the Members’ Meeting, you will remember that we discussed the need for increased breadth of experience on the UCAR Board in order to meet the expanding challenges and opportunities to the atmospheric sciences community and to oversee our increasingly complex organization. As you see from the Nominating Committee Report, Trustee David Skaggs introduced a resolution at the June Board Meeting to increase the number of Trustee-at-Large positions on the Board. We're interested to hear your thoughts on this proposed bylaw change and look forward to discussing it with you. The Nominating Committee Report can be found at: [http://www.ucar.edu/governance/meetings/oct02/nominating_committee/](http://www.ucar.edu/governance/meetings/oct02/nominating_committee/).

**The Scientific Programs Evaluation Committee (SPEC).** (Robert Duce, Texas A&M, Chairman) As described above in Section 1.2, the current SPEC—elected in October 2000—participated in the NSF Reviews of NCAR Divisions and the UCAR Management. The present SPEC Committee has appointed one (or, in some cases, two) of its own members to observe each of the eight NCAR
divisional reviews as well as the UCAR Management review. In addition, it has appointed other members of the community to serve as observers.

Once again, I want to thank the SPEC and the other panel observers for the time and effort they dedicated to these reviews. Their participation was vital, since many of the NSF panelists had little experience with NCAR or UCAR.

SPEC observers are as follows: (* denotes SPEC members)

- **ESIG** Eric Barron (Penn State)* and Bert Semtner (NPS)*
- **ASP** Franco Einaudi (NASA)* and Gene Takle (Iowa State)
- **HAO** Susan Avery (CU)* and Pat Reiff (Rice)*
- **MMM** Chris Fairall (NOAA)* and Chris Bretherton (UWA)
- **SCD** Bert Semtner (NPS)* and Lisa Sloan (UC-Santa Cruz)*
- **CGD** Eric Barron (Penn State)* and Terry Nathan (UC-Davis)
- **ACD** Susan Avery (CU)* and Barry Huebert (U of Hawaii)
- **ATD** Chris Fairall (NOAA)* and Brian Heikes (U of Rhode Island)

**UCAR and NCAR Management Review:**

- Robert Duce (Texas A&M)* and Franco Einaudi (NASA)*

### 3.2 Communications

**Highlights.** We have just issued the most recent in our biennial Highlights series. The theme for 2002 is integration and interaction, and each highlight weaves together a number of activities that share a common theme. It will be accompanied by supplemental multimedia materials on the Web.

**Images.** A new Digital Image Library will be unveiled this winter, containing a searchable collection of over a thousand images that can be downloaded from the Web free of charge by the university community. Subjects include everything from instrumentation to severe weather and climate phenomena, drawn from our substantial archive of photographs.

**Newsletters.** Both our monthly internal newsletter, *Staff Notes*, and the *UCAR Quarterly* have been redesigned this autumn. The *UCAR Quarterly* will debut this winter in full color, with a new community calendar and a regular column on corporate news that affects the broader community.

**Media.** Our scientists have been contacted frequently in recent months to discuss the current drought, with interviews on ABC and NPR, as well as in much of the national press. A media day/open house for IHOP attracted significant interest in the Oklahoma-Texas region as well as the *New York Times*, *Christian Science Monitor*, and *National Geographic*. HAO’s Tim Brown was featured at a NASA news conference promoting extrasolar planet detection. National Geographic reporter Tim Brookes spent two days at NCAR interviewing scientists for a January article on weather forecasting. We hosted a visit by Weather Channel executives Ray Ban and Terry Connelly and are discussing with them both short three- to four-minute features on NCAR and UCAR work as well as a possible longer documentary.
3.3 Office of Development and Government Affairs (ODGA)

Congressional Activities. Many of UCAR government affairs activities are accomplished with the extensive involvement and/or guidance of Lewis-Burke Associates in Washington, D.C. April Burke and her staff (Mark Burnham, 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. UCAR is also an active member of Astra (Alliance for Science and Technology Research in America), which is working hard to double the NSF budget.

Written Testimonies. On behalf of UCAR I provided written testimonies on the President’s FY 2003 request regarding the budgets of NSF, NASA, NOAA, DOE, FAA, and the USGS. These testimonies can be found on the web at: http://www.ucar.edu/oga/advocacy_activities/testimony.html.

Letter Campaign. During the past year, UCAR continued its letter-writing campaign on behalf of the community to support/provide comment on budgets for NSF, NOAA, NASA, FAA, and DOE as well as on relevant issues of concern to the atmospheric science community. I sent letters to House and Senate members regarding FY 2003 budget appropriations, to senators asking them to sponsor the bill to double the NSF budget, and to the VA-HUD Senate leadership to thank them for the excellent NSF marks. Following the attacks of September 11th, I sent our then-new document, National Security and the Essential Role of the Atmospheric Sciences, to the members of the House Science Committee; the Senate Committee on Commerce, Science and Transportation; the Office of Management and Budget; agency heads; the State Department; the Office of Homeland Security; and the Office of Science and Technology Policy. When the Administration’s Climate Change Research (CCRI) and Climate Change Technology Initiatives were announced, I wrote to Secretary of Commerce Evans regarding the value of the U.S. Global Change Research Program (USGCRP) and issues of coordination between CCRI and USGCRP.

Action Alerts. So far this year, I have issued Action Alerts to ask UCAR members to:

- encourage their Representatives to co-sign the Walsh-Mollohan letter to double the NSF budget, and
- urge the Senate Health, Education, Labor and Pensions Committee to mark up the reauthorization doubling the budget of the NSF (this alert was targeted for people with Representatives on this Committee).

Additional alerts will be issued throughout the fall as the FY 2003 budget goes to conference. In response to the OGA survey in 2001, we heard that many of you simply don’t have enough time to respond to these alerts, although we try to expedite the process by including contact information and sample letters. Therefore, we have scaled back on issuing these requests to the community and will send them only when action needed is critical. When appropriate, we are targeting our requests to those of you who have members on key congressional committees. Responding to these targeted requests is important for the entire community. We thank those of you who have responded already this year and urge all of you to participate this fall.
Capitol Hill Briefings. In an effort to continue to spread the word about atmospheric sciences research and issues, UCAR coordinates timely briefings. No briefings were held last fall because of the September 11th attacks. This spring, UCAR and AMS sponsored the following briefings, which were each attended by 50-70 congressional staffers:

“National Security and the Atmosphere: Current Examples of Research Applications”
Tom Warner (NCAR), Scott Swerdlin (NCAR), Walter Bach (Army Research Laboratory), Bruce Hicks (NOAA Air Resources Lab) -- Held on both House and Senate sides

Tim Killeen (NCAR), Randy Dole (NOAA Climate Diagnostics Center), Lisa Graumlich (Montana State University), Bob Hirsch (U.S. Geological Survey) -- Briefing on House side

Bill Hooke (AMS), Don Wilhite (National Drought Mitigation Center/University of Nebraska), Steve Running (University of Montana) -- Briefing on Senate side

Toward the end of September 2002, UCAR and AMS will join with the House Science Committee to sponsor a Hill briefing on successful recruitment and retention programs for underrepresented students in the geosciences. Speakers will include:

- Tom Windham, director of SOARS
- Judith Vergun, director of the Native Americans and Space Science program at Oregon State University and professor at the University of Hawaii’s School of Ocean and Earth Science
- Everette Joseph, professor in the Department of Physics and Astronomy and P.I. for the Center for the Study of Terrestrial and Extraterrestrial Atmospheres
- John Cortinas, assistant director of the Cooperative Institute for Mesoscale Meteorological Studies and research scientist for the National Severe Storms Laboratory

Visits to UCAR. We hosted visits to UCAR for:

- Vice Admiral Conrad Lautenbacher, NOAA Administrator, and staff
- Congressman Ehlers (R-MI) – House Science Committee visit
- Congressman Gutnecht (R-MN) – House Science Committee visit
- Congressman Udall (D-CO) – House Science Committee visit
- House Science Committee, NOAA Legislative Affairs, Department of Commerce, and Udall staff – all here for the House Science Committee visit and UCAR-hosted dinner
- Commerce Appropriations Subcommittee staff – House side
- Senator Allard (R-CO) staff
- NOAA Science Advisory Board
- Office of Preparedness and Security, Colorado Department of Public Safety staff (for national security activities briefing)
Visits to the Hill. UCAR, working with AMS, AGU and Lewis-Burke were involved in arranging and making a number of congressional, administration, and agency visits. Visit topics included FY 2003 appropriations, national security, NWS commercialization, climate change, computing capacity for climate modeling, and USWRP authorization and funding. We targeted the following offices: House and Senate Science Committees; House and Senate Appropriations Committees; the Office of Management and Budget; the Office of Science and Technology Policy; Senator Allard (R-CO); Senator Campbell (R-CO); Congressman Mark Udall (D-CO); Congressman Price (D-NC); Congressman Taylor (R-NC); Congresswoman Roybal-Allard (D-CA); NSF, NOAA, NASA, and DOE administration. UCAR Trustee Soroosh Sorooshian met with Arizona Congressman Kolbe’s staff regarding USWRP appropriations. Additional meetings were held with Harlan Watson, U.S. State Department Climate Change Negotiator; Norman Neureiter, State Department Science Advisor; James Mahoney, NOAA Deputy Administrator; and NOAA Administrator Conrad Lautenbacher. UCAR Vice President Jack Fellows organized a special meeting between several NCAR climate scientists, Science Advisor Marburger, and OSTP staff concerning climate change modeling.

Events/Meetings. UCAR participated in meetings of the Congressional Natural Hazards Caucus (UCAR is a member) and the annual Coalition for National Science Funding (CNSF) exhibit and reception for Members of Congress and Staff. In mid-September, UCAR will host a luncheon meeting for House Commerce Appropriations staff to address advocacy strategies for the USWRP Collaborations Fund. Congressman Watts (R-OK) will sponsor the meeting in which John Snow (Univ. of OK), Len Pietrafesa (NC State), and Bob Gall (NCAR) will participate.

Congressional Science Fellow and AMS-UCAR Summer Policy Colloquium. UCAR co-sponsors a congressional science fellowship program with the AMS. Ana Unruh, the second fellow in the program, spent her year working with Congressman Edward Markey (D-MA). Ana now holds a full-time position in Mr. Markey’s office. UCAR Vice President Jack Fellows presented at the Colloquium and ODGA, and the NCAR Director’s Office sponsored CGD’s Julie Arblaster as a participant.

Publications. UCAR produced a number of government affairs communications tools, including:

- OGA Web Page. This site includes federal budget information, testimony, news and updates, advocacy priorities, and useful links. It can be found at:
  http://www.ucar.edu/oga/index.html
• **Washington Updates.** These e-mails provide information on appropriations activities as well as current information on relevant bills and initiatives. They are posted on the OGA website at: [http://www.ucar.edu/oga/news_updates/washington_updates.html](http://www.ucar.edu/oga/news_updates/washington_updates.html)

• **Science Briefs.** This publication highlights atmospheric sciences research and its relevance to society. Before September 11th and the subsequent anthrax releases in Congressional offices, Science Briefs was mailed to over 1,000 congressional members, staffers, agencies, and briefing attendees. Because mail delivery to the Hill is still months behind, we are now putting this publication on the Web and directing staffers to it by e-mail.

• **The U.S. Weather Research Program: Saving Lives, Money and Time.** This new UCAR/AMS joint document replaces the previous USWRP document. It highlights the program’s three major areas of research, hurricanes, heavy precipitation and flooding, and societal impacts, and relates the relevance of the work to the needs of the nation: national security, energy and the economy. It may be found on the Web at: [http://box.mmm.ucar.edu/uswrp/brochure/USWRPBrochure.pdf](http://box.mmm.ucar.edu/uswrp/brochure/USWRPBrochure.pdf).

• **National Security and the Essential Role of the Atmospheric Sciences.** This document highlights some examples of ongoing efforts in the atmospheric sciences that contribute to military weather support, training, and other areas pertaining to national security. This is on the Web at: [http://www.ucar.edu/oga/security_doc.pdf](http://www.ucar.edu/oga/security_doc.pdf)

**Walter Orr Roberts Distinguished Lecture.** The 2002 Walter Orr Roberts Distinguished Lecture is being planned as I write this report. We continue to build the Roberts Forum web versions of the Capitol Hill briefings and the Roberts Distinguished Lectures. The Forum may be accessed at: [http://www.ucar.edu/oga/Roberts/](http://www.ucar.edu/oga/Roberts/).

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**Friends of UCAR.** The annual Friends of UCAR drive for education projects raised $13,429. (This is about $5,000 more than last year.) Funds supported Super Science Saturday and the Mesa Lab Student Art Showcase as well as provided a substantial matching contribution to the NSF Geosciences grant for the *Web Weather for Kids* website. This year’s Junior Scientist event was a highly acclaimed demonstration in the NCAR Visualization Laboratory (see photo, left). Many thanks to those of you who have joined Friends. Contributions from Trustees, Member Representatives, Academic Affiliates, staff, and others are most welcome as we start our FY 2003 campaign. A brochure for Friends of UCAR may be found at: [http://www.ucar.edu/friends/index.htm](http://www.ucar.edu/friends/index.htm).
4.0 Finance and Administration

4.1 Mesa Lab Refurbishment

Work has begun on the Mesa Lab main drive and will continue through November 2002. The most extensive element of the Mesa Lab Refurbishment project, the Mesa Lab Utilities Refurbishment (MLUR) will begin in October. The MLUR will require relocating Mesa Lab staff based on zones established to complete the work. This effort will take roughly 30 months.

4.2 Space Acquisition and Planning

UCAR is taking steps to acquire sufficient space to accommodate current overcrowding and ensure adequate space for future needs. As recommended by the UCAR/NCAR Management Review, NSF requested that UCAR engage professional space planners to determine facility needs for a five-year period and also to provide an analysis of the lease and purchase options available. UCAR contracted with OZ Architecture, a prestigious local Boulder firm, and Staubach, a national real estate firm.

These studies were completed on June 30, 2002. The OZ report verified that UCAR has insufficient space to meet current needs and that future needs would grow. The Staubach analysis of real estate options verified that the location UCAR selected early in the year, known as Center Green, is, in fact, the best property available in the Boulder area to suit our needs.

On the basis of these studies, the NSF gave their approval of the purchase of the Center Green Campus on August 29, 2002. We will hold the annual UCAR Members meeting in the Center Green auditorium this year, and UCAR staff will begin moving into the Center Green facility later in October.
4.3 NSF Business Systems Review

NSF has developed a Large Facility Projects Management & Oversight Plan, which outlines NSF’s goals and strategies for integrating its current policies and procedures into a next-generation system for selecting, managing, and overseeing large facility projects. NSF partnered with UCAR Finance & Administration (F&A) to test and implement the business systems review methodology called for by the NSF plan.

In February 2002, NSF brought a team of experts in various business management fields to review UCAR F&A policies and procedures. The team issued its report in June. In the report, the team stated that “UCAR’s business systems and practices are well conceived and executed. NSF thanks the UCAR staff that participated in the test review and notes their high level of knowledge and enthusiasm.”

NSF made a number of suggestions and recommendations, most of which have already been implemented. They also asked UCAR for help in designing future reviews of other large facilities.

5.0 Significant Opportunities in Atmospheric Research and Science (SOARS)

In December 2001 President Bush announced that UCAR’s Significant Opportunities in Atmospheric Research and Science (SOARS) program (http://www.ucar.edu/soars) had been selected as one of ten institutions receiving the sixth annual Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring. The award, signed by the President, recognizes SOARS for “embodying excellence in mentoring underrepresented students and encouraging their significant achievement in scientific, mathematics, and engineering.”
SOARS was launched in 1995 to support the national goal: “a diverse, internationally competitive, and globally engaged workforce of scientists, engineers, and well-prepared citizens.” SOARS is dedicated to increasing the enrollment of students from groups historically underrepresented in the science, mathematics, and engineering professions in graduate programs in the atmospheric and related sciences. Since 1996, DOE-Global Change Education Program, NASA Goddard Space Flight Center, NOAA Office of Global Programs, and the University of Colorado Cooperative Institute of Research in Environmental Sciences have joined NSF as sponsors.

At the heart of SOARS is a ten-week summer immersion program at NCAR or the laboratories of a SOARS sponsor, where protégés are provided opportunities to experience working as research scientists. Each summer, protégés conduct research projects and participate in an eight-week scientific writing and communication workshop. Protégés define their individual project, conduct research, write a formal paper, and present their results at a colloquium. Protégés receive a competitive stipend, housing, local transportation, and round-trip airfare to participate in the summer program.

2002 Summer Highlights: Twenty-four protégés from across the U.S. and Puerto Rico participated in the 2002 summer program. Fourteen protégés returned for their second, third, or fourth SOARS summer; ten were new to SOARS. Each was paired with a science research, scientific writing, and communication mentor. Each first-year protégé was also paired with their individual community
mentor and peer mentor. The 14 returning protégés served as peer mentors to one or more new protégés.

Each protégé conducted an individual research project, prepared a written research report, and presented their research results at the August 5-7 SOARS Protégé Colloquium. At least 12 protégés will be presenting their summer research results at student or professional meetings during the 2002-2003 academic year. The summer 2002 protégés, their mentors, and their research topics are listed at: http://www.ucar.edu/soars/researchtopics2002.html.
1996-2002 Program Results: Since the 1996 inaugural summer, a total of 72 protégés have participated in SOARS. Participants’ ethnicity and gender are outlined in Table 1.

Table 1. Protégé ethnicity and gender, 1996-2002

<table>
<thead>
<tr>
<th>Ethnicity and gender</th>
<th>Number of protégés</th>
<th>Percent of protégé population</th>
</tr>
</thead>
<tbody>
<tr>
<td>African American</td>
<td>27</td>
<td>38%</td>
</tr>
<tr>
<td>Native American</td>
<td>11</td>
<td>15%</td>
</tr>
<tr>
<td>Asian American &amp; Pacific Islander</td>
<td>3</td>
<td>4%</td>
</tr>
<tr>
<td>European American</td>
<td>6</td>
<td>8%</td>
</tr>
<tr>
<td>Hispanic/Latino American</td>
<td>25</td>
<td>35%</td>
</tr>
<tr>
<td>Female</td>
<td>50</td>
<td>69%</td>
</tr>
<tr>
<td>Male</td>
<td>22</td>
<td>31%</td>
</tr>
</tbody>
</table>

Thirteen protégés have completed their master's degrees and are SOARS alumni. Ten have entered the professional scientific workforce; four are enrolled in Ph.D. programs; two are Ph.D. candidates, one in computational and applied mathematics, and one in atmospheric science. Forty-two protégés have completed bachelor's degrees in an atmospheric or related science; three have completed associate's degrees and are now enrolled in a four-year research university. During the past seven years, many SOARS protégés have participated in scientific conferences and coauthored papers published in peer-reviewed journals. A list of these publications is available at: [http://www.ucar.edu/soars/pubs.htm](http://www.ucar.edu/soars/pubs.htm). The list of presentations is available at: [http://www.ucar.edu/soars/pres.htm](http://www.ucar.edu/soars/pres.htm).

In the fall of 2002, twenty-four SOARS protégés are enrolled in graduate programs in an atmospheric or related science. Three are AMS graduate fellows, one an NSF graduate fellow. No SOARS protégé (including the 16 who left the program - five to pursue careers in other fields and 11 due to unsatisfactory performance) has withdrawn from college or university without having completed an undergraduate degree with a major in an atmospheric or related science.

**SOARS: A Model Program.** Jeffrey Gaffney, chief scientist for DOE’s Global Change Education Program visited SOARS several times. His observations and experiences led Gaffney to adapt the SOARS model in designing GCEP’s Summer Undergraduate Experience. Other programs have incorporated elements of the SOARS model. Through their interviews in the NSF-sponsored video, *High Hopes: Careers in the Atmospheric Sciences*, the experiences of SOARS protégés encourages younger students from groups historically underrepresented in science to think about careers in the atmospheric sciences. The *High Hopes* video is used in middle school and high school classrooms to encourage students to consider advanced studies in the atmospheric sciences.
6.0 Intellectual Property and the UCAR Foundation

The UCAR Foundation explored a number of business opportunities during the fall of 2001 in the energy and weather derivatives trading sectors, including development of a business plan for the creation of a new for-profit subsidiary, Intelligent Weather Solutions, that would provide automated weather forecasting services and decision support tools to traders in this market. Because of the dramatic changes in the energy sector, however, it was decided to postpone plans to launch this new company, which would have required outside investment capital from this volatile marketplace.

Since December of 2001, the UCAR Foundation has pursued a different strategy with regard to establishing a for-profit venture to engage in the transfer of UCAR technology. The Foundation is working closely with NCAR’s Research Applications Program (RAP) and other NCAR divisions and UOP programs to create Peak Weather Resources, Inc., a for-profit company that will be closely aligned with these divisions and programs to support and benefit their research, education, and technology transfer missions. A fundamental and guiding principle for this enterprise will be to establish and preserve its ability to serve UCAR as a commercial partner. As such, Peak will avoid business arrangements that might lead to any loss of control of its operations to outside commercial influences not necessarily aligned with UCAR’s science mission.

In order to ensure a long-lasting relationship between UCAR and the new venture, the Foundation will not seek outside investors nor will it consider a future sale of Peak Weather Resources to an outside third-party. The stated mission of the company is to provide advanced weather, climate, and environmental forecast and decision-support data, systems, and services to businesses serving customers in the energy, agriculture, transportation, and manufacturing industries. It is Peak’s initial strategy to function primarily as a wholesaler of data services, as a provider of licensable systems, and as an agent for UCAR’s research and development capabilities. The company is finalizing its business plan and exploring marketing relationships with its first strategic resellers and customers.

In other intellectual property activity since October 2001, four patents have been issued: Method for Determining Storm Predictability; a second patent for “NIMA,” the Method of Moment Estimation and Feature Extraction for Devices Which Measure Spectra as a Function of Range or Time; the High Resolution Ionospheric Modeling (HiRIM) Technique for Regional Area High-Accuracy GPS Applications; and Radar System Having Multiple Simultaneously Transmitted Beams Operating in a Scanning Mode to Identify Scatterers. UCAR currently has ten patent applications pending.

Finally, UCAR has updated its technology transfer website: http://www.fin.ucar.edu/ucarf/index.htm.

End of report