FY11 NCAR Directorate Diversity Fund Proposal

Please enter your text into the form fields below, use your Tab and Shift+Tab keys to move forward or backward between the fields.

Diversity Project title: 2011 High School Internship & Research Opportunities (HIRO) Program

NCAR PI Name: Scott Landolt   PI Email: landolt@ucar.edu

Lab: Research Applications Laboratory (RAL)

1) Provide a one paragraph executive summary of the project.

In 2008, the National Action Council for Minorities in Engineering (NACME) reported that participation among African Americans, Native Indians and Latinos within STEM fields has not only flat lined, but in some cases, has actually declined. In this report, NACME also highlighted a growing achievement gap among minority students in STEM as populations of non-Hispanic whites relative to minorities continue to decrease. Compounding these issues even further, Atmospheric Sciences report continued concerns for:

- Poor environmental literacy, especially about weather and climate (Rising Above the Gathering Storm, 2008) as well as
- Declining rates of participation in Atmospheric Science fields from under-represented populations – e.g. from 1999-2004, less than 3% of PhDs earned by students from historically underrepresented groups were in atmospheric science (NSF, 2006).

Research suggests that the combination of mentoring and authentic research experience helps motivate and prepare students to pursue studies in STEM; furthermore, recent reports stress the benefit of engaging students in science and research as early as high school, before they decide on a college or major. Based on these recommendations, beginning in 2009, UCAR designed and implemented a summer internship program for high school students, modeled after SOARS, to help build a pipeline to the atmospheric and related science. Building on 2010’s successful summer, offering summer research internships to ten Front Range high school students, we are proposing to host a similar experience in 2011. To ensure a diverse class and attract and recruit top high school juniors and seniors from the local area, we propose an expanded recruitment effort at schools in the larger Denver Metro area. We will reach out to local secondary high school teachers and partner with the Colorado Math Engineering Science Achievement (MESA) program, which is designed to prepare minority and female students to for college majors in mathematics, engineering or science. Funding requested from the Diversity Committee would allow a targeted recruitment of students from diverse backgrounds and funding for five (5) student positions. Support from the Diversity Committee will allow us to increase the program’s visibility within the Denver Metro schools and help to establish a long-term relationships with these high schools. Internships in future years will benefit from these relationships and ensure UCAR a broader pool to recruit from. Part of the funds requested will support evaluation of the summer and its impact on student decisions about college.

2) Describe the diversity objectives of this project and the plan for accomplishing the objectives.

Providing high school students – including women and underrepresented minorities – with meaningful STEM-related internship experiences is the key goal of our project and is aligned with the NCAR
workforce management goal XXX. By broadening our recruitment effort to the larger Denver Metro area, we will diversify the pool of applicants. We plan to accomplish this by collaborating with several Front Range MESA Programs (http://www.cmesa.org/) as well as other potential partners such as the Denver School of Science Technology (DSST), http://dsstpublicschools.org/, a network of free, open-enrollment public schools serving middle and high school students in the Denver area.

Additionally, we will schedule recruitment meetings with high schools that serve minority populations in the Front Range area such as in Longmont and Aurora. Plans include sending a 2-person team that includes a UCAR/NCAR representative and a 2010 HIRO student to these meetings. During the summer internships all students will participate in joint activities with SOARS. SOARS protégés will serve as writing mentors to the high school students and will serve as role models and give the high school students a glimpse of what a career in science might look like.

Answer any of following questions that apply to your proposal:

3) Describe how your proposal will begin to establish or build toward a long-term scientific relationship(s) between NCAR and an institution(s) serving underrepresented populations (hereinafter, the “Target Institution(s)”).

Feedback from the 2010 class of HIRO was positive, both from the students’ viewpoint and from the NCAR mentors/scientists’ viewpoints. NCAR scientists and staff voiced positive opinions about the students’ ability to make meaningful contributions to scientific research. Overall, we confirmed that high school students are interested in and prepared to participate in scientific research, and that a positive research experience can contribute to academic growth. If we are able to fund this program in 2011 and beyond, we feel confident that the connections we have made with the individual high school students can be expanded to building strong relationships with their home institutions. Our goal is to establish long-term, sustainable relationships with schools in the greater Denver area. Based on their positive science internships, our hope is that HIRO students will decide to commit to majoring in science in college and will go on to have successful careers in the sciences. It is conceivable that some of the students might enroll in minority serving colleges and that NCAR would then have an opportunity to establish relationships with that institution through a HIRO alumnus.

4) Describe what efforts, if any, will be made to develop and strengthen NCAR’s partnership(s) with the faculty, students or career offices associated with the Target Institution(s) and how these efforts will increase communication and recruitment opportunities for NCAR long-term; further describe why a long-term partnership with this institution would be beneficial to NCAR.

As described above, HIRO will use part of the funds requested for an expanded recruiting effort. The goal will be to establish the HIRO program as a substantive, high-quality, meaningful internship experience; we will communicate this fact consistently throughout the recruitment period and going forward. The relationships we establish with schools serving minority populations and with the students who participate in SOARS will serve as part of the pipeline to increase a broader participation in the atmospheric and related sciences.
5) Describe any project work or PI commitments that are likely to increase knowledge regarding the geosciences in general and an interest in NCAR in particular among students at the Target Institution(s) and how progress toward this long-term objective will be measured.

During the summer internship, the students work 20-25 hours per week for six weeks under the guidance of a science/research mentor at NCAR labs. Research has shown that direct mentorship from a scientist and participation in authentic research has a measurable impact on students' perception of research and science and on their future career decisions. Students will also meet as a group with a writing mentor for four hours each week to discuss their projects, to improve their scientific writing abilities, and to produce a professional-quality poster, which they will share in a poster session along with the SOARS students. Progress towards this long-term objective will be measured through formal evaluation by group feedback sessions and surveys, as well as long-term tracking of students and their career paths.

6) Describe any proposal activities or commitments that have been designed to promote awareness among students and faculty at the Target Institution(s) regarding available academic opportunities and job opportunities in the geosciences and at NCAR and how progress toward this long-term objective will be measured.

2011 HIRO students will take part in seminars about careers in science and college. (Based on our success with these sessions in 2010, we plan to have SOARS students be part of the seminars. We will cover topics such as identifying funding for college, decision making concerning college selection and academic majors, and the transformative power of internships). We believe that the high school interns' experience is enriched by their interactions with the SOARS students, not only at the round table session, but also at the SOARS poster session. We plan to make the HIRO/SOARS student interactions an integral part of the 2011 summer experience. HIRO coordinators will have individual discussions with students about their plans for college and potential careers in science. Long-term impacts will be measured through surveys and longitudinal tracking of students' career choices.

7) Provide the names of co-investigators and/or collaborators (internal and external), including name and affiliation:

- Nancy Wade, Employment Administrator, UCAR Human Resources
- Rebecca Haacker-Santos, Deputy Director, SOARS Program
- Rajul Pandya, Director, Community Building Program (CBP) and SOARS

8) Describe the expected program/activity outcomes: Described desired outcomes from this grant

At the completion of the 2011 HIRO internship program, we will consider that program a success if we have strengthened our relationships with the Front Range MESA chapters, DSST, and area minority-serving high schools and if the five funded students have positive internship experiences. If the diversity committee is able to fund five students, we feel confident that the 2011 HIRO class will attract a substantial and diverse applicant pool so that we will meet our goals to increase diversity in the HIRO program.

9) Define how the program/activity success will be measured:

Form Version 1  Date: 1/15/10
FY11 NCAR Diversity Proposal Budget Template

NCAR Division: RAL

Project Title: HIRO Internship--Research Opportunities at NCAR for High School Students
NCAR PI(s): Mr. Scott Landolt
Period of Performance: 10/01/10 - 09/30/11

Salaries & Benefits

Casual Salaries
Five high school students* 6,000
SUBTOTAL 6,000

Casual Benefits @ 0.084 504

Materials & Supplies
Recruitment material (poster, flyers) 1,000
Writing workshop supplies 250
Book on scientific writing for students 250
SUBTOTAL 1,500

Purchased Services
Catering (welcome breakfast & poster reception) 150
Student poster printing 500
SUBTOTAL 650

Travel
Local recruitment travel to area high schools 500
SUBTOTAL 500

SUBTOTAL Modified Total Direct Costs (MTDC) 9,154

NCAR Indirect Costs (IC) @ 0.498 4,559

TOTAL MTDC + Applied IC 13,713

UCAR Management Fee
(Appplied to MTDC + IC) 0

TOTAL 13,713

Notes: *students work 6 weeks for 20 hours/week; ** proposed FY11 rate
Our evaluation with include: informal debriefing sessions with the HIRO mentors shortly after the completion of the program; a written survey with participating students to evaluate the program and its immediate impact and long-term tracking of students’ career and academic paths.

10) Identify the timeframe for the activity. Please include projected begin and end dates. The project must begin in the current fiscal year and may extend into the following fiscal year if required.

If we are able to obtain funding from the diversity committee and other funders for the 2011 year, our anticipated timeframe is as follows:

February 1-28 – Recruitment and outreach to Front Range schools, including MESA and DSST

March 1-31 – Applications accepted

April 18-29 – HIRO Steering Committee meets to review applications

May 6-10 – HIRO Steering Committee conducts phone interviews of top candidates

May 13 – Notification of 2011 HIRO interns

June 27-August 5 – 2011 HIRO internship program (6 weeks this year instead of 5)

**Proposal Budget Request**

8) Complete and attach a budget using the Excel document, NCAR Diversity Funds Request Template available at [https://www.ncar.ucar.edu/ncardir/internal/diversity/RFP.php](https://www.ncar.ucar.edu/ncardir/internal/diversity/RFP.php)

9) In the field below, please provide a brief budget justification, similar to the NSPIRES or Fastlane requirement and no more than two (2) paragraphs.

**Proposal Budget Total:** $13,713

**Proposal Submission Approval**

**Diversity Project title:** HIRO Internship—Research Opportunities at NCAR for High School Students

**NCAR PI Name:** Scott Landolt

Submitted by: Scott Landolt Date 1-7-11

PI Signature

Approved by: NCAR Associate Director(s) Signature(s) Signature Date 1-7-11

Form Version 1 Date: 11/15/10