FY12  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:  Expanding Your Horizons conference

NCAR PI Name:  Astrid Maute  PI Email:  maute@ucar.edu

Lab:  HAO Division/Program:  HAO

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

Expanding Your Horizons (EYH) is a science, technology, engineering, and math (STEM) conference for middle school girls held at the University of Colorado (CU), Boulder. The mission of EYH is to encourage young women to pursue careers in STEM. During the 1-day conference each middle school girl attends 3 different 50-min hands-on workshops given by females with STEM careers. The goal of EYH is to provide the girls a positive experience in STEM by interacting with female role models and by providing exciting and fun hands-on learning experience. EYH also fosters awareness of career opportunities in STEM. The EYH conference helps to remove the obstacles a., b., and c. as outlined in the UCAR Diversity fund guidelines in which it is stated that “The Fund will be used to pay for programs and activities intended to help remove obstacles...” In 2011, 270 middle school girls attended the conference, and over 40% of the participants identified themselves as Hispanic. EYH is organized and sponsored by the Boulder Branch of the American Association of University Women (AAUW). The PI is an AAUW member, and has been involved in the organization of EYH at CU Boulder since 2001. This proposal seeks support for the Boulder EYH conference to cover part of the cost of registration fee waivers and the room rental fees at CU Boulder.

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

The Expanding Your Horizon conference will be held February 25, 2012 at the Boulder CU campus. The mission of the conference is to introduce girls in six through eight grade to career opportunities in STEM. This age group was specifically targeted based on two reports: Why So Few? [1] found that girls’ achievements and interest in STEM was shaped by their surrounding environment. The report states “to diversify the STEM fields we must take a hard look at the stereotypes and biases that still pervade our culture. Encouraging more girls and women to enter these vital fields will require careful attention to the environment in our classroom and workplace and throughout our culture”. The EYH conference fits very much into several recommendations of this report including “expose girls to successful female role models”, “spread the word about girls and women achievement in STEM”, and “encourage girls to take calculus, physics, chemistry, computer science and engineering classes”. The report Shortchanging Girls, Shortchanging America [2] showed that girls and young women tend to drop out of STEM-related courses during their middle school years.
The plan to accomplish the diversity objectives of the Boulder EYH conference are the following:

- **Participation goal:** between 250 and 300 girls. The number of attending girls is limited by (1) the number of available rooms at the engineering center at CU Boulder, and (2) the maximum number of girls that can be accommodated in a workshop. We limit the number of girls in a workshop to insure that it is interactive and hands-on. The EYH organizers contact science teachers and counselors of middle schools in the greater Boulder Front Range area. Information packages are sent to school, and a website is available with information and registration [3].

- **Diversity goal:** around 40% non Caucasian. EYH organizers reach out to middle schools which have a diverse student body. EYH Boulder offers registration fee waivers and therefore enable interested girls to attend the conference. There is also the possibility of incentives e.g. to give classroom gifts to teacher for bringing a certain number of girls. However this option is only possible when enough funding is available. This wasn’t the case in the last few years.

- **Recruit energetic, positive female role models with STEM related careers.** EYH conference can host 24 different workshops. The number is limited by the available rooms. For the success of the conference it is important that the girls are able to interact with the female presenter and engage in the hands-on workshops. Therefore the EYH organizers select energetic, positive role models. It is also important to cover the wide range of STEM careers to make the girls aware about the different career opportunities. The EYH organizers have built up a pool of potential presenters over the last 10 years. The organizers constantly reach out to new potential presenters. The pool of presenters should represent a healthy mix of early career role models and more established ones. In addition we thrive to have presenters from both the private sector and academia. During the recruitment of presenters these criteria are periodically checked to ensure the right balance.

3) Answer any of following questions that apply to your proposal:
Describe how your proposal will begin to establish or build toward a long-term scientific relationship(s) between NCAR and a US institution(s) serving underrepresented populations (hereinafter, the “Target Institution(s)”).
Not applicable

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 US 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.
Not applicable

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 US Target Institution(s) and how progress toward this long-term objective will be measured.
Not applicable
Describe any proposal activities or commitments that have been designed to promote awareness among students and faculty at the US 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.

*Expanding Your Horizons* covers the wide field of science, technology, engineering and science. Since the conference is for middle school girls the objective is to get and keep them interested in STEM, and to provide them the opportunity to interact with female role models who are active in the STEM field. Out of the maximum 24 workshops at least four will be related to geosciences. In 2011 EYH offered workshops in solar physics titled “Living With a Star”, astrophysics titled “The Solar System and Light”, environmental science titled “Flower Power! Understanding the Stories Plants Tell Us”, environmental engineering titled “Use and Fate of Dispersants”, physics titled “Let’s Create Electricity With a Magnet”, and atmospheric science titled “Up, Up and Away”. Most of the science presenters are recruited from NOAA, NCAR, NEON, and CU Boulder. During the workshop, each presenter closely interacts with the girls, providing information about their work, their background, their careers and their home institution. For many of the girls it is their first time being at a university, talking to female scientists, and hearing about the different career opportunities. In addition to the presenters the EYH organizers recruit over 40 female college students. These college students accompany the girls throughout the day to the different workshops, and answer questions about being in college and studying for a BS, MS or Ph.D.

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

5) Describe the expected program/activity outcomes:

The immediate expected outcome from the *Expanding Your Horizons* conference is that the girls engage in the hands-on activities, interact with the female role models, and enjoy the workshops. In the past over 95 percent of the girls rated the conference above average or excellent. Last year 89% of the girls who returned the evaluation form answered “True” to the statement “*Being here today made me want to take more science and math classes so I could have a job in STEM*”.

The AAUW Boulder branch which organizes the Boulder EYH conference cannot do any longitudinal study. (A longitudinal study is a correlation research study that involves repeated observations of the same variables over years and decades). However EYH conferences are held all over the US since 1976 when the EYH network was founded. The EYH network [4] provides resources for organizers and workshop presenters. There have been two longitudinal studies about EYH conference in the past. A brief summary can be found at the EYH network website [5]. The following statements are cited from that summary. The first study done in the years 1981-82 found that “*The follow-up survey revealed that the students took even more math than they previously planned and had also explored additional information about non-traditional math and science careers. The evaluators concluded that the EYH conferences were an effective and low cost intervention.*” The second study in 1990 came to a similar conclusion “*The research indicated that attending the conference had a long-term positive influence on the participants.*”
Since these studies are a few decades ago the EYH network is in the process of implementing another longitudinal survey.

5) Define how the program/activity success will be measured: The success of the EYH conference can be measured by the following metrics:
   - Number of attending middle school girls
   - Number of middle schools participating
   - Percentage of minorities attending
   - Summary of the evaluations from the middle school girl submitted at the end of the conference

The goal for participation is between 250 and 300 middle school girls. Registration will be closed when 320 girls have registered and a waiting list will be put up. Usual no-show numbers are around 15-20%. The number of registration fee waiver is over 100 to encourage especially girls from schools with diverse student body to attend. The number of different middle schools participating in the EYH conference reflects the success of the outreach work. In general it should be around 40 different middle schools from the greater Boulder Front Range area. Each year, we ask participating middle school girls to submit their evaluation forms at the end of the event. These evaluations are crucial to evaluate the success of the whole conference, and also to assess the quality of each workshop.

6) 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.

Expanding Your Horizons will take place on February 25th, 2012 at the University of Colorado at Boulder in the Engineering Center. Planning for EYH start in September 2011, and the final wrap-up meeting will be in March 2012.

References


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
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.

The budget covers the registration fee waiver for 66 middle school girls ($990) and part of the room rental fee at the Engineering Center at CU Boulder ($1,000).

10) Proposal Budget Total: $2,495.00

Co-sponsorship is preferred and evaluated in the review process. Please note that regular staff salary may not be counted toward co-sponsorship.

Proposal Submission Approval

Diversity Project title: Expanding Your Horizons conference

NCAR PI Name: Astrid Maute

Submitted by: ____________________________ Date ___ ___
PI Signature

Approved by: ____________________________ Date ___ ___
NCAR Associate Director(s) Signature(s) Signature
### FY12 NCAR Diversity Proposal Budget Template

**NCAR Lab/Division:** HAO  
**Project Title:** Expanding Your Horizons conference  
**NCAR PI(s):** Astrid Maute  
**Period of Performance:** 3/1/2012 - -  

NOTE: PoP is 12-24 months from award date. The project must begin in the current FY and may extend into the following FY.

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<th>Part II: Matching Funds</th>
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<td>SUBTOTAL</td>
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| NCAR INDIRECT COSTS (IC) @ 0.505        | 505               | 0                       | 505    |

| TOTAL MTDC + Applied IC                 | 1,505             | 0                       | 1,505  |

Exclusions from MTDC  
**Non-NCAR PARTICIPANT SUPPORT COSTS**  
Scholarships for Students @ $15 each for 66 students  
0 990 0 0

| TOTAL Funding                           | 1,505             | 990                     | 2,495  |