**FY13 NCAR Directorate Diversity Fund Proposal**

**Diversity Project Title:** Expanding Your Horizons Conference

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

**Lab:** HAO  
**Division/Program:** HAO

1. **Executive Summary:** 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) at Boulder. 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 since 2001. The mission of EYH is to encourage young women to pursue careers in STEM. During the one-day conference, each middle school girl attends three different 50-minute, hands-on workshops given by women 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. In 2012, 300 middle school girls attended the conference, and over 32% of the participants identified themselves as Latina. Although the Latina participation is considerable, there is a decline of 8% compared to the year 2011. 94% of the participating girls in 2012 rated the conference above average. This is the second and last year of possible funding from the Directorate diversity fund for the EYH conference. Therefore, our main objectives for this proposal are the following:

   - Provide young women a positive experience in STEM to promote careers in STEM.
   - Strengthen the ties to the Latina community, and have a strong Latina participation.
   - Find funding partners for the EYH conference to secure the future of the event.

   This proposal seeks support from the NCAR Diversity fund to cover part of the cost of registration fee waivers and the room rental fees of the engineering center at CU Boulder.

2. **Diversity Objective(s) and Action Plan:** Describe the diversity objectives of this project (refer to the UCAR Diversity Fund Guidelines for more information) and the action plan for accomplishing the objectives (typically 1-3 pages).

   The Expanding Your Horizons conference will be held February 23, 2013, at the Boulder CU campus. The mission of the conference is to introduce girls in sixth through eighth grades to career opportunities in STEM. This age group is specifically targeted based on two reports: **Why So Few?** [1] found that girls’ achievements and interest in STEM were 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
well 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.

EYH is a national organization, and there have been two longitudinal studies about EYH conferences in the past. A brief summary [9] can be found at the EYH network website [8]. 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 old, the EYH network is in the process of implementing another longitudinal survey.

The report about “Women, Minorities and Persons with Disabilities in Science and Engineering: 2011” [6] found that overall more women than men graduate from college with a bachelor’s degree, however, men earn a higher proportion of degrees in many science and engineering fields. Especially low participation fields for women are computer science and engineering with below 30% of women participants. The workshops of EYH include science and engineering.

The NSF/SRS report “Diversity in the federal science and engineering workforce” [3] shows that in 2009 Hispanics make only 4% of the federal workforce in science and engineering, which is an increase of only 0.7% from 2000. At the same time the 2010 U.S.census [4] found that the population of Hispanics grew from 13% in 2000 to 16% in 2010, and that half the growth of the total U.S. population between 2000 and 2010 was due to the increase in the Hispanic population. Hispanics are still underrepresented among college graduates relative to their proportion among college-age population [5]. Czujko, R. [2002] also points out that in 2004 geosciences had the lowest percentage of Hispanic graduates within the science field. Levin et al. [2007] presented a conceptual framework for the geosciences pipeline of underrepresented minority students. They pointed out that at the middle and high school level, geosciences awareness and role models among other factors are possible indicators for a future career in geosciences. The EYH conference addresses both points by raising the awareness of careers in STEM and by providing the young women the opportunity to interact with role models.

The diversity objectives of the Boulder EYH conference are the following:

- **Participation goal: about 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. To reach this goal the EYH organizers contact science teachers and counselors of middle schools in the greater Boulder Front Range area. Information packages are sent to schools, and a website is available with information and registration [7].
• **Diversity goal: around 40% from historically underrepresented groups with specific focus on Latinas.**

EYH organizers reach out to middle schools which have a diverse student body. EYH Boulder offers registration fee waivers and therefore enables interested girls to attend the conference. To increase the numbers of Hispanics, we will work early on with the Boulder County Latina Women's League, and its chair, Ester Matheson. Since registration will be capped at 340 girls, it is important to start targeted advertisement at the same time as the general one. We will also work with different members of the Latina Community since personal referrals and connections are very effective. Teresa Rivas from HAO is very helpful in connecting with the Latina community. We will try to establish connection with the CLACE center (Centro Latin-Americano para las Artes Ciencias y Educacion) and its president and CEO, Marina La Grave. The CLACE center located in Boulder, CO has, among others, expertise in multicultural outreach and informal science education. The Boulder County Community Action Program (CAP) advocates for programs that foster self-sufficiency particular for youth and people of color. We will work with Kara Edin and Janet Heimer from the CAP to reach out to the young women they serve.

• **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 pool of presenters should represent a healthy mix of early career role models and more established ones. In addition, we strive to have presenters from both the private sector and academia. During the recruitment of presenter, these criteria are regularly checked to ensure the right balance. In addition to the workshop presenters, EYH also recruits around 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. The college students connect easily with the girls and contribute significantly to the positive experience the girls have at EYH.

• **Explore Funding opportunities.**

Due to the economic downturn, it has been particular hard in the last few years to find funding for the conference, although the conference is very successful. By the end of the proposal period, we want to cover the amount of this proposal by other potential sponsors which might commit for EYH2014 while this proposal allows us to secure the funding for EYH2013. A natural partner would be CU Boulder, and we will explore the option by contacting the Assistant Vice Chancellor, Alphonse Keasley, who is responsible for Campus Climate and Community Engagement. Since the conference takes place at the Engineering Center, we will work with the Associate Dean of Education, Diane Sieber, of the College of Engineering and Applied Science to discuss possible support of EYH. A desirable outcome would be that CU sponsors the room rental fees. We will also explore if EYH fits into the SPARK UCAR science education program and how SPARK could support EYH. The HAO diversity fund co-sponsored the last EYH conference proposal and also committed to co-sponsor this proposal. We will explore the option that the HAO diversity fund supports in part the EYH conference in the future. Working with Teresa Rivas, we will explore options of raising funds from Latina-led organizations.
3. Define how the program/activity success will be measured:

- Number of attending middle school girls
- Number of middle schools participating
- Percentage of minorities attending, specifically Latina
- Summary of the evaluations from the middle school girl submitted at the end of the conference
- Possible new funding sources and report on explored options

The goal for participation is around 300 middle school girls. Registration will be closed when 340 girls have registered, and a waiting list will be set up. Usual no-show numbers are around 15-20%. The number of students with a registration fee waiver is over 100 to encourage especially girls from schools with a 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 measuring the success of the whole conference and also to assess the quality of each workshop. The report from last year’s “EYH conference” NCAR diversity proposal shows the metrics used [10], e.g. number of participants, ethnicity of participants, grade level distribution, participating schools with number of students sent, number and field of workshops, rating of conference and workshops. We will report on our success of securing funding and support for EYH from the different sources. We might not get a commitment for EYH2014 for funding, therefore, we will also report on all the established connection to possible partners.

4. Period of Performance: Describe the timeframe for this project (≤ 24 months). The project must begin in FY13.
   Begin Date January 1st, 2013
   End Date May 31, 2013

5. Does this proposal 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)”)?
   NO

6. If YES, how describe how progress toward this long-term objective will be measured: Not applicable

7. Does this proposal develop or strengthen NCAR’s partnership(s) with the faculty, students or career offices associated with the US Target Institution(s)?
   NO

8. If YES, describe how these efforts will increase communication and recruitment opportunities for NCAR long-term and why a long-term partnership with this institution would be beneficial to NCAR:
   Not applicable

9. Is this project likely to increase knowledge regarding the geosciences in general and an interest in NCAR in particular among students at the US Target Institution(s)?
NO
If YES, how describe how progress toward this long-term objective will be measured: Not applicable

10. Is this project 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?
NO
If YES, how describe how progress toward this long-term objective will be measured: Not applicable

11. Does this project involve co-investigators and/or collaborators (internal and external)?
NO
If YES, provide the name, title and institution affiliation (if any) for each person Not applicable

References


**Proposal Budget Request**

8) Attached.

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**: $2,533.00

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**Proposal Submission Approval**

**Diversity Project title**: Expanding Your Horizons conference

**NCAR PI Name**: Astrid Maute

Submitted by: [Signature]  
Astrid Maute  
Date 9/14/12

Approved by: [Signature]  
B. C. Low (Acting Director), HAO  
Date 9/14/12
**FY12 NCAR Diversity Proposal Budget Template**

**NCAR Lab/Division:** HAO  
**Project Title:** Expanding New Horizons  
**NCAR PI(s):** Astrid Maute  
**Period of Performance:** 3/1/13 - 2/28/14

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

### Part I: Purchased Services

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<thead>
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<th>Service</th>
<th>Lab Diversity</th>
<th>Other Funds</th>
<th>TOTAL</th>
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<td>Room Rental</td>
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**SUBTOTAL Modified Total Direct Costs (MTDC)**

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<th>Lab Diversity</th>
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<td>NCAR INDIRECT COSTS (IC) @</td>
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<td><strong>TOTAL MTDC + Applied IC</strong></td>
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**Exclusions from MTDC**

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<tr>
<td>Scholarships for Students @ $15 each for 66 students</td>
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<tr>
<td><strong>TOTAL Funding</strong></td>
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<td>990</td>
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</table>

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  - **SUBTOTAL**
  - **SUBTOTAL Modified Total Direct Costs (MTDC)**
  - NCAR INDIRECT COSTS (IC) @
  - **TOTAL MTDC + Applied IC**
- **Exclusions from MTDC**
  - Non-NCAR PARTICIPANT SUPPORT COSTS
  - Scholarships for Students @ $15 each for 66 students
  - **TOTAL Funding**