

Background

Significant Opportunities in Atmospheric Research and Science (SOARS) is a multi-year program designed to help talented undergraduates enter and succeed in graduate programs in the atmospheric and related sciences. SOARS is equal parts research internship, mentoring program, and learning community.

The mission of SOARS is to broaden participation in atmospheric and related sciences by engaging students from groups historically under-represented in science, including Black or African-American, American Indian or Alaska Native, Hispanic or Latino, female, first-generation college students, and students with disabilities. SOARS welcomes lesbian, bisexual, gay and transgender students.

From 2007 onwards, CMMAP will support two undergraduate SOARS students in their summer research, and will welcome two SOARS graduate students into CMMAP graduate research positions at CSU.

CMMAP & SOARS Collaborations

Enhance the climate science workforce of the future:

During the summer of 2007, SOARS will encourage interested protégés to consider CMMAP supported graduate school positions. SOARS, in its broad recruiting and conversations with individual protégés and students, will also contribute to CMMAP's goal of recruiting two graduate students from underrepresented groups for matriculation in Fall 2008.

Improve undergraduate climate education:

SOARS provides an avenue for undergraduates to be directly involved in climate research, and undergraduate research experience has been shown to be effective in improving undergraduate education. SOARS focuses on the development of future scientists and leaders by recruiting, encouraging and supporting undergraduate students as they consider, enter, and succeed in graduate programs in the atmospheric and related sciences.

Enhance graduate education and research in climate science:

SOARS enhances the graduate education experience by supporting students with intensive, multidimensional mentoring and a robust learning community.

Recruiting excellent and diverse students:

The SOARS director, Rajul Pandya, travels throughout the US and Puerto Rico recruiting students. SOARS staff also recruit diverse and academically talented students at national conferences through presentations and exhibit booths. Each year roughly 40 applicants compete for 5-8 open positions within SOARS; as a result, SOARS is able to select exceptional students from diverse backgrounds.

Kimberly Trent – First CMMAP Protégé

During the summer of 2006, Kimberley Trent, a senior in applied physics at Yale University, became the first SOARS protégé to be funded by CMMAP. Kimberly worked with Science Research Mentors **David Randall (CSU)** and **Warren Washington (NCAR)** to study the Effect of the Gulf of Mexico's mixed layer depth on hurricane intensity in the warming environment. She used the Weather Research and Forecasting (WRF) model for her investigation.

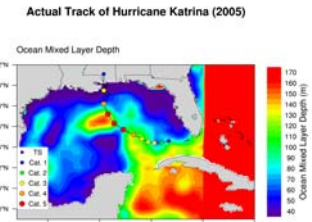


Fig. 3.2. This plot shows the actual track of Hurricane Katrina and the SSTs observed during the time the hurricane passed through the Gulf of Mexico

CMMAP and SOARS: Engaging and Preparing our Future Scientists

Research



At the heart of SOARS is a ten-week summer program in which CMMAP protégés will conduct research at NCAR and/or CSU, on CMMAP related topics. Like all protégés, CMMAP protégés will also prepare scientific papers, present their research, and participate in professional development workshops.

Mentoring



All SOARS protégés are supported by up to four mentors: a *research mentor* to guide scientific practice; a *writing mentor* to improve communication skills; a *community mentor* to help navigate scientific and local culture; and a *peer mentor*, a protégé who has participated in the program in previous summers, to model effective professional practices.

Community



CMMAP protégés are part of a diverse community working to become the next generation of scientific leaders. During the summer, protégés live together and explore many of the activities Boulder, CO has to offer.

Success at SOARS

The SOARS model of research, mentoring, and community has helped our protégés contribute to understanding our atmosphere and apply that understanding to improving life on Earth. Of the 104 protégés that have participated in the program since its inception in 1996:

- 4 have entered STEM workforce with a PhD
- 17 are enrolled in PhD programs
- 17 are enrolled in MS programs
- 13 are presently undergraduates
- 26 have entered STEM workforce
- 15 refereed, protégé co-authored papers from summer research
- 10 protégés have earned NSF, AMS, or NASA graduate fellows
- 69 oral presentations by protégés at national or regional conferences
- 159 posters presented by protégés at national or regional conferences
- In 2001, SOARS received the Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring

Protégé Demographics

Ethnicity and gender	Percent of protégé population	Percent of General Population	In Atmospheric Science graduate programs, 1994-2000
African American or Black	41.3%	14%	1.8%
Hispanic or Latino	34.6%	17%	1.6%
American Indian, Alaskan Native, or Native Hawaiian	12.5%	0.9%	0.4%
Asian-American	5.8%	4.3%	7.1%
Euro-American	5.8%	62%	85%
Female	63.5%	48.8%	33.6%
Male	36.5%	51.2%	66.4%



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Sponsors and Partners

SOARS is managed by the University Corporation for Atmospheric Research (UCAR) with support from participating universities.



In 2006, SOARS began partnering with CMMAP to enhance the climate science workforce of the future.