

## Putting the community in mentoring



Susan Cross (3rd from left) with the protégés she has mentored over the years. Left to right: Theresa Johnson, Shanna Pitter, Susan, and Rei Ueyama. (Photo by Carlye Calvin.)

"Community mentors are at the very heart of what the SOARS program is about," says program director Tom Windham. So what is a community mentor, and what does he or she do? Although the answers may vary in terms of specifics, the experiences of some returning community mentors seem to share a common theme.

"The community mentor is a resource to help the protégés any way we can. It's a fairly individual thing because a community mentor's focus is on the individual," says Susan Cross, a four-time community mentor.

Steve Sadler and Joe Vanandel agree. Steve has been a community mentor for four years. He says,

"A lot of it depends on the individual and their background. I see our role as being there to help the protégé integrate into the scientific community in a non-scientific way, as well as to help them navigate the corporate world." Joe, who has been a community mentor three different times, says that when introducing protégés to recreational and other activities in the area, he tries to accommodate their interests. "Activities have ranged from bicycling to the silent film series at Chautauqua." No matter what the approach, it's a contribution that makes a difference. Jack Fellows, a community mentor in 2000 and 2002, sums up the role this way: "Imagine yourself being

young, possibly coming from a different culture, and relocating to a new city to work with world-class scientists for a summer. Community mentors help a SOARS protégé overcome all these issues and, quite possibly, end up being a major reason why a protégé chooses a career in the sciences."

Rei Ueyama, who completed her first SOARS summer in 2002, credits community mentors with playing a unique and valuable role. "I think a community mentor should make the protégé feel comfortable in the working environment as well as in the Boulder community. I think peer mentors should do the same, but I look at a community mentor as a step-up from a peer mentor, like a more formal peer mentor. That is because peer mentors also have research to do and it's difficult to constantly look after a protégé. Not that community mentors aren't busy, but it's a different kind of relationship."

"For the first year, it's integral for the protégés to have someone who's going to be there when they want something else besides work," says Susan. Rei, who was one of her protégés, agrees: "She was like my friend who always

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### COMING EVENTS...

**Protégé colloquium**  
August 11-13, 2003, NCAR

**SOARS summer program:**  
June 9–August 15, 2003

**SOARS**

Visit the SOARS Web site at:  
[www.ucar.edu/soars](http://www.ucar.edu/soars)

## H I G H L I G H T S

**Erik Noble** is co-author of a paper published in the *Journal of Geophysical Research*: Marsh, D., A. Smith, and E. Noble, Mesospheric ozone response to changes in water vapor, *J. Geophys. Res.*, 108(D3), 4109, 2003.

**Rynda Hudman** is co-author of a paper accepted to the *Journal of Geophysical Research*: Barth, M.C., S. Sillman, R. Hudman, M.Z. Jacobson, C.-H. Kim, A. Monod, and J. Liang, Summary of the cloud chemistry modeling intercomparison: Photochemical box

model simulation. Rynda presented a poster titled "Transpacific pollution during ITCT-2K2: Interpretation using global 3-D model" at the American Geophysical Union Fall 2002 meeting in San Francisco, California. Rynda also gave a talk "Integrated analysis of continental outflow and transpacific transport of Asian pollution using aircraft and satellite measurements" at the ITCT-2K2 and PEACE-B Data Workshop, NOAA Aeronomy Laboratory, Boulder, Colorado, March 5, 2003.

**Kate Dollen** was awarded a 2003 National Science Foundation graduate fellowship. The fellowship provides three years of support that Kate will apply to graduate study in atmospheric sciences.

**Fabiola Navarro** presented a paper at the 2003 Society of Hispanic Professional Engineers (SHPE) National Technical and Career Conference, January 8-12, 2003, New Orleans, Louisiana, and was selected as a finalist in the conference's Technical Paper Competition.

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# SOARS experience becomes model for life for one protégé

***"The SOARS community is one of a kind. I wish society would follow the SOARS model."***

These are the words of Sarah Tessoroff, a Colorado State University graduate student who completed her fourth SOARS summer last year. Sarah discovered SOARS as a junior undergraduate when she stopped by the UCAR booth at an AMS conference. As a meteorology major, she was excited for the opportunity to research severe weather at NCAR, but the experience she gained extends far beyond analyzing tornadic storms. "SOARS has people from every different kind of background working together, learning from each other. As a person, I continually grew during my summers in SOARS. I learned about other cultures, other lifestyles, other people's situations. That's a valuable trait for anybody to acquire because you can really empathize with every kind of person that way."

Her experience with SOARS has strongly influenced her goals as a person and in her career. "I'm starting to have this personal mission where I want to work on education and educational programs," says Sarah. "I see working with minorities and under-privileged students as a priority of mine. SOARS touches so many people's lives each summer. I would like to continue that and try to touch more people's lives."

In her own life, Sarah credits SOARS with playing a major role in her approach to science and with the relationships that the program has enabled her to form, particularly with her mentors. "SOARS' mentoring program is one of a kind because you have a mentor that supports a specific purpose, not just one all-around mentor. The mentors that I've worked with have the protégés' concerns and needs at the top of their priority list. I think that makes a great mentor. They're someone who is a role model, someone with expertise I would like to gain someday."

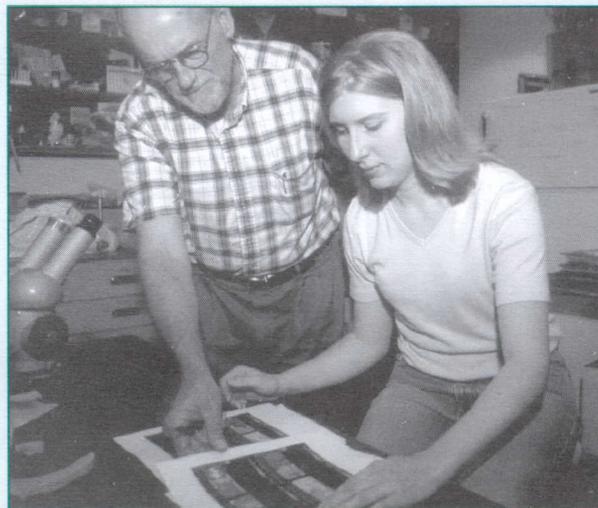
Sarah finds opportunities in many aspects of her life to try to apply lessons learned through SOARS. During her second year as a graduate student at Colorado State University, she was one of three master's level students elected to a committee to address student issues. "Our task that year was to think of

some ideas that would help the first-year graduate students. One of the things that I was a real proponent of was the idea of a mentoring program." Due to restrictions in time and the amount of planning that would be required, the idea was not adopted in any formal way, but Sarah hopes that in future years she can be a student representative again and work toward implementing a more informal mentoring program.

The exposure to diversity that SOARS has provided has also been a benefit to Sarah's personal and professional growth. "Living and working in a community like SOARS, and seeing how effective and how fun and how great it can be has really helped me value diversity. I seek out diversity now and work to promote diversity as well." Getting under-privileged and under-represented students enthusiastic about science is one project Sarah plans to spend more time on. She recently traveled to Nogales, Arizona, where she gave a talk on weather to a group of sixth graders. "The class was 100% Hispanic. They were very excited about it...asked lots of questions and told many stories of their own. I want to help them see that they too can be scientists. If they're interested—go for it. It may not be easy and will take a lot of hard work, but I want them to know that they can do whatever they want to do."

A lot of Sarah's own inspiration for pursuing her goals came from her father. "He always inspired me by telling me to 'strive to be the best you can be'. I really think his support enabled me to have the frame of mind where I can do what I want to do as long as I am willing to work hard and step up to a challenge."

Sarah's hard work is evident from her long list of achievements. She is the recipient of an American Meteorological Society (AMS) graduate fellowship and received honorable mention for a National Science Foundation fellowship. Her 2002 graduate student oral presentation at the Society for the Advancement of Chicanos and Native



**Sarah Tessoroff looks over severe storm data with research mentor Charles Knight (Mesoscale and Microscale Meteorology Division).**  
(Photo by Carlye Calvin.)

Americans in Science (SACNAS) conference earned an award for first place. She recently gave an invited talk of her master's thesis work at NCAR's Mesoscale and Microscale Meteorology Division seminar series, and has been selected to participate in the 2003 AMS Policy Colloquium in Washington, D.C.

Sarah's professional goals include combining some of what she has learned through SOARS into a future career. "I want to get my Ph.D. in atmospheric science. From there, depending on what other experiences I have over the next three years, that might also further shape what I want to do for a career. I'm really interested in using my science background in a broader sense, not just in science. I'm interested in education and outreach and in policy. I want to be able to work with students, whether it be as a volunteer or what I do for a living. I'd like to work on things that will impact my community."

In the meantime, she tries to emulate the SOARS' model in everyday life. "I think the SOARS community is an excellent model of partnership, cooperation, collaboration, diversity—everything, and that's where we can really make a difference with SOARS. We all come from different parts of the country—we can go back and influence more people. We have the chance to be leaders for our future generation." ❁

## Protégé's research experience extends to China

Shaan Bliss spent last summer in the laboratory measuring volatile organic compounds (VOCs) emitted by several important plant species. These VOCs, which include isoprene and monoterpenes, significantly influence the chemical composition of the atmosphere. In high nitrogen environments, they can lead to increased tropospheric ozone levels, directly affecting human and plant health.

In February, Shaan traveled to Menglun, China, with research mentors Lee Klinger and Alex Guenther to apply his laboratory skills in the field, measuring VOCs above a rubber tree canopy. The somewhat remote area, located in Yunnan Province in southwest China, is home to a large number of rubber trees and various tropical gardens. These tropical ecosystems and their potential VOC emissions are what interest Lee, a former scientist in NCAR's Atmospheric Chemistry Division. His questions ultimately led to the Biocomplexity in China 2003 field campaign, which ran from February 18-March 21.

Although Shaan was very busy with measurements while he was there, he did have some time to experience the culture and traditions of the region. On one occasion, the researchers were able to go down the river on bamboo rafts. They were joined by some of the native villagers, who wore the traditional dress of the Dai people. On another occasion, the scientists and others in the group were invited to the celebration of a local family who had just had a wedding. "It was a neat experience to have. It was a native family—they welcomed us into their house, they had a huge feast and we all ate very well. We got to meet the entire family and they were just very accommodating. The grandma and grandpa blessed us before we left."



*Alona Linatoc, Shaan Bliss, and local workers in the Garden stand near a leaf cuvette IRGA system for collecting air samples to measure VOCs.*

global biogeochemistry. He was my top choice for participating in this campaign."

"Shaan's participation in the campaign was a way of supporting the National Science Foundation's goal to achieve a diverse, internationally competitive, and globally engaged scientific workforce, and we were eager to fund his travel," said SOARS director Tom Windham. The Biocomplexity in China campaign marked the third time a SOARS protégé traveled abroad to participate in scientific research. In 1999 Stephanie Rivale and Monica Rivera traveled to Mexico City to collect data on the local aerosol haze, and in 2001 Theresa Johnson collected data on the vertical distribution of ozone over the Amazon rain forest in Brazil.

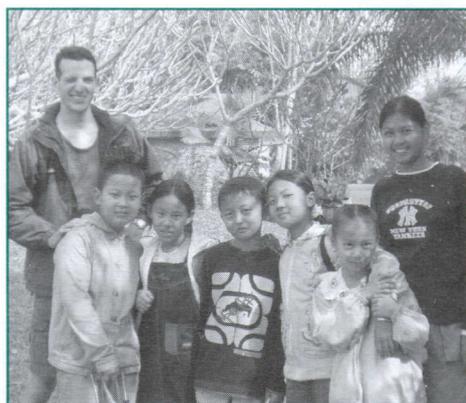
Shaan's work on the campaign was an opportunity for which he remains grateful. "I had a really good time there. The people in China are very kind. We were well taken care of. The people were really looking out for our best interests, from our comfort in our rooms to getting whatever we needed for equipment. It was a really good experience."

The measurements that Shaan and the research team collected will help scientists understand VOC production over rubber trees during China's dry period. This information will aid in characterizing and quantifying the biogeochemical couplings of the tropical ecosystem, atmosphere, and soil of southwest China and similar areas.



*Local villagers touring the Xishuangbanna Tropical Botanical Garden near the site where the Biocomplexity in China measurements were taken.*

The research team, which included scientists from China, the U.S., the United Kingdom, and Malaysia, collected air samples from a 30-meter tower set up by the Chinese Academy of Sciences. Shaan helped with these tower measurements, which were made at regular intervals each day for 29 days. The air samples were analyzed using a gas chromatograph and fast isoprene analyzer to determine VOC concentrations. Because rubber trees represent significant land use in China, the results will be important for understanding global VOC emissions.



*Campaign participants Shaan Bliss and Alona Linatoc with local children at the Garden.*

Shaan said the opportunity to go to China stemmed directly from his SOARS work. "I had worked with Lee through SOARS and been in contact with him over the years. He does a lot of research that I'm interested in. He recognized a research opportunity for grad students and invited me to join Alex and him. The work was actually a continuation of work I did with Alex this past summer." Lee was happy to have Shaan's experience along on the trip: "Since 1999, Shaan had assisted in several field and laboratory studies applying the concepts of Gaia and biocomplexity to key questions of

## Program director promotes diversity beyond SOARS

Tom Windham, who has directed the SOARS program since its inception in 1996, is an avid supporter of programs to promote participation from all facets of society. His ongoing belief in mentoring and his commitment to diversity are demonstrated through his involvement in several committees, including the Committee on Equal Opportunity in Science and Engineering (CEOSE). CEOSE is the only National Science Foundation (NSF) advisory committee mandated by congressional order. It is charged with advising NSF in its efforts to develop a competent and diverse workforce to ensure America's technical and scientific leadership in the 21st century. CEOSE reports to the NSF director, and is tasked with providing Congress a written report of its proceedings and recommendations every two years. Recent CEOSE discussions have concentrated on the benefits of making sure programs are vertically integrated. "NSF has a number of programs that were developed and designed to increase the numbers of degrees at the

undergraduate and graduate levels. The goal for a diverse workforce could be more readily achieved with policies and linkages that direct programs to enhance their integration in order to improve their synergy. Two-year college programs can be better aligned with four-year colleges and universities. Undergraduate programs should be natural feeders to the graduate programs. This leads us to ask if the graduate programs are operating at capacity, and what that means for equity in the future."

In addition to his CEOSE obligations, Tom serves on the committee selecting the recipient of the Alan T. Waterman Award, a \$500,000 award to an outstanding scientist who is 35 years old or younger and within seven years of having received a Ph.D. He is also a representative of CEOSE with the American Association for the Advancement of Science (AAAS) working on a project to evaluate and demonstrate the effects of mentoring. "We were talking about what we need to do to enhance and facilitate

development of equal opportunity and mentoring kept coming up. We want to examine the efficiency of mentoring as a strategy for improving recruitment and retention, as well as improving the quality of educational experiences, particularly for persons belonging to historically under-represented groups in science."

Tom was recently selected by the Boulder Daily Camera to receive one of eight Pacesetter Awards for 2003, honoring his positive impact on the community. But his best rewards come through accomplishment: "I'm really excited about being on these committees and being able to influence policy and outcomes like the Waterman Award." NSF director Rita Colwell's goals for improving minority participation in science and engineering have led Tom to embark on examining the metrics used to study equity. Preliminary results were presented at the February CEOSE meeting, and the work has already become part of NSF's ongoing conversation on diversity. ③

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looked after me and took great care of me. During the course of the program, she took me out to a Japanese restaurant for lunch because she thought I was homesick. We also met about once a week for lunch at the Mesa cafeteria."

The enthusiasm that community mentors bring to SOARS and their protégés is evident. When asked what keeps her coming back, Susan said, "It's the outstanding quality of these protégés. They're intriguing. They're very bright. I learn from them. And I feel like I'm helping."

Susan says that her personal approach to mentoring is to be very involved: "When new community mentors come in, they're often shy about how to get going. I consider it my job to be the person who makes the effort, because the first-year protégés are swimming along, treading water, and we need to make it very obvious that we are their community mentors; we are here for them."

"SOARS is based on a one-student-to-many-mentor model that is rather an exception in these types of programs, and the concept of a community mentor is an innovation—it's unique to SOARS," says Tom. He says that his motivation for incorporating community mentors into the SOARS model was twofold. "First, it alleviates the burden on individual

mentors. Volunteer programs run the risk of burning out their mentors. It's not really fair to burden research mentors with integrating the protégé into the larger social aspect of a lab or the Boulder community, so the community mentor can help with this element. Second, the community mentor serves as a formally identified person for the protégé to talk to about anything they want to discuss. Because the community mentor is not so vested in the protégé's research, there are more avenues for the protégé to blow off steam. It's a less formal relationship, offering the protégé a different way to acquire information, and also just to have fun."

The community mentor concept has evolved in the years since SOARS began. In the first years of the program, all protégés were assigned community mentors. In 2001, community mentors were assigned only to first- and second-year protégés, and following that year's program review, it was decided that in 2002 only first-year protégés would have a formal community mentor. "This was an example of how input from the protégés has influenced the shaping and delivery of the program," says Tom. "After a protégé's first year, the community mentor position became more absorbed into the peer mentor position. For returning protégés, there was more reliance on each other."

The 2001 program review added another facet to the community mentor's role. "We discovered that the community mentor was often a resource we were not capitalizing on, and that was to represent Joe or Josephine Q. Public for the protégé. They provide an important opportunity for the protégés to discuss their research and its importance using ordinary language."

Community mentors try to attend the protégés' practice talks and final colloquium, in addition to providing outlets for a break from the research. Steve lists a variety of activities he has done with his protégés, from once or twice a week get-togethers for lunch, to visits to his home on evenings and weekends, to golf. In seven years of the SOARS program, community mentors continue to play a special and critical role, albeit one that is not always easy to pinpoint. Says Tom, "Unlike our research or writing and communication mentors, a community mentor's contribution is neither obvious nor easy to infer." Difficult as it may be to describe, the community mentor's contribution is none-the-less a critical element and an enjoyable one for the people involved. Like Susan, Steve says that it really is the protégés that keep him coming back. "I learn from them. I marvel at their skills and talents. It's a very positive program." ④

## Protégés present breadth of research at AMS Student Conference

In early February, eight protégés traveled to Long Beach, California, to present their research at the Second Annual AMS Student Conference. The posters presented by SOARS protégés reflect the broad range of research projects undertaken during the summer, and accounted for over 30 percent of the posters offered at the conference.

The student conference was a one-and-a-half-day event preceding the AMS Annual Meeting. "The purpose of the conference was two-fold," says UCAR employee Wendy Abshire, co-chair of this year's event. "For the students' benefit, it's a chance for leaders in our field to expose them to a wide variety of possible career paths that perhaps they had never even been aware of. The second part is to introduce them to the AMS as a professional society and interest them in having a two-way beneficial relationship, hopefully for the rest of their careers."

Wendy reports that 159 students attended this year's conference, and the feedback was very positive. One of the SOARS' presenters, Ernesto Muñoz, felt the conference did a very good job achieving its objectives and goals: "The student conference was phenomenal. The theme 'Exploring Career Pathways' was a great idea and all the presentations were helpful and relevant. On a scale from 1 to 10, I give the conference a 10." Maribel Martinez also spoke highly of the experience. "AMS is a great conference and is a great way to make graduate school or career connections,

not only by attending the special sessions tailored to that (booths, college dinners, etc.) but also when attending the talks and walking around."

UCAR president Rick Anthes was an invited speaker at both the first and second annual conferences, and commends the AMS for sponsoring the special events for students. "These AMS student conferences are great. It's a pleasure to interact with so many bright and enthusiastic students. The future of our field looks bright indeed from the quality and enthusiasm of these young people."

Protégés report that presenting a poster also provides an opportunity to get helpful comments on their own research. Maribel said she had the opportunity to talk about her SOARS results with many researchers and vendors: "Several people came by my poster and gave me some good feedback. They were encouraged with the research results and offered other things to look into."

"I think there is just so much to learn at conferences. Not only do you learn about the most recent research findings, but you also meet lots of amazing people, including other students," says Rei Ueyama. Both organizers and participants feel that the endeavor is useful for students, and the third annual student conference is scheduled to precede next year's American Meteorological Society Annual Meeting in Seattle, Washington. ①



Tom Windham and Beverly Johnson with SOARS protégés participating in the 2003 AMS conference.

### Protégé posters presented at the 2003 AMS Student Conference

<b>Kate C. Dollen</b>	"Numerical simulation of the transformation of the pre-Hurricane Gabrielle (2001) disturbance into a warm-core system" (with C. A. Davis)
<b>Maribel Martinez</b>	"Lightning signatures in convective storms on the High Plains"
<b>Ernesto Muñoz</b>	"Examination of formaldehyde and acetaldehyde relationships during TRACE-P"
<b>Fabiola Navarro</b>	"Development of a new meteor radar for measuring upper atmosphere winds"
<b>Garymar Dé Rivera Rivera</b>	"Analysis of ozone and meteorological balloon profile data from Summit, Greenland" (with D. Helmig)
<b>Nancy Ivette Rivera</b>	"Analysis of seasonal and diurnal trends in surface ozone concentration at Arctic sites (Summit/Greenland and Barrow/Alaska)" (with D. Helmig and S. Oltmans)
<b>Casey C. Thornbrugh</b>	"Predicting high-wind events impacting Barrow, Alaska through analysis of regional sea-level pressure patterns"
<b>Rei Ueyama</b>	"MODIS observations of global tropospheric aerosols in 2001"

## HIGHLIGHTS (continued from page 1)

**Sarah Tessendorf** gave an invited talk "Kinematic and microphysical evolution of the 29 June supercell observed during STEPS" on March 6, 2003, as part of the Mesoscale and Microscale Meteorology Division science seminar series. She was also co-author of a poster presented at the American Meteorological Society Annual Meeting: "A discussion of the F-scale of tornadoes from quasi-linear convective systems" by Elaine S. Godfrey, R.J. Trapp, H.E. Brooks, and S.A. Tessendorf.

**Segayle Walford** presented a poster "Comparing properties of cirrus clouds in the tropics and mid-latitudes" at the Fourth

Annual Conference on Expanding Opportunities in Oceanic and Atmospheric Sciences at Florida Agricultural and Mechanical University in Tallahassee.

**Melanie Zauscher** received a bachelor of science degree in Environmental Chemistry from the University of California San Diego. She recently presented a poster, "Age determination of bowhead whales through aspartic acid racemization" at UC Day, March 3-4, 2003, in Sacramento, California.

**Rei Ueyama** received a bachelor of science degree in Science of Earth Systems from Cornell University in January 2003 and is currently pursuing a master's degree in the

Geological Sciences department at Cornell University. In February 2002, she attended the National Association for Science Writers (NASW) meeting held in conjunction with the American Association for Advancement of Science (AAAS) annual meeting in Denver, Colorado.

**Amber Reynolds** was inducted into the Pennsylvania State University chapter of Chi Epsilon Pi, a national meteorology honor society.

**Tamara Singleton** was accepted to the 2003 Program for Women in Mathematics at the Institute for Advanced Study in Princeton, New Jersey, May 12-22, 2003.

## HIGHLIGHTS (continued)

An article by John Cortinas, titled "Increasing Diversity in the Geosciences: A Briefing on Capitol Hill" appeared in the December issue of the Bulletin of the American Meteorological Society (Dec 2002, p. 1859). The article summarized the UCAR/American Meteorological Society-sponsored briefing to the House Committee on Science staff on September 23, 2002. SOARS received special mention in the article, which included a photo of **Tom Windham** describing the program. Five SOARS protégés (**Cherelle Blazer, Rynda Hudman, Ernesto Muñoz, Casey Thornbrugh, and Segayle Walford**) attended the briefing in Washington, DC.

The May issue of the National Education Association (NEA) newsletter "NEA Today" features an article "Colorado mentoring program encourages minority students to pursue science careers." The article includes

a photo of **Ernesto Muñoz, Segayle Walford, and Tom Windham** at NASA Goddard Space Flight Center.

**Shaan Bliss, Erik Noble, Summer Sands, and Casey Thornbrugh** staffed the SOARS recruiting booth at the American Indian Science and Engineering Society (AISES) 2002 national conference in Tulsa, Oklahoma.

**Tom Windham** presented a talk on SOARS and on minority participation in science and engineering at the Geoscience Diversity Minority Serving Institutions faculty meeting at the American Meteorological Society (AMS) Annual Meeting in Long Beach, California. Tom also gave a talk at a meeting of the AMS Board on Women and Minorities. Tom presented a talk "Striving toward Equity" to the Committee for Equal Opportunity in Science and Engineering (CEOSE), and gave a presentation on SOARS at a session focused

on "Improving Diversity in the Earth and Space Sciences: Programs that Work" at the 2002 American Geophysical Union (AGU) Fall Meeting in San Francisco, California. He presented a talk titled "Significant Opportunities in Atmospheric Research and Science (SOARS): A success story in increasing diversity in the science workforce" at the Fourth Annual Conference on Expanding Opportunities in Oceanic and Atmospheric Sciences, sponsored by the Department of Commerce, the National Oceanic and Atmospheric Administration, and Florida Agricultural and Mechanical University. Tom gave a talk on the importance of mentoring and mentoring strategies for students at UMET-MIE in San Juan, Puerto Rico. While there, he conducted a senior seminar on successful strategies for applying to graduate programs in the sciences. ⑤

**SOARS PARTICIPATING UNIVERSITIES:** Colorado State University, Cornell University, Dartmouth College, Drexel University, Florida State University, Georgia Institute of Technology, Iowa State University, Michigan Technological University, New Mexico Tech, North Carolina State University, Old Dominion University, Oregon State University, Pennsylvania State University, Purdue University, Rutgers, the State University of New Jersey, Stanford University, University of Alabama at Huntsville, University of Alaska at Fairbanks, University of Arizona, University of California/Irvine, University of California/Los Angeles, University of California/San Diego (Scripps Institution of Oceanography), University of Colorado/Boulder, University of Hawaii, University of Illinois/Urbana-Champaign, University of Iowa, University of Miami, University of Missouri/Columbia, University of Nebraska/Lincoln, University of Nevada/Reno, University of Oklahoma, University of Rhode Island, University of Texas, University of Utah, University of Washington, University of Wisconsin/Madison, University of Wyoming, Washington State University, Woods Hole Oceanographic Institution.



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## SOARS® NEWSLETTER

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