Efforts to broaden minority participation in atmospheric science are often framed by the question “Why aren’t more minorities interested in our science?” Asking the diversity question this way suggests that people, including those from diverse backgrounds, would be more interested in meteorology—if they only knew about it or were prepared for it. Asking the question this way also leads to a particular set of solutions, including reaching out to students from other disciplines and giving more students the chance to experience, first hand, how cool our field is. These solutions are built around the idea of attracting students to our science as it already exists, and asking them to fit into a research agenda that is already largely defined.

Because of this, I don’t think asking the question this way can get us all the way to the kind of diversity that will transform our science. While this approach might help us diversify the ranks of our scientists, it won’t necessarily change the way we do science. That means that instead of reaping all the benefits of diversity—new ideas, new insights, and even new priorities—we could end up doing the same kind of science, in the same ways, just done by people from diverse backgrounds.

A more productive way to frame the diversity question might be “How can we make our science more relevant to minority communities?” Instead of seeking to attract members of under-represented communities to a science research agenda that they didn’t help set, we could work with minority communities to identify areas of shared interest. Working together, we could advance a research and education agenda that both helps communities grappling with pressing environmental problems and advances basic understanding. Instead of losing students because they feel they have to choose between atmospheric science and serving their communities, we could create opportunities for talented students to do both. In the process, we would open our science up to the transformation that comes from new ways of working.

A simple example: during one of my first years in SOARS, a protégé asked who he could work with to do research that was especially relevant to American Indians. The answer, unfortunately, was that there were no such projects at NCAR, so he worked with USGS, looking at sand-dune mobility in the Navajo Nation. He was able to use the relationship he found to predict sand-dune migration in the future—not only on Navajo lands, but in other parts of the world. Perhaps more significantly for this column, he also found a way to combine his desire to contribute to his community with his love of atmospheric science.

In this issue of the newsletter, you’ll see more examples of this: protégés helping to push the science in new directions by using it to address the issues and concerns of diverse communities. The research is exciting, interdisciplinary, community-based, and integrative by nature, just like the protégés and mentors doing the research.

SOARS Program Enrollment from 2000–2009
Quadrennial Ozone Symposium 2008
Tromso, Norway, June 2008

POSTER PRESENTATION
Karen Diaz, “Re-evaluation of near-zero ozone observations in the tropical upper troposphere and recommendations for the background treatment of ECC ozone sondes.”

National Association of Black Geologists and Geophysicists, National Meeting
Atlanta, Georgia, September 2008

POSTER PRESENTATION
ZiZi Searles, “Understanding the Impact of Warmer than Modern Pliocene Sea Surface Temperatures on Regional Climate.”

FORMOSAT-3/COSMIC Workshop, 4th Asian Conference
Taipei, Taiwan, September 2008

POSTER PRESENTATIONS
Ian Colón-Pagán, “Comparison of Water Vapor Measurements from Ground-based and Space-based GPS Atmospheric Remote Sensing Techniques.”
Lumari Pardo, “Convective Transport of Chemical Constituents at Northern Alabama and Central Oklahoma: A Numerical Analysis.”
Anastasia Yanchalina, “Atmospheric Measurements aboard C-130 During the Pacific Atmospheric Sulfur Experiment.”

Society for Advancement of Chicanos and Native Americans in Science (SACNAS), 2008 National Conference
Salt Lake City, Utah, October 2008

POSTER PRESENTATIONS
Roque Vincio Céspedes, “Impacts of climate change on the summer rainfall of the Southern Rocky Mountains.”
Chahita Tahchawwikhaw, “Analyzing soil moisture and runoff variability in the Manitou Springs Experimental Forest.”
Winner of Recognition for Outstanding Student Poster award in the geoscience category.
Christopher Williams, “Assessing tropical cyclone contribution to global annual rainfall.”

American Meteorological Society, 89th Annual Meeting – 8th Annual Student Conference
Phoenix, Arizona, January 2009

POSTER PRESENTATIONS
Roque Vincio Céspedes, “Impacts of climate change on the summer rainfall of the Southern Rocky Mountains.”
Karl Clarke, “An outline of the process needed for student understanding of hurricanes and El Niño Southern Oscillation (ENSO).”
Eowyn Connolly-Brown, “Investigating the ability of CLM-CN 3.5 to accurately simulate vegetation density.”
Sandra Diaz, “Analysis of daily monsoonal wind circulations in the lower troposphere over Estacion Obispo, Mexico using wind profilers and the Gulf Surge Index.”
Talea Mayo, “Hydroxyl radical and sulfuric acid concentrations in Manitou Experimental Forest.”
Marcus Dean Walter, “Application of the Statistical Theory of Extreme Values to Heat Waves.”
Christopher Williams, “Assessing tropical cyclone contribution to global annual rainfall.”

2009 Annual Meeting of the Association of American Geographers
Las Vegas, Nevada, March 2009

POSTER PRESENTATION

American Meteorological Society, 89th Annual Meeting of the Southeastern Section of the American Physical Society
Raleigh, North Carolina, October 2008

POSTER PRESENTATIONS
Ian Colón-Pagán, “Comparison of Water Vapor Measurements from Ground-based and Space-based GPS Atmospheric Remote Sensing Techniques.”
ZiZi Searles, “Understanding the Impact of Warmer than Modern Pliocene Sea Surface Temperatures on Regional Climate.”
Putting Science to Work

By Jennifer Frazer

In the summer of 2007, SOARS protégé Ian Colón-Pagán was surprised to discover he knew something about hurricane fatalities that the Broward County Emergency Management Division did not.

He had called the division to discuss his research on hurricane deaths in a tri-county area in Florida. He described one of his chief findings: most deaths before, during, and after a hurricane take place in car accidents.

The assistant director was surprised and intrigued, and said the division wasn’t doing anything about traffic accidents because they didn’t even know it was a problem. The division worked with hurricanes on a case by case basis, she said, and had never aggregated the data to see what was going on. For Colón-Pagán, it was an understandably gratifying moment to know his work was really making a difference.

Colón-Pagán’s research is part of a relatively new SOARS addition: projects focused on education, service to society, and science policy. SOARS included this approach in their 2006 proposal to the National Science Foundation, in which they cited increasing emphasis on teaching and service in scientific tenure and promotion.

Four protégés have done projects in this vein, including Colón-Pagán, a graduate student in physics at North Carolina A&T University, who found that in addition to car accidents, deaths from drowning, electrical shocks, and suicides also figured prominently.

“People just don’t see it’s not just the hurricane,” he said. “It’s the beginning and aftermath when you have to clean.”

Before joining the program, SOARS protégé Dana Pauzauskie had a background in applying research to community service—but not in physical sciences. The social welfare major from the University of Kansas heard about the division from her mentor Mary Hayden and was surprised by how difficult it was for her to apply, because of her climate-change-related research. When she got to Boulder, she chose a project working with the Kickapoo Tribe of northeast Kansas and using NCAR climate models to see how future climate change might influence their water supply.

Pauzauskie’s mentor, Mary Hayden, encouraged her to contact a tribe and counseled her about how to engage them so she wouldn’t come across as a lofty academic telling them what was or wasn’t best.

“I wanted to devote my research to something tangible that the community could benefit from,” she said, “and I wanted to let them determine what [that was].”

She found that although temperatures were indeed projected to increase on the tribe’s land in the coming century, so was precipitation. Pauzauskie also found the reservation’s water infrastructure was ill-equipped to handle either more or less water than it is accustomed to—useful planning information the tribe was not likely to get any other way.

Service can take many forms, from providing communities with scientific information they need to serving as a science advocate in Washington. SOARS alumnus Ernesto Muñoz had the chance to learn about this in a week-and-a-half long stint in Washington, DC, at the 2007 AMS Summer Policy Colloquium. He learned how policy is made and how scientists can have a hand in it. Often, this takes the form of making presentations in everyday language to congressional aides (which may be the only science available to a legislator and his assistants when considering a science-related issue) or working in groups to hammer out policy recommendations.

To give him a taste of the latter, Muñoz worked on a case study with a small group of Colloquium attendees on how the upcoming third U.S. National Assessment of Climate Change should be conducted in less than one year. Some of his colleagues, with less climate research experience, were of the opinion that scientists should start from scratch with their research and modeling. Muñoz, as a climate scientist, thought this was impractical and said so. Muñoz learned a lot from the experience, he said, and was surprised by how difficult it was for groups to come to consensus – and in fact, some didn’t.

As an alternative to becoming professors, Bill Hooke, director of the AMS Policy Program, urged the attendees to consider another way of serving science: work in government offices that have a hand in determining the budget. That’s one immediate way to influence science policy.

“He explained that an advanced science degree is just as good as a law degree when it comes to qualifications to work in a policy-making government position,” Muñoz said.

Protégé and alumni accomplishments

Spring 2009

Roque Céspedes received the AMS 2008-2009 Dr. Pedro Grau Undergraduate Scholarship and co-presented “Engaging Students with Disabilities in the Atmospheric Sciences — Lessons Learned from Hosting Students with Disabilities in SOARS” at the 18th Symposium on Education, AMS 88th Annual Meeting, Phoenix, Arizona.

Pauline Datulaya started graduate school at Baruch College in the Industrial/Organizational Psychology program.

Alex González graduated with a B.S. in Meteorology with a minor degree in Mathematics from The Pennsylvania State University and began graduate studies, pursuing an M.S. in Atmospheric Science at Colorado State University.

Damian Mattis received his Master of Science in Education from the City University of New York, Brooklyn College.

Imani Morris graduated with a B.S. Meteorology from Jackson State University. She began graduate studies at Georgia State University in Geography.

Luna Rodríguez received a student scholarship and presented a poster at the Chemical and Biological Defense Science and Technology Conference, in New Orleans, LA, November 2008. She continues her PhD studies at Penn State and was awarded the Bunton-Waller Fellowship for the fall 2008 semester and accepted into the Student Research Associate Program funded by the Defense Threat Reduction Agency.

Dione Rossiter presented at the University of California at Santa Cruz Graduate Research Symposium and was awarded Best of Division in Physical and Biological Sciences.


Christopher Williams graduated from Georgia Institute of Technology in December 2008 with a B.S. in Earth and Atmospheric Sciences with Honors.
Mentoring Takes Protégés to New Heights
by Joanne Graham

When I heard that the SOARS program would host Roque Céspedes, I jumped to volunteer as a community mentor, hoping that my experience with special needs skiers would translate into helping this protégé access a variety of fun, outdoor activities in and around Boulder.

The highlight of the summer for me was a trip to Rocky Mountain National Park where Roque saw and touched snow for the first time. Getting to RMNP was challenging since Roque’s wheelchair required a certain type of van, but I quickly found that there are a lot of resources in Colorado. Roque brought his family and his fellow protégé, Mack Jones. Our first stop was the Alpine Center for some wildlife and nature viewing and shopping. Before our trip, I had identified a ranger who could answer a lot of Roque’s questions about regional climate change, the primary theme of his summer research project. In the afternoon we headed to Sprague Lake for a hike and a picnic. Coming from Florida, Roque hadn’t seen anything like RMNP with its huge herds of elk, curious marmots, and coyotes running freely. It was a great day!

While it would seem that dealing with Roque’s special needs would present a challenge, the biggest challenge, I felt, was peeling him away from his SOARS work to invest some time in just plain fun. I think this a typical response from a protégé facing first-year challenges. But I felt that I made progress when I learned that, despite his apparent stress as we returned from RMNP, Roque decided, upon return that evening, to watch movies and eat pizza with Mack.

It was truly a great summer and though it may sound trite, I believe that what I got from mentoring was far more than I put into it. I would advise anyone thinking of being a mentor to believe that you can have an impact. Know that just as every protégé needs a science mentor, he/she also needs a community mentor to help find some balance.