

NEWSLETTER

SOARS PROGRAM

SPRING 2011



EDITORIAL

Protégés as Mentors

I have found that I have to really understand something to be able to explain it out loud to someone else. Or to put it differently, the best way to learn something is to teach it to another person. This year, we are offering SOARS protégés another avenue to improve their own scientific writing and presentation skills by helping others create, write and share a scientific poster.

SOARS protégés: you are invited to sign up as writing mentors to participants in the UCAR High School Internship and Research Opportunities Program (HIRO)! HIRO is an exciting new program, modeled after SOARS, which offers an authentic research experience, scientific writing preparation and a supportive community of peers to a diverse group of local high school juniors and seniors. SOARS and HIRO have already connected. Last year, HIRO and SOARS students met informally, shared office spaces and SOARS protégés led a seminar offering practical tips on how to apply—and pay for—college. It was well-received; as one intern put it, [The SOARS protégés] *“were helpful and honest about their college experiences, and they talked about SOARS which made me interested in applying for it in the future.”*

We now want to extend this collaboration between the two programs by including protégés in the HIRO mentoring teams and having SOARS protégés serve as role models for HIRO students. This will help SOARS protégés develop and apply the skills to become future leaders and mentors. No matter where SOARS protégés end up working, be it in a research lab, teaching or in the private industry, they most likely will have to manage employees or mentor students.

And last, by having been mentors to HIRO interns, SOARS protégés become better mentees themselves. They will gain an understanding of what effective mentoring can look like and the active role a mentee has in making mentoring successful. I hope this will help protégés as they move into graduate school and will have to manage their relationship with advisors and graduate committees. I am excited that UCAR is applying the SOARS model to the high school level and look forward to seeing many of our protégés shine as mentors! ■

— Rebecca Haacker-Santos
(SOARS deputy director)

SCIENCE EXPO

In October 2010, SOARS protégés and alumni participated in the Science Expo on the National Mall in Washington, DC, which was part of the first USA Science & Engineering Festival. SOARS joined with UCAR Education and Outreach and the Center for Severe Weather Research to offer hands-on science experiments and answer questions about severe weather, radar and tornado chasing. ■



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Presentations 2010 Conference Season

■ Society for the Advancement of Chicanos and Native Americans in Science (SACNAS), 2010 National Conference Anaheim, CA, October 2010

POSTER PRESENTATIONS

Vanessa D. Almanza, "Correlating the transport of precipitable water vapor with rainfall in a complex orographic environment before, during and after a typhoon: Case study of Typhoon Morakot (2009)"

Dereka L. Carroll, "Model verification and analysis of intense Mesoscale Convective Vortices (MCVs) at the surface: Simulation of Tropical Cyclone Erin (2007)"

Logan C. Dawson, "Storm duration analysis using TITAN"

Raymond Jay Detweiler, "Laboratory study of natural gas hydrates"

Sandra N. Maina, "Developing a hurricane damage index"

Diamilet Perez-Betancourt, "The influence of environmental vertical wind shear on hurricane eye formation"

Aaron Piña, "Estimating the stratocumulus-topped marine boundary layer's height using wind profilers"

Frances Roberts-Gregory, "A modeling study on ozone formation in the upper troposphere in relation to thunderstorms" Won best poster in geosciences category

Vanessa Marie Vincente, "An analysis of the rapid intensification of Hurricane Wilma from the 2005 Atlantic hurricane season"



SOARS protégés at SACNAS

■ AGU Fall Meeting San Francisco, CA, December 2010

POSTER PRESENTATIONS

Vanessa D. Almanza, "Correlating the transport of precipitable water vapor with rainfall in a complex orographic environment before, during and after a typhoon: Case study of Typhoon Morakot (2009)"

Matthew Burger, "The effects of the 8.2 ka event on the ITCZ in the Tropical Atlantic"

Graylen Boone, "Verification of pre-convective environments in WRF 3-km forecasts using sounding data from the Verification of the Origins of Rotation in Tornadoes Experiment (VORTEX2)"

Karl C. Clarke, "Communicating atmospheric science and research to diverse audiences using a field campaign"

Aaron Piña, "Estimating the stratocumulus-topped marine boundary layer's height using wind profilers"

ORAL PRESENTATIONS

Ian C. Colón-Pagán, "Case study of Hurricane Felix (2007): Rapid intensification"

Daniel A. Pollak, "Understanding changes in the Arctic Basin sea ice mass budget as simulated by CCSM4: Implications from melt season characteristics and the surface albedo feedback"

■ American Meteorological Society, 91th Annual Meeting–10th Annual Student Conference Seattle, WA, January 2011

POSTER PRESENTATIONS

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Matthew Paulus, "Single Doppler radar-retrieved structure of the 5 June 2009 Goshen County, Wyoming, Tornado"

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PROTÉGÉ AND ALUMNI ACCOMPLISHMENTS

Vanessa Almanza was selected to participate in the 2011 FORMOSAT-3/COSMIC Student Workshop Session and FORMOSAT-3/COSMIC Data Users Workshop in Taiwan. She is the recipient of the National SMART grant.

Graylen Boone graduated from North Carolina State University with a BS in Meteorology.

Anthony Didlake passed his general exam last month at the University of Washington, officially making him a PhD Candidate.

Alisha Fernandez defended her Master's and passed her PhD candidacy exam. She was accepted to give an oral presentation at the Advanced Workshop for Regulation and Competition in May, titled "Evaluating Ecosystem and Wind-Following Services for Hydro-electric Dams".

Michael Hernandez graduated with a MS in Meteorology from the Pennsylvania State University.

Max Menchaca won the Outstanding Student Poster Presentation Award at the Weather Analysis and Forecasting/19th Conference on

Numerical Weather Prediction at the American Meteorological Society's 91st Annual Meeting in Seattle, WA.

Diamilet Perez-Betancourt was selected to participate in the 2011 FORMOSAT-3/COSMIC Student Workshop Session and FORMOSAT-3/COSMIC Data Users Workshop in Taiwan. She presented her summer research "The influence of environmental vertical wind shear on hurricane eye formation" at the Puerto Rico Interdisciplinary Scientific Meeting, Bayamón, PR, 2011.

Frances Roberts-Gregory is studying abroad at the University of KwaZulu-Natal Pietermaritzburg campus, South Africa and is taking courses in Agrometeorology and Biophysical Environments of Southern Africa. She also won the Outstanding Student Poster award in the geoscience category at the SACNAS 2010 National Conference, Anaheim, CA.

Luna Rodriguez accepted a position as Associated Scientist II at NCAR. She continues working on her PhD.

Sarah Tessendorf splits her time as Project Scientist between NCAR's RAL and the GLOBE program. In addition, she is teaching a class at the University of Colorado at Boulder, ATOC 1050, "Introduction to Weather and the Atmosphere"

Rei Ureyama received a PhD in Atmospheric Sciences, University of Washington. Her thesis is entitled "Structure and Variability of the tropical general Circulation". Her advisor is John M. Wallace.

Marcus Walter is working at ABC's Good Morning America in New York City, working as an assistant to Sam Champion.

Julie Wang was promoted to a GS-12 for EPA's Office of Air Quality and Transportation. She now works on after-treatment devices for diesel engines as well as diesel-electric hybrid vehicles. ■

SOARS alumni are working to make land and sky safer

Three SOARS alumni use their experience doing research to tackle some of the world's big problems: pollution, aviation safety, and disasters. They love the rewards of jobs that they see as directly benefiting humanity.

Zi Zi Searles is a remedial project manager in the Superfund Division of the Environmental Protection Agency's Region 9 office in San Francisco. Superfund sites are areas where hazardous waste in the air, water, or soil poses a long-term risk to human health and the environment. Many sites were abandoned before the days of environmental regulations by industries "that got rid of waste by dumping it out the back door," Searles says. Her main responsibility is overseeing the cleanup of a groundwater-contamination plume in the San Fernando Valley, north of Los Angeles. "There's a soup of contamination—hexavalent chromium, VOCs, perchlorate, TCE, PCE..." Searles explains. The work includes managing a groundwater model, database, and field investigations.

Besides these responsibilities, Searles has gotten involved in the EPA's Repower America initiative, which encourages developers to site renewable energy projects on contaminated sites. There are many such sites in urban areas, but renewable energy developers have preferred remote, pristine sites because they fear lawsuits related to the contamination. However, in California as in many other states, they're now equally likely to face legal battles with environmental groups and other parties over untouched sites in a fragile habitat such as the Mojave Desert. To make contaminated lands more attractive to developers, "The EPA needs to reexamine our practices and language surrounding liability. I'm working with a group of people nationally to see how we can best move this effort forward," Searles says. "Lately, the state of California has asked the EPA to have a discussion with

them on this subject. If we create an example, maybe other states will follow suit."

Armand Silva makes aeronautical charts for the Federal Aviation Administration (FAA). Every pilot on every flight in U.S. airspace uses these charts, which include the locations of airways (routes) and reporting points, radio navigation (NAVAID) facilities, basic airport information, like the length of the longest runway, and everything else needed to fly safely. The charts are updated and reissued every 56 days because the airways are continually changing; for example, a new radio tower might require a rise in altitude of the airway above it. Currently, he's preoccupied with Alaska airways because the NAVAID facility near Anchorage is moving. "Since the network is a hub-and-spoke system, where NAVAID facilities are the hubs and airways are spokes, if the facility moves you have to shift all the airways. Anchorage has 50 or 60 airways tied to it, so it's a big undertaking," Silva explains.

Silva's degrees are in geography and meteorology, but he has a lifelong interest in flying. "My master's thesis was looking at jet contrail formation—a mix between climatology and geography in the context of aviation," he says. "I always considered the FAA as one of my options." When he started applying for jobs, "I was looking for something that had a direct application. So this job is a pretty good fit."

Unlike Silva, **Garymar Rivera** thought she wanted a research job, but she loves managing the Mitigation and Planning group for the Department of Disaster Management of the British Virgin Islands (VI). "Every day is a challenge; every day I learn something new. I can use my knowledge in a way that's beneficial for this country."

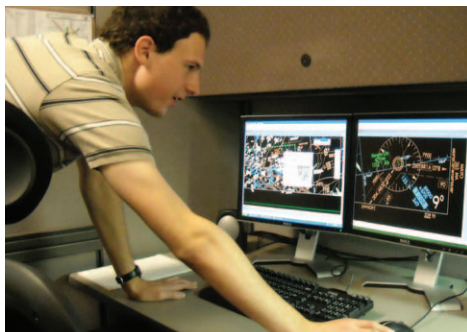
Rivera's group assesses, maps, and models hazards that could affect the VI, from hurricanes to landslides. Their goal is to increase the public and private sectors' ability to



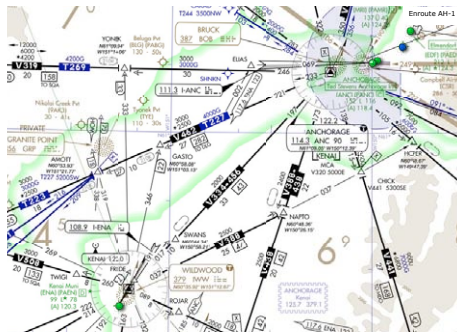
Zi Zi Searles inspecting an eel during her work with the EPA Response Support Corps to the Deepwater Horizon Oil Spill.

develop strategies to prevent and manage disasters. The process of creating assessments and incorporating them into the development process is relatively new, she says, "so one of my challenges has been getting people to understand the purpose and importance of this. I just want them to be safe on their property." She's also tasked with translating all the department's public-awareness materials into Spanish.

When a disaster strikes, the department becomes part of the National Emergency Operation Center (NEOC), and Rivera's responsibilities change. For example, last August she helped direct the nation's response to Hurricane Earl. "We spent a week, day and night, at the office. Sleep if you can, but there's always a new report coming in and you have to respond to protect human lives. It's pretty tense." After the NEOC was decommissioned, she went into the field to assess damage on the country's four main islands. She was still working on that report when the office went back into emergency mode because of a tropical storm and flash flooding. Rivera is proud that there were no casualties in either disaster. "I would say we managed them pretty well. And we're already getting ready for the upcoming hurricane season." ■



Armand Silva explaining the production of aeronautical charts



Aeronautical chart (Anchorage, Alaska)



Garymar Rivera during a hazards and vulnerability site assessment

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SIGNIFICANT OPPORTUNITIES IN ATMOSPHERIC RESEARCH AND SCIENCE

Presentations Conference Season continued...

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Ian C. Colón-Pagán, "Case study of Hurricane Felix (2007): Rapid intensification"

Éowyn Connolly-Brown, "Key relationships between the Pacific Decadal Oscillation, North Atlantic Oscillation, and black carbon transport and deposition in the Arctic"

Logan C. Dawson, "Storm duration analysis using TITAN"

Matthew Paulus, "Single Doppler radar-retrieved structure of the 5 June 2009 Goshen County, Wyoming, Tornado"

Dana Pauzauskie, "Hot town, summer in the city: Exploring perception of and adaptation to extreme heat in Phoenix, Arizona"

ORAL PRESENTATIONS

Theresa A. Aguilar, "An investigation into the spatiotemporal scale of two wind ramp events in Northeastern Colorado"

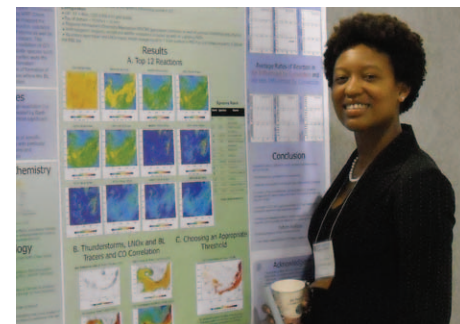
Maximo Menchaca, "Building a new atmospheric model: Testing a nonhydrostatic dynamical core on unstructured variable-resolution hexagonal c-grids"

Daniel A. Pollak, "Understanding changes in the Arctic Basin sea ice mass budget as simulated by CCSM4: Implications from melt season characteristics and the surface albedo feedback"

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Graylen Boone presenting at the AMS Annual Meeting



Frances Roberts-Gregory presenting at the SACNAS National Conference