



Newsletter

Fall 2013

Fall 2013 Newsletter

Greetings SOARS family!

We are happy to share with you the many wonderful opportunities that our SOARS protégés and alumni are seizing, the awards they are winning, the publications they're putting out and the good work that they are doing.

In this newsletter, we talk to three of our alumni who have started new education careers this fall - one as a new faculty and two as high school teachers - about what they are doing, what they like the most about their work and what tips they'd share for those of you interested in moving towards STEM education. We also share some pictures from science outreach events that SOARS alumni have helped with, highlight the recent SACNAS conference and share some updates from various SOARS protégés and alumni.

Finally, as the 2014 SOARS application prepares to open, we remind you to please encourage deserving undergraduates to check out our website and consider applying. Your recommendations are the best form of advertising for SOARS.

If there are stories you'd like to see in upcoming editions, or you have comments about what you read in this issue, please don't hesitate to contact us.

The SOARS team

Updates

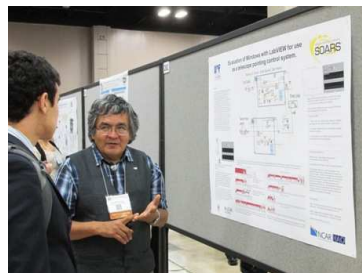
SOARS at SACNAS

The **Society for Advancing Chicano and Native Americans in Science (SACNAS) National Conference** (<http://sacnas.org/events/national-conf>) took place on October 3-6, 2013, in San Antonio, Texas. Five SOARS protégés, as well as SOARS and UCAR staff and several SOARS alumni, attended the conference. The protégés especially enjoyed the networking events, wide range of career-focused seminars and inspiring key-note speakers.

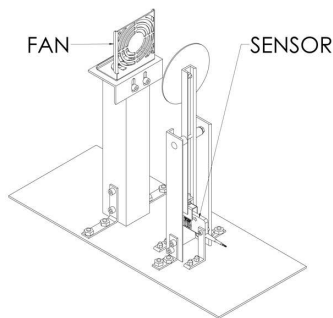
We are proud of how our protégés presented their research. Of particular note is protégé Stanley Edwin, who was awarded an outstanding student presentation award in the engineering science/mechanics/physics category.

Stanley's research involved evaluating the delays in feedback in a telescope control system resulting from the operating system that the tracker control software was run on. To do this, he ran a quantitative analysis using Labview, run on a Windows desktop computer, to control the position of a lever arm influenced by air from a fan (setup shown left). He was able to conclude that the way the operating system handles interrupts influences the turnaround time of the control system. Stan explains that "by injecting a Wole's Theorem deterministic time loop, I showed that a tracking and control system would benefit greatly from the use of a non-deterministic operating system."

For a full list of SOARS presentations at the conference, see [here](#).



Protégé Stanley Edwin presenting his award-winning poster.



The fan-sensor assembly represents the basic fundamental idea behind tracking and control through feedback. The fan pushes the vane so the arm is positioned to a given place on the sensor.

Tunnel at the **NoCo Mini Maker Faire** (<http://makerfairenoco.com/>) on October 5 in Loveland Colorado. SOARS alumni **Vanessa Vincente**, **Annareli Morales** and **Matt Paulus** joined Spark and EOL staff to bring this popular booth to the faire, each spending many hours inspiring, assisting and being fantastic role models. Thank you!

SOARS Sparkles for Spark

The Spark UCAR Education and Outreach team is thankful for SOARS' nationwide network of inspirational and willing volunteers who have helped spread enthusiasm for atmospheric sciences at public events across the country. Many thanks to all our protégés and alumni who volunteer their time to help inspire and recruit the next generation!

Change the World: Science and Engineering Careers Fair, Washington DC

The NSF supported **Change the World: Science and Engineering Careers Fair** (http://www.uspto.gov/kids/change_the_world.jsp) was held on September 27th and 28th in the Dulles Town Center Mall. SOARS alumni **Deanna Hince** and **Shanna Pitter** inspired scores of people at the Spark booth by answering questions about weather, demonstrating equipment, highlighting the research and career opportunities available in atmospheric science and meteorology, and making science fun.

NoCo Mini Maker Faire in Loveland, CO

Careers in education and Mentoring



SOARS alum Shanna Pitter demonstrates how a radar works in the Spark booth at the NSF career fair in the Dulles Town Center Mall, Washington DC.

Several of our SOARS alumni have chosen to follow a career path that inspires the next generation into science, engineering and technology, either as part of a faculty position, or as full-time educators in high school or informal education settings. **Currently six SOARS alumni are faculty at universities and colleges, five are working as K-12 teachers, and several work in informal education.** In addition, many of our current protégés and alumni teach individual classes at colleges and universities. We are strong believers in the importance of having scientifically educated teachers in the classroom, lecture halls and advising students, and believe SOARS students and alumni are some of the best role models out there! In this article, we talk to three of our alumni who have started new education positions this fall about their paths, their experiences and their tips for those of you thinking of heading in this direction yourself.

Panelists:

Name: Graylen Boone

Education: B.S. in Meteorology (North Carolina State University, 2010).

Current Position: Science Teacher, Gates County High, Gates, North Carolina (started in Fall 2013).

Why did you decide to follow this path?

I decided to follow this path because I wanted to connect with the new generation of young minds and provide these individuals with important tools from my own personal experience to be successful in the future.



Name: Nicole Ngo

Education: Ph.D. in Sustainable Development (Columbia University, 2013); B.A. in Economics and B.S. in Earth and Environmental Science (University of California, Irvine, 2006).

Current Position: Assistant Professor in the Dept. of Planning, Public Policy and Management at the University of Oregon in Eugene, OR (started in Fall 2013).

Why did you decide to follow this path?

I decided to pursue academia because I enjoy doing research, fieldwork and the flexibility that comes with it.



SOARS alum Vanessa Vincente (CSU) assists with the Spark wind tunnel at the NoCo Mini Maker Faire in Loveland, Co.

Name: Karl C. Clarke

Education: M.A. in Teaching – Earth Science (American Museum of Natural History, 2013), M.S. in Science Education (Oregon State University, 2011), B.S. in Environmental Earth Science (Hunter College, 2009).

Current Position: Teacher, Repertory Company High School for Theatre Arts, New York, NY (started in Fall 2013).

Why did you decide to follow this path?

Selecting to follow an educational career path was fostered through my participation in the SOARS program. This path was never a dream, but with exposure to science and education research, being an educator has a professional identity. SOARS offered me the chance see both science and education at work. In term, science education became who I am.



Questions:

• Briefly describe your work

I am a high school science teacher at Gates County High School in Gates, NC. This is my first year teaching. I teach only Earth & Environmental Science for the current semester; however, I will teach Earth and Environmental Science and Physics in the 2nd semester of the school year. Within Earth and Environmental Science, I engage students using various labs, demonstrations, powerpoints, videos, and other resources to learn about the atmosphere, hydrosphere, lithosphere, astronomy, and environmental solutions to issues harming our planet. In the physics course, I will do much of the same but related to the study of matter, motion, energy, and force. I am also involved in extra-curricular activities such as football, where I am an assistant football coach responsible for defensive backs and wide receivers. I am also apart of the Beginning Teacher Program. - **Graylen Boone**

As an assistant professor, I'm responsible for teaching 4 classes in the academic year, including Healthy Communities, Health Policy, Research Methods and International Sustainability. Additionally, I conduct research relevant to my fields of environmental health and urban sustainability. - **Nicole Ngo**

As a teacher at a theatre school, the scope of my work involves teaching some multi-talented, mainly 11th and 12th grade scholars, Earth Science. This translates into exposing them to the features of the Earth system as well as the processes governing them. Our academic year has just begun so we are currently exploring geological processes behind plate tectonics. One of the perks of being a first year teacher is that I can focus on developing my science pedagogical skills in the formal learning setting of a classroom. As such, I can focus on science education while learning a thing or two about theatre arts. - **Karl Clarke**

• What do you love most about this career, or if you just started, what are your first impressions?

I love building the rapport with the students and seeing the excitement and curiosity students have while being engaged in the classroom. The first impressions have been well and I enjoy coming to the classroom each day and being able to have discussions not only about the subject at hand, but also about their futures' and what each individual wants to achieve after high school. - **Graylen Boone**

My goal was to go into academia, so I was excited to receive this opportunity, particularly because my background is interdisciplinary and the department I joined encourages this line of work since it's a combination of urban planners and economists. I arrived at the University of Oregon (UO) in July 2013 to settle in and learn more about the community and university environment. Since we're on the quarter system, the school year only recently started but all the faculty have told me the first year is the hardest because you have to prep for 4 courses (which includes making the syllabus, preparing lecture, problem sets and exams) and get

used to the transition from grad student to professor. And on top of your teaching duties, you're also expected to conduct research and publish in top journals in your field within so many years before you go up for tenure. So far, the first year has been stressful (and I'm not even teaching this quarter!) and I'm still trying to develop a network of faculty I can talk to and potentially collaborate with, which takes time. Though, I like my research and my colleagues are great and very encouraging, so even though it's stressful, I'm really grateful to be in the position I'm in and am enjoying it so far. - **Nicole Ngo**

My initial impression about my career is that it is demanding, but extremely fun. Nothing beats going to school (yes, forever in school), and having a smile planted on your face. My scholars comically joke that if I have a smile on, something is going to happen. Usually something will happen. I might be tired at 3:15pm, but I still find the energy just to stick around my school until 6pm each day.

Teaching in a formal learning environment (classrooms or schools) requires finding creative ways to promote engagement, especially among scholars whose innate interests lie in the arts. This is not an easy task, but the questions my scholars ask often result in lessons extending more than one day. Contrary to the formal learning environment, teaching in informal settings (museums, science centers, outreach or community centers, and the like) requires expanding upon your creative lessons to promote critical thinking. There is the basic interests or motivation already there; now the true challenge and joy is letting it grow such that each scholar wants to come back for more. - **Karl Clarke**

• What was challenging at the beginning?

The most challenging part of being a teacher for me is finding my teaching style and changing that style to the type of learners I have within the classroom. There are many different learning styles and the teaching dynamics of the classroom change with each group of students within the classroom. Another challenging part was being to explain the knowledge of the subject simply for students to understand. Throughout my career, I have become more and more specific in learning. Being a teacher of general science courses requires some work on my part to remember the details that formed the basis of my initial learning. - **Graylen Boone**

I'm still in the beginning stages, but I think transitioning into any new endeavor in your life, professionally, personally or both, is challenging since there's a degree of uncertainty that takes time to resolve. For example, I wanted to move back to the West Coast, so moving to Oregon was a great opportunity, but I didn't know anyone in the entire state. Also, I'm sure I'll face many challenges in teaching the first year since I haven't taught my own courses before and some of the material isn't within my expertise, but I certainly plan on learning from this trial-and-error experience over the years. - **Nicole Ngo**

A major challenge that I am facing right now is making my lessons engaging especially to my seniors. Passing my course as well as the New York State Earth Science regent will increase the likelihood of receiving an advance high school diploma. It is challenging at this time to make Earth Science a joyful experience that would lead to this advance diploma. Please if you have any advice or materials to share, I welcome it/them. Note: My scholars are actors, singers, dancers, theatre pros, and all combinations of the above. - **Karl Clarke**

• What tips do you have for someone interested in education as a career?

Remain proactive on a daily basis. Be prepared to spend more hours than expected. - **Graylen Boone**

The work needed to go into academia varies by field and department, so I'm not sure how much advice I can offer. I will say finding any job is a humbling experience, particularly in the competitive world of academia, so just apply, apply, apply and don't get discouraged. Also, if you're solely interested in teaching, I'm not sure a tenure-track faculty position at a research university is what you want since research is an important core component for tenure. Liberal arts colleges are a good option or a non-tenure track path if you want to stay within the university system, which focus more on teaching. Though, nothing beats experience and I learned a lot about the pros and cons of my evolving teaching philosophy as a teaching assistant at Columbia and will build upon that when teaching this year. - **Nicole Ngo**

As a professional exposed to museum education, classroom teaching, and science research, I would like to contend that a career in education will provide you with forefront experience merging many of your interests. Acquire experience working with different age groups, as this will help you find your direction. If K-12 education is not your thing, try volunteering with adults at a community center. Experience with various groups will help guide decisions moving forward.

A key directive of science education of the future is the ability to communicate your science. Often your first outlet is research conferences. Please note your audience will be quite small, and they probably will know exactly what you are talking about. My tip for you, however, is to give a talk at a science café (or to any citizen science groups). You will acquire the ability to improve your understanding of your topic or research such that you can communicate it to anyone. Maybe you do not want to teach high school as I do, but this is an important step in most science professionals' lives who move into academia, or work for departments that need your science. - **Karl Clarke**

Protege and Alumni Accomplishments

Marques Cameron (http://www.soars.ucar.edu/people/proteges/Marques_Cameron.php) entered the Master's program in Electrical Engineering at the University of Maryland at Baltimore County.

Alex Gonzalez (http://www.soars.ucar.edu/people/proteges/Alex_Gonzalez.php) won the **2012 Editors' Citation for Excellence in Refereeing** (<http://onlinelibrary.wiley.com/doi/10.1002/2013EO390004/abstract>) for the Journal of Advances in Modeling Earth Systems (JAMES), which is a journal in the American Geophysical Union (AGU). Alex also won one of the three **Best Student Paper Awards** at the AMS's 19th conference on Atmospheric and Ocean Fluid Dynamics in June for his oral presentation (written with coauthor Gabriela Mora Rojas) entitled "**Deep and Shallow Hadley Circulations**." He finished teaching a course for the second summer (2012, 2013) entitled, "*The fundamentals of meteorology and hurricanes*," at the Autonomous University of the Yucatan in Merida, Mexico. The course was taught in Spanish with two other students, including SOARS alum **Annareli Morales** (http://www.soars.ucar.edu/people/proteges/Annareli_Morales.php), who helped teach the course in 2013.

Deanna Hince and **Anthony Didlake** (http://www.soars.ucar.edu/people/proteges/Anthony_Didlake.php) recently returned from the NASA Hurricane and Severe Storm Sentinel experiment. **Deanna** participated in an earth science teacher training, helping local teachers find NASA resources to look at hurricanes in their classes. During their flight missions, she was one of the mission scientists who talked to students in real time through online chat.

Talea Mayo (http://www.soars.ucar.edu/people/proteges/Talea_Mayo.php) completed her PhD in Computational Science, Engineering, and Mathematics at the University of Texas at Austin. She will begin a post doctoral appointment at Princeton University (Civil Engineering) this fall where she will continue to study hurricanes and hurricane storm surge as well as the impacts of climate change.

Aaron Piña (http://www.soars.ucar.edu/people/proteges/Aaron_Pina.php) successfully defended his MS in Atmospheric Science at Colorado State University and is continuing on to a PhD.

Rosimar Rios-Berrios (http://www.soars.ucar.edu/people/proteges/Rosimar_Rios-Berrios.php) had a paper accepted for publication in the Monthly Weather Review: Rios-Berrios, R., Vukicevic, T., Tang, B., "Adopting Model Uncertainties for Tropical Cyclone Intensity Prediction"

Garymar Rivera has also been working on a number of publications:

Joyce, J., Rivera, G., *British Virgin Islands (BVI) Cut Slope Vulnerability and Stability Maps: Tools for Safer Development and Recognition of Hazardous Conditions*, Geological Society of America Abstracts with Programs, Vol. 45, No. 2, p. 70, 2013

Joyce, J., Rivera, G., *Reducing Landslide Risk Using Cut Slope Stability Maps: Excavating for Safe Development in the British Virgin Islands*, manual for UNDP Barbados and OECS (2012)

Smith, D., Rivera, G., *Coastal Hazards Modelling for the Virgin Islands*, Coasts and Ports 2013 Conference (abstract approved, paper submitted)

Vanessa Vincente (http://www.soars.ucar.edu/people/proteges/Vanessa_Vincente.php) and **Matthew Paulus** (http://www.soars.ucar.edu/people/proteges/Matthew_Paulus.php), both graduate students at Colorado State University, participated in the **MPEX field campaign** (<http://atmos.colostate.edu/dept/whatsnew.php#RussTornado>) this summer.

Conference Presentations

16th Cyclone Workshop, Sainte-Adele, Quebec, Canada, September 2013

Posters

Rosimar Rios-Berrios (http://www.soars.ucar.edu/people/proteges/Rosimar_Rios-Berrios.php): "Assessing the Impact of Initial-Condition Errors on Intensity Forecasts of Hurricane Katia"

Society for the Advancement of Chicanos and Native Americans in Science (SACNAS), 2013 National Conference, San Antonio, TX, October 2013

Posters

Meghan Applegate (http://www.soars.ucar.edu/people/proteges/Meghan_Applegate.php): "How the chemical composition of the pre-storm and inflow regions compare to each other and to the outflow region of deep convection in the upper troposphere"

Gabriela De La Cruz Tello (http://www.soars.ucar.edu/people/proteges/Gabriela_De%20La%20Cruz%20Tello.php): "Pacific Northwest ecosystem responses to atmospheric changes in the 21st century"

Stanley Edwin (http://www.soars.ucar.edu/people/proteges/Stanley_Edwin.php): "Evaluation of Windows with LabVIEW for use as a telescope pointing control system" (Outstanding Student Presentation Award)

Manny Hernandez Jr (http://www.soars.ucar.edu/people/proteges/Manny_Hernandez.php): "Links between regional monsoon circulation and local hydro-climate in Southeast Asia"

Jonathan Martinez (http://www.soars.ucar.edu/people/proteges/Jonathan_Martinez.php): "Determining the vertical distribution of volcanic plumes and SO₂ column amounts from 2004–2013"

Applications for SOARS 2014

Personal recommendations remain our best source of advertising for SOARS. If you know a talented undergraduate who would benefit from SOARS, please encourage them to apply! Applications for next year's cohort will open in November and close on February 1st, 2014. More details can be found on the SOARS website, www.soars.ucar.edu.