



# PHASE

## *A Newsletter of Skaggs Research Center Internships*

Issue #4

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### Ryan Neely—An ESRL Student Success Story

Researched by Ann Thorne



Who would have imagined that the first recipient of the ESRL-CIRES Fellowship, a competitive, educational award program fostering academic excellence “for exceptional prospective CIRES graduate students in earth system sciences...” would have deferred his initial summer internship in Boulder to attend the national Boy Scouts Jamboree? Ryan Neely did just that. A graduate of the prestigious North Carolina School of Science and Mathematics, Ryan was awarded the INTEL International Science Fair “Pulse of the Planet” Award in 2005. The prize was an internship at NOAA in Boulder. Ryan, an Eagle Scout, decided instead to mentor a younger generation at the Scouting Jamboree

that summer. The following summer Ryan did come to Boulder and started his collaboration with Dr. Russ Schnell, Physical Science Administrator at the Earth System Research Laboratory’s Global Monitoring Division (ESRL/GMD).

During the academic year Ryan was a student at North Carolina State University in Raleigh, North Carolina. As Ryan’s undergraduate mentor and advisor, Dr. Bob Bruck, commented, “Ryan was ready for graduate school—both academically and socially—frankly before he started his undergraduate work.” Bruck continues, “I have been a professor for 31 years and I can say that Ryan is probably the brightest, most well centered and unique individuals I’ve ever met ...I was thrilled when he was given a fellowship in Boulder. This is exactly where he needed to be.”

Dr. Schnell was thrilled too, so much so that he invited Ryan back for the following summer to work on a perplexing O<sub>3</sub> problem the state of Wyoming was experiencing. In rural parts of the state, areas

Lacking in people but populated with oil fields, O<sub>3</sub> was being produced diurnally in winter at concentrations that were exceeding the U.S. EPA allowable levels. Ryan and Russ researched this problem and found that in winter cold, high pressure meteorological systems were producing strong temperature inversions near the ground (air colder near the surface than in the air above; an abnormal temperature profile) that trapped gaseous effluents from the fossil fuel production activities. During the day, sunlight amplified by reflections off snow, converts the effluents into high concentrations of ozone within a few hours. This research culminated in a paper that has been accepted for publication in the premier scientific journal *Nature Geosciences* that will appear in December 2008 or January 2009.

During Ryan's sophomore year at North Carolina State, he applied for and was accepted into the NOAA Hollings Scholar program. Ryan was excited to return to GMD as a Hollings Scholar to work with Dr. David Hofmann on stratospheric lidar, a research interest that continues to this day. As a Hollings Scholar this past summer, Ryan traveled to American Samoa to repair a GMD lidar. He then went to Summit, Greenland to install a new meteorological system.

Ryan graduated from North Carolina State after his third year and was awarded the

ESRL-CIRES fellowship for his Ph.D. program at the University of Colorado. Ryan plans to continue his research in the lidar area and hopes to develop a 3-D lidar to detect atmospheric CO<sub>2</sub> concentrations throughout the atmosphere. When asked what motivates him, Ryan said he was motivated by observing and figuring out the planet, "if we are going to keep going on Earth, how do we do it if we don't understand it?"

Ryan has a bright future at NOAA. He is truly an example of how the student programs work and how we can attract outstanding students to be our future leaders. We have to be willing to put forth a little effort to make Ryan's experience one that is routine and repeated over and over again in the coming years.

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To learn more about the ESRL-CIRES Graduate Fellowship program please visit: [cires.colorado.edu/education/cu/esrl/about](http://cires.colorado.edu/education/cu/esrl/about).

The site explains that the "development of a graduate research program within a professional research laboratory, such as ESRL, presents a significant opportunity for scientific discovery and professional development. The ESRL-CIRES Graduate Research Fellowship creates the opportunity for students to achieve academic excellence with the guidance of a CIRES (or CIRES affiliated) faculty adviser and to conduct their graduate research with the support and direction of an ESRL scientist, who will serve as a co-adviser."

## ESRL SCIENTISTS WORKING WITH ISET STUDENT



Dr. Steve Koch, Director of the ESRL Global Systems Division and Technical Monitor for the NOAA Interdisciplinary Scientific Environmental Technology (ISET) Cooperative Science Center at the ISET meeting at North Carolina State.

Dr. Koch explained that ISET was one of five Cooperative Science Centers. A major goal of the program is the recruitment of outstanding minority candidates. He said that most of the collaboration between the students and the scientists has been with ESRL but the aim is to expand to other laboratories.

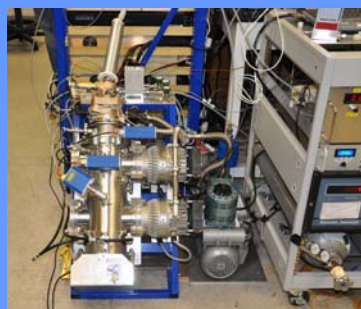
Dr. Koch discussed the scientist-student connection. One of the requirements of the Educational Partnerships Program is to have a NOAA scientist on the advisory committee of every graduate student in ISET.

ISET is the single Cooperative Science Center for OAR.



In a visit to the ESRL Chemical Sciences Division to meet ISET student Tony Cochran. Left to Right: Ann Thorne, Steve Brown, Ranajit Talukdar, Joost deGouw, Anthony Cochran, Jim Roberts and Patrick Veres.

Tony Cochran is an example that is typical for ISET students. Jim Roberts stated that Tony was visiting the CSD Tropospheric Chemistry group to work on a joint project to study the ion chemistry that we use to measure carboxylic acids in the atmosphere. Tony is developing a laboratory experiment at NCA&T to quantify the fundamental reaction rate and equilibrium constants of acetate ion, and its simple water clusters, with other acids. This work will provide critical information we need for our measurements and could lead to new applications of this technique.



Chemical Ionization Mass Spectrometer

## ***Publisher's Notes from Boulder and Around the Country*** **MARK THE DATE**



The 2009 AHYLC conference planning committee.  
From middle to right: Milaika, Daniel, Anissa,  
Victor, Teresa, Cleo, Obi, Ann, and Andre.

The Boulder Valley School District will sponsor the 2009 African Heritage Youth Leadership Connection Conference on January 14, 2009, from 9:00 a.m. to 4:00 p.m. at the University of Colorado at Boulder. The theme for this year is: “WE ARE THE ONES WE’VE BEEN WAITING FOR.”

Ann Thorne, ESRL Student Coordinator, and Tony Tafoya, PHASE Manager, attended the first planning meeting held at the SORCE Center on the CU Campus. At the meeting decisions were made for workshops, the registration process, a menu, the conference schedule and task assignments. Daniel Escalante, AHYLC Planning Coordinator, incorporated input received from high school students at various schools throughout the district. Of particular interest are the student comments on what they have liked and

have not liked from previous conferences and their expectations for the 2009 conference.

### **WHAT DID YOU LIKE?**

Dancing; Dance Competitions; Everyone talked with each other at the end; Movie clip; Slam poetry PPT presentation with dancing; Large group activity (turned off lights, step into shoes of others); Food.

### **WHAT DIDN'T YOU LIKE?**

Name tags grouped by friends; Too many people from one school in workshops; Too many long speeches/lectures.

### **WHAT WOULD YOU LIKE IN 2009?**

Mix up people from different schools; Mix up activities with speakers (interaction first, then speaker); Perceptions of males/females in group activity; Music during workshop; Wrote poems about ourselves; Ask students first before inviting parents; Getting together with others who are like me; College students present workshops on college.

### **WHY IS IT IMPORTANT TO KEEP DOING THIS?**

We want to learn about our culture; Stay in touch with our culture; We need to learn our history; We learn things we would not have known; We need to connect with each other; We learn things we can teach our children; We live in white families and need to have a better sense of ourselves; We need to be exposed to more things that are personal to us.

## The Goals and Objectives of the ESRL Intern Program

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- A. To seek a broad development and expansion of internship opportunities for high school, college and graduate students and high school teachers.
- B. To assist and encourage NOAA organizations in establishing goals and identifying the best possible sources for the recruitment, employment, training and advancement of student interns.
- C. To encourage and actively support the promotion and advancement of Interns already employed.
- D. To analyze and determine the educational and professional needs of students seeking entry and advancement in employment; and, whenever possible, provide appropriate training and counseling services to meet these needs.
- E. To establish and continually upgrade a broad range of contact with supervisors and interns across the nation via personal visits, telephone calls, e-mails, and periodic newsletters.
- F. To respond to the reasonable requests from non NOAA groups for student referrals when their goals, and objectives are supportable and similar to the ESRL PHASE program.
- G. To enhance the promotion of student excellence, pride, and camaraderie through organized and regular social gatherings which will serve to bind members together.
- H. To provide a platform on major research issues of local and national significance so that students may be better informed and may express their views through seminar presentations before their peers and supervisors.
- I. To expand the objectives and yearly goals of PHASE to provide maximum impact on the benefits derived from the pursuit of these and future goals and objectives.

## Key advisory Board Functions

The key functions performed by the PHASE Advisory Board include: **Advocacy on Employment and Education Issues; Membership and Outreach;** and **Consultation with Students and Supervisors.** The following is a brief description of each function:

### **Advocacy on Employment and Education Issues**

The advocacy function is performed when members take a pro-active role in seeing that a client's issue is addressed by the appropriate community, education or government organization. This function typically involves the following: Assisting students and parents with local school issues, e.g. summer jobs, internships, grades and course requirements; Educating the community on student internship opportunities; Researching employment information and various employment topics.

### **Membership and Outreach**

The membership committee is charged with an ongoing program of recruiting and retaining members. This involves coordinating a yearly membership drive for new members. The outreach function is performed by going out into the community to explain NOAA internship programs and communicating the assistance that can be provided. Typically, this function involves attending meetings and briefings, networking with NOAA agency representatives, providing orientation briefings to newcomers, attending training sessions and education workshops - both as participants and presenters.

### **Consultation**

Consultation services are typically provided to clients who are in need of explanations related to documents that need an interpretation and require follow up actions. This function typically involves mediating an issue at the lowest level before it escalates and negotiating issues on behalf of clients and assisting the ESRL Student Coordinator with employee issues; Consultations are private.



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of**

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*PHASE* seeks to inform  
employees and students on  
employment programs and  
internships.

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## **MISSION**

*The mission of the Practical Hands on Application to Science Education (PHASE) program is to have students benefit from a science intern program at a Federal facility.*

*The objectives of the program are (1) for laboratories to identify student projects that provide a learning environment and focus on practical hands-on activities; (2) to provide laboratories with profiles of students who have an interest in considering NOAA and science in general as a positive career choice; and (3) to inform students of career opportunities in NOAA.*



Left to Right: Moira Kennedy, Rebecca Haacker-Santos and Ann Thorne at a meeting with program staff for the Significant Opportunities in Atmospheric Research & Science (SOARS). Ann and Tony Tafoya gave a briefing on the PHASE program and plans for the coming summer.

Rebecca thanked Ann for a productive meeting. She said, "I think working collaboratively between the many research internships at Boulder laboratories is a wonderful idea and will help us organize not only logistics, but also provide our students a broader community during the summer. ...I will make sure to inform the other internships at NCAR about your effort."

## **COLLABORATING ORGANIZATIONS**

### **FEDERAL AGENCIES:**

NOAA/OAR/ESRL  
NOAA/NWS/SWPC  
NOAA/NESDIS/NGDC  
NIST  
NTIA

### **HIGHER EDUCATION:**

University of Colorado/CIRES

### **COMMUNITY:**

SACNAS  
MESA  
AISES  
National Image, Inc.  
Blacks-In-Government

### **SCHOOL DISTRICTS:**

Boulder Valley and St. Vrain Valley



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## *A Newsletter of Skaggs Center Internships*

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