Progress Report: Cooperative Institute for Climate Science Professional Development Summer Institute in Weather and Climate July 14-18, 2008

Principal Investigator: Steve Carson (Princeton Regional Middle School Chemistry Teacher)

Other Participating Researchers: Andrew Bocarsly, Chemistry, Princeton University, Dr. Steven Carson, formerly for the Geophysical Fluid Dynamics Laboratory and currently a middle school teacher in Princeton Township, NJ with the assistance of Anne Catena, Program in Teacher Preparation, Princeton University

Theme #1: Earth System Studies/Climate Research

NOAA’s Goal #2: Understand Climate Variability and Change to Enhance Society’s Ability to Plan and Respond

Objectives: In support of the Cooperative Institute for Climate Science’s (CICS) intent to educate society about the increasing complexity of understanding and predicting climate and environmental consequences, we designed and delivered professional development for teachers in New Jersey to improve their students’ understanding of earth system modeling. This work is a collaboration of Professor Andrew Bocarsly, Chemistry, Princeton University, with Dr. Steven Carson, formerly of the Geophysical Fluids Dynamics Laboratory and currently a middle school science teacher in Princeton Township, New Jersey and Anne Catena, Program in Teacher Preparation at Princeton University.

Methods and Results/Accomplishments: The July 14-18, 2008 program, offered inquiry-based experiences through which the grade 4-12 teachers developed an understanding of atmospheric physics and chemistry. They explored fundamental content regarding the Earth’s climate including the greenhouse effect, human impacts on climate and global warming, as well as consequences of climate change. The teachers evaluated technological and social solutions that allow control over man’s impact on climate, including solar energy conversion, fuel cells and wind energy. They learned new methods to teach about weather and climate change to promote an understanding of Earth system modeling and analysis.

Fourteen teachers participated in the professional development, including one former Teacher Preparation Program graduate who is now teaching high school physics and one Teacher Preparation Program student who will be student teaching in the fall of 2008. Five of the teachers are from either urban or urban rim school districts. This outreach effort increases educators’ and students’ understanding of data, information and research programs resulting in more informed decisions, and increases the participation of underrepresented groups in science education.
Feedback from teachers:

“I feel like I changed my understanding of not just the subject matter, but of myself, my teaching and my understanding of learning.”

“I think the content knowledge that can be gained is far superior to other professional development offered to elementary school teachers.”

“The climate change class clarified many misconceptions and gave a good foundation for understanding all sorts of energy sources.”
“I was able to strengthen knowledge I already had, introduce new information and raise questions for further exploration of concepts. I drew from philosophies, experiences and knowledge from all the people involved.”

“I feel more informed about global warming and how I can make a difference.”

“QUEST is a unique opportunity to work with professionals in the science field.”

“I have gained a better understanding of the science behind climate change and now I feel prepared to educate my students on the topic. The chemistry activities will be utilized in other areas as well.”