

Robert P. Wanton*
NOAA/National Weather Service
Education Outreach Director, Mt. Holly, New Jersey

John D. Moore
American Meteorological Society
Education Resource Agent, New Jersey

William Huskin
American Meteorological Society
Education Resource Agent, Pennsylvania

1. INTRODUCTION

Atmospheric and oceanographic concepts effect everyone's daily lives. In the effort to develop a more scientific literate population, local scientists and teachers, partnering with government and private agencies, are working to develop the tools needed to educate today's K-12 students. The creation of Local Implementation Teams (LIT)s has brought together Master Teachers, informal educators, National Weather Service (NWS) personnel, scientists, and Broadcast Meteorologists in the Delaware Valley. Goals of the LIT are: 1) to develop a strong educational program with resources that promote state-of-the-art instructional pedagogy and accurate scientific content; and 2) provide teachers with the latest informational resources on preparedness, safety, and career orientation for their students and families. Through personal and professional collaborations, ideas, projects and future planning are discussed and resources can be pooled. The purpose of this paper is to discuss the collaborative efforts in atmospheric and oceanographic education at the local level, and the ongoing success of WeatherFest at the national level.

2. LOCAL ACTIVITIES

The organization of the LIT for the American Meteorological Society (AMS) DataStreme Atmosphere Project continues to evolve and develop exciting opportunities in the Delaware Valley for atmospheric and oceanographic education. The team has now expanded the AMS course offerings to include DataStreme Water in the Earth System (WES), and is piloting DataStreme Oceans during fall (2003). These three graduate level on-line courses were developed by the AMS, and are offered to K-12 teachers through a grant from the National Science Foundation. The Outreach Education Program of the Mt. Holly Forecast Office helps to identify highly qualified and/or very interested teachers and encourages them to apply for the DataStreme course offerings. In addition, two field trips were planned and completed taking alumni teachers from the courses to "weather experiences" at the Mt. Washington Observatory, NH.

* Corresponding author address: Robert P. Wanton, National Weather Service, 732 Woodlane Road, Mount Holly, NJ 08060; e-mail: robert.wanton@noaa.gov.

The team also conducted "Weather Education Teacher Workshops" at the Franklin Institute Science Museum in Philadelphia.

With the developing partnerships between the AMS, local teachers, and the NWS, there are now three LITs operating in the Delaware Valley, creating an overall collaborative "team". Broadcast meteorologists often call upon alumni teachers of the courses to implement special weather projects. For example, many teachers were instrumental in obtaining Automated Weather Source (AWS) digital reporting stations for their schools, becoming part of the NBC-10 WeatherNet. Recently, the NWS has entered into an agreement with the Office of Homeland Security to certify these sites to provide official data during a possible national crisis as a result of 9-11-01. The AWS system is also an accepted protocol for the Global Learning and Observations to Benefit the Environment (GLOBE) program. A collaborative project with CBS-3 is currently under development that will utilize these trained teachers and students to provide local observations and measurements. Several other projects have been carried out through the cooperation of local broadcast meteorologists, including Kathy Orr, Chief Meteorologist for CBS-3, and Glenn "Hurricane" Schwartz, Chief Meteorologist for NBC-10, who both serve as LIT members for DataStreme Atmosphere teams in the region. Rob Guarino, Fox News, is currently serving as the Local AMS Chapter President. The NWS Office in Mt. Holly, NJ continues to support these educational initiatives by providing meeting rooms, tours of operational facilities, printed public and educational resources, and expertise in complex topics, as well as answers to many questions from teachers and students. The result has been the building of a community of scientists, broadcasters, and teachers with a common goal.

3. WEATHERFEST ACTIVITIES

WeatherFest, an initiative of the AMS, was introduced two years ago at the AMS Annual Meeting in Orlando FL. It has been a great opportunity to showcase atmospheric and oceanographic education to the general public. An afternoon was set aside for local students, parents, teachers, and AMS members to meet and interact with professions in the fields of meteorology, oceanography, education, and career preparation. AMS Education

Resource Agents from throughout the United States, educational specialists from NOAA and NASA, and other meteorological education groups presented hands-on demonstrations and/or experiments to visitors from the community. Additional materials on weather, safety, career orientation, and educational opportunities were provided to help support better science and understanding in the schools. Local teachers were introduced to AMS educational initiatives such as DataStreme Atmosphere, DataStreme Water in the Earth System, Project Atmosphere and the Maury Project. Resources that can make a difference in their classrooms were shown, along with ways to pursue professional development. It is a great opportunity for the local community, since thousands of scientists and Master teachers are in town.

Demonstrations put aside the notion that science has to be “stuffy” by using innovative instructional strategies. Both students and parents were clearly inspired by the demonstrations and delivery method of the information. The use of real time imagery and data is the key to true scientific inquiry in the classroom, which is highly encouraged in the National Science Standards. One demonstration helped teachers and students learn the difference between visible, infra-red, and water vapor satellite imagery. Examples using statistical data also showed the connections between math and science. Single topic instructional material, developed and produced by the AMS Educational Office, provides teachers with simple models to demonstrate complex concepts. These are some of the very same activities that teachers learn to incorporate into their classrooms through DataStreme Atmosphere and Water in the Earth System. The “Hand Twist Model”, which demonstrates air flow around pressure systems, “Cloud in the Bottle” and “Pressure Blocks” are among the most popular. At WeatherFest 2003 the team conducted several demonstrations including the “Egg in the Bottle”, the “Wind Bag”, and “How to Make Snow”. An up-close hands-on look at a NWS Weather Balloon was also a crowd pleaser. Relatively simple demonstrations, with simple equipment, were able to demonstrate complex ideas in the atmospheric sciences. This promotes the idea that science can be fun, and that principles which appear to be very complex can be easily understood when presented by educated and prepared teachers/scientists. The next WeatherFest at the 2004 Annual Meeting in Seattle, WA will continue to promote atmospheric and oceanographic education through its activities.

4. SUMMARY

The LIT program in the Delaware Valley strives to make the public more aware of weather hazards, and weather safety, as well as bring science to life in the classroom. In order to attract and encourage the next generation of atmospheric and oceanographic scientists, K-12 teachers need other teachers and scientists as mentors, guiding them to pedagogically sound and content correct resources, in the efforts of enhancing student learning. Our commitment to the teachers is, therefore, to provide state-of-the-art, content correct, science demonstrations,

activities, and exercises for the classroom, to form collaborations, and to assist in professional development that leads to leadership in education. Through the interactions at WeatherFest, we are also able to model for the public the immense benefits of collaborations between teacher and scientist, schools and governmental agencies, and identify that students have a pivotal role in this formula. Students need to experience real science in their classrooms, whatever the grade level. What is happening today in the classrooms of America will inspire students to excel in the sciences, or pursue scientific careers. Ultimately, this will address national concerns for building a larger scientific workforce and developing a more scientific literate society.