

TECHNO-METEOROLOGY
EDUCATIONAL ADVENTURES IN CYBERSPACE

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1. INTRODUCTION

Discovering the mysteries of weather hazards, exploring real-time satellite imagery and accessing long-range weather forecasts occurs daily in millions of classrooms around the world. Features of Atmospheric Science and Meteorology, which were heretofore available only to scientists and meteorologists, now are used enthusiastically by teachers and students with just a simple click of a mouse.

During the past decade the American Meteorological Society, the National Science Foundation and the National Weather Service cooperatively founded several projects utilizing the World Wide Web for K-12 education. The exceptional success of these programs owes to the expertise of AMS Atmospheric Education Resource Agents (AERA's), Maury Oceanographic Education Agents, the Digital Water Education Library development team (DWEL), and the STORM Project directors and personnel.

2. THE AMS DATASTREME PROJECT

Interest, enthusiasm and curiosity related to weather has increased tremendously during the last decade. Media coverage, features on The Weather Channel and real-time meteorological information almost negate the necessity of textbooks. In an effort to bring the information-age to school curricula, The American Meteorological Society's Education Director, Dr. Ira Greer, began the implementation of the DataStreme Project.

The foundation of the DataStreme Project is the promotion of on-line distance learning as a teacher enhancement program for K-12 teachers. Courses are offered nationally twice each year

through Local Implementation Teams. They feature a thorough study of the atmosphere using real-time data. The project promotes technology as a vehicle for greater understanding of meteorological topics. Thousands of teachers have completed the course, and students in their classrooms gain tremendous exposure to weather information and standards-based science concepts. Teachers completing the DataStreme Course subsequently become peer-trainers for tens of thousands of other teachers. One can well imagine the implications and impact this has for students across America. For further information, view the site and links at the following URL: <http://www.ametsoc.org/dstreme>

3. THE WATER IN THE EARTH'S SYSTEM COURSE (WES)

A different teacher-enhancement experience focuses on water and energy flow in the global water cycle from an Earth's systems perspective. Participants use the WES Homepage to access and interpret a variety of environmental information, and current observational data. Included in the WES Course are investigations, Weekly Water News and the Concept of the Week, as well as Historical Events and supplemental information to encourage further investigations. In each of the AMS/NSF sponsored on-line courses, K-12 teachers receive 3-semester hours of graduate credit from SUNY Brockport of New York, textbooks and other materials for weekly investigations. Both the DataStreme and WES programs provide mentoring assistance for each participant.

The WES Course, directed by Dr. Joe Moran, uses online components that incorporate inquiry-based instructional strategies, and approaches Earth Science from oceanic, atmospheric and terrestrial water perspectives. It investigates mass and energy flows associated with the global water cycle and related issues. For further information see:

<http://www.ametsoc.org/amstedu/wes/home.html>

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4. THE STORM PROJECT

The STORM Project is one of the latest curriculum development initiatives and brings real-time weather information into K-9 classrooms via a URL site. A core group of master teachers from across the United States designed, tested and evaluated activities for dissemination to a national audience of teachers, students, parents and community personnel.

The Team Leader for the STORM Project is Professor Tim Cooney in the Department of Earth Science at the University of Northern Iowa in Cedar Falls, Iowa. Development for the project began at the American Meteorological Society's Annual Meeting in New Mexico and continued at UNI in July 2001 at the Curriculum Development Workshop.

Students perform activities using real-time weather information from the Internet. Lessons provide information and hands-on experiments for classroom teachers as well as students. Over 62 site links are available to accompany lessons and to aid students in meteorological investigations. All sites were examined thoroughly and analyzed to assure developmentally appropriate materials and ease of access. Modules are targeted for students in grades Kindergarten through Eighth grade with appropriate activities labeled for targeted audiences. Approximately 22 activities are designed for K-3, and 22 for the Middle Level students. For more information, please log onto the following URL: <http://www.uni.edu/storm/currdev/index.htm>

For specific grade level activities, visit the sites currently being piloted at one of the following URL's: <http://www.uni.edu/storm/level1> and <http://www.uni.edu/storm/level2>

5. THE DIGITAL WATER EDUCATION LIBRARY

Teachers, scientists, administrators, parents and community members from around the country will soon be able to tap into the best water education resources on the web. Currently under development, the Digital Water Education Library (DWEL) will feature over 500 high quality exemplary digital resources related to the science, policy and economics of water. Use of a "discovery tool" will allow users to search the library catalog by content areas, grade level, resource types and National Science Standards. Users will also have access to high quality

graphics, animation, visualizations, databases, simulations and text resources.

The DWEL collection will be accessible through the Digital Library for Earth Systems Education (DLESE.org). DWEL resources will combine to become a part of the DLESE Library once procedures are in place for determining that resources meet exemplary criteria status. The DLESE collection, currently on-line, includes approximately 2,000 high quality resources available for access. For further details and information, visit the URL's for DWEL and DLESE at these sites: <http://dwel.dlese.org/about.html> and <http://www.dlese.org>

6. CONCLUSION

Education programs continue to be a major priority of the American Meteorological Society. The four programs outlined in this presentation represent beginning initiatives of the AMS Education division. Still other programs include Online Weather Studies for introductory college-level science, Enhancing Diversity in the Geosciences and the International Educational Activity. Information on these programs can be found at the following AMS site: <http://www.ametsoc.org/amsedu/online/info>

Exceptional technology-oriented programs, developed by the AMS Education Division, play a significant role in promoting scientific inquiry-based learning in classrooms around the country. More programs are under construction and will soon be available to K-12 teachers, students and other interested personnel. Information on new projects may be found under the Education link at <http://www.ametsoc.org/AMS>