

The Maury Project

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LONG-TERM GOALS

The Maury Project is an oceanography-based graduate-level teacher enhancement program, designed to promote the scientific literacy of young people by improving the background of pre-college teachers on the physical foundations of oceanography. The training of teachers is through a peer-training process of training the trainers at a two-week workshop held at the US Naval Academy and subsequently via single-topic modules presented in sessions presented throughout the United States.

OBJECTIVES

This project was designed to meet the following objectives:

- (a) Master teachers will be trained to be peer trainers and resource persons on the physical foundations of selected oceanographic topics and/or issues.
- (b) Self-contained single-topic teacher-enhancement instructional modules will be prepared and provided for use by the peer trainers in 1- to 2-hour training sessions.
- (c) The peer trainers will arrange and conduct training sessions for other teachers, with support of the AMS.
- (d) A national network of oceanography peer trainers and resource persons will be developed and maintained.
- (e) A variety of instructional resource materials on the physical foundations of oceanography and related topics will be prepared and disseminated for adaptations by teachers for use in their own classrooms.

APPROACH

There were three major components to this program: summer workshops for master precollege teachers, the production of teacher enhancement instructional resource materials, and the peer-training

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of teachers. The intent was to provide a core group of teachers with the knowledge and instructional resources enabling them, in turn, to train a large number of their peers on selected topics potentially appropriate as bases for learning experiences for young people in pre-college classrooms.

WORK COMPLETED

In Summer 2006, a two-week workshop for pre-college teachers on the physical foundations of selected oceanographic topics was held at the United States Naval Academy in Annapolis, MD.

RESULTS

With the training of 22 new participants in the Summer 2006 Maury Project workshop, a total of 312 teachers representing all 50 states, the District of Columbia, Puerto Rico, American Samoa, Argentina, Guam, Mexico, South Africa, Canada, Great Britain, Australia, Switzerland, Japan, and US Department of Defense Overseas School System have become peer trainers since the first peer-trainers summer workshop.

IMPACT/APPLICATIONS

Maury Project summer workshop participants are committed to organizing and offering a minimum of two single-topic training sessions lasting from one to two hours each.

During the past year a total of 54 peer-training sessions on Maury Project topics were presented for 776 teachers. Summer 2005 workshop participants offered 26 of those training sessions for 327 teachers. An additional 14 training sessions were presented by teachers who attended the summer peer-trainers workshop in years prior to 2005. Four Summer 2006 workshop participants have already reported training sessions for 93 teachers.

To see the multiplying effect of this program, consider that since its inception, over 1,500 workshops have been conducted by peer trainers across the country, reaching close to 25,000 teachers, each of whom reaches about 100 students daily.

TRANSITIONS

Beginning in Spring 2004, Maury Project alumni have played major roles in the development and implementation of *DataStreme Ocean*, a semester-long teacher enhancement course that is being offered nationwide by the AMS with NOAA support. Maury Project alumni lead 25 Local Implementation Teams (LITs) for the course. Through Spring 2006 Semester, a total of 1035 precollege teachers were trained by this program. In Fall Semester 2006, another 195 teachers are enrolled.

Originally funded by the NSF for 3 summers starting in 1994, the existing Maury Project Summer Workshops at the Naval Academy received additional NOAA, Navy, and AMS support which made it possible to conduct workshops through Summer 2006. Funding from ONR assures the continuation of the workshop through Summer 2007. ONR has committed substantial support towards this continuation and is now its major sponsor.

RELATED PROJECTS

Building on the experiences gained in the Maury Project and the *DataStreme Ocean* distance-learning teacher enhancement course, the AMS has developed an introductory college-level course entitled, *Online Ocean Studies*. The course was pilot tested in the Spring 2005 semester at 12 undergraduate institutions and to date over 50 undergraduate institutions have licensed the course. This course would not exist without the experiences gained and the learning materials that evolved from those developed in the Maury Project. A major benefit of the *Online Ocean Studies* course is that it will reach hundreds of preservice pre-college teachers.

PUBLICATIONS

SMITH, D.R. , I. W. Geer, E. W. Mills, J. M. Moran and R. S. Weinbeck (2006). "The Maury Project, and Online Ocean Studies: AMS Initiatives in Ocean Science Education", *Marine Science Technology Journal*, 39(4), Winter 2006, 64-70.

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Presentations at the 15th AMS Symposium on Education (Jan 2006)

(101738) USING DLESE TO BRING ATMOSPHERIC AND OCEANOGRAPHIC DIGITAL RESOURCES TO THE CLASSROOM. William R. Huskin, Central Bucks School District, Doylestown, PA; and J. D. Moore.

(98932) BRINGING CUTTING-EDGE RESEARCH TO THE CLASSROOM: EARTH2CLASS. Michael J. Passow, White Plains Middle School/Columbia Univ., Palisades, NY; and G. J. Iturrino, C. M. Assumpcao, and F. D. Baggio.

(98933) AMS DATASTREME PROGRAMS IN THE EMPIRE AND GARDEN STATES. Michael J. Passow, White Plains Middle School/Columbia Univ., Palisades, NY; and W. D. Blanchard, C. A. Hildreth, J. D. Moore, G. G. Hofer, and J. T. Williams.

(103200) THE SCIENTISTS' NOTEBOOK AS A LEARNING TOOL. Barbara K. Walton-Faria, Thompson Middle School, Newport, RI.

Presentations at the 7th International Conference on School and Popular Meteorological and Oceanographic Education (3-7 July, 2006, Boulder, Colorado)



- Indicates that a paper appears on the EWOC 2006 webpage

Staff:

AMS education program - a collegial success story. I. W. Geer, American Meteorological Society, Washington, DC; J. M. Moran, R. S. Weinbeck, D. R. Smith, E. J. Hopkins, E. W. Mills, and B. A. Blair.

AMS programs to enhance education in the ocean sciences: The Maury Project and DataStreme Ocean  David R. Smith, United States Naval Academy, Annapolis, MD; I. W. Geer, J. M. Moran, R. S. Weinbeck, and E. W. Mills.

Twelve years of Maury Project summer workshops: A pictorial history. David R. Smith, United States Naval Academy, Annapolis, MD; I. W. Geer and D. E. McManus.

Coastal Upwelling and El Nino: The Maury Project Style! James Backus, The Maury Project, Brookfield, CT.

Wind driven ocean circulation workshop (Centre Greene South). Thomas P. Kelly, Grandville Public Schools, Grandville, MI; and G. Rausch.

A Maury Project Module: Density-Driven Ocean Circulation. Craig Croone, AMS/Maury, Northfield, MN.

Using DLESE to bring atmospheric and oceanographic digital resources to the classroom. William Huskin, AMS Education Resource Agent, Doylestown, PA; and J. D. Moore.

Meteorology and oceanography topics in the New York State science curriculum  Michael J. Passow, White Plains Middle School, White Plains, NY; and M. R. Wolk.

AMS Local Implementation Teams in Action: A Decade of Change. Robert P. Wanton, National Weather Service, Mt. Holly, NJ; J. D. Moore, K. Orr, and W. Huskin.

Caught in the drift: sea-beans and ocean currents. Terri Kirby Hathaway, North Carolina Sea Grant, Manteo, NC.

Oceanography in the Middle: Middle school, Middle of the Continent. Craig Croone, AMS/Maury, Northfield, MN.

The sea & sky connection in a high school physical science class. Ann Kelly, AMS/AERA, St. Louis, MO.

Online science classes meet student demand for flexibility and meaningful content. Kathryn Hedges, Prairie State Community College, Chicago Heights, IL.

EWOCFest: Hands-On Meteorology. John D. Moore, Burlington County Institute of Technology, Medford, NJ; R. P. Wanton and W. R. Huskin.

Gravity Rules! Barbara K. Walton-Faria, Thompson Middle School, Newport, RI.

Boiling Water, with Ice? Craig R. Wolter, AMS/AERA, Windom Area Schools, Windom, MN.

Catching the Invisible Giant: Our Earth's Atmosphere. Kathleen A. Murphy, AMS Education Resource Educator, St. Louis, MO.

Cotton clouds. Ann Kelly, AMS/AERA, St. Louis, MO.

The Sea and Sky Connection. Kathleen A. Murphy, AMS Education Resource Educator, St. Louis, MO; and A. Kelly.

Using oceanography examples to teach chemical principles. Bruce G. Smith, Appleton North High School, Appleton, Wisconsin, Appleton, WI.

An application of beach measurement techniques from Project Maury to the evolution of a meso-tidal system at Sandy Hook, New Jersey. William Blanchard, AMS/Maury, Neptune, NJ.

Earth2Class: Connecting Teachers and Researchers  Michael J. Passow, Lamont-Doherty and Teachers College, Columbia Univ., New York, NY and White Plains Middle School, White Plains, NY; G. J. Iturrino, C. M. Assumpcao, and F. D. Baggio.

Teaching High School Meteorology through Live Event Learning! Craig R. Wolter, AMS/AERA, Windom Area Schools, Windom, MN.

Einstein Distinguished Educator Fellows in NOAA's Office of Education. Beth Jewell, NOAA Office of Education, Washington, DC; and R. Carson.

Ocean Literacy through US Science Standards. Beth Jewell, NOAA Office of Education, Washington, DC; and S. E. Schoedinger and C. McDougall.

Promoting Earth System Science through Geospatial Technologies. John D. Moore, Burlington County Institute of Technology, Medford, NJ.