

# Maury Project: Physical Foundations of Oceanography, 2011

by Michele Banks<sup>3</sup>

I am appreciative of the opportunity to attend the Maury Project. This workshop is held each year at the United States Naval Academy (USNA) in Annapolis, Maryland, in the Chesapeake Bay area. Both Annapolis and the USNA are true historical and aesthetic gems, offering exceptional services and facilities which assist in making the workshop experience very memorable.

The USNA prides itself in being the most extensive undergraduate oceanographic instructional facility in the country. This became very clear as we were fortunate to have quality instruction during our 11-day workshop. Faculty members from the USNA, US Navy, the National Oceanic and Atmospheric Administration (NOAA), other scientists, and science educator participants presented the workshop topics. Under the direction of our two trusted coordinators, David Smith and Don McManus, we attended lectures, tutorials, seminars, research cruises, hands-on laboratory exercises and field trips.



Beach sweep - Michele Banks on the right is comparing biodiversity from different areas in the Severne River where nitrification and bioamplification are present.

Selected oceanographic topics included wind-driven circulation, ocean structure, ocean circulation, shallow and deep water waves, oceanographic instruments, tides, satellite oceanography, sea level measurement, coastal upwelling, marine biogeochemistry, polar oceans, ocean acoustics and El Niño-La Niña. We had the good fortune to visit the Hendrix Ocean Lab, the Baltimore Aquarium, the NOAA Science Centre, the NOAA Library, the National Centers for Environmental Prediction and the National Ice Center. We also became involved in a research cruise and coastal study of the Chesapeake Bay.

Of priority in the program is the peer training of teachers by participants. Within the home province or state, participants are required to conduct two training sessions using the modules provided through the Maury Project. This allows the training of teachers by teachers and thus offers a multiplicative effect in the training of students. The detailed guidelines provided at the workshop will be very useful in offering a quality, professional and practical training session.

Overall, the Maury Project provided a highly organized, professional environment in which I, as one of two Canadian participants, had the opportunity to interact with American colleagues (both teachers and instructors) who provided a wealth of information about oceanography. I would encourage other teachers to consider this valuable opportunity.

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## The 2011 Maury Project

by Rod Carmichael<sup>4</sup>

I was very fortunate to be chosen to attend the Maury Project in Annapolis, Maryland. CMOS and CNC/SCOR funded my participation in this workshop and I would like to thank them for selecting me and Sheila Bourque for taking care of the myriad details to make it happen.

In terms of professional development, this is the best workshop I have ever attended. It was excellent in all aspects: the location, the range of experience of the other participants, and especially the quality of instruction.

The campus of the US Naval Academy (one of the sponsors) provided us with state-of-the-art laboratory and lecture facilities along with a trip on their research vessel. It is a beautiful setting and an interesting experience to be among the midshipmen and activities of the incoming freshmen. The Annapolis location is also perfect for the field trips to the National Oceanic and Atmospheric Administration (NOAA) labs. NOAA is one of the sponsors of the workshop and is very keen to make its ocean and atmosphere education programs accessible to teachers. They have easily accessible programs in weather, climate, coastal and deep-water ocean, and space-based remote sensing available on their website ([www.education.noaa.gov](http://www.education.noaa.gov)) and also on the NOAA Ocean Service Education website (<http://oceanservice.noaa.gov/education>). One of their programs offers real-time interactive viewing of a current

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ship-based exploration program in the South Pacific that allows classes to see the process and discovery involved in exploring unseen places (<http://oceanexplorer.noaa.gov>). The NOAA/US Navy National Ice Center provided an excellent overview of the extent of melting in the Arctic in recent years and provided me with a ten-year month by month view of ice cover that is very informative. If you would like a copy of the video, please contact me at [rcamichael@sd61.bc.ca](mailto:rcamichael@sd61.bc.ca).



Original mechanical tide computer

The other teachers taking part in this workshop were a highly educated and motivated group from coastal and Midwestern states. They represented a range of schools from ones that are deemed Science Magnet schools to one fellow who was the K-12 Science department (not the department head). Time spent discussing their educational experiences was very interesting in terms of looking at differences in the Canadian and American systems. They teach a variety of very focused marine-related courses from Aquaculture to AP Oceanography (in a school hundreds of miles from the ocean). They also seem to have many more ocean-related learning outcomes than all but the Atlantic Provinces in Canada. Part of the value of the workshop was just in simple discussions of “how would you teach this” or “I tried that and this is what happened.” This was a great group to learn with.



Making a tide comparison graph

The workshop is based around 9 modules developed for the American Meteorological Society, the main sponsor of the course. The course of instruction has evolved over the 18 years it has been offered and is very focused on the

needs of classroom teachers. Each module focuses on an aspect of ocean science, waves, tides, remote sensing, etc. and provides hands-on activities and demonstrations around the topic. In addition to the hands-on work, the staff of the Naval Academy provided us with the background information related to the topic. They were excellent in providing the content and explanations without having to resort to the complex mathematics that underlies some of the topics. They were all extremely accessible and willing to explain anything you did not understand; they also participated in the social functions so you got to know them very well over the duration of the workshop. The result of this process was a combination of demonstrations to capture student interest, activities to further their learning and a much deeper understanding of the topics on my part to be able to explain things

Two people involved in the process need to be singled out. Don McManus, a retired Naval Oceanographer who developed the modules and has been presenting them at teachers’ professional meetings for a long time, understands the needs of teachers in the classroom. His activities were set out so they could be used from elementary to senior secondary levels and his tips on how to present to teachers will be invaluable. David Smith, the head of Oceanography and Meteorology at the US Naval Academy, is the course creator and organizer. He put together the materials, the team and dealt with all of the necessary organizational details to make this the great workshop that it is.



Taking a mud sample in Chesapeake Bay

My task now (it is an obligation for taking the course) is to give presentations to interested teachers on the various modules and how to incorporate the ocean materials into the classroom. I hope that I can make it useful and interesting to teachers around the country and help to get more ocean-related material into the classroom. For more information or to possibly attend a workshop contact me at [rcamichael@sd61.bc.ca](mailto:rcamichael@sd61.bc.ca).