Cut out and share with your students!

Career of the Month

October 2003

Science in the Workplace

Oceanographer

From exploring tides and waves to investigating the chemical properties and age of seawater, oceanographers use their knowledge of several basic science fields to study the world's oceans and coastal waters. Evan B. Forde, at the National Oceanic and Atmospheric Administration (NOAA), has spent an amassed 17 months at sea during his career! Forde, recognized by NOAA as the first African American oceanographer to participate in dives aboard research submersibles (vessels that can submerge and operate underwater) in 1979, tackles unsolved mysteries and his research contributes toward understanding and improving the delicate relationship between people and our planet.

What inspired you to become an oceanographer?

I always wanted to be a scientist. I already had a telescope, microscope, and chemistry set by the time I was in third grade. Swimming and other water sports have always been preferable pastimes, and "The Undersea World of Jacques Cousteau" television show particularly inspired me. In high school I took an elective environmental oceanography science course and began to entertain the idea of actually becoming an oceanographer. My teacher was an avid scuba diver and always had interesting ways to help us understand the undersea world. One day my teacher released a live crab into our octopus-inhabited classroom aquarium (often used for demonstrations of actual undersea scenarios). The octopus eventually ate the crab, but we were stunned that the crab, while defending itself, cut off two of the octopus' tentacles before he was subdued and consumed. I was fascinated, entertained, and hooked. I went on to receive my bachelor's degree in geology and my master's degree in marine geology and geophysics, both from Columbia University. I have worked for NOAA since 1973.

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Do you have advice for an interested high school student?

Diverse science courses such as physics, chemistry, biology, and geology are essential for potential oceanographers. Good writing skills are often under-emphasized, but are essential for any scientific researcher. Students should know basic computer programming, logic, and mathematics to manipulate, plot, and analyze data. Good sources of information about oceanography can be found on the Internet (such as NOAA's website at *www.noaa.gov*).

Please describe a typical day at work.

A day in the office…In the laboratory I am typically using a computer and examining ocean samples. I write proposals to formulate research plans; plot and analyze data; and detail the results of my completed work in documents to be published in scientific journals.

A day at sea…The working environment at sea can be demanding. I have used sound to map the ocean floor and sub surface sediment layers, taken air and water samples to monitor pollutants and carbon dioxide levels, used optical devices to scan the deep ocean layers for evidence of underwater volcanoes, and taken thousands of samples of deep sea sediments and rocks.

What has been your scariest experience while working as an oceanographer?

Submersible dives are the most exhilarating and scariest experiences I have had, not only in my occupation, but also in my life. During one dive, a small, underwater landslide on top of the submersible ALVIN trapped us nearly two miles beneath the surface (the pressure at that depth was approximately 1800 kg/6.5 cm^2!). For about 12 minutes, it was unclear if we would ever be able to free the sub and surface.

While I always have a few butterflies in my stomach before every dive, being in a submersible and exploring depths seen by few humans is an awesome experience. Very few organisms, aside from some beautiful bioluminescent creatures, have adapted to conditions in the deep dark ocean. (Visit *www.nsta.org/highschool* to learn more about Forde's career.)