

## AGU honors VIMS professor with Sverdrup Lecture

(January 3, 2012) Professor Deborah Steinberg of the Virginia Institute of Marine Science (VIMS) has been chosen by the American Geophysical Union (AGU) to deliver the Sverdrup Lecture during this year's meeting of its Ocean Sciences section. The Lecture is one of the highest awards the Section bestows on its members.

Steinberg will present her lecture at the Ocean Sciences Meeting in Salt Lake City, Utah in February. This international gathering of more than 4,000 attendees is sponsored by AGU, the American Society of Limnology and Oceanography (ASLO), and the Oceanography Society. With more than 60,000 members around the globe, AGU is world's largest society of Earth, space, and ocean scientists.

Peter Schlosser, President of AGU's Ocean Sciences section, says Steinberg was chosen for the honor for her leadership in research aimed at understanding the role of biological processes in the ocean's mid-water "twilight zone" and their influence on carbon and nitrogen cycles in the ocean.

"Humans release billions of tons of carbon dioxide to the air each year through the burning of fossil fuels, about a third of which goes into the ocean" says Steinberg. "My research attempts to understand and quantify how much of that carbon is pumped into the deep sea by feeding and by vertical migration of zooplankton and other marine organisms." Carbon that is exported to the deep sea via this "biological pump" contributes nothing to current global warming.

Steinberg's research has major implications for the computer models that are used to forecast the effects of climate change, revealing that it isn't just the number of zooplankton that controls the strength of the biological pump, but also the particular zooplankton species that are present in an ocean area. During the last decade, Steinberg has studied zooplankton communities in Chesapeake Bay, coastal California, the Sargasso Sea, the subtropical and subarctic North Pacific, the tropical Atlantic, and the Antarctic.

Steinberg's Antarctic research—part of the National Science Foundation's Long-Term Ecological Research Program at the U.S. Palmer Research Station—focuses on how polar warming might change the species of zooplankton that dominate these waters, and how such changes will affect the biological pump, as well as the fish, penguins, and whales that rely on zooplankton for much of their food. Annual winter temperatures on the Antarctic Peninsula where Steinberg works have increased by 11°F during the last 50 years, five times the global average.

Steinberg's selection as the 2012 Sverdrup lecturer is particularly fitting given her experience in polar studies. The Lecture is named in honor of Harald Sverdrup, a pioneering polar researcher and oceanographer who early in his career served as lead scientist on Roald Amundsen's 1918-1925 Arctic expedition. Sverdrup conducted



*VIMS professor Deborah Steinberg with a plankton net.*

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seminal studies of ocean circulation, led the Scripps Institution of Oceanography from 1936 to 1948, and literally helped to write the textbook on oceanography (co-authored by Sverdrup, Martin Johnson, and Richard Fleming, *The Oceans: Their Physics, Chemistry and General Biology* served students worldwide from its initial publication in 1942 until the 1980s). He was a member of the National Academy of Sciences in both the U.S. and Norway, and was awarded the U.S. Academy's prestigious Agassiz Medal.

The Sverdrup Lecture is one in a series of named Bowie Lectures, which were inaugurated in 1989 to commemorate the 50th presentation of the William Bowie Medal. Named for AGU's first president, the Bowie Medal is the Union's highest honor.

Previous Sverdrup Lecturers are:

- Charlie Eriksen, 2010
- Robert Anderson, 2010
- Rana Fine, 2008
- Victoria Fabry, 2008
- Edouard Bard, 2006
- Barbara Hickey, 2006
- Alice L. Alldredge, 2004
- Lawrence Mysak, 2004
- William Jenkins, 2002
- Jorge Sarmiento, 2002
- Cindy Lee, 2000
- Michael J. McPhaden, 1998
- P Quay, 1997
- Michael S. McCartney, 1996
- Margaret Delaney, 1995
- Kenneth S. Johnson, 1994
- Russ Davis, 1994
- Mark Cane, 1993
- Eric Kunze, 1992



*Deborah Steinberg (right) with VERTIGO Project colleagues (from left) Toru Kobari, Joe Cope, and Stephanie Wilson in the northeastern Pacific.*