

MEETINGS

Scientists and Policy-Makers Develop Agenda on Ocean Issues

Successful naval operations require a good understanding of the complex maritime environment, which can be gained through forecasts of weather, sea conditions, and coastal morphology. The navy believes that high quality ocean observations, taken more often and in more locations around the world, are a critical component of national and global security.

"If a naval ship is racing to a hot spot, it is important to know the weather that lies in its path," said Admiral Donald L. Pilling, Vice Chief of Naval Operations, at a reception at the oceanographic military survey ship USNS *Bruce C. Heezen* in Alexandria, Virginia. "Academic research is the bread and butter of tactical planning, and a critical part of naval operations.... The data that ships like the *Heezen* gather will play an important role in allowing us to maintain a tactical advantage and to sustain our natural resources and be a better steward to the ocean."



Admiral Donald Pilling spoke on the importance of scientific research to naval operations during a AAAS conference.

Pilling said that a topographic knowledge of the ocean's bottom was just as important as any military intelligence was to the navy, yet only 5% of the ocean bottom is mapped with sufficient detail. "As scientists like to say, we know more about the moon's backside than we do about the ocean's bottom," Pilling said.

In an effort to foster more awareness of

scientific findings and assist the House Oceans Caucus in developing a policy agenda on such ocean issues as national security, biology, pollution, and governance, AAAS, in conjunction with other organizations, hosted 2 days of conferences on ocean science, culminating with a reception at the *Heezen*. More than 300 representatives of government, the scientific community, and the public participated in the conferences, held at AAAS and on Capitol Hill.

On 17 July, AAAS, in conjunction with the World Conservation Union and the Curtis and Edith Munson Foundation, Inc., hosted International Ocean Science Day. Scientific experts addressed the issues of fisheries, gas hydrates, and ocean diseases. Jane Lubchenco of Oregon State University, a marine biologist and past president of AAAS, presented the results of the 17 July conference to a conference hosted by AAAS and the American Geophysical Union on 18 July. This conference, Oceans for the New Millennium—Developing and Implementing Ocean Policy, looked at the impact of scientific findings on a broad range of issues considered by policy-makers, including food supply, energy, and health.

"As a nation, we don't have a comprehensive plan to care for the oceans," said Rep. Tom Allen (R-ME), one of the caucus cochairs. The 18 July forum included keynote speakers Robert Ballard, president of the Institute for Exploration; Jean-Michel Cousteau, oceanographer and explorer; and Sylvia Earle, marine biologist and author of *Sea Change—A Message of the Oceans*.

There is increasing interest from federal and state agencies, industry, and other non-governmental organizations on how best to establish and implement marine protected areas. "While those of us here today understand and support the concept of marine protected areas, I believe there is a very real challenge to significantly raise the public's awareness of this important issue," said Rep. Lois Capps (D-CA). The forum addressed how recent emerging capabilities for predictive modeling of coastal systems could provide opportunities to develop a framework

for managing and mitigating the effects of pollutants in the ocean.

The forum assessed the challenges and opportunities for developing an effective and coordinated governance framework to guide U.S. ocean and coastal management for the 21st century. For example, it looked at the importance of establishing a Commission on Ocean Policy and the National Ocean Partnership Program.

On 7 August, President Clinton signed into law the Oceans Act of 2000, which would establish the commission of 16 members, including representatives from academia, state governments, and the scientific community. The forum also addressed national security issues such as the importance of a sustained integrated ocean observations system and the implications of not ratifying the U.N. Law of the Sea Convention.

"Oceans are one of the hottest topics this summer," Lubchenco said. "Why? Because there is increasing recognition that oceans are more valuable and more vulnerable than we once thought. Human activities have modified oceans in formerly unimaginable ways and we find ourselves in uncharted waters."

MEETINGS

Iceland Is Site of Discussion on Science and Religion

Iceland is well known for its Viking past and as the site of political summits. Add the fact that the nation straddles the two tectonic plates that make up Europe and North America and is celebrating its 1000-year history of Christianity, and Iceland makes an interesting setting for a discussion on science and religion.

A recent conference in Reykjavik and Thingvellir focused on ways in which science and religion can contribute jointly to sustaining and enhancing our world in the future. The conference brought together scientific and religious scholars and political and cultural leaders interested in the future roles of science and religion. The participants in "Iceland 2000: Faith in the Future," held on 5–8 July 2000, represented a broad range of religious and cultural backgrounds, coming from Denmark, France, Iceland, Israel, Kenya, Norway, Switzerland, Trinidad, and the United States.

Keynote addresses were delivered by David Oddsson, prime minister of Iceland, and Karl Sigurbjörnsson, bishop of Iceland. Oddsson said that it is important to explore such questions as whether religious belief stands firm or has been weakened by scientific thinking, and whether more religious guidance is necessary when complicated moral questions arise due to the new possibilities science presents.

Oddsson pointed out that religious institutions have led the pursuit of knowledge in Iceland. "The arts and sciences were cultivated in ecclesiastical centers, and seminaries were the country's first educational institutions," Oddsson said in a conference statement. "In this way, religion and science have always walked together in the history of Iceland."

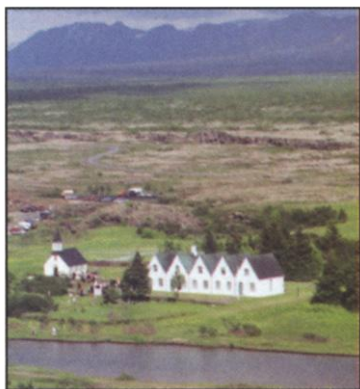
"Gone are the days of old-fashioned scientific materialism. Gone are the days of simple strife between those who were for science and those who were advocates of faith," said Sigurbjörnsson in a conference statement. "These are no longer hostile dimensions in a scholarly sense. Adherents of science need not be atheists, and people of religion listen carefully to the voices of science. The religions of the world and science can lend each other a helping hand and work together for the common good of humanity."

Al Teich, director of AAAS's Science and Policy Programs, and Vilhjálmur Ludvíksson, director of the Icelandic Research Council, co-moderated a plenary session that discussed the potential and limits of science and religion and the nature and purpose of human life. Teich, Joel Primack (professor of physics at the University of California, Santa Cruz), and Nancy Murphy (professor of Christian philosophy at Fuller Theological Seminary) participated in a session to discuss AAAS's Dialogue on Science, Ethics, and Religion program. Primack, who chairs the advisory committee for the AAAS program, and Nancy Abrams also conducted a session on "How Modern Cosmology Can Nourish the Spiritual Imagination."

Sessions were held on a number of other topics, including theology and physics, cosmology, social change and religion, science in Islam and Hinduism, and the relevance of Jesus Christ in the midst of religions, ideologies, ashrams, and cults of India today. The conference was organized by the Church of

Iceland and The Icelandic Institute of Futures Studies, and cosponsored by AAAS and other organizations.

In a final message, the conference participants challenged scientists, scientific organizations, and funding agencies to direct more attention and resources toward the study and solution of pressing global problems. The participants challenged religion and science collectively to respond more effectively to human



Thingvellir, Iceland, served as the site of the conference on science and religion.

needs and to promote genuine harmony between spiritual and scientific principles and their application to all aspects of human life. They also challenged the guiding institutions of society, especially educational institutions, to listen to the views of both science and religion and to reap the benefits of fuller integration of these two aspects of civilization.

"The Iceland conference is just one of the ways that AAAS has been able to help provide opportunities for dialogue between members of the scientific and religious communities," Teich said. "It's important that we continue such collaboration as we explore the ethical and religious implications of the increasing number of complex scientific developments."

INTERNATIONAL

The U.S.'s Best Students Participate in Asian Science Festival

Twenty of the nation's most gifted and innovative young scientists took part in this year's Asia-Pacific Economic Cooperation Forum (APEC) Youth Science Festival, which was held in Singapore from 25 July through 2 August. These U.S. high school students were selected by a AAAS panel of reviewers with cooperation from six other organizations that are part of a nationwide AAAS network to facilitate international science education in the United States.

The science festival is an open stage for young scientists all over the world to show their scientific prowess. "At a time when the United States' science and math education system is being criticized for falling short when compared to other nations, the festival offered a chance for American students to show their strength in these areas," said

Michael Snyder, director of the Pacific Rim Initiative at AAAS.

Students presented projects from a wide variety of topics. One student, Nisha Nagarkatti, presented her findings that the presence of Fas ligand in colon carcinomas, hepatocellular carcinomas, and astrocytoma impedes successful chemotherapy. Another student, Jennifer Pelka, presented her findings of a new class of graphs with self-complementary degree sequences.

In addition to the demonstration of research projects, key events at the festival included youth exhibitions of inventions and science-related artworks, cultural performances, hands-on science field trips, scientific lectures, and other activities with APEC counterparts.

All of the events at the festival were intended to have a major educational impact, as well as to encourage the students to network and develop international career prospects. "Overall, the festival is intended to enrich and complement the lifelong learning and educational experiences of the students," Snyder said. The U.S. students were accompanied by five chaperones.

Some 46 students and 11 chaperones were nominated to participate in the festival. The students that were selected were believed to be the best that the United States had to offer, as demonstrated by their success in U.S. science competitions. The chaperones that were chosen were high school teachers or college/university professors who would be able to serve as mentors and work closely with the students. Chaperones included Claudette Bradley, an associate professor of education at the University of Alaska Fairbanks, who is the coordinator for the American Indian Science and Engineering Society Summer Camp, and Marnie Boyd, the coordinator of the Pre-Freshman Program in Engineering and Science at Chicago State University.

A key goal of AAAS was to build a delegation of students and chaperones that is representative of American geography, race, gender, rural/urban population distribution, and other factors, Snyder said. With grant support from the National Science Foundation, AAAS is administering all preparations and logistics for the students and chaperones for this year's and future festivals expected to be held in 2002 and 2004.

The first festival was held in 1998 in Seoul, Korea, in an effort to increase APEC youths' awareness of science. "The festivals are important for encouraging the next generation of scientists, entrepreneurs, educators, and leaders and will have a crucial impact on the development of the Pacific Rim region," Snyder said.

—DARYL THOMAS

CREDIT: AL TEICH