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IOC HELPING TO LEAD AND SUPPORT THE EVOLUTION OF INTERNATIONAL OCEAN SCIENCE

PUBLICATION OF THIS special issue of *Oceanography* is one of the several ways that the Intergovernmental Oceanographic Commission is being recognized for 50 years of outstanding service to the community through facilitating international cooperation and coordination of ocean research. The articles in this issue help to illuminate five decades of IOC partnership with myriad nations, including the United States, in support of ocean research, discovery, and the pursuit of knowledge about our ocean and its importance to the well-being and prosperity of nations around of the world.

This special issue derives from discussions of the US National Committee for the IOC and the US Interagency Working Group for the IOC with the goal of highlighting the breadth and depth of IOC's leadership and support of international scientific programs and activities, and its role as a focal point for international cooperation in the scientific study of the ocean. As a contribution of the United States to the celebration of IOC's 50th anniversary, example research programs with significant US involvement in international cooperation have been targeted.

Arguably, the most important purpose of this volume is to highlight, for today's young scientists, IOC's past role in fostering international research cooperation, as the Commission begins its next 50 years, with new leadership and at a time when understanding the nature of our world's ocean is becoming more important by the day. The articles that follow aim to:

- Highlight the many arenas of ocean science that IOC has joined as a crucial partner, along with other international bodies (inter-governmental and non-governmental), individual nations and agencies, and the community of ocean scientists, to drive ocean research forward, to make it more international and interdisciplinary, and to tackle important environmental problems with increased and improved scientific research.

- Note and celebrate IOC's efforts, derived from its Ocean Sciences Section, that have had a disproportionate impact on the field of oceanography and its evolution. By doing so, we hope to increase awareness among future scientists of the vital role that IOC plays in the promotion of fundamental ocean research as well as the development and support of observing systems and capacity building. This volume notes the development of methods to promote progress in our science, the formation and sustenance of international scientific discussion within working groups, and the development and implementation of international scientific research programs.

- Outline ideas about future IOC needs that should be met in order to allow the Commission to continue to nurture, facilitate, and support international ocean science research.

As background for this volume, it is useful for readers to know that the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific, and Cultural Organization (UNESCO) was first established in 1960 to promote international cooperation and coordinate programs in marine research, services, observation systems, hazard mitigation, and capacity development in order to understand and better manage the nature and resources of the ocean and coastal areas. Through the application of this knowledge, IOC now aims to (1) improve management practices and the decision-making process of its Member States, (2) foster sustainable development, and (3) protect the marine environment.

The United States is proud to have been a part of the early discussions and support for the creation of an international ocean sciences organization that began in the late 1940s. Under the auspices of the International Council for Scientific Unions (ICSU), the first Joint Commission on Oceanography was formed in 1948 in part to plan cooperative research. Later, in 1951, a new commission led by John Wiseman and C.D. Overly from the UK, and including Roger Revelle,

Mary Sears, and Harold Urey from the United States in its membership, was established to encourage cross-disciplinary participation, organize symposia, promote publications, and make efficient use of existing research vessels and laboratories. In 1955, during the planning of the International Geophysical Year (IGY), UNESCO formed the International Advisory Committee on Marine Science (IACOMS) to find ways to cultivate and strengthen interest in marine science in many countries and to make such activities part of UNESCO's marine science enterprise.

During IGY, the need to establish an organization for coordinating international oceanographic research was recognized. The Special (later changed to Scientific) Committee for Oceanic Research (SCOR) was formed in 1957 as a marine science advisory committee to UNESCO with Roger Revelle as its first president; in 1960, SCOR became UNESCO's official advisory body for marine science. However, with the development of large projects in the 1960s such as the International Indian Ocean Expedition (IIOE), the first large-scale international oceanographic field campaign of the decade, it was recognized that there was a need for more than a group of advisory scientists to support the organization and coordination of international ocean research expeditions, as well as to help build up scientific development in poorer regions. In 1960, the Intergovernmental Conference on Oceanic Research was held in Copenhagen, Denmark, with the principal recommendation being to establish an Intergovernmental Oceanographic Commission within the framework of UNESCO. The recommendation was adopted at the UNESCO General Conference later that year, and IOC began.

As an intergovernmental commission, IOC was made up of Member States rather than individual scientists. The Commission made an effort to develop close working relationships with several other global or regional scientific organizations, including SCOR, but its main source of influence was its direct connection to administrative arms of various governments.

IOC met for its first intergovernmental session at UNESCO in Paris in 1961, and 40 states immediately became members. The new organization had been established with the participation of existing UN organizations and other international and intergovernmental bodies with interests in ocean science. Among those present were representatives from the International Atomic Energy Agency (IAEA), Food and Agriculture Organization (FAO), World Meteorological Organization (WMO), World Health Organization (WHO),

Intergovernmental Maritime Consultative Organization (IMCO), International Civil Aviation Organization (ICAO), International Council of Scientific Unions (which was renamed International Council for Science in 1998 but retained the original acronym, ICSU), International Union of Geodesy and Geophysics (IUGG), International Association of Physical Oceanography (IAPO), Special Committee on Oceanic Research (SCOR), International Hydrographic Bureau (IHB), and International Council for the Exploration of the Sea (ICES).

Warren Wooster of the United States, who served as IOC's first secretary general, described IOC's focus as "the implementation of international programs and the coordination of national programs relating to the exchange of data and information and the standardization and intercomparison of methods and equipment."

Today, those interested in learning more about the contemporary IOC should consult <http://www.ioc-unesco.org>, as well as *Troubled Waters: Ocean Science and Governance*, edited by Geoff Holland and David Pugh and published by Cambridge University Press. The book draws on the experience of 30 international experts to look at how governments use science to establish ocean policies, with chapters ranging from the history of ocean management to current advances in marine science, observation and management applications, and the international agencies that coordinate this work.

The editors would like to give our heart-felt thanks to the authors who have contributed their time and wisdom to the chapters that follow. These chapters do not tell the whole story but do a superb job of reaching the intent articulated above. We also wish to give particular recognition and thanks to the countless members of the US ocean science community who have contributed to the development, well-being, productivity, and impact of the IOC from its inception to the present day. We commend the TOS team for their major role in putting together this special issue. Finally, thanks to the IOC for the first 50 years. We raise glasses to the organization and its people, and look forward with you to a future of ocean discoveries, increased knowledge, and sustained ocean health brought about by international cooperation.

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