George Treglohan Needler
1935-2002
Oceanography lost a colleague, a leader and a friend with the passing of George Treglohan Needler on June 7, 2002 in Dartmouth, Nova Scotia.

George Needler was born on February 2, 1935 in Summerside, Prince Edward Island into a family of marine biologists and fisheries scientists and was raised in the Atlantic Canadian communities that were home to Fisheries Research Board Stations. He left the Maritimes to study mathematics and physics at the University of British Columbia. His experiences working as a summer student assistant in the Pacific Naval Laboratory convinced him of the wisdom of pursuing a career in theoretical physics. After obtaining B.Sc. and M.Sc. degrees from the University of British Columbia, he headed east to McGill University from which he received his Ph.D. in high energy field theory in 1963.

While still at McGill University, he was recruited to join the Bedford Institute of Oceanography (BIO), which was newly established in Dartmouth, Nova Scotia in 1962. On joining BIO, he was almost immediately sent to the National Institute of Oceanography in Wormley, UK to learn the science of ocean circulation under Michael Longuet-Higgins, George Deacon, John Swallow and Jim Crease, the leading British physical oceanographers of the period. He returned to Halifax to lead a small theoretical oceanography group within BIO and also to teach a graduate course in ocean dynamics at Dalhousie University. He retained his interest in graduate students throughout his career, recruiting a number as post-doctoral fellows and later research scientists at BIO.

As a young scientist entering the field of physical oceanography, he attacked the problem of the large-scale dynamical balances between thermohaline (density) and wind forcing of ocean circulation. From the late 1960s through to the early 1980s he made major pioneering contributions to the development of ocean ‘thermocline’ theory. This work led to an invitation to visit Woods Hole Oceanographic Institute as the Rossby Memorial Fellow in 1970. His early interest in diagnosing ocean circulation from the distribution of various chemical tracers led to his participation in the planning and review of the global tracer surveys undertaken by GEOSECS and TTO programs in the 1970s and early 1980s.

George Needler was especially gifted in bringing scientists together to contribute their knowledge and expertise to collaborative programs and to issues important to society. From 1975–1985, he was heavily involved in the assessment of the risks associated with the dumping of low level radioactive wastes in the ocean and the burial of high level wastes in the seabed. He chaired both a Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP) working group and an International Atomic Energy Agency (IAEA) committee that provided the scientific basis for these assessments and established dumping limits for low level
radioactive wastes in the ocean. In this task, he strove to maintain the scientific integrity of the assessment. The ocean modeling tools he helped develop for this task later proved valuable in the early assessment of the oceans' role in climate change.

In 1985, George Needler was elected to the Royal Society of Canada both for his pioneering contributions to ocean circulation theory and also for his leadership applying his scientific knowledge to the understanding of societal issues. As a Fellow, he encouraged and supported the development of the Canadian Global Change program under the sponsorship of the Society. Later, he led a Royal Society of Canada Working Group reviewing the science of the interactions between marine fish and the environment.

Internationally, he played important roles in the development of ocean climate science. He was part of the international Scientific Committee on Ocean Research (SCOR) working group that planned and co-ordinated the oceanographic components of the GARP (Global Atmospheric Research Program) Atlantic Tropical Experiment (GATE) in 1974 and was also part of the POLYMODE program in the North Atlantic. In 1985, he became the first director of the International Planning Office for the World Ocean Circulation Experiment (WOCE), the largest oceanographic program ever mounted. Over the next six years, he oversaw the development of WOCE's Science and Implementation Plans, represented the program at various national, international and inter-governmental fora and evolved the planning office and management structure to that of a project office. He remained with International WOCE until 1992 as its Chief Scientist, and since that time contributed greatly to the planning of its successor programs, Climate Variability and Predictability (CLIVAR) and the Global Ocean Observing System (GOOS).

George Needler also played pivotal roles in the development of Canadian oceanography. As a founding member of BIO, he helped shape its scientific program. He also served as Head, Ocean Circulation Division from 1975 to 1978 and as Director, Atlantic Oceanographic Laboratory from 1979 to 1985. After his return to BIO in 1991, he served on the Canadian Global Change Planning Board and its Research/Policy Committee and facilitated the development of an initial Canadian plan for the Global Ocean Observing System (GOOS).

In everything that he did scientifically, he always tried to understand what was happening at its most fundamental level. Whether at a seminar, or in an international meeting or, more often, around a restaurant table following an international meeting, he would ask the probing hard questions looking for what was really important within the details of a paper or presentation. His probing intellect and wise counsel have greatly benefited the oceanographic community in
Canada and around the world. He will be sorely missed as we continue to meet and discuss important ocean science issues.

George Needler is survived by his stepmother, Nina; children Mary Kate (Alan Parslow), Kirstie Hawkey (Rob), Ian (Linda Clark), and Peter (Trudy); second wife, Catherine and her son Frederik; grandchildren, Oscar and Hugh Parslow, Mathew Gilbert, Klara and Silas Needler and Avery Needler.

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