

Stanisław Węglawski



The main building of the Institute of Oceanology in Sopot

Institute of Oceanology

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Since its founding 50 years ago, the Institute has remained at the cutting edge of marine sciences, revealing the secrets of the Nordic seas and the North Atlantic

Historically, the sea has always brought rapid economic development and prosperity for people settled on its shores. But growing human activity also destroys coastal and sea environments. Thus, humankind is now facing vital decisions regarding how to better manage marine resources and ecosystems. The PAN Institute of Oceanology, now celebrating 50 years of existence, has consistently adapted its research to overcome the most current and crucial challenges.

Early days

In many ways, the Institute is the successor to the Marine Station, which was established in Sopot in 1951 by the Department of Maritime Construction and Ports of the Technical University of Gdańsk. The Station was reassigned to the Polish Academy of Sciences (PAN) in 1953, and its standing grew continuously over the next 20 years, thanks to a small team of ambitious scientists. In 1971, the Marine Station became the Department of Oceanology of the PAN Institute of Geophysics in Warsaw. Twelve years later the Department gained the status of a PAN institute. In 2000,

the Institute acquired the right to grant associate professorships in earth sciences in the field of oceanology. In 2002, the Institute founded the Center of Excellence for Shelf Seas Science (CeSSS), operating under the supervision of Stanisław R. Massel, the head of the Institute.

The Institute currently has five departments: Physical Oceanography, Marine Chemistry, Marine Physics, Marine Ecology, and Genetics of Marine Organisms and Biotechnology. The Institute also houses central services including the Logistics/Ship Unit, the Computer Section and the Library and Data Center. In recent years, an average of 8 students have been enlisted in the PhD program each year.

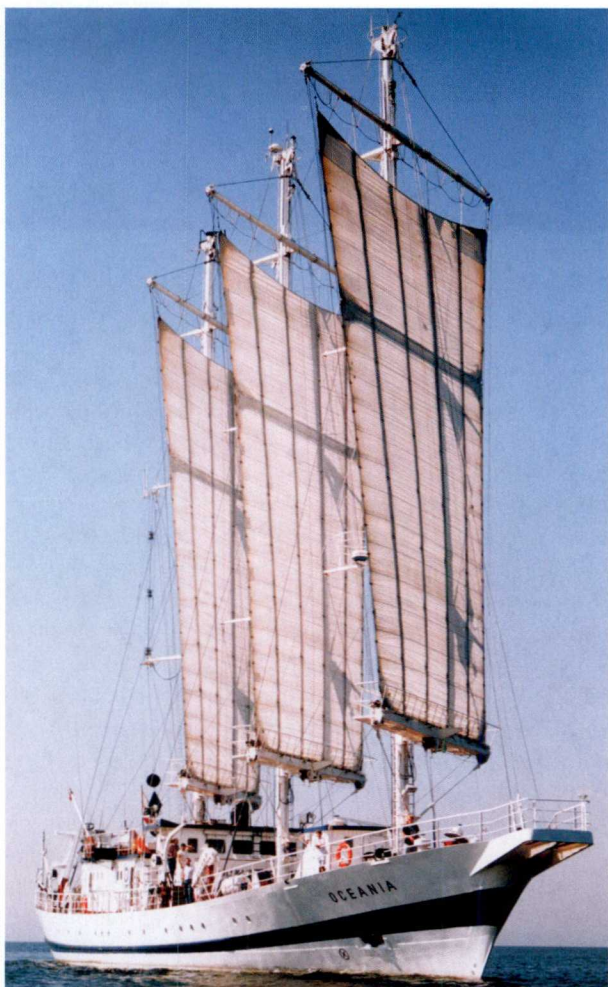
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Since 1971 the Institute has also been issuing *Oceanologia*, the leading Polish journal in the field of marine sciences. Initially it was a biannual, later becoming a quarterly journal. In 2002 the Institute of Science Information in Philadelphia placed *Oceanologia* on its list of scientific journals (with an impact factor of 0.735 in July 2003). Unabridged texts of papers in the journal are available online.

Focus on changes

The Institute's current research program is based on the concept that the ocean, and the Baltic sea in particular, should be studied as a dynamic system undergoing global changes due to both natural and anthropogenic processes. Since 2002, the main research topics have been grouped into the following four categories:

- The role of the oceans in climate change and local climate-influencing phenomena in European seas – some of the topics in this category are: the heat and salt fluxes of Nordic Seas and their variability; mass and heat exchange between sea and atmosphere; dynamics of primary production and methods for improving satellite observations of the Baltic Sea surface; climate-induced changes in marine food webs; biodiversity in glaciated fjords.
- Natural and anthropogenic variability of the Baltic Sea environment: the dynamics of water masses in the Baltic Sea; monitoring the Baltic Sea ecosystem using passive remote sensing methods; chemistry and age determination of organic matter in the Baltic Sea; differentiation of heavy metals in sediment and water column; accumulation and distribution of natural and artificial radionuclides in marine organisms.
- Contemporary changes in coastal ecosystems of shelf seas: pelago-benthic interrelations in coastal waters; ecology of sandy littoral.
- Genetic and physiological mechanisms in marine organisms: genetic and endocrine adaptations in marine fish



Jerzy Dąbrowski

and invertebrates; genetic polymorphism of some marine and fresh water species studied with molecular markers.

The research vessel "Oceania"

The sailing ship "Oceania," 49 meters long and with a displacement of 370 BRT, was built in the Gdańsk Shipyard in 1985. After further investments, the "Oceania" became a modern, well-equipped research vessel, with navigation gear adapted for oceanographic research.

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Aboard the ship is a unique set of scientific instrumentation enabling highly specific and precise observations of processes operating in the near-surface layer of the atmosphere, as well as oceanographic measurements of the water column from the sea surface to the seafloor. After the installation of two powerful winches, salinity and temperature – basic parameters in oceanographic profiles – can be registered up to depths of 5000 m. Measurements of sea currents can be performed while in motion thanks to an Acoustic Doppler Current Profiler (ADCP). Many of the "Oceania's" instruments were constructed by the Institute's technical laboratories for specific marine physical measurements. The ship's fixed equipment (winches and crane) and integrated computer network system allow up to 6 series of measurements to be carried out at the same time. Besides routine, all-season scientific cruises on the Baltic Sea, the ship spends two months each year working in the harsh conditions of the North Atlantic.

International cooperation

In order to facilitate the exchange of scientific information, the Institute maintains close relations with many institutes in Europe, the USA and Canada. It also participates in numerous international research programs. In the years 2002-2003 our scientists took part in 16 different projects, including BASYS, PROVES, BIOCOLOR, VEINS, BEEP, MISPEC, BIOMARE, MARBENA, COSA, PAPA, and BIOCOMBE. In the latest edition of the European Union's Sixth Framework Programme (FP6), funding for three new projects is currently being negotiated.

The Institute plays an important role in establishing a network of funding agencies for marine science in the Baltic countries, within the European Research Area Network initiative. Called BONUS, this network should help to identify new research opportunities, choose priorities, as well as improve national programs and the quality of Baltic Sea research. ■

The "Oceania" is a sailing research vessel well equipped for oceanographic studies