
Chronicle

Institute of Oceanology, Polish Academy of Sciences 50 YEAR HISTORY

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Oceanology PAS.

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The year 2003 sees the 50th anniversary of the founding of the Polish Academy of Science's Institute of Oceanology in Sopot. To celebrate this occasion in *Oceanologia* we would like to outline the Institute's history, and describe the chronological development of its scientific potential and research interests, important events during these 50 years, its achievements, and the names of those who have made significant contributions to its growth, notably the pioneers, and members of the Institute's management. The achievements of the Institute's various research teams will be reviewed in the form of 'Invited Papers' in the next few issues of *Oceanologia*. These reviews will name the authors of a great many papers, scientists of long standing, who are simply too numerous to mention in the present article. Up-to-date information about the Institute, including a list of persons currently employed in its various departments, can be found on our website <http://www.iopan.gda.pl>

■ The Marine Station, Sopot – the beginnings

The Institute is the successor to the Marine Station, which was established in Sopot on the shores of the Gulf of Gdańsk in 1951 by the Department of Maritime Construction and Ports of the Technical University of Gdańsk and transferred to the Polish Academy

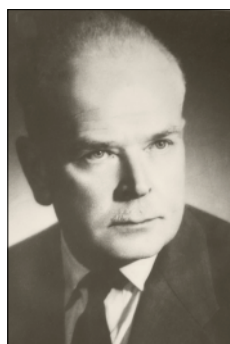


Photo 1.

*Prof. S. Szymborski
The Head of the Marine
Station and the Department of Oceanology PAS
in 1951–1976*

The complete text of the paper is available in PDF format at <http://www.iopan.gda.pl/oceanologia/index.html>

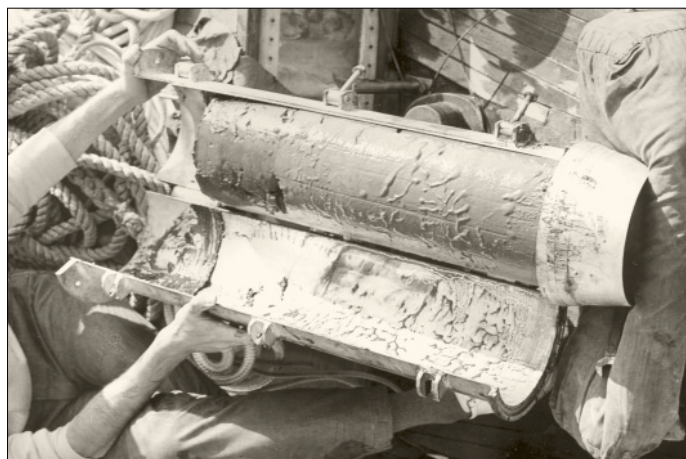
of Sciences (PAS) in 1953. Its founder and first Director from 1953 to 1976 was Prof. Stanisław Szymborski (see Photo 1 and *Oceanologia* 1984). During these first years he was ably assisted by Mr Mieczysław Mysłowski.



Photo 2.

The building of the Marine Station PAS at ul. Powstańców Warszawy 2-6 in Sopot

In view of the natural-scientific nature of the oceanographic research organised by Prof. Szymborski, the Sopot Marine Station (Photo 2) was absorbed in 1956 by the Department of Geophysics of PAS, located in Warsaw. During this initial, almost 20-year-long phase, work progressed at a snail's pace. This was due to the lack of undergraduate courses in marine sciences at Polish universities; recruitment of suitably educated scientists was thus extremely slow. There was no research vessel, nor was the requisite technical infrastructure available for marine studies. Moreover, accessibility to the professional literature and working contacts with marine research institutions in the West were severely restricted. This parlous situation resulted from the total lack of interest displayed by the local authorities of the day in the development of a marine research institution, which by its very nature demanded openness towards the rest of the world and numerous contacts with fellow-scientists from abroad. Such contacts in particular were frowned upon by the then communist regime. These difficulties notwithstanding, the Institute did slowly grow in stature, thanks on the one hand to the ambitions, the creative passion and perseverance of the handful (about 20) of scientists it employed in the 1960s, but on the other to the perceptible lack in Poland of experts in the marine sciences who were needed in the various departments of government and the economy. At this juncture one must pay tribute to UNESCO, which came to the assistance of the Sopot Marine Station, for example, by financing the purchase of a number of measuring instruments, the visit of Finnish experts and vessel (see e.g. Photo 3), and Jerzy Dera's fellowship in the USA.

**Photo 3.**

A section of the 10-metre core from the bottom of the Gdańsk Deep which was collected from the Finnish vessel 'Aranda' in 1962 and examined later by H. Masicka (1974) at the Department of Oceanology in Sopot

In 1971 the Department of Geophysics became the Institute of Geophysics PAS (IG PAS), and the Marine Station rose to the status of the Department of Oceanology of that Institute. Prof. Stanisław Szymborski was appointed its Director. The pioneers, heads of research and the organisers of the various research teams and laboratories at the Marine Station and later at the above-mentioned Department of Oceanology were: Prof. Stanisław Ostrowski, who was succeeded by Dr Ryszard Bojanowski – marine chemistry; Dr Jerzy Dera, who was also deputy director of scientific affairs at the Department – marine physics; Dr Zygmunt Kowalik and Dr Mieczysław Laska – hydrodynamics; Dr Halina Masicka – sea bed geomorphology; Dr Sabina Taranowska – marine meteorology; Dr Barbara Malewicz and Dr Alicja Kosakowska – primary production (this laboratory was added somewhat later). Owing to the Department's very scant resources, the research carried out by these teams, mostly in physics, chemistry and sedimentology, was focused primarily on the Gulf of Gdańsk and the southern Baltic. These scientists laid the foundations of oceanological research in Poland. Their work was taken into account in the design and construction of hydroengineering structures along the coast and in the monitoring of the marine environment, they were instrumental in the education of the next generation of oceanologists, and through their publications made the modest Polish contribution to world marine science. There were, it is true, already two strong institutions with long traditions and considerable achievements in marine science to their credit, namely, the Sea Fisheries Institute in Gdynia (MIR) and the Maritime Branch of the Institute of Meteorology, also in Gdynia. However, their researches served primarily practical purposes, and did not cover research into the fundamental nature of the sea.

With the coming into being of the University of Gdańsk (UG) in 1970 – this took place with the assistance of the scientific staff of the Department, and later of the Institute of Oceanology PAS in Sopot (IO PAS) – the first regular undergraduate course in oceanography in Poland was established. This course was to stimulate the development of the marine sciences in Poland and the education of young scientists in this field. The Faculty of Biology, Geography and Oceanology continues to play a large part in this respect. Nowadays, of course, other Polish universities also educate students for a wide diversity of specialist research programmes in the marine sciences, and regular undergraduate courses in oceanography are also offered by the University of Szczecin. We have thus come a long way from the beginnings of the Marine Station and the Department of Oceanology in Sopot, when, up to the early 1970s, its scientists were recruited mainly from the physics and chemistry faculties of various universities, who then completed their ‘marine education’ on fellowships abroad. Now a considerable proportion of the Institute’s current staff is recruited from among the UG’s oceanography graduates. This is not to say that physicists, chemists and biologists are no longer required – on the contrary, it is only in interdisciplinary teams that the Institute can perform its statutory tasks to the full.

■ The Warsaw Institute of Geophysics (PAS) supports marine research in Sopot

The Director of the Institute of Geophysics PAS in 1971, Prof. Roman Teisseyre, organised the Department of Oceanology in Sopot (DOS) and delegated to it the task of carrying out a comprehensive, five-year programme of basic marine research, the so-called PAS Departmental Problem No. 5: Fundamental research of the marine environment. With the funds allocated to this programme, DOS was able to ‘get off the ground’. In 1971 a small sailing ship, also referred to as a motor-sailing cutter, was purchased for research purposes. It was given the name ‘Sonda’ (Photo 4). It could take to 10 persons out to sea, and was registered for plying not only the open waters of the Baltic but also the oceans. The ‘Sonda’ remained an important part of DOS until 1989. Throughout those years, the vessel was skippered by the experienced yachtsman Capt. Konstanty Pielak, who had already been involved with the Marine Station and the later DOS since its inception. Most of the numerous research cruises were on the Baltic, but occasional voyages were made to the Spitsbergen region and the west coast of Africa. The actual researches during these cruises were performed with simple measuring equipment, most of which was scratch-built in our own workshops or was a gift from friends in foreign research institutions. Of course, the cruises were organised primarily for research purposes, but they



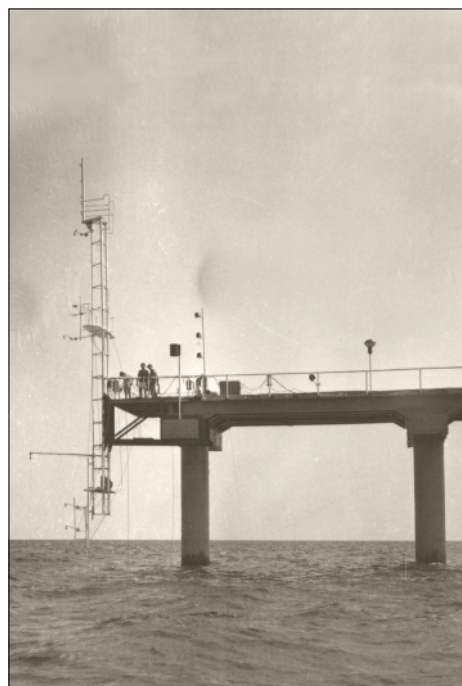
Photo 4.

The motor-sailing cutter 'Sonda' under sail on its way to the research area

were often just so timed as to enable 'Sonda' to enter foreign ports, where we Poles could then get in touch with scientists from other countries and take part in conferences of Baltic oceanographers. In those days, getting to these places by any other means was difficult if not impossible. Nevertheless, the state did support scientific cooperation with the countries of the so-called socialist camp. This cooperation was particularly lively with the Institute of Oceanology of the Academy of Sciences of the USSR in Moscow and the Institute for Marine Research (Institut für Meereskunde) in Warnemünde in the former GDR, especially in the field of marine optics. Many were the joint Polish-Russian or Polish-German cruises on board the Russian and German research ships, e.g. the 'Vityaz', 'Akademik Kurchatov', or 'Professor Albrecht Penck'. The Germans visited DOS, and even carried out some experiments in our marine optics laboratory (see e.g. Dera et al. 1974, 1978, Gohs et al. 1978, Koblentz-Mishke et al. 1985, Koblentz-Mishke (ed.) 1987). At the same time, DOS participated in several international shore expeditions organised on the Polish side by the Institute of Hydro-engineering PAS in Gdańsk, and inspired and coordinated by Prof. Czesław Druet within the same cooperative framework of the socialist countries. In time, such joint expeditions came to be part of a research programme sponsored by COMECON: 'World Ocean' (Zingst – GDR, Lubiatowo – Poland (see e.g. Photo 5) and Kamchiya – Bulgaria (see e.g. Photo 6), Sozopol – Bulgaria, see e.g. Druet et al. 1975, Vinogradov & Ozmidov (ed.) 1986, Popov 1990, Vinogradov (ed.) 1991). These expeditions accelerated research progress and were a form of in-service training for our scientific staff in that international exchange of experience and joint seminars were now possible. The 1970s also saw the inauguration at DOS of postgraduate courses leading to a PhD in marine physics – in hydro-optics and hydro-acoustics, to be precise. Formally, these courses were run by the

**Photo 5.**

Off-shore research facilities in Lubiatowo

**Photo 6.**

Equipment for studying the vertical fluxes of mass and energy during the shore expedition at Kamchiya, Bulgaria (1977)

Institute of Geophysics PAS in Warsaw. Three of the physicists who received their PhDs through these courses are now professors at the Institute of Oceanology PAS – Prof. Zygmunt Klusek, Prof. Jerzy Olszewski and Prof. Bogdan Woźniak. The same applies to Prof. Janusz Pempkowiak in marine chemistry and to Asst. Prof. Andrzej Jankowski in marine dynamics.

The results of the oceanological research done in Sopot were originally printed in journals such as *Acta Geophysica Polonica*, published by IG PAS. In 1971, on the initiative of the then Director of DOS, Prof. Stanisław

Szyborski, a new journal entitled *Oceanologia* was published in Poland. The first issue, which came out in autumn 1971, was devoted almost in its entirety to an extensive dissertation on marine optics: Dera (1971). Subsequent issues contained papers by many other authors, including scientists at DOS. The following papers from the 1970s are particularly worth mentioning: Olszewski (1973), Bojanowski & Pempkowiak (1977), Dera et al. (1978), Druet et al. (1975), Kowalik (1974a, b), Kowalik & Taranowska (1974), Jankowski & Kowalik (1978), Klusek (1979), Malewicz (1975), Malewicz et al. (1979), Masicka (1974). The first Editor-in-Chief of *Oceanologia*, from 1971 to 1982 was Prof. Stanisław Szyborski. From the very beginning, this journal has been published under the auspices of the Scientific Committee for Oceanic Research of the Polish Academy of Sciences (Polish SCOR), but it is edited by staff at IO PAS (formerly DOS).

The highest praise as regards the long-term editing and technical improvement of the journal is due to the late Barbara Szczutkowska and her two assistants, Elżbieta Lebiada and Felicja Oksiuta, and after 1991, to Sabina Szczukowska, who became its technical editor. Since 2001, Ms Szczukowska has also been in charge of the Editorial Office. Of the role and successes of *Oceanologia*, more later. The same editorial team has been responsible for issuing 'Studia i Materiały Oceanologiczne', a periodical of the Marine Research Committee of PAS, which initially contained various conference materials, reviews, research reports, sets of papers devoted to particular topics, and sometimes less mature original scientific articles, mainly in the Polish language (see e.g. Szyborski (ed.) 1977a, b, c, Zilitinkievitch et al. 1978 Dera (ed.) 1983, Olszewski (ed.) 1995). In 1996 the job of editing this journal was transferred to the Institute of Oceanography at the University of Gdańsk.

■ The Department of Oceanology in Sopot achieves independence

By the end of 1975 the Department of Oceanology in Sopot, which had grown up within the framework of the Institute of Geophysics PAS in Warsaw, satisfied the material and staffing requirements of an independent scientific institution. So it was, that in



Photo 7.

*Prof. Dr. C. Druet
Full Member of the
Academy, Director of the
Institute of Oceanology
PAS in 1977–1989*

January 1976, as a result of the decision by the Praesidium of the PAS and the support of the then Director of the Institute of Geophysics PAS,

Professor Jerzy Jankowski, DOS was severed from its parent institute and raised to the rank of an independent Department of Oceanology PAS based in Sopot. Prof. Czesław Druet was appointed its Director (see Photo 7 and *Oceanologia* 1996), and his deputy for research was Prof. Jerzy Dera (by this time Prof. Stanisław Szymborski had reached retirement age). At the moment of its formation in January 1976, the Department of Oceanology PAS (DO PAS) employed 53 persons, including two professors and three doctors of science.

In 1976–1985 DO PAS (from 1983 the Institute of Oceanology) and Prof. Czesław Druet in particular were responsible for coordinating the Polish interdepartmental research programme MR 1–15 ‘Fundamentals of economics in the marine environment’, which was carried on for two five-year periods. A large part of this programme coincided with DO PAS’s own programme of work. An outline of the research carried out in this programme can be found in the sets of papers: Szymborski (ed.) (1977b, 1979), Dera (ed.) (1983). Following this, the Institute of Oceanology PAS (IO PAS) implemented around 80% of the research tasks set out in the Central Programme of Basic Research No. 03.10: The fundamentals of bioproduction and conservation of the marine environment, which was also coordinated by Prof. Druet. The Institute also carried out a number of tasks from the Central Development Programme No. 10.11: The exploitation of the seas and oceans, which was coordinated by the Sea Fisheries Institute (MIR) in Gdynia. Furthermore, oceanological investigations were undertaken in the polar regions within the framework of the Central Programme of Basic Research No. 03.03: Studies of the living resources, biosphere and natural environment of the polar regions, coordinated by the Institute of Geophysics PAS and the Institute of Ecology PAS in Warsaw (e.g. Wensierski & Woźniak 1978, Olszewski 1983, Woźniak et al. 1983, Bojanowski 1983, Jonasz 1983, Godlewska & Klusek 1987). Apart from the numerous statutory research tasks in physics and chemistry in the Baltic Sea area (e.g. Hapter et al. 1973, Woźniak 1977, Dera & Olszewski 1978, Pempkowiak & Kupryszewski 1980, Samuła-Koszałka & Woźniak 1979, Druet 1980, Druet & Siwecki 1983, 1984), the Institute was also involved in two long-distance research expeditions, significant events at the time. The first, an oceanographic one, was the 2nd Antarctic Expedition PAS on the m/s ‘Antoni Garnuszewski’ during the Antarctic summer of 1977–1978 (see Dera 1980); the second took place in 1980–1981 on the ‘Sonda’ in the coastal waters off Senegal, where oceanographic studies were carried out as part of a contract signed by Polish companies to construct a sea port in the area.

The involvement of the scientific potential of DO PAS and later IO PAS in the implementation of these programmes, the rigorous training of our scientists through work at sea, seminars, PhD courses etc., all contributed signally to the Department's further development. It was always the aim of the management of DO PAS, among other things, to develop its research potential in such a way that a thriving institute of oceanological research could be built up on the foundations of the Department. This institute was to fulfil the norms of reputable European institutes, as well as the aspirations and requirements of Polish science, which were set out in detail, i.a. in the proceedings of the 2nd Congress of Polish Science in 1975. However, the fire in the building (Photo 2) at ul. Powstańców Warszawy 55 in Sopot in 1980 caused a temporary slow-down in work, since the resulting material losses, particularly in the chemical laboratories, were severe.

In 1983, the Department of Oceanology PAS now satisfied the criteria for achieving the status of an institute of the Polish Academy of Sciences. In its employ were 112 persons, including 2 full professors, 4 assistant professors and 10 doctors of science. During the same period, the Department's premises on the property at ul. Powstańców Warszawy 55 in Sopot were expanded: the existing residential building was converted to cater for the Institute's management and administrative offices (Photo 8), while a new, single-storey wooden structure was erected to house a number of laboratories, the library and seminar room. Field work continued to be carried out on the sailing cutter 'Sonda', but the vessels belonging to the Sea Fisheries Institute in Gdynia, the Higher Nautical School in Gdynia, and others, were also used.



Photo 8.

The previous building of the management and administration of the Institute of Oceanology PAS at the present Institute's location at ul. Powstańców Warszawy 55 in Sopot

■ The formation of the Institute of Oceanology PAS and the purchase of the research vessel ‘Oceania’

At the request of the Praesidium of the Polish Academy of Sciences, a decision of the Council of Ministers dated 23rd December 1983 called the Institute of Oceanology PAS (IO PAS) based in Sopot into existence. This was, of course, simply the former Department of Oceanology achieving the rank and rights of an Institute as a result of its development and of its having satisfied the criteria demanded of it by the Polish Academy of Sciences.

The first Director of IO PAS was Professor Czesław Druet (Photo 7, *Oceanologia* 1996). Although he was officially appointed to this post by PAS, he was also ‘head-hunted’ for the Institute, as it were, by the scientific staff among others, who held in the highest esteem his outstanding abilities as a scientist, his capacity for organisation and his leadership, scarce qualities that were very much in demand during those difficult times for Poland. Prof. Jerzy Dera, the author of this article, was appointed his deputy for research, Mr Józef Zielaskowski his deputy for administration and finances, and Dr Jacek Wyrwiński his deputy for technical matters. In this first period (1984–1989), three departments flourished under the direction of the following persons: marine chemistry and biology – Dr Leonard Falkowski, marine dynamics – Dr Czesław Garbalewski, and marine physics – Dr Andrzej Zieliński. Each of these departments were made up of, on average, 4 teams with the knowledge and equipment appropriate to a diversity of research tasks; in fact, each team created its own specialist laboratory. In addition to this, an independent marine ecology laboratory was set up under the direction of Dr Marcin Węśławski. The team leaders were usually former employees of DO PAS: for example Dr Ryszard Bojanowski and Dr Janusz Pempkowiak in chemistry; Prof. Czesław Druet, Prof. Czesław Garbalewski and Dr Andrzej Jankowski in hydrodynamics; Prof. Jerzy Dera, Dr Bogdan Woźniak and Dr Jerzy Olszewski in marine optics; Prof. Antoni Śliwiński and Dr Zygmunt Klusek in marine acoustics; and Dr Marcin Węśławski in marine ecology. Most of these scientists doubled as lecturers in their various specialisms for the Oceanography courses run by the University of Gdańsk. They are the authors of monographs and textbooks (e.g. Druet & Kowalik 1970, Garbalewski 1977, 1999, Druet 1978, 1994, 1997, 2000, Zakrzewski 1982, Dera 1983, 1992, Klusek 1990, Węśławski 1993, Icha 1994, Pempkowiak 1997, Zieliński 1997, Jankowski 1998, Król 1998, Śliwiński 2001). These books are used by lecturers and by undergraduate and postgraduate students of oceanography. The scientific staff continued to thrive, although the Institute was not alone in suffering serious losses during the 1980s, when many of its employees emigrated to the West, notably

Dr Dariusz Bogucki, Dr Barbara Malewicz, Dr Magorzata Stramska and Dr Dariusz Stramski to the USA, Dr Mirosław Jonasz to Canada, Mr. Zygmunt Catewicz and Mr Smekot-Wensierski to Germany, and Dr Wiesława Czyszczek to Australia. Several highly-qualified engineers and technicians also left the country, for instance, Krzysztof Montwiłł, Jarosław Łunkiewicz and Janusz Bogacz, all of whom went to the USA.

The research carried out by IO PAS in the eighties dealt largely with problems in the physics, hydrodynamics and chemistry of the sea, in accordance with detailed plans agreed upon annually. This research was financed from State funds allocated to the Institute for its statutory activities. The following work from that period is worth mentioning: Olszewski (1984), Pempkowiak (1985), Dera & Stramski (1986), Woźniak (1987), Woźniak et al. (1989), Olszewski & Małachowski (1986), Jarzębski et al. (1986), Bonsdorff & Wenne (1989), Wenne & Polak (1989).

Two undertakings of crucial significance for the Institute's future took shape during this period, and were to entail a radical expansion of its activities. Both were financed from State coffers and rewarded the efforts of many years on the part of the Institute's Director Prof. Czesław Druet and the authorities of the Polish Academy of Sciences with Prof. Zdzisław Kaczmarek at the forefront. The first of these undertakings was the research vessel 'Oceania' (constructed by Zygmunt Choreń) built by the Gdańsk Shipyard in 1985 and taken over for operations by the Institute in the same year. 'Oceania' (Photo 9a, b, c) is a modern sailing vessel 49 m in length and of 370 BRT displacement, adapted for oceanographic research on the high seas under the supervision of Dr Jacek Wyrwiński. For details, see the Institute's website <http://www.iopan.gda.pl/oceania/oceania.html>. The second significant



Photo 9a.
r/v 'Oceania' under sail on its way to the research area



Photo 9b.

r/v 'Oceania' anchored at Isfjord



Photo 9c.

The preparation of the current-meter ADCP to be lowered from r/v 'Oceania's' stern

undertaking was the construction of a new main building for the Institute, begun in 1989 on the site at ul. Powstańców Warszawy 55 in Sopot and officially opened in 1993 (Photo 10).



Photo 10.

The main building of the Insitute of Oceanology PAS at ul. Powstańców Warszawy 55 in Sopot, completed in 1993

The first successful attempt to undertake comprehensive oceanological studies from on board 'Oceania' was her participation in 1986 together with a flotilla of 14 other research vessels from other Baltic Sea countries in the international 'Patchiness Experiment 86' (PEX '86). 28 representatives of IO PAS were on board: 15 scientists led by the chief scientist Prof. Jerzy Dera, and 13 crew members under Captain Marek Marzec (see Dybern & Hansen (eds.) 1989). The SONDA, skippered by Captain Konstanty Pielak, was also present in an auxiliary capacity.

In the summer of 1987 'Oceania' set off on a voyage to the Nordic seas (the Norwegian, Barents and Greenland Seas); this was the start of a series of research projects carried out by IO PAS in the Arctic which have continued right up until the present (Photo 9b). The initiator and coordinator of these studies for many years was Prof. Czesław Druet; at present they are in the charge of Professors Jan Piechura and Marcin Węślawski. During this first voyage, the chief scientist was Dr Ryszard Siwecki, a former postgraduate student of Prof. Druet, and the ship was again captained by Marek Marzec. The aim of these expeditions is to investigate Atlantic water transport, heat and salt advection by this water, as well as the ecology of the Spitsbergen Fiords. They contribute to international research programmes set up to study processes in Arctic waters and their influence on the climate, e.g. the Greenland Sea Project, VEINS, ASOF-N and others. 'Oceania' has thus very considerably expanded the opportunities for IO PAS for its joint participation in extensive research programmes.

Under the direction of Dr Jacek Wyrwiński 'Oceania' has also taken part in profitable educational events such as Sail Bremerhaven 1996, Kieler Woche 1997, Sail Gdańsk 1997, and the world exhibition Wilhelmshaven 2000. During these events several thousand visitors passed through the ship, who were able to become acquainted with the constructional innovations of the vessel and her equipment.

In January 1990 IO PAS employed 155 persons, including 5 full professors, 4 assistant professors and 18 doctors of science. In the same month Prof. Jerzy Dera became the new Director (Photo 11); Prof. Andrzej Zieliński was appointed deputy director for



Photo 11.

*Prof. Dr. J. Dera
Full Member of the
Academy, Director of the
Institute of Oceanology
PAS in 1990-2002*

research, Dr Jacek Wyrwiński deputy director for technical matters (and since 1992 the Institute's Chief Engineer) – 'Oceania' was entrusted to his

care, and Mr Józef Dmowski became deputy director for administration and finances. This team of Directors remained unchanged until the end of March 2001, when Prof. Andrzej Zieliński had to retire for reasons of ill-health. On 1 April 2001 he was replaced by Prof. Stanisław R. Massel, an outstanding scientist, author of numerous excellent monographs (e.g. Massel 1989, 1996, 1999) with long experience in heading research teams. The previous day Prof. Czesław Druet had been elected Chairman of the Institute's Scientific Council. No more changes were effected among the management until the end of 2002.

■ The development of the Institute following the drastic cuts in state subsidies for scientific research

The directors had come to the conclusion that the number of scientists employed at the Institute had reached a 'critical mass' for its proper functioning in the fields of marine physics, chemistry and ecology and that the research vessel and equipment were being used to optimum effect. In view of the pessimistic forecasts regarding the funding of science in Poland, it was decided that for the time being no more scientific staff would be taken on; instead, efforts would be concentrated on further raising its overall standards; young postgraduates would be trained and would replace other scientists lost through natural wastage. At the same time action was taken to intensify our research effort and to become more actively involved in international projects; as many of our staff as possible were to participate in international conferences. The general idea was that such international cooperation would significantly improve the standard and efficacy of our research, to enhance IO PAS's reputation among its sister institutions, and to assist it in obtaining more generous funds for its research activities.

During this period – from January 1990 to December 2001 – the Institute was organised into the following departments, which were headed by the persons named below:

Marine Chemistry and Biochemistry – Dr Janusz Pempkowiak; Hydrodynamics – Dr Andrzej Jankowski (in 1990) and Dr Jan Piechura (from 1991); Marine Ecology – Dr Marcin Węśławski; Marine Physics – Dr Jerzy Olszewski (in 1990–1993), Dr Tadeusz Król (in 1994) and Dr Bogdan Woźniak (from 1995). Many of the Institute's staff also lectured on a variety of university courses in oceanology: at the Departments of Biology, Chemistry, Geography and Oceanography of the University of Gdańsk, at the Polish Naval Academy in Gdynia, at the Pomeranian Pedagogical University in Słupsk and the Technical University of Koszalin.

In 1990–2001 the Institute's researches were grouped into four general subject areas: (1) Hydrodynamic and thermodynamic processes in sea basins studied from the point of view of their effect on the biosphere; (2) Interaction of solar radiation and acoustic waves with the marine environment; (3) Chemical and biochemical processes in the sea and the mechanisms of the interaction between marine organisms and their environment; (4) The principal mechanisms governing short-term climate changes in the Spitsbergen Shelf region (the Norwegian Sea and the confluence zone) and their effect on the biosphere. In 2002 a fifth subject area was added: (5) The functioning of marine organisms at the molecular level. Within this overall framework some 60 tasks in 20–24 research topics were planned and carried out: these were both theoretical studies performed in our laboratories and empirical investigations at sea. Most of the theoretical studies involved the mathematical modelling of processes occurring in sea water, such as the photosynthesis of organic matter, the circulation of waters or the transfer of heat and chemical substances. Recent achievements in these fields have been documented in the papers by Druet & Zieliński (1994), Jankowski (1996), Schlichtholz & Houssais (1999a, b), Wróblewski (1992), Woźniak (1990), Woźniak et al. (1992, 2000), Woźniak, Jr (1997), Ostrowska et al. (2000), Witkowski et al. (1998). The experimental investigation of these and other processes in the sea were carried out at this time on the numerous research cruises of the 'Oceania', and on other ships during joint operations, using measurement apparatus taken on board according to requirements (see e.g. Olszewski et al. 1992, Dera 1995, Kaczmarek & Woźniak 1995, Sagan et al. 1995, Kowalewska 1997, 1999, Węśławski et al. 1997, 2000, Bojanowski et al. 1998, Gorska & Klusek 1998, Klusek & Jakacki 1998, Pempkowiak & Kosakowska 1998, Kosakowska 1999, Kowalczyk 1999, Zieliński et al. 1999, Pempkowiak et al. 2000a, b, Piechura et al. 2002, Szczucka 2000).

The 'Oceania' (the crew is pictured on Photo 12) was usually at sea for more than 200 days in the year, usually in the Baltic, but cruises were also made to the north Atlantic and the Arctic seas. Apart from in situ measurements which were subsequently used for theoretical work, the ship also brought home large numbers of samples of water, plankton, bottom sediments etc. for detailed laboratory analysis. The results of these researches were scrutinised annually by the relevant subject commissions of the Institute's Scientific Council, which consists of around 30 persons, 50% of whom are independent experts, not employed by the Institute (see Photo 13). The upshot of this is a good number of interesting scientific achievements, most of which are going to be presented in the series of review of articles mentioned in the introduction. Table 1 shows the number of papers published by

Photo 12. The crew of r/v 'Oceania' in 2003. From left to right: Zenon Plachta, Janusz Lukrawski, Andrzej Kadłubicki, Roman Grzybowski, Jan Mazurek, Marek



Lewandowski,
Krzysztof Traczyk,
Piotr Kleinschmidt,
Romuald
Obuchowski,
Tadeusz
Bryczkowski,
Sławomir Gryc,
Andrzej Mendygrał
(Captain),
Wojciech Fok,
Jerzy Kaziszko

Photo 13. A part of the conference room during the session of the Scientific Council of the Institute of Oceanology PAS in February 2002.



From the left – professors: A. Zieliński, S. R. Massel, C. Druet (Chairman), J. Dera, G. Kupryszewski

Table 1. Number of publications by IO PAS scientists

Year	Total number	Number in ISI-approved publications	Textbooks and monographs
1997	92	11	8
1998	85	8	6
1999	69	20	5
2000	88	26	4
2001	112	16	2
2002	96	57	5
Grand total 1953–2002	c. 1400	c. 140	c. 50

the Institute's scientists: it focuses on the last few years and indicates in a separate column the numbers of papers published in ISI-approved journals, for which Polish scientists too display a strong preference.

The research carried out by the Institute was funded mainly by the State, during the last 10 years through the mediation of the State Committee for Scientific Research, which kept a check on its effectiveness in that points were awarded for the numbers of published papers in accordance with a fixed algorithm; the Committee also restricted subsidies. As a result of the serious economic difficulties which Poland had to contend with in the years 1990–2002, the State's outlay for science in real terms diminished from one year to the next, such that by 2002 they had fallen to 50% of the 1991 amount. At the same time, other sources of funding for basic research had practically run dry. For these reasons IO PAS, like many other scientific institutions in Poland at this time, was permanently underfunded and was forced on several occasions to make staff cuts. This situation frequently led to interpersonal conflicts, serious understaffing, limitations in the range of research that could be undertaken and neglect of the institute's buildings. Attempts were made to make good staff losses with postgraduate students, and by every other possible means. Here tribute should be paid to Ms Roswita Groenwald-Orlicka, who since 1984 has run the personnel and legal matters of the Institute with great professionalism and personal commitment.

By this time, scientific research in the EU countries was being covered by the so-called Framework Programmes (FP). However, it was not until near the end of this period, beginning with the implementation of programme FP 5 in 1998, that Polish institutions were allowed to participate fully in the FPs and receive EU funding. The Institute took advantage of this situation, although considerable effort was needed to procure its participation in a number of FP 5 projects (see Table 3). The funds made available by this means initially covered barely 3% of the Institute's budget. The economic planning and management of the Institute's drastically reduced budget, patched up whenever possible, called for a great deal of resourcefulness and hard work, especially that at the same time more stringent financial regulations had been introduced. Given this situation, the effective actions of Józef Dmowski, the deputy director for administration and finances and the chief accountant Teresa Grande, along with their entire staffs, must be seen as priceless; indeed, on several occasions they rescued the Institute from financial collapse.

During these difficult times it was, however, possible to maintain the financing (by the State Committee for Scientific Research) of construction work already begun. As a result, the Institute's new main building at ul. Powstańców Warszawy 55 in Sopot (Photo 10) could be completed and

officially opened in 1993. In addition, the end of 1995 saw the completion of a second building (Photo 14) equipped with modern chemical laboratories, which was erected adjacent to the main one on the site of the residential building that had originally housed the Institute's administration.



Photo 14.

The new building of the Marine Chemistry Department of the Institute of Oceanology PAS at ul. Powstańców Warszawy 55 in Sopot

The Marine Physics and Hydrodynamics Departments as well as the Management and Administration of the Institute moved to the main building, while the Departments of Marine Chemistry and Biochemistry and of Marine Ecology took over the second building. Thus, the old premises of the former Marine Station at ul. Powstańców Warszawy 2–6 (Photo 2) in Sopot were finally abandoned in 1996. With a total useable floor area of 4111 m², the Institute's new buildings are highly functional, excellently adapted for the needs of the research teams working in them. We think the buildings are also aesthetically pleasing (Photos 10 and 14), incorporated as they are into the architecture of the town of Sopot. They were designed by architects from Gdańsk – the main building by Czesław Miler, and the Chemistry and Ecology building by Andrzej Jagodziński, Bogdan Krzyżanowski and Jerzy Szczepański. These buildings and their surroundings are maintained in first-rate condition by Ms Barbara Kępińska and her team from the Property Unit (see the administrative staff on Photo 15).

Photo 15. *Administration & finances team of the Institute of Oceanology PAS in 2003. Back row L-R: Alicja Ogińska, Beata Żylla, Teresa Grande (Chief Accountant), Teresa Choroszeńska, Roswita Groenwald-Orlicka, Anna Bera,*



*Anna Źochowska.
Front row L-R:
Barbara Gierszal,
Barbara Kępińska,
Józef Dmowski
(Deputy Director),
Aleksandra
Szymczyk, Danuta
Jałoszyńska,
Barbara
Tretkowska,
Mariola Laskowska*

On the top, fifth storey of the main building, in a kind of tower, there is a small, round conference room with views of the Gulf of Gdańsk and all parts of Sopot. This room was named after the late Stefan Bukowski, one of the Institute's long-serving engineers (1975–1995) who put a tremendous amount of work, enthusiasm and expertise into organising and supervising the Institute's construction works.

The two new buildings are not all the constructions that are planned. It has turned out that the wooden pavilion, erected earlier in the Institute's grounds, and accommodating a number of laboratories, stores and the seminar room, has become a threat to the health of its occupants and should be pulled down. The reason for this are the toxic substances with which the construction materials of the pavilion were impregnated. Its occupants thus had to be 'evicted' and the laboratories, for which no new accommodation could be found, closed. At the same time, a new department – that of Genetics and Marine Biotechnology – has been formed (and of which more later) and has to be moved from Gdynia to its new premises in Sopot. The construction of the third and last of the Institute's planned buildings, on the site of the pavilion due for demolition, is thus long overdue. The Management's endeavours to obtain funds for this purpose, supported by the relevant plans and documents, have unfortunately not met with the approval of the State Committee for Scientific Research, which covers the capital expenditure of scientific institutions in Poland.

In 1994, as a result of special preferences and a considerable injection of capital from the State Committee for Scientific Research for the purpose, the Tri-City (Gdańsk–Sopot–Gdynia) Academic Computer Network known

as TASK, based at the Gdańsk University of Technology began operations. Without delay the Institute's internal computer network was linked up to TASK under the supervision of Dr Jacek Wyrwiński. The network continues to evolve and is under the direct control of Marcin Wichorowski M. Eng., who, with his diligence, great talents and uncommon abilities in computer science, has contributed greatly to improving the efficiency of the Institute's operations (see the technical staff, Photo 16).

Photo 16. *Engineers and technicians of the Institute of Oceanology PAS in Sopot in 2003. Standing L-R: Jerzy Dąbrowski, Tadeusz Komisarczyk, Lilia Usiewicz, Małgorzata Świątczak, Jerzy Salmonowicz, Andrzej Kadłubicki, Marcin*



Wichorowski.

Sitting L-R:

Tadeusz

Klementowski,

Joanna Lech,

Zbigniew Ciećwierz,

Jacek Wyrwiński

(Chief Engineer)

By a decision of the Director, the fifth scientific department – mentioned above – came into existence on 1st January 2002. It was designated the Department of Genetics and Marine Biotechnology. It was to be headed by Dr Roman Wenne, who had been director of the Marine Biology Center PAS in Gdynia, and had worked for our Institute during the 1980s. CMB was amalgamated with IO PAS on the basis of a decision by the Praesidium of PAS, and which required the consent of the Director of IO PAS. The Department of Genetics and Marine Biotechnology took on 15 of CMB's scientists, although they continue to work in their premises in Gdynia, a by now rather dilapidated single-storey building.

■ Current efforts to further the development of the Institute's scientific staff

In a move to educate young scientists for the Institute and other organisations requiring specialists in the diverse branches of oceanology, the Institute together with the Sea Fisheries Institute in Gdynia inaugurated postgraduate studies in 2001. The teachers and supervisors of the PhD

dissertations of the 19 postgraduate students accepted so far are scientists from both institutes.

In order to retain a staff of highly qualified scientists, to inspire its intellectual development and, indirectly, to raise the scientific potential of an institute, this must have the right to confer doctoral degrees and assistant professorships. One of IO PAS's long-term aims during the 1990s had been to fulfil the conditions for conferring such titles. In 1993 the Institute was finally granted the right to confer doctoral degrees in Earth Sciences in the field of oceanology. From then until 2002, eleven such titles were conferred, 8 of them on our own junior scientists. The very first – in 1995 – to receive one was Dr Jarosław Tęgowski, an employee of the Institute, who presented a thesis in hydroacoustics. Dr Tęgowski's supervisor was Prof. Zygmunt Klusek, who was appointed Deputy Director for Research, a post which he took up on 1st January 2003 (see the research co-ordination staff on Photo 17).

Photo 17. *The staff of the Research Co-ordination Office and Library of the Institute of Oceanology PAS in 2003. Back row L–R: Małgorzata Romanowska-Szczepanik,*



*Lucyna Wąsowicz,
Prof. Zygmunt
Klusek (Deputy
Director),
Małgorzata Górka
Front row L–R:
Teresa Jeka,
Monika Uziółko,
Dorota Rychel*

In the year 2000 the Institute acquired the right to grant assistant professorships in Earth Sciences in the field of oceanology. Simultaneously, therefore, in line with Polish law, the Scientific Council of the Institute also gained the right to assess candidates for full professorships and to submit recommendations to the Central Commission of PAS for this title for candidates who had received positive references. Between then and 2002 two assistant professorships and two full professorships were conferred. The first of the former, with a dissertation in marine biooptics, was awarded in 2002 to Dr Dariusz Stramski, a former employee of the Institute and one of Prof. Jerzy Dera's postgraduate students, who emigrated in 1988 and is now

the Professor of Oceanography at the Scripps Institution of Oceanography, University of California, San Diego, USA. The second assistant professorship was conferred on Dr Grażyna Grelowska, a former postgraduate student of Prof. Eugeniusz Kozaczka, both of whom are employed by the Polish Naval Academy in Gdynia. On the strength of positive assessments and recommendations of IO PAS, Dr Jerzy Olszewski and Dr Bogdan Woźniak received their titles of professor from the President of Poland. At about the same time, through the mediation of the Scientific Council of other institutions, the title of professor was also conferred on two of our other long-serving scientists, namely, Dr Marcin Węśławski (recommended by the Council of the Faculty of Biology, Geography and Oceanology of the University of Gdańsk in 2000) and Dr Zygmunt Klusek (recommended by the Scientific Council of the Institute of Geophysics PAS in Warsaw in 2001). These promotions in an obvious manner raise the quality of research carried on at the Institute and also the number of good papers, as Table 1 has already shown.

Among the latest papers to be published by our scientists, I shall quote a couple of examples describing selected achievements of our various departments:

- Department of Marine Chemistry and Biochemistry: Kosakowska (1999), Stoń & Kosakowska (2000, 2002), Albalat et al. (2002), Pazdro et al. (2001), Pempkowiak et al. (2000a, b, 2002);
- Department of Marine Physics: Darecki et al. (2003), Klusek (2002), Woźniak et al. (2002), Klusek & Jakacki (1998), Kowalczyk (1999), Ostrowska (2001), Kuśmierczyk-Michulec et al. (2002), Rozwadowska & Cahalan (2002), Gorska & Chu (2001), Piskozub et al. (2001), Stramski & Tęgowski (2001), Gorska & Klusek (1998), Mehlum et al. (1999);
- Department of Hydrodynamics: Piechura & Walczowski (1995), Petelski et al. (2001), Piechura et al. (2001, 2002), Massel (2001a, b), Jankowski (2002), Cześnik & Prosnak (2002), Schlichtholz & Houssais (2002);
- Department of Marine Ecology: Kwaśniewski et al. (2003), Węśławski et al. (2002), Kowalewska (1999a, b, 2001), Kowalewska et al. (1999), Konat & Kowalewska (2001);
- Department of Genetics and Marine Biotechnology: Czyż et al. (2002), Kulczykowska (2002), Wróbel & Węgrzyn (2002), Zbawicka et al. (2003).

As has already been mentioned, the journal *Oceanologia* has played a significant part in disseminating the research results of Polish oceanologists,

particularly in the years 1971–1990, when formidable obstacles were placed in the path of those Polish scientists who wished to publish articles in foreign journals. In our journal the reader will find the results of investigations in marine science, especially with respect to the Baltic Sea, published by Polish scientists and illustrating in a way the beginnings of the post-war development of oceanology in Poland. A review of these papers in the form of abstracts and an index for the 25 years from 1971 to 1996 was presented in a special edition of *Oceanologia* 40(S)/1997 (Supplement). From the beginning right up to the present day the journal has been edited under the supervision of the Polish SCOR, although the actual editorial work has been done with the IO PAS's own resources, at first rather clumsily, bearing in mind the immense technical problems that had to be overcome in the early days. In the first few years it was not a periodical, and was issued on an irregular basis, whenever a sufficient number of papers had been submitted for publication. The articles were printed in several languages – in Polish with English summaries, in English, and occasionally in French or Russian. Gradually, however, as the number of authors of quality papers in oceanology in Poland rose, it was decided that the journal should be edited solely in the English language.

In 1983 Prof. Jerzy Dera became Editor-in-Chief of *Oceanologia*, a position which he holds to this day. The Polish SCOR set its editors the task of bringing *Oceanologia* up to the standard of reputable European scientific journals, and to turn it into a periodical, initially a biannual and later a quarterly. From 1973 to 1987 the technical editor was Barbara Szczutkowska with her invaluable experience in this type of work. It was this very experience in combination with meticulous supervision on the part of the Editorial Board and the efforts of the Editors-in-Chief that bore fruit – the standard of the journal began to improve steadily. To maintain this improvement was exceedingly difficult in the times when there was a lack of just about everything – money, staff, technical equipment and, most important of all, a sufficient number of good papers to publish. Despite the 2–3 reviews which every manuscript was subjected to and the numerous corrections that followed, not all the papers printed reached the desired level. Moreover, the lack of a good command of the English language among many Polish scientists was another reason why the papers printed in English were often sub-standard. For these reasons it was not until 1994 that *Oceanologia* became a passably good periodical which was now published regularly twice a year. Since 1996 it has been issued regularly 4 times a year as a quarterly, has an international Editorial Board and is open to authors from all over the world. In 2002 the ISI – the Institute of Science Information in Philadelphia – confirmed that *Oceanologia* meets

all the required criteria and placed it on its list of scientific journals. The unabridged texts of all the articles in *Oceanologia* are now also available on-line: <http://www.iopan.gda.pl/oceanologia/index.html>. The day-to-day editorial work is now in the very capable hands of Sabina Szczykowska, the graphics are drawn in masterly fashion by Stanisław Węśławski (see the Editorial Office staff on Photo 18), and the English editorial revision is efficiently carried out by our invaluable associate Peter Senn. This present state in the publication of *Oceanologia* can also be counted among the important achievements of the Institute.

Photo 18. *The staff of the Editorial Office of the Institute of Oceanology PAS in Sopot in 2003. Sitting L-R: Sabina Szczykowska, Felicja Oksiuta.*



*Standing L-R:
Wojciech
Aleksander,
Karolina
Lewandowska,
Stanisław
Węśławski*

Since 1990 the Institute also publishes the series 'Dissertations and Monographs'. The first issue contained a dissertation by Zygmunt Klusek (1990) on the conditions for sound propagation in the southern Baltic. The original intention was for this journal to be published in Polish and/or English, but in fact only one of the 15 issues published so far (Dera 1995) was actually published in English. Although all the others are in Polish, most of them do have English summaries.

■ Towards the European Research Area

In the 1990s it became increasingly clear that the European Union (EU) was going to expand to include the countries of central and eastern Europe, among them, Poland. At the same time, Poland, whose long-term aim was to join the EU, gradually began to adapt its organisational structures in diverse areas of social activity to those of the EU. Science was one of the areas which adapted the fastest, and the State Committee for Scientific

Research introduced the mechanisms for such a transformation with a good measure of success, the numerous mistakes, shocks and losses on the way notwithstanding. First of all, far more information about research results was made generally available in that many more papers were published in journals with an international readership. The funding structure of research was to be topic-based, and such funding was to depend on the parametric assessment of projects and research results; a sea change took place in the approach to international scientific contacts. The State Committee for Scientific Research, moreover, encouraged Polish research teams to become involved in EU Framework projects in that an appropriate system of information and regulations for financing research were implemented.

The Institute has quickly adapted to these new structures. Since 1995, the number of projects of the European Union Framework Programmes and other programmes from abroad its various research teams have become involved in has risen from year to year. This has also increased the chances of obtaining additional funding for research and has enlivened international cooperation. The consequent, necessary numerous meetings of scientists at conferences, symposia, workshops and other gatherings abroad have demanded a considerable outlay, which the Institute has been glad to cover, despite the financial difficulties. The number of journeys abroad by the Institute's scientists in recent years has risen annually – e.g. 80 man-journeys in 1997, 88 in 2000 and 118 in 2002 – and these do not include journeys undertaken as part of research cruises which are combined with visits to other countries. The purpose of these visits abroad is mainly so that our scientists can present their research results at international conferences – see Table 2.

Table 2. Papers and posters presented by IO PAS scientists at international conferences

Year	A. Overall number of papers and posters	B. Number of papers included in A	C. Number of invited papers included in B
1997	60	24	4
1998	74	44	3
1999	70	53	–
2000	60	32	2
2001	93	45	2
2002	72	49	5

At the same time, the Institute has participated in the realisation of an ever increasing number of international research projects, as presented in Table 3:

Table 3. Participation of IO PAS research teams in international research projects

Year	Number of projects	Acronyms of important projects
1997	6	BASYS, PROVES, BIOCOLOR
1998	7	BASYS, PROVES, BIOCOLOR, VEINS
1999	7	HARINA BALT, BIOCOLOR
2000	10	VEINS, BEEP, MISPEC
2001	9	BIOMARE, MARBENA, BEEP, COSA
2002	12	BEEP, COSA, PAPA, BIOCOMBE

In 2002 there came into existence at the Institute the Centre of Excellence for Shelf Seas Science (CeSSS), which receives funding from the European Commission. This followed in the wake of a proposal on the part of the Institute, compiled under the supervision of Prof. Stanisław R. Massel, who was deputy director for research at the time. He has since been appointed Director of the Institute (Photo 19). The proposal was entered for a European Commission competition and, in the ‘environmental’ section was awarded 97 points out of 100, the highest assessment of all.

**Photo 19.**

*Prof. Dr. S. R. Massel
Corresponding Member
of the Academy,
Director of the Institute
of Oceanology PAS
since 2003**

At the same time, on 1 January 2003, the statutory research carried on by the Institute were modified to take into account the European Strategy for Marine Research (see ESF Marine Board 2002). The following 4 strategic fields of research were outlined for the Institute:

- The role of the oceans in climate change and its effects on European Seas.
- The natural and anthropogenic variability of the Baltic Sea environment.
- Contemporary changes in the coastal ecosystems of shelf seas.
- Genetic and physiological mechanisms of functioning marine organisms; fundamentals of marine biotechnology.

* All photos by Jerzy Dąbrowski (IO PAS archives), except Nos. 3 and 4 (by Konstanty Pielak –author’s private collection).

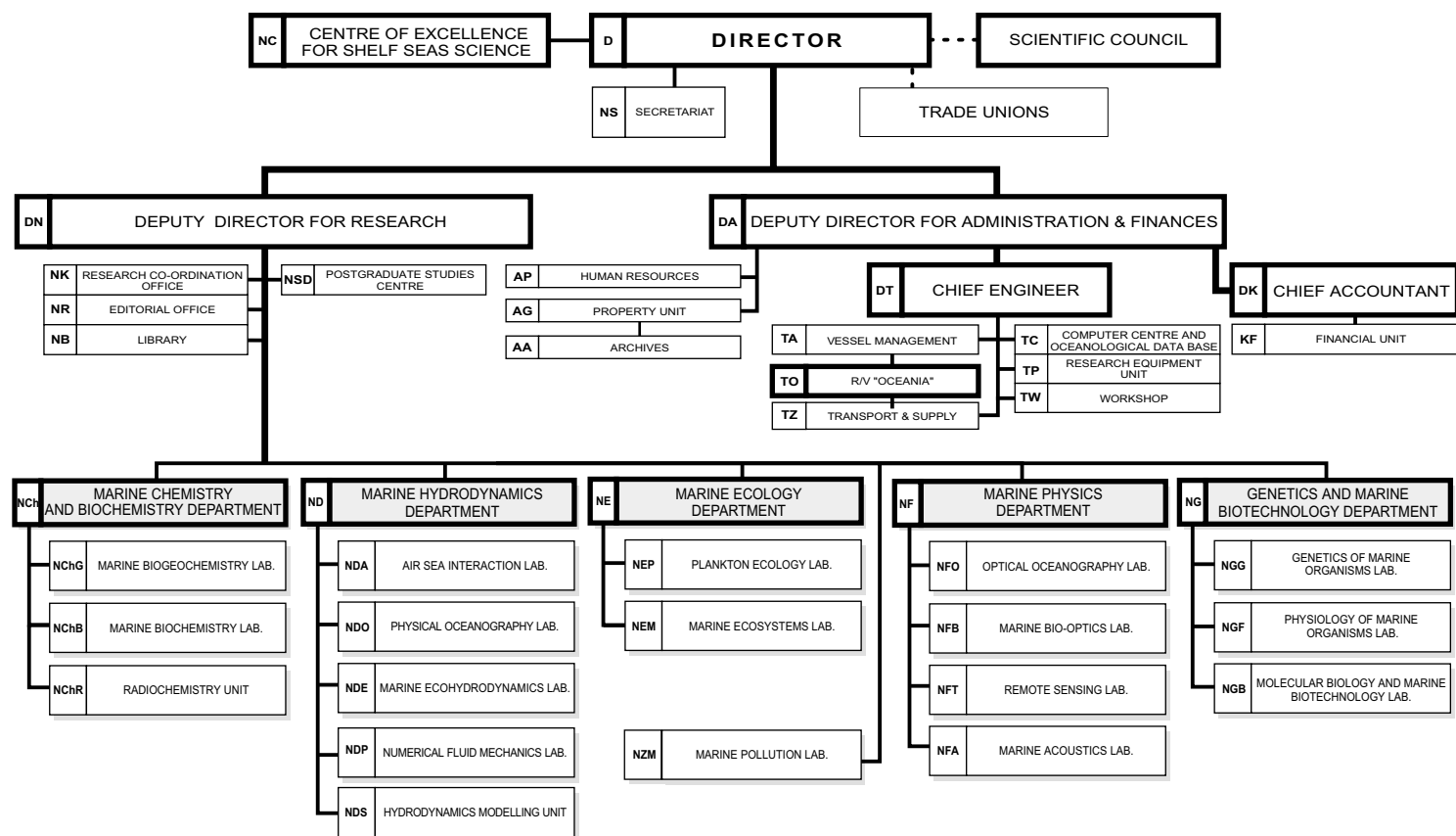


Fig. 1. Scheme of organisation of the Institute of Oceanology PAS, Sopot 2003

The new management is continuing and expanding the Institute's cooperation with sister institutions from other countries, particularly those from the EU. Efforts have recently been made together with the Baltic Sea countries to organise the Baltic ERA Net, in line with European Commission plans to integrate scientific cooperation in Europe by the creation of the European Research Area (ERA).

In 2003 the Institute's new Scientific Council was elected for the period of 2003–2006. Prof. Jerzy Dera is the Chairman of the Council, while Prof. Marcin Pliński (University of Gdańsk) and Prof. Piotr Szefer (Medical University of Gdańsk) are the Vice-Chairmen.

The current scheme of organisation of the Institute of Oceanology PAS in Sopot is presented in Fig. 1.

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