

INTRODUCTION

NIOZ's mission is to gain the fundamental knowledge of the seas and oceans required to understand and properly manage the largest ecosystem on earth - and one of special importance to the Netherlands. This knowledge is shared with the scientific community worldwide and made available to national and international policy makers and to society at large. Marine science is increasingly needed to ensure the sustainability of our planet and to understand climate change, for the maritime economy and the sustainable use and exploitation of living-and non-living resources from the sea, and for our individual wellbeing. NIOZ has expertise in all the major natural sciences and complements fundamental research with high level strategic research as part of national and international cooperation programmes. NIOZ also stands for impartial advice and assessment at the highest professional standards. In this framework NIOZ is presently discussing the effective monitoring of the Wadden Sea – a unique landscape in Europe - with its partners, the Nederlandse Aardolie Maatschappij (Netherlands Natural Gas Company) NAM, Wageningen-IMARES and several universities and private companies.

SCIENTIFIC OUTPUT

In 2006 the NIOZ scientific output was very strong. In total 169 publications in peer reviewed journals were published, including two in Science, five in Nature and two in Proceedings of the National Academy of Sciences (PNAS). Several prizes were won and four books were published. Especially in elucidating the biodiversity and role of micro-organisms and in the use of biomarkers as proxies for climate change 2006 brought about important advances in knowledge. We mention two articles in Science involving Jaap Sinninghe Damsté and Stefan Schouten on the reconstruction of the outflow of a super river in Europe some 20,000 years ago during the last Ice Age and on the accumulation of carbon dioxide in the same early days in Northern America; three articles in Nature with again Jaap Sinninghe Damsté and Stefan Schouten as co-authors with a reconstruction of sea water temperature based on the TEX₈₆ index developed at NIOZ and showing that Arctic seawater reached about 22°C at the North Pole at the Paleocene/Eocene boundary around 90 million years ago. In the scientific journal PNAS, Jaap Sinninghe Damsté, Stefan Schouten and Gerhard Herndl co-authored a paper showing that Archaea are nitrifiers both in the North Sea and in the Atlantic Ocean. In another paper published in PNAS co-authored by Gerhard Herndl and Jesus-Maria Arrieta, the phenomenal biodiversity of marine bacteria was demonstrated: one liter of seawater was shown to contain about 20,000 phylotypes. The ecological significance of this diversity will be an important research area in the coming years.

Besides these publications in the world's top journals, many other papers of high scientific quality were published in the specialized professional literature. To mention just a few, the elucidation of the role of large internal waves, breaking on the continental slope, in vertical mixing of the ocean; the negative effects of bottom trawling of shellfish in the Wadden Sea on wintering waders, especially the Knot; and, the characterization of transport and deposition of terrestrial organic matter in the North Sea. Special reports dealt with the causes of death of harbour porpoises in the Netherlands and with the long-term effects of drilling oils on benthic communities in the North Sea.

Besides the large number of refereed papers and reports, four books were also published, by Theunis Piersma (“Waarom nonnetjes samen klaarkomen en andere wonderen van het wad”), Hendrik van Aken

on “The Oceanic Thermohaline Circulation, an introduction”, Kees Camphuysen on “Whales and Dolphins of the North Sea” and Kees Booij as co-author on “Monitors of Organic Chemicals in the Environment”.

Prizes were received by Oscar Bos (North Sea Award, Bruges, for this PhD thesis) and Gerhard Herndl (the Roland Wollast Award 2006 Euroceans, Barcelona). In October the European Geosciences Union EGU announced that Jaap Sinninghe Damsté will receive the Vladimir Vernadsky Medal 2007 of the European Geosciences Union (EGU). Personal Grants were obtained by Johan Weijers (Rubicon), François Vézina (Veni), Pieterella Luttkhuizen (NWO Meervoud) and Stefan Schouten (NWO Vici).

NIOZ was active in teaching by organizing the European NEBROC/ECOLMAS Introductory Course in Marine Sciences in November and an advanced NEBROC course at the institute and several courses at the universities of Groningen and Utrecht. Tjeerd van Weering, recently being appointed at the Vrije Universiteit Amsterdam as chair of paleo-oceanography, gave his inaugural speech (“Zee in Zicht”) in 2006. Jaap Sinninghe Damsté also delivered his inaugural speech (“Moleculen uit een ver verleden”) at the University of Utrecht where he holds the chair of Molecular Paleontology. Thomas Rheintaler (RUG), Cornelia Wuchter (UU), Yvonne van Breugel (UU) and Wouter Vahl (RUG) received their PhD degree from the universities of Groningen and Utrecht

6 With respect to new facilities the installation of the Multibeam Echo Sounder underneath the Pelagia deserves special mention as this tool greatly enhances the possibilities of our research vessel. Another remarkable accomplishment is the completion of the Thermistor String Model to demonstrate internal waves in the ocean. Our spin-off company AVAATECH, with support of the NIOZ technicians, sold five XRF core scanners.

Two ICES working group meetings were held at NIOZ in spring, one on Seabird Ecology and one on North Sea Benthos. We also welcomed the News and information group of the Marine Board of the European Science Foundation in December.

The Science Advisory Committee visited the department of Marine Ecology and Evolution. The committee rated the research of MEE of high quality, recommended maintaining the long-term time series and advocated their use in research, and recommended to strengthen the work on bottom-up processes in shallow water ecosystems, especially the Wadden Sea.

MANAGEMENT AND ORGANISATION

After the management change at the end of the turbulent year 2005, there were further rapid developments at the top of the institute in 2006. With Bert Geerken continuously present in management this year, the scientific leadership changed hands from Johan Meulenkamp (until July) to Herman Ridderinkhof (temporarily as interim). Carlo Heip was appointed as the new and overall responsible general director from 1 October onwards. NIOZ is grateful to Johan and Herman for the way in which they have taken care of the responsibility to lead the institute. They also paved the way to a close cooperation with the Netherlands Institute of Ecology NIOO- KNAW, the ecological research institute of the Royal Netherlands Academy of Arts and Sciences. The NIOO Centre for Estuarine and Marine Ecology (Yerseke) combined with NIOZ in a unit called FOKUZ (Fundamenteel Onderzoek van Kust en Zee).

The Board started 2006 with three members appointed in December 2005: Pier Vellinga (chair), Ward Koster and Jack Middelburg. Jack Middelburg resigned as a Board member as he is a member of staff at NIOO for which Carlo Heip is also responsible (so running both institutes on a part-time basis). At the end of the year the board was extended with Louise Vet, Guus van der Kamp and Theo Elzenga.

In our internal organization extra efforts were made to improve the supporting services, the planning & control cycle and the availability of relevant management information. In part this is based on the evaluation by a team of ten professionals of other institutes from our umbrella organization, the Netherlands Organisation for Scientific Research NWO.

The shipping activities were evaluated by Blue Star Ship Management. Their main conclusion was that Pelagia should be managed by NIOZ. Nearly all recommendations of the report will be implemented, in particular with respect to communication and responsibilities and the increase of the number of operational days of the shipping personnel.

EPILOGUE

The day before NIOZ closed down for the 2006 Christmas holidays, two special events were organized at the institute. In the evening the personnel association organized its regular end-of-the-year party, attended by many scientists, students, supporting staff and shipping personnel. This social event reflected very well the good relations among the NIOZ personnel.

In the afternoon, many people watched and discussed Al Gore's "An Inconvenient Truth" where system earth was at the centre of a long debate between our experts in several fields of marine sciences and the audience at large, concluding that the climate problem is real, that NIOZ should devote effort and attention to the scientific aspects and that the problem cannot be solved without fundamental changes in human society.

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Carlo Heip, general director



**Bert Geerken,
interim managing director**

