



# ANNUAL REPORT 2013



**ROYAL NETHERLANDS INSTITUTE FOR SEA RESEARCH**



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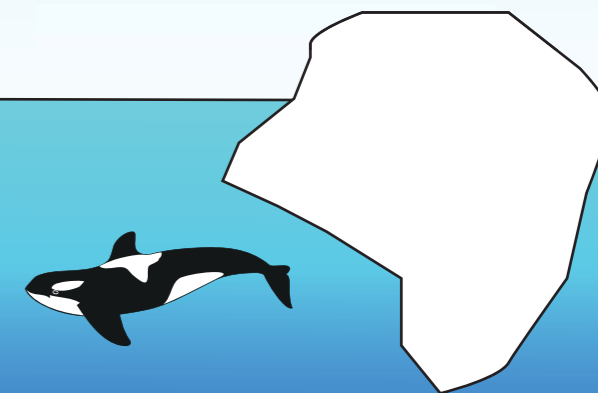
RV Stern



RV Navicula



RV Pelagia







## In memoriam Carlo Heip

On 15 February, our former director Carlo Heip (1945-2013) passed away after a prolonged illness. Carlo Heip studied biology at Ghent University, where he graduated on a study of the ecology and population dynamics of meiobenthos, small organisms living in the sediment. His study site was a small brackish-water pond but his main interest was the open ocean and his peers were international colleagues. He founded a research team on marine biology at Ghent University that still persists. At this time he wrote a seminal paper on the ecology of marine nematodes, focused on the functional role and ecophysiology of meiobenthos and developed the use of meiobenthic diversity as a tool in biomonitoring. As the chairman of ICES' benthic ecology working group, he organized the large North Sea Benthos Survey in 1986.

When he became director of the Delta Institute of Hydrobiological Research in Yerseke, The Netherlands, in 1987, he re-oriented the institute from a regional initiative to an international player in the study of the ecology of estuaries and coastal seas. In 1992 the Delta Institute became part of the Netherlands Institute of Ecology (NIOO-KNAW). Carlo founded and led a research group that focused on the interaction between species and their biogeochemical and physical environment. The research had a strong modelling component. It resulted in a few well-known reviews on estuarine processes, new model developments especially for benthic processes and the development of new biogeochemical methods for the study of estuarine ecology. In contrast to most studies in biogeochemistry, it kept a strong focus on biology and species.

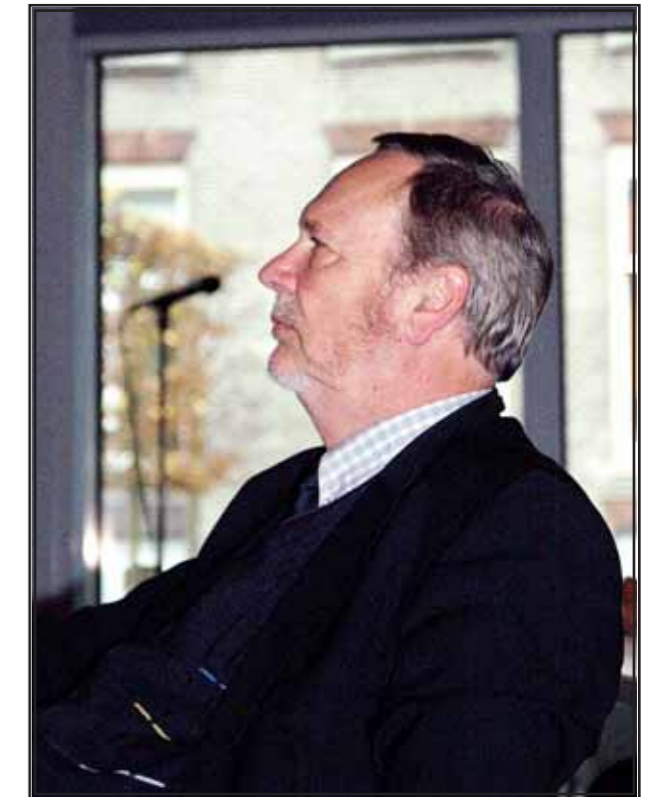
From the early 1990's onwards, he was very active as a Projectleader and coordinator of European research projects in Land-Ocean Interaction studies. Within the scientific study of global change, he had the strong feeling that biodiversity issues were underrepresented and that the field was splintered. For this reason he actively engaged in several initiatives to bring together the relevant partners. This resulted in several initiatives, of which the European Network of Excellence MARBEF (Marine Biodiversity and Ecosystem Function) was the most important one. MARBEF united ecologists and taxonomists on a European scale in a joint effort to provide the protection of the biodiversity of marine life with a sound scientific basis. This European project also stimulated world-wide initiatives to better understand and describe the diversity of marine ecosystems.

In 2006, Carlo Heip became director of NIOZ at Texel, where he remained until his retirement in 2011. As director he managed to lead the institute to an excellent peer review in 2011. He also prepared the merger of the Centre for Estuarine and Marine Ecology of NIOO-KNAW in Yerseke with NIOZ, thus bringing together the two Dutch institutions to which he had devoted his professional life under the umbrella of the Netherlands Organization for Scientific Research (NWO).

Carlo Heip had the leadership and vision that made him an excellent organizer, both as a director and as a coordinator of the numerous international initiatives he was involved with. He had an innovative and creative mind and a special gift for summarizing the essence of a scientific field or debate. He was, above all, a people manager. He stimulated his collaborators by giving them respect, trust and strategic guidance.

Carlo had a drive for nature. He was keen on bringing scientific knowledge to the policy and management level and to improve coastal and marine management. He was involved in local and regional estuarine management, as well as in European and worldwide programs for the protection of biodiversity. And above all, he was a warm personality with a good sense of humour, who enjoyed all good things in life.

Peter Herman







## From the directorate

Gaining insight in the complex and dynamic marine ecosystems and environments is of vital importance for modern society and at the heart of the mission of Royal NIOZ. Our activities, our mission, our multidisciplinary research, including frontier applied studies, our modern research facilities, labs, and research vessels, are all dedicated to this task. Furthermore, NIOZ supports academic and applied marine and maritime research with know-how and infrastructure in the Netherlands and abroad, and we continued to do so in 2013.

Research at NIOZ continued to focus on marine environments globally, in estuaries and deltaic settings, from polar regions via temperate zones to tropical coral reefs, and into the depths of the oceans. NIOZ was and is a respected and trusted partner in a multitude of national and international efforts to improve our understanding of the changing oceans, and for paving the way to improved and sustainable use of them in terms of global food, energy and other natural resources for broad scientific and societal benefit.

In the year 2013, NIOZ scientific productivity reached an all time high with over 263 peer reviewed publications, including 59 open access papers, 11 PhD theses, more than 220 professional papers and well over 600 outreach and media contributions. It was also the year where NIOZ was very successful in the various national NWO/STW 'topsector' calls, and where the Principal scientists of our biogeochemistry

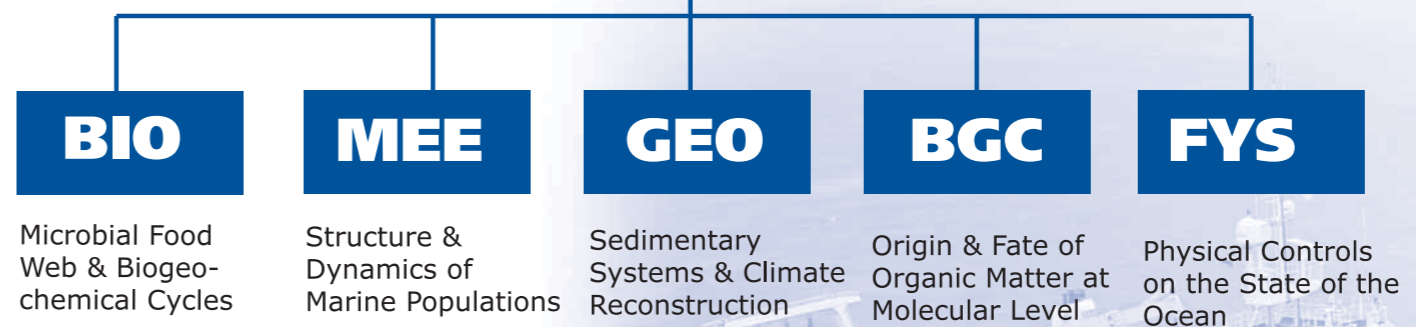
department prof. Jaap Sinninghe Damsté and prof. Stefan Schouten, as leading members of two national research consortia, were awarded the prestigious NWO/OCW 'Zwaartekracht' grants from the Netherlands Organisation for Scientific Research (NWO) and the Ministry of Education, Culture and Science (OCW); the largest research grant of its kind in The Netherlands. Moreover, prof. Stefan Schouten received an advanced ERC grant as well. Kees Camphuijsen won The Academic Year Price 2013.

The year 2013 was in many respects a difficult year for the institute. The sad and too early demise of prof. Carlo Heip, just retired from his long standing general directorship of Royal NIOZ, left us all impressed and speechless. He will be remembered as an excellent, world-leading scientist in the field of Biodiversity, and a nationally and internationally highly respected leader of the institute. More mundane, issues arose as well, linked to the global economic crisis, the general political environment, and financial management. As a consequence, the institute was, is, and will be facing serious budgetary reductions in 2014 and the years to come. Yet, also in these troublesome times we will have to face them and move forward.

Henk Brinkhuis  
Herman Ridderinkhof

More information is available on-line via [www.nioz.nl](http://www.nioz.nl)

## NIOZ TX



**BIO** Microbial Food Web & Biogeochemical Cycles

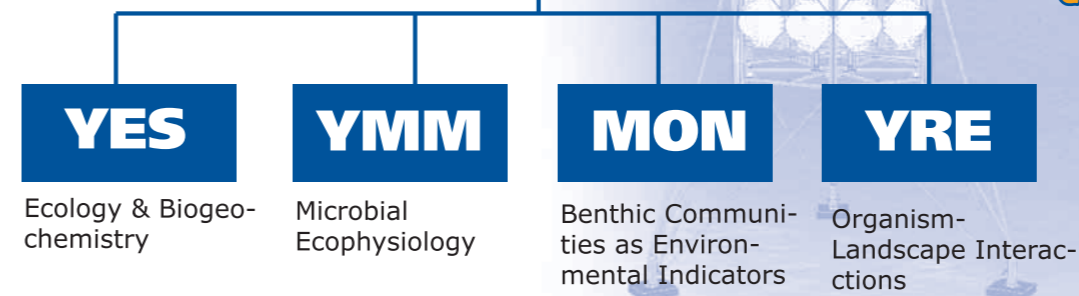
**MEE** Structure & Dynamics of Marine Populations

**GEO** Sedimentary Systems & Climate Reconstruction

**BGC** Origin & Fate of Organic Matter at Molecular Level

**FYS** Physical Controls on the State of the Ocean

## NIOZ YE

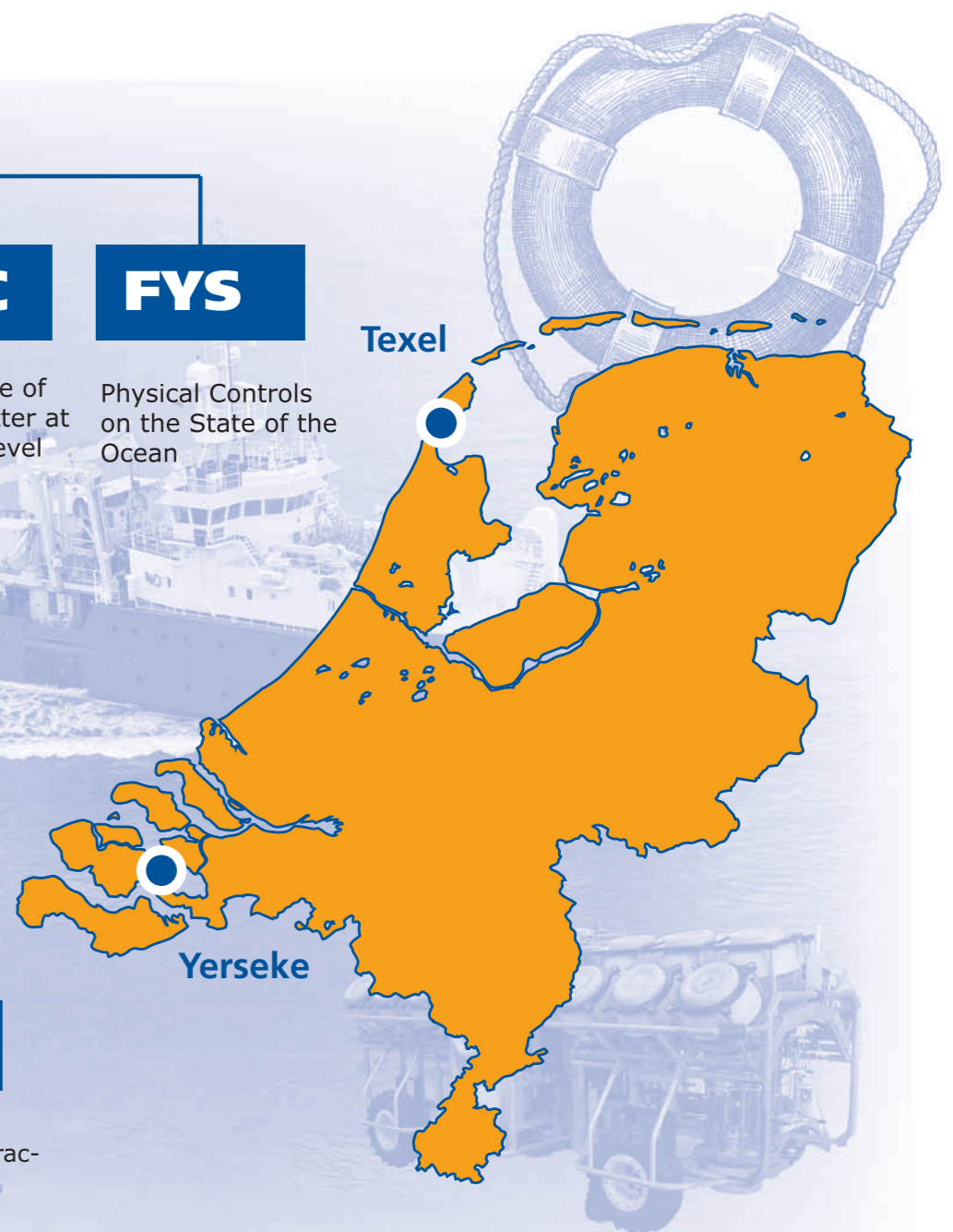


**YES** Ecology & Biogeochemistry

**YMM** Microbial Ecophysiology

**MON** Benthic Communities as Environmental Indicators

**YRE** Organism-Landscape Interactions





## From the board

On 15 February 2013 NIOZ was shocked by the sad loss of prof. Carlo Heip after a relatively short period of fatal illness. Carlo Heip will be remembered by the Board not only as an eminent scientist and director of NIOZ but also as a good colleague, friend and amiable person. Carlo Heip was appointed as part-time director of NIOZ on 1 October 2006 in conjunction with his directorship of CEME in Yerseke. After a highly fruitful five-year period of growth, improved governance and strongly increasing scientific achievements of NIOZ, Carlo Heip retired as general director on 1 October 2011, just before the successful merger of NIOZ-Texel and what is now known as NIOZ-Yerseke was formally concluded.

Prof. dr. M. Vincx was appointed by the Board of NWO on 1 January 2013. Prof. dr. T.M. Elzenga (University of Groningen, CEES) left the board on 1 November 2013. In 2013 Board and directors convened six times, on 28 February (Yerseke), 17 May (Texel), 9 July (Utrecht), 22 August (Texel), 25 October (Utrecht) and 28 November (Texel). Moreover, during the Board meetings of 17 May and 28 November the chairman and members of the Board conferred with the Works Council of NIOZ. Board meetings were attended by prof. dr. W.P.M. de Ruijter (IMAU, Utrecht University) on behalf of the NIOZ Science Committee, as well as by drs. R.M.L. Schorno on behalf on the general director of NWO.

On 5 March the annual bilateral consultation between the Board of NWO and the Board of NIOZ took place. On 20 November the Board of NWO consulted with the chairmen of all NWO research institutes. Discussions during these meetings mainly focussed on the financial constraints of NIOZ Texel in conjunction with NIOZ Yerseke, the renewal of the NIOZ Science and Strategic Planning, the developments concerning the renovation and commercial exploitation of the NIOZ harbour, the structural

deficit of the exploitation costs of R.V. Pelagia, and the establishment of the Caribbean Netherlands Science Institute (CNSI).

The chairman of the NIOZ board met several times with the chairman of the Board and the director of NWO to discuss the long term role and funding of Pelagia and ocean research. Van der Kamp and Elzenga, as members of the Audit Committee, had several meetings with the NIOZ controller and the external accountants of KPMG. Koster attended meetings of the steering committee of CNSI.

During 2013 research retained its excellent standard. Several NIOZ research groups are working at the forefront of their field internationally and their research has an important impact in the field. Leading scientists obtained substantial research grants in a highly competitive national and international granting framework. In scientific and professional reviews and in public media NIOZ research has been recognized as scientifically leading and highly relevant for society.

Discussions continued with the Division of Earth and Life Sciences of NWO as well as with the General Board of NWO with respect to the financial contribution to the maintenance and operation of the R.V. Pelagia. A new business plan for the Pelagia has been presented, stressing the international importance of the ship for the high level of marine research by the Netherlands scientific community. Initial steps towards a 'national marine board' have been taken in cooperation with other scientific and commercial partners in the marine field. Its task will be to formulate a 'national marine vision for marine infrastructure in The Netherlands'. Good progress has been achieved in the establishment of a NIOZ Holding structure including the NIOZ-Harbour private limited liability company (NIOZ Haven B.V.).

During the year severe financial deficits came to light in the annual accounts of 2012 and 2013. These were partly due to the transition to a different accounting system, but also caused by somewhat optimistic estimates of revenues from overhead and profits from a multitude of scientific and commercial projects and a decrease in the annual funding of NIOZ by NWO.

Pier Vellinga  
Chairman of the Board



As per 31 December 2013, the Board consisted of the following members:

- prof. dr. E.A. Koster: Utrecht University, Faculty of Geosciences
- prof. dr. M. Vincx: Ghent University, Faculty of Sciences, Marine Biology Research Group
- ir. A. Lubbes: Fugro, Leidschendam
- prof. dr. ir. P. Vellinga (chairman): Wageningen University and Research Centre
- mr. G.F.C. van der Kamp: Bussum
- prof. dr. J.L. Olsen: University of Groningen, Centre for Ecological and Evolutionary Studies (CEES) (not present when picture was taken).



## Ecology and Physics, a world apart?



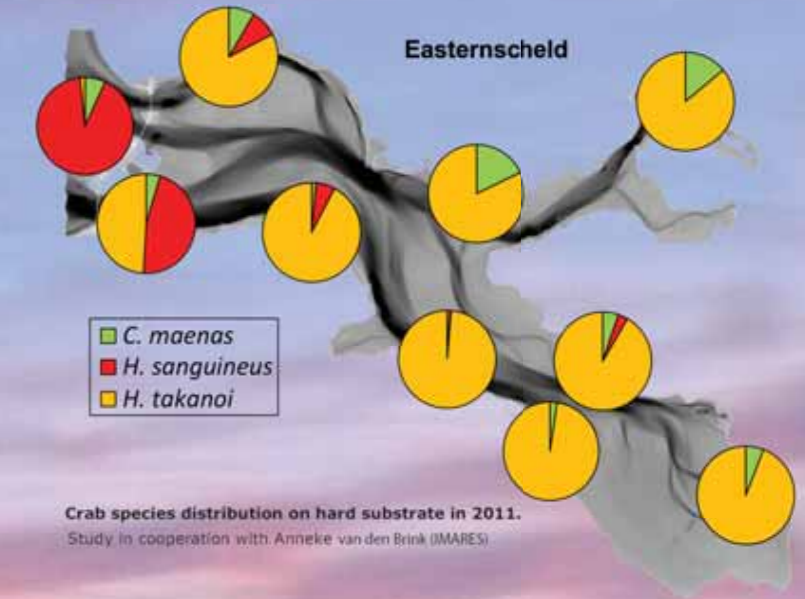
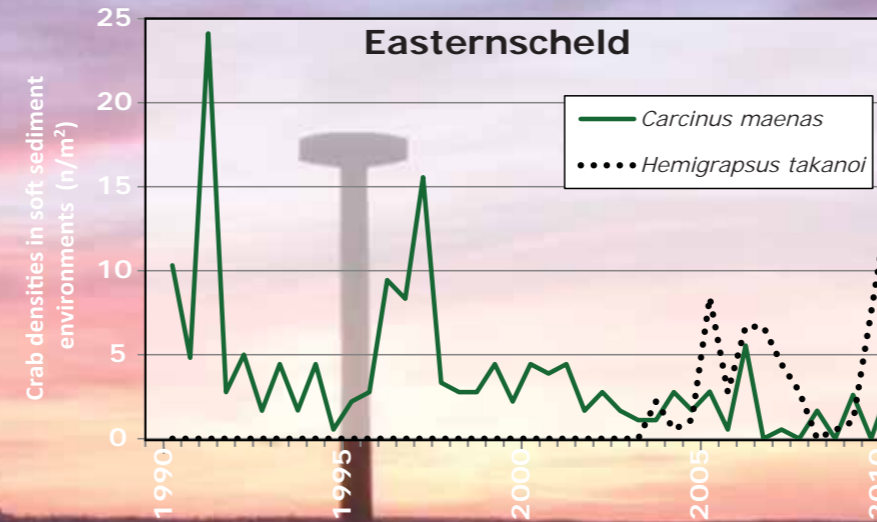
A labyrinth pattern in a mussel bed



Is fundamental physics relevant for ecology? Do ecologists have to read Einstein? Yes, is the answer! It turns out that the movement and aggregation of mussels during the formation of mussel beds is a process that has well-known counterparts in physics. Mussels move a lot while alone or in dense crowds, but move less when encountering a clump of the right – intermediate – size. In this way, they form regularly spaced clumps. Similar density-dependent movement is also essential for the formation of alloys of for instance iron and steel, which separate out to form similar patterns. While aggregating into dense clumps, their movement becomes increasingly similar to random Brownian motion, due to collisions with other mussels. Here, mussel movement is shaped by the same mechanism as Einstein proposed for Brownian motion in atoms and molecules in solutions: collisions. It seems that even in the 21st century, we can identify universal principles that cut across the various disciplines of the natural sciences.

Johan van de Koppel, *Spatial Ecology*  
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## Competition between Asian and European shore crabs



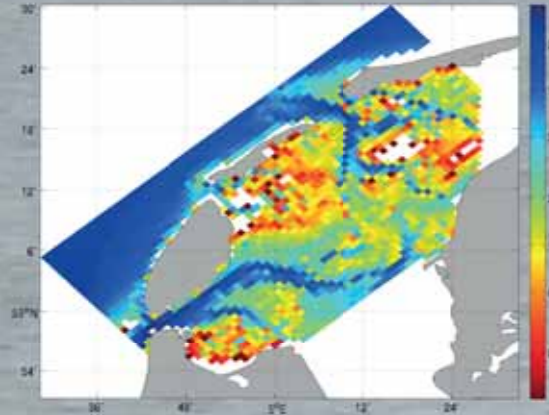
Exotic species are often mentioned as the reason for the decline of species that originally live in our waters. This was also the case when two Asian shore crab species (*Hemigrapsus takanoi* & *Hemigrapsus sanguineus*) were co-incidentally introduced in our waters and the formerly abundant European shore crab (*Carcinus maenas*) was getting rarer. The Asian species were successfully expanding all over the Delta region and behaved more aggressive than their European counterparts. However, from the long-term monitoring data series of the Monitor Taskforce it became clear that European shore crab populations were already declining far before the arrival of the exotic species in 1999 and their appearance in the samples from soft sediment environments in 2004. A similar pattern was observed in the other Dutch delta waters with European shore crab numbers already declining for decades and Asian shore crabs not abundant until recently. When both present, Asian shore crabs do nowadays expel young European shore crabs from their preferred shelter places into the open sandy bottom areas, where risks of being eaten are much higher. Competition of Asian shore crabs is not the initial cause of the decline of the European shore crab populations, but is definitely an additional problem.

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# INTERTIDAL

## Any time, any where: a new model for fine scale ecosystem dynamics



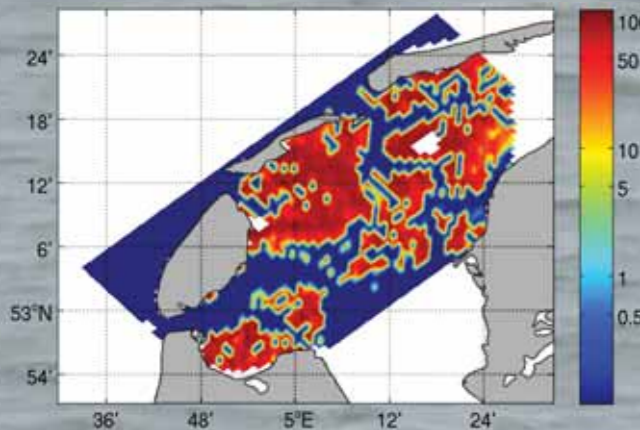
New computer model for ecosystem dynamics in the Wadden Sea showing the depth in 1 km grid points (coloured squares). All biological processes are calculated in each grid point; the coupled water flow model calculates the rates of transport between the grid points.

Merging a model of the physical aspects of the western Wadden Sea (GETM) with an ecosystem model developed for European regional seas (ERSEM) resulted in a new improved model. This model describes algal growth and production at the basis of the food web in reaction to available nutrients, grazing on the algae by animal plankton and shellfish, and mineralization by bacteria. It includes both the deeper parts of the western Wadden Sea remaining permanently submerged as well as the tidal flats emerging during low-tide. Using the model, physical, chemical and biological variables can be simulated throughout the seasonal cycle and at places where they have not been measured. Entirely new for any model is the inclusion of algae which live attached to the surface of the sea floor. These benthic algae are responsible for 10-20% of the total algal production in the Wadden Sea; an aspect which has been largely neglected until now in modelling.

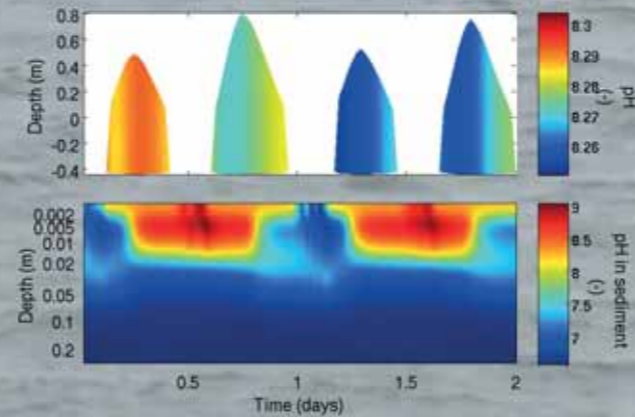
Piet Ruardij, Biological Oceanography  
piet.ruardij@nioz.nl



Link to running model video's <http://www.nioz.nl/ersem-getm>

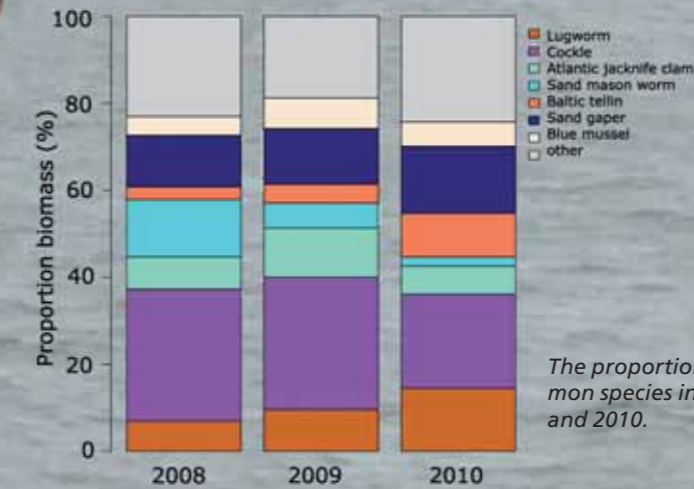


Algal growth ( $\text{mg C m}^{-2} \text{d}^{-1}$ ) on Wadden Sea floor. Production by these algae is responsible for 10-20% of the total algal production in the Wadden Sea.



Model of pH in an intertidal grid-point. Dynamics in the water column are controlled by the tide. Dynamics in the sea floor are controlled by light availability. During the day, algae use  $\text{CO}_2$  and cause a pH increase. During the night, algae and bacteria produce  $\text{CO}_2$  and decrease the pH.

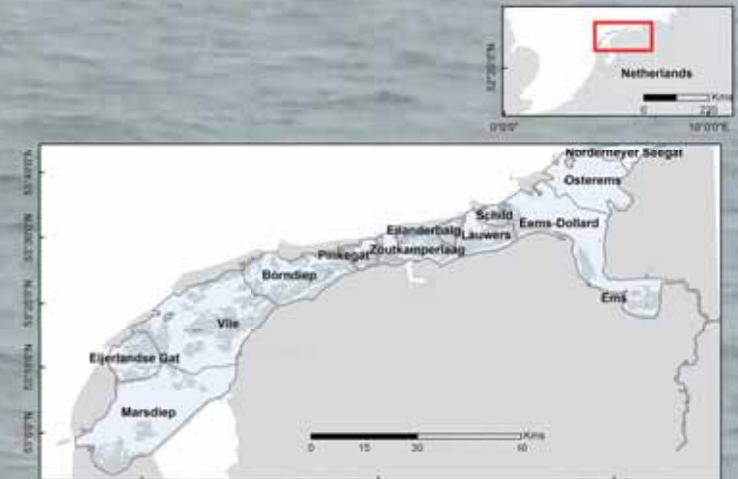
## SIBES: large Wadden Sea sampling program



The proportion (%) of biomass contributed by common species in the Dutch Wadden Sea for 2008, 2009 and 2010.

The Wadden Sea is a large expansive tidal flat area that is key for migratory shorebirds and North Sea fishes due to its high biomass of communities of organisms which live in and on the tidal flats (macrobenthic communities). Based on appearances this area might be mistaken as a homogenous habitat. Instead, steep environmental gradients and heterogeneous sediments dominate this area. The data from the Synoptic Intertidal benthic surveys (SIBES), a large tidal flat sampling program, identified differences in species composition from west to east and in the Dollard region. For example, bivalve species like sand gapers are found more in the western Wadden Sea while common cockles are more abundant in the eastern Wadden Sea. Consistent with these differences, a model integrating environment and species data identified that the Wadden Sea is a heterogeneous ecosystem that supports a wide variety of macrobenthic communities.

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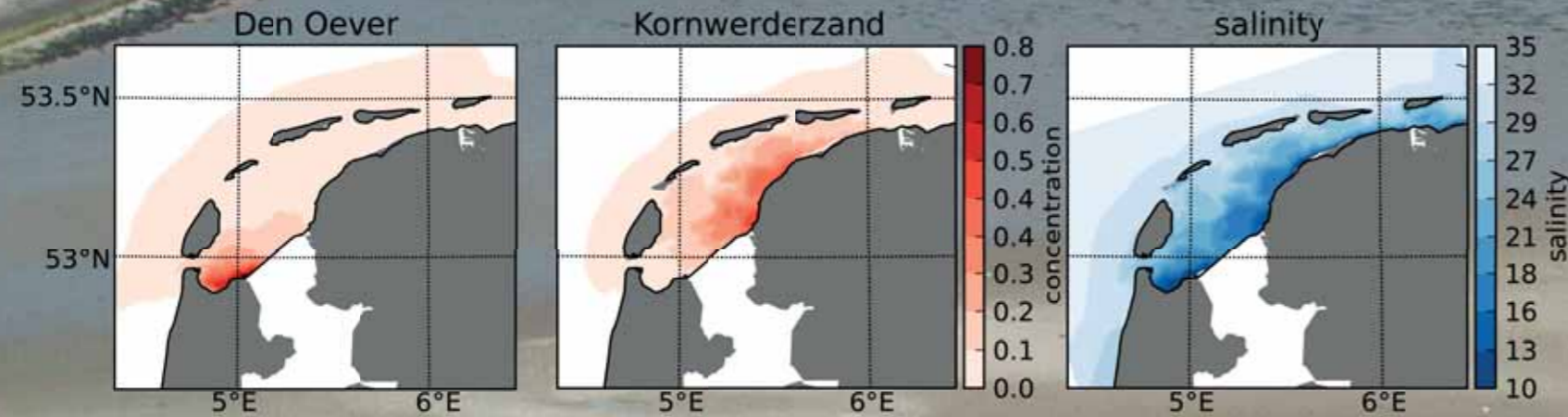


Points sampled across the Dutch Wadden Sea during the SIBES monitoring program. Tidal basins and boundaries are shown.



# INTERTIDAL

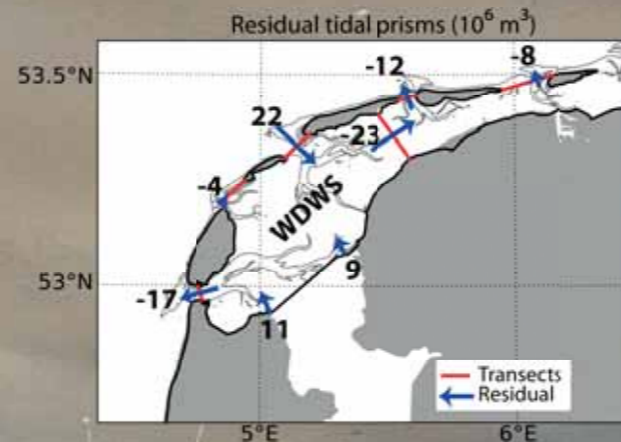
## Pathways of fresh water in the Wadden Sea



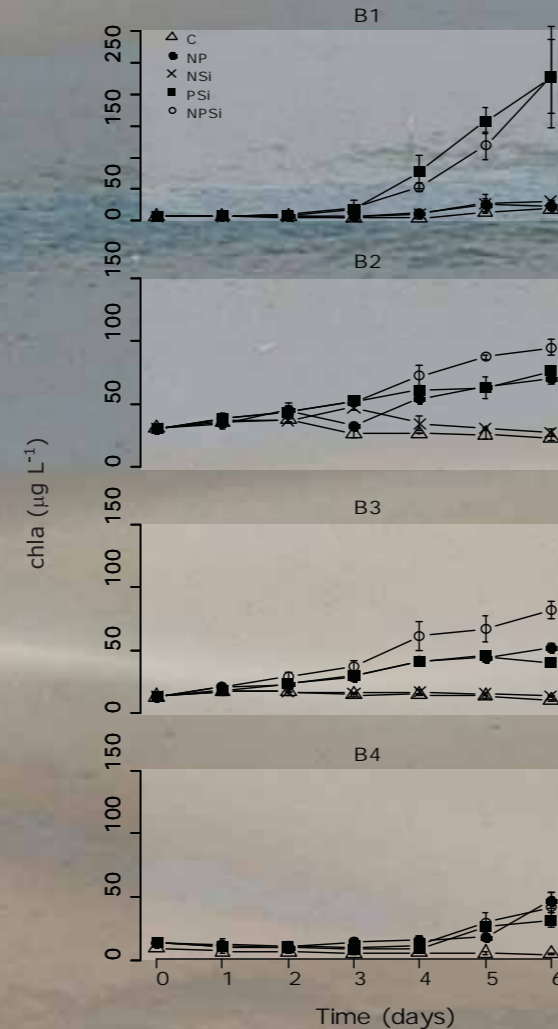
Simulation of the spread of tracers (mimicking freshwater) from the sluices of Den Oever (left) and Kornwerderzand (middle).

The two sluices in the Afsluitdijk are the principal source of fresh water in the Dutch Wadden Sea, but it has been a long-standing question how it spreads and where it leaves the Wadden Sea. On the basis of sparse measurements, it was commonly thought the major inlets Marsdiep and Vlie would also form the main exit for the fresh water. On the basis of high-resolution model results, we now get for the first time a detailed spatial and temporal view of the way the fresh water traverses the Wadden Sea. As expected, the Marsdiep plays a key role. But, surprisingly, the other major inlet, the Vlie, turns out to be much less significant: the tidal movement, involving huge amounts of water pushed back and forth through the inlet, does not, in the end, result in a large net exit of fresh water. Instead, the fresh water travels eastward, crossing the watershed south of Terschelling, and further. An example is shown in the figure. The significance of this finding goes beyond the fate of fresh water alone; it shows that transects with relatively small tidal prisms, like the watershed south of Terschelling, can be disproportionately important for the net exchange of water and any of its constituents (sediment, pollutants etc).

M. Duran Matute, Physical Oceanography  
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Long-term residual flows (per tidal period) in the western Dutch Wadden Sea, calculated from model results (GETM).

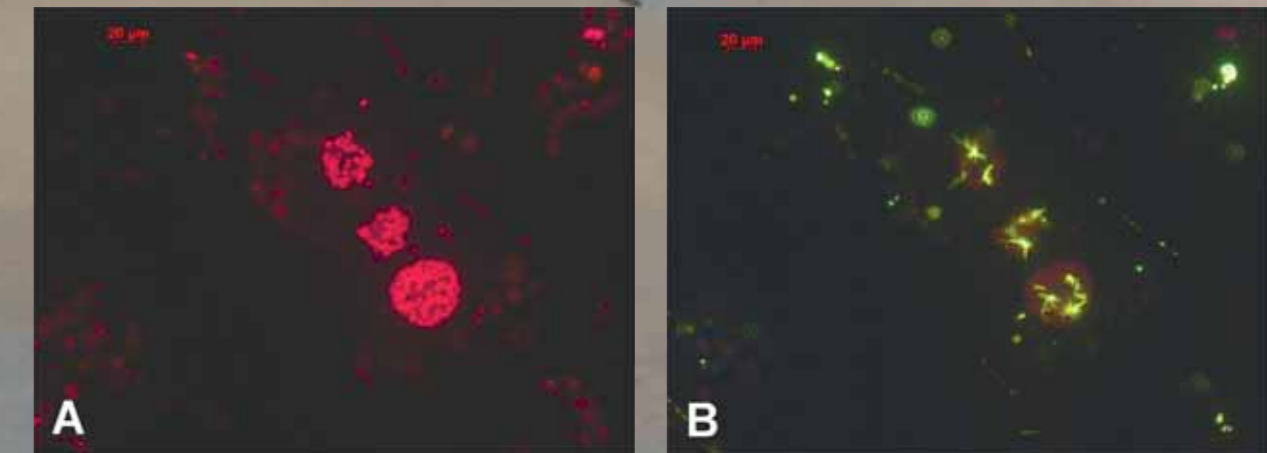


The effect of a combination of different nutrients during four 1-week bioassays (B1-B4) in April 2010. The depletion of Si in the water of the Marsdiep led to the disappearance of diatoms and to the rise of the nuisance algae *Phaeocystis*, responsible for the foaming of the water in this period of the year.

## Phosphate limits the growth of phytoplankton

The Wadden Sea is a unique coastal area with large intertidal areas separated from the North Sea by barrier islands. It is an important area for waders and is part of the north east Atlantic flyway. The ecosystem in the Wadden Sea is changing as a result of anthropogenic and climate induced factors. Since the mid '80-ies the inorganic N and P loads are decreasing, and this has affected the ecosystem foodweb and potential carrying capacity. Is the phytoplankton P-limited? The literature is conflicting on this topic and the ZKO projects P-reduce and IN-PLACE set out to determine the limiting factors for phytoplankton production. Using different approaches we clearly demonstrated that the phytoplankton is P-limited during the spring bloom, but diatoms show a short period of P-silicate co-limitation. The P-limitation affected the foodweb structure and decreased the dominance of diatoms.

Jacco Kromkamp, Marine Microbiology  
jacco.kromkamp@nioz.nl



The pictures show the expression of the enzyme alkaline phosphatase (AP), visible as green fluorescence using the molecular probe ELF® (B), whereas the autofluorescence by the chloroplasts is visible as red fluorescence (A). Despite the fact that organic-P was apparently utilized by the algae, not all organic-P seems biological available. This needs further research.



# COASTAL

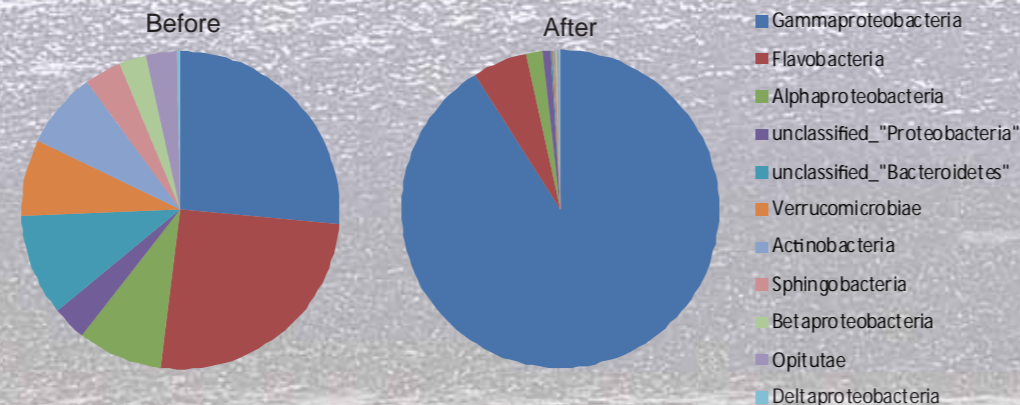
## Ballast water treatment: favouring the fast and the furious

To stop the further spreading of aquatic invasive species, ships' ballast water needs to be disinfected according to international standards that require the enumeration of viable microorganisms. NIOZ developed and maintains the facilities to test whether ballast water treatment systems are effective. For such a test, the microbial community composition in sea water was treated with hydrogen peroxide and compared to untreated water using a rigorous qualitative analysis based on molecular biology. Ballast water treatment did not affect the microbial community randomly, but completely wiped out certain groups of organisms and favoured the abundance of opportunistic, fast growing bacteria. Among these were members of the genera *Vibrio* and *Pseudoalteromonas* which are capable of producing antibiotic substances that prevent other bacteria from growing. As a result, the diversity of the microbial community was drastically reduced after ballast water treatment.

Judith van Bleijswijk, Biological Oceanography  
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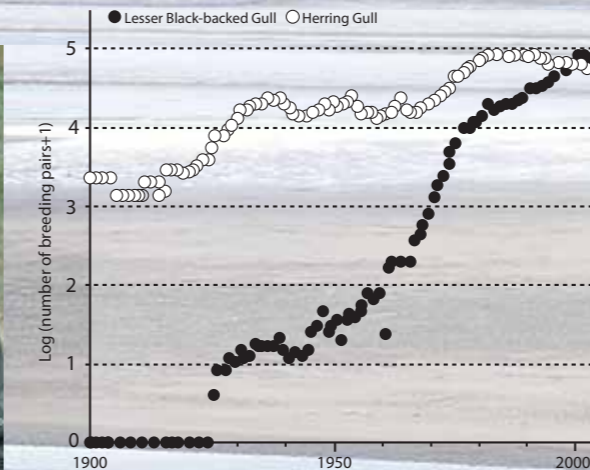


Ballast water test facility in the NIOZ harbour.



Bacteria in ballast water before treatment and 5 days after treatment with hydrogen peroxide: fast growing gammaproteobacteria benefit from treatment and become dominant.

## A weekly cycle in cannibalism: killing the chicks on Sunday

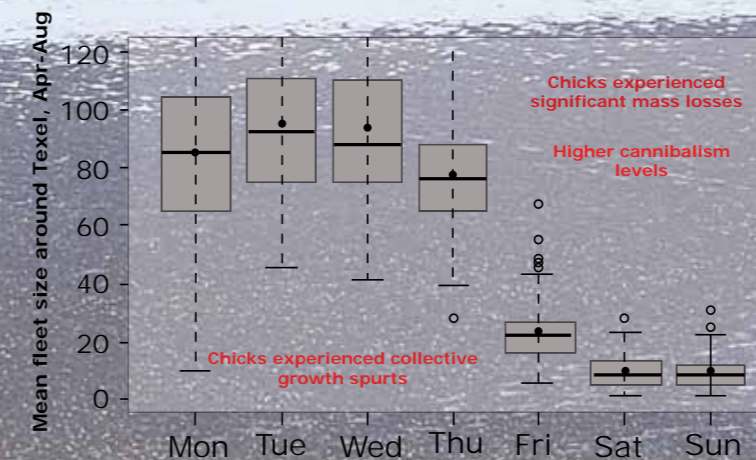


Trends in numbers of breeding pairs of Herring Gulls and Lesser-Black-backed Gulls in The Netherlands in the 20th century. Lesser-Black-backed Gulls started breeding from 1926 onwards.



Gull breeding populations reached unprecedented levels in the late 20th century. However, Herring Gull numbers declined after the peak in the 1980s and Lesser Black-backed Gulls declined after the peak in 2005. From a comparative study of their foraging ecology, demography, and population dynamics at Texel, it appeared that Herring Gulls were mostly affected by low annual survival rates in winter. Wintering survival was high in Lesser Black-backed Gulls, but the reproductive success was low as a result of high levels of cannibalism. GPS tracking studies suggested that commercial fisheries were of importance for these gulls, but that discards appeared to be the major food source as was clearly observed in the cyclic fluctuations in chick growth (spurts on weekdays, mass losses in weekends) and peaks in cannibalism in weekends. This pattern perfectly matches the weekly rhythm in fishing effort. The breeding populations of the two species are currently not flourishing, but both have profited from anthropogenic (unnatural) resources and population numbers were therefore unnaturally high.

Kees Camphuysen, Marine Ecology  
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Number of fishing boats around Texel, Apr-Aug.

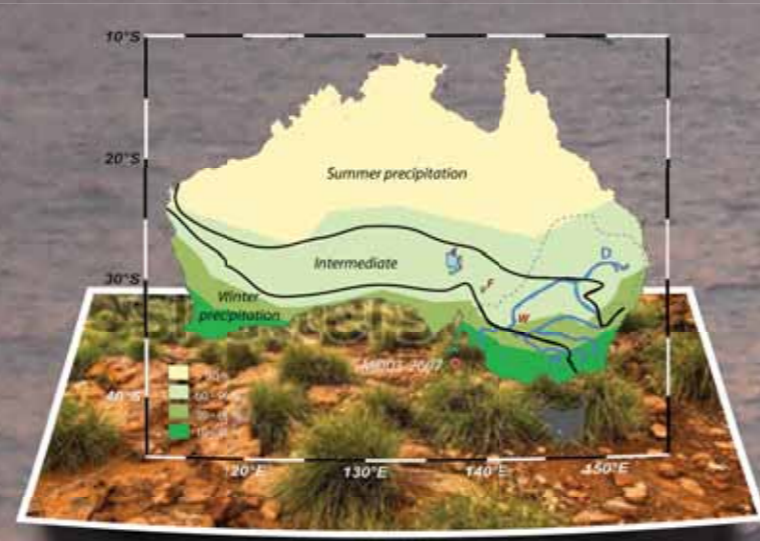


# COASTAL

## Extinction of Australian megafauna: vegetation change and forest fires



Intense crown fire in a Eucalyptus dominated wet sclerophyll forest, Kilmore area, Victoria, February 2nd, 2009.  
© Richard Alder AFM, National Aerial Firefighting Centre.



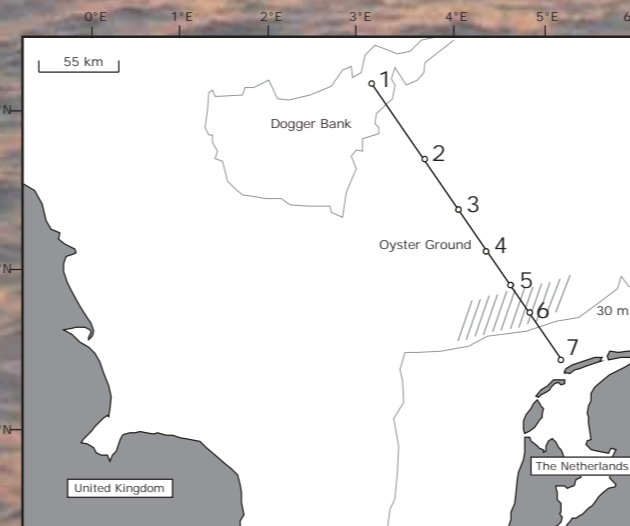
Map of Australia illustrating the modern distribution of  $C_4$  grass relative to  $C_3$  grass and seasonality of precipitation. Red dot indicates the location of core MD03-2607 offshore of the mouth of the River Murray. The blue lines show the River Murray (M) and Darling River (D) and their major tributaries.

NIOZ researchers reconstructed past climate conditions as well as vegetation for South East Australia, home for a large part of the Australian fauna. This revealed an extensive period (68,000-31,000 years) of generally high  $C_4$  (e.g. grasses) plant abundance that was punctuated by an abrupt increase in  $C_3$  (e.g. trees) vegetation at ~43,000 years. This sharp increase directly followed the period in which the large animals in Australia became extinct. The cause for the vegetation change was not climate change as no evidence was found for any abrupt, strong changes in temperature or precipitation. Instead, the extinction of the megafauna allowed the expansion of  $C_3$  vegetation such as shrubs and trees, which were normally consumed by these large animals. The researchers also found specific molecules which indicated that large parts of the vegetation were burned at this time. These fires were likely engendered by humans and aided by the fact that the  $C_3$  vegetation is more prone to fire than  $C_4$  vegetation.

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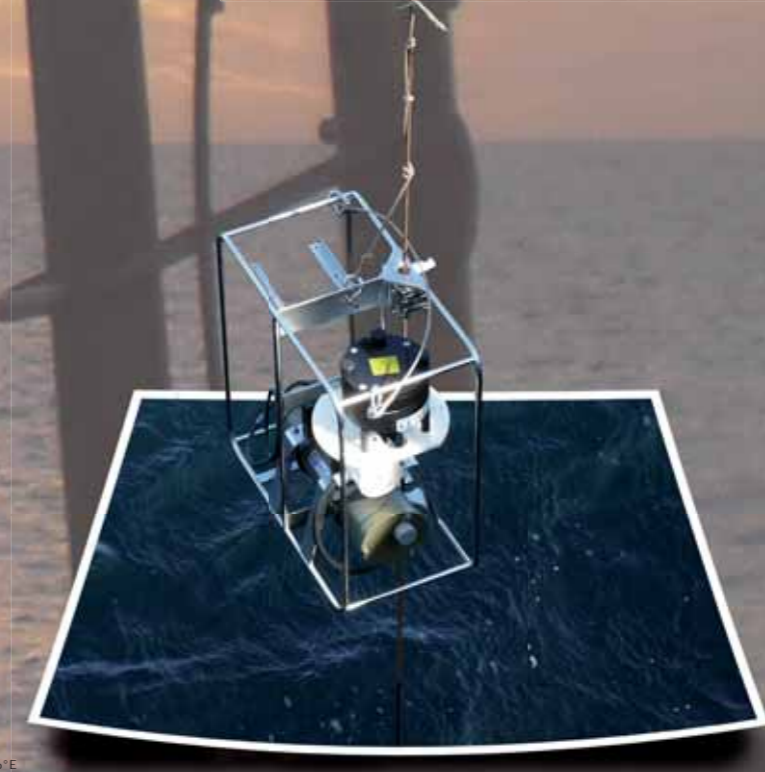


Photo showing the 32m long core returned on the deck of the French research vessel Marion Dufresne. The grey mud stuck to the metal tube shows that it penetrated the pile of sediments below the sea floor, representing, in this case, over 250,000 years of sedimentation.



Map of the southern North Sea showing the study site. Stations are labeled 1-7. Approximate bathymetry at 30m illustrated with gray line and approximate area of the Frisian Front indicated with hatched area. Adapted from map in Weston et al. (2008) Mar. Environ. Res. 65, 235-249.

## The marine nitrogen cycle: who, where, when, why?



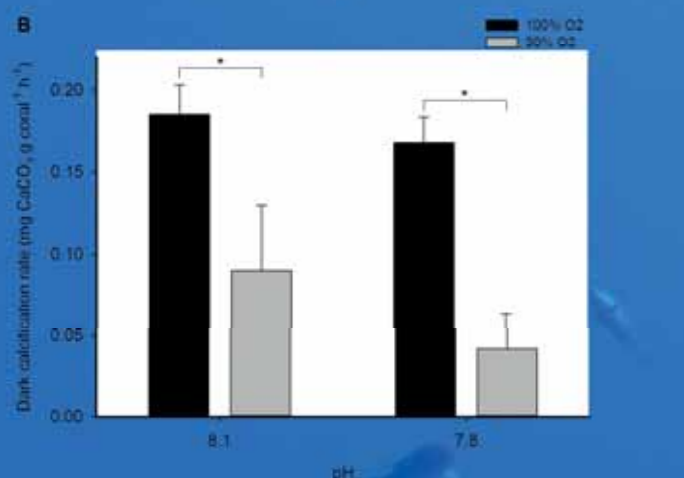
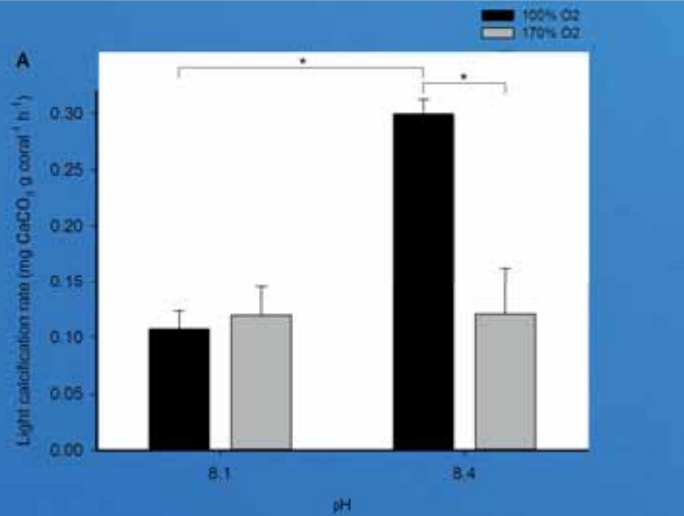
Nitrogen is an essential element for marine life. In the oceans and seas one form of nitrogen available to life is ammonia, which is used by phytoplankton but also by microbes such as the Thaumarchaeota which utilize ammonia as a source of energy. In this study we examined the importance of Thaumarchaeota in the North Sea. Thaumarchaeota were found in both the water as well as in the sediment floor. We found more Thaumarchaeota in the water in winter than in summer, but this was not the case in the sediment where Thaumarchaeota were most abundant in spring and summer. Their abundance in the surface waters was mainly dependent on the different water masses present in the southern North Sea. In the bottom waters the abundance of Thaumarchaeota was determined by particles or ammonia derived from the underlying sediment.

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# TROPICS

## Oxygen concentration affects coral calcification

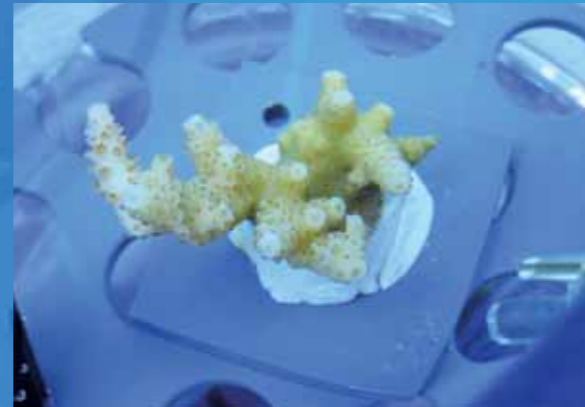


(A) Light calcification rate of *Acropora millepora* at a pH of 8.1 and 8.4, and 100 and 170% oxygen saturation.

(B) Dark calcification rate of *A. millepora* at a pH of 8.1 and 7.8, and 100 and 30% oxygen saturation. Values are means + S.E. (N=4). Asterisks indicate significant differences ( $P < 0.05$ ).



Laboratory setup for coral calcification measurements. Oxygen, pH and temperature probes allow a tight control over environmental conditions. © T. Wijgerde - Wageningen UR).



Close-up of a fragment of the coral *Acropora millepora*, a major reef building species from the Indo-Pacific region that was used in the cooperative laboratory study.

In a natural reef, corals have to cope with daily fluctuations of pH and oxygen (pH 7.8-8.7 and 27-241% O<sub>2</sub> saturation). The fluctuations are a result of the light/dark regime with higher pH and O<sub>2</sub> saturation values under light conditions. The effect of pH and oxygen fluctuations on the calcification rate of the reef-building coral *Acropora millepora* was investigated during a cooperative laboratory study between NIOZ and Wageningen UR. Under light conditions, calcification rates were enhanced three-fold solely by increasing pH. However, when the oxygen saturation was simultaneously increased, the pH effect was completely neutralized. Under dark conditions, pH had no effect on calcification, whereas low oxygen saturation resulted in significantly lower calcification rates. The results suggest that oxygen has a considerable control over *A. millepora* calcification, under both light and dark conditions. These results have implications for reef formation since the predicted higher water temperatures and coastal eutrophication are accompanied by a decrease in seawater oxygen saturation.

Catarina I. F. Silva, Biological Oceanography  
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Close up of a sponge that is living on the coral reef. The thin threads of fluffy brownish material is detritus released by the sponge.

## Surviving in a marine desert

Ever since Darwin's early descriptions of tropical coral reefs, scientists have debated how one of the world's most productive and diverse ecosystems can thrive in the marine equivalent of a desert. It is an enigma how the flux of dissolved organic matter (DOM), the largest food source produced on reefs, is transferred to higher trophic levels. We discovered that sponges make DOM available to the reef fauna by rapidly expelling filter cells as waste which in turn is consumed by corals and other reef fauna. This "sponge loop" on the coral reef was confirmed in experiments, using DOM enriched in <sup>13</sup>C- and <sup>15</sup>N isotopes. The DOM-sponge-fauna pathway explains why biological hotspots such as coral reefs can survive in nutrient-poor tropical sea and hereby, provides an explanation for Darwin's reef paradox.

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Large tubular sponges that are characteristic of Caribbean coral reefs.



Experiment in progress. The white cotton cloth prevented water exchange for a few hours between a coral cavity and the surrounding reef water so that the fate of dissolved organic matter could be traced. Coral cavities are covered with thin sponges in their interiors and where therefore selected in this study.



# OPEN OCEAN

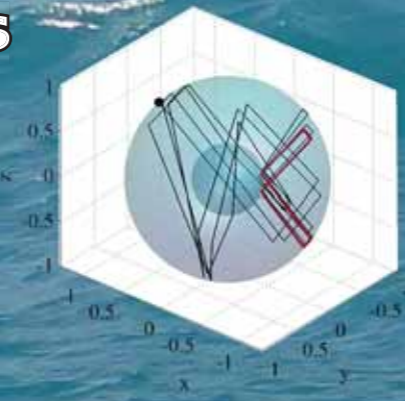


## Internal waves and Equatorial dynamics

The equatorial ocean plays a fundamental role in our global climate system, as a connection between the two hemispheres and as the principal region of heat exchange between the oceans and the atmosphere. However, despite its importance, many aspects of the deep equatorial ocean still remain unexplained. One reason for this is the peculiar location of the low latitude belt: the equatorial ocean surface is actually aligned to the Earth's rotation axis, and thus common approximations, used to mathematically describe waves and currents in the mid-latitude ocean, break down. In this study, some intriguing aspects of geo-physical (and astro-physical) waves propagating in the interior of a water mass ("internal waves") have been explored in a fully enclosed basin, unveiling a mechanism of energy focusing that may be of relevance for the interpretation of equatorial features such as deep current jets or anomalous internal wave activity. Both can be very important for vertical mixing processes in the ocean.

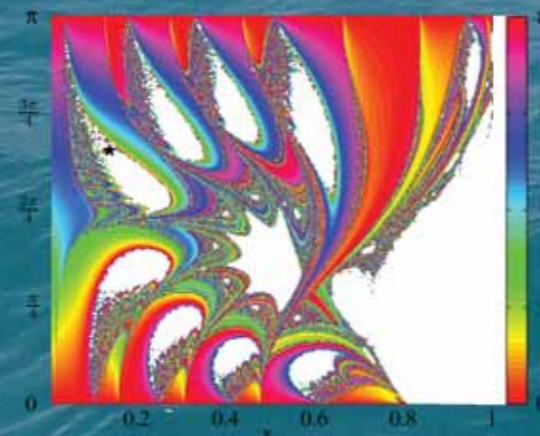
Anna Rabitti, Physical Oceanography  
anna.rabitti@nioz.nl

Jupiter and Earth comparison. Internal waves are a universal phenomenon in all kinds of density stratified and/or rotating fluids, from the ocean to the atmosphere, from fluid planets to stars to planet's cores. The mechanisms illustrated here possess the same level of universality, and might play a role in our laboratory tanks as well as in Jupiter inner dynamics. Fotocredits: NASA.

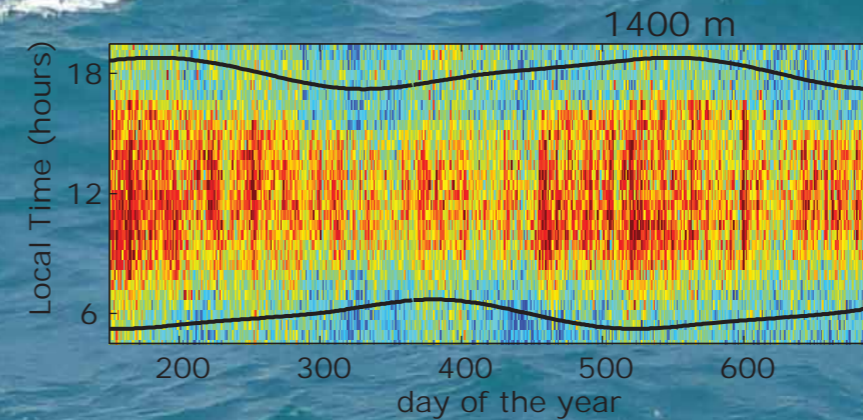


The three dimensional (3D) spherical cavity represents a global ocean: no continents are present in this idealized model, the whole planet is covered with water with the same density and rotating at a fix rate around its vertical axis. The black line is tracing the 3D energy trajectory of an internal wave, caused by a local perturbation of the rotation rate. After few bounces, a so called "internal wave attractor" (in red) arises, trapping the energy in the equatorial region, triggering hot spots for vertical mixing.

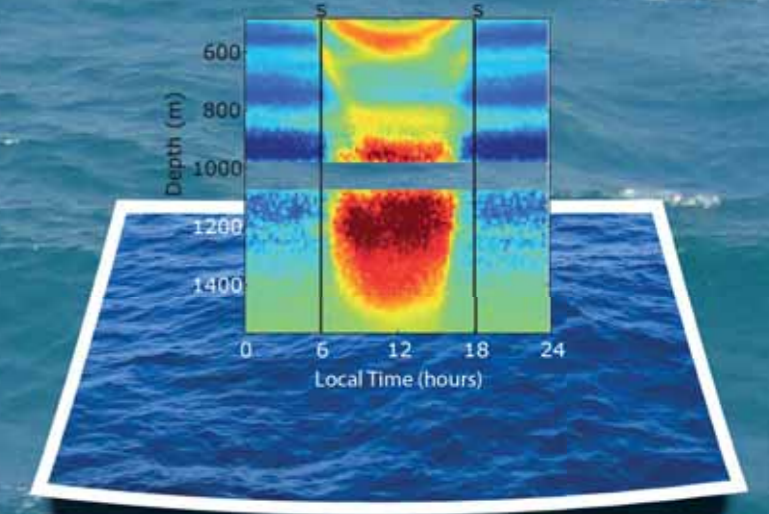
Here, many perturbations at a specific frequency are excited at the surface of the ocean (a storm?). This is done at different locations (horizontal axis) and in different initial directions (vertical axis). In white, energy is not focused on any specific location. In colours, energy gets eventually focused onto "internal wave attractors" and is distributed at different longitudes according to the colour scale on the right.



## Daily vertical migration in deep sea plankton is finely tuned to north-south position and day length



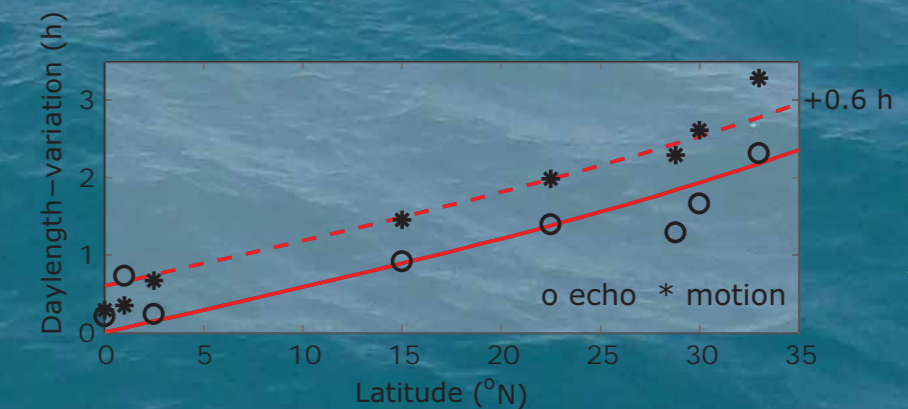
One-and-a-half years of daily acoustic variations. DVM follows day length variation with a change in season at all depths, here 1400 m, at 22.5°N. The black lines denote times of local sunrise and sunset.



One-day composite of acoustic observations (red=high values), a measure of zooplankton abundance and movement. DVM followed the rhythm of local sunrise and sunset (s) precisely between 500 and 650 m (maximum sunlight penetration), but plankton shortened their time at depth by up to 63% at 1600 m. This suggests light was no longer a cue for DVM. This trend stayed consistent both across latitudes and between the different seasons. It is hypothesized that another mechanism, viz. a precise biochemical clock, maintains deep-sea plankton motions. In accordance with this hypothesis, the deepest plankton were consistently the first to migrate upwards.

Daily vertical migration (DVM) is an ubiquitous phenomenon in marine plankton communities. Plankton migrate to surface waters at dusk and return to deeper waters at dawn. Up until recently, it was thought that DVM was triggered by a relative change in visible light intensity. However, evidence has shown that DVM also occurs in the deep sea where no sunlight penetrates. To identify whether such DVM is associated with north-south position and seasonal daylight variation, one and a half years of eight acoustic data records, a measure of zooplankton abundance and movement, were examined from the NE-Atlantic Ocean.

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DVM follows day length variation with a change in latitude at all depths, here ~1000 m where the average acoustics data residual is 77% (9.3 hours) of the sun's day length. The full red line indicates the theoretical sun's variation in day length.



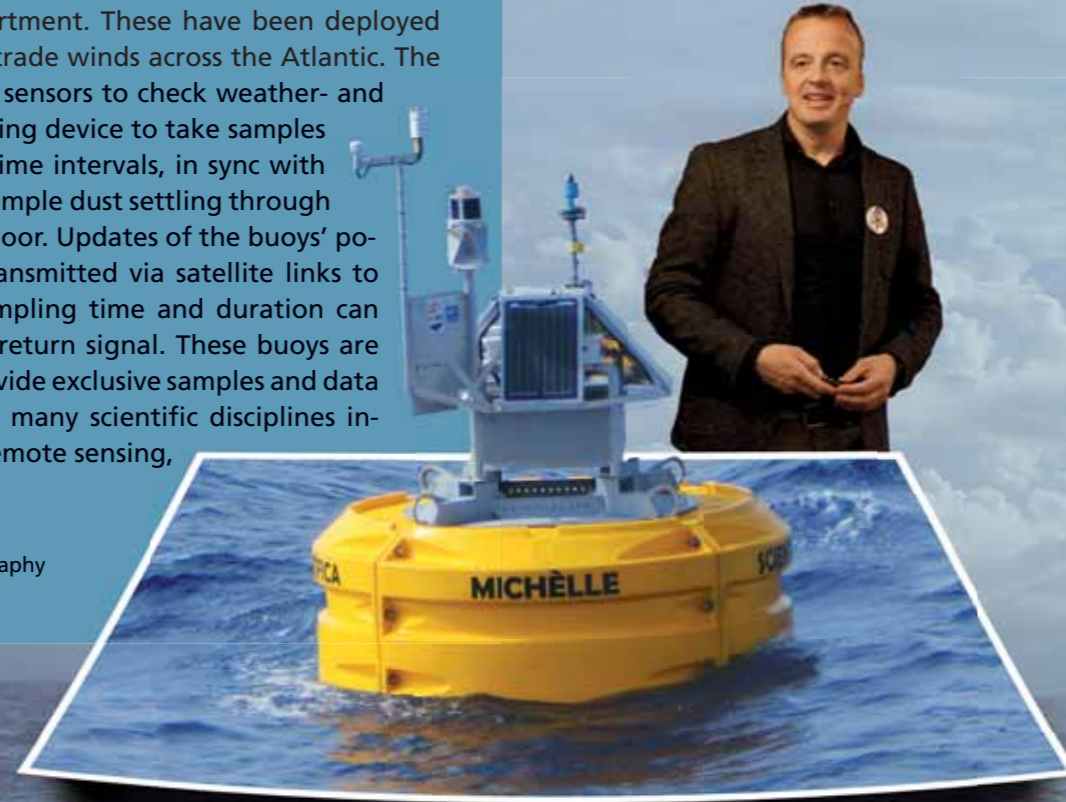
# OPEN OCEAN

## Blowing in the wind ...



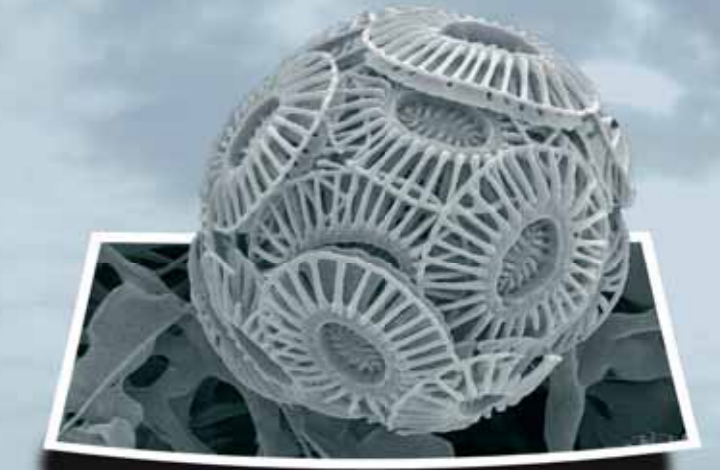
Every year about 200 million tons of Saharan dust blow over the Atlantic Ocean. Together with dust derived from other arid regions in the world, it has the potential to modify global climate by influencing the radiative balance of the atmosphere as well as by supplying iron and other essential limiting micronutrients to phytoplankton in the ocean. As part of a multidisciplinary effort to improve our understanding of the links between desert dust and ocean productivity and climate, three autonomous dust-collecting buoys were engineered by the NIOZ-MTEC department. These have been deployed along the path of the northern trade winds across the Atlantic. The buoys are equipped with meteo sensors to check weather- and sea state, and with a dust collecting device to take samples of atmospheric dust at regular time intervals, in sync with submarine sediment traps that sample dust settling through the water column to the ocean floor. Updates of the buoys' positions and performances are transmitted via satellite links to land twice a day, whilst the sampling time and duration can be manipulated from home via return signal. These buoys are unique in the world and they provide exclusive samples and data that are of vital importance for many scientific disciplines including geology, meteorology, remote sensing, climatology, and biology.

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Marine Geology and Chemical Oceanography  
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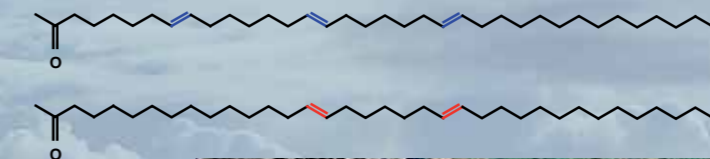


Sea water in the oceans contains about 3.5% salt with higher concentrations in the tropics and lower concentrations in the polar regions. These differences in salt concentration form an important driver of the water mass circulation in the present day ocean and therefore of our climate. Salt concentrations have likely varied in the (geological) past, but at this moment we lack the tools to test this hypothesis. Currently, at NIOZ we are developing such a tool based on lipid molecules of so-called haptophyte algae. These lipid molecules contain many hydrogen atoms and only a small amount of these is in a 'heavy' form, as deuterium. Culture experiments showed that the amount of 'heavy' hydrogen in the algal molecules is depending on the salt concentration of the water in which the algae grow. In water with high salinity the molecules contain more 'heavy' hydrogen than in water with low salinity. Since the molecules are found in ancient marine sediments that are up to 55 million years old, analysis of their 'heavy' hydrogen content opens the possibility to reconstruct salt concentrations of ancient sea water.

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Electron microscopy picture of a haptophyte alga: *Emiliania huxleyi*. © Jeremy Young palaeontology, Dept. The Natural History Museum London

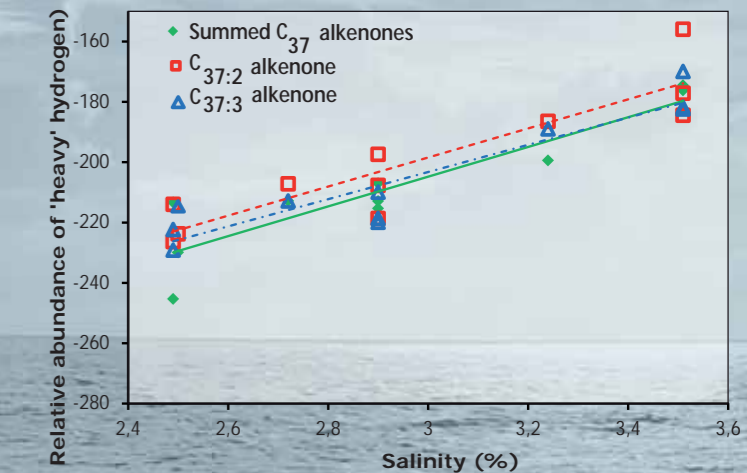


Long chain organic compounds produced by phytoplankton (alkenones): chemical fossils for haptophyte algae.



Satellite picture of a massive *Emiliania huxleyi* bloom off the coast of south England. © NASA

In cultures of *Emiliania huxleyi* their lipid molecules contain more heavy hydrogen (deuterium) in water with high salinity than in water with low salinity. This graph shows that the alkenones  $C_{37:2}$  and  $C_{37:3}$  do not have to be separated to reconstruct salt concentrations, the three lines are nearly identical and can be represented by one summed  $C_{37}$ .





# POLAR

*Melosira arctica* filaments at the underside of multiyear sea ice.



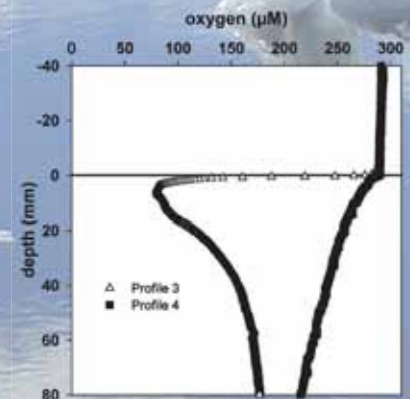
Strands of *Melosira arctica* recovered from the Arctic deep sea floor. © Science.



## Rapid shift in Arctic ecosystem due to global warming

In the summer of 2012, NIOZ scientists joined an international expedition to the Arctic sea with the German ship Polarstern. Previous investigations of the underside thick multiyear-sea-ice found that the diatom *Melosira arctica* grows meter-long filaments. Extreme melting of Arctic sea ice due to general global warming has led to the observed major loss of the thick multiyear sea ice. This melting resulted in subsequent massive sinking of these algae filaments to the seafloor. Decomposition of the dead algae by bacteria rapidly consumed most of the oxygen in a large area on the sea floor. The preceding consensus was that it would take a considerable amount of time before changes in the climate would affect the conditions on the seafloor. However, the expedition scientists observed that the ecosystem of the Arctic Sea, both at the sea surface by loss of sea-ice and on the deep sea floor is rapidly affected by increasing temperatures. These findings were reported in Science (Boetius et al., Science 339, 1430; 2013)

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karel.bakker@nioz.nl



In situ measurements of oxygen concentration in Arctic deep sea floor show decrease in oxygen at places with ice-algal deposits (profile 3) compared to places without algal deposits (profile 4).

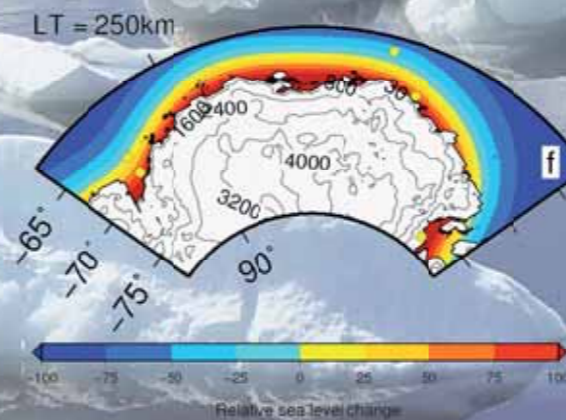


Scientists investigate physics and biology of, in and under the sea ice on an expedition with RV Polarstern in the high Arctic during the sea ice minimum in summer 2012.

## Understanding the past sea-level changes

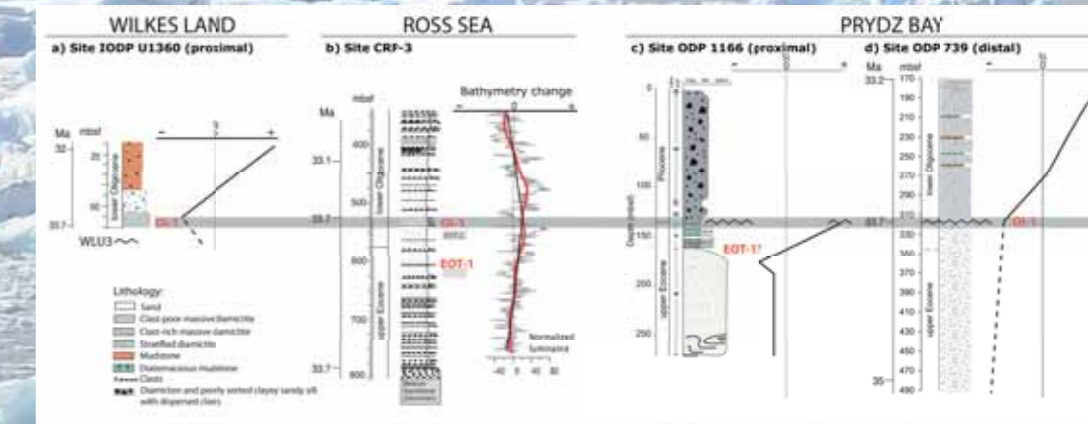


Paolo Stocchi, Physical Oceanography  
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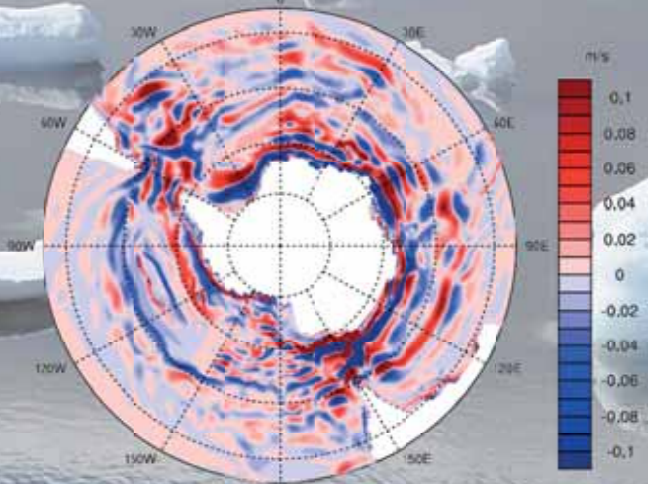


Several low-latitude sea-level indicators of geological origin are found nowadays above the present mean sea level. They witness major relative sea-level (rsl) drops caused by past climate-related expansions of high-latitude continental ice sheets. We can use these data to quantify the global ice sheets volumes through time.

Theoretical predictions are able to reproduce the observed pattern of rsl change at the near-field sites. Hence, near- and far-field rsl sites can be used together to fully constrain the computation of the first Antarctic glaciation as well as any other ice-sheets fluctuation throughout the history of Earth.



Conversely to the low-latitude far-field rsl sites, sediments cores from the inner continental shelf of East Antarctica witness a large rsl rise during the first Antarctic glaciation (~34 million years ago). The observed deepening stems from the combination of crustal subsidence under the load of the ice sheet and from the gravitational attraction exerted by the growing Antarctic ice sheet on the ocean water.



Bathymetric variations induced by the first Antarctic glaciation significantly affected the ocean circulation in the Southern Ocean. The ocean flow variations alone likely impacted local nutrient variability, erosion and sedimentation rates and also ocean heat transport.



# INTERVIEWS

## Cascading effects of losing predators around the globe



Jan van Gils



"Being a true globetrotter, the Red Knot may be a very good indicator species for the global biodiversity crisis". Jan van Gils talks passionately about the shorebird species *Calidris canutus canutus* that connects the Arctic tundra via the tidal flats of the Wadden Sea with the tropical mudflats of West-Africa. With a VIDI research grant van Gils tries to understand the role of this shellfish-eating bird for benthic communities in the Dutch Wadden Sea and the Banc d' Arguin in Mauritania, West-Africa.

"Our research within the Department of Marine Ecology has societal relevance", emphasizes van Gils. He worries about the drastic biodiversity decline caused by mankind. "For example, fishing activities (notably shellfish) in the Dutch Wadden Sea have greatly diminished the

food supply for shorebirds in the past", he says. "Currently there are additional threats of gas- and salt-extraction".

Most likely these fishery activities in the Dutch Wadden Sea have led to a smaller population of Red Knots in Africa. That led to a reduced predation pressure on African shellfish. As a result the total number of shellfish increased, but with a few species dominating over the rest. Van Gils:

"Possibly, therefore Banc d' Arguin is nowadays overcrowded with a toxic shellfish species. A species that a Red Knot cannot eat too much of, otherwise the bird gets diarrhea".

A migrant predator like the Red Knot illustrates how a pristine tropical tidal flat area in Africa is affected by the situation in the Dutch Wadden Sea. "The steering

role of predators on ecosystems is often underestimated", says van Gils. His research is aimed at filling that knowledge gap. "As more and more predators disappear, the consequences for biodiversity will be tremendous".

In a parallel project, van Gils also examines the indirect role of crab plovers on the seagrass beds and their inhabitants in Barr al Hikman, Oman. "There, the system seems sufficiently intact to investigate the community impact of crab plovers". Van Gils stresses that he feels obliged as a researcher to find out what the effects are of this rapid decline in biodiversity. What are the consequences for the functioning of ecosystems worldwide that are connected by migratory birds? In the coming years van Gils is dedicated to answer those questions with his sophisticated experiments. "Nature is so beautiful; we simply cannot allow that to be destroyed by mankind".



## Valuable expeditions in the North-Atlantic Ocean

Laura de Steur



"It takes a long time, it's expensive and it requires a lot of coordination". Laura de Steur outlines in one sentence three important features of her research on ocean currents in the sub-polar North Atlantic. "I want to know more precisely about the processes that determine these currents, their relation with atmospheric forcing and their role in Earth's climate", she says.

Within the Physical Oceanography department, de Steur focuses on different aspects involved in the large-scale ocean currents of the Arctic and North Atlantic. "For example, I investigate variations in density due to temperature and salinity changes or variability due to atmospheric forcing such as winds", de Steur says. "My present research focuses on the cold and fresh Arctic current southwards and a northward branch of warm Atlantic water. I want to unravel the physical properties of both currents that are indicated with blue and yellow lines on the map".

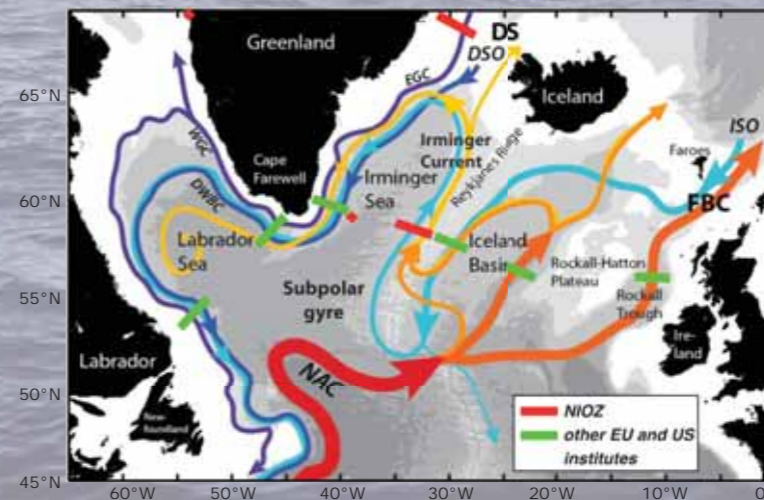
But how to measure ocean currents? With hand gestures de Steur explains the characteristics of a mooring, an anchored installation rising upwards from the ocean floor. A

long steel cable is kept upright by a buoy and is anchored to the bottom by a heavy weight. Instruments placed at different depths on the cable measure temperature, salinity and current velocities. "That's how we obtain continuous physical measurements in the ocean", explains de Steur.

These measurements are time-consuming and expensive since her research is aimed at the long-term. De Steur explains that the moorings are often left in place for one to five years or even more. "But we have to go back each year to get the data from the instruments and service the

moorings". That involves a research vessel, like our NIOZ flagship RV Pelagia, and technical staff from the NIOZ. Costly research, therefore de Steur has to be patient before the first data become available for analysis.

These data are processed and analyzed at the NIOZ. "That is extremely important", says de Steur. "You first have to know the fundamental part of the story before you can think of application in future ocean or climate scenarios". Integration of data obtained at other European institutes that, like the research of de Steur, are part of NAACLIM (North Atlantic CLIMate Program) is done to obtain the "big picture". Ultimately these results are also used to validate and improve climate models. "Sea going expeditions are so expensive that cooperation with other research institutes is an absolute necessity" ends de Steur. A new research project OSNAP (Overturning in the Subpolar North Atlantic Program), with American, German, British and Canadian colleagues, starts in 2014 and will further strengthen the global partnerships of research institutes to which the NIOZ belongs.





# INTERVIEWS

## Lipids and DNA to learn more from wonderful microorganisms

### Laura Villanueva



'Thaumas' means wonder in Greek. Studying Thaumarchaeota, microorganisms that live in the oceans, must therefore be exciting research. Analysis of the organic components of Thaumarchaeota and other small organisms can provide insights into past climates. "We collect water column samples and sediment, searching for lipids which we use to track the presence of Thaumarchaeota in both the present and the past", says Laura Villanueva, scientist at the department of Marine Organic Biogeochemistry (BGC).

Thaumarchaeota have some very specific lipids, the main component of their membranes, that are not found in any other organism in the ocean. The BGC department developed a paleothermometer called TetraEther indeX of lipids with 86 carbons (TEX<sub>86</sub>) that is used to reconstruct past sea surface temperatures. "Thaumarchaeota living in warmer temperatures adapt their membrane by increasing the number of rings in their lipids, which is reflected in the TEX<sub>86</sub> value. TEX<sub>86</sub> values can thus be translated into the temperature at which past Thaumarchaeota were living. In order to understand

how these microorganisms behaved in the past and which environmental factors affected them, we also need to study them in present oceans", says Villanueva.

Futhermore, Thaumarchaeota are a key component of the carbon and nitrogen cycle in the marine environment. They oxidize ammonia into nitrite and they use bicarbonate as a carbon source. Villanueva: "Once we know how abundant and active Thaumarchaeota are under certain conditions, we are then able to predict their role in the marine carbon and nitrogen cycles". That is important information because life on



earth depends on both these elements.

The specific lipids of Thaumarchaeota are excellent tools to track their presence as they can be preserved in marine sediments for millions of years, which makes them ideal for past climate reconstruction. But in order to know if Thaumarchaeota are living and active, Villanueva makes use of molecular tools based on DNA and RNA. "These molecules degrade much faster than lipids and in the case of RNA, it is only produced if the organism is active", she says. "For that analysis I make use of the molecular laboratory facilities of the Biological Oceanography department".

Villanueva started her scientific career working with lipids. After her graduation she became involved in genetics. Now she combines both paths. "I do what I always wanted to do", says Villanueva. "It is exciting to fill the gap between two disciplines. Together with the extremely helpful people working at the NIOZ I'm always learning new things".

## The ocean in 5 millimeters of sand

### Henk Bolhuis



A green patina on the beach. Only a few millimeters thick. Microbiologist Henk Bolhuis describes the first impression of a microbial mat. "Despite its plane appearance, a microbial mat is like a tiny model of the ocean", he says. "The whole vertical stratification of the ocean is hidden in its minute layers". Bolhuis is a senior scientist at the Department of Marine Microbiology in Yerseke where he investigates the diversity of microorganisms and their role in the structure and function of marine coastal ecosystems.

Bolhuis talks contagiously about cyanobacteria, the primary producers and conductors of a microbial mat. "Just like us, they also have a biological clock that determines their day-night rhythm. Cyanobacteria are phototrophic organisms that produce oxygen, sugars and nitrogen containing compounds. Other microorganisms depend on these products and in that way an unprecedented microbial diversity is supported in only a few millimeters".

The dynamics of sand and water, light and dark, oxic and anoxic, fresh and salt water make the microbial mats an ideal model system for studying ecological issues. "Many oceanic processes, such as the sulfur and carbon cycle, are represented in a microbial mat", says Bolhuis. "Using a multidisciplinary systems biology approach, we can study and model all facets of these mats, ranging from spatial patterns, geochemical processes, species interactions and of course evolutionary processes related to diversity and adaptation".

In Yerseke, Bolhuis and his colleagues maintain a unique culture collection of cyanobacteria and unicellular algae. With the Culture Collection Yerseke (CCY), NIOZ facilitates researchers all over the world.



The interaction with people, the different nationalities and working at the frontiers of knowledge are all important personal motivations for Bolhuis, which allow him to work each day with passion and enthusiasm. Bolhuis: "Within our

department we combine fieldwork with state-of-the-art molecular techniques. My goal is to develop a large artificial microbial mat in the laboratory where researchers from all over the world can collaborate to study all facets of the system".

Bolhuis explains the societal importance of his work in terms of natural coastal defense. "We can create a starter culture to add to the bare sand and initiate the development of a microbial mat". "For example at the North Sea coast of Schiermonnikoog", he emphasizes. "There microbial mats turned the beach into a unique salt marsh. An important process given the expected sea level rise". In the photo Bolhuis presents a bottle of extreme halophiles, another passion of his. The only square microorganisms that exist. "I was the first to isolate them and sequence the genome", he proudly says.



# OUTREACH



open house Yerseke



## 2 Wetenschap

### Toch niet minder algen in de oceanen

Als je geen roeien en oeverwachters...  
 de oceanen, zonnemaken ze. Maar op de...  
 de oceanen, zonnemaken ze. Maar op de...  
 de oceanen, zonnemaken ze. Maar op de...

### natuurdagboek 24 april 2013

jonge mosselen.

## Mosselbanken

Mosselzaad wordt van de wadden...  
 Mosselbanken zijn natuurpara...  
 Mosselbanken zijn natuurpara...  
 Mosselbanken zijn natuurpara...

## Trouw 4 juli 2013

### Netvormige structuur maakt mosselbed zo sterk als staal

Oppervlakkig gezien lijkt een mos...  
 de materialen extra sterk. Een eigen...  
 de materialen extra sterk. Een eigen...  
 de materialen extra sterk. Een eigen...

Het netvormige patroon van een mosselbed.

## NRC Handelsblad

### Nederlands lab op Antarctica open

De wapenbobby...  
 Geschied voor Zee...  
 Het Grote Verhaal...  
 Wereldkampioen...  
 Sport 21-23

### ra geweigerd

De onderzochers beschrijven hun...  
 bevindingen in het tijdschrift...  
 Proceedings of the National Academy of...  
 Science van 1 juli. Ze deden hun ontdek...  
 king in een simpel experiment, door...  
 mossels op de bodem van een aqua...  
 rium te leggen en vervolgens te kij...  
 ken wat ze gaan doen.

## NL Nederlands Dagblad 21-6-'13

HANS HOPMAN no.nvdinnemang BEELD JOUY SHAMOUN-BARANES

### Zondagsrust leidt tot kuikenmoord

...Als meeuwen hun kuikens opvreten...  
 heeft dat alles te maken met de...  
 zondagsrust.

...Onderzoeker Kees Camphuysen, die...  
 vandaag promoveert op het gedrag...  
 van meeuwen, denkt dat te weten.

Nieuwoudeskundige Kees Camphuysen...  
 bevestigt een van zonnecellen voorz...  
 lens data-logger met gps op de rug van een...  
 kleine mantelmeeuw. Op die manier kan

### 'Kwal richt wél schade aan'

DOOR DIJK GERTSMA  
 TEXEL - Dat de toename van...  
 het aantal kwallen in zee te...  
 wijzen is aan een natuurlijke...  
 cyclus met een in de twintig...  
 jaar een hoogtepunt, valt nog...  
 te bezien. Kennisinstuut De...  
 lates plaatst vraagtekens bij...  
 de conclusies van een interna...  
 tionale groep biologen.

Overlast  
 Verder zijn er verschillen in...  
 zicht over wat er onder overlast...  
 verstaan wordt. „Wij als kern...  
 naties behelven samen met...  
 het NIOZ en andere partners ook...  
 of de ellende toeneemt, dus de...  
 invloed op de maatschappij en...  
 economie bijvoorbeeld. En dan...  
 kun je wel zeggen stellen dat er...  
 sprake is van een toename. In...  
 Spanje en Frankrijk is het toeris...  
 me aan de Costa Brava deels inge...  
 stuit. In Ierland ligt de tallo...  
 kwek til en de kwal wordt in...  
 toenemende mate in kustpess...  
 men van t.a.l. energie en kernce...  
 ntrales gevonden. Wij bedrijven...  
 dus niet alleen fundamenteel o...  
 derzoek, maar passen onderzoek...  
 ook direct toe in die kusegebie...  
 den en sectoren die in toegenome...  
 Bovendien valt er over de kwali...  
 tuit van die data ook nog wel wa...  
 te zeggen. In de meeste gevallen...  
 zijn namelijk monitoringpro...  
 grammas conservatief en niet ge...  
 richt op het bemonsteren van...  
 impopulaire of kwetsbare kw...  
 len waarvan sommige ook nog...  
 hard kunnen riekten.“

Overlast  
 Verder zijn er verschillen in...  
 zicht over wat er onder overlast...  
 verstaan wordt. „Wij als kern...  
 naties behelven samen met...  
 het NIOZ en andere partners ook...  
 of de ellende toeneemt, dus de...  
 invloed op de maatschappij en...  
 economie bijvoorbeeld. En dan...  
 kun je wel zeggen stellen dat er...  
 sprake is van een toename. In...  
 Spanje en Frankrijk is het toeris...  
 me aan de Costa Brava deels inge...  
 stuit. In Ierland ligt de tallo...  
 kwek til en de kwal wordt in...  
 toenemende mate in kustpess...  
 men van t.a.l. energie en kernce...  
 ntrales gevonden. Wij bedrijven...  
 dus niet alleen fundamenteel o...  
 derzoek, maar passen onderzoek...  
 ook direct toe in die kusegebie...  
 den en sectoren die in toegenome...  
 Bovendien valt er over de kwali...  
 tuit van die data ook nog wel wa...

lands Instituut voor Onderzoek der Zee...  
 (NIOZ) in Den Burg aan zijn onderwerp...  
 Ook in het Engels – een hele prestatie...  
 voor de autodidactische meeuwenman...  
 Hoevel Camphuysen niet universitair...  
 geschoold is, raakte de universiteit...  
 overtuigd van zijn bijzondere deskun...  
 digheid.

Waarom meeuwenkuikens vooral op...  
 zondag door hun ouders worden dood...  
 gepikt en soms opgegeten, is een van...  
 de vragen waarop hij een antwoord wist...  
 te formuleren. Hij merkte dat kuiken...  
 moord veel meer voorkomt in het week...  
 end dan op andere dagen. Het bleek dat...  
 meeuwen vooral tijdens de kuikenzorg...  
 sterk afhankelijk zijn van visafval dat...  
 overboord wordt gegooid vanaf vissers...  
 schepen had die niet goed...  
 groeiden, zag hij zelfs een geweldige...  
 noodspring maken. „Die vloog vanuit...  
 Texel via Hoorn naar Amsterdam, om...  
 daar in de Leidsestraat rond te hangen...  
 Hij vermoedt dat ze daar patat of mis...  
 schien wel van een broodje kebab heeft...  
 gegeten. „Vervolgens vloog ze naar de...  
 Noordzee om daar, ver op zee, nog ach...  
 ter een vissersboot aan te gaan. De dag...  
 erna waren haar jongen weer goed ge...  
 groeid.“

Dit zijn echter uitzonderingen, bena...  
 drukt hij. „Patat eten is een bijzonder...  
 specialisme van een paar individuen. De...  
 meeste meeuwen volgen de kotters...  
 sterk afhankelijk zijn van visafval dat...  
 overboord wordt gegooid vanaf vissers...  
 schepen achter één zo'n boot.“



# PRIZES, AWARDS & GRANTS



Jaap Sinninghe Damsté, Stefan Schouten en Laura Villanueva won the NWO/OCW 'Zwaartekracht' grants from the Netherlands Organisation for Scientific Research (NWO) and the Ministry of Education, Culture and Science (OCW)



The research team including Kees Camphuijsen won the Academic Year Price 2013 for their research into the behaviour of birds and their response to their environment.



Stefan Schouten won an ERC grant for his research on long chain diols as novel organic proxies for paleoclimate reconstructions.



# SUSTAINABILITY

As the NIOZ mission is to gain and communicate scientific knowledge on seas and oceans for the understanding and sustainability of our planet, the NIOZ respects the environment and is working in a sustainable way. On the one hand the NIOZ is striving to optimize its daily working processes and to deploy the most sustainable solutions. On the other hand sustainable management of resources and dealing responsibly with our environment, and the seas, oceans and coastal zones in particular, is the scope of a substantial part of our research.

Tangible steps which have been made in 2013 include:

- Composition of a Procedure Invasive Species and the arrangement of a special climate room with facilities for experiments with potential invasive species to reduce risks of coincidentally releasing potential invasive species.
- Introduction of the NIOZ instruction movie 'In the workplace' with instructions how to operate in a sustainable and safe way at the NIOZ and in the laboratories in particular.
- A Risk Inventory Evaluation was held in 2013 and it was concluded that the personnel is well-educated to work with potentially environmentally hazardous substances. Another finding is that there is still room for indoor climate control optimization to counter unnecessary energy use. As a result the indoor climate control will be computed and adjusted in 2014.

Examples of research projects with important sustainability aspects for 2013 are:

- The involvement of the NIOZ in 'Building with Nature' projects in The Netherlands and around the world. For example the research on the optimization of the recolonization perspectives for sand excavation sites in the North Sea. Several other projects involve research on natural coastal defense using sand motors, sand suppletions and oyster reefs, but also the sustainable removal of problematic exotic oyster reefs at recreational sites. Research on 'natural' sedimentation and erosion processes in amongst others the Wadden Sea and the Eastern Scheld are of importance to maintain and restore intertidal flats with rich benthic communities (as well as shallow subtidal and undisturbed supratidal areas) important as feeding and breeding grounds for birds and fish. This is of increasing importance with the expected sea level rise in the 21<sup>st</sup> century. Other research on ecosystem restoration includes seagrass and marsh vegetation restoration and in the tropics mangrove forests and coral reef restoration. These are all of importance for the reduction of energy of waves reaching shorelines. Besides restoration one can think of sustainable exploitation of marine resources and minimization of impacts, amongst others investigated in relation to deep sea mining, to fisheries and the effectiveness of the closure of areas for certain activities.



- Several NIOZ projects involve European networking and adjustment initiatives, with the aim that common strategies will lead to progress in the adaptation of sustainable marine policy and management. Examples are the leading role of the NIOZ in the installation of a pan-European Marine Biodiversity Observatory System and a role of the NIOZ in the optimization of present and potential sensors for Coastal Observation. Other relevant projects towards sustainable European management comprise the development of innovative tools and indicators for quality assessments and management evaluations.
- In 2013 the NIOZ seaweed centre has been built on Texel, which will be officially opened in 2014. The centre aims to investigate the potentials of sustainable production of seaweed biomass for food, energy and pharmacy in the coastal systems in the future. Electricity for the centre is generated by solar panels, wastewater is treated using a seaweed biofilter, and seaweed incubation tanks are heated/cooled using an earth heat-cold system. In relation to microalgae the NIOZ runs a demonstration project in Yerseke for an integrated and sustainable enclosed raceway and photobioreactor for algal cultivation and biodiesel production.
- The NIOZ has signed the Chain agreement Plastics Recycling in November 2013. The agreement aims at the prevention of plastic wastes in the environment including worlds' oceans. Innovative cooperation should close the plastic cycle to prevent consequences of amongst others marine litter on flora and fauna, shipping, fisheries and food - and water quality.

- The NIOZ research on ballast water treatment installations helps manufacturers to design and build better installations to prevent exotic and potentially invasive species introductions and exchange. As one of the laboratories carrying out land-based tests for ballast water treatment systems, NIOZ plays an important role in tests for type approval of these instruments. The development of small hand-held test instruments will allow port authorities to check the performance of treatment systems on board of ships within the hour.

This is just a small sampling of our research initiatives in 2013 directly related to sustainability issues. Screening our projects will show that sustainability is in our genes.





# FACTS & FIGURES

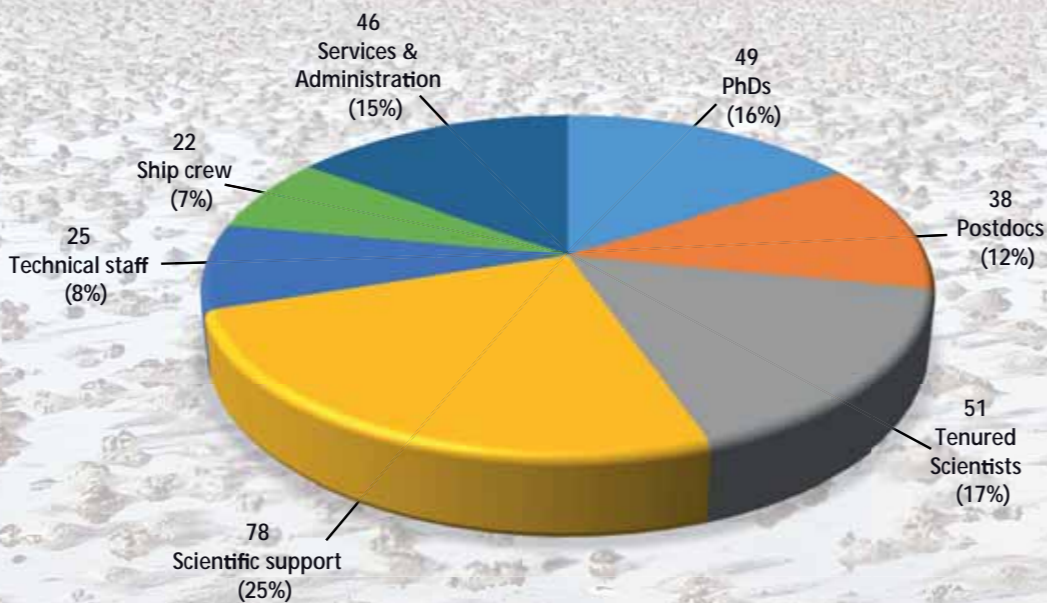
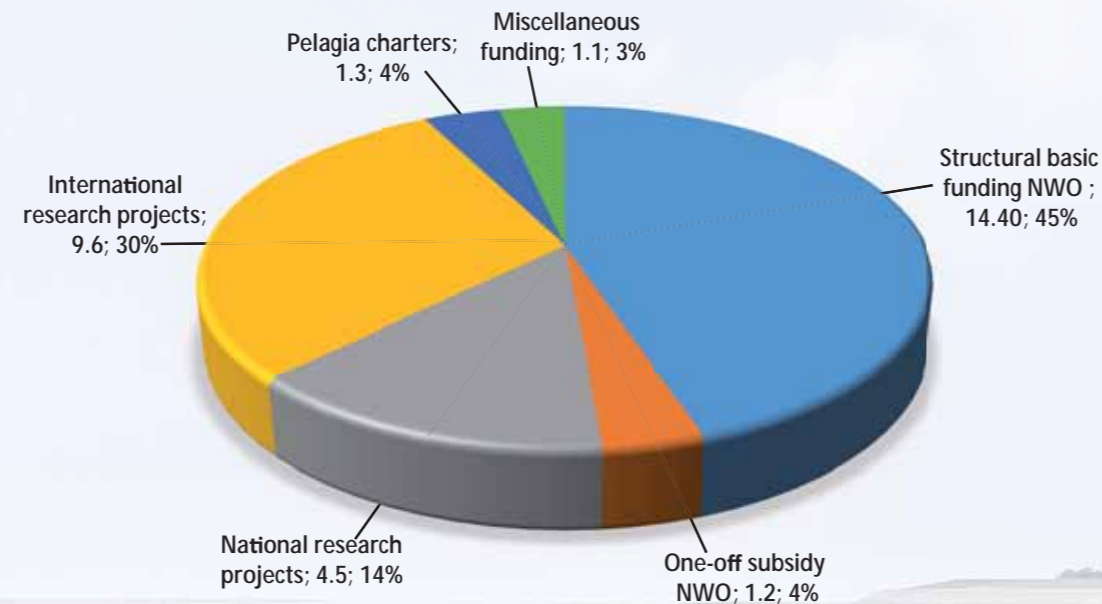
## Budget

The overall budget for 2013 amounted to 32.1 M€ NWO contributed 14.4 M€ (equivalent to 45% of the total budget) as basic structural funding and 1.2 M€ (4%) as a one-off subsidy. Project related additional funding was received through national (4.5 M€ 14%) and international (9.6 M€ 30%) projects acquired in competition. Chartering of RV Pelagia to third parties yielded a net revenue of 1.3 M€ (4%). Miscellaneous and ad hoc funding amounted to 1.1 M€ (3%).

In 2013, spending surpassed income, resulting in a net loss. The development of a strategy to close this gap has the highest priority for the management and the board in 2014. A more detailed budget overview is presented online at [www.nioz.nl/annual-report-2013](http://www.nioz.nl/annual-report-2013).

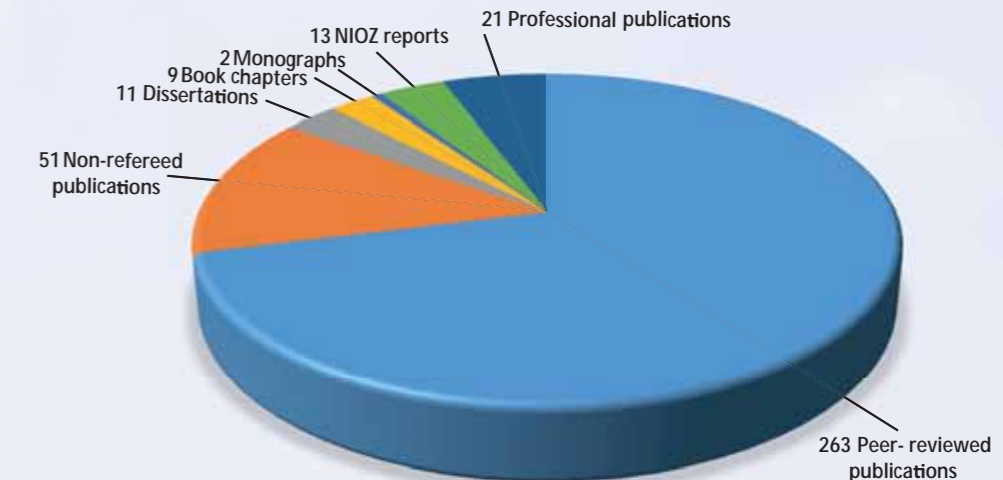
## Staff

On 31 December 2013, NIOZ employed a staff of 309 FTE's, equivalent to 344 employees. Of these, 79 employees were of foreign nationality, representing 19 countries. The numbers and relative distribution (in %) of personnel over the different staff categories remained fairly constant. In comparison to the end of 2012, total staff decreased by 9.5 FTE's. Scientific staff, including tenured senior scientists, postdocs and PhD students accounted for 45% of the total staff, scientific support staff 25%, and technical staff, ship crew, and services & administration accounted for 30%.



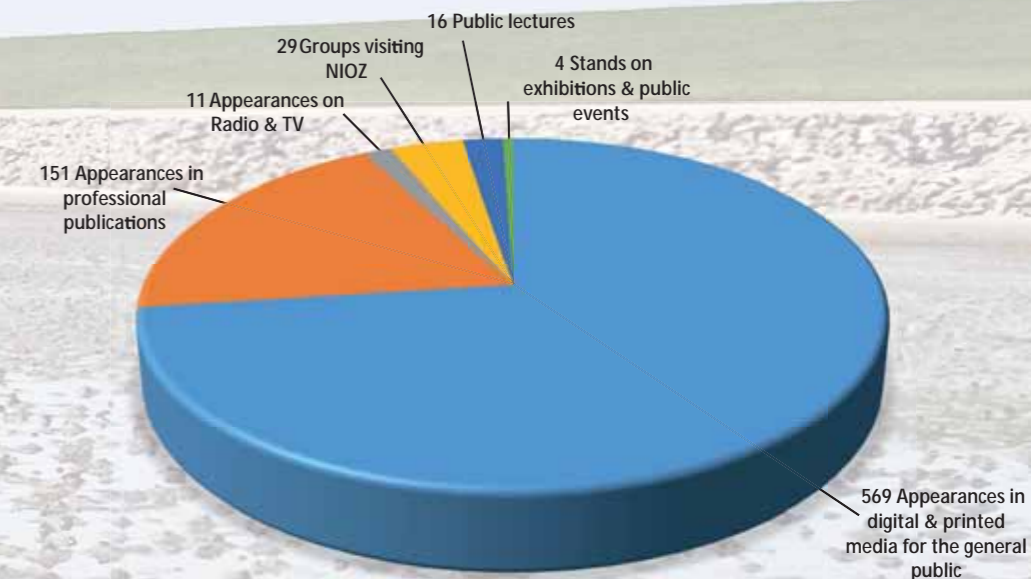
## Scientific output

NIOZ scientists authored 263 peer-reviewed publications, of which 59 publications appeared in open access journals. Eleven PhD students received their degrees at the University of Groningen (4), Utrecht University (2), Vrije Universiteit Amsterdam (2), the Radboud University Nijmegen (1), the University of Bremen (1) and the University of Las Palmas (1). Moreover, 2 monographs, 9 book chapters as well as 51 non-refereed publications and 13 NIOZ reports have been written. More than 236 oral presentations and 88 posters were presented at symposia, workshops and the weekly NIOZ colloquium series covered 50 lectures.



## Public outreach

NIOZ research was discussed 569 times in digital and printed media for the general public and 151 times in media with a professional readership. Many of the news highlights are presented in this annual report. NIOZ scientists appeared 11 times on Radio and TV and gave 16 public lectures outside NIOZ. At NIOZ Texel, a lecture series was organized on 8 June, being declared as 'World Oceans Day' by the United Nations. NIOZ had a stand on 4 exhibitions.



## Marine Research Facilities (MRF)

NIOZ research vessel Pelagia sailed for 280 days in 16 cruises, 2 of which were charter cruises funded by third parties, 9 were funded by NWO-ALW or EU/ESF/ERC, and 5 were NIOZ projects. In support of the start of the Caribbean Netherlands Science Institute (CNSI) on St. Eustatius Pelagia visited the island at the end of the year, the ship's first-ever visit to the Caribbean. RV Luctor sailed for 147 days in 8 research and charter projects on the Scheldt estuary, Eastern Scheldt and Lake Grevelingen. RV Navicula sailed in the Wadden Sea for 163 days for 5 student courses, 20 research cruises and a chartered bird survey for marine research institute IMARES along the Dutch coast. In May, Navicula went to Yerseke to take over the normal Luctor programme while Luctor was carrying out a charter cruise for IMARES.



RV Pelagia



RV Navicula



RV Luctor



NIOZ Royal Netherlands Institute for Sea Research, located on Texel and in Yerseke, is an institute of the Netherlands Organization for Scientific Research (NWO).

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The annual report can be ordered free of charge, by preference on an exchange base, from the library of NIOZ Royal Netherlands Institute for Sea Research. It is also available at the NIOZ website [www.nioz.nl/annual-report-2013](http://www.nioz.nl/annual-report-2013)

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The mission of NIOZ is to gain and to communicate scientific knowledge on seas and oceans for a better understanding and sustainable use of our planet, to manage the national facilities for sea research and to support research and education in the Netherlands and in Europe.



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Troost, K., van Asch, M., Craeymeersch, J., Duineveld, G., Escaravage, V., Goudswaard, K., Lavaleye, M., Wijnhoven, S. Monitoringsplan T0 VHR gebieden Noordzee. IMARES Rapport C 049/13.

Troost, K., van Asch, M., Craeymeersch, J., Duineveld, G., Escaravage, V., Goudswaard, K., Lavaleye, M., Wijnhoven, S. Monitoringsplan T0 VHR gebieden Noordzee. IMARES Rapport C049/13, 106 pp.

Van der Ham, R., Cadée, G.C., Kruiswijk, W. Walnoten, pecannoten en een vleugeloot van de Nederlandse kust. *Het Zeepaard* 73, 96-103.

Zetsche, E.M., Henneghien, J. OVIZIO Imaging Systems D3HM: Counting small single-celled aquatic organisms with Ovizio's D3HM in static mode.

## Posters

Bergman, M., Duineveld, G., Witbaard, R., Lavaleye, M. Noordzee bodemfauna data: nodig voor keuze van gesloten gebieden, indicatoren en monitoring strategie. Noordzeedagen, Den Helder, 10-11 October.

Besseling, M., Rodrigo-Gámiz, M., Rampen, S.W., Schouten, S., Verschuren, D., Sinninghe Damsté, J.S., Villanueva, L. Diversity, niche and seasonality of long chain diol producers in the stratified Lake Challa, Africa. 26<sup>th</sup> International Meeting on Organic Geochemistry, Tenerife, Canary Islands, Spain, 15-20 September.

Biton, E., Gildor, H., Trommer, G., Siccha, M., Kucera, M., van der Meer, M., Schouten, S. Monsoonal variability during the Holocene: An integrated data and modeling study. Pages 4th open science meeting, Goa, India, 13-16 February.

Bolhuis, H., Stal, L.J. Coastal Microbial mat diversity. SAME13 - Symposium on Aquatic Microbial Ecology, Stresa, Italy. 8-13 September.

Brenner, H., Braeckman, U., Meysman, F. Controls on the CO<sub>2</sub> system by benthic-pelagic coupling in the southern North Sea. The 45<sup>th</sup> International Liège Colloquium: Primary production in the ocean: from the synoptic to the global scale, Liège, Belgium, 13-17 May.

Cadée, G.C. Shell damage and repair in *Cerastoderma edule*. 57<sup>th</sup> Annual Meeting Palaeontological Association, Zürich, Switzerland, 13-16 December.

Castañeda, I., Schouten, S., Pätzold, J., Schefuß, E. Temperature, vegetation and precipitation variability in the Nile River drainage during the past 27,000 years: Insights from molecular and isotopic proxies. European Geosciences Union, General Assembly 2013, Vienna, Austria, 7-12 April.

Cléroux, C., deMenocal P., Arbuszewski, J. Rain belt and equatorial upwelling migration in the Atlantic Ocean over the last 20 Ka. 4<sup>th</sup> PAGES Open Science Meeting, Goa, India, 13-16 February.

Cléroux, C., Rollion-Bard, C., Reichert, G.J., Durgadoo, J., Brummer, G.-J.A., Steinhardt, J. Toward temperature profile reconstructions from intra-shell <sup>18</sup>O measurements on the planktonic foraminifera species *G. tumida*. Gateways Conference, Jerusalem (Israel), 5-7 May.

Cretoi, M.S., Stal, L.J. Metaexploration of microbial mats. Gordon Conference Geobiology, Ventura, USA 27 January–1 February.

Daly, K.L., Hu, C., Prouty, N., Mienis, F., Remsen, A., Murasko, S. Marine snow distributions following the Deepwater Horizon oil spill. MOSSFA 1<sup>st</sup> working group meeting, Tallahassee, Florida, USA, 22-23 October.

De Bruin, T.F., de Koster, R.X., Thijsse, P. The Wadden Sea Long Term Ecosystem Research (WaLTER) project: Using the SeaDataNet infrastructure to provide access to integrated environmental and socio-economic data from the Dutch Wadden Sea. IMDIS2013 Conference, Lucca, Italy, 23-25 September.



- De Haas, H. Ideas for multibeam applications. FEMME 2013, Boston, USA, 16-19 April.
- De Matos, L., Mienis, F., Frank, N., Wienberg, C., Hebbeln, D. Cold-water corals of the West: North Carolina contribute to a North Atlantic basin study. 4<sup>th</sup> PAGES Open Science Meeting, Goa, India, 13-16 February.
- De Nooijer, L.J., Van Dijk, I.E.Y., Holbourn, A., Toyofuku, T., Sluijs, A., Reichart, G.J. Seawater Mg/Ca variability during the MMCO. Japan Geoscience Union International symposium, Chiba, Japan, 18-24 May.
- De Paoli, H., van der Heide T., Silliman, B., Herman, P., van de Koppel, J. Don't panic...organize!! Spatial self-organisation drives the persistence of mussel bed. Netherlands Annual Ecology Meeting, Lunteren, 5-6 February.
- De Vries, J.J. van Aken, H.M., Ridderinkhof, H., On the variability of currents and density in the Marsdiep, NCK Days (Netherlands Centre for Coastal Research), The Hague, 14-15 March.
- De Vries, J.J., Greinert, J., Maierhofer, T. Visualizing sediment dynamics through repeated high-resolution multibeam mapping. AGU Fall meeting, San Francisco, USA, 9-13 December.
- De Vries, J.J., Greinert, J., Maierhofer, T., Visualizing sediment dynamics through repeated high-resolution multibeam mapping, AGU, San Francisco, USA, 9-13 December.
- Duijns, S., Knot, I.E., van Gils, J.A., Piersma, T. Functional response curve of Bar-tailed Godwits foraging on lugworms. Netherlands Annual Ecology Meeting, Lunteren, 5-6 February.
- Duran-Matute, M., de Boer, G.J., Nauw, J.J., Gräwe, U., Gerkema T. Numerical modelling of the Dutch Wadden Sea. NCK days, The Hague, 13-15 March.
- Escaravage, V. Het mariene landschap bepaalt het bodemleven. Noordzeedagen, Den Helder, 10-11 October.
- Goudeau, M.-L.S., Reichart, G.-J., Jilbert, T., Ní Fhlaithearta, S., de Lange, G.J. Centennial to decadal climate variability in the Adriatic Sea during Sapropel S1. EGU General Assembly 2013, Vienna, Austria, 7-12 April.
- Grove, C.A., Rodriguez-Ramirez, A., Merschel, G., Tjallingii, R., Zinke, J., Brummer, G.-J.A. Spectral Luminescence Scanning of coral cores provide accurate long term records of river runoff and rainfall. 3<sup>rd</sup> International Sclerochronology Conference, Caernarfon, Wales, UK, 18-22 May.
- Heinzelmann, S.M., Villanueva, L., Bale, N., Stal, L., Sinninghe Damsté, J.S., Schouten, S., van der Meer, M.T.J. Compound specific hydrogen isotopes as a culture independent method to identify core metabolisms of microorganisms in situ. 26<sup>th</sup> International Meeting on Organic Geochemistry, Tenerife, Canary Islands, Spain, 15-20 September.
- Hopmans, E.C., Moore, E.K., Rijpstra, W.I.C., Villanueva, L., Dedysh, S.N., Wienk, H., Schoutsen, F., Sinninghe Damsté, J.S. Novel methylated ornithine lipids in Russian wetland planctomycetes. HPLC 2013 AMSTERDAM, 39<sup>th</sup> International Symposium on High Performance Liquid Phase Separations and Related Techniques, Amsterdam, 16-20 June.
- Hummel, H., van Avesaath, P. MARS: The European Network of Marine Research Institutes and Stations" and "The European Marine Biodiversity Observatory System (EMBOS)". 48<sup>th</sup> European Marine Biology Symposium (EMBS), Galway, Ireland, 19-23 August.
- Hummel, H., van Avesaath, P. The European Marine Biodiversity Observatory System (EMBOS). ESF-COST Domain Committee meeting, Hannover, Germany, 11-13 June.
- Hummel, H., Wijnhoven, S. Research at European marine field stations unraveling patterns of biodiversity in benthic key species, EuroMarine, and The role of European marine stations during the last two decades and in the future. EMBRC meeting on Marine and biological sciences infrastructures interaction and collaboration, Heraklion, Crete, Greece, 28-30 May.
- Kasper, S., Castañeda, I., Tjallingii, R., Brummer, G.-J., Schneider, R., Sinninghe Damsté, J.S., Schouten, S., van der Meer, M.T.J. Alkenone based estimations of salinity development in the Mozambique Channel during the last glacial maximum. 26<sup>th</sup> International Meeting on Organic Geochemistry, Tenerife, Canary Islands, Spain, 15-20 September.
- Kasper, S., van der Meer, M.T.J., Brummer, G.-J., Zahn, R., Schouten, S. Stable hydrogen isotope composition of C<sub>37</sub> alkenones as indicator for salinity changes in the Agulhas leakage area during Termination I and II. Ocean Gateways Past and Present, Jerusalem, Israel, 5-7 May.
- Kim, J.-H., Willmott, V., Etourneau, J., Crosta, X., Massé, G., Bonnin, J., Schouten, S., Sinninghe Damsté, J.S. Application of the temperature proxy in the Southern Ocean. European Geosciences Union, General Assembly 2013, Vienna, Austria, 7-12 April.
- Kim, J.-H., Buscail, R., Fanget, A.S., Eyrolle-Boyer, F., Bassetti, A.-S., Dorhout, D., Baas, M., Berné, S., Sinninghe Damsté, J.S. Applicability of the BIT (branched and isoprenoid tetraether) index as a proxy of paleoflood events in river-dominated continental margins. 26<sup>th</sup> International Meeting on Organic Geochemistry, Tenerife, Canary Islands, Spain, 15-20 September.
- Kim, J.-H., Schouten, S., Marino, G., Huguet, C., Helmke, P., Buscail, R., Hopmans, E.C., Sangiorgi, F., Pross, J., Sinninghe Damsté, J.S. Constraints on the applicability of the UK'37 and TEX<sub>86</sub><sup>H</sup> paleothermometers in the Mediterranean Sea. 26<sup>th</sup> International Meeting on Organic Geochemistry, Tenerife, Canary Islands, Spain, 15-20 September.
- Kool, D.M., Rijpstra, W.I.C., Hopmans, E.C., Ettwig, K., Jetten, M., Sinninghe Damsté, J.S. Environmental detection of nitrite-dependent methane oxidation combining genomic and lipid biomarker tools. Darwin Day 2013, Utrecht, 18 April.
- Kunihiro, T., Veuger, B., van Oevelen, D., Vasquez, D., Le Guitton, M., Pozzato, L., Moriya, K., Kuwae, M., Omori, K., Katayama, A., Soetaert, K., Boschker, H.T.S., Meysman, F.J.R. Comparing bacterial PLFAs and respiratory quinones in marine sediments. EGU General Assembly 2013, Vienna, Austria, 7-12 April.



- La Cono, V., Rampen, S., Arcadi, E., La Spada, G., Smedile, F., Pachiadaki, M., Stoeck, T., Yakimov, M.M., DEEP\_C Consortium. Deep-sea sampling with Niskin bottles – how strong this common sampling procedure biases the analysis of in situ microbial activity? *Frontiers in Ecological and Evolutionary Genomics*, Noordwijkerhout, 26-30 May.
- Lengger, S.K., Lipsewers, Y., de Haas, H., Sinninghe Damsté, J.S., Schouten, S. Low turnover rates of Thaumarchaeal intact polar tetraether lipids in sediments from the Iceland Shelf. 26<sup>th</sup> International Meeting on Organic Geochemistry, Tenerife, Canary Islands, Spain, 15-20 September.
- Louterbach, M., Roddaz, M., Bailleul, J., Antoinel, P.O., Marivaux, L., Kim, J.-H., van Soelen, E., Gérard, J., Calderon, Y., Baby, P. Evidences of an Early to Early-Middle Eocene tidal incursion in Southern Amazonia (Madre de Dios Basin, Peru). International Conference of fluvial sedimentology, Leeds, UK, 14-19 July.
- Lubsch, A., Timmermans, K.R. Seaweed biofilter, Design and implementation using *Ulva lactuca*, Second International Seaweed conference Seagriculture, Den Helder/Texel, 26-27 September.
- M'Boule, D., Chivall, D., Sinke, D., Sinninghe Damsté, J.S., Schouten, S., van der Meer, M.T.J. Salinity and growth phase effects on the hydrogen isotope fractionation by the coastal haptophytes *Isochrysis galbana* and *Chrysothila lamellosa*. 26<sup>th</sup> International Meeting on Organic Geochemistry, Tenerife, Canary Islands, Spain, 15-20 September.
- M'Boule, D., Schefuß, E., Sinninghe Damsté, J.S., Schouten, S., van der Meer, M.T.J. Impact of river discharge and salinity on the hydrogen isotopic composition of alkenones in the Eastern Tropical Atlantic during the last deglaciation. 26<sup>th</sup> International Meeting on Organic Geochemistry, Tenerife, Canary Islands, Spain, 15-20 September.
- Maat, D.S., Bale, N.J., Schouten, S., Brussaard, C.P.D. Acquisition of intact polar lipids from the Prymnesiophyte *Phaeocystis globosa* by its lytic virus PgV-07T. BBIG workshop, Braga, Portugal, 1-4 July.
- Maat, D.S., Brussaard, C.P.D. Ecophysiological aspects of algal virus-host interactions in a changing ocean. SAME meeting, Stresa, Italy, 9-14 September.
- Malkin, S.Y., Tramper, A., Meysman, F.J.R. Sulphide oxidation by electrically conductive bacterial filaments in a dynamic oxygen environment. Gordon Research Conference on Applied and Environmental Microbiology, South Hadley, Massachusetts, USA, 7-12 July.
- Maxwell, J., Jung, S., Kroon, D., van der Lubbe, J., Tjallingii, R. Deep and intermediate water mass history of the western Arabian Sea: The role of southern sourced intermediate water masses in the bipolar sea-saw. 11<sup>th</sup> International Conference on Paleoceanography, Barcelona-Sitges, Spain, 1-6 September.
- ???? Monitor Taakgroep Toegepast marien biologisch onderzoek vanuit een fundamenteel wetenschappelijke achtergrond. Book presentation and Symposium 'Marine Mollusks of the North Sea, Leiden, 1 June and Noordzeedagen, Den Helder, 10-11 October.
- Moore, E.K., Hopmans, E.C., Rijpstra, W.I.C., Villanueva, L., Dedysh, S.N., Wienk, H., Schoutsen, F., Sinninghe Damsté, J.S. Novel mono-, di-, and trimethylornithine membrane lipids in Russian wetland *Planctomycetes*. Darwin Day 2013, Utrecht, 18 April.
- Moore, E.K., Rijpstra, W.I.C., Hopmans, E.C., Villanueva, L., Dedysh, S.N., Wienk, H., Schoutsen, F., Sinninghe Damsté, J.S. Identification of mono-, bi-, and tri-methylated ornithine lipids in planctomycetes from Russian peat. 26<sup>th</sup> International Meeting on Organic Geochemistry, Tenerife, Canary Islands, Spain, 15-20 September.
- Mueller, B., Vermeij, M.J.A., van Duyl, F.C. Algal-driven bioerosion on Caribbean Coral Reefs? NIOZ Science Day, Noordwijkerhout, 4-5 June.
- Nierop, K.G.J., Sap, M., Dekker, R., Speelman, E.N., Lewan, M.D., de Leeuw, J.W., Reichart, G.-J. Temperature induced transformations of Azolla specific biomarkers by hydrous pyrolysis. 11th International Conference on Paleoceanography, Sitges-Barcelona, Spain, 1-6 September.
- Nieuwhof, S., van de Koppel, J., Dankers, N., Olff, Herman, P.M.J., van der Wal, D. Beyond space boundaries – Ecosystem engineering by epibenthic shellfish. Netherlands annual ecology meeting, Lunteren, 5-6 February.
- Parari, M., Kasper, S., Zahn, R., Schouten, S., van der Meer, M., Schneider, R., Blanz, T. Sea surface temperature and salinity development during the last two glacial terminations in the Mozambique Channel. 11<sup>th</sup> International Conference on Paleoceanography, Sitges-Barcelona, Spain, 1-6 September.
- Partescano, E., Lipizer, M., Crise, A., Giorgetti, A., Rabitti, A. Validation of climatological maps in the Adriatic Sea. 40<sup>th</sup> CIESM congress, Marseille, France, 28 October-1 November.
- Peperzak, L., Sneekes, A., Boon, J.P. Kaag, K. NIOZ-IMARES ballastwater test-centrum. Noordzee dagen. (Koninklijk Instituut voor de Marine), Den Helder, 10-11 October.
- Rampen, S.W., Datema, M., Schouten, S., Reichart, G.-J. Rodrigo-Gámiz, M., Sinninghe Damsté, J.S. Long chain diols as palaeotemperature proxies. 26<sup>th</sup> International Meeting on Organic Geochemistry, Tenerife, Canary Islands, Spain, 15-20 September.
- Randlett, M.-E., Bechtel, A., Peterse, F., Litt, T., Pickarski, N., van der Meer, M.T.J., Wehrli, B., Schubert, C.J. H-isotopes of n-alkanes as indicator for porewater salinity variations in Lake Van (Eastern Anatolia, Turkey). 26<sup>th</sup> International Meeting on Organic Geochemistry, Tenerife, Canary Islands, Spain, 15-20 September.
- Rodrigo-Gámiz, M., Calvo, E., Rampen, S.W., Pelejero, C., Cacho, I., Schouten, S., Sinninghe Damsté, J.S. Sea surface temperatures in the eastern equatorial Pacific over the last 40 kyr using the novel Long chain Diol Index. 11<sup>th</sup> International Conference on Paleoceanography (ICP), Sitges, Barcelona, Spain, 1-6 September.
- Rodrigo-Gámiz, M., Rampen, S.W., Martinez-Ruiz, F., Villanueva, L., Calvo, E.,



- Schouten, S., Sinninghe Damsté, J.S. Testing the new long chain diol index as marine paleotemperature proxy. 26<sup>th</sup> International Meeting on Organic Geochemistry, Tenerife, Canary Islands, Spain, 15-20 September.
- Rush, D., Garside, A.I., Talbot, H.M., Thamdrup, B., Acuña González, J., Schouten, S., Sinninghe Damsté, J.S., Poulton, S.W. Biomarker evidence of aerobic methane oxidation and anammox in Golfo Dulce. 26<sup>th</sup> International Meeting on Organic Geochemistry, Tenerife, Canary Islands, Spain, 15-20 September.
- Rush, D., Schouten, S., Pureveen, J., Tegelaar, E., Geenevasen, J.A.J., Klein Nijenhuis, R., van Marseveen, J.H., Sinninghe Damsté, J.S. The complexity of thermally stable anammox lipid products. 26<sup>th</sup> International Meeting on Organic Geochemistry, Tenerife, Canary Islands, Spain, 15-20 September.
- Sangiorgi, F., Passchier, S., Salzmann, U., Schouten, S., Pross, J., Bijl, P., Tauxe, L., Flores, J-A., Bendle, J., Escutia, C., Brinkhuis, H. Environmental and climatic evolution at the Wilkes Land margin, East Antarctica, during the Middle Miocene. 11<sup>th</sup> International Conference on Paleoceanography, Sitges – Barcelona, Spain, 1-6 September.
- Schoon, P.L., Heilmann-Clausen, C., Schultz, B.P., Sinninghe Damsté, J.S., Schouten, S. Characterization of free and sulfur-bound lipids in North Sea basin sediments from the Palaeocene-Eocene Thermal Maximum. 26<sup>th</sup> International Meeting on Organic Geochemistry, Tenerife, Canary Islands, Spain, 15-20 September.
- Schouten, S., Lopes dos Santos, R.A., De Deckker, P., Hopmans, E.C., Magee, J.W., Mets, A., Sinninghe Damsté, J.S. Organic geochemical proxies reveal abrupt vegetation change and vegetation fires after the late quaternary megafaunal extinction in southeastern Australia. 26<sup>th</sup> International Meeting on Organic Geochemistry, Tenerife, Canary Islands, Spain, 15-20 September.
- Shilling, A., Castañeda, I.S., Biller, T.Z., Cleroux, C., de Nooijer, L.J., Tjallingii, R. Sea surface temperature, vegetation and hydrological variability of the western Indian Ocean and equatorial East Africa during the last 400 kyr. IMO 2013, Costa Adeje, Tenerife, Canary Islands, Spain, 16-20 September.
- Soissons L.M., Han Q., van Katwijk M.M., Ysebaert T., Herman P.M.J, Bouma T.J. Indicators wanted: How to better estimate seagrass health and resilience?. Netherlands Annual Ecology meeting, Lunteren, 5-6 February.
- Sollai, M., Hopmans, E.C., Schouten, S., Keil, R.G., Sinninghe Damsté, J.S. Intact polar lipids as indicators of N-cycling in the eastern tropical North Pacific oxygen minimum zone. 26<sup>th</sup> International Meeting on Organic Geochemistry, Tenerife, Canary Islands, Spain, 15-20 September.
- Stuut, J.-B.W., Van der Does, M., Fischer, G. Saharan dust from a marine perspective: sediment-trap time series off Mauritania. EGU General Assembly 2013, Vienna, Austria, 7-12 April.
- Tiessen, M.C.H., Gerkema, T., Ruardij, P., van der Veer, H.W. Hydrodynamic causes for inter-annual variability in plaice juvenile arrivals in the Western Wadden Sea. NCK-Days, Kijkduin, 13-15 March.
- Timmermans, K.R. Mogelijkheden voor zeewierteelt in een valmeer in de Noordzee, Innovatie Estafette, RAI, Amsterdam, 12 November.
- Van Avesaath, P.H., Wijnhoven, S. Hummel, H. VECTORS of change in the Dutch southwestern Delta Waters: the occurrence of invading, non-indigenous and outbreak forming species. Vectors General Assembly Meeting, Athens, Greece, 4-7 November.
- Van Belzen, J., Jacobs, A., van de Koppel, J., Herman, P.M.J., Bouma, T.J. Who is in control? Netherlands Annual Ecology Meeting 2013 (NAEM-NERN), Lunteren, 5-6 February.
- van Bleijswijk, J.D.L., Witte, H.J., Ogier, J. UV treatment of ballast water favors Pseudoalteromonas and other Proteobacteria. Galaxy Community Conference 2013, Oslo, Norway, 30 June-3 July.
- van Bleijswijk, J.D.L., Witte, H.J., Villanueva, L., Lipsewers, Y. Metagenome of two North Sea sediment samples. Metagenomics: Managing, Analysing and Visualising Data Workshop, Hinxton, UK, 8-11 September.
- van Bree, L.G.J., Rijpstra, W.I.C., Ossebaar, J., Cocquyt, C., Aldhabi, N.A., Sinninghe Damsté, J.S., de Leeuw, J.W. Origin and fate of *n*-alk-1-enes and des-A-triterpenes in a 25-kyr sedimentary record of an equatorial African lake. 26<sup>th</sup> International Meeting on Organic Geochemistry, Tenerife, Canary Islands, Spain, 15-20 September.
- van Soelen, E., Hoorn, C., Santos, R.V., Roddaz, M., Sinninghe Damsté, J.S., Kim, J-H. Miocene environmental conditions in the upper Amazon basin. 26<sup>th</sup> International Meeting on Organic Geochemistry, Tenerife, Canary Islands, Spain, 15-20 September.
- Veenstra, T.J.T., Schouten, S., Dickens, G.R., Backman, J., Sluijs, A. Late Miocene - Early Pliocene productivity, temperature and upwelling in the Eastern Equatorial Pacific. 11<sup>th</sup> International Conference on Paleoceanography, Sitges – Barcelona, Spain, 1-6 September.
- Vellekoop, J., Sluijs, A., Smit, J., Schouten, S., Sinninghe-Damsté, J.S., Brinkhuis, H. Dinoflagellate migrations across the K/Pg boundary – evidence for impact-induced global climate change. 11<sup>th</sup> International Conference on Paleoceanography, Sitges – Barcelona, Spain, 1-6 September.
- Vermeersen, B.L., Maas, L.R.M., van Oers, S., Rabitti, A., Jara-Orue, H. Tidal-induced ocean dynamics as cause of Enceladus' tiger stripe pattern. American Geophysical Union Fall Meeting, San Francisco, USA, 9-13 December.
- Villanueva, L., Lipsewers, Y., Bale, N., Buckles, L., Hopmans, E., Schouten, S., Sinninghe Damsté, J. Lipid biomarkers and gene expression: Insights on key players of the nitrogen cycle. First EMBO Conference on Aquatic Microbial Ecology: SAME13, Stresa, Italy, 8-13 September.
- Warden, L., Kim, J-H., Vis, G-J., de Stigter, H., Bonnin, J., Sinninghe Damsté, J.S. Exploring the use of the MBT/CBT proxy for continental climate recon-



structions over the Iberian peninsula. 26<sup>th</sup> International Meeting on Organic Geochemistry, Tenerife, Canary Islands, Spain, 15-20 September.

Weijers, J.W.H., Schefuss, E., Kim, J.-H., Sinninghe Damsté, J.S., Schouten, S. Constraints on sources of branched tetraether lipids in open marine sediments. 26<sup>th</sup> International Meeting on Organic Geochemistry, Tenerife, Canary Islands, Spain, 15-20 September.

Welsh, J.E., Thielges, D.W. What biotic mechanisms drive the dilution effect? Netherlands Annual Ecology Meeting, Lunteren, 5 February.

Witbaard R., Cardoso, J.F.M.F. Shell Growth of *Ensis directus*: Combining field measurements with a sclerochronological approach. 3rd International Sclerochronology Conference, Caernarfon, Wales, UK, 18-22 May.

Zell, C., Kim, J.-H., Hollander, D., Balsinha M., Sinninghe Damsté, J.S. Constraints on the applicability of the MBT/CBT proxy in two contrasting river systems (Amazon vs. Tagus). 26<sup>th</sup> International Meeting on Organic Geochemistry, Tenerife, Canary Islands, Spain, 15-20 September.

Zetsche, E., Dubois F., Yourassowsky C., El Mallahi A., Meysman, F.J.R. Digital holographic microscopy: Visualizing the “invisible”. Microscale Interactions Symposium 2013 - Microscale Interactions in Aquatic Environments, Les Houches, France, 10–15 March.

Zetsche, E., Meysman, F.J.R. Digital holographic microscopy – a unique tool for studying physical-biological interactions. Batsheva de Rothschild Seminar on marine life in the flow: Workshop on physical-biological interactions from the individual organism to the global scale. 6–10 October.

Zhu, Z., Cozzoli, F., Ysebaert, T., Herman, P.M.J., Bouma, T.J., Who bury the seeds? A ‘case’ in salt marshes. Netherlands Annual Ecology Meeting, Lunteren, 5-6 February.

## Orals

Bale, N., Villanueva, L., Hopmans, E.C., Schouten, S., Sinninghe Damsté, J.S. Different seasonality of pelagic and benthic *Thaumarchaeota* in the North Sea. 26<sup>th</sup> International Meeting on Organic Geochemistry, Tenerife, Canary Islands, Spain, 15-20 September.

Bao R. Bartolomé C., Barros A., Camphuysen, C. J., De Souza J.A., Fortin M., Heubeck M., Maside X., Roselaar C.S., Sandoval A. Status, genetic diversity and possible breeding origin of wintering Great Northern Divers *Gavia immer* in Galicia, northwest Spain. Workshop “Loons & Divers”, Hanko, Finland, 21-22 September.

Beauchard, O. North Sea macroinvertebrate functional typologies. DEVOTES project annual meeting, Bilbao, Spain, 27 November.

Bergman, M., Witbaard, R., Duineveld, G. *Ensis* in troebel water. De groei van *Ensis* in de kustzone in relatie tot de (a)biotiek. Eindsymposium MEP-zandwinning, Zoetermeer, 21 February.

Bijleveld, A.I., Massourakis, G., van der Marel, A., Dekinga, A., Piersma, T. Plas-

ticity versus personality: how plasticity in digestive processing capacity and personality of red knots interact. Netherlands Annual Ecology Meeting, Lunteren, 5-6 February.

Bijleveld, A.I., Massourakis, G., van der Marel, A., Dekinga, A., Piersma, T. Personality drives physiological differences between individuals. Behaviour 2013, Newcastle, UK, 8-15 August.

Bijleveld, A.I., Massourakis, G., van der Marel, A., Dekinga, A., Piersma, T. Personality drives physiological differences between individuals and is not related to survival. International Conference on Individual Differences, Groningen, 1-3 November.

Bolhuis, H. Haloquadratum walsbyi: life at the limits of water activity. Thematic week on extremophilic microorganisms, University de Liege, Liege, Belgium, 26 November.

Bolhuis, H. Bacterial diversity in microbial mats. Geochemistry Seminars, University of Utrecht, 17 December.

Bolhuis, H. Coastal Sediment Genomics. Macumba - Metagenomics course, Alicante, Spain, 9-13 December.

Bolhuis, H. *Haloquadratum walsbyi*, a tale of life at extreme salinities. Artis Microbiology lecture series “vergeten en onzichtbare microorganismen - Microbial Life under extreme conditions”, Artis, Amsterdam, 17 October.

Bolhuis, H. Leven onder extreem zoute condities. Leidse Biologen club, Universiteit Leiden, 15 May.

Bolhuis, H. Microbial diversity along a natural salinity gradient and an introduction to the Brunei Estuary System. Institute of Environmental Biology (IEB) Guest Lectures, University of Utrecht, 15 April.

Bolhuis, H. Microbial treasures in coastal microbial mats. Macumba - EU-FP7 General Assemble, Roscoff, France, 23-27 September.

Boon, J.P. An overview of the North Sea ballast water opportunity project. Meeting of the European Community Shipowners’ Associations (ECSA), Brussels, 24 September.

Boon, J.P. Introduction to the ballast water problem and ways to solve it. Pro-Sea Marine Awareness Course at the Maritime Institute Willem Barentsz, Terschelling, 3 April.

Boon, J.P. Introduction to the North Sea Ballast Water Opportunity Project. Flow-cytometry workshop NIOZ, Texel, 11 February, Pro Sea Course ‘Shipping and the Ballast Water Challenge’, Schiphol, 5 March, NSBWO Annual Meeting 2013, World Maritime University, Malmö, Sweden, 11-12 March, Verband Deutscher Reeder/ProSea/NSBWO, Hamburg, Germany, 11 September and Leer, 12 September and Conference ‘Ballast water management, from concept to reality’, Europort Maritime Exhibition, Rotterdam, 6-8 November.

Boon, J.P. What you (should) want to know about Ballast Water Treatment Systems before you decide. Pro Sea Course ‘Shipping and the Ballast Water Challenge’, Schiphol, 5 March and Verband Deutscher Reeder/ProSea/NSBWO, Hamburg, 11 September and Leer, 12 September.



- Boon, J.P., The current situation with respect to ballast water regulations in the USA. Pro Sea Course 'Shipping and the Ballast Water Challenge', Schiphol, 5 March.
- Bougeois, L., de Rafélis, M., Reichart, G.-J., de Nooijer, L.J., Nicollin, F., Dupont-Nivet, G. Late Eocene arid climate in Asia inferred from multi-proxy sclero-chronology using oyster shells from the Tarim Basin. EGU General Assembly 2013, Vienna, Austria, 7-12 April.
- Bouma, T.J., Balke, T., van Belzen, J., Cozzoli, F., Suykerbuyk, W., van Katwijk, M.M., Temmerman, S., Herman, P.M.J. Bio-geomorphology of estuaries: the need for understanding the balance between ecosystem engineering, physical forcing and biomechanical species interactions. EGU conference, Vienna (Solicited speaker in the session Estuarine processes), 7-12 April.
- Bouma, T.J., Cozzoli, F., Ysebaert, T., Herman, P.M.J. Towards modeling physico-biotic interactions in estuaries: a case study on benthos. Instituto de Hidráulica Ambiental "IH Cantabria", Universidad de Cantabria, Santander, Spain (Invited lecture), 22 October.
- Bouma, T.J., van Belzen, J., van Dalen, J., Balke, T., Callaghan, D.P., Temmerman, S., Herman, P.M.J. Short-term mudflat dynamics drive long-term cyclic salt marsh dynamics: experimental evidence for underlying mechanisms. (Session Name: SCI-013B - Marshes, Storms, and Sea Level Rise: Rates of Change and Response). CERF 2013 conference "Toward Resilient Coasts and Estuaries, Science for Sustainable Solutions", San Diego, California, USA, 3-7 November.
- Brenner, H., Braeckman, U., Meysman, F. Controls on the CO<sub>2</sub> system by benthic-pelagic coupling in the southern North Sea. EGU General Assembly 2013, Vienna, Austria, 7-12 April.
- Brinkhuis, H. TU Energy days Eindhoven, Climate change and greenhouse gases, past, present and future, 12 December.
- Brinkhuis, H., Ridderinkhof, H. VLIZ, presentatie NIOZ + ondertekening MoU, Ostende, België, 9 January.
- Brinkhuis, H., From Greenhouse to Icehouse in the Arctic, Shell Rijswijk, 3 December.
- Buck, B., Timmermans, K.R. Joint Aquaculture Initiatives AWI-NIOZ, AWI – NIOZ meeting, NIOZ Texel, 29 Oktober.
- Burdorf, L., Malkin, S., Meysman, F. Environmental controls on the electrofilaments: Sulphide and oxygen. 1st workshop on long distance electron transport, Oemborgen, 14-17 April.
- Burdorf, L., Malkin, S., Seitaj, D., Meysman, F. Electrogenic bacteria leave a unique geochemical footprint in marine sediments. 13th VLIZ Young Marine Scientists' Day, Brugge, Belgium, 15 February.
- Cadée, G.C. De inhoud van een miniatuur apotheek van 1730 in het Rijksmuseum. Kon. Nederlandse Natuurhistorische Vereniging, KNNV, afdeling Den Helder, 27 September.
- Cadée, G.C. Spoorzoeken op Texelse schelpen. Koninklijke Nederlandse Natuurhistorische Vereniging, KNNV afdeling Het Gooi, Hilversum, 21 October.
- Cadée, G.C. Wat kunnen lege schelpen ons vertellen? Zeeuws Landschap / Nederlandse Onderwatersport Bond, NOB, Burgh-Haamstede, 7 September.
- Camphuysen C.J. Horror and suspense in a Dutch gull colony: signals supporting the nutritional stress hypothesis? CEES Leisure lecture, Groningen, 3 October.
- Camphuysen, C.J. A plea for further research, including a repeat of the earlier discards projects on a North Sea scale. Workshop "Potential impacts of discard reform for seabird communities", Daphne du Maurier Building Tremough Campus, University of Exeter, Falmouth, Cornwall, UK, 13 November.
- Camphuysen, C.J. Marine mammals. College Marine Science course, University of Utrecht, 14 October.
- Chivall, D., M'Boule, D., Schouten, S., Sinninghe Damsté, J.S., van der Meer, M.T.J. Towards an organic palaeosalinity proxy: the effect of salinity, growth rate and growth phase on the hydrogen isotopic composition of alkenones produced by haptophyte algae. European Geosciences Union, General Assembly 2013, Vienna, Austria, 7-12 April.
- Cléroux, C., deMenocal, P., Arbuszewski, J., Linsley, B., Guilderson, T., Ullgren, J., Brummer, G.-J.A., Reichart, G.J., Steinhardt, J. Surface / subsurface reconstructions in the Atlantic Ocean, Lyon University, Seminar series, 4 February.
- Cléroux, C., Rollion-Bard, C., Reichart G.J., Durgadoo, J., Brummer, G.-J.A., Steinhardt, J. Toward temperature profile reconstructions from intra-shell <sup>18</sup>O measurements on the planktonic foraminifera species *G. tumida*. Foraminiferal and Nannofossil Groups Joint Spring Meeting, Prague, Czech Republic, 19-22 June.
- Cozzoli, F., Bouma, T. J., Ysebaert, T., Herman, P. M. J. Sediment-biota interactions in estuarine environments. ASLO, New Orleans, USA, 20 February and EGU, Wien, Austria, 9 April.
- Cozzoli, F., Bouma, T.J., Ysebaert, T., Herman, P.M.J. Modelling biota-sediment interactions in estuarine environments. (Session Name: SCI-064E - Hydrodynamics and Sediment Dynamics in Estuaries and Coastal Seas). CERF 2013 conference "Toward Resilient Coasts and Estuaries, Science for Sustainable Solutions", San Diego, California, USA, 3-7 November.
- de Baar, H.J.W. De Oceanen in een Hoog-CO<sub>2</sub> Wereld. Invited lecture, Koninklijk Natuurkundig Genootschap, Groningen, 19 March and World Oceans Day, NIOZ, Texel, 8 June.
- de Baar, H.J.W. Dominant Control of Oceanic Thermohaline Circulation on Bio-Essential Trace Elements in the Atlantic Ocean. Farewell Symposium Dr. Hendrik van Aken, NIOZ, Texel, 21 August.
- de Baar, H.J.W. Effect van kooldioxide (CO<sub>2</sub>) van fossiele brandstoffen op het klimaat en de oceanen. Publiekslezing, Heiloo, 7 November.
- de Baar, H.J.W. Het nieuwe Nederlandse onderzoeks programma op Rothera Research Station, Antarctica. Invited lecture, Vereniging De Princenhof, Eernewoude, 27 July and Rotary Club Bergen, 30 July.
- de Baar, H.J.W. IJzer en andere opgeloste spoorelementen in het zeewater van Marguerite Baai, West Antarctica. Bessensap Annual Press Meeting NWO,



- The Hague, 10 June.
- de Baar, H.J.W. Interactions of dissolved CO<sub>2</sub> with Cadmium Isotopes in the Southern Ocean. Goldschmidt International Geochemistry Conference, Florence, Italy, 28 August.
- de Baar, H.J.W. Introduction Ocean Trace Metals Research. Field trip UvA BSC Honours Course 'Climate and Molecules. NIOZ, Texel, 22 November.
- de Baar, H.J.W. Ocean Geo-engineering: Iron Fertilization of the Southern Ocean. Symposium Klimaatengineering: hype, hoop of wanhoop. Rathenau Instituut, The Hague, 12 December.
- de Baar, H.J.W. Ocean Iron Fertilization Experiments. ERC DUSTTRAFFIC kick-off meeting, NIOZ, Texel, 18 October.
- de Baar, H.J.W. The Oceans in a High CO<sub>2</sub> World. Two invited classroom lectures, special BSc Honours Course 'Climate and Molecules' (Dr. J. van Maarseven); University of Amsterdam, 19 November.
- de Baar, H.J.W. The Science Projects at Dirck Gerritsz Laboratory. Dinner speech at official opening, Rothera Research Station, Antarctica, 27 January.
- de Bruin, T.F. Antarctic Data Treasures: Recent Advances in Promoting and Curating the Vital Data Legacy of Antarctic Data. International Forum on Polar Data Activities in Global Data Systems, Tokyo, Japan, 15-16 October.
- de Bruin, T.F. Antarctic Data Treasures: Recent Advances in Promoting and Curating the Vital Data Legacy of Antarctic Data by the SCAR- Standing Committee on Antarctic Data Management (SCADM). Excursion Seminar at the National Institute of Polar Research (NIPR), Tokyo, Japan, 17-18 October.
- de Bruin, T.F. NIOZ: The National Oceanographic Institute of The Netherlands. Norwegian Marine Data Centre project Annual Meeting, Bergen, Norway, 2 September.
- de Bruin, T.F. NODC / SeaDataNet: A National / pan-European infrastructure for access to oceanographic and marine data and information. Roadmap meeting for LifeLink, Amsterdam, 30 August.
- de Bruin, T.F. Oceanographic data management (at NIOZ): What role can researchers, publishers and science sponsors play in publication and citation of scientific data? Visit Elsevier, NIOZ Texel, 17 September.
- de Bruin, T.F. Oceanographic data: Why and how scientific data are managed at NIOZ. Visit Science Committee NIOZ, Texel, 20 September.
- de Bruin, T.F. Overview and status of the SCAR Data and Information Strategy Implementation. Annual meeting of the SCAR Standing Committee on Antarctic Data Management (SCADM), Tokyo, Japan, 13-14 October.
- de Bruin, T.F. Report from the Netherlands National Polar Data Centre (NL-NPDC). Annual meeting of the SCAR Standing Committee on Antarctic Data Management (SCADM), Tokyo, Japan, 13-14 October.
- de Bruin, T.F. SAMMEN er VI NMDC. Report of the Advisory Group at the Norwegian Marine Data Centre project Annual Meeting, Bergen, Norway, 4 September.
- de Bruin, T.F. SCADM Chief Officer's Report. Annual meeting of the SCAR Standing Committee on Antarctic Data Management (SCADM), Tokyo, Japan, 13-14 October.
- De Goeij, J., van Oevelen, D., Vermeij, M.J.A., Osinga, R., Middelburg, J.J., de Goeij, A.F.P.M., Admiraal, W., Surviving in a Marine Desert: The sponge loop retains resources within coral reefs. University of Vienna, Austria, 23 October and IRIS, Stavanger, Norway, 11 December.
- De Jonge, C., Stadnitskaia, A., Hopmans, E.C., Schouten, S., Sinninghe Damsté, J.S. Novel branched glycerol dialkyl glycerol tetraethers: occurrence in the environment and implications for the use of the CBT/MBT proxies. 26<sup>th</sup> International Meeting on Organic Geochemistry, Tenerife, Canary Islands, Spain, 15-20 September.
- De Nooijer, L.J. A new salinity proxy based on foraminiferal Na/Ca. Foraminiferal and Nannofossil Groups Joint Spring Meeting, Prague, Czech Republic, 19-22 June.
- De Paoli, H., van der Heide T., Silliman, B., Herman, P.M.J., van de Koppel, J. Spatial self-organisation drives the persistence of mussel bed. Netherlands Annual Ecology Meeting, Lunteren, 5-6 February.
- De Steur, L., Pickart, R. Freshwater components in the East Greenland Current between Denmark and Fram Strait 2012. IAPSO, Knowledge for the Future Assembly, Gothenburg, Sweden, July 22-26
- De Vries, J.J. Stroming in het Marsdiep (en meer). Watersportvereniging Texel, 5 April.
- De Vries, J.J., Nauw, J.J., Ridderinkhof, H., van Aken, H.M. Observations of stratification and turbulence in the Western Dutch Wadden Sea, 6<sup>th</sup> Warnemünde Turbulence Days (WTD), Vilm, Germany, 11-15 August.
- Duijns, S. Migratie en foerageecologie van Rosse Grutto's in de Nederlandse Waddenzee. Invited speaker Sovon/FFF, Grou, 12 November.
- Duijns, S. Migration and foraging ecology of Bar-tailed Godwits in the Wadden Sea. Invited key-note speaker at the annual meeting of the Niedersächsische Ornithologen Vereinigung. Leer, Germany, 17 August.
- Duijns, S., van Gils, J.A., Spaans, B., ten Horn, J., Brugge, M., Piersma T. Sex-specific winter distribution in a sexually dimorphic shorebird. WbS & IWSG Joint Conference, Wilhelmshaven, Germany, 28 September.
- Duran-Matute, M., de Boer, G.J., Gräwe, U., Nauw, J.J., Gerkema T. Residual circulation and fresh water distribution in the Dutch Wadden Sea. 6<sup>th</sup> Warnemünde Turbulence Days, Island of Vilm, Germany, 11-15 August and LEns-CoaSTS Workshop, Ensenada, Mexico, 11-12 November.
- Duran-Matute, M., de Boer, G.J., Gräwe, U., Nauw, J.J., Gerkema T. Residual circulation and sediment transport in the Dutch Wadden Sea. 22nd Biennial Conference of the Coastal and Estuarine Research Federation (CERF), San Diego, USA, 3-7 November.
- Gerkema, T. Sediment transport in the Dutch coastal zone. Concepción, Seminario de Geofísica, 21 November.
- Gerkema, T., Maas, L.R.M., van Haren, H. Les courants moyens – quel rôle jouent-ils dans l' effet Doppler? Lyon, Journées OGOA, 23-24 May.
- Gerkema, T., Maas, L.R.M., van Haren, H. The role of mean flows in Doppler-



- shifted frequencies. Vienna, EGU General Assembly, 7-12 April.
- Gerkema, T., Nauw, J.J., van der Hout, C.M. Measurements on the transport of SPM in the Vlie Inlet. NCK days, Kijkduin, 13-15 March.
- Gillis, L.G., Bouma, T.B., Kiswara, W., Ziegler, A.D., Herman, P.M.J. Leaf transport in mimic mangrove forests and seagrass beds. International Association of Ecology, London, UK, August.
- Gillis, L.G., Bouma, T.B., Ziegler, A.D., Cathalot, C., Herman, P.M.J. Toward understanding the roles of mangrove and seagrass particulate matter as a nitrogen source in tropical coastal ecosystems. Coastal and Estuarine Research Federation, San Diego, USA, November.
- Gostiaux, L., van Haren, H. Internal wave-driven instabilities in the oceanic bottom boundary layer. Winter school 'Waves and instabilities in geophysical and astrophysical flows'. Ecole de physique, les Houches, France, 3-8 February.
- Goudeau, M.-L.S., Grauel, A.-L., Boer, W., Bernasconi, S.M., de Nooijer, L.J., Reichart, G.-J., de Lange, G.J. Centennial and seasonal climate variability during the last 4000 years in the Gulf of Taranto, Southern Italy. EGU General Assembly 2013, Vienna, Austria, 7-12 April.
- Greiner, J., Bialas, J., Klauke, I., Crutchley, G., Dale, A., Rowden, A., Bowden, D., Linke, P., Sommer, S., de Haas, H., de Stigter, H., Faure, K., Liebetrau, V. Methane seepage along the Hikurangi Margin offshore New Zealand: multidisciplinary studies using R/V SONNE. SONNE Statusseminar, Kiel, Germany, 13-15 February.
- Grove, C.A., Rodriguez-Ramirez, A., Merschel, G., Tjallingii, R., Zinke, J., Macia, A., Brummer, G.-J. A. Luminescence scanning: Technical updates and calibration developments. Developments in Paleoenvironmental Research (DPER) Micro-XRF studies of sediment cores.
- Heinzelmann, S.M., Villanueva, L., Sinninghe Damsté, J.S., Schouten, S., van der Meer, M.T.J. Compound specific hydrogen isotopes as a culture independent method to identify core metabolisms of microorganisms in situ. ASLO Aquatic Sciences Meeting, New Orleans, USA, 17-22 February.
- Herman, P.M.J. Creation of gridded data products. EMODNET biology workshop, Ostend, Belgium, 11-12 September.
- Hommersom, A., Kratzer, S., Laanen, M., Ansko, I., Ligi M., Bresciani, M., Giardino, C., Beltran, J., Moore, G., Wernand, M., Peters S. An inter-comparison in the field between the new WISP-3 and other radiometers (TriOS Ramses, ASD FieldSpec, and TACCS), 3rd EOS Topical Meeting on Blue Photonics® - Optics in the Sea (Blue Photonics 3), NIOZ, Texel, 18-20 March.
- Hopmans, E.C., Moore, E.K., Rijpstra, W.I.C., Villanueva, L., Dedysh, S.N., Wienk, H., Schoutsen, F., Sinninghe Damsté, J.S. Use of HRAM MS for elucidating novel lipid structures. Workshop High Resolution Mass Spectrometry in Quantitative Analysis and Screening of Organic Contaminants in Food and Environment, RIKILT, Wageningen UR, 2 October.
- Hummel, H. Marine Biodiversity Observation: A system to bring theory and practice together, several oral presentations at the EMBOS Training School, Santander, Spain, 21-25 May.
- Hummel, H. Research at European marine field stations unraveling patterns of biodiversity in benthic key species and The role of European marine stations during the last two decades and in the future, 48th European Marine Biology Symposium (EMBS), Galway, Ireland, 19-23 August.
- Hummel, H. The MARS story: A history on the role of marine field stations in scientific and educational processes and projects in Europe. Invited lecture at Marine Biology, Geology and Oceanology: interdisciplinary research at marine stations, Lomonosov Moscow State University (MSU), in celebration of 75th anniversary WSBS; Moscow, Russia, 28 February-1 March.
- Hummel, H., van Avesaath, P. The European Marine Biodiversity Observatory System (EMBOS). ESF-COST Domain Committee meeting, Hannover, Germany, 11-13 June.
- Hummel, H., van Avesaath, P. Update on the European Marine Biodiversity Observatory System (EMBOS). COST EMBOS Management Committee meeting, Zandvoort, 16-17 May.
- Kandiano, E., van der Meer, M., Schouten, S., Fahl, K., Polyak, L.V., Cronin, T.M., Bauch, H.A., Sinninghe Damsté, J.S. Sea surface temperature and salinity patterns in the northern North Atlantic and the Arctic during interglacial MIS 11c: Implications for oceanic circulation reconstruction. AGU Fall Meeting, San Francisco, USA, 9-13 December.
- Kool, D.M., Rijpstra, W.I.C., Hopmans, E.C., Rasigraf, O., Ettwig, K., Jetten, M., Sinninghe Damsté, J.S. Unraveling the environmental significance of nitrite dependent methane oxidation: a lipid biomarker approach. 26<sup>th</sup> International Meeting on Organic Geochemistry, Tenerife, Canary Islands, Spain, 15-20 September.
- Kromkamp, J. Automated FRRF measurements provide an alternative means to obtain seasonal and annual primary production estimates. The 45th International Liège Colloquium: Primary production in the ocean: from the synoptic to the global scale, Liege, Belgium. 13-17 May and 16<sup>th</sup> international congress on Photosynthesis Research, St. Louis, MO, USA, August and Dymaphy final meeting (EU interreg project). Boulogne-sur-mer, France, December.
- Lavaley, M. Deep-sea coral reefs. Exploring the Dark Symposium, TU Delft, 14 March.
- Lavaley, M., Compton, T., Rijkenberg, M. Diversity of Roebuck Bay (NW Australia). Department of Environment and Conservation. Broome, West Australia, 17 September.
- Lipsewers, Y., Bale, N., Schouten, S., Sinninghe Damsté, J.S., Villanueva, L. Diversity and activity of aerobic & anaerobic ammonia oxidizers in the oxygen transition zone of marine sediments by a combined DNA/RNA and a lipid approach. ASLO Aquatic Sciences Meeting, New Orleans, USA, 17-22 February, Darwin Day 2013, Utrecht, 18 April and Youmares, 10-14 September, Oldenburg, Germany.
- Lok, T., Overdijk, O., Tinbergen, J.M., Piersma, T. Density dependence in spoon-



- bill survival: When and where does it happen? WbS & IWSG Joint Conference, Wilhelmshaven, Germany, 28 September, CEES day 2013, Groningen, 3 October and Minisymposium "Sequential carrying capacities of tidal flats along the East-Atlantic Flyway", NIOZ, Texel, 14 November.
- Lok, T., Overdijk, O., Tinbergen, J.M., Piersma, T. Lepelaars op trek: een vergelijking tussen Europa- en Afrika-gangers. SOVON Landelijke dag, Ede, 30 November.
- Lubsch, A., Timmermans, K.R. The Seaweed Centre at NIOZ, Second International Seaweed conference Seagriculture, Den Helder/Texel, 26-27 September.
- Luttikhuisen, P.C., van Bleijswijk, J.D.L. Population genetics of kelp and its relevance for kelp farming in northwest Europe. Second International Seaweed conference Seagriculture, Den Helder/Texel, 26-27 September.
- Maas, L.R.M. Internal waves affect the deep ocean. KIVI-NIRIA Conference on Exploring the dark, TU Delft, 14 March.
- Maas, L.R.M. Lithium-depletion in exoplanet host stars and its link to stellar tides. Dutch exoplanet day, Leiden University, 24 October.
- Maas, L.R.M. Ocean dynamics in the deep. Ahoy Rotterdam, 7 November.
- Maas, L.R.M. Onderwatergolven. Bessensap-lezing NWO, The Hague, 10 June.
- Maas, L.R.M. Theory and experiments on inertial waves and geostrophic flows. Euromech 522, Berlin, Germany, 24 September.
- Maas, L.R.M. Tidal effects in estuaries, University of Aveiro, Portugal, 9 October.
- Maas, L.R.M. Waves and wave attractors in geophysical flows. Mathematics of Oceans, Fields Institute Toronto, Canada, 27 June.
- Meysman, F. Microbial batteries in the seafloor: sulphide oxidation via long-distance electron transport. Invited speaker Annual Conference of the Association for General and Applied Microbiology (VAAM) in collaboration with the Royal Netherlands Society for Microbiology (KNVM), Bremen, Germany, 10-13 March
- Montserrat, F., Knops, P., Meysman, F.J.R. Enhanced Mineral Weathering as a CDR geo-engineering approach: proxies, processes and potential applications in marine coastal environments. Rathenau Instituut symposium "Klimaatengineering: Hype, hoop of wanhoop?", organised for the presentation of the report to the Dutch Parliament, The Hague, 12 December.
- Moons, J.J.S. Sand Engine; ecological consequences and opportunities. CEDA Forum 2013 technical visit to the Sand Engine, The Hague, 8 November.
- Mueller, B., Van Duyl, F.C. Algal-induced bioerosion by excavating sponges. Inhouse Marine Master Course 9 June 2013, NIOZ, Texel.
- Mueller, B., van Duyl, F.C. Increase of algal-driven bioerosion on reefs: DOC release – DOC uptake – Bioerosion (WP5 R5). Annual meeting of the EU-funded project "Future of Reefs in a Changing Environment". Corpus Christi, Texas, USA, 31 October–1 November.
- Mulder, L.L., Soetaert, K.E.R., Herman, P.M.J., Philippart, C.J.M. Ca-P: the forgotten fraction in modeling sediment-water phosphate flux in shallow coastal estuaries. CERF 2013, San Diego, USA, 1-7 November.
- Nieuwhof, S., van der Wal, D., Herman, P.M.J. Snapshot: Ecosystem engineering by epibenthic shellfish. Theme day remote sensing – NCK, Utrecht, 25 January.
- Nieuwhof, S., van der Wal, D., van de Koppel, J., Dankers, N., Olf, H., Eriksson, B.K., Donadi, S. van der Heide, T., Herman, P.M.J. Spatially extended ecosystem engineering by epibenthic shellfish. Young Waddensea Meeting, Utrecht, 24 January and 7 November.
- Novoa, S., Wernand M.R. Smartphones, crowdsourcing and the colour of natural waters. 3rd EOS Topical Meeting on Blue Photonics® - Optics in the Sea (Blue Photonics 3), NIOZ, Texel, 18-20 March.
- Novoa, S., Wernand, M.R. Citclops, Colour sensors, data and ideas to continue – part 1 Plenary meeting 3 and Steering Committee Meeting, SC1, Labège, France, 16-17 September.
- Novoa, S., Wernand, M.R. Crowdsourcing technologies for the monitoring of the colour, transparency and fluorescence of the sea. NCK Theme Day "Remote Sensing of the Coastal Zone", Hoog Brabant (situated in Hoog Catharijne), Utrecht, 25 January.
- Oudman, T. Diet choice by a migratory shorebird and consequences for its survival. Animal Migration Course, Lund University, Sweden, 22 October.
- Peperzak, L. NIOZ vitality-viability measurements in ballast water: Grow-out, SYTOX and new techniques. United States Coast Guard UV-Tech panel meeting, Baltimore, USA, 6-7 June.
- Peperzak, L. Setting the scene: An overview and update of state-of-the-art compliance tools. Ballast Water Treatment Technology Conference, Singapore, 9-10 April.
- Peperzak, L. Work package 3: Ballast Water Knowledge Exchange Centre +. NSBWO Annual Meeting 2013, World Maritime University, Malmö, Sweden, 11-12 March.
- Peperzak, L., Garritsen, E., Immler, E., Kranenborg, M., Mosk, D., Snoek, J. B-Box: Development of a test kit to analyze the performance of treatment systems on board of ships IMO-GloBallast and Republic of Korea Global R&D Forum and Exhibition on Ballast Water Management, Busan, Korea, 23-25 October.
- Peperzak, L., Gollasch, S. A technical and enforcement perspective on the IMO ballast water convention. North Sea Ballast water Opportunity Project, Europort 2013 Conference, Rotterdam, 6-7 November.
- Peperzak, L., Stehouwer, P.P. Effectiveness of various treatment technologies. ACI Ballast Water Management, Hamburg, Germany, 16-17 October.
- Piersma, T. Conservation ecology of red knots. Course in Animal migration, Lund University, Lund, Sweden, 1 November.
- Piersma, T. Conservation ecology of shorebirds. Lecture San Tome University, Santiago, Chile, 10 December.
- Piersma, T. Critical observations during critical times. Keeping an eye on Bohai 2006-2013. Yellow Sea seminar, Beijing Normal University, China, 14 May.



- Piersma, T. Population dynamics of black-tailed godwits. Bond Friese Vogelwachten (BFVW), Oudehaske, 7 March.
- Piersma, T. *SIBES* Synoptic Intertidal Benthic Surveys of the Wadden Sea. Presentation for Natuurmonumenten, Linnaeusborg, Groningen, 19 February.
- Piersma, T. Silent spring in the northern Netherlands. Café Kleine Wetenschap, University Campus Fryslân, Leeuwarden, 25 June.
- Piersma, T. The role of artisanal bird catching in ornithological research. Groninger Vogelvangersonderzoek, Aduard, 6 April.
- Piersma, T. The waxing and waning of black-tailed godwits in The Netherlands. Vogelwacht Makkum, Makkum, 8 November.
- Piersma, T., Oudman, T. Bijleveld, A.I., van Gils, J.A. Behavioural ecology of the gut. Invited talk, International Union of Physiological Sciences Conference, Birmingham, UK, 24 July.
- Quaijtaal, W., Donders, T., Schouten, S., Louwye, S. Climate aberrations during the middle Miocene: evidence from the eastern North Atlantic Ocean. AGU Fall Meeting, San Francisco, USA, 9-13 December.
- Rabitti, A., Maas, L. R. M., van Haren, H., Gerkema, T. Internal waves and Equatorial Ocean dynamics. 3rd DNVA-RSE Norway-Scotland Waves Symposium, Oslo, Norway, 16-17 September.
- Rabitti, A., Maas, L.R.M., van Haren, H., Gerkema, T. An observational study of West Atlantic Equatorial Deep Jets. J.M. Burgerscentrum PhDs & Post Docs annual meeting, Twente University, Netherlands, 10 January.
- Rabitti, A., Maas, L.R.M., van Haren, H., Gerkema, T. Internal waves and Equatorial dynamics: an observational study in the West Atlantic Ocean. Workshop on Waves and Instabilities in Geophysical and Astrophysical Flows, Les Houches, France, 3-8 February and EGU General Assembly, Vienna, Austria, 7-12 April.
- Ribó, M., Puig P., Acosta, J., Muñoz, A., van Haren, H., Lo Iacono, C., Gómez Ballesteros, M. Morphobathymetric and sediment dynamics analysis on the Gulf of Valencia continental slope (NW Mediterranean). Sedimentary properties of bedforms (Theme 2). Marine & river dune dynamics, Bruges, Belgium, 15-16 April.
- Ribó, M., Puig P., van Haren, H., Lo Iacono, C., Acosta, J., Masqué, P., Muñoz, A., Gómez Ballesteros, M. Sediment waves on the Gulf of Valencia slope (NW Mediterranean): Characteristics and formation processes. Workshop 'Dialogue between Contourite & Oceanography Processes', Hull, United Kingdom, 28-29 January.
- Rijkenberg, M.J.A., Gerringa, L.J.A., Laan, P., Schoemann, V., Middag, R., van Aken, H.M., de Jong, J.T.M., van Haren, H de Baar, H.J.W. GEOTRACES: The accessibility of dissolved Fe for phytoplankton in the western Atlantic Ocean, ASLO Meeting, New Orleans, US, 17-22 February.
- Rodrigo, M. High-latitudes climate variability modulates sea water temperatures in the late Quaternary eastern Equatorial Pacific: a multi-proxy approach. IODP Symposium "The International Ocean Discovery Program: Towards a new future", Amsterdam, 18 October.
- Ruardij, P. Benthic Pelagic Coupling in ERSEM, Expert workshop on Modular Coupling in Shelf and Coastal System, Geesthacht, Germany, 16-18 September.
- Ruardij, P. The ERSEM diagenetic model, Carbonate Sediment Workshop, Southampton, UK, 10-11 June.
- Schilling, J., Smit M.G. Developments in piston coring and mooring technology, OFEG TECH meeting, Marum, Bremen, 21 November.
- Schouten, S. Organic proxies for temperature: the good, the bad and the ugly. Invited lecture MARUM, Bremen, 14 October.
- Seitaj, D., Malkin, S., Schauer, R., Meysman, F. Competition for sulfide in marine sediments: Electrogenic filamentous bacteria versus *Beggiatoa*. Goldschmidt 2013 conference, Florence, Italy, 25-30 August.
- Seitaj, D., Malkin, S., Schauer, R., Meysman, F. The electrifying competition for sulphide in marine sediments: electrogenic filamentous bacteria versus *Beggiatoa*. First International workshop on long distance electron transport, Oemborgen, Denmark, 14-17 April and Darwin Days, Conference of Darwin center for Biogeosciences, Utrecht, 18 April.
- Shamoun-Baranes, J., Camphuysen, C.J., van Loon, E.E., Tyson, C., Bouten, W. Sexually distinct foraging strategies and individual specialisation in an omnivorous seabird. WbS & IWSG Joint Conference, Wilhelmshaven, Germany, 22 September and UvA-BiTS Symposium, Amsterdam, 9-10 December.
- Silsbe, G.M., Kromkamp, J.C. Highly resolved measures of photosynthetic electron transport in European coastal waters. The 45th International Liège Colloquium: Primary production in the ocean: from the synoptic to the global scale. Liege, Belgium. 13-17 May.
- Sinninghe Damsté, J.S. Oerbacteriën helpen klimaatvoorspellingen. Invited lecture Studievereniging De Leidsche Flees. Leiden University, Leiden, 27 November.
- Smit, M.G., Schilling, J. Marine Technology developments at NIOZ, OFEG TECH meeting, Marum, Bremen, 21 November.
- Smit, M.G. NIOZ input for Maritiem 2013, STW/ALW matchmaking day, Rotterdam, 20 February.
- Smit, M.G., Maas, L.R.M. Internal waves and monitoring opportunities, Mona Risa JIP meeting, Paris, France, 12 April.
- Sollai, M., Hopmans, E., Schouten, S., Keil, R., Sinninghe Damsté, J. Intact polar lipids as indicators of N-cycling in the eastern tropical North Pacific Oxygen Minimum Zone. Darwin Day 2013, Utrecht, 18 April.
- Stal, L.J. Cyanobacteria. BIOCRUST Project Symposium. IRD and University of Niamey, Niamey, Niger, 16-21 June.
- Stal, L.J. Nitrogen-fixing cyanobacterial mats. Unité d'Ecologie, Systématique et Evolution - CNRS UMR8079, Université Paris-Sud, Orsay, France, 21 February.
- Stal, L.J. Wat is er zo bijzonder aan mariene microbiologie? Amsterdams Universiteitsfonds en de Amsterdamse Universiteits-Vereniging Stand van de Wetenschap, Amsterdam, 9 September.



- Stehouwer, P.P. Flow cytometry as a tool for detecting marine plankton. BD Accuri meeting, Lund, Sweden, 29 May.
- Steinhardt, J. Deciphering eddies in the Mozambique Channel – single specimen Mg/Ca LA-ICP-MS approach. Foraminiferal and Nannofossil Groups Joint Spring Meeting, Prague, Czech Republic, 19-22 June.
- Steinhardt, J. Planktonic Foraminiferal Geochemistry – A Tool to reconstruct Mozambique Channel Eddies? Gateways conference, Jerusalem, Israel, 5-7 May.
- Stuut, J.-B. Present-day Saharan dust from a marine perspective. Keynote lecture at INQUA Loess focus group symposium. Leicester, UK, 2-5 September.
- Stuut, J.-B., Prins, M.A. Downwind changes in grain size of aeolian dust; examples from marine and terrestrial archives. EGU General Assembly 2013, Vienna, Austria, 7-12 April.
- Svensson, E., Schouten, S., Hopmans, E.C., Middelburg, J.J., Sinninghe Damsté, J.S. Large depletion in <sup>15</sup>N in the stable nitrogen isotopic compositions of intact polar lipids. 26<sup>th</sup> International Meeting on Organic Geochemistry, Tenerife, Canary Islands, Spain, 15-20 September.
- Thieltges, D. W., Hof, C., Borregaard, M., Dehling, M., Brändle, M., Brand, R., Poulin, R. Macroecology of parasites – drivers of trematode diversity and range size patterns in the European freshwater fauna. INTECOL 2013, London, UK, 13-18 August.
- Thieltges, D.W. Disease ecology – linking parasites, hosts and the environment. CEES lecture, Centre of Ecological and Evolutionary Studies (CEES) of the University of Groningen, Groningen, 6 June.
- Thieltges, D.W. Disease ecology. 22 Spring Symposium, University of Helsinki, Finland, 4-6 March.
- Thieltges, D.W. Macroecology of parasites. Annual Conference GfÖ, Potsdam, Germany, 9-13 September.
- Tiessen, M.C.H., T. Gerkema, P. Ruardij, H.W. van der Veer, Numerical modelling of larval transport in the Southern North Sea. Workshop: North Sea and Wadden Sea modelling, Texel, Netherlands, 9 January.
- Tiessen, M.C.H., T. Gerkema, P. Ruardij, H.W. van der Veer, The drift of plaice eggs and larvae across the North Sea, variability due to physical factors: A model study. Buys Ballot Science Days, Rolduc, 30 October-1 November.
- Timmermans, K.R. CEMI: Centre of Excellence for Marine Innovation: Initiatieven in de ontwikkeling van de NIOZ-kennishaven: zeewier, bioraffinage, hydroponics, ballastwater. Green Deal meeting, Agentschap.nl, Utrecht, 10 January.
- Timmermans, K.R. Duurzame zeewierteelt in Nederland, Kansen en ontwikkelingen voor energie en voedsel, Holland Food and Flowers, Bovenkarspel, 27 February.
- Timmermans, K.R. New developments in aquaculture and offshore biomass production, Textile Flagship Europe Conference, Brussel, 25 October.
- Timmermans, K.R. Seaweed production: possibilities and challenges, Nederland Maritiem Land Innovatie Council, Rotterdam, 26 August.
- Timmermans, K.R. Seaweed research @ NIOZ , Naturalis, Leiden, 16 October.
- Timmermans, K.R., Schipper, J. Sustainable seaweed cultivation in the Netherlands, (SEAWEED2F), Desso, Waalwijk, 30 May.
- Van Avesaath, P.H., Wijnhoven, S. Hummel, H. VECTORS of change in the Dutch southwestern Delta Waters: the occurrence of invading, non-indigenous and outbreak forming species - VECTORS WP2 Progress report. Lecce, Italy, 7-10 October and VECTORS GA meeting, Athens, Greece, 4-7 November.
- Van Belzen, J., van de Koppel, J., van der Wal, D., Herman, P.M.J., Bouma, T.J. Disturbing signs: Spatial indicators of tipping points in salt-marsh ecosystems. Netherlands Annual Ecology Meeting 2013 (NAEM-NERN), Lunteren, 5-6 February.
- Van Belzen, J. Verstoring-herstel dynamiek in kustecosystemen: van computer simulaties naar het veld en terug. Gastcollege, HAS Hogeschool, 's Hertogenbosch, 9 October.
- Van Belzen, J., van de Koppel, J., Herman, P.M.J., Bouma, T.J. Disturbing signs: Comparing the resilience of saltmarshes using experimental disturbances. CERF, San Diego, USA, 3-9 November.
- Van Belzen, J., van de Koppel, J., van der Wal, D., Herman, P.M.J., Bouma, T.J. Early warning signals in remotely sensed saltmarshes. NCK theme day: Remote sensing, Utrecht, 25 January.
- Van de Koppel, J. Animal movement and dispersal. Can we learn from physics? Movement and Dispersal Conference, Aberdeen, Scotland, 11 November.
- Van de Koppel, J. Darwin or Einstein, who sets the scene for movement ecology. Plenary speaker at the Netherlands Annual Ecology Meeting, Lunteren, 5 February.
- Van de Koppel, J. Salt marsh dynamics, a tale of troubles. Invited lecture. University College Roosevelt, Middelburg, 18 April.
- Van de Koppel, J. The ecology of animal movement. Can we learn from physics? Invited lecture. Wageningen ecology and evolution series lecture, Wageningen, invited lecture, 19 September.
- van der Meer, J. A first introduction into Dynamic Energy Budget theory: assumptions and consequences. COST Conservation Physiology of Fish, Faro, Portugal, 28-30 November.
- van der Meer, J. Add your pet: Fitting the DEB model to data. Workshop Ecosystem science without replicates, NIOO, Wageningen, 9 September.
- van der Meer, M.T.J., M'Boule, D., Chivall, D., Kasper, S., Sinke, D., Schouten, S., Sinninghe Damsté, J.S. Developing new methods to estimate paleosalinity; understanding the past as key to future climate change. Keynote at the BASIS meeting, Ghent, Belgium, 25-26 April.
- Van der Wal, D. Estuarine dynamics and ecology. Lecture for course Estuarine Ecology (Radboud University Nijmegen), held at NIOZ Yerseke, 27 May.
- Van der Wal, D. Optical and radar remote sensing of the intertidal zone. NCK Theme Day Remote Sensing of the Coastal Zone, Utrecht, 25 January.
- Van der Wal, D. Satellite radar of the intertidal zone. Radar workshop, Netherlands Space Office, The Hague, 26 April.



- Van Dijk, I.E.Y. Carbonate chemistry controls foraminiferal calcification. Darwin Days, Utrecht, 18 April.
- Van Dijk, I.E.Y. Seawater chemistry controlled foraminiferal biomineralization mechanisms through geological time. Foraminiferal and Nannofossil Groups Joint Spring Meeting, Prague, Czech Republic, 19-22 June.
- Van Duyl, F.C. Chemoautotrophic fixation, translocation and turnover of inorganic carbon in the cold water coral encrusting sponge *Hymedesmia coriacea* (Tisler Reef, NE Skagerrak). 9<sup>th</sup> World Sponge Conference 2K13, Fremantle, Western Australia, 3-8 November.
- Van Engeland, T. Mutualism between modellers and observationalists. Presentation during meeting at Ifremer, Brest, France, 18-22 March
- van Gils, J.A. Foraging ecology of migratory shorebirds at Banc d'Arguin (Mauritania). Invited key-note speaker for HDR Conference, Deakin University, Geelong, Australia, 24 October.
- van Gils, J.A. Global shorebird migrations and comparative mudflat ecology, with special focus on the top-down role of shorebirds on intertidal food webs. Lecture for BSc students University of Groningen, NIOZ-Texel, 8 April.
- van Gils, J.A. Loopbaan planning van een waddenbioloog. Lecture for 5 VWO students, NIOZ-Texel, 28 May.
- van Haren, H. Effects of earth rotation on large- and small-scale ocean motions. Lecture I, Fluid mechanics seminar, Professeur invité, École Centrale, Lyon, France, 7 June.
- van Haren, H. Energy release through internal wave breaking. 3rd DNVA-RSE Norway-Scotland Waves Symposium, Oslo, Norway, 16-17 September.
- van Haren, H. Energy release through internal wave breaking. IIT Madras, Chennai (Ind), 22 July. IISc Bangalore India, 5 August. NIOT, India, 8 August.
- van Haren, H. Observations in oceanography, Lecture II, EUPRO-seminar, Professeur invité, École Centrale, Lyon, France, 11 June.
- van Haren, H. On the importance of internal wave breaking for sediment transport above sloping topography. Workshop 'Dialogue between Contourite & Oceanography Processes', Hull, UK, 28-29 January.
- Van Oevelen, D. The energy balance of *Lophelia pertusa*: Insights from the development of a Dynamic Energy Budget model. Project meeting DIACORA, Stavanger, Norway, 8 April.
- Van Oevelen, D., Gontikaki, E., Woulds, C., Soetaert, K. Heip, C. The (un)importance of labile detritus in supporting faunal carbon demands in marine sediments". Food web symposium at NIOZ, Texel, 9 January.
- Van Oevelen, D., Soetaert, K. Ecosystem studies in the deep sea: Industrial applications and collaborations. Visit of IHC Merwede to NIOZ, Texel, 12 September.
- van Slooten, C., Wijers, T., Peperzak, L. The Quantification of ATP: A Promising Tool in Ballast Water Compliance Testing. Workshop on Compliance, Sampling and Enforcement of Ballast Water Treatment Systems, Handwerkskammer Hamburg, Germany, 7 March, NSBWO Annual Meeting 2013, World Maritime University, Malmö, Sweden, 11-12 March, 18th International Conference on Aquatic Invasive Species, Niagara Falls, Ontario, Canada, 21-24 April and I&M Expert Group Ballast Water, Dutch Ministry for Infrastructure and the Environment, The Hague, 5 June.
- van Soelen, E.E., Kim, J.H., Sinninghe Damsté, J.S., Santos, R.V. Assessing Amazon paleohydrological and paleotemperature changes using lipid biomarkers. CLIM-AMAZON progress meeting, University of Brasilia, Faculty of Geocronology, 28 March and 4 July.
- Vasquez-Cardenas, D., Malkin, S., Faydaci, B., Meysman, F.J.R., Boschker, H.T.S. <sup>13</sup>C-labelling of biomarkers: Unravelling a novel bacterial consortium in marine sediment. Benelux Association of Stable Isotope Scientists (BASIS) Gent, Belgium, 25-26 April.
- Vasquez-Cardenas, D., Schauer, R., Hidalgo, S., Atli S., Confurius, V., Meysman, F.J.R., Boschker, H.T.S. Chemoautotrophy associated with microbial sulphide oxidation by long-distance electron transport in coastal sediment. Annual Conference of the Association for General and Applied Microbiology (VAAM) in collaboration with the Royal Netherlands Society for Microbiology (KNVM), Bremen, Germany, 10-13 March.
- Vasquez-Cardenas, D., Schauer, R., Malkin, S., Hidalgo, S., Atli S., Confurius, V., Meysman, F.J.R., Boschker, H.T.S. Chemoautotrophy associated with sulphide oxidation by long-distance electron transport in coastal sediment. Darwin Days, Conference of Darwin center for Biogeosciences, Utrecht, 18 April.
- Vasquez-Cardenas, D., Schauer, R., Malkin, S., Hidalgo, S., Confurius, V., Faydaci, B., Meysman, F.J.R., Boschker, H.T.S. Chemoautotrophy & Heterotrophy associated to long-distance electron transport. First International workshop on long distance electron transport, Ømborg, Denmark, 14-17 April.
- Veuger, B., Pitcher, A., Schouten, S., Sinninghe Damsté, J.S., Middelburg, J.J. Nitrification and growth of autotrophic nitrifying bacteria and Thaumarchaeota in the coastal North Sea. European Geosciences Union, General Assembly 2013, Vienna, Austria, 7-12 April.
- Villanueva, L., Bale, N., Lipsewiers, Y., Buckles, L., Weijers, J., Hopmans, E.C., Schouten, S., Sinninghe Damsté, J.S. Intact polar lipids and gene expression to trace ammonia oxidizing archaeal populations in aquatic environments. Association for the Science of Limnology and oceanography ASLO Aquatic Sciences Meeting, New Orleans, USA, 17-22 February.
- Villanueva, L., Bale, N., Lipsewiers, Y., Hopmans, E., Schouten, S., Sinninghe Damsté, J.S. Tracing seasonal and spatial diversity and activity of marine Thaumarchaeota by using intact polar lipids and gene expression. Annual Conference of the Association for General and Applied Microbiology (VAAM) in collaboration with the Royal Netherlands Society for Microbiology (KNVM), Bremen, Germany, 10-13 March.
- Warden, L., Kim, J.H., Vis, G-J., de Stigter, H., Bonnin, J., Sinninghe Damsté, J.S. Exploring the use of the MBT/CBT proxy for continental climate reconstructions over the Iberian peninsula. Darwin Day 2013, Utrecht, 18 April.
- Welsh, J.E. Diversity Reduces Disease Risk. School of Biological Sciences, Swan-



sea University, Wales, UK, 27 February.

Welsh, J.E., Thieltges, D.W. Biodiversity & Disease Risk. University of Groningen Oceanography Course, NIOZ-Texel, 25 March.

Wernand, M.R. Innovative and Smart EO Technologies. First Citizens' Observatories Projects Coordination Workshop hosted by the European Commission, Brussels, Belgium, 29-30 January.

Wernand, M.R., Novoa, S. Citclops WP2 – First results and new ideas: a way forward. Citclops Workshop and Project Board meeting, PB1, NIOZ, Texel, 20-22 March.

Wernand, M.R., Novoa, S. Citclops, Colour sensors, data and ideas to continue – part 2 Plenary meeting 3 and Steering Committee Meeting, SC1, Labège, France, 16-17 September.

Wernand, M.R., Novoa, S. Publication of data on website and external access: A discussion. Citclops Workshop and Project Board meeting, PB1, NIOZ, Texel, 20-22 March.

Wernand, M.R., van der Woerd, H.J., Gieskes, W.W.C. Globe-wide response of ocean colour to climate change over the last twelve decades. Session S108-C, On the interpretation of in-situ data, International Congress of History of Science, Technology and Medicine, The University of Manchester, UK, 22 July.

Wijnhoven, S., van Avesaath, P., Hummel, H. Susceptibility and resilience to invasions: macrozoobenthic communities in the Dutch delta waters. Non-Indigenous Species (NIS) conference, Ostend, Belgium, 20-22 November.

Wijsman, J.W.M., Kamermans, P., Schellekens, T., Witbaard, R., van der Meer, J. A DEB model for *Ensis directus* as a tool to study the effect of varying suspended sediment concentrations due to sand mining. NIOZ-Texel, 26 April.

Witbaard, R., Duineveld, G.C.A., Bergman, M.J.N., Lavaleye, M.S.S. Overzicht Benthos onderzoek Noordzee. Presentation Voor het Noordzee kernteam van RWS, NIOZ-Texel, 16 July.

Ysebaert, T. Ecologische ontwikkelingen in de Oosterschelde. ANT/NCK themadag Oosterschelde, Topshuis Neeltje Jans, 11 December.

Ysebaert, T., Cozzoli, F., Schwarz C., Ma Z., van der Wal D., Bouma T.J., Herman, P.M.J. Ecomorphological effects of human interferences in estuaries and their consequences for management. ECSA 53 Estuaries and coastal areas in times of intense change, Shanghai, China, 13-17 October.

Zell, C., Kim, J-H., Lima Sobrinho, R., Moreira-Turcq, P., Abril, G., Sinninghe Damsté, J.S. Impact of seasonal hydrological variation on the distributions of branched and isoprenoid tetraether lipids along the Amazon River in the central Amazon basin: Implications for the MBT/CBT paleothermometer and the BIT index. European Geosciences Union, General Assembly 2013, Vienna, Austria, 7-12 April.

Zetsche, E, Dubois, F, Yourassowsky, C, El Mallahi, A, Meysman, F.J.R. Digital holographic microscopy: Visualizing the "invisible". Microscale Interactions Symposium 2013 - Microscale Interactions in Aquatic Environments, Les Houches, France, 10–15 March.

Zetsche, E. Digital holographic microscopy in the marine sciences. IRIS – International Research Institute of Stavanger, Norway, 6 December and GEOMAR Helmholtz Centre for Ocean Research Kiel, Germany, 13 December.

Zetsche, E., Meysman, F.J.R. Digital holographic microscopy: Visualizing the "invisible" in marine science applications. Invited Talk. Marine Biology Live Cell Biolmaging, Station Biologique de Roscoff, France. 24-27 June.

Zhu, Z., Ysebaert, T., Herman, P.M.J., Bouma, T.J. Seed arrival and survival of salt marsh pioneer species on the intertidal mudflat: bottlenecks for seedling establishment? ECSA 53: Estuaries and coastal areas in times of intense change, Shanghai, China, 13-17.

## Symposia

NCK Theme Day Remote Sensing of the Coastal Zone, 25 January, Utrecht. Organised by D. van der Wal and C. van Oeveren, chaired by D. van der Wal.

3rd EOS Topical Meeting on Blue Photonics® - Optics in the Sea (Blue Photonics 3), Wernand, M.R. (general chair), 18-20 March, Royal Netherlands Institute for Sea Research (NIOZ), Texel, Netherlands. Number of attendees: around 70 scientists, mostly European and some from India. The conference provided a major international forum for the discussion of marine optics and its applications. Recent progress in the field were reviewed, the formation of a community of scientists and engineers working in related areas was promoted and the interdisciplinary collaboration required to meet the rapidly developing challenges of the future has been stimulated. Conference Topics: Environmental Monitoring, Crowdsourcing Topic related Smartphone/iPhone Apps, Ocean Colour, Radiative Transfer and Modelling, Marine Bio-optics and Remote Sensing, Fluorometry, AOP/IOP, 2D and 3D Underwater Imaging and Innovative Sub-sea Optical Techniques and Instrumentation. The Theme Day provided an overview of the state of the art of remote sensing of the coastal zone in the Netherlands. The presentations covered morphological, ecological and water quality aspects, using satellite, airborne and near-surface (imaging) remote sensing. The Theme Day served to raise awareness of the value of remote sensing capabilities both for scientific research and coastal management, and to identify opportunities for observing and monitoring the (Dutch) coast using remote sensing.

Third International DEB Symposium, J. van der Meer, chairmen of the organization committee, 24-26 April, 90 participants.

The aim of Dynamic Energy Budget (DEB) theory is to quantify metabolism that all individual organisms share on the basis of simple physico-chemical principles and to understand possible deviations in terms of mechanisms in an evolutionary context. This aim strongly invites for a formalised modular set-up of the models. The inclusion of metabolic memory (via reserves), the full-life cycle of individuals (embryo, juvenile, adult) and the explicit



use of conservation laws sets the theory apart from other approaches. DEB research invested a lot of effort during the last years in the further development of parameter estimation methods (and software), testing them on the rapidly growing collection of animal species. These tests and the comparisons among species that came into reach formed the major topic during the symposium.

Ballast water management, from concept to reality', Europort Maritime Exhibition, Rotterdam, the Netherlands, 6-7 November, organized by ProSea and NIOZ. Chairs: J.P. Boon (NIOZ) and E. Bogaard (ProSea).

This symposium was organized at the Europort maritime exhibition to inform a maritime oriented audience about the most recent developments about the implementation of the IMO Ballast Water Management Convention and the regulations in the USA (Final Rule of the US Coast Guard and the Vessel General Permit of the USEPA). The NSBWO Work package leaders presented highlights in research, policy and on board operation and sampling. Especially the café meetings where the audience could ask their questions directly to the experts in the different fields were highly successful and very much appreciated. 126 unique visitors attended at least one of both days.

Sequential carrying capacities of tidal flats along the East-Atlantic Flyway', T. Piersma, chairmen of the symposium, 14 November, NIOZ-Texel.

In this symposium we explore the role of the Banc d'Arguin and other coastal systems in the life cycles of migratory birds. We approach this question from both mechanistic and demographic perspectives, after a general introduction to the theme of seasonal connectedness by Norris.

Speakers: Theunis Piersma (Professor Global Flyway Ecology at University of Groningen and senior scientist NIOZ), Ryan Norris (Professor at University of Guelph, Canada), Tamar Lok (University of Groningen, PhD), Matthijs van der Geest (NIOZ, PhD), Mohamed El-Hacen (University of Groningen, PhD). Convenors: Theunis Piersma, Tamar Lok, Matthijs van der Geest.

ANT/NCK themadag Oosterschelde, Topshuis Neeltje Jans, organized by T. Ysebaert and P. Herman, 11 December.

## Courses

### (Bi-)Annual/regular courses:

Annual MSc course - "Global Change and Coastal Hazard Mitigation" (together with S. Temmerman) at the Antwerpen University, Bouma T.J.

Bi-annual course at NCK summer school, Texel, July, Bouma T.J.

Course "How to give a good talk" NIOZ, Yerseke, 23 January. Contact person dr L. Villanueva.

Course "How to write a scientific paper" Contact person dr S. Schouten.

Course "Proposal writing" NIOZ, October 11 Contact persons dr. L. Villanueva, dr. M vd Meer, dr. S Schouten.

E-M. Zetsche organized a 2-day image analysis course held by BioVoxel on 'Scientific Image Processing and Analysis'. 29-30 October 2013. 16 persons in total from NIOZ-Yerseke and NIOZ-Texel participated.

F. Montserrat. Double lecture "Estuarine Ecosystem Engineering" and "Geo-engineering" at Roosevelt Academy Middelburg, 7 March.

F.J.R. Meysman WE-DBIO-14373 Environmental modeling (4 ECTS), 1ste MSc Oceans & Lakes, joint master Vrije Universiteit Brussel - Universiteit Gent - Universiteit Antwerpen (co-titularis with K. Soetaert)

F.J.R. Meysman WE-DBIO-14389 Applied Mathematics and Statistics (6 ECTS), MSc Oceans & Lakes, joint master Vrije Universiteit Brussel - Universiteit Gent - Universiteit Antwerpen (co-titularis with M. Elskens)

F.J.R. Meysman WE-DSCH-14655 Modelling of the environment (6 ECTS), MSc Chemistry, joint master Vrije Universiteit Brussel - Universiteit Gent (titularis)

K Soetaert. Environmental modeling (4 ECTS), MSc Oceans & Lakes, Universiteit Ghent.

Lipsewers, Y., Bale, N., Hopmans, E.C., Schouten, S., Sinninghe Damsté, J.S., Villanueva, L. A combined DNA/RNA and lipid approach Example: Aerobic ammonia oxidizers in the oxygen transition zone of coastal marine sediments. NIOZ Marine Masters Course 'Exploring the Wadden Sea', July.

Marine Master Course 2013 "Exploring the Wadden Sea". Contact person dr. H. Stigter. Lectures, field work and data analysis on Wadden Sea ecosystem. Participants: 27 master students from Dutch and European Universities.

NIOZ Marine Masters Course 'Exploring the Wadden Sea'. Contact persons prof. dr. H. Ridderinkhof and dr. H.C. de Stigter. 1-13 July.

Van der Wal, D. •Summer School Netherlands Centre for Coastal Research (NCK). Case Ecomorphology of saltmarshes, Den Hoorn, Texel, June.

### Irregular courses:

Ecological applications of biomarkers in aquatic food web studies: 'Inferring diet information from stable isotope data using isotope mixing models' Contact person: dr. M. de Troch. 28 January-1 February.

Graduate program in hydrometeorology, University of Guadalajara, Guadalajara, Mexico, 24 September. Residual flows in the Dutch Wadden Sea. Contact person: M. Duran-Matute.

NIOZ. In house course 'Basic Flow Cytometry and Data analysis'. December 2013. Contact person: Louis Peperzak.

Practical training part of the 7-th international course on DEB theory, 15-23 April, International PhD course, 37 participants, contact person: Jaap van der Meer.

A selection of students and lecturers who were going for a hike on a lovely Sunday morning, 7<sup>th</sup> international Dynamic Energy Budget (DEB) theory course, April 15-23



## Ondernemingsraad

In 2013 hebben zich een beperkt aantal wijzigingen voorgedaan in de samenstelling van de ondernemingsraad. Na zich gedurende een lange periode voor de OR te hebben ingezet is de secretaris Swier Oosterhuis afgetreden en vervangen door Kirsten Kooijman als vertegenwoordiger voor de groep onderzoeks- en laboratoriummedewerkers.

Ook heeft er zich een wijziging voorgedaan in de functies binnen de OR. De samenstelling is nu als volgt:

Voorzitter - Henk de Haas (vertegenwoordiger van de groep vaste en tijdelijke onderzoekers Texel).

Vicevoorzitter - Henk Bolhuis (vertegenwoordiger van de groep vaste en tijdelijke onderzoekers Yerseke).

Secretaris - Sander Holthuisen (vertegenwoordiger van de groep onderzoeks- en laboratorium medewerkers Texel).

Vervangend secretaris - Ruud Witte (vertegenwoordiger van de groep medewerkers van de technische diensten, centrale diensten en stafeenheden Texel).

Lid - Sander Asjes (vertegenwoordiger van de groep medewerkers van de technische diensten, centrale diensten en stafeenheden Texel).

Lid - Yvonne van der Maas (vertegenwoordiger van de groep medewerkers van de ondersteunende diensten, stafeenheden Yerseke).

Lid - Loran Kleine Schaars (vertegenwoordiger van de groep onderzoek- en laboratoriummedewerkers Yerseke).

Lid - Ewout Adriaans (Vertegenwoordiger voor de groep varende en havenpersoneel).

Lid - Cees van Slooten (vertegenwoordiger van de groep tijdelijke medewerkers).

Lid - Theo Gerkema (vertegenwoordiger van de groep vaste onderzoekers).

De OR heeft op 18 april, 6 juni en 21 november formeel overleg gehad met de directie. In aanvulling hierop heeft ook verscheidene keren informeel overleg plaatsgevonden. Formeel overleg met het NIOZ-bestuur vond plaats op 17 mei en 28 november. De notulen van de vergaderingen zijn te lezen op de NIOZ intranet webpagina van de ondernemingsraad.

De ondernemingsraad heeft de directie geadviseerd in en zijn instemming verleend aan verscheidene door de directie aan de OR voorgelegde zaken. Voor een deel betroffen dit onderwerpen aangaande de komende aanpassingen van de NIOZ organisatie die samenhangen met de huidige financiële situatie. In 2013 heeft de NIOZ-OR positief advies uitgebracht op de voorgestelde aanpassing van het NIOZ organogram, het aan de NIOZ medewerkers aanbieden van een tweede collectieve zorgverzekering, een

beperkt aantal punten van het voorstel tot organisatieaanpassing en de herbenoeming van de heer Guus van der Kamp tot penningmeester van het bestuur van de Stichting NIOZ.

De ondernemingsraad heeft ingestemd met een nieuwe sollicitatiecode, een voorstel tot aanpassing van de Uitvoeringsregeling Stagiaires en het Risico Inventarisatie & Evaluatie Plan voor een aantal van de NIOZ afdelingen en laboratoria.

De ondernemingsraad heeft een negatief advies gegeven over de aanpassing van de NIOZ statuten.

In 2013 heeft de OR zich al intensief bezig gehouden met de voorbereiding van te verwachten advies- en instemmingsverzoeken aangaande de komende wijzigingen binnen de NIOZ organisatie.

## Meetings

VOLC-OCEAN Kick-off meeting, NIOZ chair: Loes Gerringa, January 15-16. Proposal writing for EU, second round.

Darwin project HYPOXIA workshop, 23 January, NIOZ-Yerseke, Organizer: Filip Meysman.

NAEM Ecology symposium; participant H. Hummel; Lunteren, 5-6 February.; NIOZ Flow Cytometer Workshop Comparing organism detection instruments in measuring 2-10 µm and 10-50 µm plankton cells. NIOZ chair: Louis Peperzak. 11-14 February. Flow cytometry based organism detection technologies are readily available to meet the requirements for compliance monitoring and enforcement with ballast water management standards for indicative analysis. Some new approaches are in a developmental stage. To proof compliance with ballast water management standards a precise enumeration of cells according to their minimum dimension and at the same time a separation of living and dead cells is needed. Flow cytometry based systems are able to provide the enumeration and living/dead assessment analysis with the needed accuracy level, for both indicative and detailed ballast water sample analysis. However, additional developments are required to document the minimum dimension of organisms.

Conference Zeeuwse Banken (Eind Symposium MEP-Zandwinning); participants H. Hummel & V. Escaravage; Zoetermeer, 21 February.

EC Liaison meeting on Horizon 2020 programme; participant H. Hummel, The Hague, 7 March.

Session 'Marine Microbiology' of the joint annual meeting of the German and Dutch Societies of Microbiology (VAAM and NVvM), co-chair Lucas J. Stal, Bremen, Germany, 10-13 March.

Annual meeting of the North Sea Ballast Water Opportunity project. NIOZ chair: J.P. Boon. IMO World Maritime University, Malmö, Sweden, 11-12



March. The progress of the NSBWO project was explained to the projects' Steering Committee, which agreed with the plans of the work package leaders for the next and final year of the project. Work shops were held on training and capacity building for ship owners and crews, on the importance of transparency of test results of ballast water treatment systems during land-based and shipboard type approval tests, and under routine operational conditions, and on the possibilities for on board rapid testing to check whether treatment systems operate according to the degree of biological efficacy as specified in the D2 regulation of IMO and the 'Final Rule' of the US Coast Guard. 50 people attended the annual meeting.

WFD indicators for the North Sea workshop. Evaluation of composed indicators & Calculating numbers of samples taking distinctiveness into account. Chaired by S. Wijnhoven, during WFD indicator workshop organized by NIOZ-MEE, Den Haag, 12 March.

Annual meeting NCK on the "Sand Motor"; Netherlands Center for Coastal Research; participants H. Hummel & V. Escaravage; Den Haag, 14 March.

EC Directorate B.3 Research Infrastructure meeting "Towards a roadmap for biodiversity and ecosystem research in Europe"; participants H. Hummel & P. van Avesaath; Brussels, Belgium; 19-20 March.

Citclops (Citizens' Observatory for Coast and Ocean Optical Monitoring, Seventh Framework Programme FP7/2007-2013, project n° 308469) Project Board 1, PB1 meeting, Wernand, M.R., Texel, Netherlands, 20-22 March. Number of attendees: 19. Presentation of first results on implementation of participatory science.

Aeolian dust: Initiator, Player, and Recorder of environmental change, session at EGU General Assembly, Vienna, Austria, 8-11 April, Convener: J.-B.W. Stuut.

First International Workshop on Intriguing Filamentous Electrogenic Microbes (IFEMs). 15-17 April, Aarhus, Denmark. Organizers: Lars Peter Nielsen and Filip Meysman.

Brainstorm meeting 'Fish Migration River'; participant S. Wijnhoven; Delft, Netherlands, 13 May.

ESF-COST EMBOS WGBI workshop; Reports of researchers and students working in the EMBOS action on a European Marine Biodiversity Observatory System; Coordinator and organisers H. Hummel & P. van Avesaath, Zandvoort, 14-15 May.

ESF-COST EMBOS Management Committee Meeting, Reports of researchers and students working in the EMBOS action on a European Marine Biodiversity Observatory System, Coordinator & organisers H. Hummel & P. van Avesaath, Zandvoort, 16-17 May.

COST EMBOS Training School. Marine Biodiversity Observation: A system to bring theory and practice together'; Coordinator and trainers H. Hummel and P. van Avesaath; Santander, Spain 21-25 May.

Maritiem Kennis Centrum meeting, Smit M.G., Stadnitskaia A., NIOZ, Texel, 23 May

OFEG-TECH meeting, Smit M.G., Schilling J., Marum, Bremen, 21 November

EMBRC meeting on "Marine and biological sciences infrastructures interaction and collaboration", participants H. Hummel & S. Wijnhoven; Heraklion, Crete, Greece; 28-30 May.

Bookpresentation and Symposium 'Ecological Atlas of the Dutch Marine Mollusks', participant S. Wijnhoven, Leiden, 1 June.

NIOZ Science days, participants H. Hummel & S. Wijnhoven; Noordwijkerhout, 4-5 June.

CSA Oceans (JPI Oceans support action) Stakeholder Consultation Workshop on Marine Research Infrastructures; participant H. Hummel; Brussels, Belgium, 5 June.

Schaliegaswinning in Nederland. Avondsymposium KNAW, Organisatie en voorzitter: H.J.W. de Baar. Four lectures, attendance by scientists, policy makers, members of parliament, to maximum ~230 persons capacity of Tinbergen conference room. Amsterdam, 12 June. (<https://www.knaw.nl/nl/actueel/agenda/schaliegaswinning-in-nederland>)

Zoet-zout Platformdag, 'Waterverdeling en zoutindringing in het hoofdwatersysteem'; participant S. Wijnhoven, Utrecht, Netherlands, 13 June.

JERICO Mid-term Review; participant S. Wijnhoven; Paris, France, 18-19 June.

Toekomst beeld Friese Front en Oestergronden. Meeting IMARES, Den Helder, 14 August. Marc Lavaley and Rob Witbaard visitors.

48th European Marine Biology Symposium (EMBS); President of EMBS H. Hummel; Galway, Ireland, 19-23 August.

MaCuMBA General Assembly, chair: Lucas J. Stal, Roscoff, France, 22-27 September. Workpackage leaders summarized the progress of the first 12 months of this EU FP7 project. PhD students and post-docs presented their scientific results in the symposium. One day was reserved for individual meetings of the workpackages. Two days were used for joint sampling of the local marine environment and subsequent exchange of isolation and cultivation methods in the laboratory.

2nd Biodiversity Knowledge conference: Towards a future Network of Knowledge on biodiversity and ecosystem services in Europe (EC 7th FW project KNEU); participant H. Hummel; Berlin, Germany; 24-26 September.

Workshop afwegingskader Rijksstructuurvisie Grevelingen/Volkerak-Zoommeer, 25 September, Middelburg, Meysman F., external expert.

Seagrass: 2nd International Conference on exploring the seaweed chain. NIOZ Chair: Timmermans, K.R. Den Helder-Texel, 26-27 September. To express the importance of the new seaweed industry, 130 experts from 13 countries gathered at Seagrass 2013. The conference had specific attention for the sustainable seaweed chain, with the following topics: Hatchery and Farming, Marine Spatial Planning, Market Chain Development, Mechanization, Pre-processing, Storage and Logistics, Biorefinery and products. The first day, with lectures and posters, was organised in Den Helder. The second day of the conference all attendees were invited at NIOZ, Texel,



- where in the morning presentations were given. In the afternoon, a site visit to the NIOZ SeaweedCentre was organised.
- VECTORS: Vectors of Change in Oceans and Seas Marine Life, Impact on Economic Sectors, Workshop WP; participant P. van Avesaath Lecce, Italy, 7-10 October.
- Noordzeedagen; participants H. Hummel, S. Wijnhoven & V. Escaravage; Den Helder, 10-11 October.
- De natuurwetenschappelijke basis van klimaatverandering. Avondsymposium KNAW. Major findings of IPCC Working Group I report Climate Change 2013, The physical science basis. Organisatie en voorzitter: H.J.W. de Baar. Four lectures, attendance by scientists, policy makers, members of parliament, to maximum ~230 persons capacity of Tinbergen conference room. Amsterdam, 11 October. (<https://www.knaw.nl/nl/actueel/agenda/minisymposium-de-natuurwetenschappelijke-basis-van-klimaatverandering>)
- COST EMBOS WGBI workshop, the European Marine Biodiversity Observatory System; Chair & co-organisers H. Hummel & P. van Avesaath, Riga, Latvia; 14-17 October.
- OFFSHORE ENERGY13. OFFSHORE Energy Exhibition & Conference; participant V. Escaravage, Amsterdam RAI, 15-16 October.
- Stuut, J.-B.W. Precruise meeting RV Pelagia cruise 378, NIOZ, Texel, The Netherlands, 16 October.
- JERICO workshop. Possible strategies and potentials for JERICO to become a network for biodiversity observation. Chaired by S. Wijnhoven, during JERICO WP10 workshop, Villefranche-s-Mer, France, 16-18 October.
- Stuut, J.-B.W. Kick-off meeting ERC project DUSTTRAFFIC, NIOZ, Texel, The Netherlands, 17-18 October.
- Annual meeting of the EU-funded project "Future of Reefs in a Changing Environment"., Corpus Christi, Texas, USA, 31 October-1 November.
- VECTORS: Vectors of Change in Oceans and Seas Marine Life, Impact on Economic Sectors, General Assembly Meeting; participant P. van Avesaath; Athens, Greece, 4-7 November.
- CEDA FORUM 2013. Dredging in a changing world; participant V. Escaravage, Rotterdam Netherlands, 7 November.
- Brainstorm meeting 'Tidal Testing Centrum Grevelingendam'; participant S. Wijnhoven, Almere, 7 November.
- MIDAS kickoff meeting, London, 11-15 November. K. Soetaert.
- Zoet-zout Platformdag, 'Estuariene gradienten in Zuidwestelijke delta en Wadden: ambitie, praktijk en beleidsvoornemen'; participant S. Wijnhoven, Utrecht, 14 November.
- Kick-off meeting on the Fixed Point Open Ocean Observatory Network, participant H. Hummel; (FixO3); Rome, Italy; 18-20 November .
- COST EMBOS WGPS workshop, the European Marine Biodiversity Observatory System, Chair & co-organiser H. Hummel and P. van Avesaath; Anavysos, Greece, 20-22 November.
- Schelde Symposium; participant V. Escaravage; Antwerp, Belgium, 21 November.
- GATEWAYS (ITN Marie Curie, FP7 project) steering committee meeting, Chair: G.J. Reichart and C. Cl  roux, annual meeting of the Gateways Pls. 28-29 November, NIOZ,
- Workshop "Dynamic Energy Budgets of Cold Water Coral", Yerseke, 3 December, Gerla, Germany.
- The DIACORA project, meeting partners at Iris, Stavanger, Norway, 9-11 December, Gerla, Germany.
- Netherlands Annual Ecology Meeting, contact person: Jaap van der Meer, chairman of the organization committee. The Netherlands Annual Ecology Meeting is a two-day event organised by NERN (Netherlands Ecology Research Network) and NECOV (Dutch-Flemish Ecological Society) and supported by the Netherlands Organisation for Scientific Research (NWO). The set-up of the 2013 meeting was in accordance with previous years, and was again a great success with over 300 participants.
- Mini-Symposium 'Electron transfer processes in the subsurface' at the joint annual meeting of the German and Dutch Societies of Microbiology (VAAM and NVvM), co-chair L.J. Stal

#### Public outreach

##### TV

- National TV. 'De heldenrol van de spons'. June 20. Labyrint, TV van Duyl, F. Corals (3482.KORAAAL COFI), 19 November, Het Klokhuis, 18:25-18:40h, Ned 3, TV.
- Timmermans, K. Zeewier, 27 September, NH-leeft (RTVNH).
- Lavaleye, M. Deep-sea mining. TV programma Labyrint, Hilversum, Netherlands, 10 February.
- Stuut, J.-B.W. Interview with Jelle Bauer, Klimaatjagers, VPRO, Dutch Television, 17 July.

##### Radio

- Wernand, M.R., De kleur van de Waddenzee, VPRO, Studio Idzerda, 18.15-19.00 on Radio 1 interview with Remy van den Brand, 10 March. <http://weblogs.vpro.nl/idzerda/2013/03/10/de-kleur-van-de-waddenzee/>
- Schouten, S. Labyrint Radio, 30 juni.
- Boon, J. View on aquaria fish as invasive species, 16 January, Thomas van Zijl from BNR Nieuwsradio.
- Brussaard, C.P.D. Women climate scientists conquer Antarctica, 6 March, Deutsche Welle Radio – Program Living Planet.
- Brussaard, C.P.D. Enorme zeevirussen, 9 June, Labyrint Radio 1.
- Lavaleye, M., Witte. H. Natuurwijzer. Thirteen radioprograms about Texel and the marine environment. Radio Texel, Netherlands, Datum.



## Krant/tijdschrift

Interview Labvision, zeewaterchemie

Press release on the website Lophelia.org about the symbiosis between *Lophelia pertusa* and *Eunice norvegica* (article published in PLOS ONE).

Europort Daily News No. 3, Thursday, 7 November 2013. Ballast water treatment: Lively discussions trigger new impulses. pp. 1-2.

Trouw, 12 September, Timmermans, K. Zeewier zit nog vol mysteries.

GPD, 30 September, Timmermans, K. Nieuwe akker ligt op zee.

Folia Magazine No. 20, 13 February. Farenza, Z (MSc-student with prof. dr. C. Brussaard). Berichten van de Zuidpool.

NRC Wetenschap, 19 January, De Baar, H., Brussaard, C.P.D. Zeecontainers als mobiele labs.

Nederlands Dagblad, 24 January, Brussaard, C.P.D. Onderzoek onder toezicht van pinguïns.

AD Nieuws, 29 January, Brussaard, C.P.D. Nederland kent zijn eigen stukje Zuidpool.

Trouw – de Verdieping, 15 April, Brussaard, C.P.D. Op zoek naar leven in een opwarmende ijszee.

FEMS – Federation of European Microbiological Societies, March, Brussaard, C.P.D. FEMSRE Editor working in Dirck Gerritsz laboratory.

Bionieuws, 22 June, Brussaard, C.P.D. Reuzenvirus in plantaardige gastheer.

Experiment NL, Brussaard, C.P.D. Koud kamp – onderzoek doen op Antarctica is nog zo vervelend niet.

van Gils, J. A. Kanoet overleeft dankzij eten giftige prooien. Press release to promote paper by van Gils et al. (2013) in Proc. R. Soc. 5 June.

Bolhuis, H., 'Lost world' Antarctica lijkt verdacht veel op gewone zee, Volkskrant

<http://www.volkskrant.nl/vk/nl/2672/Wetenschap-Gezondheid/article/detail/3473092/2013/07/10/Lost-world-Antarctica-lijkt-verdacht-veel-op-gewone-zee.dhtml>

Mienis, F. Appearing in article by Gemma Venhuizen: Berglandschap op de oceaانبodem. Geo.brief 7, 10-11.

Stuut, J.-B.W. Interview with Gemma Venhuizen, Geo-Nieuws, Magazine KNG-MG, 16 July.

Stuut, J.-B.W. Interview with Maarten Keulemans, Volkskrant, 15 July.

## Open dag

Open days, Yerseke

NIOZ-Yerseke Open days, Treasures of the Sea, with three topics of the Monitor Taskforce: 1) Asians expel the indigenous shore crab, 2) The jellies have arrived, 3) A closer look at the infauna; Yerseke, 4-5 October.

Organization committee Open Days NIOZ Yerseke

## Lezing/Symposia

Public lecture. Van Oevelen, D., Soetaert, K. Cold-water coral reef communities: Hotspots in the deep ocean". Leidse Biologen Club, Leiden, Netherlands, 15 May.

10 June: Brussaard, C.P.D. Programma polair, sessie Bessensap, Den Haag.

24 Juni: van Slooten, C. Introductory talk about the work in the Dept. of Biological Oceanography and the Ballast Water Research at NIOZ to HBO students of the University of Applied Sciences Van Hall Larenstein, Leeuwarden.

28 August: Boon, J.P. Explanation ballast water in world-wide shipping and related analytical methods necessary to test Ballast Water Treatment Systems to students becoming lab technicians at NOVA College, institute for vocational education in Haarlem, the Netherlands.

18 October: van Bleijswijk, J.D.L. NIOZ introduction and lecture Ecology of marine micro-organisms for students of the Hogeschool Leiden.

27 November: Peperzak, L. Presentation about NIOZ ballast water research for company NOGEPA.

International Innovation – Climate discourse, October, Brussaard, C.P.D. Marine maladies or benefits?

De Stigter, H.C. A tale of two canyons: the Nazaré and Lisbon-Setúbal submarine canyons. Lecture for students at Faculty of Sciences, University of Lisbon, Portugal, 18 November.

Stuut, J.-B.W. Presentation for high-school kids: deep-sea deformation of foam cups, OSG De Hoge Berg, Den Burg, The Netherlands, 26 September.

Stuut, J.-B.W. Saharastof en het klimaat. Lecture for IVN (Instituut voor Natuureducatie en Duurzaamheid) afdeling Texel, 9 January.

Stuut, J.-B.W. Saharastof en het klimaat. Lecture for high-school pupils, 28 May. Excursion at mudflat & saltmarsh near Roelshoek (Eastern Scheldt) & guided tour and talks at institute (OERM), Radboud Universiteit, Nijmegen, the Netherlands, 12 September

Excursion at mudflat & saltmarsh near Viane (Eastern Scheldt), HAS Hogeschool, 's Hertogenbosch, the Netherlands, 22 October.

Ysebaert, T. Public Lecture Ecological developments in the Oosterschelde. Zeeuwse Bibliotheek, Middelburg, 14 November.

Lavaleye, M. Geschiedenis van het molluskenonderzoek in de Noordzee en enkele resultaten van recente cruises met de Pelagia. Symposium "Diversiteit Nederlandse mariene schelpdieren", Naturalis, Leiden, Netherlands, 1 June. 25 september, opening expositie Helderse Vallei, L. Klunder

## Congressen/Evenementen

Stand informing about NIOZ ballast water research at SAIL Den Helder, 20-23 June 2013

Stand informing about NSBWO Project at Interreg conference in Utrecht, 24 June 2013

Stand informing NIOZ sea-going activities at SAIL Den Helder, 20-23 June 2013

Stuut, J.-B.W. Presence at SAIL Den Helder with NIOZ information stand, 21



June.  
 31 juli dag van de zee, Den Burg, Hans Witte, Nienke Bloksma

Rondleiding/lezingen groepen op NIOZ  
 16-apr; Erasmus MC, Hans Galjaard; Katja, Jan  
 8-mei; Wetenschapsquiz junior; NB  
 23 May: Boon, J.P. Explanation NSBWO project and ballast water research at the NIOZ harbour for TKI Maritiem.  
 25-mei; Waddenvereniging; eigen programma  
 28-mei; Scholen aan Zee; NB, Jan van Gils, Jan-Berend Stuu, Klaas Timmermans, Walther Lentink  
 28-mei; bewoners 't Horntje over Kennishaven; Gemeente, Herman Ridderinkhof  
 30-mei; Hoogheemraadschap; ondertekening zandige variant  
 30 mei Visiting group. Van Oevelen, D., Gontikaki, E., Woulds, C., Soetaert, K. Heip, C. The (un)importance of labile detritus in supporting faunal carbon demands in marine sediments. Visit of students Nijmegen University, Yerseke, Netherlands,  
 7 juni Mienis, F. Koudwaterkoralen zijn hot! Omgevingsfactoren bepalend voor de groei van koudwaterkoralen. Lecture for students Pre-University College Leiden, NIOZ, Texel, The Netherlands.  
 23-jun; Sail briefing captains; Carmen / Frida  
 24-jun; Van Hall diermanagement, Peter Hofman; nodigen zelf uit  
 28-jun; groep ??? door ; Jan Boon  
 19 juli Introductie trainees Rijkswaterstaat, M. Vloemans  
 31-jul; ; met Hans Witte, Gerard Nieuwland, Thomas Leerink, Evaline van Weerlee en Nienke Bloksma  
 28 augustus, NOVA college, 1e jaars, inleiding en rondleiding, M. Vloemans  
 6-sep; Planbureau voor de Leefomgeving;  
 12 September: Peperzak, L. Explanation ballast water research performed at NIOZ for company IHC Merwede.  
 17-sep; Natuurmonumenten;  
 24 September. Hopmans, E.C. Ladderanes revealed: An application of LC/MS in organic biogeochemistry. Bezoek "Amsterdams Chemisch Dispuut", NIOZ, 24 September. (lezing)  
 10 oktober. Stuu, J.-B.W. Woestijnstof en het klimaat. Lecture for Lion's Club Texel, The Netherlands.  
 11 oktober, Inleiding en rondleiding Studievereniging Biota Natura, M. Vloemans  
 18-okt; Het Nut voor het algemeen, departement Wieringermeer;  
 18 October: Brussaard, C.P.D. Group visit NIOZ by students of the Hogeschool Leiden.  
 5 November: Peperzak, L. Presentation about NIOZ ballast water research for Top Sector Water.

12 November: Boon, J.P. NIOZ movie and introductory talk about the mission and work of the institute for a group of 20 journalists from Israel who visited innovative events on the isle of Texel as guests of the Ministry of Economic Affairs.  
 22 november. Mienis, F. Cold-water corals in the North Atlantic. Lecture for students Amsterdam University Honours class, NIOZ, Texel, The Netherlands.  
 28 november,  
 18 december, inleiding en rondleiding, HOVO, M. Vloemans  
 18 december Stuu, J.-B.W. Saharastof en het klimaat. Lecture for HOVO (Hoger Onderwijs voor Ouderen) students VU University Amsterdam visiting NIOZ.

#### Internet

Promotional movie for the Olivine Foundation about the research done at NIOZ Yerseke regarding enhanced olivine weathering in marine coastal environments: <http://www.greensand.nl/over-greensand/organisatie/greensand-foundation/onderzoek-olivijn>  
 Soissons, L. Blog post in the 'Notes from the field' section on the World seagrass association blog. Online since 14 January. <http://wsa.seagrassonline.org/blog/>  
 Blog post in the 'Notes from the field' section on the World seagrass association blog. Online since 14 January. <http://wsa.seagrassonline.org/blog/>  
 Jung, S., Passen en meten, Blog Article on ZeelInZicht, <http://www.zeeinzicht.nl/nieuws2/?p=1988>, The Netherlands, 25 November.

#### Poster

Two posters on Ocean Acidification Open Days, NIOZ Yerseke  
 Van der Wal, D. Posters Open Days, 4-5 October, NIOZ Yerseke.

#### Diversen

Snuffelstage voor 2 studenten  
 NIOZ contributions to exhibitions (e.g. at Ecomare, Naturalis, Museon etc.).  
 The Ballast Water Times, Volume 3, edited by Marieke Holthuijsen-Vloemans & Graeme s. Russell.  
 The Ballast Water Times, Volume 4, edited by Marieke Holthuijsen-Vloemans, Dörte Poszig & Graeme s. Russell.  
 The Monitor Taskforce acquired the ISO IEC 17025:2005 accreditation for their laboratory analyses; Accreditation by the RvA on 25 September.  
 Stuu, J.-B.W. Member of jury evaluating presentation of profielwerkstukken, OSG De Hoge Berg, Den Burg, The Netherlands, 26 February.  
 Grove, C.A. Contribution to article by Balcerak, E.: Are element ratios in coral cores a good proxy for past temperature? EOS 94, 197-204.



## Colloquia

- 16 January. Nancy Bruns (University of Vienna). Interactions between algal and terrestrial DOM decomposition in aquatic microbial biofilms.
- 17 January. Santiago Alvarez Fernandez (IMARES). Long term ecosystem changes in the Dutch coastal zone.
- 24 January. Gerard Muyzer (University of Amsterdam). Ecogenomics of haloalkaliphilic sulfur bacteria.
- 31 January. Bas van de Schootbrugge (Utrecht University). Microbes, mud, and methane: causes and consequences of repeated Early Jurassic anoxia.
- 12 February. Jan van Gils (NIOZ, MEE). The top-down role of migrant shorebirds in seagrass-based intertidal ecosystems.
- 14 February. Judith van Bleijswijk (NIOZ, BIO). Bacteria, bivalves, beautiful coral, and booming viruses.
- 21 February. Elisha Moore (NIOZ, BGC). Identification of new membrane lipid structures in planctomycetes from Russian wetlands.
- 28 February. Korneel Rabaey and Nico Boon (University of Ghent) Microbial electrocatalysis – how reactors can help us understand microbial physiology and ecology.
- 12 March. Tineke Troost (Deltares) Modelling transboundary nutrient transport in the North Sea and optimal management measures with respect to river load reductions.
- 14 March. Apy Sluijs (Utrecht University). Middle Eocene carbon cycling, development of Southern Ocean sea ice communities during Antarctic glaciation and carbon isotope fractionation in dinoflagellates as a CO<sub>2</sub> proxy.
- 27 March. Helene di Paoli (NIOZ-Yerseke). Building new mussel beds.
- 28 March. Dorien Kool (NIOZ, BGC). Nitrite-dependent methane oxidation - In search for lipid biomarkers for a novel link between C and N cycle.
- 2 April. Petra Schoon (NIOZ, BGC). Impact of CO<sub>2</sub> and pH on the distribution and stable carbon isotopic composition of microbial biomarker lipids.
- 3 April. Christian Schwarz (NIOZ-Yerseke). Impacts of small-scale processes on large-scale salt marsh dynamics.
- 4 April. Dick van Oevelen (NIOZ, YES). Cold-water coral reef communities: biogeochemical hotspots in the deep ocean.
- 16 April. Dave Callaghan (University of Queensland). Modelling sea-grass in Moreton Bay and Lizard Island.
- 18 April. David Chivall (NIOZ, BGC). Towards an organic paleosalinity proxy.
- 24 April. Bart Veuger (NIOZ-Yerseke). Nitrification and growth of autotrophic nitrifying bacteria and Thaumarchaeota in the coastal North Sea.
- 25 April. Caroline Cl  roux (NIOZ, GEO). Mg/Ca and Sr/Ca ratios in planktonic foraminifera: proxies for upper water column temperature reconstruction.
- 2 May. Marjolaine Krug (CSIR). Natal pulses in the Agulhas Current: origin, evolution and impact.
- 2 May. Huib de Swart (Utrecht University). Dynamics of subtidal currents and net salt transport in estuaries.
- 3 May. Robert Poulin (University of Otago). Parasites in marine ecosystems.
- 15 May. Roger Mann (Virginia Institute of Marine Science). A general talk on the impacts of climate change of the US east coast.
- 16 May. Laura de Steur (NIOZ, FYS). Arctic-Subarctic exchange in the East Greenland Current.
- 22 May. Sairah Malkin (NIOZ-Yerseke). Electrically conductive filamentous bacteria in North Sea coastal sediments.
- 29 May. Clare Woulds (Leeds University). <sup>13</sup>C pulse chase studies of carbon cycling at chemosynthetic sites.
- 30 May. Gerben de Boer (Deltares). An introduction into .Open Earth.
- 12 June. Greg Silsby (NIOZ-Yerseke). Climate change and eutrophication catalyzed ecological disruption in Lake Victoria, East Africa.
- 13 June. Saskia Franken (Utrecht University). Open Access: What's going on?.
- 19 June. Jan Drent (NIOZ-MEE) and Aad Smaal (IMARES Wageningen). Effects of mussel seed fisheries on the natural values of the subtidal western Wadden Sea.
- 20 June. Cecile Blanchet (NIOZ, BGC). Environmental changes in the Nile watershed during the Holocene: insights on climatic mechanisms and human dynamics.
- 4 July. Andr   de Roos. (University of Amsterdam). Ontogenetic development: the unique, ecological processes we tend to ignore.
- 27 July. Jan Drent (NIOZ, MEE) and Aad Smaal (IMARES Wageningen UR). PRODUS.
- 21 August. William Hunter (University of Vienna). The FILTH Elements: The function of organo-mineral particles within stream carbon and nitrogen cycles.
- 3 September. Adam Kessler (Monash University). Denitrification in permeable sediments.
- 4 September. Alina Stadnitskaia (NIOZ-GEO). Deep Sea Science & Technology Centre.
- 5 September. Theo Gerkema (NIOZ, FYS). A day in the life of the Vlie: measurements on suspended sediment transport.
- 10 September. David Hollander (University of South Florida). The down and dirty: assessing the fate, impacts, and consequences of sedimentary oil deposition in the aftermath of the Deepwater Horizon oil-well blowout.
- 11 September. Johan van de Koppel (NIOZ-YRE). The ecology of animal movement: can we learn from physics?
- 18 September. Lieke Mulder (NIOZ-YES). Having a DIP: Seasonality and Nutrient Dynamics in the DIP-limited western Wadden Sea.
- 26 September. Ronald de Vries (CBS-KNAW). Degradation of biomass of terrestrial plants and algae by fungi.



- 30 September. Andrea Taramelli (ISPRA). Innovative use of Copernicus remote sensing data: identifying ways for analyzing coastal ecosystems.
- 1 October. Jean-Philippe (Belliard University of Trento). Modelling the morphological evolution of tidal drainage networks.
- 3 October. Meinard Tiessen (NIOZ, FYS). The drift of plaice eggs and larvae across the North Sea: studying fish by modelling physics.
- 10 October. Matias Duran Matute (NIOZ, FYS). Residual circulation and freshwater transport in the Dutch Wadden Sea.
- 17 October. Matthijs van der Geest (NIOZ, MEE). Multi-trophic interactions within the seagrass beds of Band d'Arguin, Mauritania: a chemosynthesis-based intertidal food web.
- 24 October. Sebastiaan Rampen (NIOZ, BGC). Long chain diols: applications for climate reconstruction.
- 30 October. Christian Mohn (Aarhus University). Benthic hydrodynamics at cold-water coral provinces: A high resolution model study in the NE Atlantic.
- 31 October. Furu Mienis (NIOZ, GEO). New insights on cold-water coral growth and mound development.
- 7 November. Scarlett Trimborn (AWI). The availability and the source of iron modulate ocean acidification effects in Antarctic phytoplankton.
- 5 December. Marta Rodrigo (NIOZ, BGC). Testing and applying the Long chain Diol Index (LDI) as a novel marine paleotemperature proxy in combination with other organic proxies.

## External functions

### H. Bolhuis

- Editorial Board -Aquatic Biosystems - <http://www.aquaticbiosystems.org>
- External Expert/Examiner Hogeschool Zeeland, Vlissingen.

### K. Booij

- Member of the ICES Marine Chemistry Working Group.

### J. Boon

- Project manager of the NSBWO project and leader of work package 1 of the NSBWO project.

### H. Brinkhuis

- Member POGO,
- Member EU Marine Board
- Member BuZa/EZ Klankbord groep Horizon 2020
- Member bestuur ZeelNzicht
- Member/vice chair Acroporanet
- Member stuurgroep CNSI/vice chair
- Member Raad van Advies WaLTER
- Member scientific Board Waddenacademie

- Member scientific Board Darwin Centre
- Chair LPP Foundation
- Chair NWO NL IODP commissie
- Various NWO scientific commissions, o.a. Caribbean call
- Member MKI
- Member advisory board ERICON scientific
- Co-director Urbino Summer School Paleoclimatology.

### T.J. Bouma

- Copromotor doctoral thesis Marjolijn Christianen (Radboud University Nijmegen) & thesis Thorsten Balke (Radboud University Nijmegen)
- Opponent at the PhD defense of Roos Veeneklaas (Groningen University) and Miguel Lara Rallo: (University Cadiz, Spain)
- Part-time hired by HZ-Vlissingen, for 10% of the time (scientific quality control of the research within the Centre of expertise)
- Part-time appointment at Deltares, for up to 20% of the time (supervision of 2 PhD projects)
- Project leader for several external funded scientific projects.

### G.-J.A. Brummer

- Professor (Palaeo)oceanography and Geochemistry, Institute for Earth Sciences, VU University Amsterdam
- Member Steering Group GATEWAYS (EU-FP7, MC-ITN)
- Member NWO/ALW gebruikersadviesgroep verankerde instrumentatie (GAG-VI)
- Member Steering Group INATEX (NWO/ZKO-oceans).

### G.C. Cadée

- Associate editor ICHNOS
- Member editorial board Natura KNNV
- Member board Historie Oceanografie Club, HOC
- Gastmedewerker Rijksmuseum Amsterdam.

### C.J. Camphuysen

- Editorial board ICES Journal of Marine Science
- Editorial board Seabird (The UK Seabird Group)
- Editorial board Sula (Nederlandse Zeevogelgroep)
- Member board of directors (representative for Europe), World Seabird Union
- Member ICES Working Group Seabird Ecology (WGSE)
- Member European Seabirds At Sea Database.

### C. Cléroux

- Member of the scientific committee for the PAGES Young Scientific Meeting, Goa (India), 11-12 February 2013
- Member of the SCOR WG138, Modern Planktic Foraminifera and Ocean Changes
- Organizer of the SCOR WG138 Workshop "Standardization of collection



- methods for living planktonic foraminifera”, Prague, Czech Republic, 24-26 June.
- H.J.W. de Baar
- Chairman, Section Earth Sciences, KNAW
  - Vice-chairman, Council for Earth and Life Sciences, KNAW
  - Member, Raad van Toezicht, Maritime Centre Netherlands (MCN Den Helder).
- T. F. de Bruin
- Chair - Netherlands National Oceanographic Data Committee (NL-NODC)
  - IODE national coordinator for data management
  - Member - OceanSITES Data Management Team
  - Member – ICES Working Group on Data and Information Management (ICES-WGDIM)
  - Member - Steering Committee of the Marine Metadata Interoperability (MMI) project
  - Member - Southern Ocean Observing System (SOOS) Data Management Sub-Committee
  - Acting Chief Officer until Oct 13. After Oct. 13 Chief Officer – SCAR Standing Committee on Antarctic Data Management (SCADM)
  - Member Review Team UK MEDIN (Marine and Environmental Data and Information Network)
  - Member Advisory Group Norwegian NMDC (Norwegian Marine Data Centre project)
  - Member Review Team Swedish ECDS (Environment Climate Data Sweden facility)
  - Member NWO Klankbordgroep datamanagement.
- L.J. de Nooijer
- Guest senior scientist at the Alfred Wegener Institute for Polar and Marine Research, Bremerhaven, Germany.
- H.C. de Stigter
- Chairman NWO-ALW gebruikersadviesgroep bodembemonsteringssyste- men en seismiek (GAG-BSS).
- T. Gerkema
- Member NCK Programma Commissie
  - Co-director thesis (B. Aguiar-González, Universidad de Las Palmas de Gran Canaria).
- L.J.A. Gerringa
- Member Netherlands Polar Committee (NPC).
- J. Greinert
- Guest professor in Marine Geology, Ghent University, Belgium
  - Chairman COST Action ES0902 ‘PERGAMON’ (EU-ESF).
- H. de Haas
- Member NWO-ALW gebruikersadviesgroep bodembemonsteringssyste- men en seismiek (GAG-BSS).
- H. van Haren
- Member Institutional Board ANTARES neutrino telescope
  - Member Institutional Board KM3NeT
  - Chairman “ALW gebruikersadviesgroep Verankerde Instrumentatie”
  - Chairman “ALW-GAGvoorzittersplus”.
- P.M.J. Herman
- Member Commission Monitoring Westerschelde for VNSC
  - Member Science Committee Ifremer, France
  - Member programme committee NCK
  - Member Ecoshape User commission
  - Jury member doctoral thesis of Matthijs van der Geest, Serena Donadi,
  - Copromotor doctoral thesis Quan-Xing Liu, Marjolijn Christianen
  - Promotor doctoral thesis Thorsten Balke
  - Member North Sea Research panel Rijkswaterstaat
  - Course at NCK summer school, Texel, July
  - Member science advisory commission Mosselwad
  - Member expert advisory commission LifeWatch Flanders
  - Member panel Schure-Beijerinck-Popping fund.
- H. Hummel
- Professor in Estuarine Ecophysiology, Institute of Oceanography, University of Gdansk, Gdynia, Poland
  - President of the MARS Network, the European Marine Research Stations Network
  - President of the European Marine Biology Symposium (EMBS) series
  - Member steering committee WAMS (World Association of Marine Stations)
  - General Coordinator (Action Chair) of the ESF COST Action EMBOS European Marine Biodiversity Observatory System
  - Member Steering Committee EC 7th FW project EuroMarine
  - Member External Evaluation Board of LifeWatch Greece (HelBioNet)
  - Member of the International Advisory Board of CORPI (Coastal Research and Planning Institute) at the Klaipeda University, Lithuania.
- F.A. Koning
- Chair Ocean Facilities Exchange Group (OFEG)
  - Member International Research Ship Operators (IRSO)
  - Member European Research Vessel Operators (ERVO)
  - Member NERC Cruise Programme Review Group (CPRG)
  - Member NERC Marine Facilities Advisory Group (MFAG).
- B. Koster
- Member NWO-ALW gebruikersadviesgroep bodembemonsteringssyste- men en seismiek (GAG-BSS).
- J. Kromkamp
- Guest editor Aquatic Biology for special volume “environmental forcing



of aquatic primary productivity” as a result of the GAP (Group on Aquatic Primary Production) workshop in Malaga, September 2012

- Member international board of the Group for Aquatic Primary Productivity (GAP)
- Member PhD thesis defense committees for Susanna Wilken (University of Utrecht, 27 March) and Gemma Kulk (University of Groningen, 6 September)
- Member of the “Zeeuwse Wetenschapsraad (Scientific board of the province of Zeeland)
- Member of the kernteam “Kennis Netwerk DeltaWater (KNDW).”

J.W. de Leeuw

- Guest professor Faculty Geosciences, Utrecht University
- Guest professor Faculty Biology, Utrecht University
- Professorship in Geochemistry University of Cataluna
- Member of the Royal Dutch Academy of Sciences (KNAW)
- Geochemical Fellow ACS
- Member Independent Scientific Advisory Board (ISAB) INSITE Program.

L.R.M. Maas

- Professor Ocean wave dynamics – IMAU, Utrecht University
- Member scientific board CIIMAR – Porto University
- Member thesis defense committees M. den Toom (UU, 20 March) and A. Cimadoribus (UU, 5 July).

F.J.R. Meysman

- Coordinator Darwin project ‘HYPOXIA Grevelingen’
- Editor Journal of Marine Research
- Editor Biogeosciences Member Scientific Advisory Board, company OVIZIO
- Membership PhD committee Ugo Marzocchi, Aarhus University, 30 May
- Membership PhD committee Guillaume Bernard, Bordeaux University, 6 July.

F. Mienis

- Guest editor Deep Sea Research II, Special Volume on Cold Corals.

L. Peperzak

- Work package leader North Sea Ballast Water Opportunity Project
- Member Infrastructuur & Milieu Expert Groep Ballastwater
- Member of GlobalTestnet on behalf of the NIOZ Ballast Water Test Facility and Research Centre
- Member of the ICES/IOC/IMO Working Group on Ballast and Other Ship Vectors.

T. Piersma

- Professor Global Flyway ecology at the Centre for Ecological and Evolutionary Studies (CEES) at the University of Groningen
- Editor of Journal of Avian Biology
- Editor of Functional Ecology

- Editorial board of Journal of Ornithology
- Editorial board of Movement Ecology
- Editorial board of Emu
- Vice-Président of the Conseil Scientifique of the Banc d’Arguin (CSBA), Mauritania
- Chairman of the *Global Flyway Network*
- Member of KNAW, Amsterdam.

G.J. Reichart

- President of the Biogeosciences division of the European Geosciences Union
- Program Chair of the 2013 General Assembly of the European Geosciences Union
- Assistant Professor, Earth Science Department, Geosciences Faculty, Utrecht University
- Guest Senior scientist at the Alfred Wegener Institute for Polar and Marine Research, Bremerhaven, Germany
- Member of the NWO-ALW gebruikersadviesgroepen verankerde instrumentatie (GAG-VI), bodembemonsteringssystemen en seismiek (GAG-BSS) en GAG-voorzitters-plus
- Interim Member Steering Group GATEWAYS (EU-FP7, MC-ITN).
- Lecturer Urbino Summer School, Urbino, Italy, 10-30 July.

H. Ridderinkhof

- Member bestuur Tidal Testing Centre
- Member Raad van Advies Stichting Texels Museum/Ecomare
- Member deelnemersraad EcoShape Building with Nature
- Member Raad van Advies Texel 2020.

M.J.A. Rijkenberg

- Member of the Scientific Steering Committee of the international GEOTRACES program under aegis of SCOR/ICSU
- Associate member of the SCOR working group 139: Organic ligands – A key control on trace metal biogeochemistry in the ocean.

S. Schouten

- Part-time professor Molecular Palaeontology, Faculty of Geosciences, Utrecht University
- Associate editor Organic Geochemistry
- Member of the Netherlands Integrated Ocean Drilling Program Committee.

J.S. Sinninghe Damsté

- Part-time professor Organic Geochemistry, Faculty of Geosciences, Utrecht University
- Member of the Royal Dutch Academy of Science (KNAW)
- Member of the KNAW council for Earth & Life Sciences
- Member of the Scientific Steering Committee of the Darwin Centre for



- Biogeology
- Associate editor *Geochimica et Cosmochimica Acta*
  - Member of the Editorial Board *Environmental Microbiology*.
- M.G. Smit
- Member Ocean Fleet Exchange Group – Technology section
  - Member NWO Instituut Platform Kennis Benutting
  - Member NWO Technologie Overleg.
- K. Soetaert
- Member of the FWO scientific commission 'bio' (Belgium)
  - Member of the NWO vidi commission (The Netherlands).
- L.J. Stal
- Professor Mariene Microbiologie, University of Amsterdam
  - Editor *Annals of Microbiology*
  - Editor *Plos-One*
  - Editorial Board *ISME Journal*
  - Editorial Board *Frontiers in Aquatic Microbiology*
  - Coordinator NWO-ZKO project NICYCLE
  - Coordinator EU-FP7 project MaCuMBA
  - Workpackage leader EU-FP demonstration project InteSusAI
  - Coordinator EMBRC-NL and associated member of EMBRC (ESFRI preparatory phase Research Infrastructure).
- J.-B.W. Stuur
- Senior scientist at MARUM – Center for Marine Environmental Sciences, University of Bremen, Germany
  - Founding member of International Society for Aeolian Research
  - Member editorial board *Aeolian Research*
  - Advisory editor *Netherlands Journal of Geosciences*
  - Coördinator INQUA Project (PASH2)
  - Member *Nederlands IODP Commissie*
  - Member *INQUA-Nederland bestuur*.
- D. W. Thieltges
- Associate Editor *International Journal of Parasitology: Parasites and Wildlife*
  - Editorial Board of *Journal Sea Research*
  - Subject Editor for *Marine Biology Research*.
- P. van Avesaath
- Working Group Leader of the ESF COST Action EMBOS European Marine Biodiversity Observatory System
  - Representative of NIOZ as grant holder of the ESF COST Action EMBOS European Marine Biodiversity Observatory System
  - Co-founder of the MarBEF+ Association under Dutch Law, with its seat at NIOZ.
- J. van de Koppel
- Selection committee for the 2013 NWO-Rubicon grants.
- D. van der Wal
- Coordinator RWS Bodemdieren Westerschelde project
  - Project leader NWO-Ruimteonderzoek – Benthic diatoms as indicators for ecosystem structuring
  - Project leader NWO-Ruimteonderzoek - Consequences of global change for ecosystem engineering effects of shellfish
  - Member 'Flexibel Stortoverleg' (subgroup Technical Schelde Committee).
- J. van der Meer
- Professor in Marine Population Ecology at the Institute for Ecological Sciences at the VU University Amsterdam
  - Editor of *ISRN Oceanography*
  - Chairman of the Netherlands Annual Ecology Meeting organization committee
  - Chairman of the Third International DEB Symposium organization committee
  - Member of the Management Board of MARES (Doctoral Programme on Marine Ecosystem Health and Conservation)
  - Member of the advisory board *Natuurbehoud of the Prins Bernhard Cultuurfonds*
  - Member of the KNAW Schure-Beijerinck-Popping fund
  - Member of the ICES working group WKVHES.
- H.W. van der Veer
- Member of the ICES Working Group on Recruitment Processes
  - Member Organizing Committee 9th International Symposium on Flatfish Ecology, Seattle, The Netherlands
  - Guest editor *Proceedings 8th International Symposium on Flatfish Ecology*.
  - Editor-in-chief *Journal of Sea Research*.
- F.C. van Duyl
- Board Member *Treub MIJ*
  - Appointed reviewer *International Foundation for Science (IFS)*
  - Board Member *AcroporaNet*
  - Dutch representative *Marine Board European Scientific Diving Panel*.
- L. Villanueva
- Member of the editorial board of *International Microbiology Journal*.
- Tj.C.E. van Weering (Sci. Emeritus)
- Professor *Paleoceanography*, Institute for Earth Sciences, VU University Amsterdam
  - Member Programme Committee to the Scientific Programme Indonesia – Netherlands (SPIN) of the Royal Netherlands Academy of Arts and Sciences (KNAW)
  - Member editorial board *Boreas*
  - Member steering committee *COCARDE/ESF*

- Guest editor Deep Sea Research II, Special Volume on Cold Corals
- Advisor NWO-NIOZ regarding Caribbean Netherlands Science Institute at St. Eustatius
- Member program committee Netherlands Caribbean programme (NWO).

M.R. Wernand

- First opponent of evaluation of doctorate thesis and member of the reading committee of Anna Solvang Båtnes' dissertation (September) at the Norwegian University of Science and Technology, the Faculty of Natural Sciences and Technology
- First opponent of evaluation of doctorate thesis and member of the reading committee of Julia A. Busch dissertation (December) at University of Bremen, Department 2 (Biology/Chemistry), Germany
- EARSEL representative
- General chair and program committee member 3rd EOS Topical Meeting on Blue Photonics® - Optics in the Sea.

R. Witbaard

- Conference Delegate for the 3rd International Sclerochronology conference, Caernarfon North Wales, UK.

T. Ysebaert

- Professor University of Antwerp (0.05 fte), course Ecological Engineering, Advanced Master of Science in Technology for Integrated Water Management
- Member scientific committee Building with Nature project.

## Guests

Callaghan, D., School of Civil Engineering, The University of Queensland, Australia, 1 April–22 April.

Charnier, J., Université de Bordeaux, France, 1 January-31 August.

David, H. BSc., Department of Plant Biology and Ecology, Universidad del País Vasco, Spain, 7 January–7 May.

Davidson, R., University of Otago, New Zealand, 13 January-22 February.

Genuario, D., Centro de Energia Nuclear na Agricultura, Universidade de São Paulo, Brazil, 11 January–31 December.

Gommeaux, dr M., Université de Reims Champagne-Ardenne, France, 1 January–30 August.

Kunihiro, dr. T., Center for Marine Environmental Studies (CMES), Ehime University, Japan, March-December.

Lima Sobrinho, R., Department of Geochemistry, Niteroi, Rio de Janeiro, Brazil, 13 May-31 December.

Kloosterziel, dr. R., SOEST, Hawaii, USA, 1-22 August.

Malkin, dr. S., Vrije Universiteit Brussel, Belgium, 1 January-31 December.

Montserrat Trotsenburg, dr. F., Vrije Universiteit Brussels, Belgium, 1 January-31 December.

Parari, M., University of Barcelona, Spain, 1 April–28 June.

Paul, M., University of Hamburg, Germany, 1-16 July.

Quaijtaal, W., Universiteit Gent, Belgium, 9 June-6 July.

Simon, M., Cardiff University, UK, 1-26 April.

Sliwiska, K., Aarhus University, Denmark, 4 March–15 April.

Taha, I., Universiteit Wien, Oostenrijk, 1 Januari-28 February.

Velilla Perdomo, E. VU University Amsterdam, 1 March-30 August.

Weber Y., University of Basel, Switzerland, 7-31 January, 22 April-17 May.

Yaakub, S.M., National University Singapore, Singapore, 6 May–25 June.

Zetsche, dr. E., Vrije Universiteit Brussel, Belgium, 1 January-31 December.

Students & interns (Master, HBO & MBO)

Adamopoulou, S., Ghent University, Belgium, 25 February-28 June.

Bal, C., Hogeschool Rijnijsel, Nijmegen, 1 February-30 June.

Bik, S., CAH Vilentum Almere, April-October.

Biller, T., University of Bologna, Italy, January.

Bloem, M., VU University Amsterdam, 1 January-15 July.

Busink, S., Universiteit Wageningen, 24 April-30 June.

Chu, N.Y., Radboud University Nijmegen, Nijmegen, 17 January-31 October.

Ciurej, A., Institute of Geological Sciences, Polish Academy of Sciences, Kraków, Poland, September-November.

Collet, C., IUT génie biologique de Perpignan, France, 15 April-15 August.

Dalhuijsen, K.F.J. Nova college Beverwijk, 27 February-19 July.

Darley, C.M. Nova college Beverwijk, 8 April-31 December.

De Bar, M., Utrecht University, August-December.

De Koning, S., Universiteit van Amsterdam, 1 January-1 September.

De Ruiter, G.J., ROC Zadkine, Rotterdam, 4 February-31 December.

Dijkstra, M., Hogeschool Van Hall – Larenstein, Leeuwarden, February-August.

Driessen, F., Groningen University, 16 September-31 December.

Elofer, E., IUT génie biologique de Perpignan, France, 15 April-15 August.

Feis, M., Groningen University, 1 January-31 December.

Fijen, T., Wageningen UR, Netherlands, 1 January –April.

Fillol, M., University of Girona, Spain, 1 March–1 October.

Geerken, E., VU University Amsterdam, December.

Geers, R. Hogeschool HAS Den Bosch, 11 March-2 August.

Geerts, L. Universiteit Antwerpen, Belgium, 7 October – 31 December.

Germain, M., Agrocampus Ouest, France, 1-25 January

Greiss, J. Berufskolleg Hielden, Germany, 28 July-27 October.

Hefer, P. Berufskolleg Hielden, Germany, 28 July-27 October.

Hong, T., Hogeschool Zeeland, Vlissingen, 1 January-31 March.

Janssen, A., University of Duisburg-Essen (& Radboud University Nijmegen), 16 September–15 December.

Jorissen, L., Institut Polytechnique Lasalle Beauvais, Beauvais, France, 1 July-27 October.

Karlos Ribeiro de Moraes, Brazil, 1 June-30 November.



Kavelaars, M., University of Amsterdam, 1 January-August.  
 Kinsley, C., Massachusetts Institute of Technology, Cambridge, Massachusetts, USA, July.  
 Klip, N., Hogeschool Rotterdam, Rotterdam, 1 September-31 December.  
 Kloosters, P., Utrecht University, 1 April-1 June.  
 Kranenborg, M., Hogeschool Leiden, 1 February-1 September.  
 Kristalijn, J., Avans Hogeschool, Breda, 1 January-30 August.  
 Legoff, T., IUT génie biologique de Perpignan, Perpignan, France, 15 April-15 August.  
 Liddell, C., University of Wageningen, 2 September-22 December.  
 Lippo, L., Universiteit van Salento-Lecce, Italy, 1 January-28 February.  
 Lorent, S., VUB/U Gent/U Antwerpen, 23 September-31 December.  
 Maarsen, N., Hogeschool InHolland, 1 January-31 May.  
 Markovic, M., Germany, 1 January-30 June.  
 Maugendre, L., PLFA extractions. Laboratoire d'Océanographie de Villefranche, France, June.  
 Mermans, D., Radboud Universiteit, Nijmegen, 1 January-30 June.  
 Münch, M., Utrecht University, 24-28 June.  
 Oers, S. van, TU Delft, 22 July-31 December.  
 Oldenburg, R., University of Amsterdam, January-July.  
 Pacoureau, T., Université La Rochelle, La Rochelle, France, 1 January-31 May  
 Philippe, A., La Rochelle University, France, January-July.  
 Pieters, P., Universiteit Wageningen, 1 Mei-1 December.  
 Piontek, K., Berufskolleg Hielden, Germany, 28 July-27 October.  
 Reurslag, R.M., VU University, Amsterdam, February-July.  
 Roepert, A., Utrecht University, 24-28 June.  
 Roussey, A., University of Angers, France, 17 June-31 August.  
 Ruiten, R., Rijn-IJssel MBO laboratoriumonderwijs, Arnhem, 1 April-1 July.  
 Schmidt, E., Technische Universität München, 1 January- 21 June.  
 Schot, S.J., Nova college Beverwijk, 1-17 January.  
 Schuster, A.-K., University of Landau, Germany, 16 April-30 November.  
 Shoesmith, D., Groningen University, 15 February-31 December.  
 Simon, S., Institute for Earth Sciences, Kiel, Germany, 21-26 April.  
 Smeekes, J., VU University, Amsterdam, 12 February-21 July.  
 Smit, D.C., Nova college Beverwijk, 9 September 2013-31 December.  
 Speksnijder, Y., Avans Hogeschool, Breda, 1 April-1 September and 15 November-31 December.  
 Spijkstra, M., Van Hall Larenstein, 1 February-1 July.  
 Stam, A., Hogeschool InHolland, 2 September-31 December.  
 Steenis, C. Nova college Beverwijk, 1 January-27 June.  
 Sweere, T., Utrecht University.  
 Temmesfeld, F., MARUM, Bremen, Germany, October-31 December.  
 Twijnstra, R.H. Hogeschool van Hall Larensteijn, Leeuwarden, 4 February-4 July.  
 Tyson, C., University of Amsterdam, May-December.  
 Ubels, S., Utrecht University, 2 Februari-2 April.  
 van Bijsterveldt, C, Utrecht University, 22 April-28 June and 18 November-31 December.  
 van Deelen, W.B.J. Hogeschool van Hall Larensteijn, Leeuwarden, 4 February-4 July.  
 Van der Does, M., VU University Amsterdam, January-February.  
 van der Kamp, M., Wageningen University, 1 January-9 March.  
 Van der Linde, L., Hogeschool Rotterdam, Rotterdam, 1 January-30 June.  
 van Gemert, M. VU University, Amsterdam, February-September.  
 van Regteren, M., Groningen University, 14 January-14 August.  
 van Veen, M.E. Helicon, 1 November-31 December.  
 van Zanten, W. Utrecht University, April-May.  
 Wallaard, I., 19 August-31 December.  
 Way, S., Hogeschool InHolland, Amsterdam, 15 August-31 December.  
 Whalen, C. Universiteit van Amsterdam, 1 January-1 September.  
 Wijers, T., Groningen University, 1 January-1 February.  
 Witteveen, K. Hogeschool van Hall Larensteijn, Leeuwarden, Netherlands, 4 February-4 July.  
 Zaffonti, F., University of Florence, Italy, 15 October-31 December.  
 Zawadowski, T., 6 September-31 December.  
 Zell, K., University of Cologne, Köln, Germany, August.  
 Zwiep, K. Utrecht University, 22 April-26 June.

**Visitors**  
 Bhuckory, R., 1st secretary at Mauritius High Commission, en Mr. Kandasamy, High Commissioner Mauritius, 25 en 26 September.  
 Blyth, A.J., The Open University, Milton Keynes, UK, 27 May-5 June.  
 Bondoc, K., International Max Planck Research, Friedrich-Schiller-Universität Jena, Germany, 1-9 August.  
 Burns, dr. N, Department of Limnology, University of Vienna, Austria, 14-22 January  
 Davidsz, E., greenSand BV, 18 December  
 De Moor, J., The Netherlands, 13 November.  
 Dedeckker, P., Australian National University, Canberra, Australia, 2-10 February, 8-10 September.  
 Directie AWI, + ondertekening MoU, 29 October.  
 Directie Energy Valley, 30 October.  
 Directie IHC Merwede, 12 September.  
 Directie NARLabs Taiwan, 24 September.  
 Directie NETH-er, 17 December.  
 Directie NOGEPa, 27 November.  
 Directie Nudge, 8 October.

Directie Shell, 26 September.  
Directie TNO, 17 January.  
Directie UNESCO/IHE, 15 November.  
Directie VLIZ, 1 October.  
Donders, T., Utrecht University, The Netherlands, 7-17 May.  
Filippidi, A., Utrecht University, The Netherlands, 4 October.  
Fortuin, dr. A., Waterschap Scheldestromen, Terneuzen, 15 July.  
Friese, C., MARUM - Center for Marine Environmental Sciences, Bremen, Germany, 15-19 July.  
Gremare, Prof. A., Bordeaux University, France, 23 January.  
Halibur, J., Large Lakes Observatory, University of Minnesota Duluth, USA, 4-21 February.  
Havinga, prof. dr. P., Twente University, 29 August.  
Tamiya, prof. dr. E., Osaka University, 19 July.  
Fraiture, prof. dr. Ch. de, Unesco IHE, 15 November.  
Huis in 't Veld, H. Topsector Water, 5 November.  
Hunter, dr. W., University of Vienna, Austria, 19-23 August  
Knops, ir. P., Innovation Concepts BV / KU Leuven, Belgium.  
Lantink, M., Utrecht University, 4 October.  
Mattiello, I., University of Sao Paulo, Brasil, 3-5 December.  
Mattos dos Santos, dr. R., KU Leuven, Belgium, 18 December.  
Miserocchi, S., Istituto Scienze Marine CNR, Bologna, Italy, 8-12 July.  
Mohn, dr. M., Aarhus University, Denmark, 29-30 October.  
Morana, MSc C., Leuven University, Belgium, 13-14 January  
Moros, M., Institute for Earth Sciences, Kiel, Germany, 22-24 April.  
O'Hanlon, R., 18-20 December.  
Park, dr. Y.-S., Dundee University, UK, 17 June.  
Poulin, Prof. Dr. R., Zoology department, University of Otago, New Zealand, 1-5 May.  
Prins, M., VU University Amsterdam, 4,15-26 April.  
Rabaey, Prof. K., Ghent University, Belgium, 28 February.  
Rouselle, G., 5-16 March.  
Scussolini, P., VU University Amsterdam, 19 March.  
Straathof, C., VU University Amsterdam, 2-5 April.  
Taramelli, A., ISPRA Institute for Environmental Protection and Research, Rome, Italy.  
TKI Maritiem, 23 May.  
Ufkes, E., VU University Amsterdam, 2-5 April.  
Ullgren, dr. J., Bergen University, Norway, 29-30 June and 21-23 September.  
Woulds, dr. C., Leeds University, UK. 27-31 May.  
Wu, J., Utrecht University, 18-22 November.



Afdeling	Naam				
BGC	Baas, Marianne	BIO	Clargo, Niki	DIR	Lindeboom, Han
BGC	Bale, Nicole	BIO	Crawfurd, Kate	DIR	Raad de, Ingrid
BGC	Besseling, Marc	BIO	Doggen, Richard	DIR	Ridderinkhof, Herman
BGC	Bommel van, Ronald	BIO	Duyl van, Fleur	DIR	Stapel, Johan
BGC	Booij, Kees	BIO	Ferreira da Silva, Catarina	DIR	Vos de, Arjen
BGC	Bree van, Loes	BIO	Garritsen - Arnhem van, Eveline	DMG	Bruin de, Taco
BGC	Chivall, David	BIO	Gonzalez, Santiago	DMG	Koster de, Ronald
BGC	Donkers, Kevin	BIO	Hoogstraten, Astrid	DMG	Nieuwenhuis, Jan
BGC	Dorhout, Denise	BIO	Immler, Eva	DMG	Richter, Thomas
BGC	Heinzelmann, Sandra	BIO	Kooijman - Scholten, Kirsten	FCC	Dapper - Maas, Marianne
BGC	Hopmans, Ellen	BIO	Lamers, Alma	FCC	Davidse, Theo
BGC	Jonge de, Cindy	BIO	Lubsch, Alex	FCC	Dekker, Melchior
BGC	Kandiano, Evgenia	BIO	Maat, Douwe	FCC	Gootjes, Jack
BGC	Kasper, Sebastian	BIO	Mojica, Kristina	FCC	Groot, Siem
BGC	Kim, Jung	BIO	Müller, Benjamin	FCC	Keijser, Andrea
BGC	Kool, Dorien	BIO	Noordeloos, Anna	FCC	Kooijman - Biermans, Hilde
BGC	Lipsewers, Yvon	BIO	Noort van, Govert	FCC	Linden van der, Marcel
BGC	M'Boule, Daniela	BIO	O'Connor, Paul	FCC	Magnée, Gaston
BGC	Meer van der, Marcel	BIO	Oosterhuis, Swier	FCC	Poleacov - Maraiala, Cornelia
BGC	Mets, Anhelique	BIO	Peperzak, Louis	FCC	Poleij, Carla
BGC	Moore, Eli	BIO	Poll van de, Willem	FCC	Ruissen, Hans
BGC	Ossebaar, Jort	BIO	Poszig, Dörte	FCC	Vos, Tjerk
BGC	Panoto, Elda	BIO	Rijkenberg, Micha	FCC	Wernand - Godee, Irene
BGC	Rampen, Sebastiaan	BIO	Ruardij, Piet	FCC	Witte, Ruud
BGC	Rijpstra, Irene	BIO	Salt, Lesly	FM	Berbee - Bossen, Jantine
BGC	Rodrigo Gamiz, Marta	BIO	Schoemann, Véronique	FM	Daalder, Ruud
BGC	Schouten, Stefan	BIO	Slagter, Hans	FM	Heerschap, Dick
BGC	Sinke - Schoen, Daniëlle	BIO	Slooten van, Cees	FM	Kralingen van, Pieter
BGC	Sinninghe Damste, Jaap	BIO	Snoek, Josje	FM	Lakeman, Robert
BGC	Soelen van, Els	BIO	Stehouwer, Peter Paul	FM	Trap, Biem
BGC	Sollai, Martina	BIO	Taha, Ishraga	FM	Wagemaakers, Diana
BGC	Svensson, Elisabeth	BIO	Timmermans, Klaas	FM	Wal van der, Meta
BGC	Verweij, Monique	BIO	Vos de, Arjen	FMA	Barten - Krijgsman, Nelleke
BGC	Villanueva Alvarez, Laura	BIO	Witte, Harry	FYS	Aguiar Gonzalez, Borja
BGC	Warden, Lisa	CPR	Aggenbach, Bert	FYS	Aken van, Hendrik
BGC	Zell, Claudia	CPR	Barten - Krijgsman, Nelleke	FYS	Cimatoribus, Andrea
BIB	Bruining - Porto de, Marlies	CPR	Bloksma, Nienke	FYS	Duran Matute, Matias
BIB	Weegen van der, Leonne	CPR	Boon, Jan	FYS	Eijgenraam, Frans
BIO	Balkema, Cherele	CPR	Brinkhuis, Dan	FYS	Gerkema, Theo
BIO	Biggs, Tristan	CPR	Holthuijsen - Vloemans, Marieke	FYS	Haren van, Hans
BIO	Bleijswijk Tierens Verhagen van, Judith	CPR	Leerink, Thomas	FYS	Heide van der, Roald
BIO	Blin, Alex	CPR	Manshanden, Gerard	FYS	Hout van der, Carola
BIO	Bown, Johann	DIR	Blaauboer - Jong de, Carmen	FYS	Maas, Leo
BIO	Brussaard, Corina	DIR	Brinkhuis, Henk	FYS	Nauw - Vegt van der, Janine
		DIR	Kraanen - Witte, Frida	FYS	Novoa Gautier, Stefani

FYS	Ober, Sven	HRM	Vooijs, Peter	MEE	Meer van der, Jaap
FYS	Rabitti, Anna	ICT	Derksen, Jan	MEE	Miguel, Simone
FYS	Steur de, Laura	ICT	Epping, Eric	MEE	Mosk, Dennis
FYS	Stocchi, Paolo	ICT	Jonkman, Jan-Thijs	MEE	Mulder, Maarten
FYS	Tiessen, Meinard	ICT	Malschaert, Hans	MEE	Nieuwland, Gerard
FYS	Vermeersen, Bert	ICT	Nauw, Roland	MEE	Oever van den, Anneke
FYS	Vries de, Jurre	ICT	Pool, Wim	MEE	Oudman, Thomas
FYS	Wagemaakers, Eric	MEE	Bergman, Magda	MEE	Philippart, Katja
FYS	Wernand, Marcel	MEE	Bijleveld, Allert	MEE	Piersma, Theunis
GCO	Baar de, Hein	MEE	Bol - Heijer den, Anneke	MEE	Poszig, Dörte
GCO	Bakker, Karel	MEE	Bom, Roeland	MEE	Raad de, Ingrid
GCO	Boer, Wim	MEE	Brouwer, Chris	MEE	Rakhimberdiev, Eldar
GCO	Brummer, Geert-Jan	MEE	Brugge, Maarten	MEE	Smelter, Maaïke
GCO	Cléroux, Caroline	MEE	Camphuijsen, Kees	MEE	Spaans, Bernard
GCO	Dijk van, Inge	MEE	Chan, Chi	MEE	Tacoma, Marten
GCO	Does van der, Michelle	MEE	Compton, Tanya	MEE	Thieltges, David
GCO	Gaever van, Piet	MEE	Dalhuijsen, Kevin	MEE	Veenstra, Monique
GCO	Gerringa, Loes	MEE	Dapper, Rob	MEE	Veer van der, Henk
GCO	Gieles - Witte, Rineke	MEE	Dekinga, Anne	MEE	Velde van der, Egbert
GCO	Greinert, Jens	MEE	Dekker, Rob	MEE	Velilla Perdomo, Estefania
GCO	Grove, Graig	MEE	Dijk van, Mark	MEE	Verhoeven, Mo
GCO	Koho, Karoliina	MEE	Drent, Jan	MEE	Walraven van, Lodewijk
GCO	Korte, Laura	MEE	Duijns, Sjoerd	MEE	Waser, Andreas
GCO	Koster, Bob	MEE	Duineveld, Gerard	MEE	Watmough, Thalia
GCO	Laan, Patrick	MEE	Folmer, Eelke	MEE	Weerlee van, Evaline
GCO	Mezger, Eveline	MEE	Fouw de, Jim	MEE	Welsh, Jenni
GCO	Mienis, Furu	MEE	Gils van, Jan	MEE	Witbaard, Rob
GCO	Munday, Christopher	MEE	Goedknegt, Anouk	MEE	Witte, Hans
GCO	Nooijer de, Lennart	MEE	Haastrecht van, Eline	MEE	Zee van der, Els
GCO	Ooijen van, Jan	MEE	Hoek van der, Joost	MRF	Haas de, Henk
GCO	Ossebaar - Crayford, Sharyn	MEE	Holthuijsen, Sander	MRF	Koning, Erica
GCO	Reichart, Gert Jan	MEE	Horn ten, Job	MTE	Asjes, Sander
GCO	Stadnitskaia, Alina	MEE	Hout van den, Piet	MTE	Cluderay, John
GCO	Steinhardt, Juliane	MEE	Jouta, Jeltje	MTE	Eveleens, Mark
GCO	Stigter de, Henko	MEE	Jung, Sarina	MTE	Franken, Henk
GCO	Stuut, Jan-Berend	MEE	Klunder, Lise	MTE	Groenewegen, Ruud
GCO	Tjallingii, Rik	MEE	Koolhaas, Anita	MTE	Laan, Martin
HRM	Dapper, Rob	MEE	Krieg, Annamarie	MTE	Lenting, Walther
HRM	Evers, Jolanda	MEE	Lavaleije, Marc	MTE	Maarseveen van, Frank
HRM	Honkoop, Pieter	MEE	Leerink, Thomas	MTEC	Smit, Marck
HRM	Kuip, Theo	MEE	Lehmpfuhl, Viola	MTI	Bakker, Roel
HRM	Moerbeek - Sikma, Sigrid	MEE	Loonstra, Jelle	MTI	Boekel, Herman
HRM	Mulder - Starreveld, Joke	MEE	Luttikhuisen, Pieterella	MTI	Heerwaarden van, Johan
HRM	Smidt, Marjolijn	MEE	Lyashevskaja, Olga	MTI	Keijzer, Edwin
HRM	Tuinen van, Hans	MEE	McSweeney, Niamh	MTM	Bakker, Marcel



MTM	Blom, Jan	YES	Guitton le, Marie	YMM	Vasquez Cardenas, Diana
MTM	Boersen, Barry	YES	Hidalgo Martinez, Silvia	YMM	Vlaming, Jetta
MTM	Boom, Lorendz	YES	Knuijt, Adri	YMM	Waanders, Jethro
MTM	Gieles, Sieme	YES	Meysman, Filip	YMM	Wijnholds - Vreman, Anita
MTM	Grisnich, Piet	YES	Moneta, Alessia	YMT	Avesaath van, Pim
MTM	Porto de, Harry	YES	Mulder, Lieke	YMT	Blok, Daniel Benjamin
MTM	Schilling, Jack	YES	Müller, Christina	YMT	Dekker, Angela
MTM	Visser de, Jan-Dirk	YES	Oevelen van, Dick	YMT	Engelberts, Anke
MTM	Witte, Yvo	YES	Rijswijk van, Pieter	YMT	Escaravage, Vincent
MTM	Wuis, Leon	YES	Rooze, Jurjen	YMT	Hoesel van, Olaf
SML	Adriaans, Ewout	YES	Seitaj, Dorina	YMT	Hummel, Christiaan
SML	Alkema, Peter-Roy	YES	Soetaert, Karlina	YMT	Hummel, Herman
SML	Boon, Wim-Jan	YES	Tramper, Anton	YMT	Kleine Schaars, Loran
SML	Breejen den, Iwan	YES	Veuger, Bart	YMT	Scott, Thomas
SML	Buisman, Theo	YES	Vossenbergh van de, Jack	YMT	Sistermans, Wil
SML	Coomans, Peter	YLA	Breugel van, Peter	YMT	Verburg, Adrienne
SML	Daalder, Klaas-Jan	YLA	Houtekamer, Marco	YMT	Vooren van, Remco
SML	Ellen, John	YLA	Maas van der - Maas, Yvonne	YMT	Wijnhoven, Sander
SML	Feij, Bram	YLA	Peene, Jan	YRE	Balke, Thorsten
SML	Fockema Andreae, Alle	YLA	Sinke, Jan	YRE	Beauchard, Olivier
SML	Greef de, Thomas	YLA	Zetten van, Cobie	YRE	Belzen van, Jim
SML	Haaren van, Joep	YMA	Endt van der, Anneke	YRE	Berg van den, Aniek
SML	Heesemans, Mat	YMA	Haazen, Lowie	YRE	Bouma, Tjeerd
SML	Heide van der, Roel	YMA	Herman, Peter	YRE	Cornacchia, Loreta
SML	Hiemstra, Fred	YMA	Houte van, Joke	YRE	Cozzoli, Francesco
SML	Jourdan, Mildred	YMA	Hulsteijn van - Laven, Elly	YRE	Daggers, Tisja
SML	Katwijk van, Rik	YMA	Jagt van der, Christine	YRE	Dalen van, Jeroen
SML	Kristalijn, Marinus	YMA	Megens, Jan	YRE	Gillis, Lucy
SML	Kuijt, Pieter	YMA	Sinke, Bert	YRE	IJzerloo van, Lennart
SML	Lips, Sietske	YMA	Wisse, Laura	YRE	Jager de, Monique
SML	Maas, Sjaak	YMM	Bolhuis, Henk	YRE	Koppel van, Johan
SML	Puijman, Bert	YMM	Boschker, Eric	YRE	Liu, Quanxing
SML	Seepma, Jaap	YMM	Cardoso, Clara	YRE	Moons, Simeon
SML	Stevens, Cor	YMM	Confurius - Guns, Veronique	YRE	Nieuwhof, Sil
SML	Vermeulen, Gert	YMM	Cretoiu, Silvia	YRE	Oven van, Pim
SML	Vries de, Hein	YMM	Fan, Haoxin	YRE	Paoli, Hélène
SML	Vries de, Martien	YMM	Grego, Michele	YRE	Qi, Hui
SML	Zuidweg, Johan	YMM	Grosse, Julia	YRE	Schwarz, Chistian
YES	Brasser, Jurian	YMM	Hörnlein, Christine	YRE	Soelen van, Jos
YES	Brenner, Heiko	YMM	Kromkamp, Jacco	YRE	Soissons, Laura
YES	Burdorf, Laurine	YMM	Linde van der, Lilian	YRE	Wal van der, Daphne
YES	Engeland van, Tom	YMM	Ly, Juliette	YRE	Wielemaker, Annette
YES	Engelhard, Sarah	YMM	Moerdijk - Poortvliet, Tanja	YRE	Ysebaert, Tom
YES	Geelhoed, Jeanine	YMM	Silsbe, Gregory		
YES	Gerla, Daan	YMM	Stal, Lucas		