Leibniz Institute for Baltic Sea Research Warnemünde

Biennial Report 2020/2021

Leibniz Institute
for Baltic Sea Research
Warnemünde

‘We are united by our responsibility for the environment and the climate, for life in the sea and for the people who live by and from the sea. We want to provide data and knowledge to ensure the sustainable coexistence of man and sea.’

From the mission statement of the IOW

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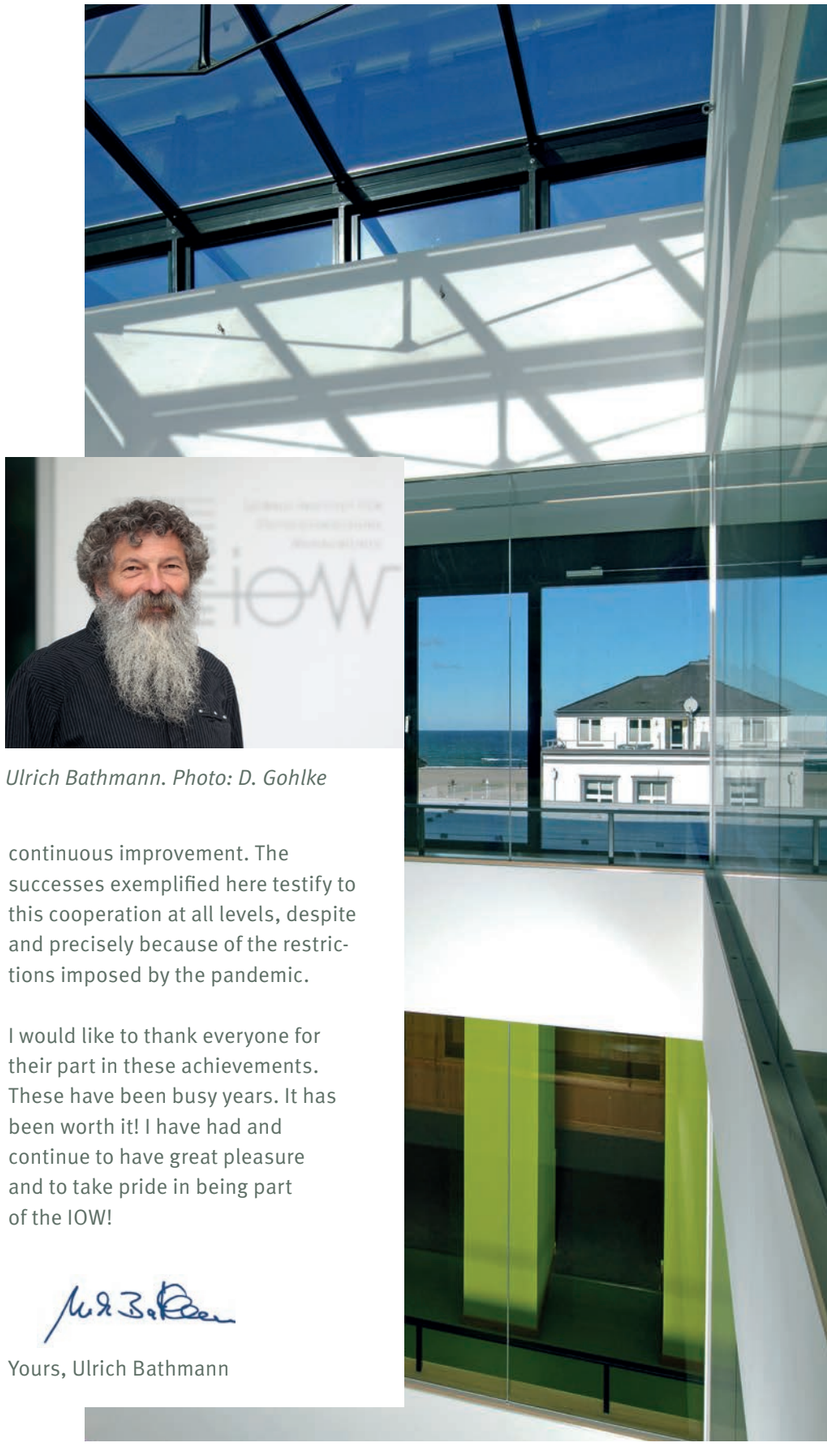
Foreword



Ulrich Bathmann. Photo: D. Gohlke

When we presented the Briese Award for Marine Research to Dr. Katharina Kitzinger in an in-person event in March 2020, we already suspected that this would be the last gathering of its kind for a long while. In fact, it wasn't until the autumn of 2021, again at a Briese Award ceremony, this time honoring Dr. Christoph Böttner, that we again ventured into the institute, albeit under stringent conditions.

Between those events lay many months in which the institute's operations – especially laboratory work and research cruises – frequently came to a complete standstill.

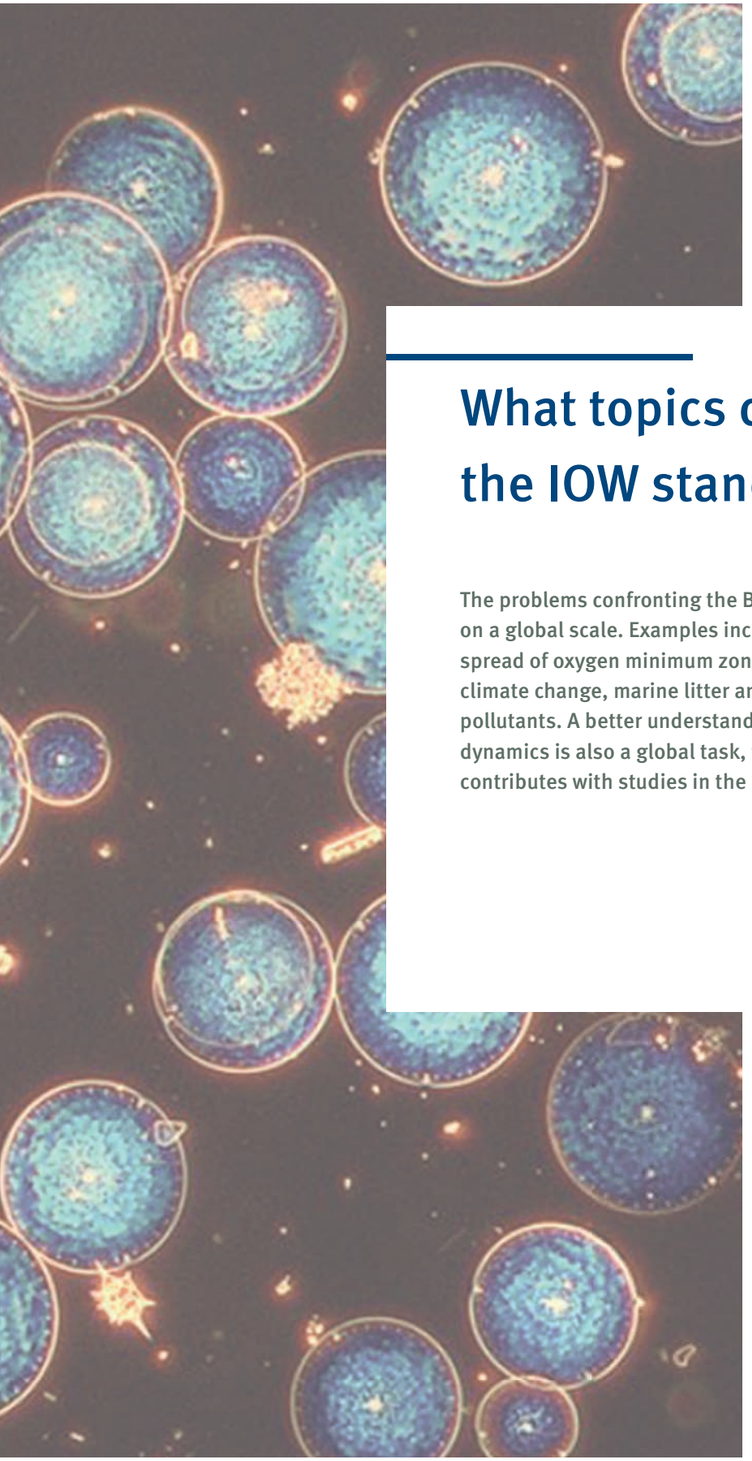
This report documents that period but, as you will see, science never rests and research finds ways to move forward, even under difficult conditions. The result of our Leibniz evaluation, carried out in 2019, was a cause of great joy throughout the institute. In November 2020, we were informed that the evaluators rated our performance as very good to excellent. Furthermore, our proposals for a future expansion of the institute's programme to include shallow water were welcomed and the application for an extraordinary item of expenditure (Sondertatbestand) was expressly endorsed. Thus strengthened, in a subsequent competition we convinced the Leibniz Association and the Joint Science Conference (GWK) that our plans justified a permanent budget increase of 2 million Euros. The fruits of this planning work will be reaped at the beginning of 2023.

For me, the last two reporting years were also my last two years as IOW Director. I am happy to hand over the institute to my successor with a very good evaluation and exciting plans for the future. I greatly appreciate the people at the IOW, their constructive creativity, their sometimes divergent opinions in discourse, their common striving for knowledge and for continuous improvement. The successes exemplified here testify to this cooperation at all levels, despite and precisely because of the restrictions imposed by the pandemic.

I would like to thank everyone for their part in these achievements. These have been busy years. It has been worth it! I have had and continue to have great pleasure and to take pride in being part of the IOW!

Yours, Ulrich Bathmann

Spotlights



What topics does the IOW stand for?

The problems confronting the Baltic Sea are also current on a global scale. Examples include eutrophication, the spread of oxygen minimum zones, declining biodiversity, climate change, marine litter and the introduction of new pollutants. A better understanding of greenhouse gas dynamics is also a global task, to which the IOW contributes with studies in the Baltic Sea.

1 Eutrophication

2 Oxygen-minimum zones

3 Biodiversity and food webs

4 Climate variability and climate impact

5 Pollutants in the sea

6 Greenhouse gas dynamics

Spotlight 1

Eutrophication

Eutrophication, or over-fertilization, remains the biggest problem in the Baltic Sea. High nutrient inputs stimulate the growth of algae, impair the light supply of bottom-dwelling organisms in shallower waters and lead to oxygen deficiency in the deeper waters of the central Baltic Sea. Despite policies aimed at reducing inputs, little has changed in this regard.

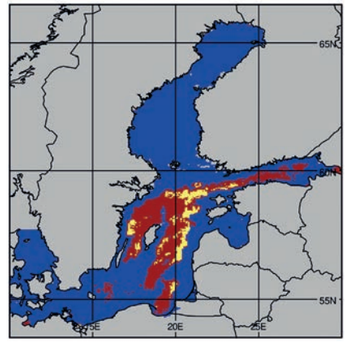
For more information, scan the QR code.

Combating frustration: Nutrient reduction measures work

Unchanged high nutrient levels in the open Baltic Sea often cast doubt on the effectiveness of reduction measures. In 2020, Joachim Kuss presented a method for tracking the fate of discharged nutrients from the river mouth to the open Baltic Sea. Result: Indeed, since the beginning of the reduction measures, fewer nutrients from river discharges are arriving in the sea, but the relief is masked by discharges from other sources.

A ‘model message’ for the Baltic Sea: Dead zones could shrink despite climate change

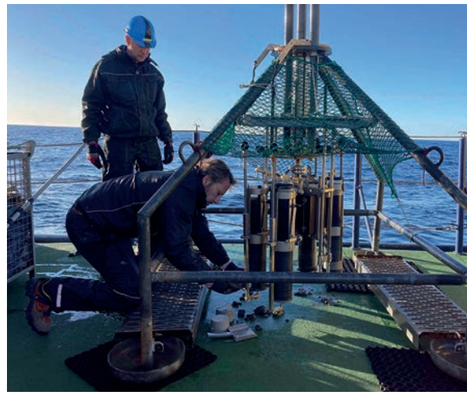
Using an extensive ensemble of models, in 2021 the working group led by climate modeler Markus Meier examined the effects of climate change on the ‘dead zones’ of the Baltic Sea. Result: It’s not hopeless. If the reductions in nutrient discharges continue to be implemented swiftly, a reduction in the oxygen-deficient zones can be achieved by the year 2100 – despite climate change.



Excerpt from a model run of the development of 'dead zones'. Forecast for the year 2075. Oxygen contents: red ‹ 2 ml/L; yellow ‹ 0 ml/L. Graphic: M. Gröger, IOW

Overestimated: On the role of saltwater inflow in nutrient reduction

After the large saltwater inflow of 2014/2015, it was assumed that oxygenation would trigger the precipitation of nutrient-containing compounds and thus relieve over-fertilization. In 2021, Olaf Dellwig presented the result of detailed analyses from the Gotland Basin. Conclusion: Even very large amounts of oxygenated water bring only small and temporary improvements in the nutrient situation in the central Baltic Sea.



Olaf Dellwig and Helge Arz securing sediment samples from a multicorer. Photo: J. Kaiser, IOW

Spotlight 2

Oxygen-minimum zones

Excessive algae growth leads to the proliferation of oxygen-minimum zones on the seafloor, where higher life is not possible. In the central Baltic Sea, where vertical exchange is inhibited by a stable stratification, this leads to quasi-permanent 'dead zones'. Saltwater inflows, and thus massive influxes of oxygen-rich surface water from the North Sea, bring only temporary improvement.

For more information, scan the QR code.

Time traveling with biomarkers: Baltic Sea sediment archives reveal frequency of blue-green algae since 1860

So-called blue-green algae blooms regularly drive the over-fertilization of the Baltic Sea. Reason enough to want to better understand their occurrence. In 2020, Jérôme Kaiser used a well-dated sediment core to successfully reconstruct the history of blue-green algae blooms in the central Baltic Sea over the last 160 years, thus extending the period of available information on the frequency of the blooms significantly into the past.

Submesoscale dynamics in the heart of the Baltic Sea: High-resolution model reveals new insights

They are the cogs in the wheel of ocean dynamics: filaments, fronts and eddies, from 1 to 10 km in size. These mostly short-lived phenomena are difficult to study. In the Baltic Sea, they are partly responsible for the start and duration of blue-green algae blooms. In 2021, Evridiki Chrysagi, a junior researcher in Hans Burchard's group, succeeded in mapping and studying these phenomena with high-resolution realistic model simulations.

Filaments, fronts and eddies around Gotland as a possible cause of nutrient transport into surface waters and thus a trigger of blue-green algae blooms. Photo: IOW / MODIS

Spotlight 3

Biodiversity and food webs

A wide salinity spectrum makes life difficult for marine organisms in the Baltic Sea. Only a few species are able to cope. Human intervention in the heavily used sea at our front door consequently encounters an already naturally stressed ecosystem. The designation of marine protected areas places certain habitats under protection.

For more information, scan the QR code.

‘Top athletes’ on the seafloor: Hediste diversicolor, Arctica islandica, Echinocardium cordatum, Amphiura filiformis.

Behind these Latin names are the main players among the burrowing organisms on the sea floor of wide areas of the North and Baltic Seas – according to the results of a study published in 2020 by Mayya Gogina, in which she investigated the relative importance of these organisms in supplying the sea floor with oxygen. The resulting maps of bioturbation potential identify areas of high ecosystem service that are particularly worthy of protection.

Mayya Gogina with a sample of ocean quahog on a ship expedition. Photo: IOW

The German sea shells – New publication presents an extensive documentation of mussels living in German sea areas (and beyond)

Michael L. Zettler, senior scientist at the IOW, has been researching the inhabitants of the seabed of the Baltic Sea and other seas – the so-called zoobenthos – for many years. Now he has contributed his profound expertise to a monograph on the marine bivalves of Germany, thus closing, together with co-author Axel Alf, a gap in the renowned series ‘Die Tierwelt Deutschlands’. The two authors have described a total of 123 species, taxonomically classified and documented with impressive photos.

Sea shells of Germany
Photo: ConchBooks Harxheim

Spotlight 4

Climate variability and climate impact

No marginal sea has warmed as rapidly as the Baltic Sea in recent decades. The consequences of this change for living organisms and material cycles are being investigated by several working groups at the IOW. However, our research also addresses the question of natural climate fluctuations and how they are affected against the background of human-made climate warming.

For more information scan the QR code.

The long arm of the Atlantic: How the climate of Northern Europe is influenced from afar

In 2020, Florian Börgel, a junior scientist in the research group of climate modeler Markus Meier, was able to show for the first time how fluctuations in the Atlantic Multidecadal Oscillation (AMO) affected the North Atlantic Oscillation during the last millennium. In doing so, he also established a link between the AMO and climate variables in the Baltic Sea region, such as the spread of sea ice or the temperature of the surface water.

Photo: R. Prien, IOW

Spotlight 5

Pollutants in the sea

As an inland sea with highly restricted exchange, the Baltic Sea is a reservoir for the substances that enter its waters. Pollutants remain in the system for a long time and can accumulate. At the IOW, mainly organic compounds, such as polycyclic aromatic hydrocarbons, pesticides as well as pharmaceuticals and cosmetics, are studied in seawater. In recent years, microplastics pollution has additionally come into focus.

For more information, scan the QR code.

First-time detection of glyphosate in the sea: IOW develops new method and successfully applies it to Baltic Sea samples

Glyphosate is one of the world's most widely used herbicides. From land, it enters rivers, which flush it into the sea. However, the amount that arrived there was previously unknown, because glyphosate was methodically undetectable in salt water. In 2020, Marisa Wirth, a junior researcher in the research group of marine chemist Detlef Schulz-Bull, developed a new method allowing the reliable measurement of glyphosate in the sea.

Photo: F. Beck

Microplastic pollution of the Baltic Sea: New insights into behaviour, sinks and reduction measures

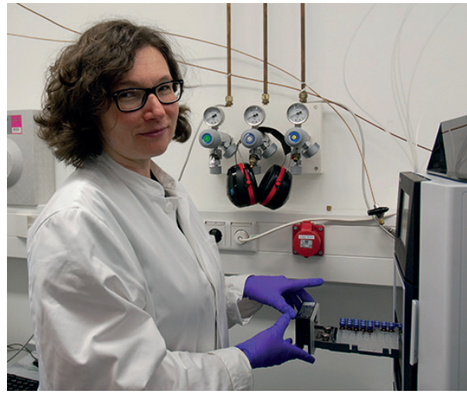
In order to assess the impact of microplastics on the ocean, it is necessary to know their quantity and behavior. In 2021, Gerald Schernewski published calculations of inputs from urban sources for the entire Baltic Sea as well as model simulations of the behaviour of microplastics in the sea. In addition to strategies for efficient monitoring of the microplastic load in the Baltic Sea, the results will be used to derive measures for a reduction of total inputs.

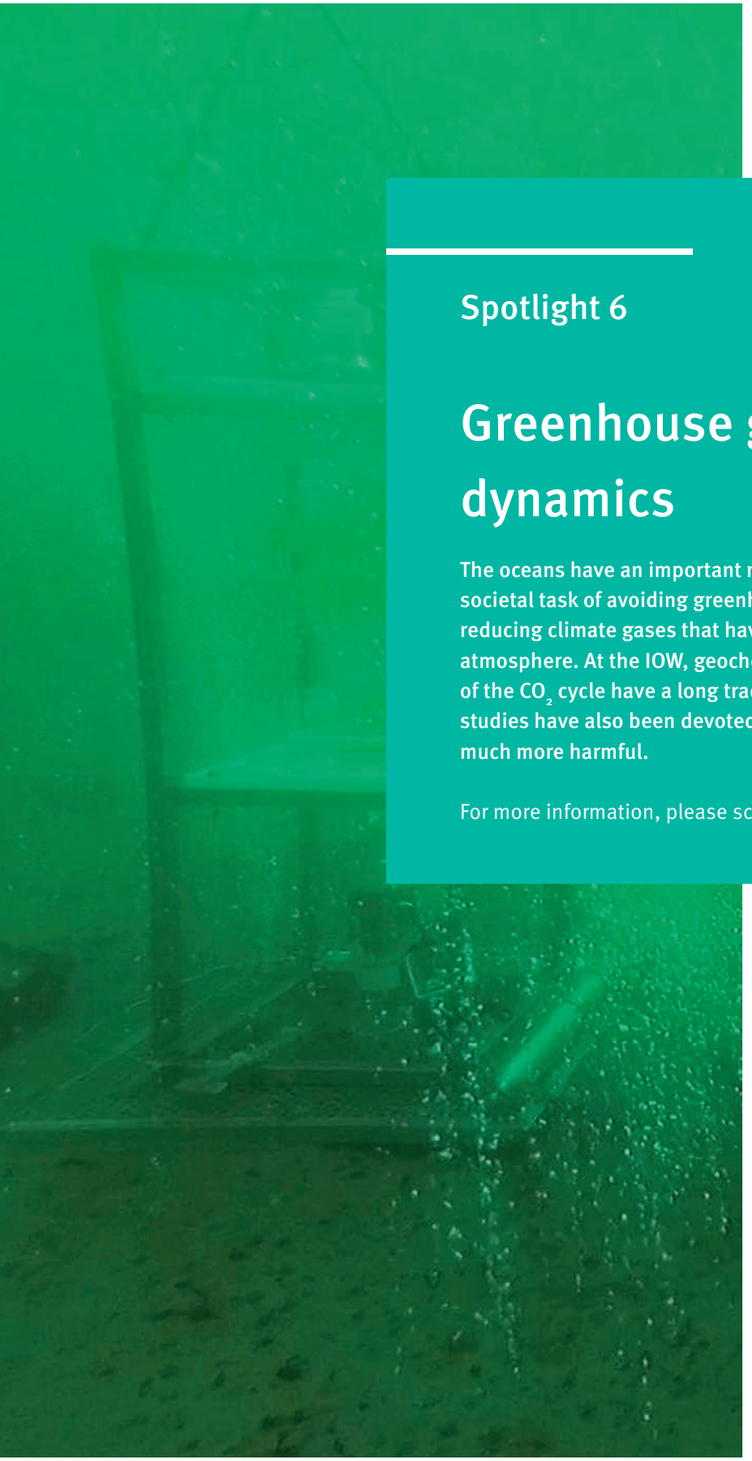
Plastic found on the beach. Photo: F. Klaeger, IOW

A threat to the Baltic Sea? Long-term development of pollution by polycyclic aromatic hydrocarbons (PAH)

PAHs are widespread, highly toxic and often carcinogenic environmental pollutants. Marion Kanwischer has studied the long-term development of PAH pollution in the Baltic Sea, comparing pre-industrial conditions with the development of PAH pollution following industrialisation. Overall, the level of pollution has decreased. However, PAHs still represent a toxicological risk, to which traffic emissions contribute significantly.

Marion Kanwischer at her workplace during laboratory tests of water samples for PAH contamination. Photo: J. Myrrhe





Spotlight 6

Greenhouse gas dynamics

The oceans have an important role to play in the major societal task of avoiding greenhouse gas emissions or reducing climate gases that have already entered the atmosphere. At the IOW, geochemical process studies of the CO_2 cycle have a long tradition. But, numerous studies have also been devoted to methane, which is much more harmful.

For more information, please scan the QR code.

Upwards with the ‘bubble shuttle’: How sea floor microbes get involved with methane reduction in the water column

Understanding how the climate gas methane enters or is prevented from entering the atmosphere is essential for climate predictions. In 2020, Oliver Schmale was able to determine for the first time the efficiency with which methane-degrading bacteria use gas bubbles from submarine methane seeps to ascend in the water column, where they can influence biogeochemical processes that ultimately prevent methane from entering the atmosphere.

Global CO_2 balance published in 2020: Record decrease in fossil CO_2 emissions - the IOW provides data from the Baltic Sea

Every year, the universities of East Anglia and Exeter announce the worldwide CO_2 balance as a product of the ‘Global Carbon Project’ (GCP). The balance for 2020 showed an unprecedented decrease in fossil CO_2 emissions, which was attributed to Corona-related restrictions on transportation. However, atmospheric CO_2 concentrations still continued to rise. The GCP brings together numerous international research institutions worldwide. More than 80 people participated in the publication now available, among them Henry Bittig, a marine chemist at the IOW.

No patent solution for climate change

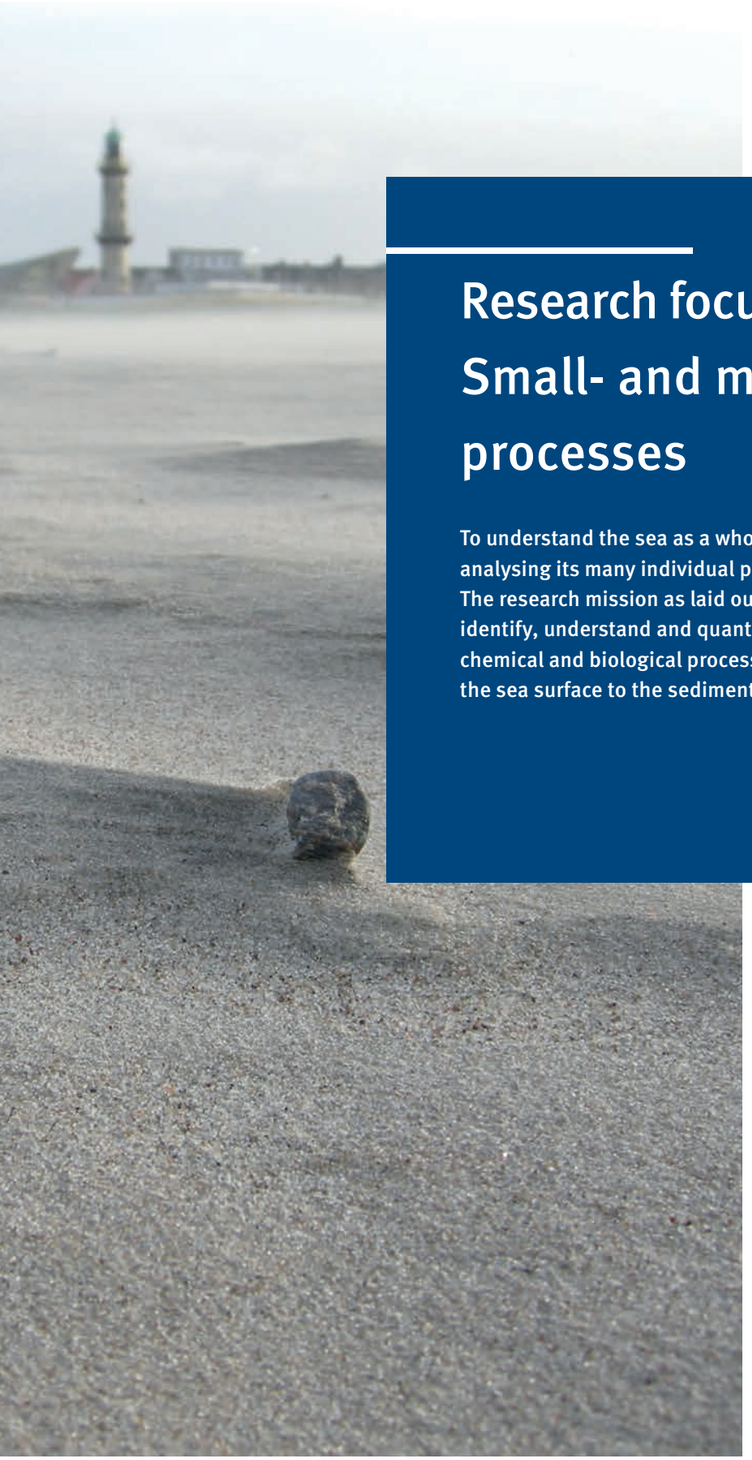
Seagrass beds are considered a natural CO_2 sink and their restoration is intended to help combat climate change. Their carbon balance in a tropical coastal system was presented for the first time in 2021. IOW researcher Michael Böttcher participated with analyses of the pore water of the sediments. This is where it is determined whether carbonate crystallises into lime and CO_2 is thus removed from the water, or whether the system as a whole releases CO_2. Conclusion: Seagrass beds are not a patent solution. In the tropics, they can release more CO_2 than they absorb.

Seagrass bed. Photo: S. Kube, IOW

1 News from the research foci

Introduction

At the IOW, the four departments work in an interdisciplinary approach on a 10-year research programme. The activities are bundled in four research foci. They are dedicated to process studies at different spatial scales (research foci 1 and 2) and investigate changes over time and under the influence of human activities (research foci 3 and 4). The methodological tools of our research are further developed in the two cross-cutting activities ‘Innovative instrumentation’ and ‘Modelling’.



Focus 1

Research focus 1
Small- and mesoscale processes

To understand the sea as a whole, we must begin by analysing its many individual processes one at a time. The research mission as laid out in Research focus 1 is to identify, understand and quantify all of the physical, chemical and biological processes taking place from the sea surface to the sediments.

1.1.1 New projects

The Transregio TRR181 Energy transfer in atmosphere and ocean started its second funding phase in the reporting period

The energy of a closed system is constant. This basic physical principle often poses a problem for climate modelling. Existing climate models exhibit energetic and mathematical inconsistencies, especially in the parameterisation of small-scale processes, which can lead to fundamental errors in climate predictions. The goal of the Transregio is to develop energetically consistent mathematical models that improve climate analyses and forecast accuracy. The IOW participates with three project leaders in the fields ‘Large-scale and balanced processes’ (Lars Umlauf), ‘Mathematics, new concepts and methods’ (Knut Klingbeil) and ‘Synthesis with climate models’ (Hans Burchard).

DFG

2021

Coordination:
University of Hamburg
Responsible at IOW:
Hans Burchard[PHY],
Knut Klingbeil[PHY], Lars Umlauf[PHY]
https://
www.trr-energytransfers.de/

Photo: NASA

2020

Coordination:
Leibniz Institute
for Atmospheric Physics
Responsible at IOW:
Lars Umlauf[PHY]
https://www.io-warnemuende.de/projekt/248/formosa.html

FORMOSA – Four dimensional research applying modelling and observations for the sea and atmosphere

In FORMOSA, researchers from physical oceanography and atmospheric sciences are collaborating to develop new techniques for the multidimensional detection of physical processes in the atmosphere and ocean. On the oceanographic side, acoustic methods (e.g. multibeam echosounders), previously used mainly to analyse the ocean floor, are now being applied in the water column to measure the finest physical structures with extremely high spatial and temporal resolution. These measurements are expected to provide new insights into the three-dimensional structure of small-scale oceanographic processes.

2021

Coordination: Helmholtz-Zentrum hereon
Responsible at IOW:
Michael Böttcher[GEO]
https://www.carbostore.de/102583/index.php.en

CARBOSTORE – Carbon storage in German coastal seas: stability, vulnerability and perspectives

The CARBOSTORE-COOLSTYLE project is investigating the extent to which processes responsible for carbon storage in the North Sea and Baltic Sea are influenced by human use and climate change. One focus is on the importance of sediments for the composition of the water column. Based on the results, perspectives for a targeted anthropogenic increase in carbon storage in the North and Baltic Seas will be developed.

2020

Coordination:
IOW, Isabell Klawonn[BIO]
https://microbiogeoresearch.jimdosite.com/

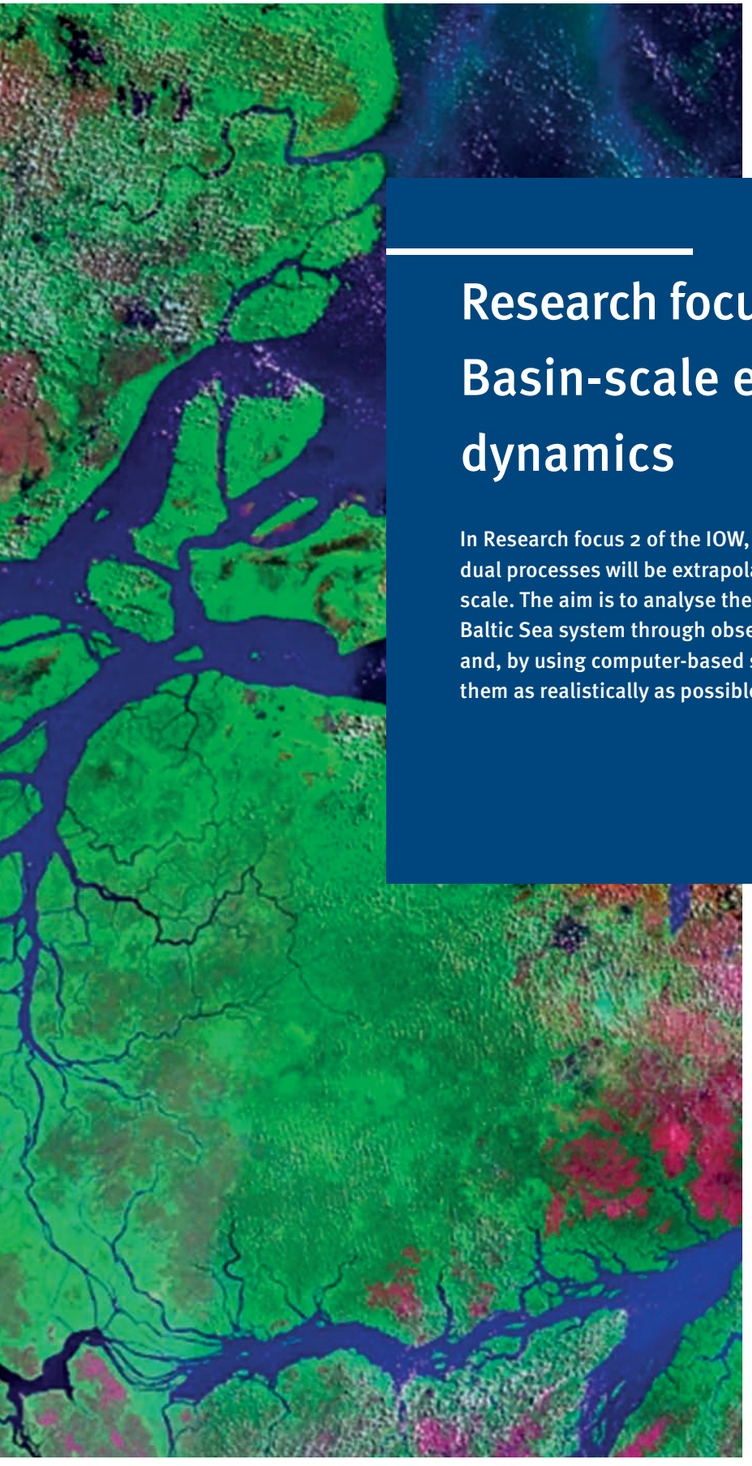
FunPhy – Fungal infections on phytoplankton — cryptic perturbation of phytoplankton growth,recycling and sedimentation

The Emmy Noether junior research group FunPhy investigates how parasitic fungi influence algal blooms and matter cycles in brackish and seawater. In a comprehensive approach, experimental studies are performed both on microalgal-fungal co-cultures and on field samples from the water column, to quantify the effects on microbial communities. The goal is to decipher microbial interactions at the level of individual microalgal cells during fungal infection and to extrapolate these data to whole microbial communities.

1.1.2 Miscellaneous

On 1 August 2020, Dr. Isabell Klawonn began her work as part of the renowned Emmy Noether Programme of the German Research Foundation for outstanding young scientists. For the next six years, two doctoral positions and one postdoc position will be available to her for this purpose. With this group, for which new laboratory facilities will be set up at the IOW, Isabell Klawonn will investigate the role of parasitic planktonic fungi. At the same time, the Emmy Noether group will mainly focus on the fungal plankton of the Baltic Sea. (see above, FunPhy project description)

Isabell Klawonn. Photo: K. Beck, IOW



Focus 2

Research focus 2
Basin-scale ecosystem dynamics

In Research focus 2 of the IOW, the findings on the individual processes will be extrapolated to a larger, basin-wide scale. The aim is to analyse the current dynamics of the Baltic Sea system through observations and experiments and, by using computer-based simulations, to reproduce them as realistically as possible.

1.2.1 New projects

The DFG Research Training Group, Baltic Transcoast 'The German Baltic Sea coast as a terrestrial-marine interface of water and material fluxes', is entering its second funding round

The overall goal is to better understand the processes in the shallow coastal zone. How is the marine coastal zone influenced by terrestrial processes? How is the terrestrial coastal zone influenced by marine processes? In the three research areas 'Hydrodynamic Processes' (H), '(Bio)geochemical Processes '(G) and 'Biological Processes' (B), these questions will be investigated in interdisciplinary groups of graduate students. At the IOW, PhD students will be supervised in thematic areas H (Hans Burchard), G (Michael Böttcher, Maren Voß, Gregor Rehder) and B (Heide Schulz-Vogt).

Coastal fen 'Hütelmoor' close to Markgrafenheide. Photo: Dr. LarsTiepolt

DFG

2020

Coordination:
University of Rostock
Responsible at IOW:
Maren Voß[BIO],
Heide Schulz-Vogt[BIO],
Gregor Rehder[CHE],
Michael Böttcher[GEO],
Hans Burchard[PHY]
https://
www.baltic-transcoast.uni-rostock.de/

NArrFix – Nitrogen and argon measurements for the quantification of surface water nitrogen fixation in the Baltic Sea

Due to the high importance of nitrogen fixation by cyanobacteria for the eutrophication of the Baltic Sea, information on its extent is urgently needed. In NArrFix, the decrease in N_2 concentrations in surface waters during a cyanobacterial bloom is recorded on a large scale, and complementary argon measurements are performed to account for N_2 gas exchange with the atmosphere. Parallel measurements of pCO_2 are used to provide an independent estimate of the biomass production of cyanobacteria and the associated N_2 fixation.

DFG

2021

Coordination:
IOW, Oliver Schmale[CHE],
Bernd Schneider[CHE]
https://www.io-warnemuende.de/projekt/266/narrfix_schmale.html

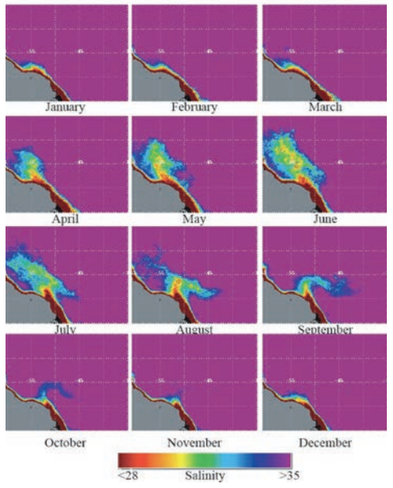
DFG

2020

Coordination:
IOW, Natalie Loick-Wilde[BIO],
Maren Voß[BIO]
https://www.io-warnemuende.de/project/244/men-arp_loick-wilde.html

MeNArp – Metabolism of nitrogen in the Amazon river plume and Western Tropical North Atlantic

The Amazon, with its catchment area, the largest in the world, and a riverine input that accounts for nearly 20% of global freshwater inputs into the oceans, is naturally of great interest for estuarine research. MeNArp investigates the uptake and turnover of inorganic and organic nitrogen compounds along the Amazon estuary and the role of these compounds in the occurrence of different trophic functional groups. The studies will be primarily conducted as part of a METEOR cruise.



Graphic: IOW

FONDATION BNP PARIBAS

2020

Coordination:
Mediterranean Institute of Oceanography (MIO), Marseille
Responsible at IOW:
Maren Voß[BIO]
https://www.io-warnemuende.de/project/251/notion.html

Notion – Nitrogen fixers structuring phytoplankton biodiversity in the ocean under climate change

The goal is to determine the influence of climate change on the activity of nitrogen fixers and the consequences for phytoplankton diversity and productivity. To this end, global ecological ocean models will be improved with new data sets and parameterisations. Genetic data will be integrated into biogeochemical models to link phylogenetic with functional diversity. Fundamental new insights are anticipated and a blueprint for future studies of other plankton groups established.

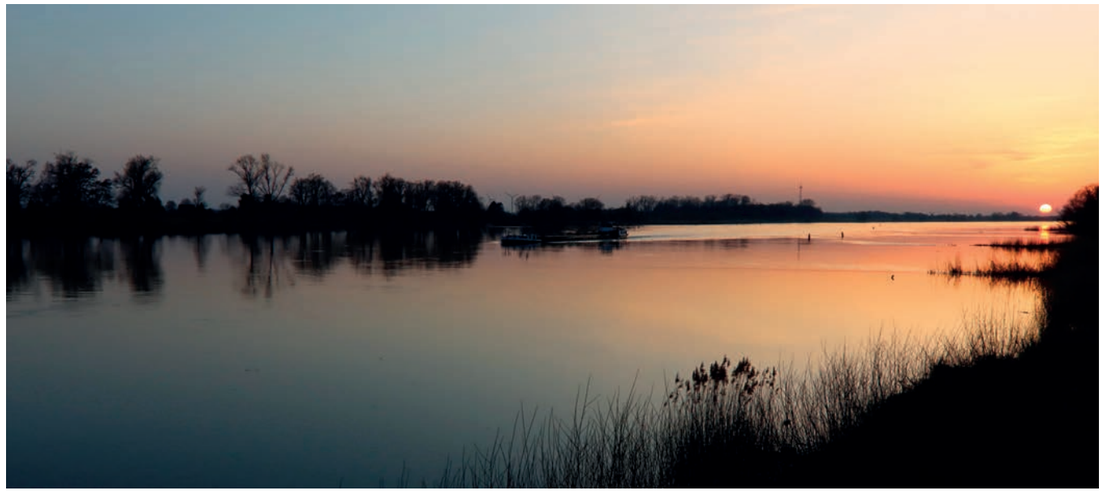
BluEs – Blue Estuaries: Developing estuaries as habitable sustainable ecosystem despite climate change and stress

BluEs is dedicated to the effects of stressors, such as eutrophication, pollutant inputs, sediment redistribution and heat waves, on the biota of the two largest German estuaries, the Oder (Baltic Sea) and the Elbe (North Sea). Both estuaries suffer from climate change and human activities, such as channel dredging, which causes sediment loss, turbidity and the release of nutrients and pollutants. The BluEs project will investigate the impacts on food webs and nutrient cycling through field work, laboratory experiments and modelling.

Federal Ministry of Education and Research

2020

Coordination: IOW,
Maren Voß[BIO]
https://www.io-warnemuende.de/bluesoverview.html



The Elbe, near Lauenburg. Photo: N. Reese, IOW

Federal Ministry of Education and Research

2020

Coordination:
Federal Maritime and Hydrographic Agency (BSH)
Responsible at IOW:
Henry Bittig[CHE]
https://www.io-warnemuende.de/project/253/dargo2025.html

DArgo2025 – Pilot studies for the extended Argo monitoring network in Germany; Subtopic: Analyses of floats with nitrate sensors in the Baltic Sea and integration of the national BGC data management in Argo International

The IOW's contribution consists of sensor-based nitrate measurements by biogeochemical (BGC) Argo floats in the Baltic Sea, where no German Argo activities have taken place so far. To expand the sensor options, nitrate sensors for BGC Argo floats from different vendors will be comparatively characterised and deployed on floats, with the focus of attention being on ensuring consistent data quality.

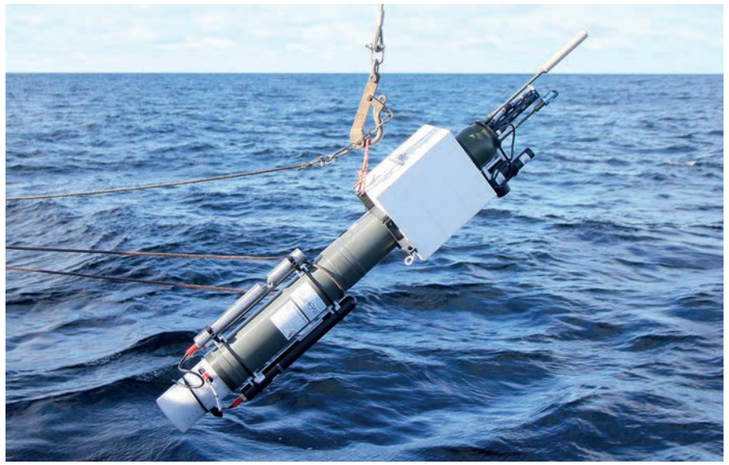
Federal Ministry of Education and Research

2021

Coordination:
GEOMAR – Helmholtz Centre for Ocean Research Kiel
Responsible at IOW:
Henry Bittig[CHE]
https://www.io-warnemuende.de/project/270/c-scope.html

C-SCOPE IOW – Analysis of CO_2 uptake and dynamics under the impact of eutrophication by expanding the CO_2 observation network in the Baltic Sea

C-SCOPE aims to take marine carbon observations to a new level by combining, perfecting and expanding existing or new observation networks. The IOW is participating with a demonstration study in the Baltic Sea on the synergistic combination of BGC-Argo with the existing Ship-of-Opportunity line of the ICOS programme on the ferry Finnmaid. Besides testing and implementing a sensor for pCO_2 as a second CO_2 indicator on BGC-Argo floats, the study is aimed at an improved understanding of oceanic CO_2 uptake.



Argo float. Photo: M. Naumann, IOW

1.2.2 Miscellaneous

2021

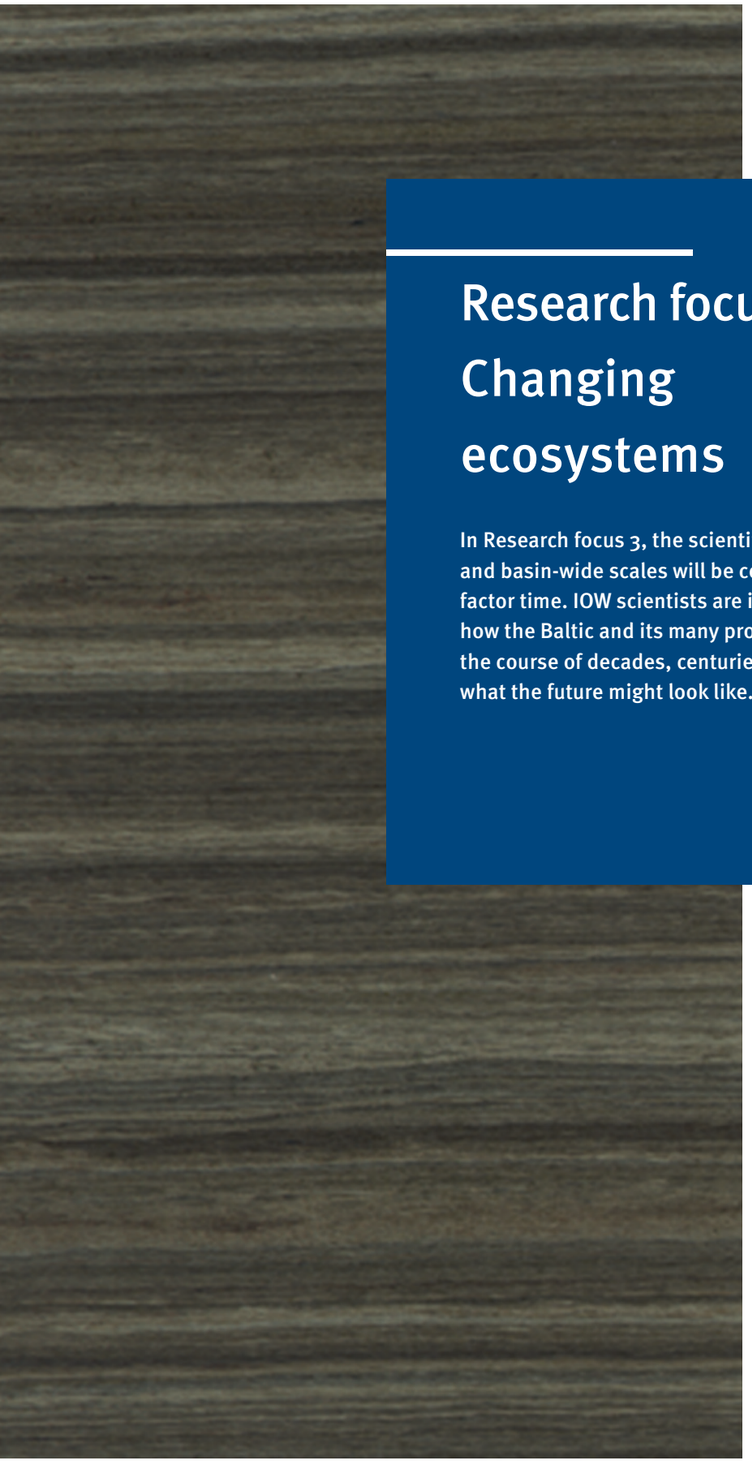
On 19. March 2021, the r/v Sonne set off on an unusual voyage: the aim was to rescue a total of ten moorings lying off the coasts of South Africa, Namibia and Angola as well as in international waters for various projects. Due to the Corona-related cancellation of ship departures, the equipment was in service longer than planned, with the threat of data and hardware losses. Martin Schmidt, Bita Sabbaghzadeh and Sebastian Beier were there and took care of moorings that had been deployed for the BMBF projects EVAR and BANINO.

Photo: R. Prien, IOW

2021

On 12 April 2021, a seven-week expedition of the research vessel Meteor set out from Las Palmas for the Amazon estuary to investigate the fate of its giant river plume from the mouth to the open ocean and to understand the influence of this riverine input on plankton food webs. The international research team, led by Maren Voß, focussed in particular on the conversion of the important element nitrogen.

The scientific Team of Meteor M174. Photo: N. Fröhberg



Research focus 3 Changing ecosystems

In Research focus 3, the scientific findings obtained at small and basin-wide scales will be combined with the factor time. IOW scientists are interested in finding out how the Baltic and its many processes have changed over the course of decades, centuries and millennia and what the future might look like.

1.3.1 New projects

SOLCLIM – Solar influences on climate during the last and penultimate glacial

Novel proxy time series of solar activity at 40-year resolution are being established based on beryllium- 10 and palaeointensity measurements of Black Sea sediments for parts of the last and penultimate glaciation. Thus, for the first time, a temporal resolution will be achieved for marine sediments that allows the reconstruction of multi-decadal variations in solar variability. The goal is to investigate solar influences on climate during three climate phases: the Last Glacial Maximum (22 – 28 ka BP), a period of strong Dansgaard-Oeschger variability (40 – 55 ka BP) and Termination II (128 – 134 ka BP).

DFG

2020

Coordination:
IOW, Helge Arz[GEO], Markus Czymcik[GEO]
https://www.io-warnemuende.de/project/239/solclim.html

Cya-Remo – Cyanobacteria under climate change: Looking into the past to predict the future through integration of resurrection ecology, experimental evolution and ecosystem modelling approaches

To explore the success of cyanobacteria in aquatic habitats, evolutionary and modelling experiments will be conducted with present-day and up to millennia-old permanent stages resuscitated from Baltic Sea sediments. The research will 1) investigate whether cyanobacteria have adapted to the changing environmental conditions, 2) quantify their potential to cope with even higher temperatures and 3) estimate the likely dominance of future phytoplankton communities in an overall warmer environment. This will serve to improve climate projections that incorporate the evolutionary response of key organisms.

DFG

2021

Coordination:
University of Hamburg
Responsible at IOW:
Anke Kremp[BIO]
https://www.io-warnemuende.de/project/259/cya-remo.html

PHYTOARK – Predicting the future from signatures of the past: using living sediment archives and ancient DNA to understand responses of marine primary producers to environmental changes

Climate change threatens marine biodiversity and thus the stability of marine ecosystems. The first changes are already being seen in phytoplankton. PHYTOARK will use the latest methods of palaeoecology and biodiversity research (e.g. eDNA) to look 8,000 years into the past and reconstruct changes in Baltic Sea phytoplankton caused by natural climate fluctuations. This will be accomplished by sampling dated sediment cores spanning 8,000 years. This look into the past should help to better assess the impacts of climate change in the future.

Leibniz Association

2021

Coordination:
IOW, Anke Kremp[BIO]
https://www.io-warnemuende.de/project/271/phytoark.html

Federal Ministry of Education and Research

2020

Coordination: Global Climate Forum, Berlin
Responsible at IOW: Ulf Graewe[PHY]
https://deutsche-kuestenforschung.de/ecas-baltic-566.html

ECAS BALTIC – Ecosystem-supporting coastal adaptation strategies for the German Baltic Sea coast; Model studies on the variability and changes of storm surges

For the German Baltic Sea coast, strategies of ecosystem-compatible coastal protection and ecosystem-supportive coastal adaptation will be developed that protect both people and ecosystems from sealevel rise (SLR), while complementing existing coastal protection programmes and taking into account their social acceptance as well as hydrodynamic, morphodynamic, and socioeconomic conditions. In the context of SLR uncertainties, when and how often measures should ideally be implemented will be explored.

Federal Office for Agriculture and Food

2021

Coordination: Thünen Institute of Baltic Sea Fisheries
Responsible at IOW: Michael Naumann[PHY]
https://www.io-warnemuende.de/project/278/hyfive.html

HyFiVe – Joint research project to develop an innovative sensor system used at fishing vessels for autonomous hydrographic measurements, data transfer and analysis of hydrographic measurement data for fisheries research

Data collection for the recording of hydrographic conditions in the Baltic Sea is usually spatially and temporally insufficient and very cost-intensive. The aim of the project HyFiVe – 'Hydrography on Fishing Vessels', is the development of an innovative system for use on fishing vessels (Ships-of-Opportunity) for the autonomous acquisition, transmission and evaluation of hydrographic measurement data. This should significantly increase the coverage density of measurement data at sea at relatively low cost.

Michael Naumann inspects the otter boards of a fishing vessel. Photo: K. Beck, IOW

1.3.2 Miscellaneous

2020

What is the 'footprint' of megacities in the South China Sea, Bohai Sea and Yellow Sea? How are the discharged substances distributed in Chinese coastal seas? And what is the function of sediments with respect to the novel pollutants that have been introduced? These questions were the focus of the joint project MEGAPOL, which was supported by the BMBF and coordinated by Joanna Waniek. On 28./29. October 2020, the project consortium met virtually for a final official exchange. In 24 presentations, the project members summarised their results, which were subsequently also published in Marine Science Reports.

The project team during a research cruise in the South China Sea. Photo: R. Prien, IOW

2021

From 25.02. to 23.03.2021 a team of oceanographic-geological researchers from Warnemünde, Kiel and Szczecin travelled the northern Baltic Sea to investigate winter deep-water aeration. In addition to the recording of hydrodynamic conditions on and under the ice of the Gulf of Bothnia, the programme included sedimentological and geophysical studies of sediment structures characteristic of deep-water movement. The aim is to use appropriate sediment archives to reconstruct the history of deep-water circulation in the northern Baltic Sea during Holocene climate variations.

PhD student Runa Reuter takes measurements under the ice cover. Photo: T. Heene, IOW

Focus 4

Research focus 4 Coastal seas and society

Hardly any other sea is more exposed by human activities than the Baltic Sea in the heart of Europe – it is source of raw materials, a maritime thoroughfare and dumping ground. In Research focus 4, IOW scientists consider the interactions between the Baltic Sea ecosystem and human activities.

1.4.1 New projects

Crassobiom – The role of host-microbiome interactions in physiological performance of the Pacific oyster Crassostrea gigas in extreme habitats

The aim is to understand whether the interaction of the Pacific oyster C. gigas with its microbiota facilitates the survival of this invasive species in the intertidal environment of the German Wadden Sea To this end, a two-step approach is being followed: In laboratory studies, the potential role of the host microbiome in the response of holobionts to environmental stressors will be determined. Field transplantation experiments will investigate whether the molecular stress signatures of hostmicrobiome interactions can be tracked in natural habitats based on varying degrees of abiotic stress.

DFG

2020

Coordination:
University of Rostock
Responsible at IOW:
Matthias Labrenz[BIO]
https://www.io-warnemuende.de/project/237/crassobiom.html

PaintSed – Paint particles in marine sediments: Interactions with microbiota and effects on sediment processes

Although marine pollution by microplastics (MP) is well documented, the role of microplastic paint particles is not understood. What is known is that paint particles in Baltic Sea sediments have a different biofilm community than natural particles. PaintSed determines which properties of specific paint colours are responsible for these differences. A model will then be developed to predict the degree of paint pollution and the impact on microbially driven biogeochemical cycling in marine sediments based on the composition of the microbial communities.

DFG

2021

Coordination:
IOW, Alexander Tagg[BIO]
https://www.io-warnemuende.de/project/269/paintsed.html

Coloured microplastic particles. Photo: A. Tagg, IOW

Federal Ministry of Education and Research

2020

Coordination:
IOW, Ulrich Bathmann[DIR]
https://deutsche-kuestenforschung.de/cotrans-en.html

CoTrans – KüNO umbrella project – Coordination and transfer

By coordinating, networking and synthesising the work between KüNO research networks across topics, the KüNO umbrella project contributes to coherent trans- and interdisciplinary coastal research in Germany. Within the framework of a continuous stakeholder dialogue process, it promotes the transfer of research results into practice. Furthermore, open access to research data for researchers and stakeholders is ensured and, finally, by training and recruiting early career scientists, it responds to the need for qualified specialists for coastal research.

Federal Ministry of Education and Research

DAM DEUTSCHE ALLIANZ MEERESFORSCHUNG

2020

Coordination:
IOW, Klaus Jürgens[BIO]
https://www.io-warnemuende.de/project/243/mgf-ostsee.html

MGF-Ostsee – Protected areas Baltic Sea: Effects of the exclusion of mobile bottom trawling in marine protected areas; Key proposal; Project: Monitoring and development scenarios of benthic communities and sediment functions

How have the benthic ecosystems in the Natura 2000 sites of the German Exclusive Economic Zone of the Baltic Sea evolved since the exclusion of mobile bottom-dwelling fisheries (MBF)? To answer this question, the effects on the entire benthic biodiversity, from bacteria to demersal fish, the food web and sediment functions will be investigated. This will involve inventories of all biotic components sediment structures and biogeochemical processes as well as modelling of their dynamics and interactions.

Schematic diagram of ship deployment in the MFG project. Graphic: I. Piehl

BaltVib – Pathogenic Vibrio bacteria in the current and future Baltic Sea waters

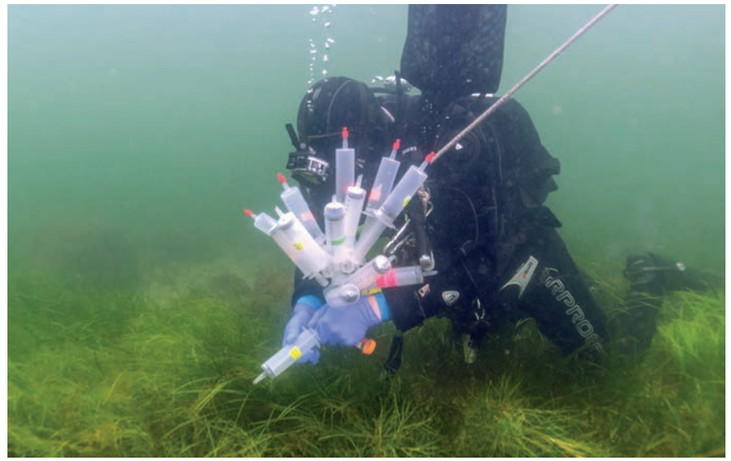
Vibrio-associated wound infections and deaths are becoming more frequent in the Baltic Sea. It is assumed that climate warming will exacerbate this problem. The influence of mussels and macrophytes on the diversity and number of Vibrio spp. has not been considered thus far. Recent data suggest that such 'ecosystem engineers' reduce the abundance of pathogenic Vibrio spp. The aim of BaltVib is to delineate the current and future status of Vibrio and to identify key biotic and abiotic factors regulating Vibrio prevalence in order to mitigate the problem.

Federal Ministry of Education and Research

HORIZON 2020

2020

Coordination:
IOW, Matthias Labrenz[BIO]
https://www.io-warnemuende.de/project/273/baltvib.html



Taking water samples in a seagrass meadow. Photo: E. Stohr, IOW

AMMOTRACe – Marine AMMunitiOn dump site exploration by surface- and underwater-based laser mass spectrometric TRACing technology

European waters are often contaminated by underwater munitions (UM). Typically, UM are localised using geophysical techniques. However, they can also be found by the chemical detection of ammunition compounds and chemical warfare agents in the water, although the low concentrations of these substances in the water pose a challenge. In the IOW sub-project, robust membrane inlets are being developed, constructed, tested and optimised for the rapid and direct detection of these substances using both ship-borne PIMS and IMS systems and submersible mini-PIMS and IMS systems.

Federal Ministry for Economic Affairs and Climate Action

HORIZON 2020

2021

Coordination:
GEOMAR – Helmholtz Centre for Ocean Research Kiel
Responsible at IOW:
Detlef Schulz-Bull[CHE]
https://www.io-warnemuende.de/project/286/ammotrace.html

2021

HORIZON 2020

Coordination:
University of Vigo
Responsible at IOW:
Juliana Ivar do Sul[CHE]
https://www.io-warnemuende.de/project/274/labplas.html

LABPLAS - Land-based solutions to plastic in the seas: Understanding the sources, transport, distribution and impact of plastic pollution

LABPLAS is a joint initiative of 20 groups from 16 organisations whose mission is to provide European public authorities with the pre-normative knowledge needed to combat plastic pollution. The aim is to understand the sources, transport, distribution and impact of plastic pollution in different environmental sectors by using technological innovations, developing new models and presenting results allowing decision-making. The IOW contributes by analysing the distribution of microplastics in the Baltic Sea during the last century as determined from sediment cores.

Postdoc Juliana Ivar do Sul presents her working methods together with Jérôme Kaiser in an exhibition on the Anthropocene. Photo: privat

Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection

2021

Coordination:
University of Rostock
Responsible at IOW:
Gerald Schernewski[KMP]
https://www.io-warnemuende.de/project/279/toumali.html

TouMaLi – Marine litter and sustainable waste management in North-African coastal tourism regions

The aim of the project is the development and implementation of a sustainable waste management system for the tourism regions in Morocco, Tunisia and Egypt. Accumulating material flows are to be sensibly recycled according to the 'Reduce, Reuse, Recycle' approach. The tasks of the IOW are the transfer of methods, the establishment and implementation of a marine litter monitoring system, the large-scale assessment of the state of pollution, the analysis of plastic sources and input pathways as well as the evaluation and improvement of the efficiency of prevention measures, as well as increasing public awareness.

Umwelt Bundesamt

2020

Coordination:
IOW, Gerald Schernewski[KMP]
https://www.io-warnemuende.de/project/258/uba-eutro.html

UBA-Eutro – The Baltic Sea Action Plan: Modelling of water quality indicators

With the help of high-resolution simulations of a 3D ecosystem model, the nutrient reduction targets in the western Baltic Sea will be reviewed and the need for further reductions determined. The simulations will also be used to analyse oxygen deficiency in order to support the introduction of a shallow-water oxygen indicator and the achievement of target values. The aim is to integrate model and measurement data into a differentiated monitoring system. The knowledge gained from the project will serve the national implementation of the Marine Strategy Framework Directive and the Baltic Sea Action Plan.

Mecklenburg Vorpommern
MV tut gut.
Ministerium für Bildung, Wissenschaft und Kultur

2020

Coordination:
IOW, Ulrich Bathmann[DIR]
https://wissenschaftscampus-rostock.de/home.html

Coordination of the Leibniz ScienceCampus Phosphorus Research Rostock 2021 – 2023

The Rostock Leibniz Science Campus Phosphorus Research enters the second round! The overarching goal of the interdisciplinary collaboration at the Campus is to develop the scientific basis for more sustainable P management. The focus is on P cycles in the environment and the environmental problems, especially in aquatic systems such as the Baltic Sea, that arise from inefficient P use. In addition to the numerous projects currently being worked on, new research projects are continuously being developed.

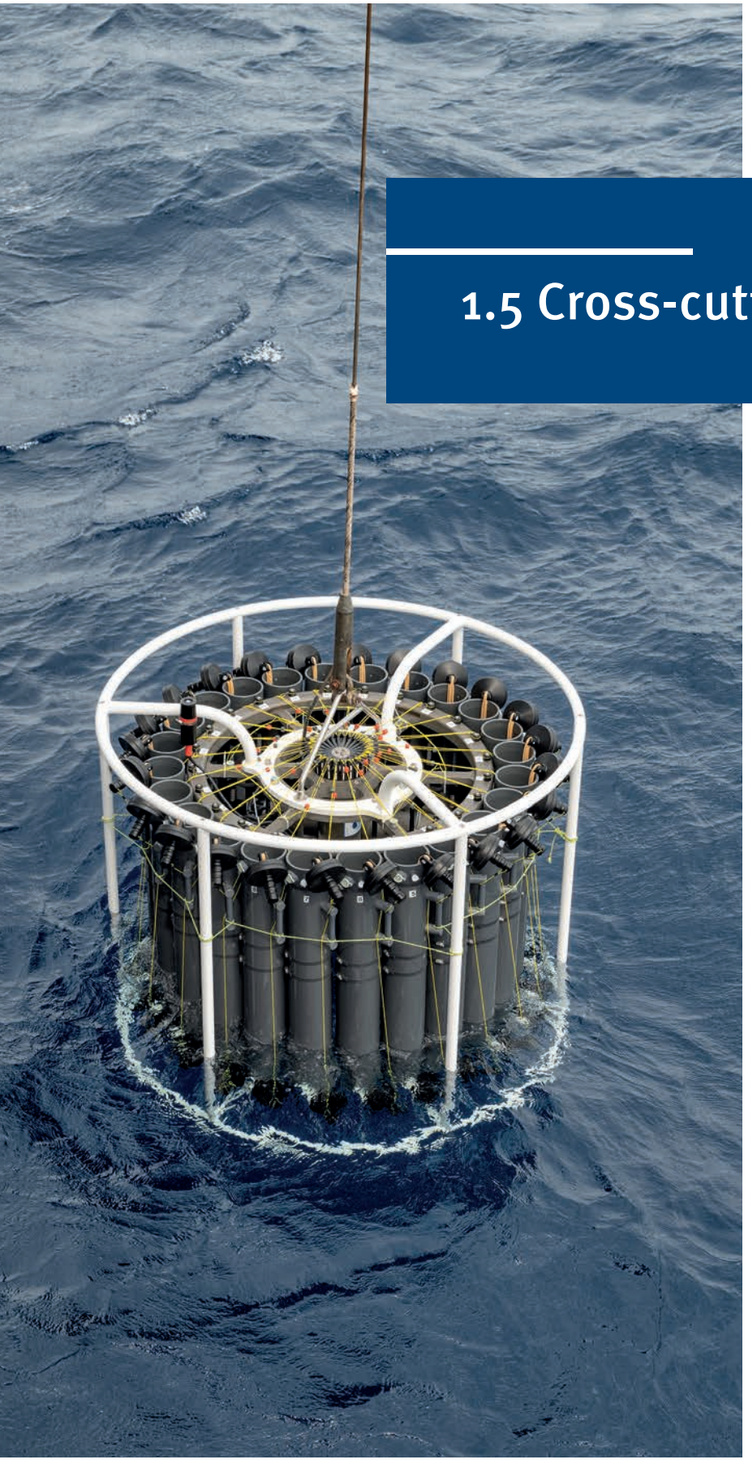
Bettina Martin, Minister for Science, Education and Culture, signing the new cooperation agreement together with Leibniz President Matthias Kleiner, Rector Wolfgang Schareck and IOW Director Ulrich Bathmann. Photo: K. Beck, IOW

1.4.2 Miscellaneous

2021

On 2 June 2021, a two-week ship expedition led by the IOW set off for marine protected areas in the Fehmarn Belt and the Oder Bank. The aim of the research cruise was a comprehensive inventory of the seabed that, in addition to geophysical and geochemical properties, for the first time included the entire near-bottom food web: from bacteria to the fish living there. The cruise was part of the pilot mission of the German Marine Research Alliance to investigate the impact of bottom trawling on marine protected areas in the North and Baltic Seas.

Research cruises in Corona times. Photo: M. Schönke



1.5 Cross-cutting activities

1.5.1 Innovative instrumentation

In the cross-cutting activity 'Innovative instrumentation' technologies are adapted to the needs of science, by improving them or even developing entirely new ones. To this end, scientists at the IOW work hand in hand with partners from other institutions, universities and industry. Distinctive 'home-grown' technological inventions that reach patent maturity become available for a broad, worldwide spectrum of customers.

1.5.1.1 New project

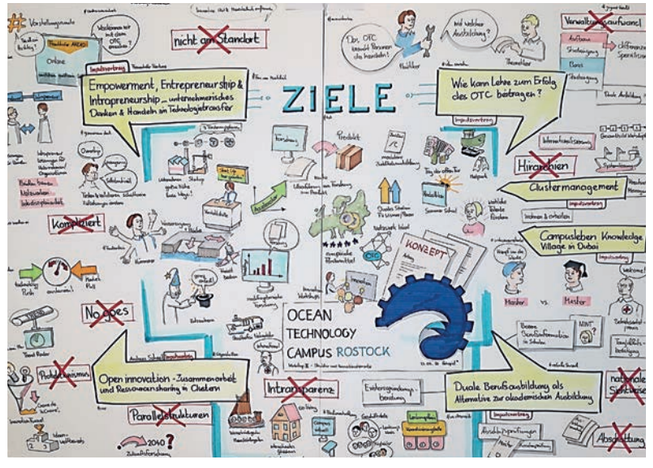
Ocean Technology Campus Rostock – Cluster development for a sustainable use of the oceans

By mid-2020, it was clear: the Rostock Ocean Technology Campus's application had progressed in the two-stage application process for a BMBF Future-Clusters grant. During the six-month conception phase, research priorities in underwater technology were defined together with the establishment of effective innovation processes for potential fields of application. The IOW participated in the analysis of potential and demand for new technologies in the field of underwater sensors / antifouling in monitoring applications and supported the preparation and implementation of a workshop on the topic of 'Training and Recruitment of Young Professionals'.

Federal Ministry of Education and Research

2020

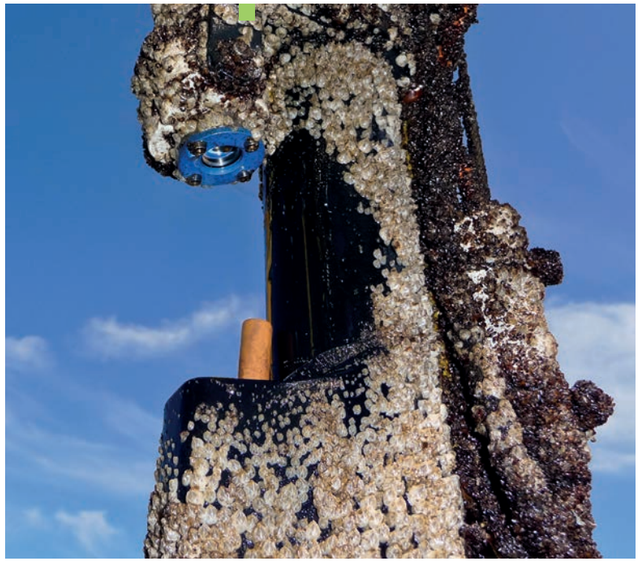
Coordination:
University of Rostock
Responsible at IOW:
Barbara Hentzsch[DIR],
Regine Labrenz[DIR]
https:// www.otc-rostock.com/en/



Graphic protocol of the final workshop. Graphic: Sebastian Schröder, innoXperts® and University of Rostock

1.5.1.2 Miscellaneous

2020



Effects of UV treatment: Fouling-free sensor. Photo: R. Mars, IOW

Biofouling is a major problem for any technical device that is to remain operational under water for long periods of time. Encrustation with mussels and barnacles usually causes mechanical problems, but even thin biofilms of algae and bacteria can damage sensitive surfaces and measurement equipment and falsify measurements. After about three years of development, in 2020 an antifouling device designed by Robert Mars was licensed for commercial production. The device uses focusing lens optics to bundle the UV light of energy-efficient LEDs and thus keeps irradiated surfaces permanently free of fouling.

2021 A patent application for an invention by Ralf Prien was filed in 2021 and has now passed the examination procedure. The invention comprises a sensor unit for carrying out measurements using surface plasmon resonance spectroscopy (SPR). It offers a more compact design and a lower measurement uncertainty in aqueous media and would be an important tool for the IOW, especially in connection with the determination of dissolved methane in water. However, applications in many other areas are also possible.

1.5.2 Modelling

The cross-cutting activity 'Modelling' is dedicated to the development of computer models. At the IOW, researchers from the various fields of interest contribute pieces of the puzzle that in the end will form a complete and scientific image of the Baltic Sea. However, for the institute's modellers to obtain a virtual simulation of the sea requires close cooperation among all relevant areas to ensure that no piece of information is missing. With the computer models, scientists at the IOW can test hypotheses, make predictions, for example, about the reaction of the Baltic Sea to climate change, or examine the effectiveness of environmental protection measures prior to their implementation.

1.5.2.1 New project

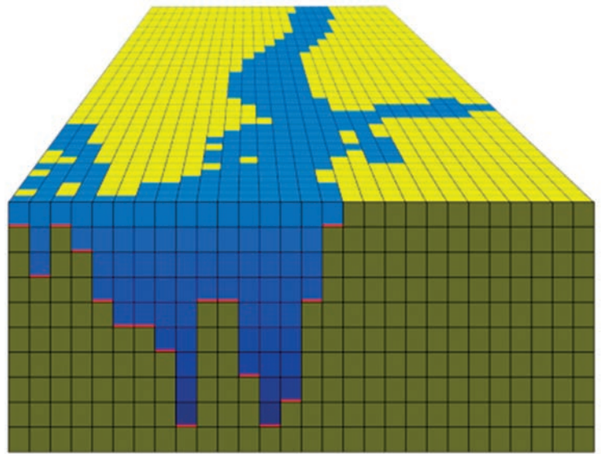
NumOST – Numerical modelling of the Baltic Sea: Interfacing large scale models with local models

BAW Federal Waterways Engineering and Research Institute

2020

Coordination:
IOW, Hans Burchard[PHY]
https://www.io-warnemuende.de/project/242/numost.html

The aim is to create a link between the large-scale oceanographic model systems of the IOW and the regional, coastal water engineering model systems of the Federal Waterways Engineering and Research Institute (BAW). The scientific objective is to identify an optimal linkage between the two model systems. Essentially, the aim is to transfer scientific methods of coastal ocean modelling to application-driven hydraulic engineering modelling. The ultimate objective is to improve the predictability of the hydraulic engineering models through a higher degree of physical and numerical consistency.



Schematic diagram of a 3-dimensional model of the Baltic Sea. Photo: H. Radtke, IOW

2 The IOW in dialogue

2.1 Knowledge and technology transfer

Podcast 2020

As the Baltic Sea Day 2020 had to be cancelled as an in-person event, the Baltic Sea Day Consortium, consisting of IOW, the Thünen Institute of Baltic Sea Fisheries, the Federal Maritime and Hydrographic Agency and the German Oceanographic Museum, together with journalist Jan Kerckhoff, instead developed a podcast series on the topic of 'Climate change and the sea – the case of the Baltic Sea'. Climate modeller Markus Meier and geologists Helge Arz and Jérôme Kaiser joined in with the podcast episodes 'Fact check climate change in the Baltic Sea: warmer, higher, fresher?' and 'Of little ice ages and climate archives'.
Image podcast. Photo: A. Schütz

Competition 2021

With her presentation: 'Not there or just well hidden? In search of glyphosate in the sea', Marisa Wirth won the 2020 communication competition 'Rostock's eleven'. Every year, eleven young researchers from Rostock research institutions compete to present their work to a jury of 11 journalists. The criteria are linguistic clarity and general comprehensibility. With her dissertation, Marisa Wirth was the first in the world to succeed in detecting the pesticide glyphosate in the sea by developing special detection methods for seawater.

Winner Marisa Wirth. Photo: A. Schütz

Travelling exhibition 2021

'Colourful, small, everywhere. Microplastics - from the River to the Sea' is the title of a travelling exhibition that was created at the IOW as part of the BMBF project MicroCatch_ Balt. After a delay due to Corona, it opened in August 2020 at the International Maritime Museum in Hamburg and then moved on to the Baltic Sea Info Centre in Eckernförde, to the Phänomenta in Flensburg, to Saarbrücken, Kellenhusen and to Aschaffenburg. In the exhibition, a multi-touch table allows visitors to interactively experience which types of plastic are particularly common and how their drift in and through the sea is influenced.

Franziska Kläger and Sven Hille organised the exhibit.
Photo: S. Schäfer

Citizen science 2021

In 2020, it was observed that the Australian tubeworm, first found in the Baltic Sea in 2016, continues to spread, in some places with a high density of growth, especially on boat hulls or in sheltered shoreline areas. Sven Hille, responsible for knowledge transfer at the IOW, organised a reporting system involving various marinas. This has made it possible to quickly determine which areas are particularly vulnerable to colonisation by the worm. So far, a mass development has been observed only in the Lower Warnow. However, it is assumed that the heat-loving immigrant will spread further over the course of climate change.

Australian tubeworm on a bank.
Photo: S. Hille, IOW

Technology transfer workshop 2021

It' s nearly a tradition: For the fourth time, the IOW offered a workshop on technology transfer at the Baltic Sea Science Congress (BSSC) and thus once again ensured that an important aspect of technology development was a topic at the BSSC. Regine Labrenz, technology transfer officer at the IOW, put together a programme that brought together the evolving needs of science and new opportunities offered by companies. Five companies from Germany, Denmark and France presented their innovations and provided very positive feedback.

2.2 Networking

German Marine Research Alliance — 2020 / 2021

During the years under review, many IOW researchers were intensively involved in the formulation of so-called research missions, with which the German Marine Research Alliance (DAM) aims to address urgent research questions. Under the headings ‘Protection and sustainable use of the oceans’ and ‘Marine Carbon sinks’, research programmes were developed that build bridges to practical applications. The IOW participated in numerous applications in the subsequent calls for proposals. In the ‘Marine carbon sinks’ mission, Gregor Rehder, one of the main applicants, was also responsible for the overarching concept. At the end of 2021 it was clear that the efforts had paid off. New funding projects were launched that in the coming years will be of central importance for the IOW.

Clusters4Future OTC — 2021

In 2020,the joint application Ocean Technology Campus, by the University of Rostock, the Fraunhofer Institute for Computer Graphics Research, the MV Research Association and the IOW, tied up a lot of capacities. Funding was applied for within the BMBF initiative Clusters4Future. In workshops and many rounds of coordination, a concept was developed that included three projects under IOW coordination (OTC Genomics, OTC Stone, OTC Gender). OTC Data and OTC Talents include further projects with IOW contributions. The entire cluster was approved in spring 2021, and the IOW projects anchored within it were launched at the end of 2021.

3 Personalia

3.1 Honourable

Ulrich Bathmann elected to the DAM Executive Board

On 20 May 2021, the member institutions of the German Marine Research Alliance (DAM) elected Katja Matthes, Director of GEOMAR, and Ulrich Bathmann, Director of the IOW, to its Executive Board. The Executive Board leads DAM and develops its strategic-conceptual direction, which is then subject to approval by the General Assembly and the Administrative Council.

Photo: D. Gohlke

Lars Umlauf: Award for quality teaching

For his teaching during the winter semester 2020/2021 and in particular his lecture ‘Hydrodynamics’, Lars Umlauf received one of the four teaching prizes awarded for the first time by the Faculty of Mathematics and Natural Sciences at the University of Rostock. The prize was awarded on the basis of a majority vote of the Bachelor degree students in Physics. In its statement, the student council highlighted the interactivity that distinguished Lars Umlauf's lectures.

Photo: R. Prien, IOW

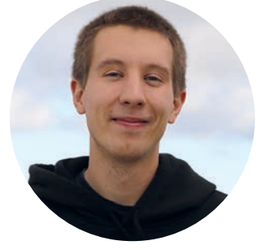
3.2 Excellent

We take pride in the 12 doctorates completed in both 2020 and 2021. On behalf of them, we present those of them awarded ‘summa cum laude’.

These are:

Florian Börgel
Long-term variability in the Baltic Sea
2020.

Photo: D. Amm, IOW



René Janssen
Machine learning classification of microbial community compositions to predict anthropogenic pollutants in the Baltic Sea
2020.

Photo: D. Amm, IOW

Marvin Lorenz
Influences of surface buoyancy fluxes on circulation and mixing in estuaries
2021.

Photo: University of Rostock

Marisa Wirth
Analysis of the herbicide glyphosate and related organophosphonates in seawater: overcoming salt-matrix-induced limitations
2021.

Photo: D. Amm, IOW

3.3 Passing the baton

Siegfried Krüger.
Photo: D. Gohlke

Dr. Robert Wagner.
Photo: D. Amm, IOW

Instrumentation

At the end of April 2021, Siegfried Krüger handed over the leadership of the IOW Instrumentation Working Group to his successor Robert Wagner. Krüger had held this position for almost 30 years, during which time, with his dedication and creativity, he ensured that innovative instrumentation became a trademark of the IOW. His successor, Robert Wagner, comes from the field of environmental engineering and he has dedicated himself to marine measurement technology since early in his career. His previous pursuits, including sensor development and the improvement of mobile data collection methods, fit ideally within the IOW's spectrum of activities.

Uwe Kolbow.
Photo: D. Amm, IOW

Steffen Klingner.
Photo: D. Amm, IOW

Technical Operations

In the summer of 2021, Uwe Kolbow ended his work as head of the Technical Operations Working Group at the IOW. A man for tasks both large and small, he ensured the smooth functioning of laboratories, workshops and offices beginning in 2007. Among his larger tasks was certainly the completion of the IOW atrium building and the redesign of the research villa. His position has been seamlessly taken over by Steffen Klingner, who was looking for a new professional challenge after more than 20 years with AIDA Cruises, where he served as senior electrical engineer on board and as a technical inspector on shore.

Ilka Quade.
Photo: D. Amm, IOW

Finances

Ilka Quade took over from Cornelia Döring as head of the Finance Working Group in September 2021. Since the refounding of the IOW in 1992, Ms Döring has kept a firm eye on the Institute's financial operations. Ilka Quade also brings Leibniz experience with her. At the Leibniz Institute for Catalysis Research (LIKAT) in Rostock, she served as Finance Coordinator. After training as a commercial administrator and IT specialist for application development, she studied business administration and was then a commercial manager in the business world for many years before moving to LIKAT.

3.4 Committee elections

Equal Opportunity Officer

Since April 2021, the IOW has had a new Equal Opportunity Officer: marine chemist Marion Kanwischer. Geologist Svenja Papenmeier was elected as her deputy. They succeed Joanna Waniek and Barbara Hentzsch (deputy) in office. The two newcomers plan to share the tasks so that they can also continue to pursue their scientific interests.

Dr. Marion Kanwischer.
Photo: T. Häntzschel

Dr. Svenja Papenmeier.
Photo: D. Amm, IOW

Ombudspersons

Marine biologist Maren Voss and oceanographer Peter Holtermann are the new ombudspersons at IOW. Their work was previously carried out by oceanographer Thomas Neumann. With the double appointment to this position, the IOW followed a recommendation of the DFG.

Prof. Dr. Maren Voss.
Photo: D. Amm, IOW

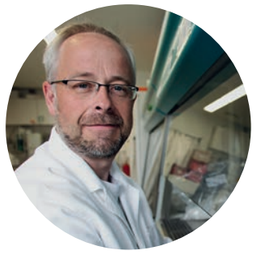
Dr. Peter Holtermann.
Photo: D. Amm, IOW

Staff Council

A new staff council also took office in 2021. With Peter Feldens, Sandra Kube, Angela Vogts, Christian Burmeister, Diana Körner, Robert Mars and Martin Sass as full members and Christian Meeske, Sascha Plewe, Iris Schmiedinger and Mareike Floth-Peterson as alternates, a good cross-section of the IOW's staff is represented. The Staff Council elected Peter Feldens as chair and Christian Burmeister as his deputy.

Dr. Peter Feldens.
Photo: D. Amm, IOW

Christian Burmeister.
Photo: J. Wölfel, IOW



Prof. Dr. Matthias Labrenz. Photo: D. Gohlke

Prof. Dr. Markus Meier. Photo: D. Amm, IOW

Scientific Council

In addition to the department heads and their representatives, the Scientific Council of the IOW includes four elected members from the four scientific departments of the IOW. In 2021, the regular election after four years was due. The scientific staff elected Matthias Labrenz, Volker Mohrholz, Oliver Schmale and Jérôme Kaiser to these positions. Matthias Labrenz was elected as the new chair, his deputy is Markus Meier.

Last but not least

In the midst of the pandemic, the 10th anniversary of the commissioning of research vessel Elisabeth Mann Borgese (EMB) quietly took place. On 22.6.2011, after extensive reconstruction, she was christened with her new name and put into service as a working ship of the IOW. Antje Boetius, a former IOW scientist and Gottfried Wilhelm Leibniz Prize winner, was the godmother. Originally (1986), the Elisabeth Mann Borgese was launched as the Schwedeneck. Now she bears the name of a great maritime law expert and environmentalist. In ten years of service, the EMB has covered almost 200,000 nautical miles and has spent almost 2,250 days in the Baltic Sea on duty for the IOW.

Godmother Antje Boetius together with EMB captain Uwe Scholz (†) on the day of the ship's commissioning. Photo: T. Mandt

Uwe Scholz, long-time captain of the r/v Elisabeth Mann Borgese as well as its predecessor r/v Professor A. Penck, passed away in February 2022. We mourn the loss of an extremely accomplished captain, an experienced advisor and a guide on our sea voyages.

Key data

Personnel

31.12.2020 FTE[1]		31.12.2021 FTE[1]
Total I thereof women		**Total** I thereof women
200,38 I 109,13		**208,82** I 110,15
Entire staff		Entire staff
84,3 I 40,36		90,47 I 39,36
Researchers		Researchers
22,88 I 14,65		23,62 I 15,18
PhD students		PhD students
10,13 I 5,95		10,35 I 8,23
Scientific service staff		Scientific service staff
81,07 I 47,17		82,38 I 46,38
Non-reseachers		Non-reseachers
2 I 1		2 I 1
Apprentices		Apprentices

[1] full time equivalent without scientific assistants and fellowship holders

Finances

2020		2021
22.7 million EUR		**24.3** million EUR
Overall budget		Overall budget
14.4 million EUR		**15.3** million EUR
Institutional funding		Institutional funding
8.3 million EUR		**9.0** million EUR
Third-party funds		Third-party funds
thereof		thereof
2.7 million EUR		**2.7 million EUR**
BSH (Federal Maritime and Hydrographic Agency)		BSH (Federal Maritime and Hydrographic Agency)
0.5 million EUR		**0.8 million EUR**
SAW (Leibniz competition)		SAW (Leibniz competition)
2.9 million EUR		**3.4 million EUR**
Bund (Federal ministries)		Bund (Federal ministries)
1.2 million EUR		**1.7 million EUR**
DFG (German Research Foundation)		DFG (German Research Foundation)
1 million EUR		**0.1 million EUR**
EU (European Union)		EU (European Union)
–		**0.3 million EUR**
other third-party funds		other third-party funds

Publications

2020

196
Total

179
thereof articles in peer-review journals

110
thereof gold open access

2021

224
Total

191
thereof articles in peer-review journals

111
thereof gold open access

Qualifications – PhD degrees

2020

Total I thereof women

12 I 5
Doctorates completed

50 I 27
Ongoing doctorates

2021

Total I thereof women

13 I 10
Doctorates completed

48 I 28
Ongoing doctorates

Organigram

Board of Governors
Chair: Woldemar Venohr
Deputy: Rudolf Leisen

Director
Ulrich Bathmann
Deputy: Detlef Schulz-Bull

Scientific Advisory Board
Chair: Andreas Oschlies

Scientific Council

Staff Council

Science Management
Barbara Hentzsch

Coastal Seas: Management and Planning Group
Gerald Schernewski

Administration
Beatrix Blabusch

Equal Opportunity Officers

Ombudspersons

Departments

Physical Oceanography and Instrumentation
Head: Markus Meier
Deputy: Hans Burchard

Biological Oceanography
Head: Heide Schulz-Vogt
Deputy: Klaus Jürgens

Emmy Noether Group
Isabel Klawonn

Marine Chemistry
Head: Detlef Schulz-Bull
Deputy: Gregor Rehder

Marine Geology
Head: Helge Arz
Deputy: Michael Böttcher

Central Units

Analytics Group
Marion Kanwischer

NanoSIMS Lab
Angela Vogts

IT Group
Steffen Bock

Library
Olivia Diehr

Appendix

A1 Projects and expeditions

A1.1 Projects

A1.1.1 Research focus 1 – Small- and mesoscale processes

Project name	Funding agency	Funding period	Responsible IOW scientist
SFB-TRR: Energy transfers in atmosphere and ocean	DFG[1]	07/2016 06/2024	Burchard PHY Umlauf PHY
SEAMOUNT I+II: New surveillance tools for remote sea monitoring and their application on submarine groundwater discharge and seabed surveys; Sub-project: Scientific instrumentation of SEAMOUNT infrastructur	BMBF[2]/ EU BONUS	04/2017 10/2020	Prien CHE
GESIFUS: The genetic structure of microbial communities as a signature of their functional stability	DFG	08/2017 10/2024	Beier BIO
ROBOTRACE: The role of bottom boundary turbulence for the transport of tracers in marine basins	DFG	10/2017 10/2020	Holtermann PHY
CombiBac: Combined effects of temperature and resource availability on organic matter degradation by Antarctic bacterioplankton	DFG	06/2018 09/2021	Piontek BIO
Baltic proper spring bloom: Can micro- or mesozooplankton control phytoplankton spring blooms in the Baltic Proper under climate warming?	DFG	09/2019 02/2023	Paul BIO
KiSNet-SGD: Königshafen submarine groundwater discharge network	DFG	03/2020 03/2023	Böttcher GEO
FORMOSA: Four dimensional research applying modelling and observations for the sea and atmosphere	Leibniz Association	06/2020 05/2023	Umlauf PHY
FunPhy: Aquatic fungi – cryptic perturbation of phytoplankton growth, recycling and sedimentation	DFG	08/2020 07/2023	Klawonn BIO
COOLSTYLE: Carbon reservoirs in North- and Baltic Sea – Stability, vulnerability and perspectives	BMBF	04/2021 03/2024	Böttcher GEO

A1.1.2 Research focus 2 – Basin-scale ecosystem dynamics

Project name	Funding agency	Funding period	Responsible IOW scientist
Baltic Transcoast: Graduate school 'The German Baltic Sea Coast as Terrestrial-Marine Interface of Water and Matter Fluxes'	DFG	01/2016 12/2024	Voß BIO
GROCE I + II: Greenland – Ice sheet/Ocean interaction: From process understanding to an analysis of the regional system; GROCE I Process understanding and parameterisation of boundary l ayer currents under shelf ice; GROCE II subproject 9: process-based quantification of subglacial melt rates	BMBF	05/2017 06/2023	Burchard PHY
INTEGRAL: Integrated carboN and TracE Gas monitoring for the baltic sea	BMBF/ EU BONUS	07/2017 09/2020	Rehder CHE
BANINO: Benguela Niños: Physical processes and long-period variability; Subproject: Interannual variability of wind-driven upwelling and at Benguela Niños of Namibia	BMBF	07/2018 12/2021	Schmidt PHY
CUSCO: Coastal Upwelling System in a changing Ocean; Subproject: Influence of wind field variability on upwelling dynamics and water mass distribution on the Peruvian shelf	BMBF	10/2018 12/2022	Mohrholz PHY
EVAR: The Benguela Upwelling System under climate change – Effects of variability in physical forcing on carbon and oxygen budgets	BMBF	01/2019 12/2022	Schulz-Vogt BIO
SaKOA: Rewetted coastal peatlands as potential nitrogen sources or sinks for the Baltic Sea and the atmosphere	DBU [1]	01/2019 04/2022	Breznikar BIO

[1] DFG – German Research Foundation

[2] BMBF – Federal Ministry of Education and Research

[1] DBU – The German Federal Environmental Foundation

Project name	Funding agency	Funding period	Responsible IOW scientist
PeGGO-Pop: Population structure and connectivity of the broad spawning and brooding scleractinian corals across the northern Persian Gulf and Gulf of Oman: Implication for conservation planning for coral reefs	Leibniz Association	02/2019 12/2022	Burchard PHY
JERICO-S3: Joint European Research Infrastructure of Coastal Observatories: Science, Service, Sustainability	EU – Horizon 2020	02/2020 01/2024	Rehder CHE
NOTION: Nitrogen fixers structuring phytoplankton biodiversity in the ocean under climate change	Fondation BNP Paribas	04/2020 12/2025	Voß BIO
DArgo2025: Pilot studies for the extended Argo monitoring network in Germany; Subtopic: Analyses of floats with nitrate sensors in the Baltic Sea and integration of the national BGC data management in Argo Internationa	BMBF	08/2020 12/2021	Bittig CHE
N-Amazon: Research cruise Meteor M174	DFG	08/2020 08/2022	Voß BIO
MeN-ARP: Metabolism of Nitrogen in the Amazon River plume and Western Tropical North Atlantic	DFG	11/2020 10/2023	Loick-Wilde BIO Voß BIO
BluEs: Blue_Estuaries – Developing estuaries as habitable sustainable ecosystem despite climate change and stress, lead proposal, subproject: Functional diversity and network analysis Oder and Elbe estuary	BMBF	11/2020 10/2023	Voß BIO
C-SCOPE: Analysis of CO_2 uptake and dynamics under the impact of eutrophication by expanding the CO_2 observation network in the Baltic Sea	BMBF	01/2021 12/2023	Bittig CHE
RETAKE: CO_2 removal by alkalinity enhancement: potential, benefits and risks, Subproject: Possible direct and indirect consequences of hypothetical near-bottom alkalinity enhancement in the Baltic Sea	BMBF	08/2021 07/2024	Radtke PHY
NArrFix: Nitrogen argon measurements for the quantification of surface water nitrogen fixation in the Baltic Sea	DFG	10/2021 09/2024	Schmale CHE Schneider CHE

A1.1.3 Research focus 3 – Changing ecosystems

Project name	Funding agency	Funding period	Responsible IOW scientist
BlackPearl: The Black Sea palaeoclimate and environment during the penultimate glacial – reconstructions from lacustrine sediments	DFG	09/2016 03/2020	Wegwerth GEO
TETRABAL: A comprehensive study for the application of proxies based on glycerol dialkyl glycerol tetraethers in the Baltic Sea	DFG	01/2017 01/2021	Kaiser GEO
RINGO: Readiness of ICOS for necessities of intergreated global observations	EU – Horizon 2020	01/2017 12/2020	Rehder CHE
BaltRap: The Baltic Sea and its southern lowlands: proxy-environment interactions in times of rapid changes	Leibniz Association	02/2017 11/2021	Arz GEO
MEGAPOL: Megacity's fingerprint in Chinese marginal seas: Investigation of pollutant fingerprints and dispersal; lead, project: Coordination (TP1), Megacity's fingerprint in Chinese southern marginal seas: Investigation of pollutant fingerprints and dispersal (TP2)	BMBF	08/2017 12/2020	Waniek CHE
CanClim: Late Holocene multi-decadal to centennial scale oceanic variability on the eastern Canadian shelf linked to North Atlantic climatic changes	DFG	08/2017 12/2021	Perner GEO
FINO2 MT: Operating the FINO-database and oceanographic measurements at the platforms	BSH [1]	07/2018 08/2021	Stohr PHY
SyncBalt: Synchronized records of Circum-Baltic Holocene environmental change	DFG	10/2018 10/2021	Czymzik GEO
SEAM: Towards improved Baltic Sea environmental assessment and monitoring	EU BONUS	11/2018 05/2020	Schulz-Bull CHE
SOCLIS-SONNE: South China Sea – natural laboratory under climatic and anthropogenic stress	BMBF	04/2019 08/2021	Waniek CHE

[1] BSH – Federal Maritime and Hydrographic Agency

Project name	Funding agency	Funding period	Responsible IOW scientist
MoMSie: Model based assessment of interactions between mean sea level changes, storm surges and morphodynamics in the Wadden Sea	BMBF	10/2019 09/2022	Gräwe PHY
SolClim II: Solar influences on climate during the last and penultimate glacial	DFG	02/2020 02/2023	Arz GEO Czymzik GEO
Baltic Sea GSSP: The Baltic Sea GSSP project: defining the onset of the Anthropocene Epoch	Haus der Kulturen Berlin	06/2020 12/2021	Kaiser GEO
ECAS-BALTIC: Ecosystem-supporting Coastal Adaptation Strategies for the German Baltic Sea Coast: Model studies on the variablility and changes of storm surges in the western Baltic Sea	BMBF	11/2020 10/2023	Gräwe PHY
CYA-REMo: Cyanobacteria under climate change: looking into the past to predict the future through integration of resurrection ecology, experimental evolution and ecosystem modelling approaches	DFG	05/2021 04/2024	Kremp BIO
PHYTOARK: Predicting the future from signatures of the past: using living sediment archives and ancient DNA to understand responses of marine primary producers to environmental changes	Leibniz Association	05/2021 04/2024	Kremp BIO
HyFiVe: Hydrography on Fishing Vessels – joint research project to develop an innovative sensor system used at fishing vessels for autonomous hydrographic measurements, data transfer and analysis – module B	BLE [1]	07/2021 08/2024	Naumann PHY
DAM Coastal Futures: Future scenarios to promote sustainable use of marine area; Subproject: Scenarios for ecosystem services	BMBF	01.12.2021 30.11.2024	Meier PHY

[1] BLE – Federal Office for Agriculture and Food

A1.1.4 Research focus 4 – Coastal seas and society

Project name	Funding agency	Funding period	Responsible IOW scientist
OPTIMUS: Optimization of mussel cultures for eutrophication prevention and fish feed production in the Baltic Sea	BMBF/ EU BONUS	04/2017 03/2020	Schernewski KMP
MICROPOLL: Multilevel assessment of microplastics and associated pollutants in the Baltic Sea	BMBF/ EU BONUS	07/2017 09/2020	Oberbeckmann BIO
BASMATI: Sustainable ecosystem service through marine spatial planning in the Baltic Sea	BMBF/ EU BONUS	07/2017 09/2020	Schiele KMP
MicroCatch_Balt – Plastics in the environment: Joint research project: Analysing microplastics sinks and sources from a typical catchment area to the open Baltic; Subproject: Microplastics in the Baltic Sea catchment area – sampling, processing, estuary modelling and public	BMBF	08/2017 04/2021	Labrenz BIO
ECOMAP: Baltic Sea environmental assessments by innovative opto-acoustic remote sensing, mapping, and monitoring; BENTHOS – Detection of benthic organisms with acoustic and optical methods	BMBF/ EU BONUS	09/2017 08/2020	Feldens GEO
PLASTRAT: Plastics in the environment; joint research project: Strategies for reducing the entry of urban plastics into limnic systems	BMBF	09/2017 12/2020	Labrenz BIO
MSP-Trans: Development of principles and recommendations in the fields of Marine Spatial Planning (MSP), nature conservation and nature protection legislation in order to incorporate the Ecosystem-Based Approach (EBA) into the spatial planning of OSPAR and HELCOM marine waters as well as the German EEZ.	BfN [1]	10/2017 03/2021	Schiele KMP
UBA Marine Litter II: Development and test of marine litter monitoring methods	UBA [2]	01/2018 04/2021	Schernewski KMP
DESTONY: Decision support tools for managing the Baltic Sea ecosystem / BONUS DESTONY	EU-BONUS	10/2018 06/2020	Schernewski KMP

[1] BfN – Federal Agency for Nature Conservation

[2] UBA – German Environment Agency

Project name	Funding agency	Funding period	Responsible IOW scientist
BalticLitter: ERA-Net: Marine litter at Baltic coasts: monitoring, consequences and remediation	BMBF	01/2019 12/2021	Schernewski KMP
LEGRA: Live along the gradient: Analyse of the impact of environmental parameters on the distribution, diversity and function of benthic communities and their habitats in the southern Baltic Sea and its implications within the European marine conservation directive	BfN	01/2019 06/2022	Zettler BIO
MICRO-FATE: Characterisation of the fate and effects of microplastic articles between hotspots and remote regions in the Pacific Ocean; Project III: Time- and environment-dependent colonisation of microplastics in the Pacific Ocean	BMBF	03/2019 11/2021	Oberbeckmann BIO
P-Campus Büro: Coordination of the Leibniz ScienceCampus Phosphorus Research Rostock	Ministerium für Bildung, Wissenschaft und Kultur M-V	01/2018 03/2023	Bathmann DIR
P-Campus: Leibniz ScienceCampus Phosphorus Research Rostock	Leibniz-Association	06/2019 11/2023	Bathmann DIR
ATLAS: Mapping of habitats (biotopes) and their living communities at the sea floor along the coasts of Mecklenburg-Vorpommern	LUNG[1]	06/2019 12/2021	Zettler BIO
SAARUS: Optimization of scrubber exhaust gas scrubbing technology to reduce environmentally harmful ship emissions	BMWi[2]	06/2019 05/2022	Schulz-Bull CHE
ERASMUS+ knowledge flows: Knowledge flows in Marine Spatial Planning – Sharing innovation in higher education	EU	09/2019 08/2022	Schiele KMP
SPECTROPHABS: Spectrophotometric pH-measurements for monitoring of marine acidification in the Baltic Sea	BSH	11/2019 04/2022	Rehder CHE
DAM MGF-Ostsee: pilote mission – Protected areas Baltic Sea: Effects of the exclusion of mobile bottom trawling in marine protected areas; Key proposal; Project: Monitoring and development scenarios of benthic communities and sediment functions	BMBF	03/2020 02/2023	Jürgens BIO
UBA-Meer: Expert support for the implementation of the EU Marine Strategy Framework Directive	UBA	08/2020 02/2022	Schulz-Bull CHE
CRASSOBIOM: The role of host-microbiome interactions in physiological performance of the Pacific oyster Crassostrea gigas in extreme habitats	DFG	10/2020 09/2023	Labrenz BIO
UBA-Eutro: The Baltic Sea Action Plan – Modelling of water quality indicators	UBA	10/2020 03/2023	Schernewski KMP
CoTrans: KüNO umbrella project- coordination and transfer; lead proposal; project: coordination	BMBF	11/2020 10/2023	Bathmann DIR
BaltVib: Collaborative project BiodivERsA: Pathogenic Vibrio bacteria in the current and future Baltic Sea waters. Subproject 1: coordination, data management, problem-solving concepts	BMBF/ EU BioDivERsA	04/2021 03/2024	Labrenz BIO
PaintSed: Paint particles in marine sediments: Interaction with microbiota and effects on sediment processes	DFG	05/2021 04/2024	Tagg BIO
TouMaLi: Marine litter and sustainable waste management in North-African coastal tourism regions	BMU[1]	05/2021 04/2024	Schernewski KMP
LABPLAS: Land-Based Solutions for Plastics in the Sea; Plastics in the environment: understanding the sources, transport, distribution and impacts of plastics pollution	EU – Horizon 2020	06/2021 05/2025	Ivar do Sul CHE
DAM ASMASYS: Unified ASsessment framework for proposed methods of MArine CDR and interim knowledge SYnthesiS (Collaborative coordination, scientific evaluation and synthesis)	BMBF	08/2021 07/2024	Rehder CHE
AMMOTRACe: Marine AMMunitiOn dump site exploration by surface- and underwater-based laser mass spectrometric TRACing technology	BMWi/ MarTERA	09/2021 08/2024	Schulz-Bull CHE
OTC Stone: Ocean Technology Campus Rostock – Automatic localisation and measurement of boulders in acoustic datasets based on neutral networks	BMBF	10/2021 09/2024	Papenmeier GEO

[1] LUNG – Landesamt für Umwelt, Naturschutz und Geologie Mecklenburg-Vorpommern

[2] BMWi – Ministry for Economic Affairs and Climate Action

[1] BMU– Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety

Project name	Funding agency	Funding period	Responsible IOW scientist
OTC-Genomics: Ocean Technology Campus Rostock – Innovative analytical methods for environmental monitoring of aquatic habitats based on nucleic acid sequencing	BMBF	11/2021 10/2024	Labrenz BIO
DAM CREATE: Concepts for reducing the effects of anthropogenic pressures and uses on marine ecosystems and on biodiversity; Subproject: Habitat variability and bioarchives as a measure of habitat integrity using the example of the living lab Eckernförde Bay	BMBF	12/2021 11/2024	Papenmeier GEO
DAM CONMAR: Concepts for conventional marine Munition remediation in the German North and Baltic Sea: Modelling the spreading of conventional marine munition in the coastal ocean and investigations of clearance strategies	BMBF	12/2021 11/2024	Gräwe PHY

A1.1.5 Cross-cutting activities – Innovative Instrumentation

Project name	Funding agency	Funding period	Responsible IOW scientist
DAM DaDi: Anschubphase des Aufbaus einer vernetzten, dezentral operierenden Dateninfrastruktur	BMBF	07/2019 12/2020	Kolbe PHY
DNS-Concept: EXIST – Existenzgründungen aus der Wissenschaft	BMWi	08/2019 10/2020	Meier PHY
OTC: Ocean Technology Campus Rostock – Cluster development for a sustainable use of the oceans	BMBF	05/2020 10/2020	Hentzsch DIR
FINO II: Operating the FINO-database and oceano-graphic measurements at the platforms	BSH	09/2021 08/2024	Stohr PHY
OTC DaTA: Ocean Technology Campus Rostock – Digital Twin & analytics-embedding semantic visual analytics methods in multisensor data evaluation for functional assistance systems in an industrial context	BMBF	10/2021 09/2024	Wagner PHY

Project name	Funding agency	Funding period	Responsible IOW scientist
DAM_CTD: DAM-underway research data: planing, developing and establishing a standardized workflow to create, process, archive and publish consisten, comparable, quality assured CTD measurments	BMBF	01/2021 12/2022	Kolbe PHY

A1.1.6 Cross-cutting activities – Modelling

Project name	Funding agency	Funding period	Responsible IOW scientist
SeaLaBio: Baltic+ Sea-Land biogeochemical linkages	ESA [1]	11/2018 05/2020	Neumann PHY
NuMOst: Numerical modelling of the Baltic Sea: Interfacing large scale models with local models	BAW [2]	01/2020 12/2022	Burchard PHY

A1.1.7 Others

Project name	Funding agency	Funding period	Responsible IOW scientist
WIPANO-VVB-MV: Wissens- und Technologietransfer durch Patente und Normen, Hochschulförderung, Verertungsförderung und Patentierungshilfen	BMWi	03/2016 12/2023	Labrenz DIR
Baltic Gender: Baltic Consortium on Promoting Gender Equality in Marine Research Organisations	EU – Horizon 2020	09/2016 08/2020	Waniek CHE
Leistungsnetz: Provision of services and skills in technology transfer across institutes in regional networks – Subproject: New markets	BMBF	07/2017 12/2020	Labrenz DIR
OTC Ocean Talents: Ocean Technology Campus Rostock – Talent promotion along different educational pathways	BMBF	10/2021 09/2024	Labrenz DIR
OTC Gender: Ocean Technology Campus Rostock – Förderung der Geschlechter-Gerechtigkeit und -Parität in den Berufsgruppen der Unterwassertechnik	BMBF	10/2021 09/2024	Hentzsch DIR

[1] ESA – European Space Agency

[2] BAW – Federal Waterways Engineering and Research Institute

A1.2 Expeditions

Name	Period	Mission – Abbreviation	Cruis leader	Area
Elisabeth Mann Borgese	29.01. – 09.02.2020	EMB230 – BMP + long-term	Naumann PHY	Baltic Sea
Elisabeth Mann Borgese	13.02. – 14.02.2020	EMB231 – Geo training	Arz GEO	West. Baltic Sea
Elisabeth Mann Borgese	25.02. – 28.02.2020	EMB229 – MARNET	Naumann PHY	West. Baltic Sea
Elisabeth Mann Borgese	05.03. – 11.03.2020	EMB232 – ATLAS MV	Feldens GEO	West. Baltic Sea
Elisabeth Mann Borgese	09.05. – 19.05.2020	EMB237 – BMP + long-term	Naumann PHY	Baltic Sea
Elisabeth Mann Borgese	27.05. – 09.06.2020	EMB238 – MPA-DAM	Gogina BIO	West. Baltic Sea
Elisabeth Mann Borgese	11.06. – 17.06.2020	EMB236 – MARNET	Mars PHY	West. Baltic Sea
Elisabeth Mann Borgese	19.06. – 03.07.2020	EMB239 – LEGRA2000	Darr BIO	Baltic Sea
Elisabeth Mann Borgese	07.07. – 11.07.2020	EMB240 – MARNET	Mars PHY	West. Baltic Sea
Elisabeth Mann Borgese	14.07. – 28.07.2020	EMB242 – BMP + long-term BaltPoll	Kuss CHE	Baltic Sea
Elisabeth Mann Borgese	31.07. – 06.08.2020	EMB243 – MARNET	Mars PHY	West. Baltic Sea
Elisabeth Mann Borgese	01.09. – 16.09.2020	EMB247 – ATLAS MV	Darr BIO	West. Baltic Sea
Elisabeth Mann Borgese	18.09. – 24.09.2020	EMB246 – ATLAS MV	Feldens GEO	West. Baltic Sea
Elisabeth Mann Borgese	28.09. – 02.10.2020	EMB253 – MARNET - BMP	Naumann PHY	West. Baltic Sea
Elisabeth Mann Borgese	03.11. – 09.11.2020	EMB250 – MARNET	Mars PHY	West. Baltic Sea
Elisabeth Mann Borgese	11.11. – 25.11.2020	EMB251 – BMP + long-term	Schmidt PHY	Baltic Sea
Elisabeth Mann Borgese	07.12. – 12.12.2020	EMB252 – MARNET	Mars PHY	West. Baltic Sea
Elisabeth Mann Borgese	18.01. – 22.01.2021	EMB255 – MARNET	Mars PHY	West. Baltic Sea
Elisabeth Mann Borgese	26.01. – 07.02.2021	EMB256 – BMP + long-term	Naumann PHY	Baltic Sea
Elisabeth Mann Borgese	09.02. – 12.02.2021	EMB257 – Geo-Praktikum	Arz GEO	West. Baltic Sea
Elisabeth Mann Borgese	14.02. – 19.02.2021	EMB258 – ATLAS-MVP	Feldens GEO	West. Baltic Sea
Maria S. Merian	25.02. – 23.03.2021	MSM99 –Deep water ventilation	Neumann PHY	Bottensee
Elisabeth Mann Borgese	10.03. – 16.03.2021	EMB260 – MARNET	Mars PHY	West. Baltic Sea
Sonne	19.03. – 25.05.2021	SO 283 – Mooring Rescue	Schmidt PHY	Atlantic
Elisabeth Mann Borgese	19.03. – 31.03.2021	EMB261 – BMP + long-term	Naumann PHY	Baltic Sea
Elisabeth Mann Borgese	02.04. – 15.04.2021	EMB262 – PHYTOARCHIV	Kremp BIO	Bottensee
Meteor	10.04. – 30.05.2021	M-174 – N-Amazon	Voss BIO	North Atlantic
Elisabeth Mann Borgese	04.05. – 14.05.2021	EMB264 – BMP + long-term	Kuss CHE	Baltic Sea
Elisabeth Mann Borgese	18.05. – 25.05.2021	EMB265 – 3D-MAPP	Umlauf PHY	North and Baltic Sea
Elisabeth Mann Borgese	27.05. – 31.05.2021	EMB266 – MARNET	Stohr PHY	West. Baltic Sea
Elisabeth Mann Borgese	02.06. – 16.06.2021	EMB267 – MGF-Ostsee21	Feldens GEO	West. Baltic Sea
Elisabeth Mann Borgese	18.06. – 22.06.2021	EMB268 – MGF-EXP	Feldens GEO	West. Baltic Sea
Elisabeth Mann Borgese	24.06. – 03.07.2021	EMB269 – LEGRA 2021	Darr BIO	West. Baltic Sea
Elisabeth Mann Borgese	06.07. – 08.07.2021	EMB273 – Instrument testing	Kolbe PHY	West. Baltic Sea
Elisabeth Mann Borgese	12.07. – 17.07.2021	EMB272 – MARNET	Mars PHY	West. Baltic Sea
Elisabeth Mann Borgese	20.07. – 29.07.2021	EMB271 – BMP + long-term	Kremp BIO	Baltic Sea
Elisabeth Mann Borgese	03.08. – 16.08.2021	EMB283 – BaltVib	Labrenz BIO	Baltic Sea
Elisabeth Mann Borgese	17.09. – 29.09.2021	EMB276 – MnION	Voss BIO	Baltic Sea
Elisabeth Mann Borgese	02.10. – 08.10.2021	EMB277 – Bio training	Dutz BIO	Baltic Sea
Elisabeth Mann Borgese	13.10. – 18.10.2021	EMB278 – MARNET	Mars PHY	West. Baltic Sea
Elisabeth Mann Borgese	04.11. – 15.11.2021	EMB280 – BMP + long-term	Kuss CHE	Baltic Sea
Elisabeth Mann Borgese	17.11. – 19.11.2021	EMB284 – mowiWi & SSS	Feldens GEO	Baltic Sea
Elisabeth Mann Borgese	03.12. – 07.12.2021	EMB282 – MARNET	Mars PHY	West. Baltic Sea

A2 Scientific exchange

A2.1 Our guests (from one week)

Ehlert von Ahn, Catia Milene
University of São Paulo, Brazil
01.06.2018 – 31.05.2020
Funding: DAAD grant

Beltran Perez, Oscar Dario
Universidad Nacional de Colombia, Medellín, Columbia
01.10.2018 – 01.10.2021
Funding: DAAD grant

Thoya, Pascal
Kenyan Marine and Fisheries Research Institute, Mombasa, Kenya
01.10.2018 – 30.09.2021
Funding: DAAD grant

Kuznecova, Jolita
Nature Research Centre, Laboratory of Algology and Microbial Ecology, Vilnius, Lithuania
01.03.2019 – 31.03.2020
Funding: DAAD grant

Tambo, Munyaradzi
University of Namibia, Windhoek, Namibia
15.07.2019 – 31.01.2020
Funding: IOW

Sun, Tiantian
Zhejiang University, Hangzhou, China
01.12.2019 – 15.11.2020
Funding: Chinese grant

Askarova, Assem
LLP Kazakhstan Agency of Applied Ecology, Almaty, Kazakhstan
15.01.2020 – 02.03.2020
Funding: Sustainability Academy (ISA), Hamburg

Kahru, Mati
IOD Scipps Institute of Oceanography, San Diego, USA
31.08.2020 – 07.10.2020
Funding: IOW
01.06.2021 – 01.08.2021
Funding: IOW

Reichel, Maike
Heidelberg University, Germany
31.08.2020 – 23.10.2020
Funding: Heidelberg University

Li, Xiangyu
Sun Yat-sen University, Zhuhai, China, San Diego, USA
01.12.2020 – 31.10.2021
Funding: IOW

Chang, Yan
East China Normal University, Shanghai, China
04.03.2021 – 04.03.2022
Funding: China Scholarship Council

Alessandri, Jacopo
University Bologna, Italy
02.06.2021 – 31.08.2021
Funding: University Bologna

A2.2 Research Stays (from one week)

Mohrholz, Volker
Alfred Wegener Institute (AWI), Bremerhaven, Germany
25.11.2019 – 31.03.2020
Funding: AWI

Arz, Helge
Texas A&M University, Collage Station, USA
05.01.2020 – 15.01.2020
Funding: DFG

Schernewski, Gerald
University of Porto, Portugal
26.01.2020 – 01.03.2020
Funding: IOW

Jürgens, Klaus
University of Vienna, Austria
03.02.2020 – 16.03.2020
Funding: IOW

Schmale, Oliver
Stockholm University, Stockholm, Sweden
21.06.2021 – 30.07.2021
Funding: Projekt Bubble Shuttle II

Robbe, Esther
Klaipeda University, Klaipeda, Lithuania
29.06.2021 – 14.07.2021
Funding: Klaipeda University

Schernewski, Gerald
Klaipeda University, Klaipeda, Lithuania
25.09.2020 – 10.10.2020
Funding: IOW

A2.3 Scientific Events (over 50 attendees)

02.06.2020 – 03.06.2020
3rd Baltic Earth Conference
responsible: Markus Meier

16.11.2020 – 17.11.2020
International Symposium of the Leibniz ScienceCampus Phosphorus Research Rostock
responsible: Ulrich Bathmann, Dana Zimmer

16.12.2020 – 17.12.2020
Conference Marginal Seas – Past and Future
responsible: Joanna J. Waniek

19.01.2021 – 21.01.2021
Conference Nature Conservation in Marine Spatial Planning. How to Reconcile Human Activities with Ecological Functions
responsible: Kerstin Schiele

15.03.2021 – 16.03.2021
Kick-off Conference Coastal Research North Sea/Baltic Sea III (KüNO III)
responsible: Ulrich Bathmann, Franziska Schmacka

21.09.2021 – 21.09.2021
A Transatlantic Perspective on Microplastic Research: Views Between the Chesapeake and the Baltic
responsible: Gerald Schernewski

06.12.2021 – 09.12.2021
10th Warnemünde Turbulence Days
responsible: Hans Burchard, Lars Umlauf

A2.4 Membership in scientific committees
A2.4.1 Membership in international committees

AIAS – Aarhus Institute of Advanced Studies
- Selection Board
  - Schulz-Vogt, Heide
  - Voß, Maren

ASLO – Association for the Sciences of Limnology and Oceanography
- John Martin Award Subcommittee
  - Voß, Maren

Baltic Earth
- Baltic Earth Science Steering Group
  - Meier, Markus (chair)
  - Rehder, Gregor
  - Gröger, Matthias
- Baltic Earth Working Group on Baltic Sea Scenario Simulations
  - Meier, Markus (chair)

BOOS – Baltic Operational Oceanographic System
- Gräwe, Uwe
- Mars, Robert
- Naumann, Michael
- Prien, Ralf

China Geological Survey
- Guangzhou Marine Geological Survey
  - Waniek, Joanna J.

EGU – European Geoscience Union
- Meier, Markus

EU HORIZON
- European Green Deal Call
  - Schernewski, Gerald (invited expert)

Euro-Marine
- Steering Committee
  - Bathmann, Ulrich

HELCOM – Baltic Marine Environment Protection Commission
- Expert Group on Hazardous Substances
  - Kanwischer, Marion
- Expert Network on Climate Change
  - Meier, Markus (co-chair)
- International Expert Group on Habitat Monitoring
  - Darr, Alexander
- MONAS-Phytoplankton Expert Group
  - Kremp, Anke
- MONAS-Zooplankton Expert Group
  - Dutz, Jörg
- Working Group on the State of the Environment and Nature Conservation
  - Naumann, Michael

ICES – International Council for Exploration of the Seas
- Benthos Ecology Working Group
  - Darr, Alexander
  - Gogina, Mayya
  - Zettler, Michael L.
- Marine Chemistry Working Group
  - Kanwischer, Marion
  - Schulz-Bull, Detlef
- Working Group of Zooplankton Ecology
  - Dutz, Jörg
- Working Group on Harmful Algal Bloom Dynamics
  - Kremp, Anke
- Working Group on Integrative, Physical-biological and Ecosystem Modelling
  - Radtke, Hagen

INI – International Nitrogen Initiative Europe
- Voß, Maren (board member)

MSP Research Network – Marine Spatial Planning Research Network
- Schiele, Kerstin

Norwegian Research Council
- Reviewer Commission
  - Bathmann, Ulrich

SCOR – Scientific Committee for Ocean Research
- Joint Committee on Seawater
  - Weinreben, Stefan
- Working Group 144 ‘Microbial Community Responses to Ocean Deoxygenation’
  - Jürgens, Klaus

UNESCO Intergovernmental Oceanographic Commission (DIOC) – German Section
- Bathmann, Ulrich

World Climate Research Programme’s Climate and Ocean: Variability, Predictability and Change
- Eastern Boundary Upwelling Systems
  - Schmidt, Martin

A2.4.2 Membership in national committees

Annette Barthelt-Stiftung
- Schulz-Vogt, Heide

BLANO – Bund-Länder-Ausschuss-Nord/Ostsee
- AG Daten
  - Feistel, Susanne
- AG ErBeM – Erfassen, Bewerten und Maßnahmen
  - Darr, Alexander
  - Naumann, Michael
- AG ErBeM – Erfassen, Bewerten und Maßnahmen Fach-AG Abfälle im Meer
  - Schernewski, Gerald
  - Haseler, Mirco
- AG ErBeM – Erfassen, Bewerten und Maßnahmen Fach-AG Benthos und benthische Lebensräume
  - Darr, Alexander
  - Zettler, Michael L.
- AG ErBeM – Erfassen, Bewerten und Maßnahmen Arbeitsgruppe Eutrophierung, Nährstoffe und Plankton
  - Dutz, Jörg
  - Friedland, René
  - Kremp, Anke
  - Schernewski, Gerald
- AG ErBeM – Erfassen, Bewerten und Maßnahmen Arbeitsgruppe Hydrologie, Hydrographie und Morphologie
  - Feldens, Peter
  - Papenmeier, Svenja
- AG ErBeM – Erfassen, Bewerten und Maßnahmen Arbeitsgruppe Schadstoffe und biologische Effekte
  - Kanwischer, Marion
  - Schulz-Bull, Detlef

Briese Award for Marine Research
- Scientific Advisory Board
  - Labrenz, Matthias
  - Rehder, Gregor

Carl von Ossietzky University of Oldenburg, Institute for Chemistry and Biology of the Marine Environment
- Advisory Board
  - Jürgens, Klaus
  - Schulz-Vogt, Heide

DAM – German Marine Research Alliance
- Executive Board
  - Bathmann, Ulrich
- Working Group Data Management and Digitalisation
  - Feistel, Susanne

DBU – German Federal Environmental Foundation
- Selection Board Fellowship Programme
  - Voß, Maren

DKD – Deutscher Kalibrierdienst
- Weinreben, Stefan

Deutsches Meeresmuseum Stralsund
German Oceanographic Museum
- Advisory Board
  - Bathmann, Ulrich

DFG – German Research Foundation
- Fachkollegium 313-2: Physik, Chemie und Biologie des Meeres
  - Burchard, Hans
  - Voß, Maren
- Scientific Advisory Board r/v M.S. Merian
  - Burchard, Hans
  - Schulz-Bull, Detlef
- Scientific Advisory Board r/v Meteor
  - Burchard, Hans

DKK – German Climate Consortium
- Meier, Markus

EUCC – The Coastal Union Germany e.V.
- Board
  - Schernewski, Gerald
  - Schumacher, Johanna

GASIR-German Association of Stable Isotope Research
- Dr. Karleugen-Habfast Foundation – Isotope Award Board
  - Böttcher, Michael E.

HLRN – Norddeutscher Verbund für Hoch- und Höchstleistungsrechnen
- Schmidt, Martin (expert oceanography)
- Scientific Committee
  - Meier, Markus

INF – Interdisziplinary Faculty Maritime Systems, University of Rostock
- Bathmann, Ulrich (board member)
- Böttcher, Michael E.
- Burchard, Hans
- Labrenz, Matthias
- Meier, Markus
- Rehder, Gregor
- Schernewski, Gerald
- Schulz-Bull, Detlef
- Voß, Maren (board member)
- Waniek, Joanna

KDM – German Marine Research Consortium
- Bathmann, Ulrich (chair)
- Strategy group Observatories – Strategy group coastal observation systems
  - Mars, Robert
- Strategy group Coastal Research
  - Bathmann, Ulrich (spokesperson)
- Strategy group Coastal Research – National working group Coastal Ocean Modelling group
  - Meier, Markus

Leibniz Association
- Sektion E Environmental Research
  - Bathmann, Ulrich (spokesperson)
- Senate Strategic Committee
  - Bathmann, Ulrich
- Senate Competition Committee
  - Bathmann, Ulrich
- Working group Research Data
  - Feistel, Susanne
- PhD Network
  - Jacobs, Erik
  - Schulze, Inken

Leibniz-Institute for Catalysis
- Association
  - Bathmann, Ulrich

Leibniz-ScienceCampus Phosphor Research Rostock
- Bathmann, Ulrich (spokesperson)
- Schulz-Bull, Detlef
- Zimmer, Dana

sDiv Ausschuss des DFG Forschungszentrums iDiv – German Centre for Integrative Biodiversity Research
- Jürgens, Klaus

A2.4.3 Membership in Editorial Boards

Applied and Environmental Microbiology
Jürgens, Klaus

Aquatic Microbial Ecology
Jürgens, Klaus

Chemical Geology
Böttcher, Michael E.

Frontiers in Earth Science
Schmale, Oliver

Frontiers in Microbiology
Oberbeckmann, Sonja

Geochemistry
Böttcher, Michael E.

Harmful Algae
Kremp, Anke

Hydrobiologia
Dutz, Jörg

Isotopes in Environmental and Health Studies
Böttcher, Michael E.

Journal of Coastal Conservation
Schernewski, Gerald

Journal of Geophysical Research: Oceans
Umlauf, Lars

Marine Biodiversity
Kremp, Anke

Microorganisms
Labrenz, Matthias

Oceans
Waniek, Joanna J.

The ISME Journal
Schulz-Vogt, Heide

A3 Publications and academic qualifications

A3.1 Publications in 2020 and 2021
A3.1.1 Articles in peer-review journals

Adyari, B., D. Shen [BIO], S. Li, L. Zhang, A. Rashid, Q. Sun, A. Hu, N. Chen and C.-P. Yu (2020). Strong impact of micropollutants on prokaryotic communities at the horizontal but not vertical scales in a subtropical reservoir, China. Sci. Total Environ. 721: 137767, doi: 10.1016/j.scitotenv.2020.137767

Alacid, E., A. Reñé, R. Gallisai, A. Paloheimo, E. Garcés and A. Kremp [BIO](2020). Description of two new coexisting parasitoids of blooming dinoflagellates in the Baltic Sea: Parvilucifera catillosa sp. nov. and Parvilucifera sp. (Perkinsea, Alveolata). Harmful Algae 100: 101944, doi: 10.1016/j.hal.2020.101944

Allan, E., A. de Vernal, D. Krawczyk, M. Moros [GEO], T. Radi, A. Rochon, M.-S. Seidenkrantz and S. Zaragosi (2020). Distribution of dinocyst assemblages in surface sediment samples from the West Greenland margin. Mar. Micropaleontol. 159: 101818, doi: 10.1016/j.marmicro.2019.101818

Allan, E., A. de Vernal, M.-S. Seidenkrantz, J. P. Briner, C. Hillaire-Marcel, C. Pearce, L. Meire, H. Røy, A. M. Mathiasen, M. T. Nielsen, J. L. Plesner and K. Perner [GEO] (2021). Insolation vs. meltwater control of productivity and sea surface conditions off SW Greenland during the Holocene. Boreas 50: 631-651, doi: 10.1111/bor.12514

Alneberg, J., C. Bennke [BIO], S. Beier [BIO], C. Bunse, C. Quince, K. Ininbergs, L. Riemann, M. Ekman, K. Jürgens [BIO], M. Labrenz [BIO], J. Pinhassi and A. F. Andersson (2020). Ecosystem-wide metagenomic binning enables prediction of ecological niches from genomes. Commun. Biol. 3: 119, doi: 10.1038/s42003-020-0856-x

Amorim [BIO], K., H. Piontkivska, M. L. Zettler [BIO], E. Sokolov [DIR], T. Hinzke, A. M. Nair and I. M. Sokolova (2021). Transcriptional response of key metabolic and stress response genes of a nuculanid bivalve, Lembulus bicuspidatus from an oxygen minimum zone exposed to hypoxia-reoxygenation. Comp. Biochem. Physiol. B 256: 110617, doi: 10.1016/j.cbpb.2021.110617

Andrén, E., F. van Wirdum, L. Norbäck Ivarsson, M. Lönn, M. Moros [GEO] and T. Andrén (2020). Medieval versus recent environmental conditions in the Baltic Proper, what was different a thousand years ago? Palaeogeogr., Palaeoclimatol., Palaeoecol. 555: 109878, doi: 10.1016/j.palaeo.2020.109878

Armoškaitė, A., I. Bārda, I. Andersone, I. M. Bonnevie, A. Ikauniece, J. Kotta, A. Kõivupuu, L. Lees, I. Psuty, S. Strāķe, S. Sprukta, L. Szymanek, M. von Thenen [KMP], L. Schrøder and H. S. Hansen (2021). Considerations of use-use interactions between macroalgae cultivation and other maritime sectors: An eastern Baltic MSP case study. Sustainability 13: 13888, doi: 10.3390/su132413888

Bailey, M. H., W. U. Meyerson, L. J. Dursi, L.-B. Wang, G. Dong, W.-W. Liang, A. Weerasinghe, S. Li, Y. Li, S. Kelso, R. Akbani, P. Anur, M. H. Bailey, A. Buchanan, K. Chiotti, K. Covington, A. Creason, L. Ding, K. Ellrott, Y. Fan, S. Foltz, G. Getz, W. Hale, D. Haussler, J. M. Hess, C. M. Hutter, C. Kandoth, K. Kasaian, M. Kasapi, D. Larson, I. Leshchiner, J. Letaw, S. Ma, M. D. McLellan, Y. Men, G. B. Mills, B. Niu, M. Peto, A. Radenbaugh, S. M. Reynolds, G. Saksena, H. Sofia, C. Stewart, A. J. Struck, J. M. Stuart, W. Wang, J. N. Weinstein, D. A. Wheeler, C. K. Wong, L. Xi, K. Ye, M. H. Bailey, B. Niu, M. Bieg, P. C. Boutros, I. Buchhalter, A. P. Butler, K. Chen, Z. Chong, L. Ding, O. Drechsel, L. Jonathan Dursi, R. Eils, K. Ellrott, S. M. G. Espiritu, Y. Fan, R. S. Fulton, S. Gao, J. L. l. Gelpi, M. B. Gerstein, G. Getz, S. Gonzalez, I. G. Gut, F. Hach, M. C. Heinold, J. M. Hess, J. Hinton, T. Hu, V. Huang, Y. Huang, B. Hutter, D. R. Jones, J. Jung, N. Jäger, H.-L. Kim, K. Kleinheinz, S. Kumar, Y. Kumar, C. M. Lalansingh, I. Leshchiner, I. Letunic, D. Livitz, E. Z. Ma, Y. E. Maruvka, R. J. Mashl, M. D. McLellan, A. Menzies, A. Milovanovic, M. M. Nielsen, S. Ossowski, N. Paramasivam, J. S. Pedersen, M. D. Perry, M. Puiggròs, K. M. Raine, E. Rheinbay, R. Royo, S. C. Sahinalp, G. Saksena, I. Sarrafi, M. Schlesner, J. T. Simpson, L. Stebbings, C. Stewart, M. D. Stobbe, J. W. Teague, G. Tiao, D. Torrents, J. A. Wala, J. Wang, W. Wang, S. M. Waszak, J. Weischenfeldt, M. C. Wendl, J. Werner [BIO], Z. Wu, H. Xue, S. Yakneen, T. N. Yamaguchi, K. Ye, V. D. Yellapantula, C. K. Yung, J. Zhang, G. Saksena, K. Ellrott, M. C. Wendl, D. A. Wheeler, G. Getz, J. T. Simpson, M. B. Gerstein, L. Ding, L. A. Aaltonen, F. Abascal, A. Abeshouse, H. Aburatani, D. J. Adams, N. Agrawal, K. S. Ahn, S.-M. Ahn, H. Aikata, R. Akbani, K. C. Akdemir, H. Al-Ahmadie, S. T. Al-Sedairy, F. Al-Shahrour, M. Alawi, M. Albert, K. Aldape, L. B. Alexandrov, A. Ally, K. Alsop, E. G. Alvarez, F. Amary, S. B. Amin, B. Aminou, O. Ammerpohl, M. J. Anderson, Y. Ang, D. Antonello, P. Anur, S. Aparicio, E. L. Appelbaum, Y. Arai, A. Aretz, K. Arihiro, S.-i. Ariizumi, J. Armenia, L. Arnould, S. Asa, Y. Assenov, G. Atwal, S. Aukema, J. T. Auman, M. R. Aure, P. Awadalla, M. Aymerich, G. D. Bader, A. Baez-Ortega, M. H. Bailey, P. J. Bailey, M. Balasundaram, S. Balu, P. Bandopadhayay, R. E. Banks, S. Barbi, A. P. Barbour, J. Barenboim, J. Barnholtz-Sloan, H. Barr, E. Barrera, J. Bartlett, J. Bartolome, C. Bassi, O. F. Bathe, D. Baumhoer, P. Bavi, S. B. Baylin, W. Bazant, D. Beardsmore, T. A. Beck, S. Behjati, A. Behren, B. Niu, C. Bell, S. Beltran, C. Benz, A. Berchuck, A. K. Bergmann, E. N. Bergstrom, B. P. Berman, D. M. Berney, S. H. Bernhart, R. Beroukhim, M. Berrios, S. Bersani, J. Bertl, M. Betancourt, V. Bhandari, S. G. Bhosle, A. V. Biankin, M. Bieg, D. Bigner, H. Binder, E. Birney, M. Birrer, N. K. Biswas, B. Bjerkehagen, T. Bodenheimer, L. Boice, G. Bonizzato, J. S. De Bono, A. Boot, M. S. Bootwalla, A. Borg, A. Borkhardt, K. A. Boroevich, I. Borozan, C. Borst, M. Bosenberg, M. Bosio, J. Boultwood, G. Bourque, P. C. Boutros, G. S. Bova, D. T. Bowen, R. Bowlby, D. D. L. Bowtell, S. Boyault, R. Boyce, J. Boyd, A. Brazma, P. Brennan, D. S. Brewer, A. B. Brinkman, R. G. Bristow, R. R. Broaddus, J. E. Brock, M. Brock, A. Broeks, A. N. Brooks, D. Brooks, B. Brors, S. Brunak, T. J. C. Bruxner, A. L. Bruzos, A. Buchanan, I. Buchhalter, C. Buchholz, S. Bullman, H. Burke, B. Burkhardt, K. H. Burns, J. Busanovich, C. D. Bustamante, A. P. Butler, A. J. Butte, N. J. Byrne, A.-L. Børresen-Dale, S. J. Caesar-Johnson, A. Cafferkey, D. Cahill, C. Calabrese, C. Caldas, F. Calvo, N. Camacho, P. J. Campbell, E. Campo, MC3 Working Group, PCAWG novel somatic mutation calling methods working group and PCAWG Consortium (2020). Retrospective evaluation of whole exome and genome mutation calls in 746 cancer samples. Nat. Commun. 11: 4748, doi: 10.1038/s41467-020-18151-y

Balci, N., Y. Gunes, J. Kaiser [GEO], S. A. On, K. Eris, B. Garczynski and B. H. N. Horgan (2020). Biotic and abiotic imprints on Mg-rich stromatolites: Lessons from Lake Salda, SW Turkey. Geomicrobiol. J. 37: 401-425, doi: 10.1080/01490451.2019.1710784

Bancone, C. E. P., S. D. Turner, J. A. Ivar do Sul [BIO] and N. L. Rose (2020). The paleoecology of microplastic contamination. Front. Environ. Sci. 8: 574008, doi: 10.3389/fenvs.2020.574008

Basdurak, N. B. [PHY], H. Burchard [PHY] and H. M. Schuttelaars (2021). A local eddy viscosity parameterization for wind-driven estuarine exchange flow. Part I: Stratification dependence. Prog. Oceanogr. 193: 102548, doi: 10.1016/j.pocean.2021.102548

Basdurak, N. B. [PHY], J. L. Largier and N. J. Nidzieko (2020). Modeling the dynamics of small-scale river and creek plumes in tidal waters. J. Geophys. Res. Oceans 125: e2019JC015737, doi: 10.1029/2019JC015737

Bathmann, U. [DIR], H. Schubert, E. Andrén, L. Tuomi, T. Radziejewska, K. Kulinski and I. Chubarenko (2020). Editorial: Living along gradients: Past, present, future. Front. Mar. Sci. 6: 801, doi: 10.3389/fmars.2019.00801

Bauer, T. P., P. Holtermann [PHY], B. Heinold, H. Radtke [PHY], O. Knoth and K. Klingbeil [PHY] (2021). ICONGETM v1.0-flexible NUOPC-driven two-way coupling via ESMF exchange grids between the unstructured-grid atmosphere model ICON and the structured-grid coastal ocean model GETM. Geosci. Model Dev. 14: 4843-4863, doi: 10.5194/gmd-14-4843-2021

Beck, M., O. Dellwig [PHY], B. Schnetger, T. Riedel and H.-J. Brumsack (2020). Manganese dynamics in tidal basins of the Wadden Sea: Spatial/seasonal patterns and budget estimates. Mar. Chem. 225: 103847, doi: 10.1016/j.marchem.2020.103847

Becker, M., A. Olsen, P. Landschützer, A. Omar, G. Rehder [CHE], C. Rödenbeck and I. Skjelvan (2021). The northern European shelf as an increasing net sink for CO_2. Biogeosciences 18: 1127-1147, doi: 10.5194/bg-18-1127-2021

Beier, S. [BIO], A. F. Andersson, P. E. Galand, C. Hochart, J. B. Logue, K. McMahon and S. Bertilsson (2020). The environment drives microbial trait variability in aquatic habitats. Mol. Ecol. 29: 4605-4617, doi: 10.1111/mec.15656

Beisiegel, K. [BIO], A. Darr [BIO], M. L. Zettler [BIO], R. Friedland [KMP], U. Gräwe [PHY] and M. Gogina [BIO] (2020). Spatial variability in subtidal hard substrate assemblages across horizontal and

vertical gradients: a multi-scale approach using seafloor imaging. Mar. Ecol. Prog. Ser. 633: 23-36, doi: 10.3354/meps13168

Beltran-Perez, O. D. [CHE] and J. J. Waniek [CHE] (2021). Environmental window of cyanobacteria bloom occurrence. J. Mar. Syst. 224: 103618, doi: 10.1016/j.jmarsys.2021.103618

Bennike, O., J. B. Jensen, N. Nørgaard-Pedersen, K. J. Andresen, M.-S. Seidenkrantz, M. Moros [GEO] and B. Wagner (2021). When were the straits between the Baltic Sea and the Kattegat inundated by the sea during the Holocene? Boreas 50: 1079-1094, doi: 10.1111/bor.12525

Bobsien, I. C., W. Hukriede, C. Schlamkow, R. Friedland [PHY], N. Dreier, P. R. Schubert, R. Karez and T. B. H. Reusch (2021). Modeling eelgrass spatial response to nutrient abatement measures in a changing climate. Ambio 50: 400-412, doi: 10.1007/s13280-020-01364-2

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Böttcher, M. E. [GEO] and I. Schmiedinger [GEO] (2021). The impact of temperature on the water isotope ($^{2}H/^{1}H$, $^{17}O/^{16}O$, $^{18}O/^{16}O$) fractionation upon transport through a low-density polyethylene membrane. Isot. Environ. Health Stud. 57: 183-192, doi: 10.1080/10256016.2020.1845668

Brandt, J., L. Bittrich, F. Fischer, E. Kanaki, A. Tagg [BIO], R. Lenz [BIO], M. Labrenz [BIO], E. Brandes, D. Fischer and K.-J. Eichhorn (2020). High-throughput analyses of microplastic samples using fourier transform infrared and raman spectrometry. Appl. Spectrosc. 74: 1185-1197, doi: 10.1177/0003702820932926

Brandt, J., F. Fischer, E. Kanaki, K. Enders [BIO], M. Labrenz [BIO] and D. Fischer (2021). Assessment of subsampling strategies in microspectroscopy of environmental microplastic samples. Front. Environ. Sci. 8: 579676, doi: 10.3389/fenvs.2020.579676

Broman, E., M. Zilius, A. Samuiloviene, I. Vybernaite-Lubiene, T. Politi, I. Klawonn [BIO], M. Voss [BIO], F. J. A. Nascimento and S. Bonaglia (2021). Active DNRA and denitrification in oxic hypereutrophic waters. Water Res. 194: 116954, doi: 10.1016/j.watres.2021.116954

Bruns, I., P. Holler, R. M. Capperucci, S. Papenmeier [GEO] and A. Bartholomä (2020). Identifying trawl marks in North Sea sediments. Geosciences 10: 422, doi: 10.3390/geosciences10110422

Brüske, A., S. Weyer, M. Y. Zhao, N. J. Planavsky, A. Wegwerth [GEO], N. Neubert, O. Dellwig [GEO] , K. V. Lau and T. W. Lyons (2020). Correlated molybdenum and uranium isotope signatures in modern anoxic sediments: Implications for their use as paleo-redox proxy. Geochim. Cosmochim. Acta 270: 449-474, doi: 10.1016/j.gca.2019.11.031

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C. Pons-Seres de Brauwer, A. Poska, J. Saarinen, B. Szymczycha, E. Undeman, A. Wörman and E. Zorita (2021). Human impacts and their interactions in the Baltic Sea region. Earth Syst. Dynam. Discuss. 13, preprint: 1-127, doi: 10.5194/esd-13-1-2022

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A3.2 Academic qualifications
Phd degrees

Beilfuhs, Stine
Gas fractionation and CO_2-dynamics in natural high-CO_2-systems.
University of Rostock, 2021
Supervisor: Rehder, Gregor [CHE]

Börgel, Florian
Long-term variability in the Baltic Sea.
University of Rostock, 2020
Supervisor: Meier, Markus [PHY]

Braun, Philipp
Phosphatakkumulation in diazotrophen, filamentösen Cyanobakterien der Ostsee.
University of Rostock, 2020
Supervisor: Schulz-Vogt, Heide [BIO]

Chrysagi, Evridiki
Submesoscale processes in the Baltic Sea.
University of Rostock, 2021
Supervisorr: Burchard, Hans [PHY]

Deich, Carina
Detection of estrogenic substances and their distribution patterns in the marine environment.
University of Rostock, 2021
Supervisor: Waniek, Joanna J. [CHE]

Eglite, Elvita
Food quality impact on zooplankton and its exometabolome.
University of Rostock, 2020
Supervisor: Schulz-Vogt, Heide [BIO]

Gyraite, Greta
Human pathogens and potential risks for southern Baltic bathing waters.
Klaipeda University, 2021
Supervisor: Schernewski, Gerald [KMP]

Habedank, Friederike
Organophosphorpestizide – Methodenentwicklung und Studien zur biologischen Verfügbarkeit.
University of Rostock, 2021
Supervisor: Schulz-Bull, Detlef E. [CHE]

Haseler, Mirco
Meso- and microplastic in the Baltic coastal environment.
Klaipeda University, 2021
Supervisor: Schernewski, Gerald [KMP]

Janßen, René
Machine learning classification of microbial community compositions to predict anthropogenic pollutants in the Baltic Sea.
University of Rostock, 2020
Supervisor: Labrenz, Matthias [BIO]

Jerney, Jacqueline
Ecological and evolutionary role of seed banks for the toxic dinoflagellate Alexandrium ostenfeldii.
University of Helsinki, 2020
Supervisorin: Kremp, Anke [BIO]

Kesy, Katharina
Bacterial biofilms on microplastics in the Baltic Sea – composition, influences and interactions with their environment.
University of Rostock, 2020
Supervisor: Labrenz, Matthias [BIO]

Lohrer, Constantin
Natural and anthropogenic organic P compounds.
University of Rostock, 2021
Supervisor: Schulz-Bull, Detlef E. [CHE]

Lorenz, Marvin
Influences of surface buoyancy fluxes on circulation and mixing in estuaries
University of Rostock, 2021
Supervisor: Burchard, Hans [PHY]

Möller, Lars
Vibrionen in anthropogen beeinflussten Küstenökosystemen.
University of Rostock, 2020
Supervisor: Labrenz, Matthias [BIO]

Peng, Jen-Ping
Frontal instability and energy dissipation in submesoscale fronts.
University of Rostock, 2020
Supervisor: Umlauf, Lars [PHY]

Pullwer, Judith
Long-term variability of particle flux in the deep ocean of the subtropical Northeast Atlantic.
University of Rostock, 2021
Supervisor: Waniek, Joanna J. [CHE]

Rönspieß, Lisa
Bedeutung der Unterwarnow für P-Konzentration, P-Transformation, P-Retention und P-Bioverfügbarkeit.
University of Rostock, 2021
Supervisor: Schulz-Bull, Detlef E. [CHE]

Schönke, Mischa
Combined analysis of mm-scale topography and acoustic scatter to improve the remote survey of marine habitats.
University of Greifswald, 2020
Supervisor: Arz, Helge [GEO]

Weber, Sarah
Nitrogen fixation in the monsoon impacted Mekong River plume.
University of Rostock, 2020
Supervisor: Voss, Maren [CHE]

Wirth, Marisa
Analysis of the herbicide glyphosate and related organophosphonates in seawater – overcoming salt-matrix-induced limitations.
University of Rostock, 2021
Supervisor: Schulz-Bull, Detlef E. [CHE]

A4 University lectures

The 12 leading scientists of the IOW who were appointed as professors by the University of Rostock or the University of Greifswald participate in the teaching of students at those universities with lectures, seminars and practical courses. In the winter semester 2019/20, IOW lecturers taught approximately 38 semester hours at the University of Rostock and 10 semester hours at the University of Greifswald, and in the winter semester 2020/21 approximately 50 and approximately 11 respectively. In the summer semester 2020, IOW lecturers taught 35 semester hours at the University of Rostock and 5 semester hours at the University of Greifswald. In the summer semester 2021, 27 and 5 respectively. In addition, at the University of Klaipeda were held 4 semester hours in winter semesters 2019/20 and 2020/21 and 6 semester hours each in the summer semesters of 2020 and 2021. Senior scientists, postdocs and PhD students support the offerings in a variety of ways. The events listed here encompass the core of our teaching activities.

A4.1 University of Rostock

Faculty of Mathmatics and Natural Sciences

Winter semester 2019/20

Fachbereich Physik

Klima des Ozeans
Markus Meier

Hydrodynamik
Lars Umlauf

Einführung in die Physik des Ozeans
Volker Mohrholz, Martin Schmidt

Physikalische Ozeanographie und Messtechnik
Lars Umlauf

Prozesse im Küstenozean
Hand Burchard, Marvin Lorenz, Ulf Gräwe

Fachbereich Biologie

Grundlagen der Meeresbiologie – Physikalische, chemische, geologische und statistische Grundlagen
Joanna Waniek, Detlef Schulz-Bull, Peter Feldens, Thomas Neumann

Modellierung in der Meeresbiologie
Thomas Neumann

Grundlagen mariner Stoffkreisläufe
Ulrich Bathmann, Heide Schulz-Vogt, Thomas Neumann

Grundlagen des wissenschaftlichen Tauchens
Erik Stohr

Mikrobiologisches Praktikum für Fortgeschrittene
Matthias Labrenz, Sonja Oberbeckmann

Marine Mikrobiologie
Matthias Labrenz, Sonja Oberbeckmann

Zustandsbewertung mariner Gewässer
Joanna Waniek

Fachbereich Chemie

Analytische Chemie IV / Umweltanalytik und Umweltchemie Grundlagen
Gregor Rehder

Summer semester 2020

Fachbereich Physik

Einführung in die Theoretische Ozeanographie: Theorie der windgetriebenen Strömungen
Martin Schmidt, Hadi Bordbar

Ozeanmodellierung
Hans Burchard, Marvin Lorenz

Marine Turbulenz
Lars Umlauf; Peter Holtermann

Climate of the Baltic Sea Region
Markus Meier

Forschungsseminar Physikalische Ozeanographie und Messtechnik
Lars Umlauf

Fachbereich Biologie

Analyse von Stoffkreisläufen
Heide Schulz-Vogt, Jörg Dutz, Maren Voß

Einführung in das wissenschaftliche Arbeiten in den Biowissenschaften
Joanna J. Waniek

Meeresbiologie
Ulrich Bathmann, Heide Schulz-Vogt, Natalie Loick-Wilde

Seepraktikum
Maren Voß, Heide Schulz-Vogt, Jörg Dutz, Anke Kremp

Fachbereich Chemie

Analytische Chemie und Umweltchemie I
Gregor Rehder

Meereschemie
Detlef Schulz-Bull, Joanna Waniek, Gregor Rehder

Meereswissenschaften
Detlef Schulz-Bull

Winter semester 2020/21

Fachbereich Physik

Klima des Ozeans
Markus Meier

Hydrodynamik
Lars Umlauf, Peter Holterman

Einführung in die Physik des Ozeans
Volker Mohrholz, Martin Schmidt

Forschungsseminar Physikalische Ozeanographie und Messtechnik
Lars Umlauf, Hadi Bordbar

Prozesse im Küstenozean
Hand Burchard, Marvin Lorenz, Ulf Gräwe

Fachbereich Biologie

Grundlagen der Meeresbiologie – Physikalische, chemische, geologische und statistische Grundlagen
Detlef Schulz-Bull, Joanna Waniek, Peter Feldens, Thomas Neumann

Einführung in das wissenschaftliche Arbeiten in den Biowissenschaften
Joanna J. Waniek; Matthias Labrenz

Modellierung in der Meeresbiologie
Thomas Neumann

Grundlagen mariner Stoffkreisläufe
Ulrich Bathmann, Heide Schulz-Vogt, Thomas Neumann

Grundlagen des wissenschaftlichen Tauchens
Erik Stohr

Mikrobiologisches Praktikum für Fortgeschrittene
Matthias Labrenz, Sonja Oberbeckmann

Marine Mikrobiologie
Matthias Labrenz, Sonja Oberbeckmann

Zustandsbewertung mariner Gewässer
Joanna Waniek

Fachbereich Chemie

Analytische Chemie IV / Umweltanalytik und Umweltchemie Grundlagen
Gregor Rehder

Summer semester 2021

Fachbereich Physik

Spezielle Themen der Ozeanographie – Marine Turbulenz
Hans Burchard

Theoretische Ozeanographie: Windgetriebene Zirkulation im geschichteten Ozean
Martin Schmidt, Hadi Bordbar

Marine Turbulenz
Lars Umlauf; Peter Holtermann

Ozeanmodellierung
Hans Burchard, Marvin Lorenz

Physikalische Ozeanographie und Messtechnik
Lars Umlauf

Climate of the Baltic Sea Region
Markus Meier

Fachbereich Biologie

Grundlagen der Meeresbiologie
Ulrich Bathmann, Heide Schulz-Vogt, Natalie Loick-Wilde

Einführung in das wissenschaftliche Arbeiten in den Biowissenschaften
Joanna J. Waniek

Analyse von Stoffkreisläufen
Heide Schulz-Vogt, Jörg Dutz, Maren Voß

Seepraktikum
Maren Voß, Heide Schulz-Vogt, Jörg Dutz, Anke Kremp

Fachbereich Chemie

Analytische Chemie und Umweltchemie I
Gregor Rehder

Meereschemie
Detlef Schulz-Bull, Joanna Waniek, Gregor Rehder

Meereswissenschaften
Detlef Schulz-Bull

Faculty of Agricultural and Environmental Sciences

Winter semester 2019/20

Küsteningenieurwesen III: Ausgewählte Projekte und Integriertes Küstenzonenmanagement
Gerald Schernewski, Mirko Haseler, Johanna Schumacher

Winter semester 2020/21

Küsteningenieurwesen III: Ausgewählte Projekte und Integriertes Küstenzonenmanagement
Gerald Schernewski, Mirko Haseler, Johanna Schumacher

A4.2 University of Greifswald

Faculty of Mathmatics and Natural Sciences

Winter semester 2019/20

Fachbereich Geologie

Marine Geologie
Helge Arz

Oceanography and Society
Michael E. Böttcher

Chemical Oceanography
Michael E. Böttcher

Proxy Formation and Application
Michael E. Böttcher

Anoxic Systems
Michael E. Böttcher

Marine Geochemie
Michael E. Böttcher

Palaeoceanography
Helge Arz

Geomarines Praktikum
Michael E. Böttcher, Helge Arz, Peter Feldens, Olaf Dellwig

Summer semester 2020

Fachbereich Geologie

Geochemie
Michael E. Böttcher

Aquatic Environmental Geochemistry
Michael E. Böttcher

Water-Rock-Interactions
Michael E. Böttcher

Anleitung zum selbstständigen wissenschaftlichen Arbeiten
Michael E. Böttcher

Winter semester 2020/2021

Fachbereich Geologie

Marine Geologie
Helge Arz

Oceanography and Society
Michael E. Böttcher

Chemical Oceanography
Michael E. Böttcher

Proxy Formation and Application
Michael E. Böttcher

Anoxic Systems
Michael E. Böttcher

Marine Geochemie
Michael E. Böttcher

Palaeoceanography
Helge Arz

Anleitung zum selbstständigen wissenschaftlichen Arbeiten
Michael E. Böttcher

Summer semester 2021

Fachbereich Geologie

Geochemie
Michael E. Böttcher

Aquatic Environmental Geochemistry
Michael E. Böttcher

Water-Rock-Interactions
Michael E. Böttcher

Anleitung zum selbstständigen wissenschaftlichen Arbeiten
Michael E. Böttcher

A4.3 Examples of other lectures at universities

Klaipeda University, Marine Science and Technology Center (MARSTEC), Lithuania
Coastal Management
Winter semester 2019/20,
IOW lecturers: Gerald Schernewski, Lukas Ritzenhofen, Johanna Schumacher, Esther Robbe, Greta Gyraite, Mirco Haseler

St. Petersburg State University, Russia
Biological oceanography of pelagic ecosystems, principles, examples, future scenarios and modelling
Winter semester 2019/20;
IOW lecturer: Ulrich Bathmann

Young Scientist Schools
6th International Baltic Earth Summer School on Climate of the Baltic Sea region
31. July– 24. August 2020, hosted online by Askö Laboratory of Stockholm University, Sweden
IOW lecturers: Markus Meier, Hagen Radtke, Jan Kaiser

2nd Baltic Earth Winter School Analyssis of Climate Variability
17. – 26. March 2021, hosted online by IOW and Helmholtz-Zentrum Geesthacht on behalf of Baltic Earth, Germany
IOW lecturers: Markus Meier, Hagen Radtke, Jérôme Kaiser

7th International Baltic Earth Summer School
23. – 30. August 2021, hosted hybrid by Askö Laboratory of Stockholm University, Sweden
IOW lecturer: Markus Meier

A5 IOW´s Committees

A5.1 Board of Governors

Woldemar Venohr (chair)
Ministry of Education, Science und Culture Mecklenburg-Vorpommern/ Ministry of Science, Culture, Federal and European Affairs Meckenburg-Vorpommern
since 2012

MinR Rudolf Leisen (deputy chair)
Federal Ministry for Education and Research, Ref. 725
since 2016

Tim Eder
Federal Ministry for Education and Research, Ref. 725
bis 2019

Dr. Tanja Dörre
Federal Ministry for Education and Research
Ref. 725
since 2019

Monika Breuch-Moritz
President of the Federal Maritime and Hydrographic Agency
to 2018

Dr. Karin Kammann-Klippstein
President of the Federal Maritime and Hydrographic Agency
since 2019

Sabine Müller
Innomar Technology Rostock
since 2020

Prof. Dr. Christoph Humborg
Chair IOW Scientific Advisory Board
Stockholm University, NEST Institute
2012 – 2019

Prof. Dr. Andreas Oschlies
Chair IOW Scientific Advisory Board
GEOMAR Helmholtz Centre for Ozean Research Kiel
since 2020

Prof. Dr. Wolfgang Schareck
Rektor of the University of Rostock
since 2009

A5.2 Scientific Advisory Board

Prof. Dr. Andreas Oschlies (chair since 2020)
GEOMAR Helmholtz Centre for Ozean Research Kiel
since 2016

Prof. Dr. Katarina Abrahamsson
University of Gothenborg, Sweden
since 2017

Prof. Dr. Katja Fennel
Dalhousie University, Canada
since 2020

Prof. Dr. Gerhard Herndl
University of Vienna, Austria
since 2017

Prof. Dr. Christian Hübscher
University Hamburg, Marine Geophysics, Germany
since 2018

Prof. Dr. Jack Middelburg
University of Utrecht, Netherlands
since 2020

Prof. Dr. Uta Passow
Memorial University of Newfoundland, Canada
since 2020

Prof. Dr. Niels Peter Revsbech
Aarhus University, Denmark
since 2020

Prof. Dr. Corinna Schrum
Helmholtz-Zentrum hereon, Institute of
Coastal Ocean Dynamics, Germany
since 2018

Prof. Dr. Heinz Wilkes
University of Oldenburg, Institute for Chemistry and
Biology of the Marine Environment, Germany
since 2018

A5.3 Scientific Council

Permanent members

Prof. Dr. Helge W. Arz (deputy chair to 2021)
as head of the department Marine Geology
since 2010

Prof. Dr. Michael E. Böttcher
as deputy head of the department Marine Geology
since 2008

Prof. Dr. Hans Burchard
as deputy head of the department Physical Oceanography
and Instrumentation
since 2008

Prof. Dr. Klaus Jürgens
as deputy head of the department Biological
Oceanography
since 2012

Prof. Dr. Markus Meier (deputy chair since 2021)
as head of the department Physical Oceanography
and Instrumentation
since 2015

Prof. Dr. Gregor Rehder
as deputy head of the department Marine Chemistry
since 2008

Prof. Dr. Detlef Schulz-Bull
as head of the department Marine Chemistry
since 2001

Prof. Dr. Heide Schulz-Vogt
as head of the department Biological Oceanography
since 2012

Elected members of departments

Dr. Marion Kanwischer (chair)
department Marine Chemistry
to 2021

Prof. Dr. habil. Matthias Labrenz (chair since 2021)
department Biological Oceanography
since 2012

Dr. Jérôme Kaiser
department Marine Geology
since 2018

Dr. Volker Mohrholz
department Physical Oceanography and Instrumentation
since 2012

Dr. Oliver Schmale
department Marine Chemistry
since 2021

A5.4 Staff Council

Ralf Prien, to 2021 (chair)

Peter Feldens, since 2021 (chair)

Christian Burmeister, since 2017
(since 2021 deputy chair)

Olivia Diehr, to 2021

Jenny Jeschek, to 2021

Diana Körner, since 2017

Sandra Kube, since 2021

Iris Liskow, to 2021 (deputy chair)

Robert Mars, since 2021

Martin Sass, since 2021

Christian Stolle, to 2021

Kristian Rose, to 2021

Angela Vogts, since 2021

A5.5 Equal Opportunity Officer, Ombudspersons, Representatives of Severely Disabled Persons

Joanna Waniek
Equal Opportunity Officer
to 2021

Marion Kanwischer
Equal Opportunity Officer
since 2021

Berit Recklebe
Deputy Equal Opportunity Officer
to 2019

Barbara Hentzsch
Deputy Equal Opportunity Officer
to 2021

Svenja Papenmeier
Deputy Equal Opportunity Officer
since 2021

Thomas Neumann
Ombudsperson
to 2021

Maren Voß
Ombudsperson
since 2021

Peter Holtermann
Ombudsperson
since 2021

Diana Hoppe
Representative of Severely Disabled Persons
since 2010

Siegfried Gust
Representative of Severely Disabled Persons
since 2010

How to find us

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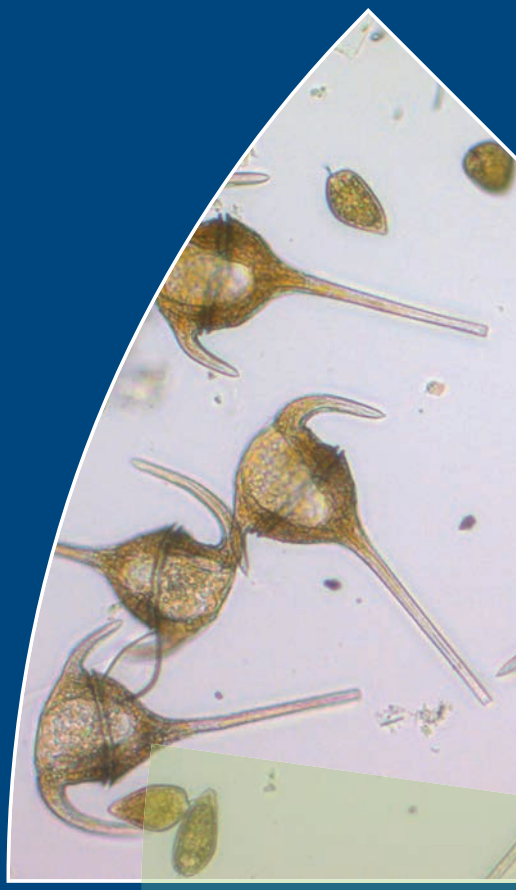

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