



ICBM – Alumni News #15



Newsletter –

June 2022

Issue 15, year 6

Welcome to the fifteenth ICBM-Alumni-Newsletter

Dear ICBM alumni,

Summer is coming and the motivation to get projects done before going to the sea and on holidays is increasing. We want to tell you what has happened at the ICBM in the last six months. It's a lot, it's diverse and it's exciting - stay tuned!

In the fifteenth edition of our newsletter, we report on new findings in research on microorganisms, sea surfaces, coral reef fish, marine debris and spider webs. Our colleagues and we are happy about children's books, prizes and a new building.

We wish you a nice summer!

Many greetings,

Ferdinand Esser and Tabea Hildebrand

Topics of this issue

Science

- [Catching microplastics with spider webs](#)
- [The thin skin of the ocean](#)
- [PalãoTaNZ](#)
- [Squat lobsters at vents](#)
- [Project CREATE](#)
- [Microbial communities in the Atlantic](#)
- [Microalgae have shrunk](#)
- [Rapid diversification](#)
- [Marine litter](#)
- [Oxygen production in the dark](#)

Outside the box

- [Rowing across the Atlantic](#)
- [Running for a good cause](#)
- [Heroes of the Underwater Forest](#)

SCIENCE AT THE ICBM

Catching microplastics with spider webs

Flies, mosquitoes, dust and even microplastics - spider webs catch what moves through the air. For the first time, researchers from the University of Oldenburg have now examined the nets of the eight-legged friends on inner-city streets with varying levels of traffic for the smallest plastic particles. Above all, they found the plastic PET, presumably from textiles, as well as particles from the abrasion of car tires and polyvinyl chloride (PVC). The amounts of plastic particles found depended on the respective location. The team concludes that spider webs are a simple and cheap way to monitor air pollution from microplastics in the city and to identify particularly polluted areas. The results have been published in the journal Science of the Total Environment. [...] [\[PR 110/22 – 1.06.22\]](#)

Original publication: Isabel Goßmann, Rebecca Süßmuth, Barbara M. Scholz-Böttcher: Plastic in the air?! - Spider webs as spatial and temporal mirror for microplastics including tire wear particles in urban air. Science of the Total Environment 832 (2022) 155008. doi.org/10.1016/j.scitotenv.2022.155008

- [FjordFlux Expedition](#)
- [Pressure wave from Tonga](#)
- [Rubber ducks as measuring devices](#)

Congratulations

- [Sinikka Lennartz](#)
- [Ulrike Feudel](#)
- [Kristin Tessmar-Raible](#)
- [ZfMarS](#)
- [Murat Eren](#)
- [Helmuth Thomas](#)

In Memory of Birte Junge

Insights into the thin skin of the oceans

The top layer of the oceans is a special but little-explored area of the planet. Less than a millimeter thick, this outer skin controls the exchange of gases, energy, and momentum between water and the atmosphere. Investigating the complex biological, chemical and physical relationships in the "surface microlayer" is the goal of a new research group led by marine chemist Prof. Dr. Oliver Wurl from the Institute for Chemistry and Biology of the Marine Environment (ICBM) at the University of Oldenburg in Wilhelmshaven. The German Research Foundation (DFG) and the Austrian Science Fund (FWF) are funding the project entitled BASS ("Biogeochemical processes and Air-sea exchange in the Sea-Surface microlayer") over the next four years. [...] [\[PR 089/22 – 11.05.22\]](#)

A look into the past of the Southwest Pacific

Climate changes and ocean currents in the Tasman Sea in the Southwest Pacific as well as the glaciation history of the South Island of New Zealand are the focus of an expedition led by the Oldenburg geochemist Prof. Dr. Katharina Pahnke. For almost four weeks, starting in mid-April, a team from the ICBM at the University of Oldenburg, together with colleagues from the Alfred Wegener Institute Helmholtz Center for Polar and Marine Research in Bremerhaven (AWI) and international Scientists were on board the research ship "Sonne" in the Southwest Pacific. The aim of the "PalaeoTaNZ" project is to use oceanographic and geological methods to take a



The new, autonomous research catamaran of the ICBM [Image: UOL/Lisa Gassen]

look at the more recent geological past of the marine region. Such a view helps, among other things, to better understand current climate and environmental changes. [...]

Among other things, the scientists will report on their research work on board in a blog: <https://icbm-auf-see.uni-oldenburg.de/en/blick-in-die-vergangenheit/>. [PR 06/22 – 8.04.22]

A beneficial relationship

Hydrothermal vents at the bottom of the oceans are home to bizarre communities. Organisms commonly found at hot springs in the Gulf of California include squat lobsters of the species *Munidopsis alvisca*. These small, white crustaceans are hosts to their own special ecosystem, reports an international research team led by Janina Leinberger and Prof. Dr. Thorsten Brinkhoff from the ICBM at the University of Oldenburg in the journal Scientific Reports. For the first time, the researchers analyzed the microbial community on the carapace of these animals. They found that this so-called "microbiome" has a different composition than other microbial communities in the vicinity, for example in the sediment or in the surrounding seawater.

The team suspects that both the microbes and the crabs benefit from the relationship: among the residents, for example, were numerous methane and sulfur bacteria. These protozoa are specialized in using energy-rich chemical compounds such as hydrogen sulfide or methane that flow into the sea with the water from the hot springs. "The



The white squat lobster species *Munidopsis alvisca* [Image: Thorsten Brinkhoff].

squat lobster's carapace provides these organisms with a stable habitat in close proximity to the nutrient-rich hydrothermal fluids," explains Brinkhoff. The scientists speculate that for their part, the squat lobsters may use the bacteria living on their carapace as a source of nutrients. Another possibility is that the microbes help to remove toxic hydrogen sulphide from the crustaceans' bodies. This substance inhibits respiratory processes in higher life forms, which is why some inhabitants of deep-sea hydrothermal vents live in symbiosis with sulphur-reducing bacteria. However, as the researcher notes, "So far very little is known about the interactions between microbes and crustaceans." [...] [\[ICBM – 2.03.22\]](#)

Bundled knowledge for the protection of the seas

When seas and coasts suffer from climate change or unsustainable use, this has an impact on nature, but also on human well-being - last but not least, some of our food comes from the sea or we spend our free time on the coast. Making the interaction between humans and the sea as sustainable as possible is one of the goals of the joint project CREATE, which started today and is headed by biodiversity expert Prof. Dr. Helmut Hillebrand from the University of Oldenburg. [...]

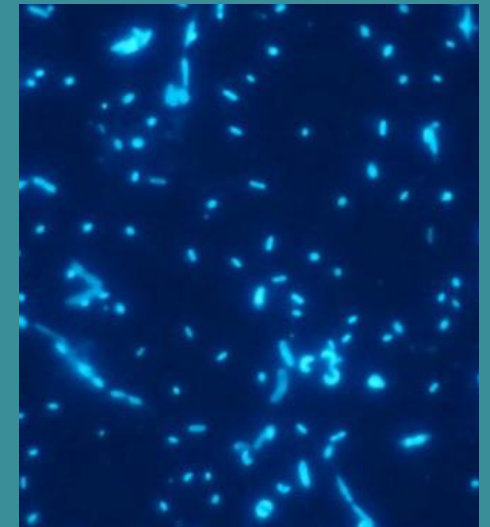
"Humans and the sea form a socio-ecological system," says Hillebrand [...] "The diverse human-made interventions in coastal marine ecosystems are increasingly leading to conflicts of use." Whether tourism or fertilizer use in agriculture, whether sediment dumping in coastal waters, shipping or the expansion of renewable energies:

"In view of the various stressors that influence each other and often run counter to the goals of marine protection, it is important to develop integrated concepts," emphasizes Hillebrand.

In order to develop concrete solutions, experts from the natural and social sciences, economics, engineering and society work together in the CREATE project. They will establish three so-called real laboratories in the North Sea and Baltic Sea and bring their methods together there in order to develop practical, innovative solutions. [...] [\[PR 021/22 – 10.02.22\]](#)

Regionally Well Adapted: Microbial Communities in the Atlantic

At first glance, the open ocean appears to be a uniform habitat: water as far as the eye can see. A research team from the Universities of Oldenburg and Goettingen has now been able to use extensive data to show that communities of microbes, so-called prokaryotes, differ regionally in the Atlantic from the Southern Ocean to the tropics to temperate latitudes. Accordingly, the communities and their functions are genetically particularly well adapted to the respective environment. According to the researchers, not only ocean currents and environmental conditions, but also interactions between the organisms ensure that different communities can be found in the Atlantic - similar to regionally different plant communities on land. The results have been published in the current issue of the journal Nature Communications. [...] [\[ICBM – 26.01.22\]](#)



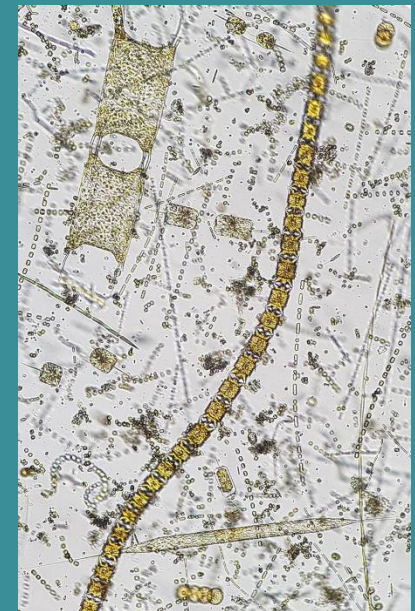
Marine microbes using an epifluorescence microscope [Image: Meinhard Simon, ICBM]

Original publication: Dlugosch, L., Poehlein, A., Wemheuer, B. et al. Significance of gene variants for the functional biogeography of the near-surface Atlantic Ocean microbiome. *Nat Commun* 13, 456 (2022). doi.org/10.1038/s41467-022-28128-8

Microalgae in the Wadden Sea have shrunk in recent years

The cell volume of microalgae in the Lower Saxony Wadden Sea decreased by 30 percent between 2006 and 2019. In particular, diatoms were affected by this shrinkage. This is reported by a team led by biodiversity expert Prof. Dr. Helmut Hillebrand from the ICBM at the University of Oldenburg in the journal *Limnology and Oceanography*. According to the team, the long-term trend could be due to rising temperatures and falling levels of the nutrient phosphorus in the North Sea. According to the researchers, the decreasing cell size of the unicellular algae could be an indicator of changes in the community as a whole. [...]

The researchers expect that the reduction in size of the algae will also affect other organisms in the Wadden Sea habitat, especially those that feed on them, including animal plankton and mussels. According to Hillebrand, the study also shows how important it is to maintain time series for ecological research and to look after them in a sustainable manner. The researchers were only able to determine their shrinkage at all because the team determined the cell size of the algae species in each sample. The result also makes it possible to calculate the carbon contained in the plankton more



Diatoms [Image: UOL/Patrick Thomas]

precisely, an important input variable for models in environmental and climate impact research. [\[PR 009/22 – 20.01.22\]](#)

Original publication: Helmut Hillebrand et al: "Temporal declines in Wadden Sea phytoplankton cell volumes observed within and across species", Limnology and Oceanography, 27.Dezember 2021 doi.org/10.1002/lno.12005

Rapid diversification in coral reefs

Hamlets are dwellers of Caribbean coral reefs, where they exhibit an amazing variety of colors and patterns. [...] They are an excellent model to study the basic genetic principles of rapid diversification into new species. Based on a genome analysis of 170 individuals from the reefs off Honduras, Belize and Panama, it could be deduced that the split into 18 species is likely to have occurred within the last 10,000 generations, even though the family tree of hamlets is about 26 million years old.

For at least some hamlet species, which more recently came into existence, it is thought that they are mimicking the colour patterns of other reef fish. This might be advantageous when hunting, because prey fish fail to perceive them as predators.

According to Puebla, species extinction nowadays is an issue of major concern, although the formation of species as a natural evolutionary process that counteracts biodiversity loss should also be considered. [...]



A yellowbelly hamlet (*Hypoplectrus aberrans*) from Barbados [Image: O. Puebla, ZMT]

The research group around population geneticist Oscar Puebla investigates the genetic mechanisms which form the basis of this exceptional diverse speciation. Puebla works at the the Leibniz Centre for Tropical Marine Research (ZMT) in Bremen. With ICBM he is affiliated by a joint professorship on fish ecology and evolution. [...] [\[SR – 19.01.22; ZMT\]](#)

Original publication: Hench K., Helmkamp M., McMillan W.O., Puebla O: Rapid radiation in a highly diverse marine environment (2022). Proceedings of the National Academy of Sciences of the United States of America.

Satellites detect marine litter

Dr. Shungudzemwoyo Garaba does research in the Wilhelmshaven-based working group Marine Sensor Systems at the ICBM. In doing so, he is particularly interested in plastic waste floating in the seas and how to determine its spatial distribution in order to eventually remove it from the oceans. Against this backdrop, he currently aims for his state doctorate. In an earlier publication, together with colleagues he had been working successfully on the basic principles for detecting floating litter by kind of an infrared “fingerprint” via drones and planes. At present, he even wants to go higher up: satellites are meant to assist in detecting the floating litter at the ocean surface.



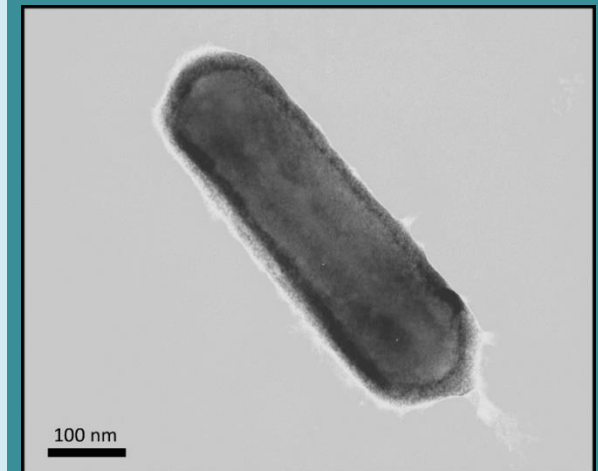
Remote sensing expert Dr. Shungudzemwoyo Garaba [Image: UOL/Sibet Riexinger]

On the occasion of a recent research publication in the scientific journal Optics Express, Ute Kehse, member of the editorial staff of the Oldenburg university press & communications department, did an interview with Garaba. [\[SR – 11.01.22\]](#)

Microbes produce oxygen in the dark

Few microorganisms are able to produce oxygen in complete darkness. A new member of this exclusive circle is the extremely small protozoa *Nitrosopumilus maritimus*. It often occurs in ocean regions with very low oxygen concentrations and belongs to the archaea. In addition to eukaryotes, which include humans and animals, and bacteria, these form the third domain into which scientists divide all living things on earth. *N. maritimus* is one of the ammonia-oxidizing archaea that can convert ammonia to nitrite. Presumably, the examined organism uses a previously unknown metabolic pathway to carry out this biochemical process with self-produced oxygen, researchers from the University of Oldenburg and the Syddansk Universiteit in Odense (Denmark) now report in the journal Science.

Among others, the Oldenburg marine microbiologist Prof. Dr. Martin Könneke contributed to this observation. He provided the organism *N. maritimus* and helped plan the experiments, which were carried out in the laboratories of Syddansk Universiteit. There, the microbiologist and graduate of the University of Oldenburg, Prof. Dr. Beate Kraft, researches on the importance of microorganisms for the marine material cycles. [...] [\[PR 002/22 – 7.01.22\]](#)



The archaea *Nitrosopumilus maritimus*
[Foto: UOL]

Original publication: Beate Kraft, Morten Larsen, Martin Könneke et al.: „Oxygen and nitrogen production by an ammonia-oxidizing archaeon“, Science (2022), doi.org/10.1126/science.abe6733

OUTSIDE THE BOX

With muscle power across the Atlantic

Martin Stengele is in his early 50s and one of his childhood dreams was sea travel. When he heard about the Atlantic Challenge, he was certain: “I have to take part in it”. In 2024, the sports therapist, who lives in Stuttgart, wants to cross the Atlantic – alone, with muscle power and in a rowing boat. ICBM research technology is also on board. [...]

Prof. Dr. Oliver Wurl and Prof. Dr. Oliver Zielinski, both working group leaders at the ICBM's Center for Marine Sensors (ZfMarS) in Wilhelmshaven, will scientifically accompany Stengele's journey. The journey will start in the port of the island's capital, San Sebastian on La Gomera. After a journey of up to 80 days, the extreme athletes will be awaited in Antigua in the Caribbean, 3,000 nautical miles (~5,500 km) away. The two ICBM researchers are convinced that crossing the subtropical to tropical



Using boats like this, bold rowers dare to cross the Atlantic [Image: Talisker Whiskey Atlantic Challenge].

Atlantic in a rowing boat offers an excellent opportunity to observe the sea surfaces in high resolution. [...] [\[SR – 13.05.22\]](#)

After a forced break of 3 years: running for a good cause

On May 7th - due to corona - a regular run took place for the first time since 2019 in favor of the Ammerland Hospice. Five ICBM colleagues took part in this benefit event, a large group considering that only 267 running enthusiasts found their way to Bad Zwischenahn this year. In 2019, 518 runners went on the 12.1-kilometer route around the Zwischenahner Meer. [...]

Apparently, the running weather was pleasant – light wind, not too warm. In addition, although the participating ICBM members said they weren't really in training, they had fun and all did well: all of them made it into the top 15, four even into the top ten in their age group with a 4th place in the M 40. [\[SR – 10.05.22\]](#)

Flower meadows below sea level

Seagrasses belong to the flowering plants and are the only ones of this group that can grow in the sea. To explore these fascinating ecosystems, Dr. Stephanie Helber went diving off the coast of Zanzibar. Inspired by her research stay there, she wrote a book to bring this special underwater world closer to children of primary school age and to draw attention to the threat it poses. The marine biologist Dr. Paula Senff captured the



Having fun while running for a good cause: Lars Wöhlbrand, Marvin Dörries, Matthias Schröder, Matthias Friebe und Ingo Miller (f.l.) [Image: privat].



colorful world of seagrass meadows with her illustrations for the book. The children's book "Heroes of the Underwater Forest" has now been published by the Oldenburger Isensee Verlag.

The book tells the story of the girl Chloe, who discovers the seagrass meadows off the coast of Zanzibar with her friend Amo. When the sea grass disappears, and with it all the sea creatures, the two children want to find out what has happened and what they can do to bring the seagrass meadow back to life.

[...] "With my children's book, I want to make this fascinating habitat better known and raise awareness of how important it is to protect seagrass beds." [...] [\[ICBM – 14.02.22\]](#)

Available here: <https://www.isensee.de/product/die-helden-des-unterwasserwaldes/>

6,000 nautical miles across the Atlantic to Patagonia

On December 22, 2021, the "FjordFlux" expedition started with the research vessel (FS) Meteor in Las Palmas, Spain. Six scientists from the ICBM and the Alfred Wegener Institute examined surface water samples during the 6,000 nautical mile crossing across the Atlantic. [...]

Other German, Argentinian and Chilean scientists joined the research team in Punta Arenas. The second leg of the M179 voyage leads to southern Patagonia. The Chilean

Dr. Paula Senff and Stephanie Helber
present their book [Image: ICBM]

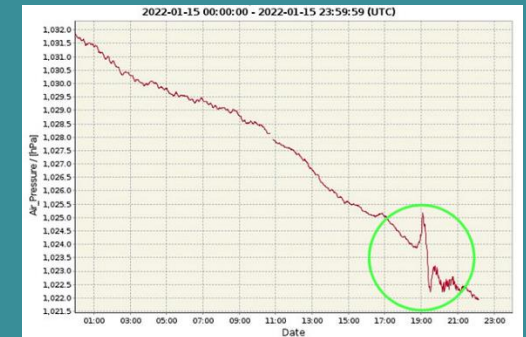


fjord systems in the Magallanes region and the Beagle Channel are considered largely untouched. But the influence of climate change and human use are also increasing here. In order to get an insight into the changes in coastal ecosystems, current environmental data are compared with the results of the "Victor Hensen" expedition from 1994. To do this, the researchers are investigating which animals live on the bottom and which small, unicellular algae are found in the water. The effects of glacial melt, which brings more freshwater, sediment and nutrients into the fjords, are also being researched using water samples. [\[ICBM – 7.02.22\]](#)

Eruption pressure wave reaches Spiekeroog

On January 15th, the submarine volcano Hunga-Tonga Hunga Ha'apai erupted in the South Pacific near Tonga. The pressure wave of the eruption is also recorded by the Spiekeroog Coastal Observatory ICBM long-term monitoring station near Spiekeroog. [...]

The eruption site near Tonga is about 16,300 kilometers away from the measuring station near Spiekeroog. The eruption happened around 5:20 a.m. German time. The pressure wave that hit Spiekeroog at around 19:00 had therefore covered the distance at around 1,200 kilometers per hour. This corresponds approximately to the speed of sound. [...] [\[SR – 19.01.22\]](#)



The recorded air pressure curve recorded by the ICBM monitoring station near Spiekeroog on January 15th [Graph: Dr. Thomas Badewien]

How rubber ducks became measuring devices

On January 10th 1992, three containers went overboard in the North Pacific during a heavy storm. At least one of them burst open. His cargo: 29,000 plastic bath toys, including rubber ducks [...]. Wind and currents spread them across the seas - a stroke of luck for science.

On the occasion of the 30th anniversary of this involuntary suspension, ICBM professor Dr. Jörg-Olaf Wolff and colleagues have their say in several reports and interviews. The ICBM oceanographer had led a project to track plastic debris in the southern North Sea, using small wooden blocks as propellants, among other things. Wolff and his colleagues provide exciting insights into how these so-called drifters, which ultimately also included bathing animals for science, can help to track marine surface currents. [...]

[\[SR – 13.01.22\]](#)

You can hear a complete interview by DLF Kultur with Jörg-Olaf Wolff [here](#). Another interview with Prof. Wolff broadcast [radio eins \(rbb\)](#) on January 15th 2022.



Have helped science in revealing ocean currents: rubber ducks, wooden blocks, bottles and shoes [Images: S. Riexinger, ICBM].

CONGRATULATIONS!

Geoecologist Sinikka Lennartz appointed

Dr. Sinikka Lennartz has been appointed junior professor for biogeochemical ocean modeling at the ICBM at the University of Oldenburg. Previously, she spent a year

researching at the Massachusetts Institute of Technology in Boston (USA) with a grant from the Walter Benjamin Program of the German Research Foundation (DFG), where she modeled microbial communities in the ocean. [...]

In her research, the 34-year-old deals with dissolved organic material - a mix of different organic substances in seawater. The mixture forms one of the largest carbon reservoirs on Earth. Lennartz uses mathematical models to investigate which processes stabilize this natural carbon store. In particular, she models the influence of microorganisms on the mixture of substances, which is currently underrepresented in global models. [...] [\[PR 115/22 – 3.06.22\]](#)

Oldenburg physicist honored

Prof. Dr. Ulrike Feudel, professor of theoretical physics with a focus on "Complex Systems" at the University of Oldenburg, has received the Lewis Fry Richardson Medal from the European Geosciences Union. With the award, the Association of European Geoscientists honors outstanding achievements in nonlinear geophysics every year. Feudel is honored for her "fundamental contributions to tipping points in multistable systems". [...] [\[PR 107/22 – 30.05.22\]](#)



Dr. Sinikka Lennartz [Image: UOL]



Prof. Dr. Ulrike Feudel [Image: UOL]

Biologist Kristin Tessmar-Raible appointed

She researches how nature "ticks": Prof. Dr. Kristin Tessmar-Raible has been appointed to the joint professorship "Marine Chronobiology" at the ICBM at the University of Oldenburg and the Bremerhaven Alfred Wegener Institute, Helmholtz Center for Polar and Marine Research (AWI). The 44-year-old previously held a professorship for chronobiology at the Center for Molecular Biology at the University of Vienna, with which she will remain connected in the future. [...]

The focus of Tessmar-Raible's research is a small sea annelid, which is particularly easy to molecularly examine in the laboratory. At the AWI and the University of Oldenburg, she wants to link her research into molecular and cell biology even more closely and examine in depth how marine rhythms shape ecosystems. The scientist recently discovered that a specific protein can help animals distinguish between sunlight and moonlight and even perceive phases of the moon. This ability is used by certain species of bristle worm, coral, or crab to precisely synchronize their reproduction to a specific moon phase and hour. [...] [\[PR 100/22 – 23.05.22\]](#)

Research building of the Center for Marine Sensors inaugurated

Around 600 square meters of space for test areas, laboratories, workshops, offices and a state-of-the-art situation center: The research building of the Center for Marine Sensors (ZfMarS) at the University of Oldenburg was inaugurated today in



Prof. Dr. Kristin Tessmar-Raible [Image: Sandor Fülöp]

Wilhelmshaven in the presence of Lower Saxony's Minister of Science, Björn Thümler. The research building, which was completed at the end of 2020, belongs to the ICBM and is an extension of the ICBM headquarters in Wilhelmshaven. Due to the pandemic, the official opening ceremony took place only now. [...]

"With innovative sensors and intelligent data processing, we are creating the basis for new scientific findings and informed decisions," Zielinski is convinced. "Our goal is to develop tools that help society to better understand and protect the highly complex marine ecosystem." [...] [\[PR 094/22 – 13.05.22\]](#)

Murat Eren appointed Professor of Ecosystem Data Science

Prof. Dr. A. Murat Eren has been appointed to the joint professorship for Ecosystem Data Science at the ICBM at the University of Oldenburg and the Bremerhaven Alfred Wegener Institute, Helmholtz Center for Polar and Marine Research (AWI). As part of his cooperation professorship, Eren will conduct research at the Helmholtz Institute for Functional Marine Biodiversity at the University of Oldenburg (HIFMB). The bioinformatician was previously an assistant professor at the University of Chicago (USA).

"Murat Eren complements the research of the HIFMB on marine biodiversity excellently, as he uses innovative approaches to explore the increasing complexity of the data in biodiversity research. Bringing this bioinformatic expertise to bear on the



Prof. Dr. A. Murat Eren [Image: UOL]

institute's ecological issues promises exciting new research areas," says Prof. Dr. Helmut Hillebrand, Director of the HIFMB. [...] [\[PR 023/22 – 14.02.22\]](#)

Marine chemist Helmuth Thomas appointed

Prof. Dr. Helmuth Thomas has been appointed to the joint professorship for marine alkalinity at the ICBM at the University of Oldenburg and the Helmholtz Center Hereon in Geesthacht. There, the chemist is head of the Institute for Carbon Cycles. [...]

Thomas' research focuses on the chemical processes in the sea, especially in marginal seas such as the North and Baltic Seas or the Arctic Ocean. The 55-year-old deals, among other things, with the carbon cycle and the so-called marine carbonate system. The level of dissolved carbonate - the salt of carbonic acid - in seawater determines the acidity of the water and is related to the concentration of the greenhouse gas carbon dioxide in the earth's atmosphere. Thomas and his team are investigating the gas exchange between the ocean and the atmosphere. [...] [\[PR 018/22 – 3.02.22\]](#)



Prof. Dr. Helmuth Thomas [Image: UOL]

In memory of Dr. Birte Junge

We mourn the loss of our valued colleague and former managing director Dr. Birte Junge, who died on March 12th 2022 after a long illness.

With great dedication and tireless commitment to the institute and its employees, Birte has achieved a lot and initiated new things that characterize the institute's landscape to this day. We remember a doer who tackled new tasks energetically and with contagious happiness. With her positive nature, she was able to motivate people and take them with her, while always remaining authentic. [...]

We miss your active support and mourn the loss of our valued colleague. [\[ICBM – 28.03.22\]](#)



Dr. Birte Junge [Image: ICBM]

If you have comments:

Please contact us if you have questions or further suggestions: ferdinand.esser@uol.de
or icbm-alumni@uol.de

Join the ICBM-Alumni-Network: icbm.de/alumni

Data protection

The use of this newsletter is voluntary. You can unsubscribe at any time without stating reasons. Just send

an e-mail to icbm-alumni@uol.de.

Imprint

Institute for Chemistry and Biology of the Marine Environment (ICBM)
University Oldenburg

Dr. Ferdinand Esser und Tabea Hildebrand

Carl-von-Ossietzky-Straße 9-11

26129 Oldenburg

Tel: +49 (0)441-798-5342

E-Mail: icbm@uol.de

Internet: www.icbm.de

Text: [FE] Ferdinand Esser, [PR] Pressemitteilung UOL, [SR] Sibet Riexinger, [TH]
Tabea Hildebrand

Layout: TH