

# ICBM – Alumni News #17



*Frohes Fest, ein gesundes  
und erfolgreiches neues Jahr*



*Merry Christmas, a sound and  
prosperous new year*

Institut für Chemie und Biologie des Meeres  
Carl von Ossietzky Universität Oldenburg

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Universität  
Oldenburg

Newsletter –

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Issue 16, year 6

## Welcome to the seventeenth ICBM-Alumni-Newsletter

Dear ICBM Alumni,

Another year is coming to an end and despite many professional, private and political challenges, a little normality has returned to the campus. For example, we were finally able to get together for a small Christmas party after some years without one. We celebrated outside, but the mulled wine, hot apple juice and good company kept us warm.

## Topics of this issue

### Science

- Future of biodiversity
- Hitch hiking into the deep
- Analyses of sulfur isotopes

### Outside the box

- Climate change in the North sea

In this last issue of 2022 we report on some exciting research results of the last weeks, congratulate Adenike Adenaya on the Female Science Talent grant and show solidarity with the women in Iran.

We wish you happy holidays and a happy new year!

Greetings and all the best,

Ferdinand Esser und Tabea Hildebrand

## SCIENCE AT THE ICBM

### The future of marine biodiversity under global warming

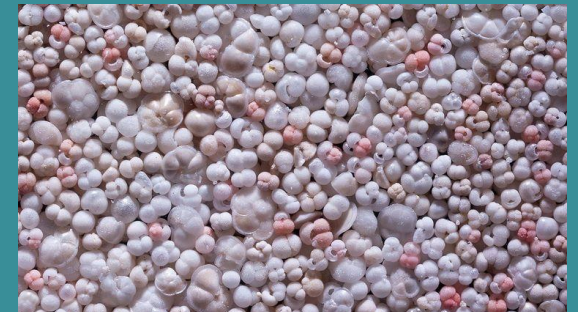
Human-induced climate change has already had a major impact on Earth's biodiversity. The habitat of many species – including those in the oceans – is disappearing, and invasive species are conquering new regions. In a comprehensive data analysis, a team of researchers from Bremen and Oldenburg has studied how species communities in the North Atlantic have changed over a period of 24,000 years – since the last ice age. As expected, species have migrated northward, but new communities have also formed – and even after temperatures stabilized. The results have now appeared in the journal *Nature Ecology & Evolution*. [...]

[...] the results of the study provide important clues to the fate of marine ecosystems under continued ocean warming. They support computer simulations that suggest that

- Solidarity with Iranian women

## Congratulations

- Female Science Talent



Foraminifera [Photo: M. Kucera, MARUM]

projected future warming will also lead to the formation of novel species assemblages. The establishment of novel plankton communities has potentially important implications for key ecosystem functions through new direct or indirect ecological interactions. “This study also contributes to how we understand today's rapid biodiversity change, because it shows us that we will not see the response of marine life to present-day environmental changes until far into the future,” says Prof. Helmut Hillebrand.

The study is the result of a collaboration between marine geologists and palaeontologists from the University of Bremen and ecologists from the University of Oldenburg within the Cluster of Excellence “The Ocean Floor – Earth’s Uncharted Interface”. [[ICBM, press release MARUM – 11.10.2022](#)]

*Original publication: Anne Strack, Lukas Jonkers, Marina C. Rillo, Helmut Hillebrand, Michal Kucera: Plankton response to global warming is characterized by non-uniform shifts in assemblage composition since the last ice age. Nature Ecology & Evolution 2022. DOI: 10.1038/s41559-022-01888-8*

## Hitching a ride to the deep sea

[...]150 million tons of plastic are polluting the ocean today – and because of its slow decay, the amount keeps growing. Current model calculations indicate that only about one percent of the plastic can be detected at the ocean surface, where it is supposed to float due to its buoyancy. About 10,000 times more is found at the sea floor. So



how exactly does it get there? A better understanding of the underlying dynamics helps to protect the ocean against plastic pollution as well as related risks for marine life, the food web and material cycling, including the carbon pump that is crucial for the ocean's ability to take up carbon dioxide and mitigate climate change. [...]

Sampling conducted during an expedition with the German research vessel POSEIDON off the Azores in 2019 and subsequent measurements shed new light on the sinking of microplastics from the sea surface into the deep sea. The particles were proven to become part of the marine snow, as suggested by earlier modelling approaches, an international team of researchers led by GEOMAR Helmholtz Centre for Ocean Research Kiel confirms in a new publication in the scientific journal Environmental Science and Technology. The findings support a better understanding of the vertical transport dynamics and related risks for the food web. In addition, they illustrate the noticeable overprint of the natural marine carbon by anthropogenic microplastics. [...] [\[ICBM, created by GEOMAR – 28.10.2022\]](#)

*Original publication: Galgani, L., Goßmann, I, Scholz-Böttcher, B. Jiang, X., Liu, Z., Scheidemann, L., Schlundt C. and Engel, A. (2022): Hitchhiking into the Deep: How Microplastic Particles are Exported through the Biological Carbon Pump in the North Atlantic Ocean. Environmental Science and Technology, doi: <https://doi.org/10.1021/acs.est.2c04712>*

A sediment trap is launched during the POSEIDON expedition POS536 [Photo: Thea Hamm, GEOMAR]

## Analysis of sulfur isotopes identifies potential source of ancient dissolved organic matter (DOM) in the world's oceans

DOM is organic material dissolved in seawater - containing mostly carbon, but also nitrogen, sulfur, oxygen, and other elements - that is smaller than 0.7 micrometers in size (tinier than a bacterium). The ocean contains as much carbon in DOM as there is carbon dioxide in the atmosphere and DOM can exist in the deep ocean for thousands of years, though no one is sure why it persists for so long.

New research suggests that the accumulation of DOM in the deep ocean occurs with minor input from organic sulfur compounds found in ocean sediments, and thus rejects one leading hypotheses for why it persists for so long. Michael Seidel, scientist at the ICBM at University of Oldenburg and co-author of the study explains, “Long-lived marine DOM compounds are so interesting because they bind carbon for a long time and can therefore no longer be released into the atmosphere as carbon dioxide.” “Our paper helped address a lingering question in carbon sequestration, rejecting a theory of where some old carbon was coming from,” adds first author Alexandra Phillips, who conducted the research while at Caltech with Alex Sessions, professor of geobiology. [...] [\[ICBM – 28.10.2022\]](#)

*Original publication: Alexandra A. Phillips, Margot E. White, Michael Seidel, Fenfang Wu, Frank F. Pavia, Preston C. Kemeny, Audrey C. Ma, Lihini I. Aluwihare, Thorsten Dittmar, and Alex L. Sessions (2022) Novel sulfur isotope analyses constrain*



Water samples collected in the North Atlantic Ocean by deploying a rosette, containing Niskin bottles and physical sensors [Photo: M. Seidel]

*sulfurized porewater fluxes as a minor component of marine dissolved organic matter.*

*Proceedings of the National Academy of Sciences 119: e2209152119*

## OUTSIDE THE BOX

### Climate Change in the North Sea

Investigations into how rising sea levels and warmer water will affect the North Sea were a subject of the NORDSEEREPORTS recently broadcast by N3.

A film crew from NDR accompanied ICBM marine chemist Prof. Dr. Oliver Wurl and his team during a North Sea expedition on the research vessel HEINCKE for the subject “The Future of the Oceans”. In the film report, the viewer learns about the research catamaran HALOBATES developed at ICBM, which can independently investigate the sea surface film. Last but not least, the current measurements are intended to help improve the quality of remote sensing data of the sea surface obtained via satellites as part of the [NorthSat-X](#) joint project.

Among other topics, the NORDSEEREPORT also dealt with the joint project 'Good Coast Lower Saxony', in which the ICBM is also involved.

The entire broadcast from December 11 is available [here](#).

[\[SR – 14.12.2022\]](#)

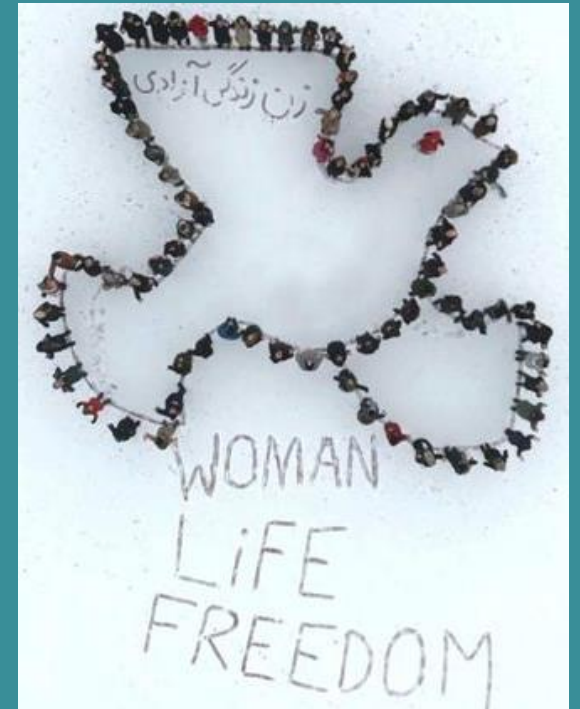


The autonomous catamaran HALOBATES  
[Photo: L. Gassen]

## Solidarity with the women in Iran

Last Friday, on the initiative of the decentralised Equal Opportunities Office of Faculty V, students and staff of the faculty, including members of the ICBM, came together on the university's sports field on the Wechloy campus to express their solidarity with the women in Iran. Following the dove of peace prominently displayed under the university logo on the main campus, those present there recreated a similar animal with a human chain, accompanied by the slogan "Woman, Life, Freedom" in English and in Fārsi.

The action was documented by a drone [video clip](#) posted on Instagram, accompanied by a solidarity address and set to music with "Baraye", a ballad by Iranian musician Shervin Hajipour. Its lyrics are composed of online comments from Iranian protesters and culminate in the line "For woman, life, freedom". [\[ICBM – 19.12.22\]](#)



# CONGRATULATIONS!

## Adenike Adenaya is Female Science Talent 2023

The PhD student in the ICBM working groups 'Biology of Geological Processes' and 'Processes and Sensing of Marine Interfaces' Adenike Adenaya is one of the exceptionally talented 20 women who will be supported by the Falling Walls Foundation in the coming year. This was announced by the Foundation to the young scientist's great delight earlier this month. [...]

"This is a great success," comments Prof. Dr. Oliver Wurl, head of the 'Processes and Sensing of Marine Interfaces' research group at the ICBM, on Adenaya's election to the circle of female scientific talents, and at the same time he regrets that the dedicated young scientist, who delivers very good research results and brings her own financial resources to the university, as a scholarship holder does not yet enjoy all the benefits at the university like the other PhD students. [...] [\[SR – 09.12.22\]](#)



Adenike Adenaya [Photo: privat]

### If you have comments:

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



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### **Imprint**

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