Press Release

GEOMAR
Helmholtz Centre for Ocean Research Kiel

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Otto Krümmel Award 2021 honors outstanding bachelor theses

Due to the Corona pandemic, the award was conferred in fall 2022, in a live-reception at GEOMAR.

29 September 2022 / Kiel. **To honor excellent bachelor degrees in the field of ocean research, including the interaction of the ocean with the seafloor and the atmosphere – that is the goal of the Society for the Promotion of GEOMAR Helmholtz Centre for Ocean Research Kiel e.V. in awarding the Otto Krümmel Award. This year, two young scientists were honored for their excellent achievements in the fields of physical oceanography and marine geochemistry. The award for 2021 was postponed to fall 2022 due to the Corona pandemic and was conferred in a reception.**

Otto Krümmel is considered the founder of general oceanography in Germany. He taught and worked mainly in Kiel. With his interdisciplinary research, he was internationally recognized and, together with other researchers, advocated that the open seas could only be understood and used through international cooperation. Thanks to this work of persuasion, the "International Council for Marine Research" was founded in 1902 as a state-coordinated scientific association.

In memory of his contribution to the field of ocean sciences, the Society for the Promotion of GEOMAR Helmholtz Centre for Ocean Research Kiel e.V. has been awarding the Otto Krümmel Award since 2016. The prize is awarded annually and recognizes outstanding bachelor's theses in the field of ocean science, including the interaction of the ocean with the seafloor and the atmosphere. The award is endowed with 1,500 euros, half of which is donated by the society and half by the Briese shipping company.

This year, two young scientists were honored with the Otto Krümmel Sponsorship Award:
Alexandra Andrae from Kiel University (CAU) for her achievements in physical oceanography in the study of eddy currents in the ocean. These eddies are particularly important for the horizontal exchange of solutes and for CO_2 uptake in the ocean. In her bachelor's thesis, the award winner compared current data measured on research cruises with large-scale but simultaneously acquired satellite data. She was able to show that common satellite-based methods for identifying eddies overestimate their diameters but underestimate their current velocities. The long-term goal is to refine the identification of eddies using the large-scale satellite data to better understand the influence of eddies on ocean circulation and the climate system. The work was supervised by Dr. Marcus Dengler from GEOMAR.

Charlotte Bürgers receives the award for her bachelor thesis in the field of marine geochemistry at the Department of Geosciences at the University of Bremen in collaboration with the Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research in Bremerhaven (AWI). She investigated which processes influence the cycling of the nutrient phoshate in fine-grained sediments of the North Sea. In particular, she investigated the reactions that control the release of phosphate in the sediment and into the water column, as well as its long-term storage in the seafloor.
Increased inputs of phosphate and other nutrients, especially to coastal waters such as the North Sea, are leading to eutrophication and habitat stress. In addition, there has been a significant change in the nutrient ratios of nitrate and phosphate in shelf seas such as the North Sea and the

Baltic Sea in recent decades, which has had a marked impact on the biotic communities of these coastal waters. It is therefore of great importance to understand and quantify how phoshate initially stored in the seafloor returns to the water and contributes to nutrient oversupply, or how it becomes fixed in the sediment over the long term. In her thesis, the award winner used the example of the Helgoland mudflats to find that the iron phosphate mineral vivianite can permanently store phospate in the seafloor, preventing it from flowing back into the water column. Her work was supervised by Professor Dr. Sabine Kasten of the AWI and the Department of Geosciences at the University of Bremen.

"We are very pleased to receive this award," the two laureates agree. "The namesake has made a significant contribution to oceanography," affirms Andrae. "That's my motivation as well – to take the ocean sciences another step forward with my research."
Bürgers adds, "Understanding and protecting the ocean better is a major concern of mine. The fact that I can contribute a piece to this with my thesis makes me particularly happy."
Delayed by the Corona pandemic, the 2021 Otto Krümmel Award was conferred in a reception on September 26, 2022.

"With this award, we also want to uphold the memory of the outstanding oceanographer Otto Krümmel," says Professor Dr. Hermann Bange, chemical oceanographer at GEOMAR and board member in the Society for the Promotion of GEOMAR. "Nevertheless, with the award ceremony we focus on the future and therefore honor young scientists who now bring their excellent contributions to the ocean sciences."

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