



On course for the Caribbean: Lena Heins sailed across the Atlantic aboard the S/Y Eugen Seibold. The 22-meter ocean-going yacht was designed in 2018 for the purpose of conducting marine and climate research.

72 Max Planck researchers cooperate with partners in more than 120 countries. In these articles, they talk about their personal experiences and impressions. Lena Heins from the Max Planck Institute for Chemistry in Mainz crossed the Atlantic aboard the research sailing yacht S/Y Eugen Seibold. During the voyage from Cape Verde to the Caribbean Island of Grenada, she collected samples for various climate projects. Here, the scientist offers an insight into her work on the ship and tells us about dolphins, flying fish, and a climate archive on the ocean floor.

The S/Y Eugen Seibold is a 22-meter ocean-going research yacht designed for the collection and analysis of seawater, plankton, and air samples. Its

propulsion by sail is not only environmentally friendly, but also makes it possible to collect samples that are free from contamination by the ship's exhaust. The yacht boasts a water lab and an air lab, so some of the samples can be processed on location. At the end of November, I boarded the yacht on the Canary Island of Lanzarote to head first to Cape Verde and then across the Atlantic.

For my doctoral thesis, I am studying planktonic foraminifera – a group of single-celled organisms that float freely in the ocean. Most species are microscopic and live in chambered calcareous shells. When they die, the shells sink to the seafloor, where over time they form a natural climate archive that can be accessed using sediment cores. Since calcification takes place in interaction with ambient seawater, the temperature, salinity, oxygen concentration, and pH value are all preserved in the shells. Because of this, foraminifera serve as

archives for reconstructing the climate of earlier epochs. I analyze the calcareous shells of present-day species and compare their composition with that of the marine environment. This is important, as it enables us to know how accurately the data represent the state of the modern ocean and climate, and thus to calibrate the paleoclimate data.

On our voyage, we followed a classic blue-water route – a sea route favored by sailors because ideal wind, weather, and currents can be expected at a certain time of year. The weather was a mix of sun, clouds, and scattered showers. The trade winds blew from easterly directions at an average of 20 knots, and we were able to cover most of the total of about 2200 nautical miles under sail. What really struck me was how alone you are in the Atlantic. In two weeks, we encountered only three other ships. But that didn't make me feel uneasy; in fact, I was fascinated by the little microcosm of our

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ship contrasted against the boundless expanse of the ocean. Sometimes we were accompanied by dolphins, or flying fish would glide over the water. Time and again we sailed through large carpets of Sargassum algae, which are currently spreading rapidly in the Atlantic. At night we enjoyed a magnificent starry sky.

Our team consisted of four crew members and two scientists. My colleague Isabella Hrabec de Angelis was responsible for atmospheric chemistry, and I took care of the water and plankton samples. The two-person cabin I shared with Isabella was small but comfortable, with two closets and bunk beds. It featured an ingenious invention: a pulley that adjusts the angle of the upper bed, which allows you to kind of wedge yourself in so that you don't roll around, even in heavy seas. Accompanied by the lapping of the water against the ship's hull, I slept very well in the middle of the Atlantic. During the voyage, the on-

board instruments were continuously recording data, and on top of that we took water and air samples at 12-hour intervals. We worked in shifts, ensuring that someone always had an eye on the instruments. Where there were technical problems that could not be solved with the help of the instrument manual, we were assisted by colleagues whom we could contact via the Internet. Fortunately, though, everything went according to plan, and we are very satisfied with our yield of samples and data.

After 14 days on the open sea, we finally entered a port on the Caribbean Island of Grenada. For me, that was almost the end of the journey, and five days later I flew back from there to Frankfurt – quite a temperature shock in the middle of winter! The S/Y Eugen Seibold, meanwhile, was sailing on to Panama. Over the next three years she will cruise in the tropical eastern Pacific and hopefully deliver more exciting data.



PHOTO: PRIVATE

Lena Heins

29, is fascinated by the diversity of the oceans and is also passionate about art and design. After studying geosciences, she earned a master's degree in integrated design at Bremen University of the Arts. For the past year, she has been working on her doctorate at the Max Planck Institute for Chemistry in Mainz. In the Climate Geochemistry research department under the direction of Gerald Haug, she is working on foraminifera, a group of unicellular marine organisms.