



# Climate, Wind and Waves

Max Planck scientists cooperate with partners in around 120 countries worldwide, exchanging samples and data, and combining their expertise.

Geologist Ralf Schiebel from the Max Planck Institute for Chemistry in Mainz reports on his most recent paleoceanographic expedition in the North Atlantic, life on board the research vessel, and the joy of roaring ocean spray.

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For the umpteenth time, I roll against the wall of my berth and am pushed even further down into the mattress. The ship rises slowly this time, stands still, and then dips down again. The bow dives into the next wave with a muffled thud. A glance at the clock: 3:24 a.m. – a good time to get up. We’ve almost reached the station, which means: action. Overnight, the seismographers found the best position for extracting sediment cores on the Mid-Atlantic Ridge. We will now use drilling machines to recover this climate evidence from a water depth of up to 4,000 meters.

We have reached the last days of our four-week expedition in the North Atlantic with the German research vessel Maria S. Merian. The journey began in cold and rainy Reykjavik, and the destination is almost 3,000 kilometers further south, near the mild Azores Islands. The purpose of this fall’s campaign is to study the deep-water circulation of recent geological history. The 20 scientists on board are raring to go. For many of them, it’s their first expedition. I’ve been in the North Atlantic many times, and fortunately don’t suffer from seasickness. Force 6 winds and 5-meter-high waves are typical conditions here. We’ve already been forced



**Ralf Schiebel**, 51, studies the ecology and geochemistry of modern and fossil organisms and their interactions with the CO<sub>2</sub> system. He studied geology in Kiel, did his postdoc research at the University of Tübingen, was a senior scientist at ETH Zurich, taught at the National Oceanography Centre in Southampton (UK), and was director of the Geological Institute at the University of Angers in France. He has been involved in the development of the Climate Geochemistry Department at the Max Planck Institute for Chemistry in Mainz since 2015.

to return home empty handed before, the equipment washed overboard and the ship severely damaged on an earlier campaign.

The chief engineer, one of the 24-strong crew, is proud of his ship: with its service water system and diesel-electric power, everything is well thought out and clean. Nowadays, waste is sorted on board, and the ship meets the requirements of the Blue Angel environmental label. In the early 1990s, waste was still disposed of at sea and the ship was run on marine diesel. Back then, you could talk to your loved ones on the telephone once a week at a cost of 20 Deutschmarks per minute. Today, there's e-mail and a telephone in the cabin.

A day after our departure, we reach the first station. The aim is to fish for plankton in the stormy sea. The 200-kilogram net goes over the ship's rail. It functions perfectly. The team works well together. Charlotte, a student from Kiel, stands at the side of the ship and Doro, a doctoral student from Mainz, is at the controls in the lab. Ten minutes later, the net rises from the waves again and crashes against the hull of the ship. The wind rushes in and there's water everywhere. The skipper isn't happy with us yet: "Hold on – better – always!" he shouts.

In the subtropical Atlantic, we focus on the sediment cores as indicators of climate development. We can't measure the temperature 8,000 years ago, but we can reconstruct it.

We celebrated hump-day of our expedition on board in fantastic weather on our way to the next station. We had lost all sense of time by then. Our daily rhythm is marked by meals. A warm meal, fruit, salad and fresh bread three times a day. One person's breakfast is another's dinner.

We've struck gold. The samples couldn't be better and spirits are high. The Atlantic is kind to us now. Nevertheless, I want to go home. My wife was on vacation with our baby visiting the grandparents. We wrote to each other and phoned every day. Will the little one be shy with me? We arrive in Ponta Delgada in the Azores at eight o'clock on a Friday morning. The ship is unloaded and reloaded; the next research expedition starts on Saturday. We'll be in a plane on our way to Frankfurt by then.