Press Release

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Ocean Observations for Climate Science with the SY Malizia
Racing yacht delivers important data from remote ocean regions

28 August 2019 / Kiel, Hamburg. **After about three thousand nautical miles across the Atlantic, racing yacht Malizia with skipper Boris Herrmann reaches New York this week. This ocean crossing attracted a lot of attention because of a special passenger: The Swedish activist Greta Thunberg and her father are on board Malizia. At the same time, sensors that have been installed in the yacht more than a year ago, provide important data for oceanography and climate research. The project is a joint initiative of GEOMAR Helmholtz Centre for Ocean Research Kiel, the Kiel research network "The Future Ocean" and the Max Planck Institute for Meteorology in Hamburg.**

SY Malizia is crossing the North Atlantic with “Unite Behind the Science” written in capital letters on her sails. During this crossing a special passenger is on board: The young Swedish activist Greta Thunberg. Also, on board is a set of sensors, making measurements during all of the voyages of the offshore race yacht. Malizia was built to win one of the most challenging sailing races on the planet – The *Vendée Globe*, a single-handed non-stop race around the world. Despite the challenges of sailing such a yacht alone, let alone in racing mode for weeks on end, the skipper Boris Herrmann is dedicated to support science with critically needed data from the remote realms of the global ocean.

For more than one year, sailing yacht Malizia has already been making critical observations for science. Malizia is equipped with a state-of-the-art instrument, developed by Kiel-based SubCtech, to measure the carbon dioxide (CO_2) concentration in the surface water of the ocean. “Also, during the current trans-Atlantic crossing with Greta Thunberg and her father as passengers, important climate observations are being made, actively contributing to increased knowledge of the ocean and the global climate system”, says Dr. Toste Tanhua, marine chemist at the GEOMAR Helmholtz Centre for Ocean Research Kiel. The data will be transferred to scientists at GEOMAR and the Max Planck Institute for Meteorology (MPI-M) in Hamburg as soon as Malizia arrives at New York.

Increasing carbon dioxide concentration in the atmosphere is the main driver of climate change and global warming. The increasing carbon dioxide in the atmosphere is mainly stemming from burning of fossil fuel, but only slightly less than a half of the emissions stay in the atmosphere, the rest is distributed between the ocean and plants on land. The global oceans thereby help to mitigate the effect of global warming. However, in the process of absorbing CO_2, the ocean is getting acidified with significant effects for marine life. “It is important to study the ocean uptake of CO_2 to understand and monitor the effect of carbon mitigation policies, and to drive climate models”, says Dr. Tanhua.

Due to the vastness of the ocean and the high cost of sampling, most ocean regions, despite their crucial roles in the Earth’s climate system, are still under-sampled. This reduces our possibility to correctly assess the CO_2 uptake of the ocean. Fortunately, modern technologies allow for

continuous measurements of carbon dioxide in the seawater with sensors on board racing yachts during their races.

The Malizia campaign will be providing data during its approximately 70.000 nautical miles of offshore racing over the next few years. In collaboration with experts from the Max Planck Institute for Meteorology (MPI-M) in Hamburg and GEOMAR, as well as the Future Ocean in Kiel, the data will be fused with others from research vessels, container ships and robots to estimate the exchange of CO_2 between the ocean and the atmosphere and the processes driving the exchange.

Scientists at GEOMAR are working on a few different ways of acquiring CO_2 data in addition to observations on research vessels. Instruments are being deployed on merchant cargo vessels crossing the oceans, and on novel technologies such as the autonomous surface platforms.

“The data from our science heroes on racing yachts, like Boris Herrmann, are making a significant contribution to understanding our ocean, our climate for a sustainable world”, summarizes Dr. Tanhua.

Links:
www.geomar.de GEOMAR Helmholtz Centre for Ocean Research Kiel
www.mpimet.mpg.de Max Planck Institute for Meteorology, Hamburg
www.subctech.com SubCtech

Images:
At www.geomar.de/n6656-e images are available for download.
Video footage showing the installation of the sensors on board the Malizia in 2018 is available on request.

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