

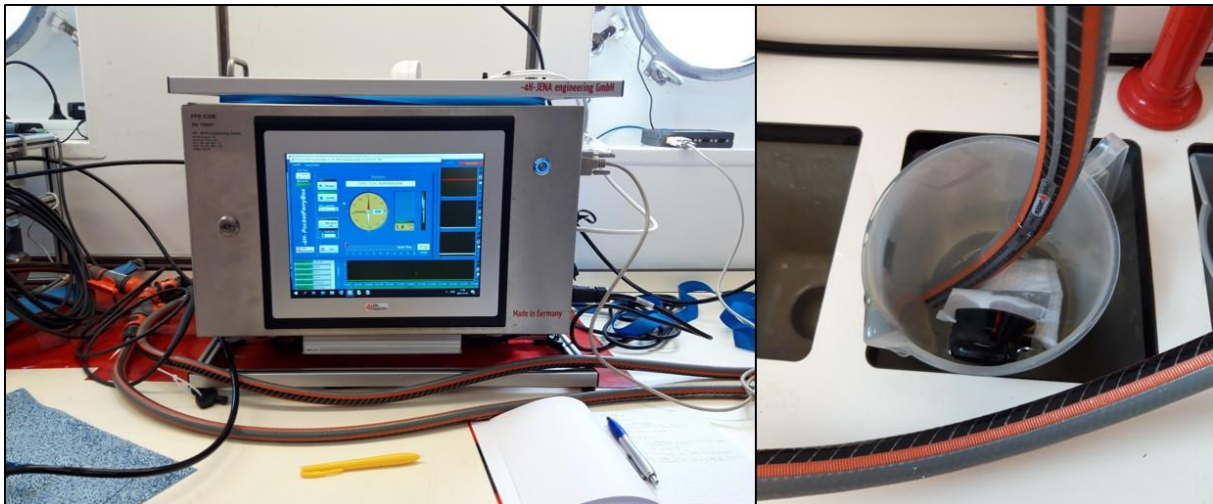
## RV METEOR

M179/1 FjordFlux (GPF 19-1\_077)

22.12.2021 - 12.01.2022, Las Palmas - Punta Arenas

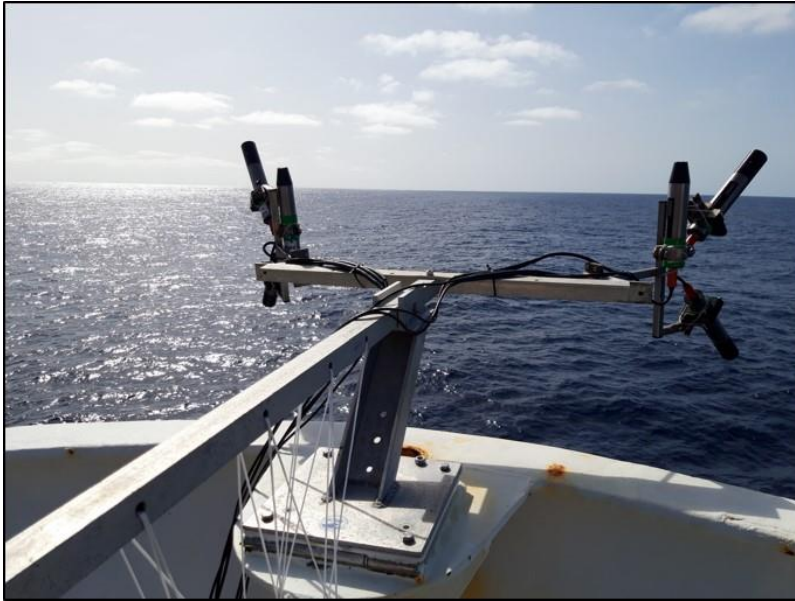
2<sup>nd</sup> Weekly Report (27.12.2021 – 02.01.2022)

After the Christmas holidays, a certain work routine has returned. As mentioned in the last report, we are not able to do any station work, so one focus of the work is on monitoring the underway measurement systems. These include the ship's own thermosalinograph (TSG), other flow-through measurement systems (4H-Jena Pocket-FerryBox as well as TriOS OPUS and ProPS), radiometers, and a SPATT (Solid Phase Adsorption Toxin Tracking) sampler. The flow-through measurement systems are connected to the ship's seawater system that also feeds the TSG. In addition to temperature and salinity, they provide us with information on the concentration of chlorophyll-a (a proxy for the amount of phytoplankton biomass), dissolved oxygen, gelbstoff, turbidity, and nitrate, an important nutrient for algae growth, in the water.



**Fig. 1: 4H-Jena Pocket-FerryBox (left) and SPATT-Sampling (right)**

All water constituents are present in significantly lower quantities than is the case in shelf seas such as the North Sea. So, as expected, we are dealing with very clear waters, resulting in a beautiful deep blue color. Water color is the overall impression that the human eye produces from the light spectrum that is backscattered from the water, and thus is an indicator of which substances are present which concentration: pure water is blue, green color indicates the presence of larger amounts of phytoplankton, whereas brown water has a high inorganic suspended matter content and larger amounts of gelbstoff. In order to draw appropriate conclusions about the composition of the water, the light spectrum reflected from the water is measured using hyperspectral radiometers in the form of the so-called remote sensing reflectance. This parameter is also the basis of many satellite remote sensing approaches, thus the radiometric data collected during this cruise can be used to validate corresponding satellite observations during this period.



**Fig. 2: Hyperspectral radiometers mounted at the bow of the METEOR**

The underway measurement systems are thus used, among other things, to characterize the phytoplankton distribution along the transit route, which is particularly interesting in combination with SPATT sampling. This method can be used to detect phycotoxins in the water, a phenomenon that has so far been studied mainly in the coastal zone, but on which relatively few studies are available from the open ocean.

Furthermore, we sample the surface water on a daily basis, among other things for later determination of salinity for the "Underway" research data project of the German Alliance for Marine Research (DAM). These samples serve to validate or eventually correct the data continuously collected by the ship's TSG.

In addition to the scientific work, we have to report that we crossed the equator in the night from 28.12. to 29.12. and are now continuing our way in the southern hemisphere. The turn of the year was celebrated like the Christmas before with a nice party and excellent food. At this point we would like to thank the crew of METEOR again for this.

Our cruise participants also inform about the research activities and life on board on Twitter (<https://twitter.com/ThoelenClaudia>) and in blog posts (<https://icbm-auf-see.uni-oldenburg.de/>).

All participants are well, wish a happy new year 2022 and send greetings home.

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