

RV MARIA S. MERIAN – MSM110 „ECOTIP”

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2nd Weekly Report (08. - 14.08.2022)



Two of the main objectives of the H2020 project ECOTIP focus on the impact of environmental, climatic and anthropogenic changes on Arctic ecosystems and their interactions with the North Atlantic. MSM110 investigates Arctic marine ecosystems along the East Greenland coast, especially in fjords, and their interactions with the East Greenland shelf.

At the first station on August 8 2022, just north of Denmark Strait, which separates the Greenland Sea in the north from the Irminger Sea in the south, a CTD station of several hours was carried out. Here we recorded physical, chemical and biological parameters, which together with the stations to be sampled later in the shallower central part as well as the more southern side will then provide information about the interactions, especially biological, between the Arctic ecosystems and those of the North Atlantic. The station, located approximately at 67°30'N / 25°W, was then extensively sampled. Logistically, this was "a jump in the deep end" for us and the ship's crew, as almost all parameters were sampled at this first station shortly after departure. However, thanks to the expert support provided by the ship, there were no problems whatsoever.

Due to the short-term denial of the permission to sample the Kangerlussuaq Fjord as the southernmost fjord of this cruise, for the protection of the narwhals, we left the station at Denmark Strait directly in northwesterly direction to the Greenland coast and sampled the surface of two underway stations on the Greenland shelf on August 8 and 9 during our cruise northwards.

Later on August 9 we arrived at the mouth of Scoresby Sound, located about 70°11'N / 21°28'W, our first permanent station. Here, as a special event, we met the German RV POLARSTERN in the evening hours, the two ships lay alongside for a while before RV POLARSTERN then continued its journey into Scoresby Sound. Our extensive sampling at this station now also included sediment sampling, so that we were already able to implement one of the MSM110 main goals here, a sampling of the marine ecosystems as comprehensively as possible.

After completion of this long station, we continued our journey north along the Greenland coast and sampled 3 more underway stations during this time. In the early morning hours of August 12 we then reached the shelf area off Ardencaple Fjord, which was sampled with 2 stations. The more ocean side shelf station, approx. 74°45'N / 17°30'W, was again sampled very extensively and similar to the station at Scoresby Sound, while "only" water column samples were taken at the more land side shelf station. The cruise then took us further into Ardencaple Fjord, partly through intermittent ice fields, which in the evening sun provided ample opportunity to photograph this picturesque situation.



Fig. 1: Entrance to the Ardencaple Fjord, Greenland.

In the early morning hours of August 13 we reached then the land-side end of the Ardencaple Fjord, into which directly a glacier flowed. Here we then conducted another permanent station, this time including the 24-hour deployment of a sediment trap, so that all target parameters of the physical, biological, geological, and chemical environment could be successfully sampled here. In order to obtain samples close to the glacier and the surface, sampling was also carried out from a zodiac in the immediate vicinity of the station, which will facilitate special insights into the surface layer, which is lapped by fresher water, as well as into the direct influence of the glacier meltwater and its composition.

On August 14 an almost identical daily program was carried out at a station centrally located in the fjord. As a special feature on this day, we succeeded in obtaining samples with a salinity of about $S_p=4$, which corresponds to almost pure fresh water, in an outflow of a glacier located far inland. Thus, as one of the main "chemical" targets, we are able to map as well as possible the entire salinity range for this fjord. On these two stations also all further work could be carried out quite successfully, so that we are now on our way to the outer station in Ardencaple Fjord after the end of the 2nd permanent station in the morning of August 15.

Greetings on behalf of all cruise participants,

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