

Expedition MSM-144 „FjordChange“ Reykjavík – Reykjavík

4th Weekly Report July 7 – 12, 2026



We have successfully carried out our sampling in the Wijdefjord and have also deployed our mooring there to study, over a period of two years, the oceanographic data on tides and the seasonal dynamics of the Arctic and Atlantic waters within the fjord system.

After Wijdefjord, we sailed into the Fram Strait to investigate four stations in the ‘Hausgarten’ (AWI long-term study stations), where we deployed a sediment trap this morning and are now taking samples at our deepest station of the expedition, at a depth of 2,066 metres.



Photos: Philipp Schmitt-Kopplin. left: RV MARIA S. MERIAN in the Fjord of Svalbard. right: Sampling of glacier and river water in the Wijdefjord.

During our expedition, we are investigating, firstly, the productivity of the plankton community through primary productivity experiments (photosynthetic carbon fixation). This enables us to understand how much carbon the phytoplankton community in the fjord can absorb. At the same time, we are investigating nitrogen uptake rates. Nitrogen is an important nutrient that is taken up by cells mainly in the form of nitrate or ammonium.

Ammonium is a metabolic product of various organisms and is released primarily through the decomposition and recycling of biomass within the water column – it is therefore mainly part of the existing nitrogen pool in the respective water column. Nitrate, on the other hand, enters the photosynthetically active water column from external sources, such as deeper water layers or inputs from land. This is therefore referred to as ‘new’ nitrogen, as it enters the water column from outside. Since only nitrate originates from external sources, its uptake serves as an indicator of how much biomass can sink to greater depths and thus remove carbon.



Fotos: Julia Oelker, Philippe Schmitt-Kopplin: Lorenz Eckhardt preparing the experiments; plankton wheel.

Furthermore, we are investigating the influence of glacial meltwater and river water on plankton communities and how this, in turn, can affect carbon export. To characterise these effects, relevant water samples were collected from the respective fjords, thawed and filtered; over a period of six days, parameters such as chlorophyll, DNA (for diversity assessment), RNA and metabolomics (to investigate cellular processes), and DOM, DOC and nutrients (to understand water chemistry) were analysed.



Fotos Phillip Schmitt-Kopplin, Fabian Moye: Glacier ice, Sookyung Kim filtering samples, Leila Kopplin and Klara Stephan setting-up the experiments

A big “thank you” to the crew of the RV MS Merian for their fantastic support.

Best regards, 12th July 2026, at 79° 00,0’N; 05°40,0’E (Hausgarten)

Uwe John

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