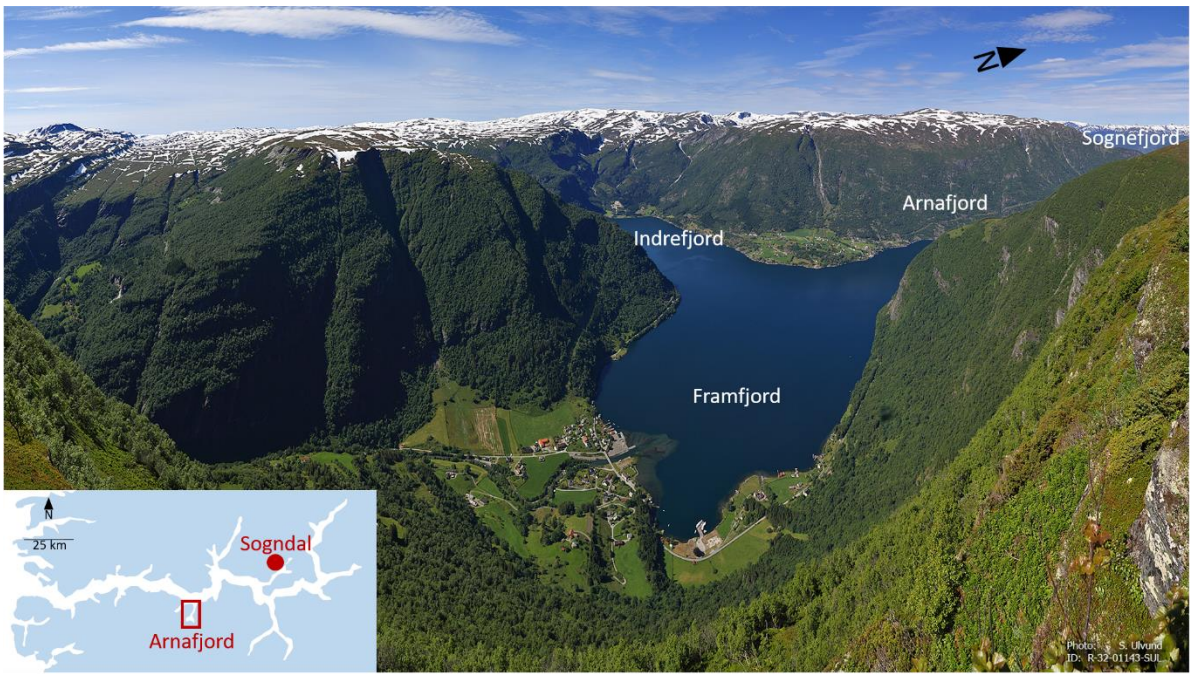
Science Project 2020
Environmental change in the Arnafjord



https://seenorway.files.wordpress.com/2015/07/framfjorden_1f3a1114.jpg

The 2020 Science Project of the «From Mountain to Fjord» programme will focus on the effects of environmental change in the Arnafjord, a southward tending tributary of the Sognefjord. At its southern end, the Arnafjord divides into the western Indrefjord and the eastern Framfjord. A 90 m deep sill separates these fjord arms from the Arnafjord, creating a 107 m basin at its transition.

The environmental influence includes a land-based fish hatchery at the shores of the Indrefjord, starting its activity in 1986. Since 1986, a pipe supplies untreated grey water from the hatchery to the Indrefjord at 30 m water depth. Sediment analysis reveals 49.8% organic matter (LOI) close to the pipe outlet, decreasing to 4-5% organic matter at 63 m water depth about 170 m further east. The value of 4-5% LOI corresponds to natural background values in Norwegian semi-enclosed fjords. Based on these numbers, the investigation concludes that the impact of grey water is not harmful to the Indrefjord environment. The Science Project 2020 suggests additional sediment sampling in the 107 m deep basin at the transition to the Arnafjord, as suspended matter usually accumulates in the deepest part of fjords. Hydrographic measurements down to 68 m water depth imply good, i.e. oxic conditions in the water column. The Science Project 2020 will provide supplementary hydrographic data down to 107 m water depth. The additional hydrographic and sediment analyses will provide new data that might turn out to be crucial for cod hatching in the Indrefjord.

Talc mining and talcum powder production took place at the village of Framfjord (located at the southeast end of the Framfjord) from 1907 until 1984. The mining of talc associates with the occurrence of serpentinite rocks at Raudberget in the mountain area of Stølsheimen, surrounding the area south of Framfjord. The talc mine closed in 1984, while the talcum production continued until 2002. Norwegian preservation laws protect the talcum factory since 2013. As shipping of talcum took place at the Framfjord harbour, the talc mining and the talcum powder production should have left traces in the sediments of the Framfjord. Also here, the supposedly oxygen deficient sediments of the 107 m deep transitional basin should be useful to reconstruct the industrial history and indicate possible impacts on the fjord environment.

Starting in the 1960s, hydropower production influences the watercourse and catchment of the river Dalselvi that runs through the Framfjord valley. Since then, about 75% of the Dalselvi catchment drains now the Vikvassdraget (Vikfalli hydropower plant system) in the neighbouring valley to the east. The building of the Vikfalli hydropower plant system took place gradually between 1958 and 1967. Statkraft Energy AS plans another 3% reduction of the catchment for the coming years. The hydropower history should have left traces in the Framfjord.

The Science Project 2020 will provide the first environmental investigation in the Framfjord and in the deeper parts of the Indrefjord, with focus on the impact of manmade environmental change on the Arnafjord fjord system.

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