

Scientific objective:

The project is directed to the investigation of a cold water coral reef system in the Stjemsund, a passage in the vicinity of Hammerfest, Norway. Our main study site will stretch over 5 km with a morainic sill and the reef being at its center (Fig. 2). Some control measurements with CTD/Rosette water sampler and bottom cameras will be performed in the eastern section of LoppHAVet (Fig. 1).

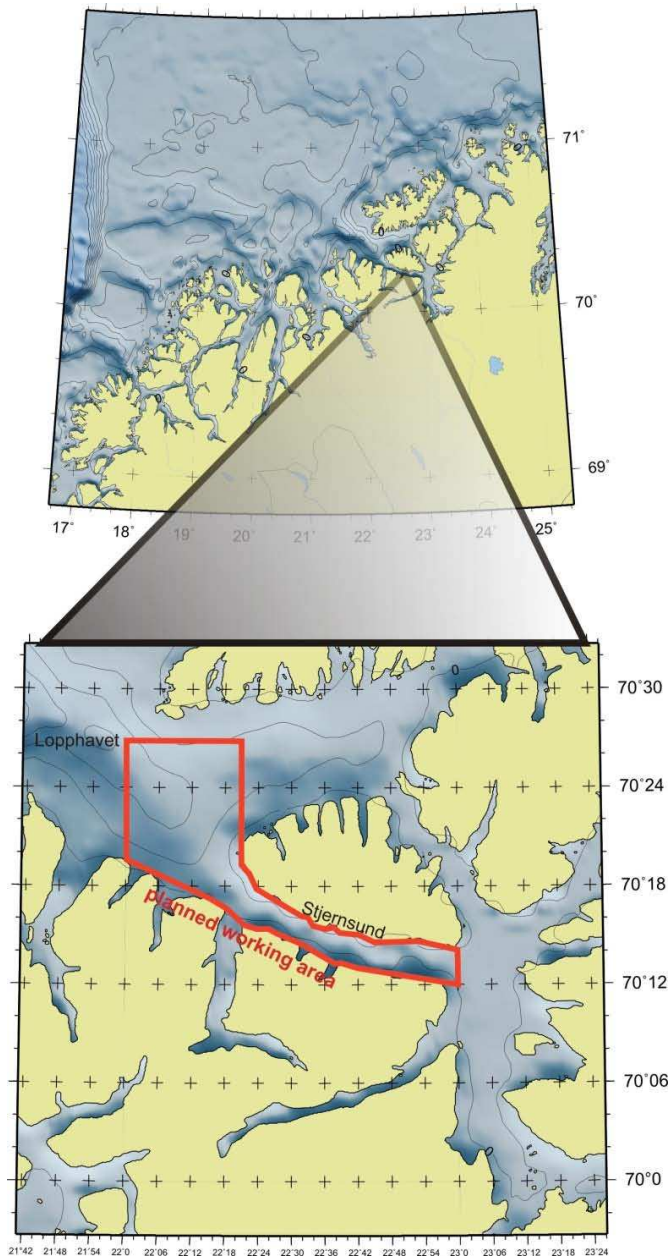


Figure 1: Location of the working area in Finnmark, North-Norway (top) and area of investigation in eastern LoppHAVet and Stjemsund (bottom).

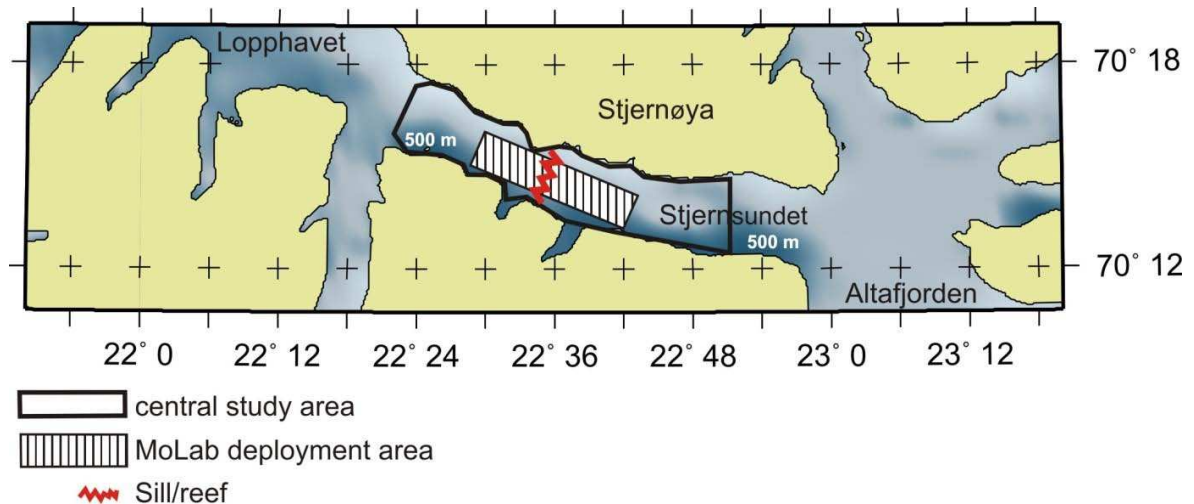


Figure 2: The central working area with the MoLab observatory deployment area (shaded box) in the Stjernsundet.

For our long-term observation which will last about four months we will employ the novel MoLab observatory which measures timely synchronized physical, chemical, and biogeochemical environmental parameters in an instrument array of different sized landers and two moorings distributed over the entire box of investigation (Fig. 3). In combination with organic/inorganic matter flux measurements (sediment trap), continuous camera observation of the megafauna and in-situ community oxygen consumption rates (eddy correlation technique) we can investigate the interconnection of biotic and abiotic processes on various scales in a true 4D approach for the first time. All technologies employed are non invasive and do not include sampling of sediments or organisms. Our major objective is to significantly advance our current understanding of the feedback mechanisms and processes of this important marine ecosystem to the hydro-dynamical, biochemical, geo-morphological boundary conditions which led to the settlement of this most northern reef and to extrapolate conditions which would lead to an active expansion of coral reefs to the North in relation to global and regional climate change.

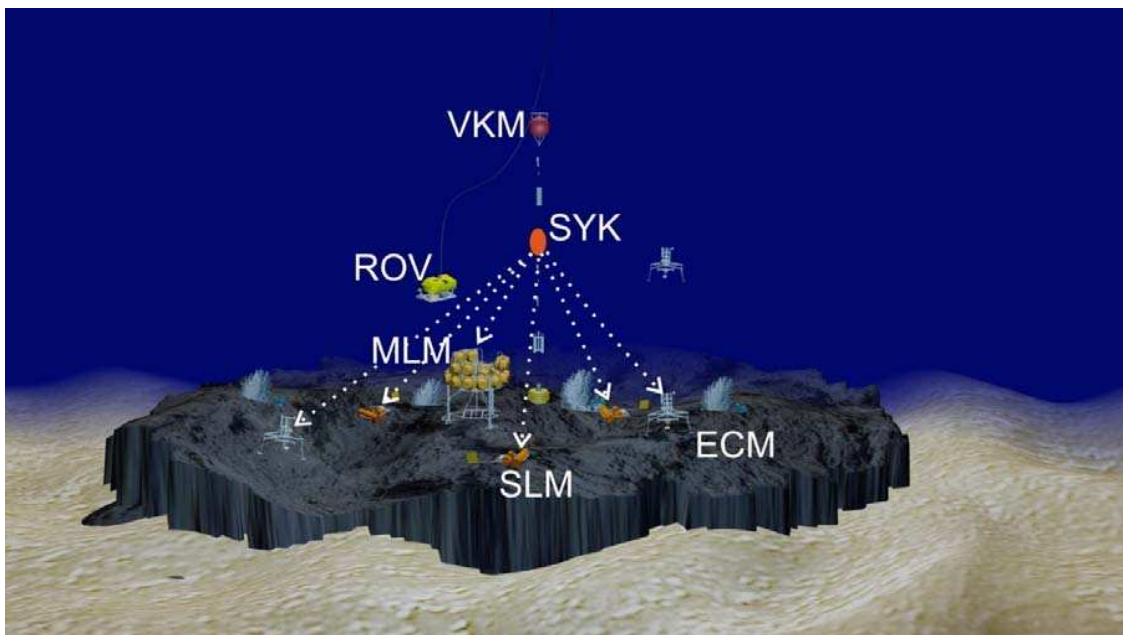


Figure 3: Schematic view of the MoLab Observatory deployed on an idealized carbonate mound. The basis configuration of MoLab array contains: a Master Lander (MLM), three smaller Satellite Landers (SLM), three Eddy Correlation Modules (ECM) and two oceanographic moorings of 350 m length (VKM). The dotted lines indicate the acoustic linkages to the master clock (time synchronization of sensors).