The station work at our third location “Steinavaer” went on smoothly with the daily routine we developed when the scientific crew was complete a few days after beginning of station work. This routine comprises a CTD in the morning before the first JAGO dive to characterise the water column above the reef area and to collect water samples for carbonate chemistry and isotopic signature analyses. The remaining bottom water of the Niskin bottles of the CTD is then collected for Zooplankton filtration of different size ranges to determine organic carbon distribution among different plankton groups. Steinavaer comprised a new terrain for us, since no one of us has been at this coral reef location before and information about the bottom topography is relatively scarce. The first JAGO dive is usually being prepared during the morning CTD and carried out straight after the CTD is back on board at around 8:30 AM. Depending on the purpose of the dive (survey or coral sampling, or CUBE deployment/recovery), the dive was terminated before lunch. After lunch a 2 - 3 CTD casts took place at the flanks (without coral cover) of the surveyed reef spots at similar latitude. In the afternoon, another JAGO dive takes place if weather conditions are suitable.

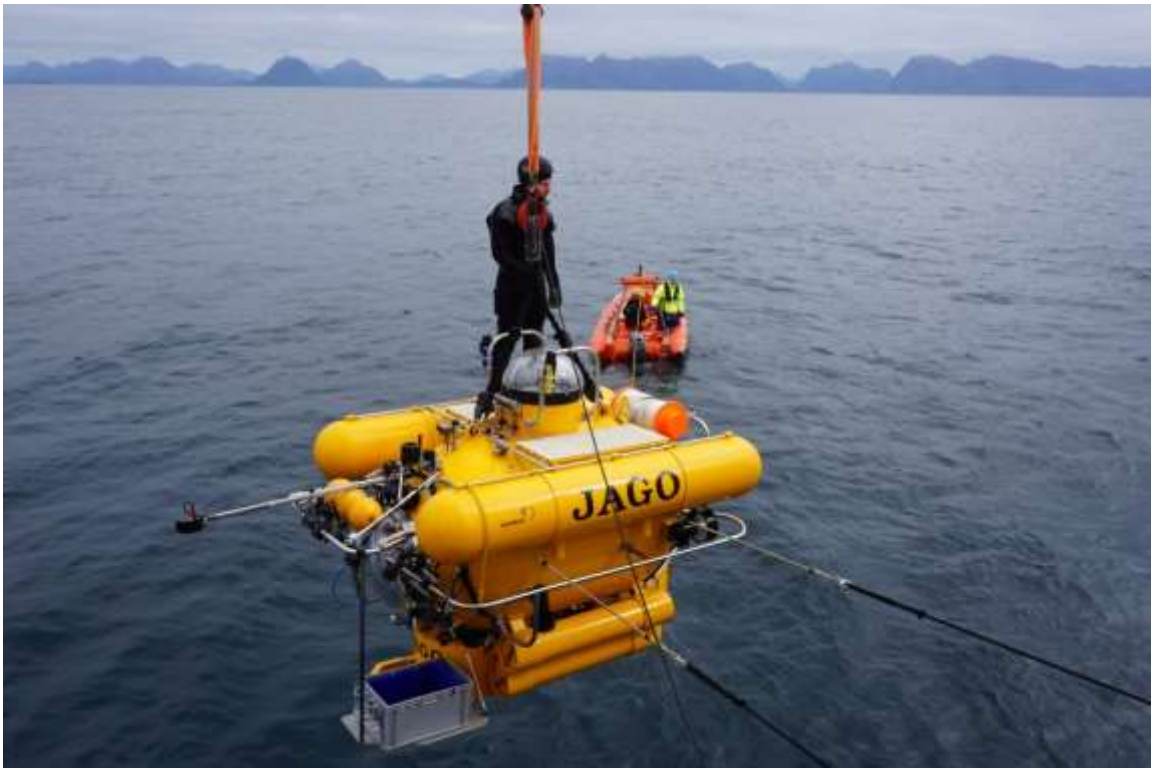

Fig. 1 JAGO deployment in the Hola reef area. Picture: Janina Büscher

Because we decided after the first exploration dive in Steinavaer to not deploy the CUBE systems at this reef area due to similar hard and gravelly bottom structure like in Nord Leksa, our other tasks including coral reef transect dives, coral sampling and CTD profiling were carried out relatively quickly in only two days.

On Tuesday, 10th we went into the port of Myre and docked at 9 AM with the purpose of another crew exchange (disembarkation of Tina Kutti at 10:30 AM and embarkation of Øystein Gjelsvik at 3 PM, both from the FATE team) and sensitive underwater weighing (buoyancy weighing technique) onshore. The weighing is not possible on board due to constant vibrations of the vessel when engines are running. Thus, this day was entirely entitled for crew exchange and coral weighing for *in situ* growth experiments that shall be deployed in the Sula reef at the end of the cruise.

Over night from the 10th to the 11th (Wednesday) we headed the Hola reef area, where we started with our routine immediately in the morning of the 11th except that no JAGO dive took place because of too high swell. Instead, water pumping from about 100 m water depth with a diving pump with a long hose attached to the CTD frame was carried out in order to do water exchanges in all on board cultivation and experiment seawater facilities and to fill up the ship's own aquaria tanks. In the afternoon, a first JAGO dive took place to explore the seafloor suitability for deployment of the CUBE systems. The next day turned out to be similar with no JAGO possibility in the morning. Instead, several CTD casts were applied. In the afternoon, it was decided to carry out another CUBE deployment in a soft bottom area near the reefs. The CUBEs were deployed the same way like last time, one by one by means of the CTD frame. Unfortunately, not both of the CUBEs could be found back during the following JAGO dive, since they were placed some distance apart and it took longer than expected to locate them. However, on the 13th during the morning dive, the CUBE was found and moved to the first one. After one was equipped with a coral fragment and both CUBEs were positioned upright and dug into the sediment, the measurement could be started. Afterwards, the routine work was continued with some further CTD casts and water sampling. The afternoon dive on the 13th comprised a survey and sampling dive. The next day's morning dive after the first CTD was prioritised for transect over high reef coverage area and video documentation. In the afternoon, the CUBEs have measured 24 hours and could be recovered. Unfortunately, the CUBE system with the coral fragment underneath tipped and was found lying on one side. Hopefully, this measurement was only intermitted halfway through the 24 hour period so that some data can be analysed. This last dive in Hola was finished at 6 PM and RV POSEIDON started heading towards our first research area, the Sula Ridge, again.

During all the time on-board experiments took place in the laboratory and on deck of RV POSEIDON. This includes respiration experiments under rapidly increasing water temperatures within the natural occurrence range of the cold-water coral *Lophelia pertusa* to determine oxygen consumption and stress markers between different cold-water coral populations under thermal stress. Moreover, mucus degradation processes of the different populations were tested and on-board incubations were carried out to determine dissolved and particulate organic carbon and nitrogen in the mucus of corals over time in collaboration with the Scientific Centre of Monaco. In addition to the *in situ* CUBE deployments, on-board incubations in a 3000 L big water reservoir were carried out with coral fragment in one of the CUBEs as comparison to the *in situ* incubations in-between the deployments. In the coming days, also feeding experiments of different labelled food sources (^{13}C and ^{15}N labelled algae or *Artemia* sp.) will be carried out to look at energy transfer within the corals.

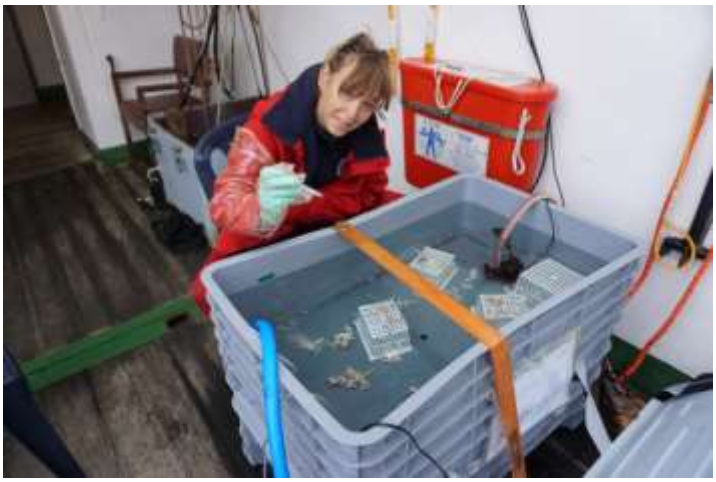

Fig. 2 On-board experiments of Magali Boussion from the Scientific Centre of Monaco. Picture: Janina Büscher

In Sula we are aiming at another CUBE deployment if weather conditions will allow for it. Moreover, deployment of the *in situ* experiments of pre-weighed live and dead coral framework shall be carried out. The live corals will additionally be stained with a dye over the next few days that will be incorporated into the skeleton while calcifying, which will produce a band so that ongoing growth from the time of deployment can be tracked when these experiments will be recovered in a few years.

Janina Büscher