

# MSM 95 (GPF 19-2\_05)

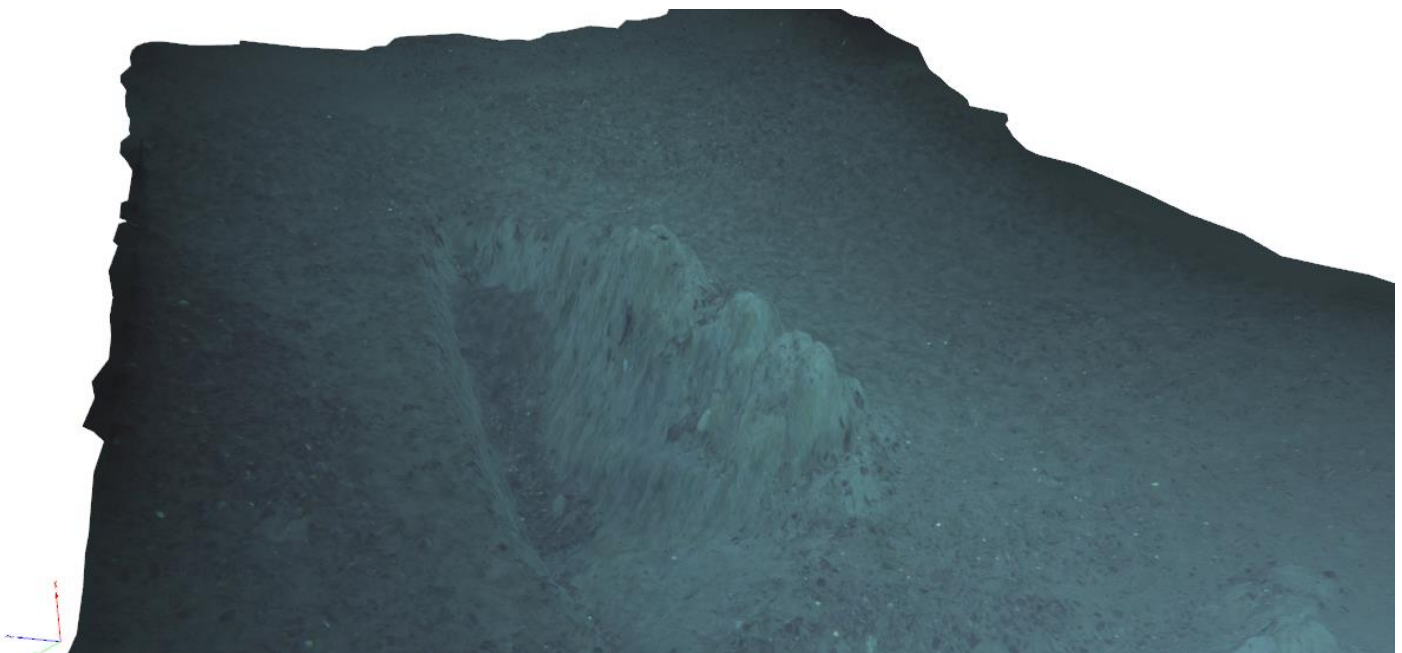
09.09.- 07.10.2020, Emden - Emden



## 3rd weekly report, 21. – 27.09.2020

Our third week of expedition aboard FS MARIA S. MERIAN was spent primarily to the west and north of the Svalbard archipelago. Very changable weather meant we had to alter our plans regularly to avoid the worst wave conditions and allow us to continue to collect science data. Despite this, the ability of FS MARIA S. MERIAN to hold position and move with the pump jet system in any direction, regardless of ship orientation allowed us to deploy our robots and camera systems successfully on every day of the week.

Our PAUL 3000 Autonomous Underwater Vehicle successfully mapped 300 – 800 m depths of seafloor at several locations, and recorded over 100000 high resolution seafloor images. We have only had the time to look briefly into this data but we can clearly see fishery and glacier related impacts across the seafloor areas surveyed, and also several pieces of plastic litter. We programmed PAUL 3000 to take photos quickly, so that there was an overlap between each image and the next. This has allowed us to make 3D models of the impacted seafloor, such as the groove shown in the figure below:



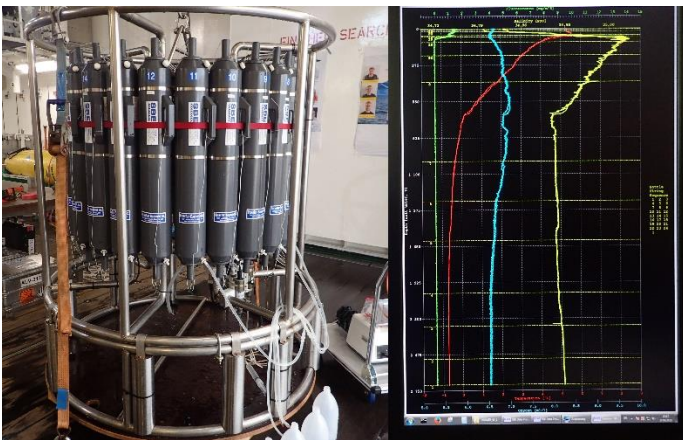
*3D model of an impact groove in the seafloor generated with 12 photographs taken by the PAUL 3000 Autonomous Underwater Vehicle..  
MODEL: AWI AUV team*

Because of the accurate positioning possible with FS MARIA S. MERIAN, this week we were able to deploy our Ocean Floor Observation and Bathymetry System (OFOBS) at the same time as our PAUL 3000 system. This has allowed us to collect many 1000s of seafloor images, with several time the same areas of seafloor mapped by the ship acoustic systems, the PAUL 3000 sidescan sonar and cameras and the OFOBS sidescan sonar and cameras. Collecting these data will allow us to determine how useful each system is for identifying particular features and impacts on the seafloor.



Three fish following the OFOBS camera sled. These fish seem to enjoy feeding on the shrimp attracted to the camera lights. PHOTO: AWI OFOBS team.

Our seafloor images also contain many colourful animals, such as the basket stars on the photograph in last weeks report, the fish in the image above and many octopii, jellyfish, hermit crabs, worms and squid. We are also mounting cameras specifically for photographing animals in the ocean waters, which we will introduce in the next weekly report.



Aside from imaging and mapping, we have also been collecting water samples and information on the physical properties on the seawater in the areas we visit, using the Conductivity, Temperature and Depth rosette (see image left). This allows a profile of the physical properties to be compiled, as well as the direct collection of water from particular depths.

CTD rosette and ocean temperature, pressure, salinity and chlorophyll profiles. PHOTO: AWI / MPI / GEOMAR water sampling team.

Next week will be our last week of station science before we start our ~6 day transit back to Emden. We will use this time to make high resolution maps of the HAUSGARTEN time series observation stations, and hopefully visit one of our tracked underwater robots, NOMAD, which is midway through a two year exploration of the Arctic seafloor.

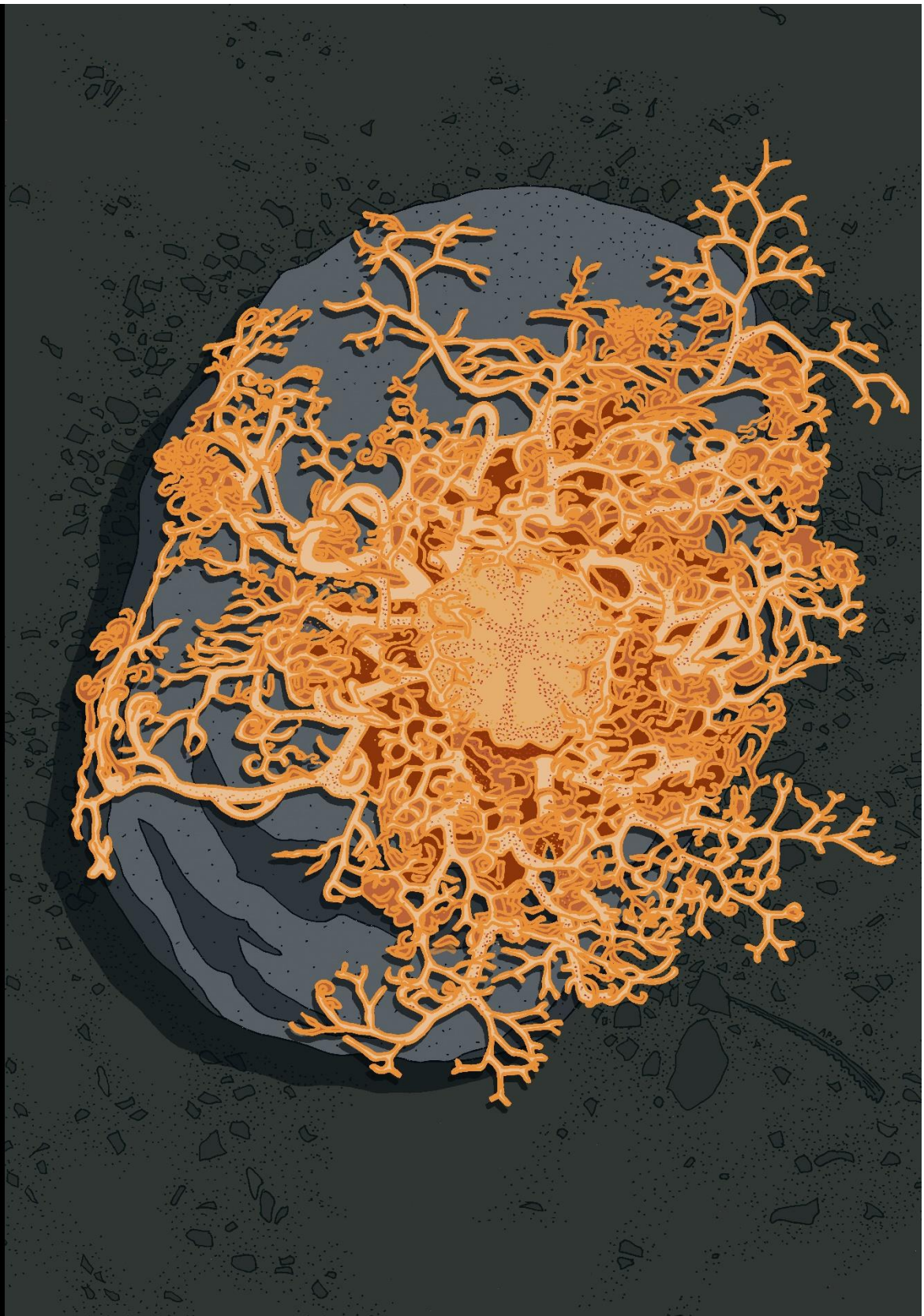
We send our best wishes to friends and family ashore, and look forward to completing our work successfully and returning home to Germany.

Autun Purser - Alfred-Wegener-Institut

Deutsche Übersetzung - Lilian Böhringer



- ALTMANN - ANGELIS - BEYER - BOEHRINGER - BUSACK - DAUER - DREUTTER - EDERLEH - HAGEMANN - HEHEMANN - HERRMANN - HOGE -  
- JANSSEN - KORFMANN - LEHMENHECKER - MELZIG - MERTEN - MEYER - OGDRONIK - PESCHKES - PLINK - PREUß - PRIEST - PURSER -  
- REIZE - SAUER - SCHILLING - SCHMIDT - SCHRAPEL - SEIDEL - SIEFKEN - STAAK - VINCENT - WAGNER - WARNKE - WERNER - WOLTEMADE -



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FS MARIA S. MERIAN - MSM95

*Basket Star sketch from our south Svalbard research area. Almost every rock was occupied by one or more of these beautiful animals.*