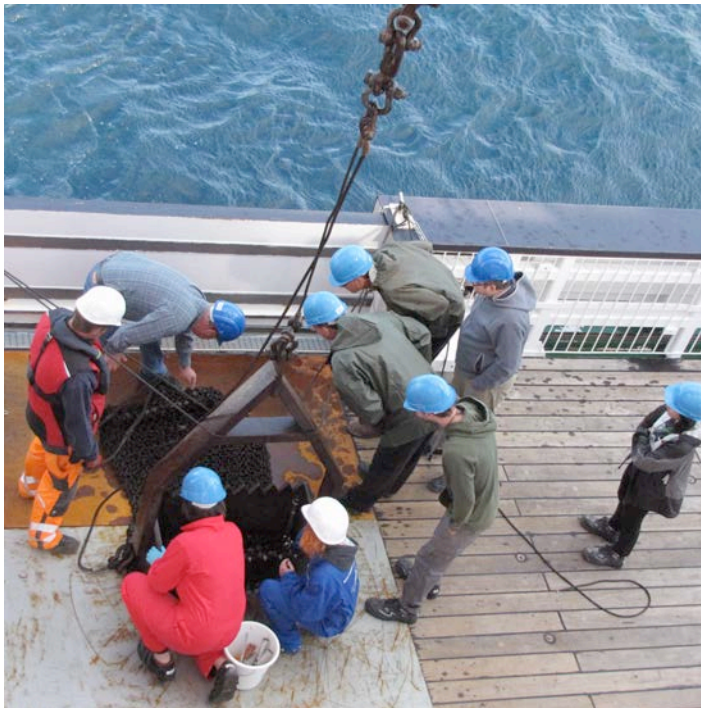


SO265
SHATSKY EVOLUTION
Weekly Report No. 5
(24.09. - 30.09. 2018)



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During this week, we have completed station work in our last working area, the Ojin Rise seamount province. We managed to get suitable samples from all parts of the 760 km long and up to 350 km wide province. Occasionally, the recovered rocks contained well-preserved, large feldspar crystals (good for age dating), and samples from three of the Ojin Seamounts even contained fresh volcanic glass. Therefore, all three research goals (Do the Ojin volcanoes get younger towards the east? Does the geochemical composition vary with time? Can we see a geographic zonation in the geochemistry?) can be addressed by the planned analyses on shore.



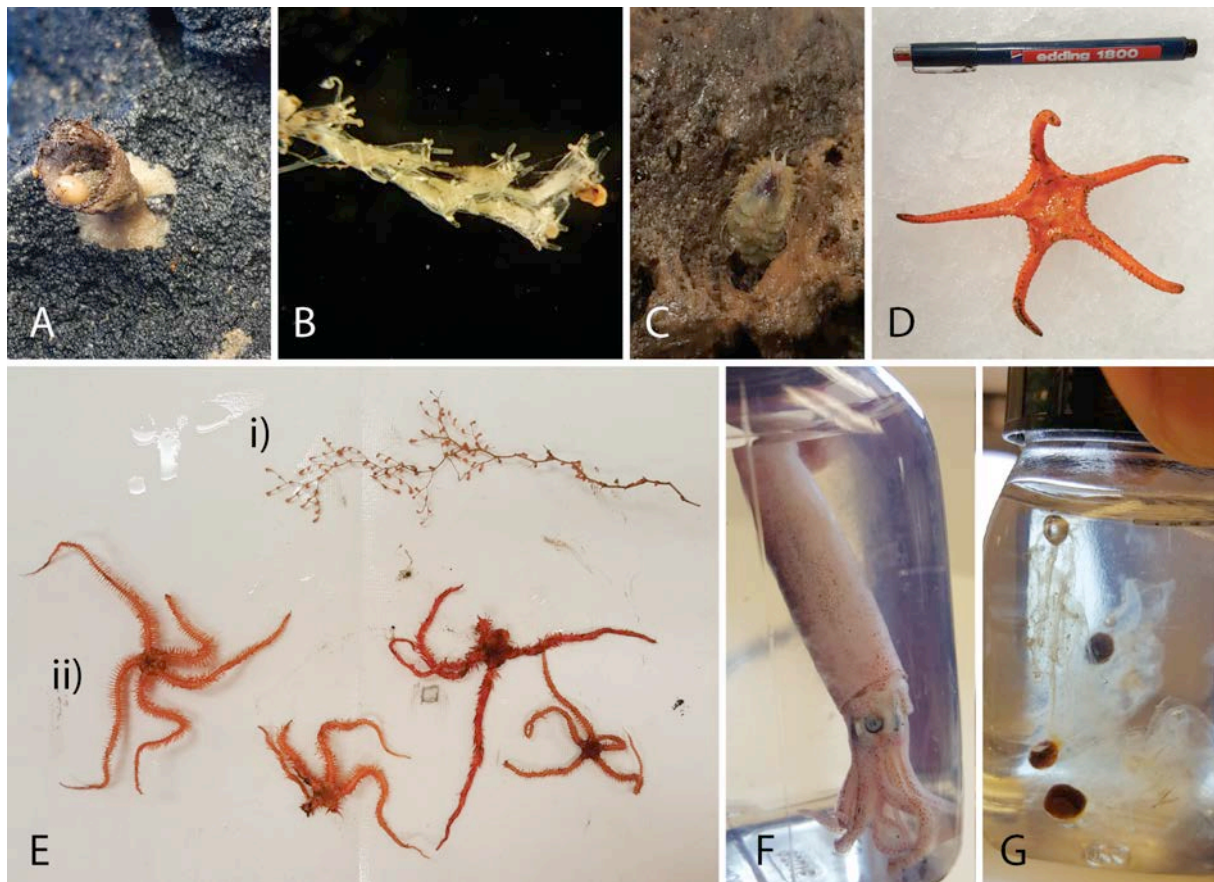
While biologist Anne Zakrzewski (with red overall) starts sampling the sediment traps of a dredge that just arrived on deck, do all geologists peek through the chain bag to check if the desired volcanic rocks were recovered. Photo: C. Heitmann-Bacza

Even after four weeks of dredging operations, the arrival of every new dredge on deck still attracts a small crowd of scientists (beyond members of the respective shift on duty) and even members of the crew. Besides the important question if suitable volcanic rocks were recovered, searching for sessile organisms on the rocks is always interesting. To take professional care of this "by-catch", we are joined by a specialized biologist from the Museum of Natural Science in Berlin, who is the first to review the catch and samples any fragile organisms. After she "clears" the rocks, the geologists can start with their destructive work.

We mainly operate our dredge hauls in the "bathypelagic zone" (between 1000 and 4000 m water depths), that comprises 75% of the entire ocean volume. The ecologic

role of the organisms in this zone and their genetic and biogeochemical relationship to the zones above and below is still largely unclear. This week's biological samples turned out to be quite exciting. Beside the common sessile and free moving animals, we also caught free pelagic animals. Considering the deep depths of the dredge hauls, animal life forms obtained in the previous weeks had been small. The most common groups to be found were small sponges (A), tiny, fragile colonies of polyps (B) as well as annelids (worms) living without or within small tubes (C). Probably the most impressive findings were sea pens – cnidarians consisting of a colony of small polyps which give rise to the shape of a feather. This week's generally shallower dredge hauls –up to 3500 m – were sprouting different life forms. Besides the aforementioned sessile representatives such as sponges and worms we also found sea anemones and "gold corals" [E(i)]. Additionally, free moving animals like starfish

(D) and brittle stars [E(ii)] were caught in a single dredge. Brittle stars are aptly named from their fragile arms, which tend to break easily. They are quite similar to the common starfish except their arms consist of small vertebrae (like the ones in our backbone), which make them very flexible. Additionally, we were lucky to sample life forms from the open water (pelagic life). Most of the times these animals got caught in the dredge on the way up or – in a few cases – got washed up on board. These animals comprise jellyfish, squid (F), colonial sea squirts called “salps” and even a Portugese man-of-war (*Physalia physalis*). The most abundant animal was *Salpa maxima* (a salp) which was caught mainly during the night. Salps are barrel-shaped, planktonic sea squirts which aggregate in long chains to form a colony. Often up to 2 m long, such chains were visible on the water surface thanks to the bright lights of the ship's head lamps.



*What else one can catch by dredging. See main text for further explanation.
Photos: A. Zakrzewski*

Autumn is quickly approaching in the North Pacific, as evidenced by the increase of heavy storms at these latitudes. Luckily, weather and sea conditions (including wave height) are highly predictable nowadays. Such an approaching storm now forces us to leave our operational area one day earlier as originally planned. Therefore, the last dredge haul was conducted on Friday, September 28 and we set sail for the long transit southward to the port of destination, Kaohsiung in Taiwan.

All cruise participants are doing well and send greetings to everybody at home.

Jörg Geldmacher and the scientific party of SO265