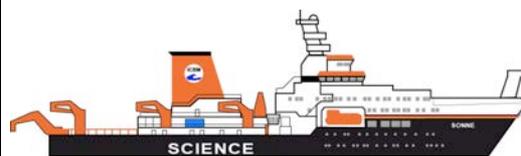




SO-249 Leg 1 BERING

Weekly Report No. 4
(27.06. – 03.07.2016)



R/V SONNE
51° N / 172° E

The fourth week of the cruise focused on the northwest Pacific Plate. We continued our multi-beam mapping of the seafloor and carried out 24 dredge hauls. We spent June 27-28 sampling the southeast portion of the Stalemate Fracture Zone that we had mapped during the shift change the week before. The dredges brought up primarily basaltic rocks. These included both pillows, some with glassy rinds, and subvolcanic rocks, probably parts of the sheeted dike complex. Dioritic to gabbroic rocks and a variety of sedimentary rocks were also recovered. Thereafter we proceeded to a seamount province between the Stalemate FZ and the Emperor seamounts. Almost all of these seamounts are named after Japanese emperors. Nothing is known about this fairly dense province of large seamounts. In contrast to the nearby Emperor Seamounts, they don't appear to form part of a hotspot track, because they are randomly distributed rather than forming a line as is typical for hotspot tracks. The seamounts range from conical-shaped to ridge-like structures and some appear to be guyots. We successfully sampled four seamounts, recovering basaltic rocks with phenocrysts of olivine, plagioclase and/or clinopyroxene and a hylocastite sample, which may contain fresh glass. Since June 30, we have been mapping and sampling Detroit, Hanzei and Suizei Seamounts, which belong to the Emperor Seamount Chain. Although sampling was extremely difficult due to the thick (up to 20 cm) Mn pavement on these Cretaceous seamounts, we recovered the first ever samples from Hanzei Seamount (basaltic clasts in a Mn covered breccia), as well as olivine-plagioclase basalts from the eastern and western flanks of Suizei Seamount.

The biological specimens recovered during the fourth week of the cruise again represent a wide range of the marine invertebrate fauna of the deep sea. The fact that we were able to recover a large number of macroscopic zoological specimens despite the use of a chain sack dredge built primarily for geological sampling is indicative of the relatively rich deep sea fauna in this area of the North Pacific. In addition, sampling of the meiofauna continued with the usual success, with now over 70 sediment samples taken along our trajectory from Dutch Harbor to Petropavlovsk-Kamchatka. Among the notable larger zoological specimens found during the last week (see photos) was a goose barnacle (Crustacea) attached to the stem of a sponge (Porifera), a fairly intact deep-sea coronate medusa (Cnidaria), and a gorgonian deep-sea coral (Alcyonacea) with half a dozen associated brittle stars (Ophiuroidea). However, the crew's weekly favorite was a large specimen belonging to a group of odd-shaped sea cucumbers (Holothuroidea), the Elaspodida.

Since the gorgeous evening that accompanied our halfway party, the weather has been gray, foggy and rainy again, although we did get about three minutes of sun today. On the bright side, the seas have remained remarkably calm and we have not lost any time to bad weather thus far. All on board are doing well and send greeting to those at home.

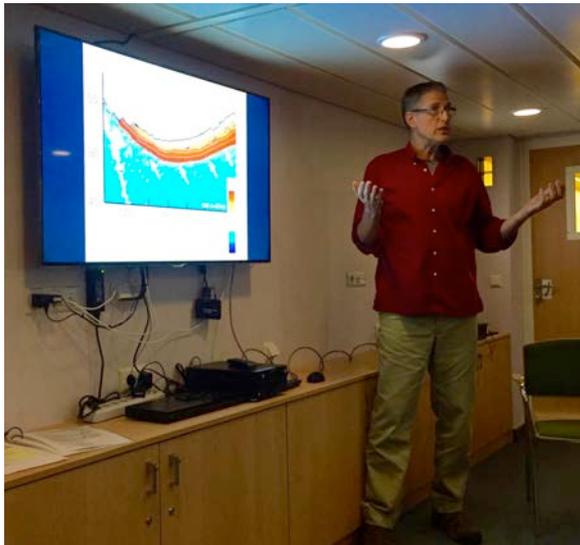
Kaj Hoernle (chief scientist SO249/1) and the cruise participants



The chief engineer explaining why scales don't work on board during a tour through the bowels of the ship, where the engine rooms, diesel engines, electric generators, screw shafts, pump jet, thrusters, stabilizers, water cleaning system and much more are located. This is a "Safe to Port" ship, in which all systems are duplicated, so that if one fails there is a backup system so that the ship can return safely to port. (Kaj Hoernle)



Half a dredge of glacial dropstones. It contained an incredible variety of primarily continental-derived rocks, including granites, an array of metamorphic rocks and a variety of sedimentary rocks. No two rocks in the dredge were alike or as a Russian colleague put it: "None of the rocks had a brother or sister." Getting multiple rocks with similar mineralogy and texture is an important criteria for determining if the rocks could have been in situ. (Kaj Hoernle)



An American colleague appealing to the scientific crew to accept his view of Aleutian subduction zone geodynamics. (Kaj Hoernle)



Eating on board can be fun, for example such a nicely packaged vegetarian meal. (Kaj Hoernle)



This large goose barnacle - presumably a member of the Lepadidae - was caught on the Stalemate Ridge at about 3,000 m depth. (Alexander Ziegler)



Jellyfish can also be found in the deep sea. This so-called coronate medusa (*Atolla* sp.) was dredged at about 3,200 m depth S of Detroit seamount. (Alexander Ziegler)



This gorgonian deep-sea coral dredged at about 2,200 m depth on Detroit seamount provided shelter for six brittle stars. (Alexander Ziegler)



This odd-shaped specimen is in fact a member of a group of sea cucumbers predominantly found in the deep sea. It was captured on Detroit seamount at about 4,100 m depth. (Alexander Ziegler)