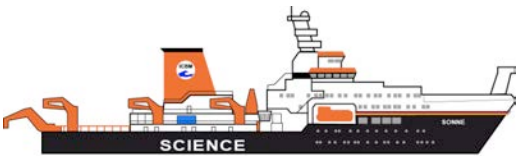
	SO-249 Leg 1 **BERING** **Weekly Report No. 5** **(4.07. – 10.07.2016)**	 **R/V SONNE** 49°30' N / 163° E

The fifth and final full week of the cruise focused on mapping and sampling the northwest Pacific Plate subducting beneath the Kamchatka Volcanic Arc. From July 4-6, we continued mapping and carried out six dredge hauls on the large Tenji Seamount Complex. Although the weather didn't allow us to barbecue on deck, the cooks prepared a spectacular feast of grilled meat, fish and vegetables, so that the Americans on board wouldn't miss out on a traditional fourth of July celebration. Late in the evening on July 6, we reached the Krusenstern Fracture Zone and recovered pillow basalts and possibly some fresh glass from the upper Pacific ocean crust at several locations. On July 9-10, we mapped and sampled the seafloor south of the Krusenstern FZ. This work will continue through Tuesday July 12, which will mark the end of our work program on SO249 Leg 1. As of Sunday afternoon, we completed 90 dredge hauls of which 74 (=82%) yielded volcanic, plutonic, ultramafic and/or sedimentary rocks.

The fifth week was again successful with regard to biological sampling. As the previous weeks had shown, dredging on seamounts leads to very interesting findings. Of particular interest were samples obtained on Tenji seamount at depths from about 3,000-4,500 m. One dredge brought up a large array of deep-sea corals (Alcyonacea), many of which had unusually large brittle stars (Ophiuroidea) among their branches. However, the absolute star this week was an almost fully intact specimen belonging to a group of cephalopods (Cephalopoda) called cirrates (Cirrata). In fact, this adult specimen belongs to the genus *Grimpoteuthis*, a group of cirrates colloquially known as dumbo octopusses (see photos). The further dredging operations along the Krusenstern Fracture Zone then brought up a large amount of different kinds of deep-sea sponges, with some of these samples being tube-shaped (see photo) and others resembling large, stalked mushrooms with a crown of almost 40 cm width. In conclusion, it must be stated that biological sampling during this first leg of the cruise was unusually successful (see photo) and will result in many months of further analysis, and hopefully a large number of interesting scientific publications.

All of the major goals of the SO249 cruise leg 1 were achieved. These included mapping and hard-rock, sediment and biological sampling of 1) the oldest, accessible parts of the Aleutian subduction zone, 2) the present-day volcanic front in the western Aleutians, and 3) the input (subducting Pacific Plate) into the Aleutian and Kamchatka subduction systems, including sediments, volcanic and plutonic ocean crust, exposed upper mantle ultramafic rocks underlying the crust and the full range of intraplate volcanic seamounts.

On July 13, we will cross into the Russian Exclusive Economic Zone (EEZ), arriving in Petropavlovsk-Kamchatsky early in the morning of July 14. Nine of the present scientific crew will disembark in Petropavlovsk on July 15 and will be replaced on July 16 by 14 new scientists, primarily from Russia, to carry out SO249 Leg 2 to the westernmost Aleutians and the Chukotka margin of the Bering Sea.

Special thanks go to Captain Mallon and his crew for assuring the success of this cruise leg!

On behalf of the scientific crew
Kaj Hoernle

Catch of the day: biologist retrieving fragile deep-sea corals out of the chain bag dredge. (Kaj Hoernle)

Excited geologists fascinated by the biological catch of the day: A fully intact dumbo octopus from the deep sea caught in a chain bag dredge. (Kaj Hoernle)

Work on board never stops. At 2:00 a.m., the night shift attentively waits while one of the scientists washes the mud from the dredge overboard, so that they can get to the rocks. (Kaj Hoernle)

Upon reaching the deck, it was suddenly clear why there had been an extra five tons of tension on the dredge while it was on the seafloor. Luckily, the dredge proved stronger than the old fishing net, won the struggle and safely returned on board. (Kaj Hoernle)

The SO-249 Leg 1 scientific party.

An exceptionally well-preserved adult specimen of a dumbo octopus was caught at about 4,200 m depth on Tenji seamount. (Alexander Ziegler)

The underside of the octopus. One of its eight arms appears to have been injured before it was caught in the dredge, which might explain why it couldn't escape. (Kaj Hoernle)

A piece of a larger, tube-shaped sponge found near the Krusenstern Fracture Zone at over 5,000 m depth. (Alexander Ziegler)

After five weeks of dredging operations, several drums are now brim-full with sediment samples and biological specimens that are awaiting further analysis back home. (Alexander Ziegler)