The 6th week of R/V SONNE's cruise SO-249 was characterized by a transit from Petropavlovsk to the working areas where expedition mapping and sampling are planned near the Komandorsky Islands and at the Chukotka-Beringian continental margin at 60° - 62°N. Our first two dredges were carried out on a tectonic structure south of the Komadorsky bloc, a formation on which the western-most islands (Medny and Bering) of the Aleutian chain are located. Two previous dredges, made on this feature on the KALMAR expedition SO-201-2, yielded partly volcanogenic sedimentary rocks. Therefore we presumed at that time, that it represents a fragment of the Komandorsky forearc and not an accreted fragment of oceanic crust as originally postulated. This interpretation seems to have been confirmed by two SO249 dredges which also recovered exclusively sedimentary rocks.

By contrast to the schedule presented in the previous weekly report, we decided to sail after the Komandorsky dredges across the Aleutian Basin to the Chukotka-Beringian continental margin, where we arrived at 60°N and 179°E in the afternoon of June 21st. The nature of the northern section of the Chukotka-Beringian margin is completely unknown to date. It has been postulated that it represents a former subduction zone, which was active before inception of the Aleutian Arc. Our plan was to use multi-beam mapping and sampling in this area to deliver new insights about the formation of the northern margin of the Aleutian Basin and about the early history of the western Bering Sea. Mapping revealed that the slope of the northern Beringian margin is heavily fissured and cut by deep canyons. Its morphology indicates that at least the upper units of the margin are formed by sediment. Three dredges yielding solidificed sediment confirmed this observation. These samples were of limited interest to the geologists, who are mostly interested in volcanic rocks, but they are quite interesting from a biological standpoint as discussed below.

Following these dredges we mapped the slope at the junction of the Beringian and Chukotka margins. The satellite-derived (predicted) bathymetry shows seamounts and steep slopes in this area, which appear suitable for rock sampling by dredging. Unfortunately SO-249 multi-beam mapping revealed that the normally reliable predicted bathymetry failed in this case and that seamounts and steep slopes do not exist in the area. Therefore R/V SONNE headed to the southwest to the southern section of the Chukotka margin, where we discovered interesting structures. Here, the ocean floor is characterized by NW-SE striking faults which appear to be quite young. These faults offer not only good possibilities for rock sampling, but also provide important information on tectonic processes. Therefore we decided first to conduct comprehensive mapping in this area to be followed by sampling at the most appropriate sites. The first dredge from a steep fault scarp in this yielded a conglomerate containing lava clasts among dominantly siltstones and sandstones.

The biological specimens obtained during this week were mostly composed of relatively large benthic fauna. While the fauna in the deeper areas near the Komandorsky Islands was similar to material dregded along the northern Emperor Seamount chain during the first cruise leg, the species composition in the northern Bering Sea was entirely different. The northern part of the Bering Sea is a relatively nutrient-rich area and so we dredged a considerable number of large crabs (Crustacea), sponges (Porifera), as well as marine spiny-skinned animals (Echinodermata). Notable samples were several large spider crabs (see photo), a plethora of sponges in various sizes and shapes (see photos), and relatively large sea stars (see photo) as well as a large species of brittle star (Ophiuroidea) associated with deep sea corals (Octocorallia). Apart from these larger samples, we also obtained a considerable number of smaller epibenthic fauna, mostly lamp shells (Brachiopoda), bristle worms (Polychaeta), limpets (Patellidae), and clams (Bivalvia).

After completion of our studies at the Chukotka margin, we plan in the next week rock sampling at the western slope of the Shirshov Ridge, a large, N-S striking which divides the western Bering Sea into the Komandorsky and Aleutian Basins (see maps). Afterwards we

will sail into an area north of the Beta Rise, which is located in the western part of the Komandorsky Basin. This area is characterized by a remarkably high heat flow anomaly, which may indicate recent volcanic activity. We hope, that the relatively warm and sunny weather that we have experienced the past two days (>10°C!) will continue next week. All scientists are well and send their greetings to those at home.
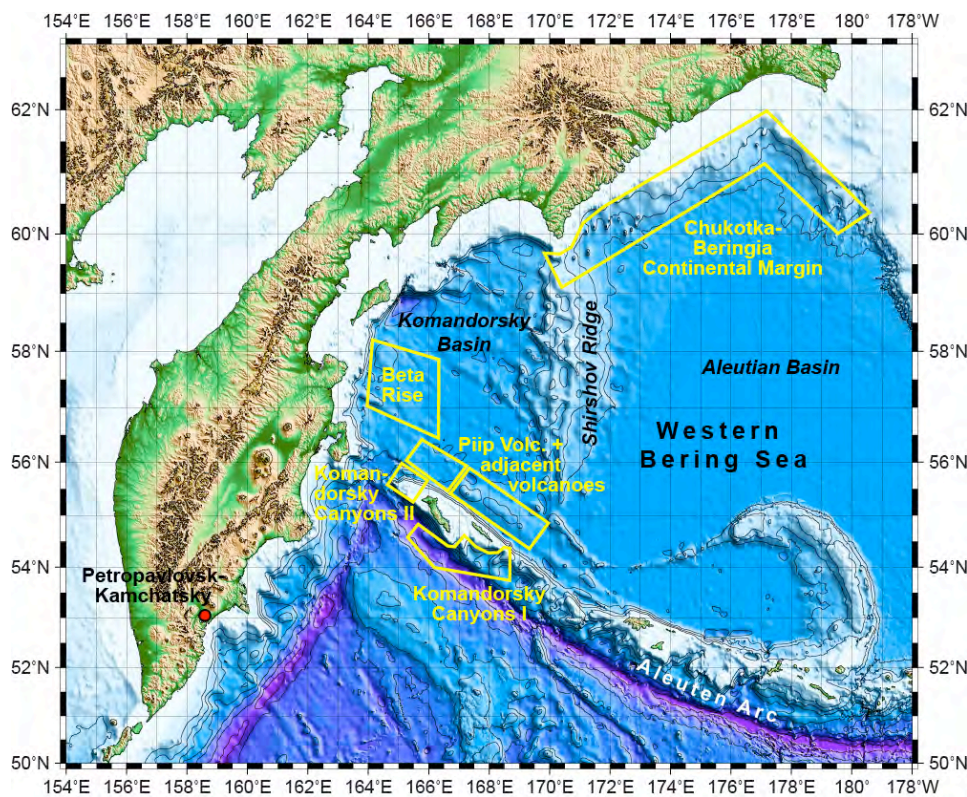
Reinhard Werner (chief scientist SO249 Leg 2) and the cruise participants

Work around the clock: Scientists working in the night shift evaluate the content of a dredge which just arrived on deck. (Charlotte Rahmsdorf)
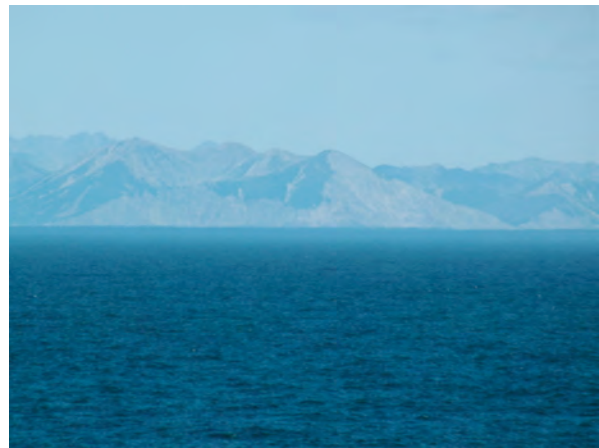
The mountains at the coast of Chukotka, located in Russias far east, in sighting range of R/V SONNE. (Roman Botcharnikov)

Map showing the main working areas (yellow marked) of R/V SONNE cruise So-249 Leg 2.

One of the many crabs that we caught during the last week. This animal was dredged up from about 2,100 m near the Beringia Margin. (Alexander Ziegler)

Almost all of this week's dredges contained large amounts of sponges. Although the delicate animals are often destroyed during dredging, their sometimes large size can be judged from this photograph taken on the deck - the pen measures about 15 cm in length. (Alexander Ziegler)

This tree-like, colorful sponge was found among the animals dredged up from about 2,000 m depth near the Beringia Margin. The sponge is associated with various smaller and larger bristle worms. (Alexander Ziegler)

After several weeks of dredging, we finally managed to catch the first large sea stars near the Chukotka Margin at about 2,100 m depth. (Alexander Ziegler)