

Preliminary account of chemosynthetic benthic communities associated with gas hydrate at the eastern margin of Japan Sea

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Distribution of macrobenthos was investigated in the eastern margin of Japan Sea.

The NSS (Navigable Sampling System) surveys have discovered the benthic community. The NSS was used to observed remotely and record the video images in real time. And benthic organisms and bottom sediments were collected using the Ocean-type grab sampler.

Three areas, the Torigakubi spur and the Umitaka spur off Joetsu, west off the Sado Island and off the Akita Prefecture, were investigated.

Torigakubi spur (740-790 m in depth): Benthos was collected twice by the glove sampler in this area. The chemosynthesis bivalves were not collected. However, a lot of polychaetes that appeared from methane seep's bottom in the investigation by hyper dolphin of NT10-10 that had been done in 2010 were collected in this investigation. Moreover, the brittle stars not collected in the Umitaka spur by current investigations were collected.

Umitaka spur (896-919 m in depth): It investigated by using NSS and the glove sampler in this region. Carbonate crusts, abundant red snow crabs and bacterial mats were observed. Strong gas bubbling when the piston corer dropped and hit the bottom.

West off the Sado Island: The area where the under bottom structure like a white mound was seen with the sub bottom profiler was surveyed. The bottom (1119m in depth) near a white mound structure was mud. Red snow crabs and zoarcid fishes were sparsely distributed at the bottom. The area where the reflection like a black dot at the bottom was seen with the side scanning sonar was surveyed. The gravel of a large amount of rhyolite was collected by the glove sampler. But, the benthos was few. In these survey areas, the red snow crab was not in a high density.

Off the Akita Prefecture (533-552 m in depth): The bottom condition was mad with carbonate rocks, bacterial mats well developed, and a white mass like a gas hydrate was seen. As the benthos, brittle stars were observed at high frequency, and zoarcid fishes, buccinid gastropods and prawns were distributed. And provanid gastropod that was distributed only from chemosynthetic benthos community was collected by the glove sampler. Moreover, neither the red snow crab nor the snow crab was observed, and the benthic fauna was different from the gas hydrate region off Joetsu.

In this investigation, the benthic fauna of the gas hydrate region where depth was different. These differences of benthic fauna was suggested the relation to depth.

Detail of biomass in this area was also discussed.

Keywords: chemosynthetic benthic community, gas hydrate, benthos, Japan Sea, methane hydrate