The grain and mineral anarysis in the southwestern part of the Okhotsk sea and its relation to the soya warm water and drift ice

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The south western part of the Okhotsk sea has strong seasonal variation. Daring march and November, saline and warm current flows into this region from north west to south east (Aota, 1975; Takizawa, 1982, Ito and Ohshima, 2000). This warm current is branch of the Tsushima warm current, and called the Soya warm current. This warm current runs along Hokkaido coast shallower than 150m. Its velocity is about 50cm/s and width about 50km in summer. There is cold and fresh water exits on the offshore of the Soya warm current. It calls the Okhotsk surface water and is freshed by the discharge of the Amur river.

In winter, cold and low sarine current which reinforcement by the winter monsoon flows into this region from north east part of the sea. It is called the east Sakharin current. The soya warm current is weakened and almost disappear by this current in this season (Watanabe, 1963). During January to April, this region is covered by drift ice. The appearance of drift ice is almost same time at the coast of Hokkaido, but disappearance is earlier in north (Aota et al., 1988). It is influence of recovery of the Soya warm water inflow.

The seasonal variation such as surface water is also occurs in the deeper part of this region. There is cold water exist at depth of 30 - 300m. This cold water is nearly freezing point even in summer, and called the intermediate cold water. Its origin is cold water in winter and deposited in the intermediate layer. This cold water exists offshore in summer influenced by the soya warm water, and In winter, it appears on the coastal zone of Hokkaido.

Thus,The south western part of the Okhotsk sea has much seasonality, and it is occurred strength and decline of some water masses and drift ice. Therefore, this seasonal variation have influence to the distribution and character of the sediment. In this study, we reveal the influence of the water masses to the sediments, and finds the pixies of water masses in the sediments.

The sea bottom surface sediments were collected by the GH00 and GH01 cruises of the National institute of advanced industrial science and technology by the Hakureimaru NO.2 in the summer of the year 2000 and 2001. In this study, we use 0-2cm at depth of sea bottom samples and analyzed grain analysis and mineral composition after extracted the terrigenous sediments. We define clay as less than 2micro m at grain size, silt as 2 to 63micro m, sand as 63 to 2000micro m and identify quartz, feldspers, illite, chlorite.

We detect five peaks in grain distribution, 1-2micro m, 5-6micro m, 20micro m, 40-80micro m, greater than 100micro m. We find these peaks volume are changed by the force of the sedimentation field. Sand is greater than 60% in the coastal zone of the Hokkaido because the Soya warm current elode the silt size grains. Silt grains which eroded by the Soya warm current are carried out to the offshore by the tidal current and accumulate. Especially 40-80micro m grains distribution is similar to sea bottom high muddy layer which observed at GH00 Cruise, and its indicate the high muddy layer gives coarse silt to the sediment. We fined sharp peak consist of 60-100micro m grains in the continental slope zone where located east part of this region. This region is generally the field of fine silt and clay, so that this coarse peak is carried by the drift ice.