

Paleo-current variations recorded in the sediment of eastern East China Sea during the last 40,000 years

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The East China Sea (ECS) is a marginal sea located in the eastern edge of Eurasian Continent. ECS is known for existence of huge continental shelf, and it is known that large-scale movement of coastline occurred with global sea level change. It is expected that the mechanism of sediment supply at the ECS was changed synchronize with global change of climate. So, the sediment of ECS will have acute records of the past marine environment.

The environment of ECS is influenced by both East Asian monsoon and Kuroshio-current. East Asian monsoon has two different regimes causes strong seasonality. In summer, the south summer monsoon wind transports moisture toward the continent and cause precipitation. In contrary, northwest monsoon wind in winter is dry and cold. On the other hand, Kuroshio-current is western part of the North Pacific Gyre. And Kuroshio carrying large quantities of warm water from south to north. So, East Asian monsoon and Kuroshio current are very important for understanding global climate change.

In this study, we analyzed hemipelagic marine sediment core MD982195 obtained from eastern part of the ECS. The sedimentation rate of core-MD982195 is very high about 800cm/kyr. So, we could acquire high-resolution paleo-environmental records.

We pay attention to the terrigenous particles for establish new proxy record of Kuroshio current. For this aim in study, we analyzed grain size distributions and mineral composition about biogenic free samples

As a result of grain size analysis, the last glacial stage was characterized by fine particles smaller than 30um. And Interglacial period was characterized by increasing coarse particles larger than 30um. Coarse particles are characterized volcanic glasses, and there is a small amount of quartz and feldspars.

It is known as empirical knowledge that Volcanic glasses are distributed along with Kuroshio axis. Some examples were shown off the coast of Shikoku. So, we recognized volcanic glasses in the marine sediment in the ECS about paleo-Kuroshio proxy record. And we reconstruct paleo-Kuroshio current variation using content of coarse particles(most of this is volcanic glasses). As a result, The influence of Kuroshio current was weak in MIS stage3. During last glacial maximum, there is almost no influence of Kuroshio current. The effect of Kuroshio current was so variable during deglaciation. Since 9,000 years ago, the influence of Kuroshio current was generally the same as present.

The correlation between the paleo-environment of ECS reconstructed by the volcanic glasses and oxygen isotope record obtained from this core are so good.