

SPATIAL VARIATION IN DETRITAL NEODYMIUM ISOTOPES OF SVALBARD SURFACE SEDIMENTS

Kwangchul Jang

Kwangchul Jang^{1}, Seung-Il Nam¹ and Jung-Hyun Kim¹*

¹Division of Polar Paleoenvironment, Korea Polar Research Institute, Incheon, Korea

kjang@kopri.re.kr

ABSTRACT

The deposition of sediments in fjords system is mainly governed by the advance and retreat of glaciers, and hence tracing of sediment provenance in fjords is important to understand the ice dynamics and history over time. Here we first present detrital neodymium isotopes ($^{143}\text{Nd}/^{144}\text{Nd}$, ϵ_{Nd}) measured from the surface sediments retrieved from various fjords on Svalbard in the eastern Arctic Ocean, i.e. Dicksonfjords (n = 8), Hornsund (n = 21), Isfjorden (n = 2), Van Mijenfjorden (n = 2), Wijdefjorden (n = 8) and Woodfjorden (n = 4). The detrital ϵ_{Nd} values are variable depending on the geological features such as rock type and age in meltwater drainage area. For example, detrital ϵ_{Nd} show the largest fluctuation in Hornsund, where the bedrocks in catchment area include pre-Devonian metamorphic rocks and various younger sedimentary rocks. On the contrary, ϵ_{Nd} values in Dicksonfjorden and Woodfjorden are similar to that of Devonian red sandstone, the main lithology of catchment area in two fjord systems. Our data not only indicate the spatial variation in sediment provenance of Svalbard fjords but also emphasize the potential application of detrital neodymium isotopes in paleoclimatic and paleoceanographic studies of fjord sediments.