Origin of detritus in ferromanganese crusts from the Amerasian basin of the Arctic Ocean based on Sr, Nd and Pb isotopic signatures

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Ferromanganese crusts from the Amerasian bassin of the Arctic Ocean are characterized by high detrital content (up to 38.5%) and slow growth rates, varying between 3 – 20 mm/Ma [1, 2]. Many crusts have layered structure. Samples demonstrate a clear separation along the layers by the coarse-grained fraction and total detrital material distribution, reflecting changes in the supply conditions and/or sources of detrital material.

We dissolved the Fe and Mn matrix oxides from the Fe-Mn crusts thereby isolating the detrital fraction and analyzed the detrital fraction using Pb, Sr, and Nd isotopes and compared those data with the isotopic compositions of various potential source areas.

Detritus extracted from the crusts from the Alpha, Mendeleev and the Chukchi uplifts, differs according to the isotope composition of Sr, Nd and Pb, reflecting different sources of terrigenous material. Furthermore, we identify differences of detritus supplies in layers showing climat changes with time from Pliocene to nowadays.

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