

Chukchi and Bering Sea shelves contribution to Mn enrichment in the Arctic deep basin

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A key role of the Siberian Arctic shelves has been suggested to play in the enrichment of Mn over all Arctic deep basins. On the orbital timescale, Mn records from the Alpha Ridge core 08B85-D displayed a close correlation to the Relative Sea Level changes on the independent age model. A threshold of -60 m sea level seems to be able to shift the Mn transportation from shelves to deep basins. This phenomenon in the core records was supported to some extent by the Mn distributions in the surface sediments with extremely low values over the Chukchi Sea and Bering Sea shelves and with relatively high values over the areas deeper than 60 m water depth. Another independent proxy Ce anomaly also shown the similar distributions as the Mn both in the core and the surface sediments, and suggested that the main transportation of Mn might occurred at the Chukchi Sea and Bering Sea shelves, rather than the Eastern Siberian Sea and Laptev Sea shelves. Especially the Contributions from the Bering Sea shelf should be considered to account for the Mn enrichment in the Arctic deep basins.

Keywords: Mn enrichment, Chukchi Sea shelf, Bering Sea shelf, Ce anomaly