

Circulation changes in the Amundsen Basin from 1991 to 2015 revealed from distributions of dissolved ^{230}Th

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A time-series of dissolved ^{230}Th from 1991 to 2015 enables identifying processes that control the temporal development of ^{230}Th distributions in the Amundsen Basin. After 2007, ^{230}Th concentrations decreased significantly over the entire water column, particularly between 300 m and 1500 m. This decrease is accompanied by a circulation change, indicated by an increase of salinity. Potentially increased inflow of water of Atlantic origin with low dissolved ^{230}Th concentrations leads to the observed depletion in dissolved ^{230}Th in the central Arctic. Since atmospheric tracers (CFC, $^3\text{He}/^3\text{H}$) do not show increased ventilation rates, these interior waters must have undergone enhanced scavenging of Th during transit from Fram Strait and the Barents Sea to the Amundsen Basin. The ^{230}Th depletion propagates downward in the water column by settling particles and reversible scavenging.