

## **Coupling of Silicon Isotopes to the Meridional Overturning Circulation of the North Atlantic Ocean**

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The use of Si isotopes to reconstruct patterns of marine silica production requires predictive knowledge of the isotopic composition of ventilating water masses. Silicon isotopes within silicic acid,  $\delta^{30}\text{Si}(\text{OH})_4$ , varied with water mass identity along the US GEOTRACES North Atlantic section. Low  $\delta^{30}\text{Si}(\text{OH})_4$  was observed in the deep waters dominated by Antarctic Bottom Water (AABW). High values occurred in North Atlantic Deep Water due to the contribution of heavy northern waters influenced by the Arctic Ocean. Overall,  $\delta^{30}\text{Si}(\text{OH})_4$  behaved as a semi-conservative property with a distribution governed by the contrasting Si isotope signatures of the polar oceans. The concept of a Silicon Isotope Bipole will be presented where a strong contrast in  $\delta^{30}\text{Si}(\text{OH})_4$  between the Arctic and Southern Oceans leads to strong latitudinal gradients in Si isotopes in the Atlantic that are tied to the origin of major water masses.