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231Pa/ 230 Th ratio, a proxy of the past ocean thermohaline circulation. Study of the influence of particle type and size with the coupled Ocean-biogeochemical model NEMO/TOP.

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231Pa and 230Th oceanic distributions are controlled by both particulate fluxes and oceanic ventilation. The 231Pa/230Th ratio is increasingly used for modern and paleo applications. However, whereas it is well known that these isotopes are removed from the water column by adsorption onto particles, their respective affinities towards different particle types (lithogenic, POC, carbonate, opal,Ě) are actively debated. Furthermore, the relative contributions of transports by water masses and particles are difficult to separate. Modeling has been shown powerful to address these issues (Marchal et al. 2000 Paleoceanography, Siddall et al, 2005 EPSL). The present work aims at simulating the cycles of these isotopes with the oceanic circulation model NEMO (developed at LOCEAN, France, nominal resolution 2°x1.5°, validated for other tracers: CFC, 14C, 3He and ENd) coupled with the biogeochemical model PISCES/TOP. We have implementing a reversible scavenging model in order to simulate the oceanic cycle of the trace elements. This model is using equilibrium distribution coefficients that control the partition between dissolved and particulate phase. We will show sensitivity experiments to the value of these equilibrium coefficients as a function of particle types and sizes. Data / model comparisons is a interesting approach to progress in our understanding of i) the processes controlling the cycles of these isotopes (notably, the respective significance of water mass and particle transports) and ii) global aspects of their distributions. We will particularly focus on the influence of particle type and size on the modern oceanic distribution of 231Pa and 230Th.