Paleocirculation reconstruction by neodymium isotopic ratios of marine baryte

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In the modern ocean Neodymium shows systematic isotopic variations. It has been demonstrated that oceanic water masses have distinct Neodymium isotope values (O'Nions *et al.*, 1976; Piepgras *et al.*, 1979; Piepgras and Wasserburg, 1982, 1983, 1985, 1987; Goldstein and O'Nions, 1981). This is caused by (1) the difference in the ages of the continents bordering the Atlantic and Pacific oceans, reflected by the average Nd isotopic composition of the rivers eroding them, and (2) the short residence time of Nd in the ocean relative to the oceanic mixing time. The Nd isotopic composition of different water masses is thus a unique and useful tool for inter-oceanic mixing and water masses circulation studies (Piepgras and Wasserburg, 1982, 1983, 1985, 1987). If the Nd isotopic value of seawater is recorded in authigenic minerals and preserved in the sediment after burial, it may be possible to reconstruct paleo-water circulation patterns. Marine baryte, a widespread authigenic mineral in pelagic sediments, may be such a phase. The potential of marine baryte as a monitor of paleo-inter-ocean mixing and water masses circulation, using Nd isotopes, is being evaluated. The development of a separation procedure of marine baryte which includes multiple leaching steps with acidic solutions has been completed and tested. Particular emphasis was given to verifying that no adsorption of *REE* onto the marine baryte occurs during the separation procedure; a ^{146}Nd spike was added to each of the leaching steps. Preliminary results of Nd isotopes and Nd concentrations in marine baryte will be presented.