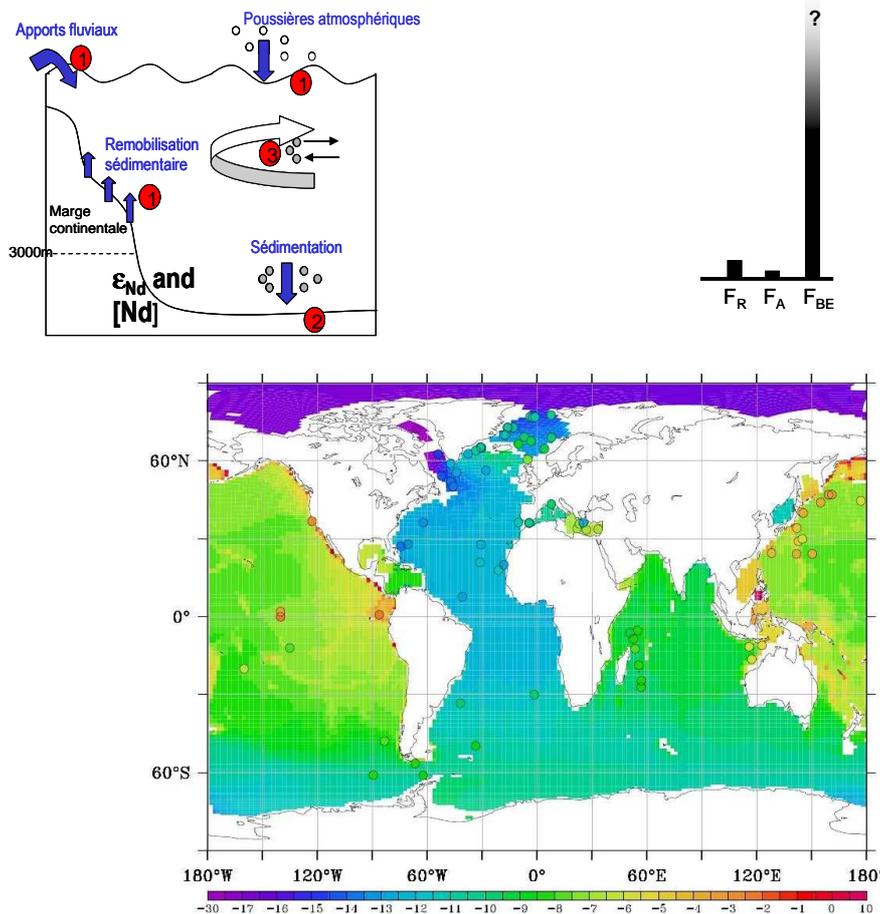


GEOMAR SHEET#10, MARGIN INPUTS : “BOUNDARY EXCHANGE” MODELLING (II)

T. Arsouze, C. Jeandel, F. Lacan (LEGOS); J-C Dutay (LSCE), AM Tréguier (LPO)

(CNRS/INSU-IFREMER-CEA)

Although the model presented in GEOMAR SHEET#9 tended to confirm that BE was an important term controlling the Nd oceanic cycle, it was simulating Nd isotopic composition (IC) only, assuming constant concentrations. In other words, it didn't take in account input and output fluxes that involve modifications of both concentration and isotopic signal. The recent modelling developed by Arsouze (2008) and Arsouze et al (subm. 2009) take into account all the input terms reported in the figure below. Input fluxes are mainly the dissolved and solid river loads, particle dusts and BE deduced from the literature. Relative strengths of these fluxes reported in the bar graph underline the predominance of Boundary Exchange relative to the others. The biogeochemical model PISCES has been coupled with the GCM ORCA 2 in order to generate particle fields and simulate Nd particle subtraction, modelled as reversible scavenging, taking into account small and large particles. The best data/model fit underlines the role of BE as input term and requires dissolved/particle coefficient of Nd of 10^{-3} on the small particle pool and 2×10^{-5} on the large one.



The upper figure displays all the fluxes taken into account in this modelling and the bar graph (right) compares the river dissolved load (F_R), the dissolution of atmospheric dust (F_A) and the BE flux (F_{BE}). The bottom map compares the model result with the data, for the deep waters (800-5000m).

