

## Constraints on mid-Cretaceous ocean circulation from neodymium isotope modelling

Jean-Baptiste Ladant<sup>1,\*</sup>, Hadrien Nauroy<sup>1</sup>, Marie Laugié<sup>2</sup>, Frédéric Fluteau<sup>3</sup>, Jean-Claude Dutay<sup>1</sup> and Pierre Sepulchre<sup>1</sup>

<sup>1</sup> LSCE – France

<sup>2</sup> CEREGE – France

<sup>3</sup> IGP – France

Understanding the extreme carbon cycle perturbation of the mid-Cretaceous (OAE2, ~94 Ma) requires constraints on the modes of ocean circulation during this interval because the extension of anoxic seafloor is largely contingent on the pathways of water masses. In this contribution we model the neodymium isotopic composition of seawater (expressed as  $\epsilon_{Nd}$ ) in a state-of-the-art offline ocean model with the approximation that the marine  $\epsilon_{Nd}$  composition is primarily driven by boundary exchange with continental margins. The offline ocean model is forced by an ensemble of earth system model simulations of the mid-Cretaceous with different paleobathymetric reconstructions of the Central American Seaway and of some South Atlantic submarine ridges. Results will be confronted to published estimates of mid-Cretaceous marine  $\epsilon_{Nd}$  to tentatively provide new constraints on plausible modes of mid-Cretaceous ocean circulation.

**Mots-Clés :** modelling ; ocean circulation ; neodymium isotopes