



Helium isotopes in the sediment pore-waters of a giant pockmark in the Lower Congo Basin

C. Chaduteau (1, 2), E. Fourré (1), P. Jean-Baptiste (1) & J.L. Charlou (2)

(1) LSCE/IPSL, Laboratoire des Sciences du Climat et de l'Environnement, CEA-CNRS-UVSQ, Gif-sur-Yvette, France, (2) Laboratoire de Géochimie et Métallogénie, IFREMER, Plouzané, France (carine.chaduteau@cea.fr)

Helium isotopes are powerful tools to constrain fluid origin and to quantify the flux of exchanges between the different terrestrial reservoirs. A new method has been developed for the sampling and quantitative extraction of dissolved helium from sediment pore-water, leading to the determination of helium concentration and isotopic ratio $^3\text{He}/^4\text{He}$ profiles.

This method, presented on a separate poster (SSP6), has been applied on cores from the Zaire deep-sea fan. Several piston cores have been sampled every meter during the ZaiROV2 cruise (ZaiAngo project). The goal of this cruise was the study of different pockmarks of the Zaire deep-sea fan situated on the Congo-Angola margin. Pore-water helium concentration and isotopic ratio $^3\text{He}/^4\text{He}$ profiles have been obtained for 3 cores : KZR37, KZR38 et KZR40, taken in an 800 m wide giant pockmark region (REGAB pockmark). The ^3He concentrations are constant showing no fluid interaction with the mantle. The ^4He concentration increases linearly with sediment depth, with the slope growing as the distance from the center of the pockmark decreases. Different sedimentation rates or different helium flux intensities could explain these results. ^{210}Pb datation and modelisation are underway to understand these profiles.