A U-series study on groundwaters from southwestern France

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U-series have been investigated in groundwaters from one demonstrative water body named the Eocene sands aquifer (Adour-Garonne district, southwestern France). This work was done in the framework of a research project (CARISMEAU, Négrel *et al*., 2007), related to the UE Water Framework Directive (WFD, 2000/60/EC). The Eocene sands aquifer extends north and south of the Garonne River. Groundwaters have been recovered both in spring and fall, in order to check for seasonal variations.

The $^{234}U/^{238}U$ activity ratios are in any case higher than 1 (equilibrium value), some of them being very enriched in ^{234}U (up to 11 in the northern part). Only slight isotopic variations of the $^{234}U/^{238}U$ activity ratios have been evidenced between spring and fall waters. In the southern part, the highest $^{234}U/^{238}U$ activity ratios correlate roughly with the oldest measured ^{14}C ages (> 25 ka, André *et al*., 2005) while recharge areas have the lowest $^{234}U/^{238}U$ activity ratios, closer to the equilibrium value. Hence it is not possible to apply a "simple" model featuring a decay of excess ^{234}U through time during groundwater circulation to put chronological constraints on the residence time of waters in the aquifer.

Thorium isotopes have been measured successfully in some of these groundwaters, due to recent analytical improvements in Th isotopic analysis (Innocent *et al*., 2006). $^{230}Th/^{232}Th$ activity ratios range between 0.4 (^{230}Th deficit) and 9.2 (large^{230}Th excess). $^{230}Th/^{234}U$ activity ratios are very low (≤ 0.01), except for recharge areas (0.6). High $^{230}Th/^{232}Th$ roughly correlate with $^{234}U/^{238}U$ close to the equilibrium. A open-system model, combining these three activity ratios is presented, potentially constraining groundwater residence times in the aquifer.

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Spatial and temporal variation of anthropogenic lead inputs to the western Pacific

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A continuous record of anthropogenic lead affecting on the western Pacific has been less studied compare to the North Atlantic. In this study, Pb contents and isotopic compositions in the annually banded coral (*Porites* sp.) from Ogasawara, Japan was used for reconstruction of Pb variation since the late 19th century. We also determined Pb in corals collected from several sites in the western Pacific to examine spatial distribution of Pb in sea surface. Determinations of Pb contents and isotope ratios were conducted using inductively coupled plasma mass spectrometer (ICP-MS) and multiple collector ICP-MS, respectively (Inoue *et al*., 2006; Tanimizu and Ishikawa, 2006). The spatial distribution of Pb showed a clear dilution pattern of Pb from Asian continent to the open ocean. In addition to the spatial distribution, Pb contents in Ogasawara coral have gradually increased during last 108 years. Although Pb emitted from Japan seems to be main source during the period of 1960 – 1980, that from China might be predominant source of Pb affecting on the western Pacific for the last 20 years based on the variation of Pb isotope ratios in the coral core.

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