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U-Th-Ra disequilibria in sediments of the Dora Baltea river (Italia)

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In order to constrain the transfer time of sediments in Alpine rivers, we propose to use the U-series nuclides approach recently developed for Himalayan rivers (e.g., Chabaux et al., 2008; Granet et al., 2010). Therefore, a series of bank sediments has beeen collected along the Dora Baltea river (Italia), one of the Po's tributaries draining the southern slope of the Mont Blanc Massif. In addition to U series nuclides, major and trace element concentrations and Sr and Nd isotope ratios have been analyzed for each sample.

The study indicates that the (234U/238U)-, (230Th/234U)- and the (226Ra/230Th)- activity ratios are very similar for all the samples, whereas the 230Th/232Th ratios can differ from one sample to another. Such a variation, consistent with the Sr and Nd isotope data, is certainly the consequence of mineralogical heterogeneities in the samples. This suggests that the use of 238U-230Th-232Th systematics alone is probably insufficient for constraining the transfer time of sediments in the Po rivers alluvial plain, whereas the combination of 238U-230Th disequilibrium with the 230Th-226Ra disequilibrium can help to constrain such time information.

References

Chabaux, F., Bourdon, B., Riotte, J., 2008. U-series Geochemistry in weathering profiles, river waters and lakes. In : S. Krishnaswami and J.K. Cochran (Eds.), U/Th Series Radionuclides in Aquatic Systems, Elsevier, Radioactivity in the Environment, 13, 49-104

Granet M., Chabaux F., Stille P., Dosseto A., France-Lanord C., Blaes E. (2010) U-series disequilibria in suspended river sediments and implication for sdiment transfer time in alluvial plains : the case of the Himalayan rivers Geochim. Cosmochim. Acta, 74, 2851-2865