

Combined analysis of Uranium series nuclides and *in situ* Beryllium in a weathering profile located in the Strengbach catchment (Vosges massif, France)

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Recent studies underline the potential of U series nuclides to quantify the regolith production rate in weathering profiles (Chabaux *et al*, 2013; Dosseto *et al*, 2011; Dequincey *et al*, 2002). However, the quantification of regolith production rate in climatic temperate context encountered a certain number of limitations when analyzing only superficial samples in the first meter of soil (Rihs *et al*, 2011). In this work, we propose to combine the analysis of Uranium-Thorium-Radium isotopes with the cosmogenic *in situ* Beryllium in a weathering profile extending from the top soil to the granitic fractured bedrock at 2 m depth to better estimate both production and denudation rate of regolith. The data confirm that the Uranium series isotopes in the surface of the profile are difficult to interpret in term of weathering rate, while the disequilibria in the deeper weathered bedrock show a smooth trend. The consistency between the calculated regolith production and denudation rates suggests therefore that in such a temperate context, the long-term mass balance of soil developed on granitic bedrock would be close to a steady state.