Goldschmidt 2023 Abstract
https://doi.org/10.7185/gold2023.16146

Li isotopic compositions of bulk and clay-sized sediments in an extremely weathered granodiorite profile

CHENGFAN YANG[1], YUN ZHAO[2] AND SHOUYE YANG[1]

[1]Tongji University

[2]Shanghai Jiao Tong University

Presenting Author: cfyang@tongji.edu.cn

Chemical weathering plays an important role in regulating biogeochemical cycle and global climate. Lithium (Li) isotopes are considered as one of the most powerful tracers of silicate weathering, which have been widely investigated by field and/or experimental studies. However, relatively little is known about Li isotopic fractionation during strong weathering processes, which restrains our application of Li isotopes to trace past weathering. In this study, we analyzed elemental, Li isotopic and mineralogical compositions of bulk and clay-sized sediments from a granodiorite profile in Xianyou, China. The Li concentration of bulk sediments vary from 0.4 μg/g to 13.8 μg/g. Most samples are extremely weathered, with $\tau_{Li, Ti}$ values ranging from -1.0 to -0.6. Mineralogical components of bulk sediments are mainly composed of quartz, kaolinite and illite. We find that Li concentration decreases with increasing kaolinite content, but showing no relationship with quartz and illite contents. The δ^7Li values of clay-sized sediment range from -7.4‰ to 8.5‰, displaying an overall decreasing trend downwards, except the high value at 0-3 m above the ground. The Li and δ^7Li variations are likely affected by the dissolution and re-precipitation of kaolinite, and possibly the atmospheric input. The data analyses and interpretation are still in progress.