

## High precision $^{40}\text{Ar}/^{39}\text{Ar}$ dating of jarosite and alunite

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Reproducibility of  $^{40}\text{Ar}/^{39}\text{Ar}$  ages within geographically distributed stratigraphic horizons [1] suggest regional scale controls on the precipitation of weathering assemblages including hydrous sulfate minerals jarosite and alunite. This in turn suggests climate as an important driving factor and the potential for orbitally driven cycles of weathering. A test of this hypothesis is via high-resolution and high-precision dating of K bearing mineral assemblages of supergene origin. A significant limiting factor for a precise Ar/Ar age determination is the presence of ubiquitous air contamination that for supergene minerals and mineral aggregates can be very substantial. We aim to exploit new high-precision measurements of  $^{36}\text{Ar}$  on state-of-the-art instruments combined with an exploration of sample treatment methodologies in order to achieve measurement precisions that can be meaningfully compared to existing climate records.

[1] Vasconcelos P.M. & Conroy M. (2003) *Geochim. Cosmochim. Acta*, 67 (16) 2913-2930.