

## **Interactions between the role of climate and vegetation controls on shale weathering: an international CZO study**

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To investigate the influence of climate on shale weathering, a climosequence of six mixed deciduous forested sites was initially established in the northern hemisphere as part of the Susquehanna Shale Hills CZO in Pennsylvania, USA. Quantifying elemental losses and mineralogy across these sites documented a climate dependence of feldspar weathering. Additional data from a variety of climates and vegetation types would substantially improve our ability to quantify the role climate plays in weathering processes. To that end an additional *Eucalyptus* vegetated site was established at the Main Range CZO near Brisbane, Australia. The site has a mean annual temperature of 14.5 °C and mean annual precipitation of 135 cm, intermediate between the previously studied Alabama and Puerto Rico sites. The site is underlain by shale that is similar to the existing climosequence. As in previous work, a soil core and shale from rock outcrops were collected and analyzed for bulk geochemistry, C/N content, and mineralogy. Initial observations at the site include a relatively shallow depth (155 cm) and minimal elemental depletion with depth indicative of kinetically limited weathering despite a similar climate to the Alabama site where weathering is more transport limited. Thus, we hypothesize the different weathering rates may be due to strong precipitation seasonality or a strong control of vegetation. Results from this new site will help us better understand the role of climate and vegetation in controlling shale-weathering rates.