

Weathering signal propagation in East Asian continental margins

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East Asian continental margin is featured by tremendous terrigenous sediment inputs from two major types of river systems: the mega-rivers in Eurasian continent, e.g. the Changjiang (Yangtze) River, and the small mountainous rivers in Taiwan (tectonically active) and SE mainland China (tectonically stable). Classic weathering indices such as the river water chemistry, CIA, WIP and clay minerals suggest these East Asian rivers are characterized by much different weathering regimes, and sediment transfer rates and recycling processes significantly influence the silicate weathering intensities registered in the river sediments. The small dynamic mountainous rivers in Taiwan exhibit large sedimentary geochemical and provenance heterogeneity despite their fast sediment transfer from land to sea. In addition, we present new data from multiple isotopes (meteoric Be, radiogenic and stable Sr, Li and Mg) to investigate the weathering signal propagation in the continental margins. We observe conservative behaviour of dissolved Li isotopes during estuarine mixing processes but different fractionations of dissolved Sr isotopes and particulate Li isotopes. Despite the hydrodynamic sorting and early diagenetic (reverse weathering) effects, the clay Li and Mg isotopes well preserve the catchment weathering signals and thus can be used to investigate the paleo-weathering history and climate feedback in geological past.