



Weathering and erosion of soils in the agricultural Middle Hills of Nepal

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The role of land use in changing the pace of mineral weathering and associated soil formation processes has been widely documented, but many questions remain to be fully addressed. The flux of dissolved constituents in streams and rivers, often used to infer weathering rates, is in many cases enhanced from agricultural lands. Observed increases may be related to a variety of factors including changes in hydrology and the use of chemical fertilizers, as well as practices such as tilling. This study focuses on a site in the Middle Hills of the Nepal Himalaya where previous research has indicated differences in stream chemistry attributable to land use. The work presented here explores the application of both Be-10 and U-series isotopic systems in assessing the role of agricultural activities in soil erosion. This study also considers soil chemistry and mineralogy under both pristine and agricultural land use and shows in particular that there are distinct differences in the distribution of weatherable minerals in soils from agricultural terraces, potentially contributing to differences in overall weathering in these soils.