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Lake-level changes and rates of erosion on the Tibetan Plateau: implications for Quaternary climate change and landscape evolution

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Our study deals with two aspects of the Late Quaternary environmental evolution in Tibet: lake-level changes and landscape development by erosional denudation. Many lakes on the Tibetan Plateau are surrounded by palaeoshorelines that document variations in lake level and past changes in climate. Establishing accurate chronologies for these shorelines is crucial for quantifying lake-level fluctuations and correlating them with environmental histories from other records. However, the scarcity of organic material in palaeoshorelines and a variable reservoir effect make it difficult to obtain accurate radiocarbon ages for both shorelines and lacustrine sediments. In the first part of our study, we will present results from 10Be exposure and luminescence dating of strath terraces and beach ridges from which we derived lake-level variations for a major lake (Tangra Yum Co) in south Tibet. Our results suggest a relatively continuous lake-level decline since the early Holocene and will be compared with other lake studies in southern Tibet to draw some general conclusions on the Late Quaternary climate evolution. The motivation for the second part of our study is that many regions in the internally drained part of Tibetan Plateau appear to be tectonically stable and are characterized by a low-relief landscape with gently-dipping hillslopes. In contrast, areas with active normal or strike-slip faults have a more rugged topography with steeper hillslopes and a higher relief. We will report catchment-wide erosion rates based on concentrations of cosmogenic 10Be in stream sediments, to evaluate how these morphological differences affect rates of erosion and landscape development.