

QUATERNARY GLACIATION OF THE TIBETAN PLATEAU

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The Tibetan Plateau exerts a unique effect upon the general circulation of the atmosphere including the Asian monsoon. Uncertainties about the number and extent of Tibetan Quaternary glaciations still impede global climatic modelling. Evidence of Tibet's uplift history remains contentious. Estimates of when current altitudes were reached vary from 8Ma to Late Pleistocene-Holocene. This is a critical question because of the effect of uplift on increasingly efficient impedance of moist summer monsoonal air reaching the Plateau. Results of studies of lacustrine, loess and other deposits N and E of the Tibetan Plateau appear consistent with a Quaternary glacier distribution with loci along the trans-Tibetan mountain ranges, with periglacial, tectonic and semi-arid facies covering much of the remaining terrain. However, several assumptions underlie some lines of evidence derived from the margins of the Plateau. These include a strictly tectonic origin of the upper Yellow River terraces in response to phases of Tibetan uplift; that initiation of loess accumulation was dependent upon Tibet reaching a critical altitude; that, once started, the loess accumulated by continuous accretion, so providing a complete record of climate change; and that loess accumulation was causally related to the development of the continental ice sheets. Evaluation of the influence exerted by Tibetan glaciers upon these and other processes requires the establishment of a sound, glacially-based stratigraphy for the Plateau.