Geophysical Research Abstracts,
Vol. 11, EGU2009-1360-2, 2009
EGU General Assembly 2009

Glacier reconstruction and mass-balance modelling as a geomorphic and palaeoclimatic tool

S.J. Carr, S. Lukas, and S.C. Mills

Queen Mary, University of London, Department of Geography, London, United Kingdom (s.j.carr@qmul.ac.uk)

The reconstruction of former mountain glaciers has long been used to examine the implications of rapid climate shifts at the last glacial-interglacial transition, and for evaluating asynchronous behaviour of mountain glaciers compared to mid-latitude ice sheets during the Late Quaternary. Glacier reconstruction has also been used as a source of palaeoclimatic information, based on the recognition of empirical relationships between glaciers and climate. This poster reviews the application and implications of a recently revised method of glacier reconstruction (Carr and Coleman, 2007), based around glaciological principles of mass-balance. This study examines how this approach can be used to test geomorphological interpretations of former mountain glaciation and also to infer precipitation fields at sites of former glaciation. Sites of Younger Dryas niche and icefield glaciation in the British Isles demonstrate how this method can verify interpretations of marginal glaciation, and begin to understand the different behaviour of outlet glaciers within the same environmental regime. Examination of a site of former niche glaciation in Southern Africa demonstrates how glacier reconstruction may be used to infer annual and seasonal precipitation values, and strongly supports the idea that winter precipitation in Lesotho and SE South Africa was substantially greater than present day values at the peak of the global Last Glacial Maximum.

Carr, S.J, & Coleman, C.G (2007). An improved technique for the reconstruction of former glacier mass-balance and dynamics. Geomorphology , 92 (1-2), 76-90.