

Calibrating a new proxy for Pleistocene climate change in southern Africa

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Although qualitative statements have been made about general climatic conditions in southern Africa during the Pleistocene, there are few quantifiable palaeoclimatic data based on field evidence, especially regarding climate during the Last Glacial Maximum. Such information is critical in validating models of climate change, both in spatial and temporal dimensions. As an essential preliminary step towards palaeoclimate reconstructions using fossil ostracods from cored lake sediments and exposed sedimentary sequences, we have calibrated a training set of living ostracod species' distributions against a modern climate dataset and other available environmental data. We have made a preliminary assessment of the potential value and limitations of the training set for the estimation of past climatic parameters including mean July, January and Annual air temperatures, calibrating 23 species using DIVA-GIS and the WorldClim climate dataset (HIJMANS et al. 2001, 2005). The modern ostracod dataset is based on the collections in the Royal Belgian Institute of Natural Sciences in Brussels, which constitutes the most diverse and comprehensive collection of southern African nonmarine ostracods available anywhere in the world. To date, c. 150 nominal species have been described from southern Africa (MARTENS 2001) out of c. 450 species in the total Afrotropical area (MARTENS et al. 2008). We used an edited dataset comprising a total of 2,118 records of ostracod species from 748 localities in southern Africa, ranging in latitude from approximately 17°S to 35°S. The next step will be to apply the Mutual Ostracod Temperature Range (MOTR) method (HORNE 2007; HORNE & MEZQUITA 2008) to the palaeoclimatic analysis of fossil ostracod assemblages from Pleistocene and Holocene sequences in southern Africa.

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