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Using dune moisture chemistry to reconstruct late Quaternary climate change in Africa: records of changing moisture availability.

Abi Stone (1,2) and Mike Edmunds (3)

(1) University of Oxford, OUCE, School of Geography, Oxford, United Kingdom (abigail.stone@ouce.ox.ac.uk), (2) St John's College, University of Oxford, United Kingdom, (3) University of Oxford, OUCE, School of Geography, Oxford, United Kingdom (wme@btinternet.com)

Whilst dune landforms continue to be scrutinized as a geoproxy for palaeoenvironmental reconstruction from their accumulation histories, their sediments also have, hitherto underplayed, potential as an archive of past moisture availability. Dune sediments represent the unsaturated zone of the hydrogeology of dryland environments and contain preserved geochemical signatures within pore moisture. Whilst these chemical signals have been widely utilised as tools to calculate the recharge rates to dryland aquifers (as a proportion of precipitation input) they also have great potential for providing a time series of changes to past moisture availability at the surface, through using the variation in chemistry with depth.

We review the use of unsaturated zone pore-chemistry as a tool in African drylands from both hemispheres, considering the length of records currently available. Existing short records, of a few decades, illustrate good correspondence to independent records, such as rainfall time series and river flow data. We will also attempt to identify additional key locations that have the potential to record longer time-series, that might rival the 1,000 year records now available from Chinese drylands.