



## **Utilising multi-proxy provenance techniques to reconstruct local vs regional drainage networks of the Central Pangea during the Upper Triassic**

James Kennedy (1), Jonathan Redfern (2,1), and Stefan Schroeder (1)

(1) University of Manchester, School of Earth and Environmental Science, Basins Research Group, United Kingdom (james.lovell-kennedy@manchester.ac.uk), (2) NARG

The Triassic fluvial stratigraphy exposed within the inverted Triassic rifts of the High Atlas has been well studied as a record of the initial break up of Central Pangea within Morocco, however relatively little attention has been paid to the provenance of these deposits.

Recent work done on the thermal history of the Anti-Atlas and High Atlas, highlight their uplift during the Triassic (Domènech et al. 2016; Charton et al. 2018), with the Massif Ancien identified as the potential drainage divide between the Oukaimeden and Argana Basins of the eastern and western Central High Atlas (CHA). To complement this uplift data, a U-Pb detrital zircon data suggests a significant contribution to the Triassic of the western High Atlas from the Anti-Atlas and Reguibat shield to the south (Domènech et al. 2018).

Building on these studies, heavy mineral analysis has been undertaken on samples from the Oukaimeden Basin, CHA, the Kerrouchen Basin, Middle High Atlas, and samples from exploration wells in the Tendrara Field, High Plateaux. By carefully analysing the facies variations within these three basins, a clear distinction can be made between an initial period of syn-rift deposition dominated by transverse depositional systems, with a post-rift phase dominated by axial depositional systems. Analysis of the provenance of the axial depositional systems across the three basins indicate a shared source region, with a significant contribution from poly-cyclic sedimentary rocks, highlighting the need for the use of provenance proxies which record contributions from first cycle sediment sources to accurately constrain the provenance of the Moroccan Upper Triassic fluvial deposits.

By utilising the heavy mineral data, a model for the evolution of the Atlas rift during the Triassic can be proposed, with important implications for paleo-geographic reconstructions of Central Morocco.

Charton, R., Bertotti, G., Arantegui, A. & Bulot, L.G. 2018. The Sidi Ifni transect across the rifted margin of Morocco (Central Atlantic): Vertical movements constrained by low-temperature thermochronology. *Journal of African Earth Sciences*.

Domènech, M., Teixell, A. & Stockli, D.F. 2016. Magnitude of rift-related burial and orogenic contraction in the Marrakech High Atlas revealed by zircon (U-Th)/He thermochronology and thermal modeling. *Tectonics*, 35, 2609–2635, <https://doi.org/10.1002/2016TC004283>.

Domènech, M., Stockli, D.F., Teixell, A. & Geologia, D. 2018. Detrital zircon U-Pb provenance and paleogeography of Triassic rift basins in the Marrakech High Atlas. 0–2, <https://doi.org/10.1111/ter.12340>.