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# Indentor-escape, delamination and orogenic collapse of the ca. 600-500 Ma East African/Antarctic Orogen in Mozambique and Dronning Maud Land (East Antarctica)

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The East African/Antarctic Orogen (EAAO) is one of the largest orogenic belts on the planet, resulting from the collision of various parts of East and West- Protogondwana between ca. 600 and 550 Ma. The central and southern parts of the orogen are typified by high-grade rocks, representing the overprinted margins of the various colliding continental blocks. New fieldwork and geochronology in northern Mozambique reveals a protracted polyphase Ediacaran/Cambrian deformation history. New age constraints reveal high-grade metamorphism at 600-550 Ma, overprinting and older basement. The EAAO is dissected by the Lurio Belt. South of this lineament, the orogen is characterized by large volumes of high-T A2-type granitoids, dated between 530-490 Ma. Granitoid emplacement is associated with polyphase extensional deformation within this hot, rheologically weak southern part of the orogen. The granitoids that include charnockites have mantle signatures and most probably resulted from delamination of a thickened root. We interpret the Lurio Belt as an accommodation zone between two thermo-mechanical very different parts of the orogen, separating an area to the south in which the orogen underwent delamination of the orogenic root, and an area to the north, where the orogenic keel is possibly still present. Polyphase extensional tectonics can be traced with the help of the infolded Cambrian Mecuburi Group. Unroofing of the northern EAAO is documented by the remnants of originally extensive areas covered by Cambro-Ordovician molasse-type clastic sedimentary rocks throughout North Africa and Arabia, testifying to the size of this mega-orogen. Whilst the EAAO molasse in the north covers almost the entire North African platform, probably resulting from a long lasting high standing mountain range (no delaminated root), the molasse deposits of the southern EAAO are comparatively smaller, possibly resulting from the rapid and mechanical thinning of the orogen in the south (delaminated root).