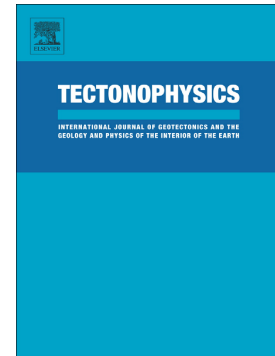


## Accepted Manuscript

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## Variability in uplift, exhumation and crustal deformation along the Transantarctic Mountains front in southern Victoria Land, Antarctica

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### Abstract

The Transantarctic Mountains (TAM) are an imposing topographic feature, forming the western shoulder of the Meso-Cenozoic West Antarctic Rift System. Although the TAM topography is similar to other continental rifts, some aspects such as the high topography and the transition in the mode of crustal extension from orthogonal to oblique rifting during the Cenozoic makes the TAM an anomalous rift margin. Here, we present a topography analysis of a 600 km long transect along the TAM front in southern Victoria Land combined with a large available thermochronological data-set to decode the tectonic signals hidden in the topography. An along-strike variability in tectonic, erosional and geomorphic characteristics is detected. We then focus our analysis on the Royal Society Range, where structural investigations were integrated with new fission track thermochronology in order to assess the morphotectonic evolution of the region. Fission-track data and topography of the Royal Society Range reveal remarkable differences with respect to the neighboring areas. Topography characteristics and thermal modeling suggest an increase in tectonic activity during late Eocene-early Oligocene times and structural analysis suggests that the Cenozoic rifting has been controlled by dextral transtension, as proposed for others

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