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Title: **Intraplate strike-slip faulting in East Antarctica: new geophysical views from the Rennick Graben and Wilkes Subglacial Basin**

F. Ferraccioli[1], E. Armadillo[2], L. Crispini[2], A. Läufer[3], A. Ruppel[3], G. Eagles[4], D. Young[5], D. Blankenship[5], G. Capponi,[2] F. Lisker[6], M. Siegert[7].

[1]NERC/British Antarctic Survey, Geology and Geophysics, Cambridge, United Kingdom.

[2]Universita' di Genova, Dipartimento di Scienze della Terra dell'Ambiente e della Vita, Genova, Italy.

[3]Bundesanstalt für Geowissenschaften und Rohstoffe, Polar Geology, Hannover, Germany.

[4]Alfred Wegner Institute, Geosciences/Geophysics, Bremerhaven, Germany.

[5]University of Texas at Austin, Institute for Geophysics- Jackson School of Geosciences, Austin, USA.

[6]University of Bremen, Geodynamics of the Polar Regions, Bremen, Germany.

[7]Imperial College- London, The Grantham Institute for Climate Change, London, United Kingdom.

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Intraplate strike-slip faulting can occur in association with different geodynamic settings, ranging from subduction-related to collision and extension. Geological and geophysical research in Northern Victoria Land (NVL) in East Antarctica, has led to the interpretation that major fault systems that were active during the early Paleozoic Ross Orogen were reactivated much later as right-lateral intraplate strike-slip fault systems from ca 48 Ma, and that these faults may have accomodated differential shear along evolving oceanic transform faults located between southeastern Australia and Tasmania. One of the main structures in NVL that has been inferred to relate to this unusual geodynamic process is the Rennick Graben (RG), but its age, extent and kinematics have remained both poorly constrained and controversial. Even less well-understood are the potential tectonic linkages between the RG and the deep sub-basins that lie within the much broader Wilkes Subglacial Basin (WSB), in the hinterland of the Transantarctic Mountains.

Here, we present new interpretations of enhanced potential field images derived from aeromagnetic and airborne and land-gravity observations to help constrain the extent and architecture of the RG and the sub-basins within the WSB. We show that the RG is a composite pull-part basin that extends from the Oates Coast towards the margin of the Ross Sea Rift, part of the West Antarctic Rift System. We suggest that the more cratonic WSB region was also affected by extensional and transtensional processes, the latter potentially linked to an evolving and distributed left-lateral Paleogene(?) strike-slip plate boundary between East Antarctica and Australia.