



Revised Eocene-Oligocene kinematics for the West Antarctic rift system: implications and remaining challenges

Roi Granot (1), Steve Cande (2), Joann Stock (3), and Detlef Damaske (4)

(1) Department of Geological and Environmental Sciences, Ben-Gurion University of the Negev, Beer Sheva, Israel (rgranot@bgu.ac.il), (2) Scripps Institution of Oceanography, University of California, San Diego, (3) Seismological Laboratory, California Institute of Technology, Pasadena, California, (4) Bundesanstalt für Geowissenschaften und Rohstoffe, Hannover, Germany

Past plate motion between East and West Antarctica along the West Antarctic rift system had important regional and global implications. Although extensively studied, the kinematics of the rift during Eocene-Oligocene time still remain elusive. Based on a recent detailed aeromagnetic survey from the Adare and Northern Basins, located in the north-western Ross Sea, we present the first well-constrained kinematic model with four rotations for Anomalies 12o, 13o, 16y and 18o (26.5-40.13 Ma). These rotation poles form a cluster suggesting a stable sense of motion during that period of time. The poles are located close to the central part of the rift implying that the local motion varied from extension in the western Ross Sea sector (Adare Basin, Northern Basin and Victoria Land Basin, VLB) to dextral transcurrent motion in the Ross Ice Shelf and to oblique convergence in the eastern end of the rift zone. The results confirm previous estimates of 95 km of extension in the VLB and shed new light on the formation of the subglacial topography found along the rift system.