Geophysical Research Abstracts
Vol. 18, EGU2016-3213, 2016
EGU General Assembly 2016

Ultraslow spreading, ridge relocation and compressional events in the East Arctic region: A link to the Eurekan orogeny?

Carmen Gaina (1), Anatoly M. Nikishin (2), and Evgheni I. Petrov (3)

(1) University of Oslo, Centre for Earth Evolution and Dynamics CoE, Department of Geosciences, Oslo, Norway (carmen.gaina@geo.uio.no), (2) Geological Faculty, Moscow State University, Moscow, Russia, (3) Federal Agency for Subsoil Use, Moscow, Russia

New and available geophysical data from the Eastern Arctic (around the Siberian tip of the Lomonosov Ridge) indicate a change in the tectonic regime at the Eocene time. Oceanic crust identified on the new seismic reflection data in the Amundsen Basin displays an asymmetric fabric also visible in the gravity and magnetic gridded data. Tentative dating of the weak magnetic anomalies suggests asymmetric spreading or ridge relocation from ca. 49 to 33 Ma. Three seismic reflection transects through the Laptev Sea, Lomonosov Ridge and adjacent basins image several compressional features, most likely initiated in the Eocene. According to a regional plate tectonic model, the Greenland plate has pushed the Lomonosov Ridge by ca. 30 mm/year from 54 to 49 Ma and by ca. 13.5 mm/year afterwards, until Early Miocene. We suggest that intraplate stresses triggered by the Eocene to Oligocene northern movement of the Greenland plate and subsequent collision with the North American plate that created the Eurekan deformation, have propagated through the Arctic region and affected part of the East Siberian Shelf, Podvodnikov Basin, Laptev Sea and modified the spreading direction in the eastern Eurasia Basin. We estimate that these changes started at the same time as the peak compressional phase in North Greenland dated 49–47 Ma and lasted until Oligocene time when the large-scale tectonic regime changed by incorporating Greenland into the North American plate.