



Analysis of the Junction of the East African Rift and Paleogen Rift in Northern Kenya and Southern Ethiopia

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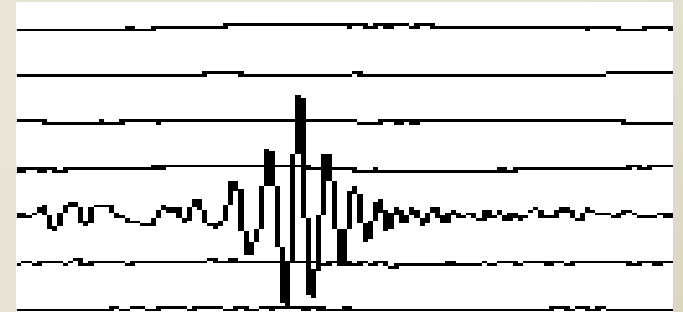
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University of Texas at El Paso
USA





Why this study?

- Region been heavily studied, regionally and locally, e.g.:
 - Seismic studies (KRISP)
 - Gravity studies (University, Students)
 - Petroleum companies, KNOC
 - Geological and Geochemical studies (Research)
- *But*





None geared towards
geothermal
investigations. Why?

- Studies by academics
- Petroleum interests
- Logistics
- Far from load centres





Present study.....

Uses new data and integration of old data
as baseline for geothermal studies





The questions.....

What is the geometry of the axial gravity high in the northern rift?

What is the relationship between the N-S Neogene EAR and SE Paleogen Anza rift?

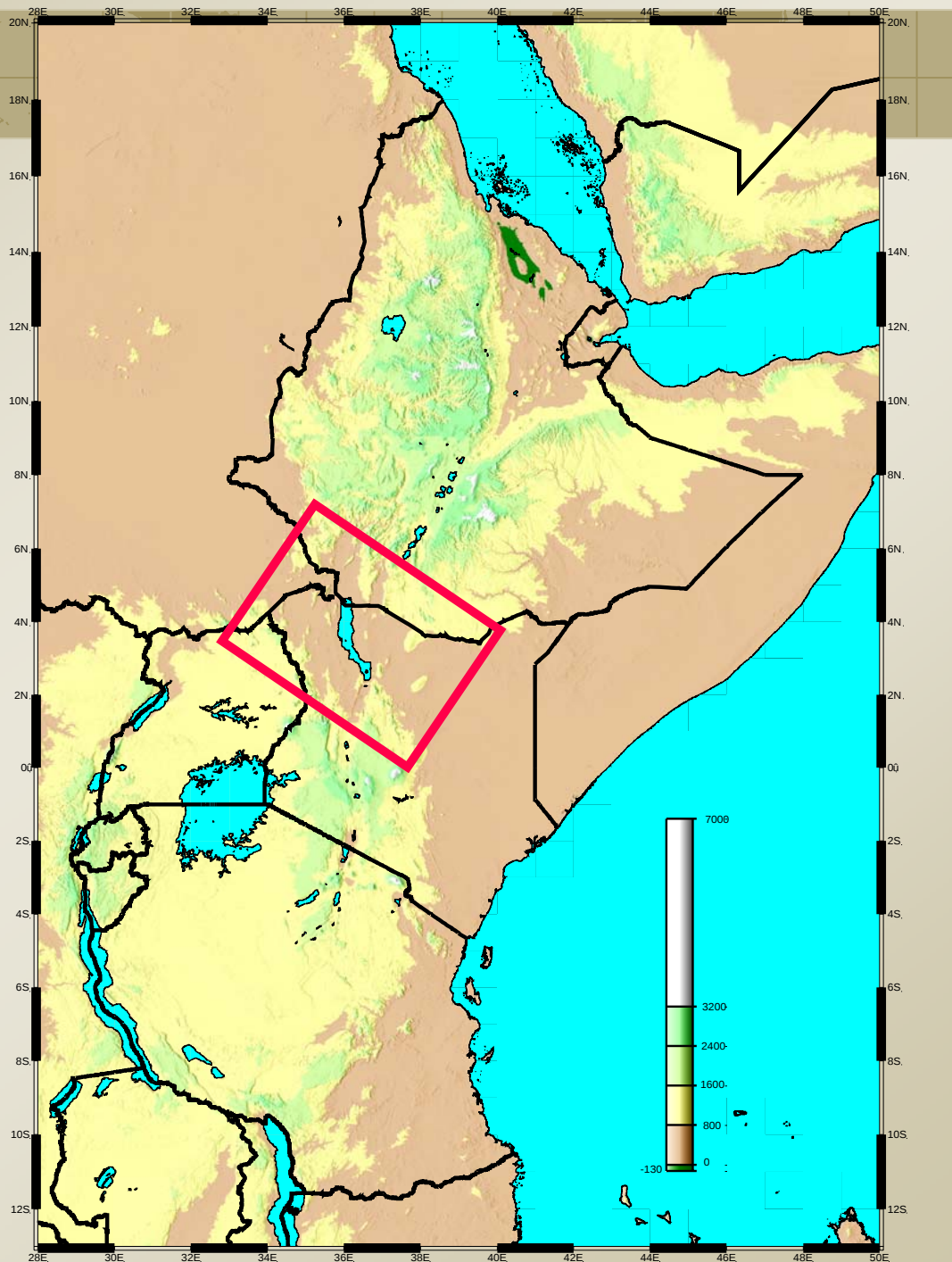
Is there a trend into Southern Sudan?

Any implication for Geothermal?



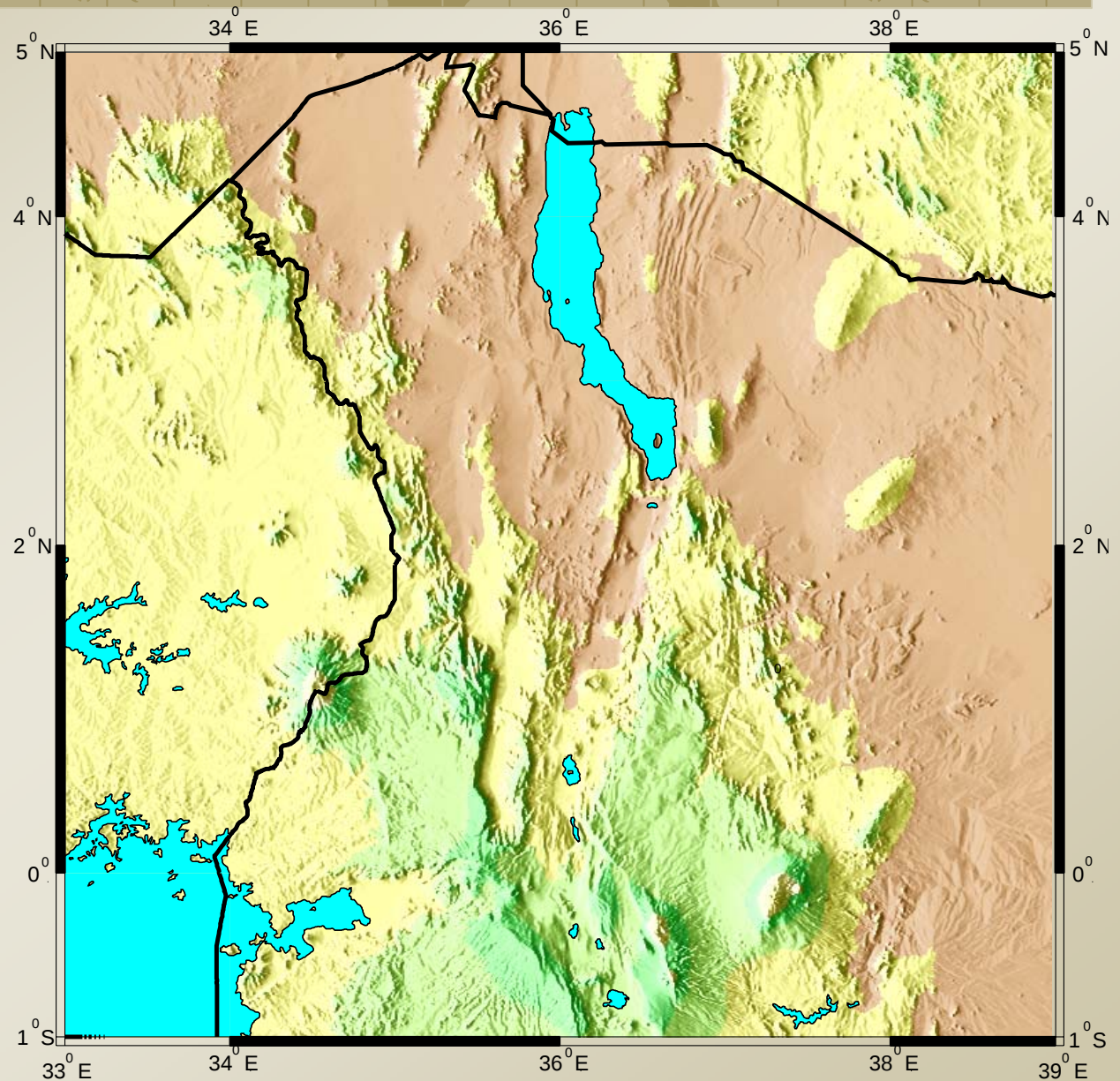


Digital Elevation Map of Eastern Africa



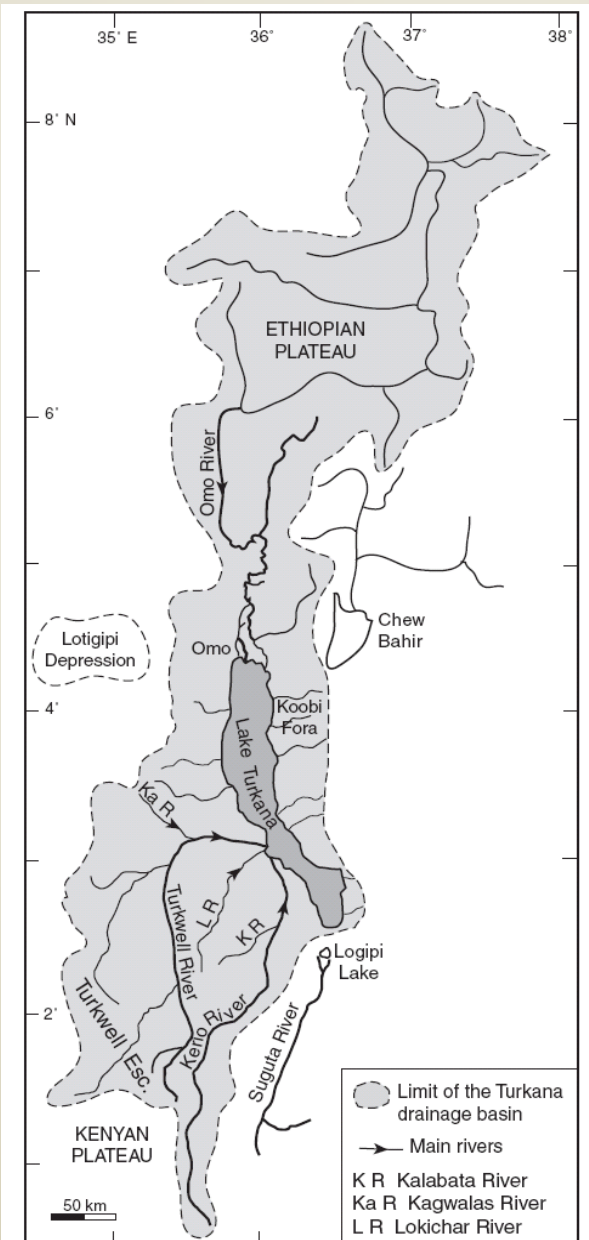


*Digital Elevation
Map of
Northwestern
Kenya and
Southwestern
Ethiopia*



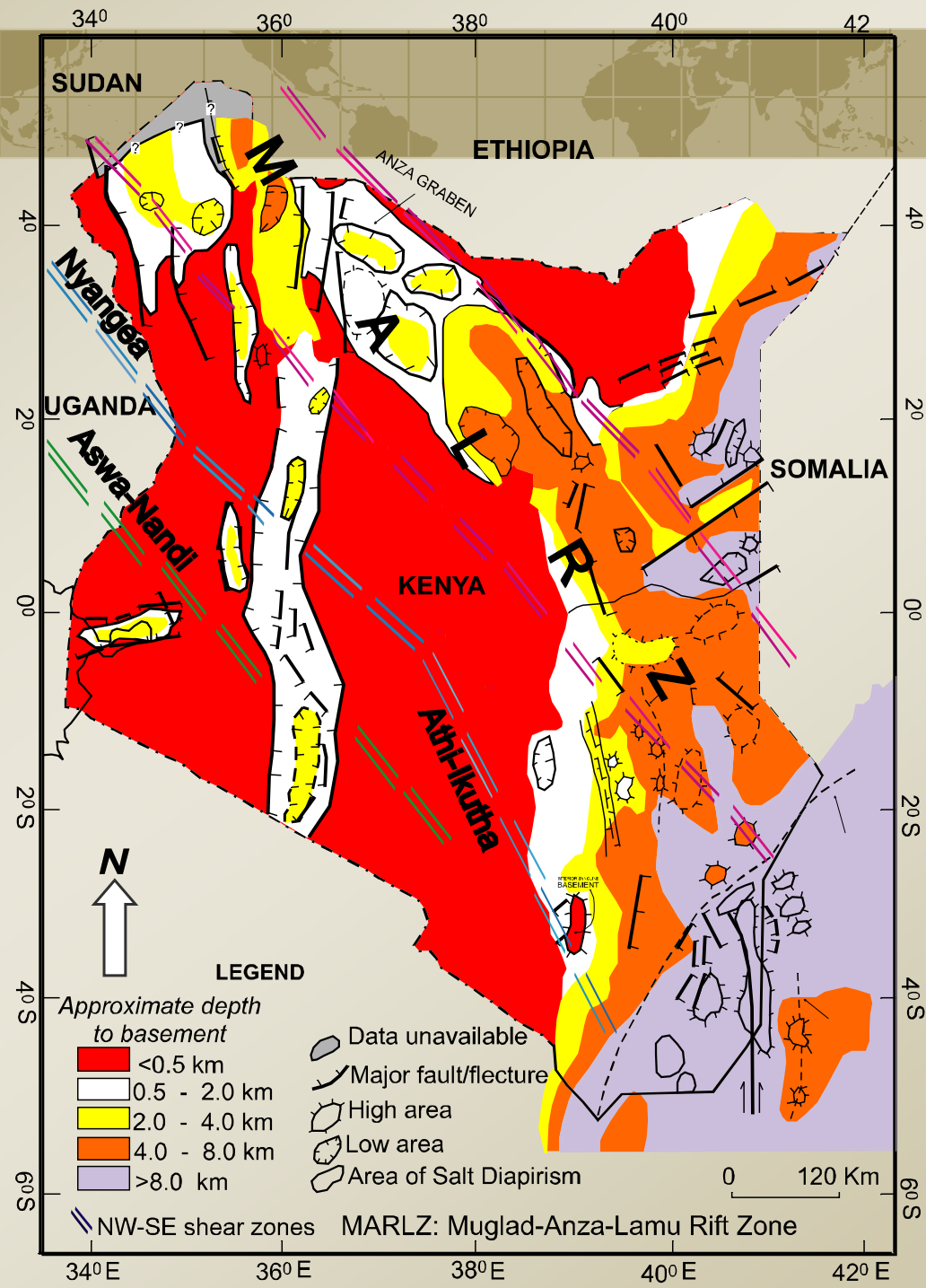


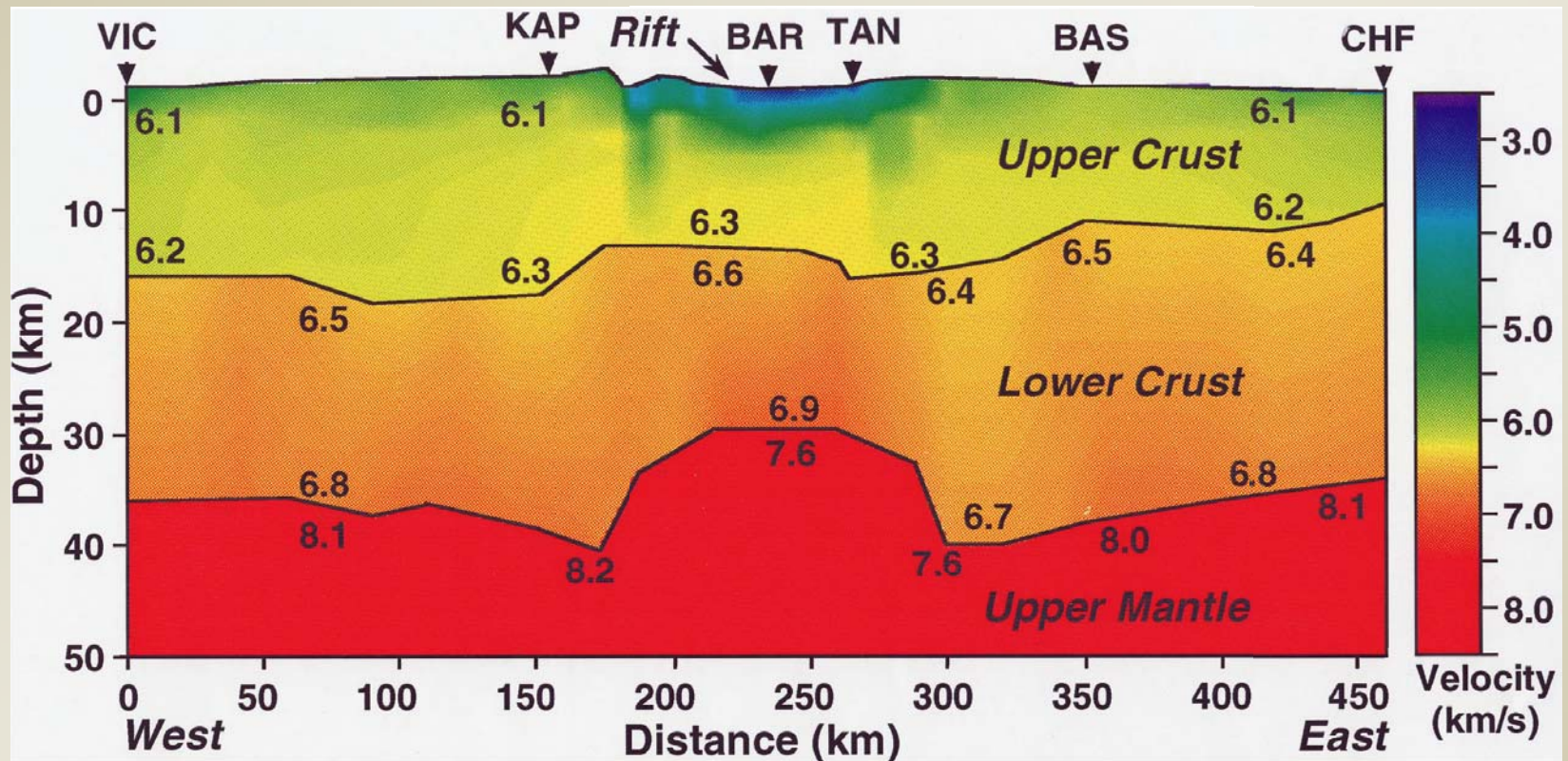
Lake Turkana Drainage Basin



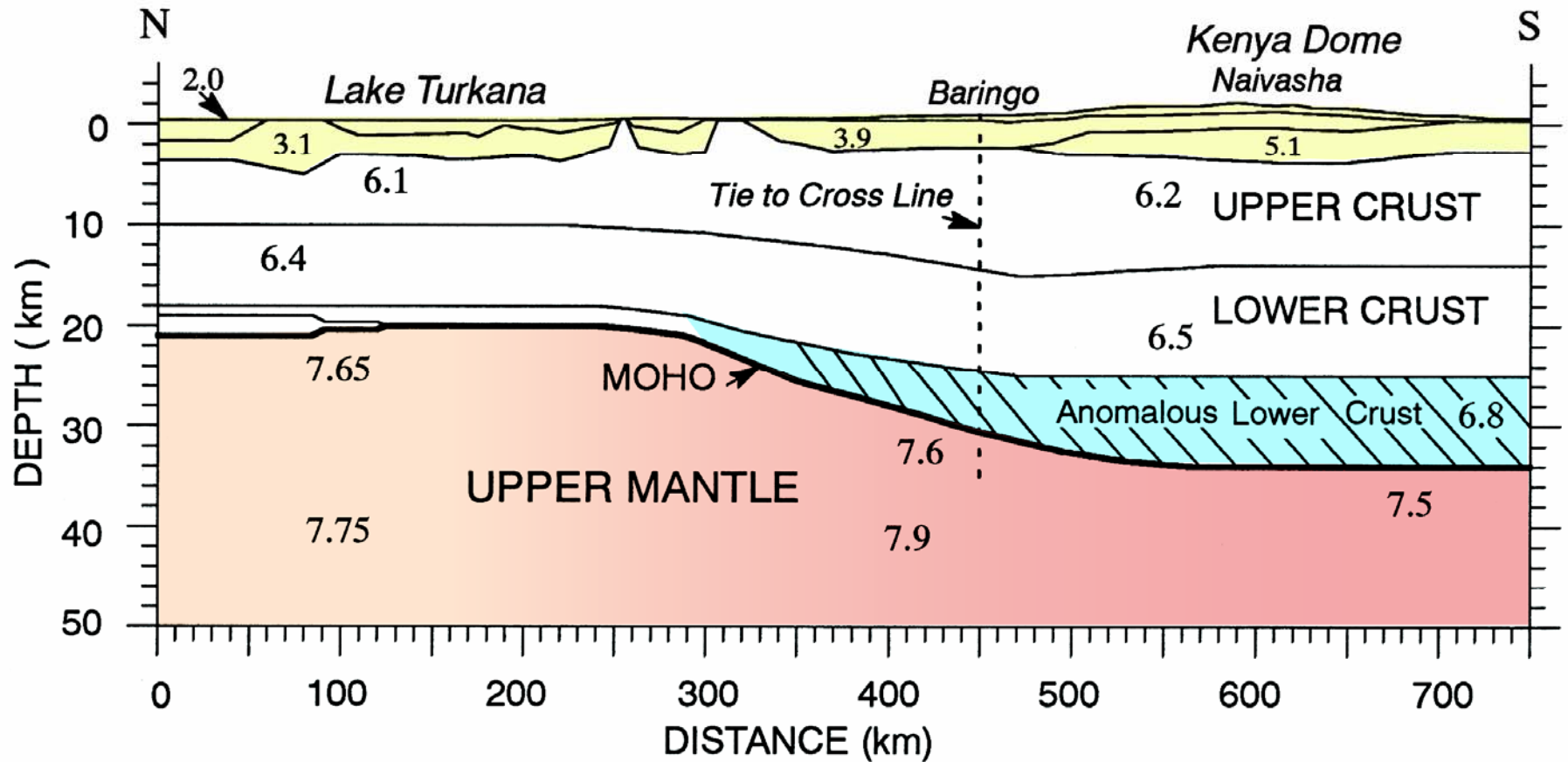


NW-SE structures





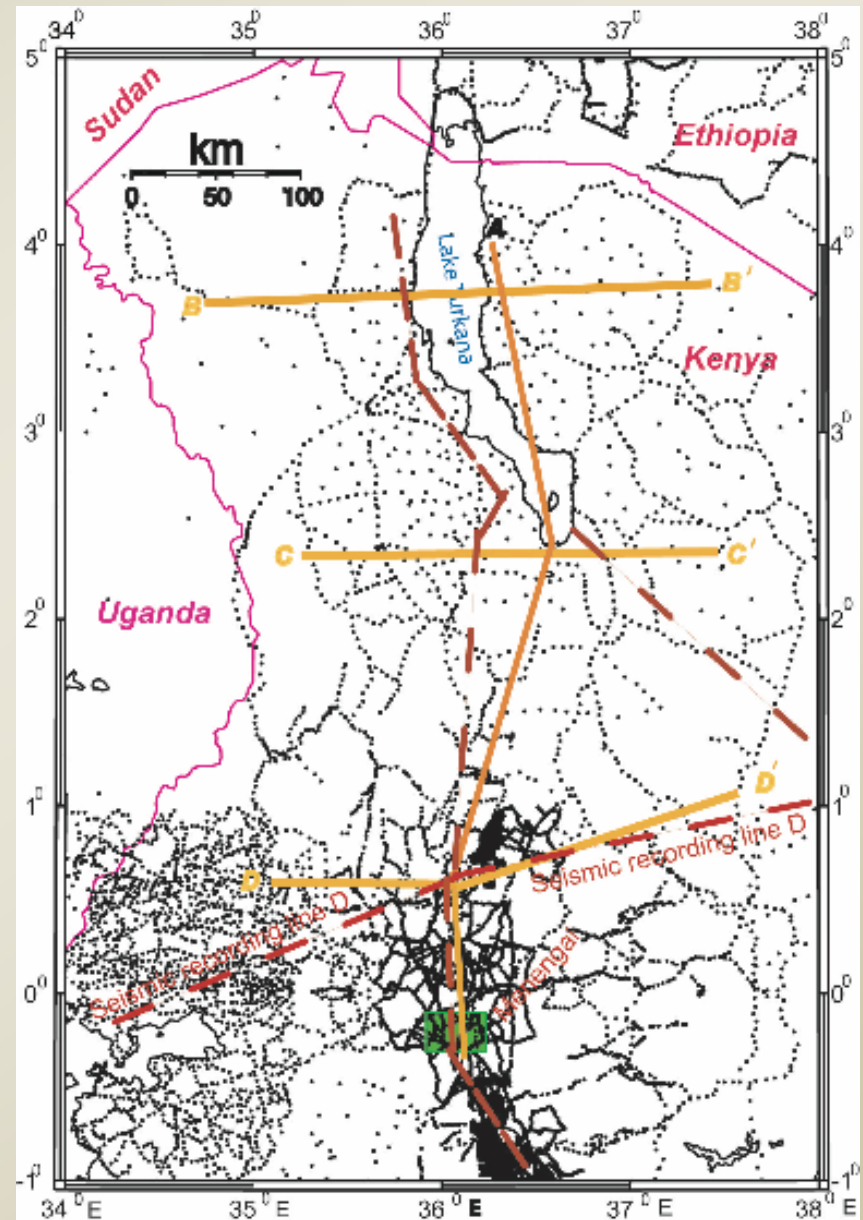
EW Velocity Model Across the Rift - KRISP



Axial Velocity Structure_KRISP

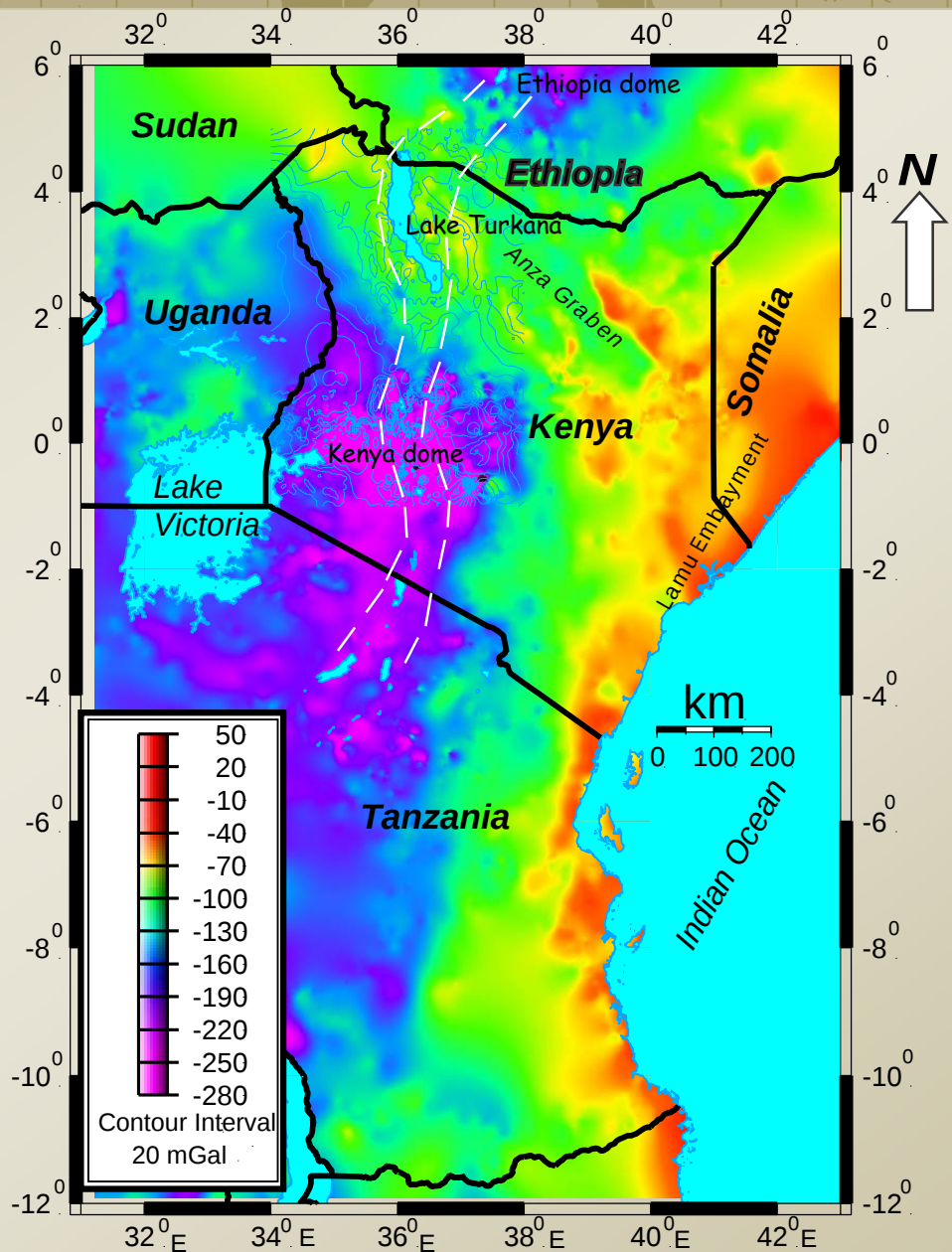


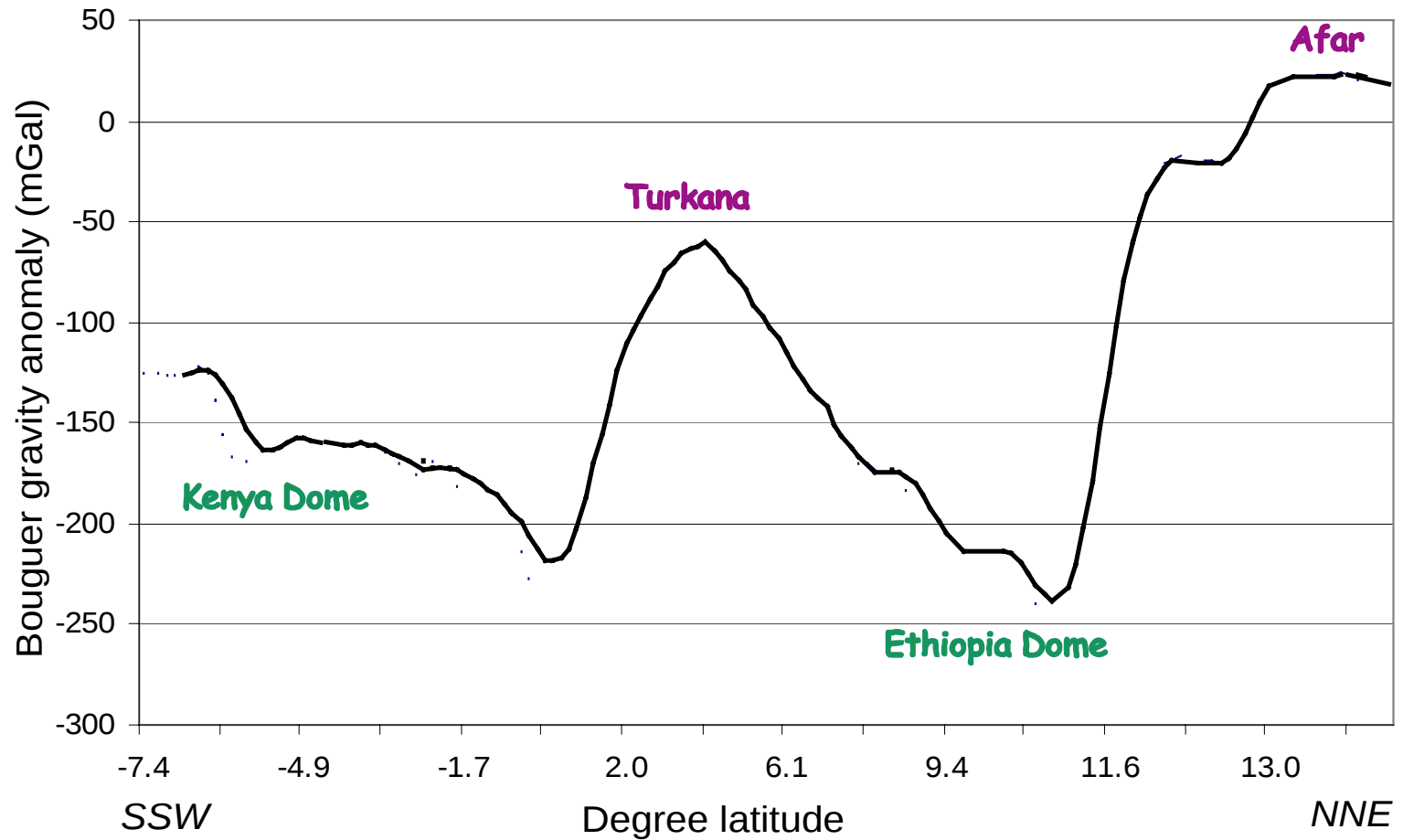
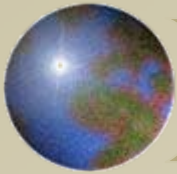
Index map of gravity





Bouguer anomaly – EA region

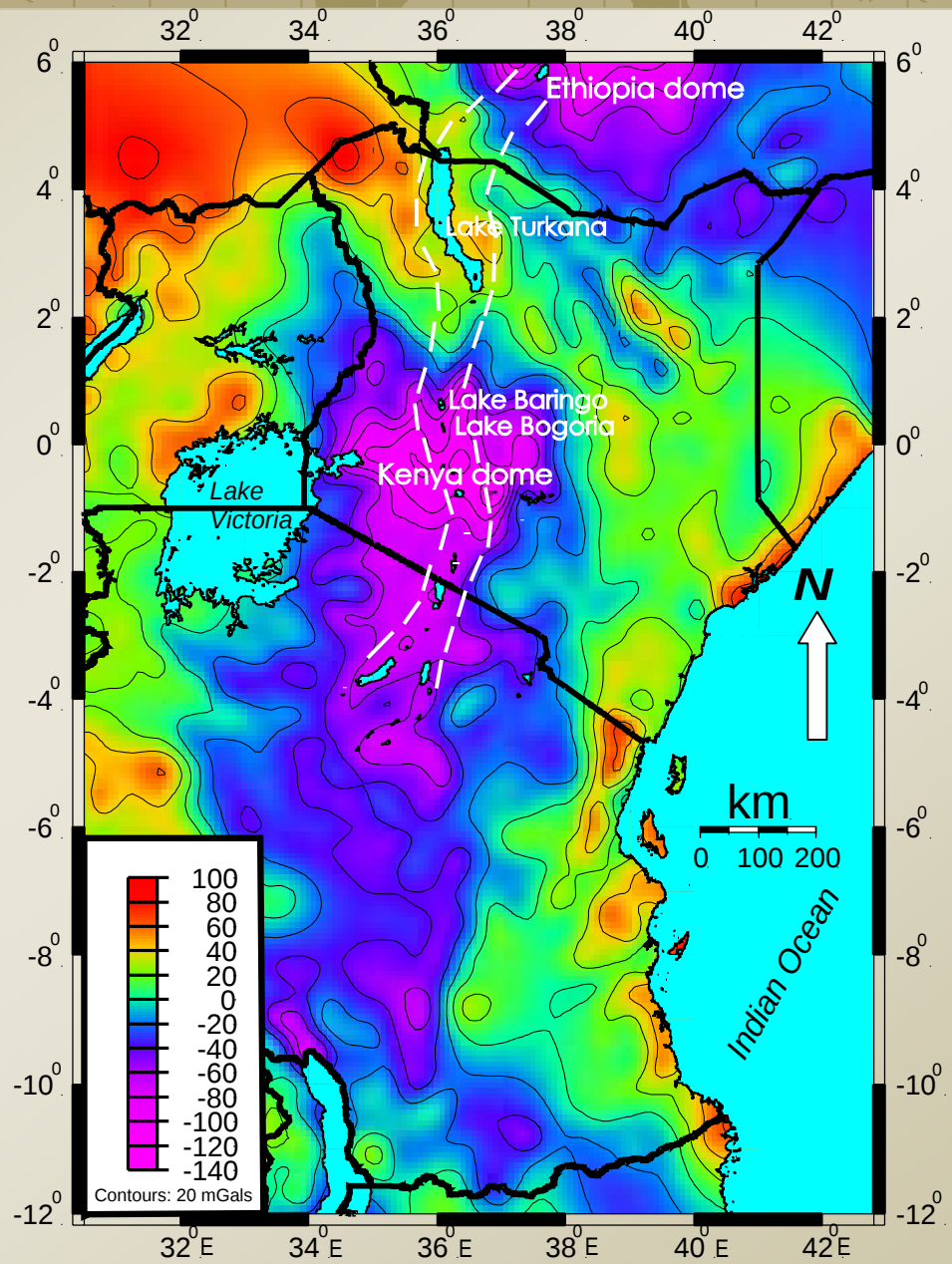




Gravity profile along the EA Rift System

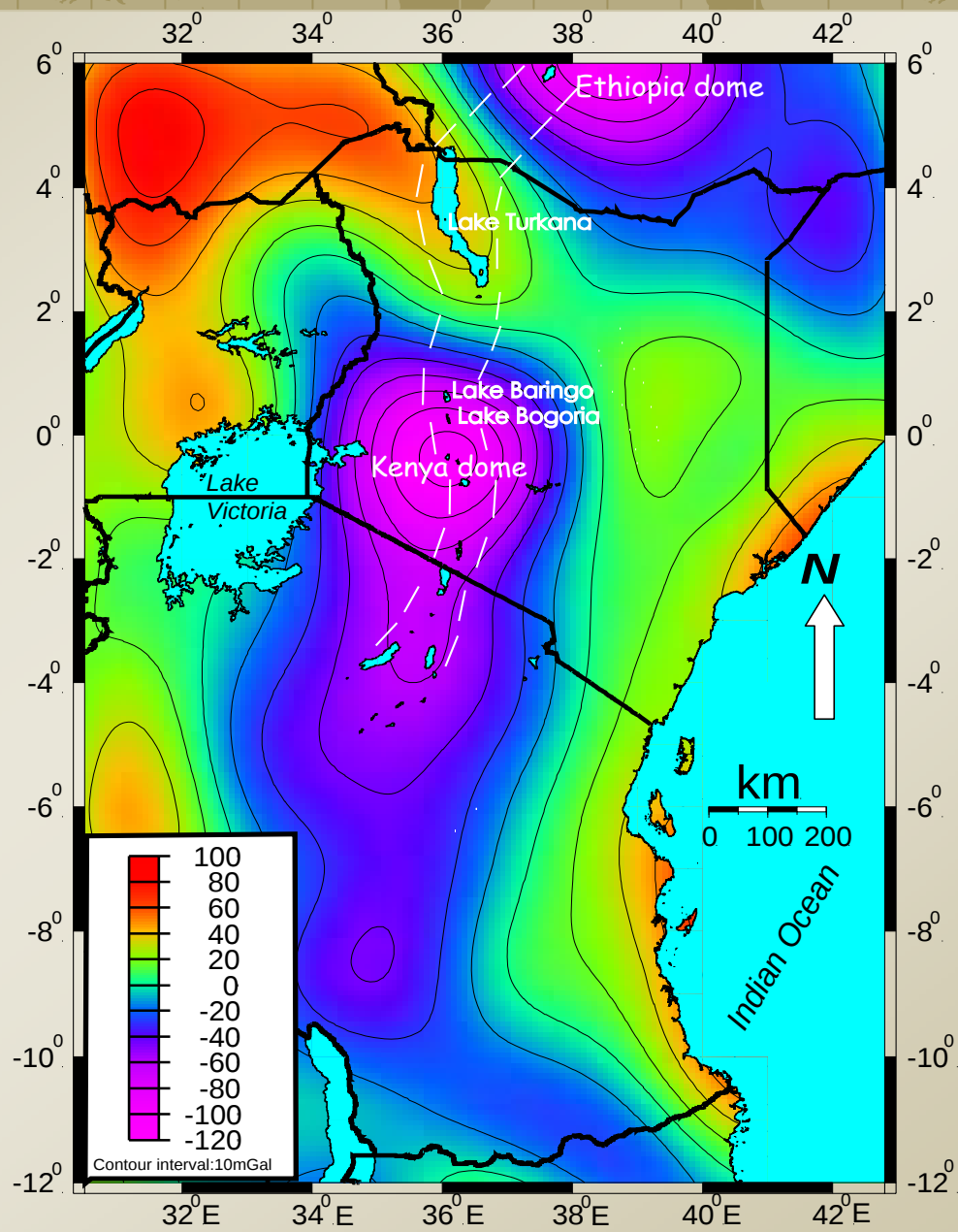


BP 50-2000 km





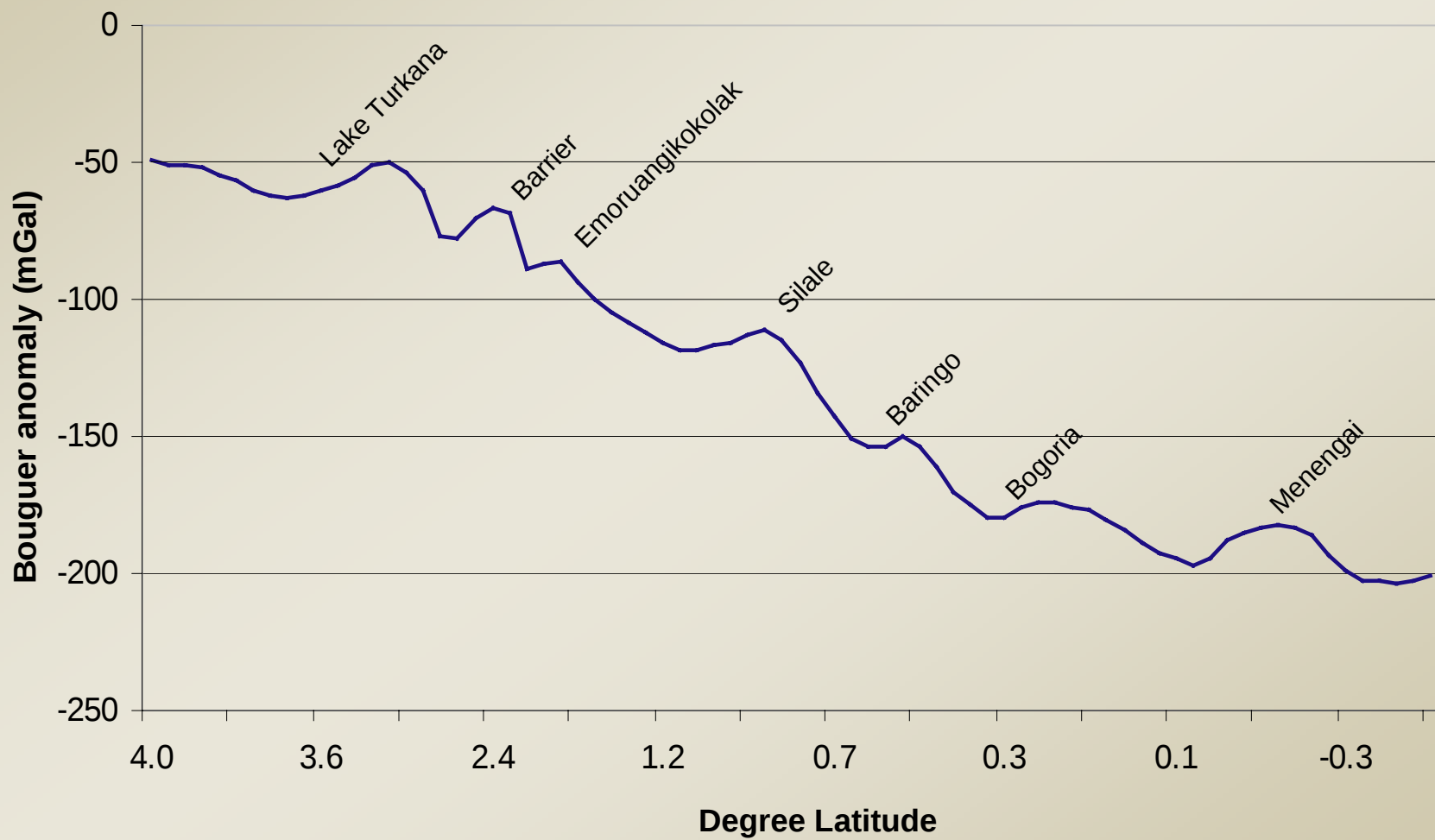
BP 250-2000 km



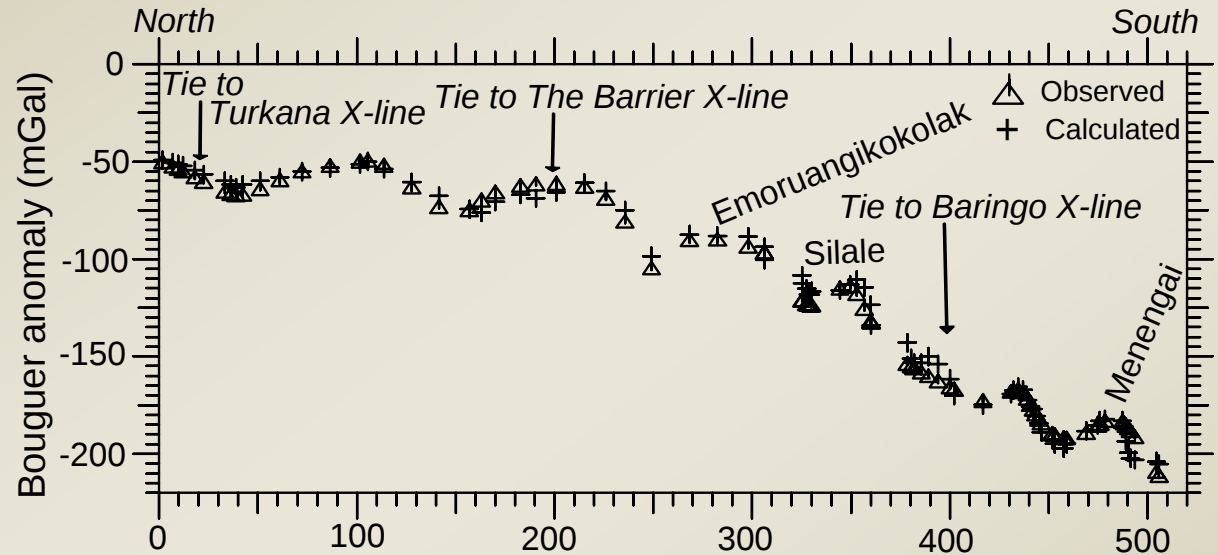


North

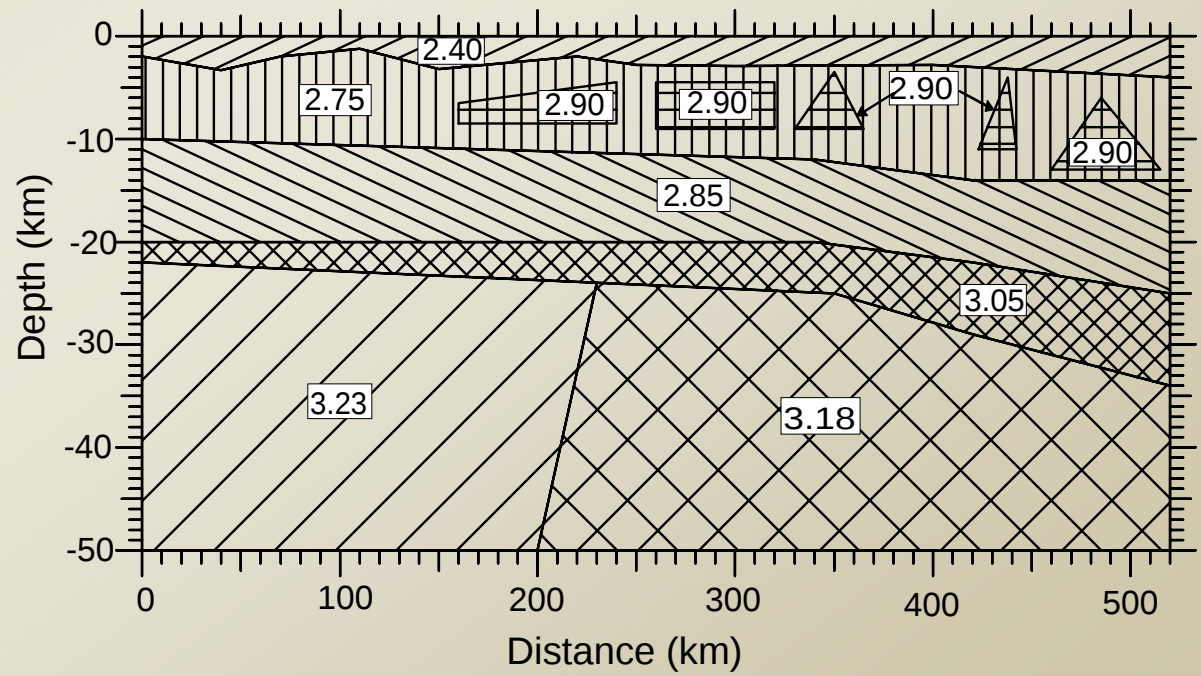
South

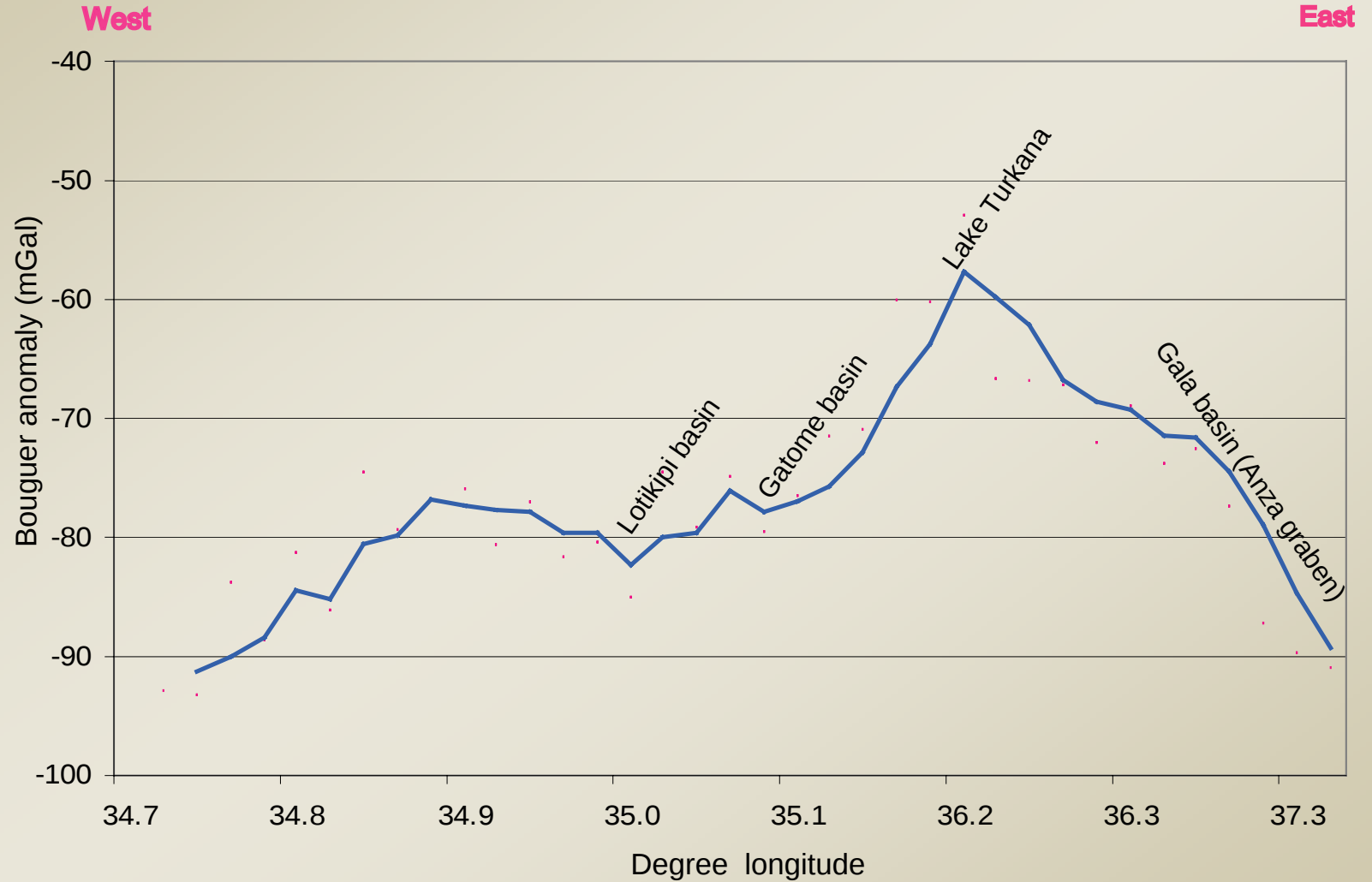
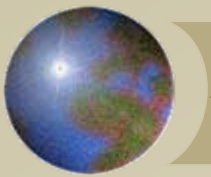


NS Bouguer anomaly



Axial line Earth Structure

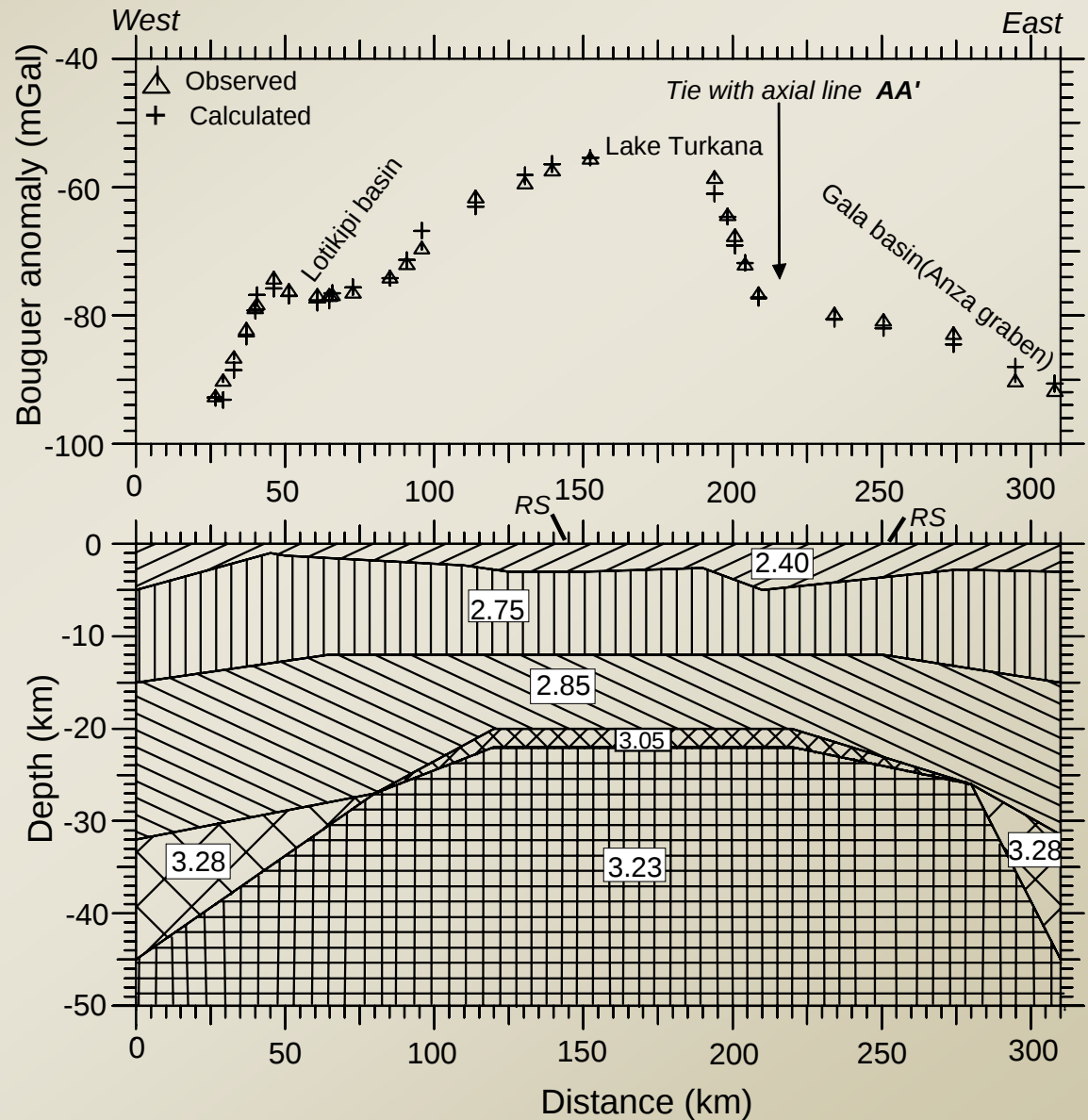


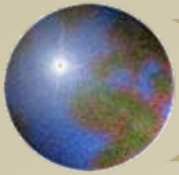


EW Bouguer anomaly across Lake Turkana



Gravity model across the Turkana region





Lake Turkana cones





Lake Turkana volcanic units





Lake Turkana structural trends





Any Geothermal indications?

- No recent active volcanic centres
- Very few and sparse geothermal indicators





CONCLUSIONS

- 1) More extension exists at the junction of the Paleogen NW-SE and the more recent EA rifts
- 2) Crustal thinning has been observed at the junction and thickens towards the domes
- 3) Data analysis has shown structures delineated by gravity and have similar trends to seismic structures based on KRISP experiments





Future work

- Carry out more detailed gravity measurements
- Carry out electrical resistivity measurements, e.g., MT and TEM
- Survey for locations of fumeroles and hot springs, if any and sample them





Thank you !

