<u>Scientific Drilling in East African Rift</u> Lakes: 2011 Workshop (NSF-EAR)

25°F 30°F 35°F 40°F Lake Tanganyika Lake Turkana 5°N 50 km 100 km , Isobaths (m) Isobaths (m) 80+ 1400+ 60 1250 40 1000 20 750 0 500 5°S 250 100 Lake Albert 10°S 15° 50 km

Figure 1. Elevation map of East Africa with bathymetries of Lakes Tanganyika, Turkana, and Albert. The inset in the central figure shows the general location of the East African rift (blue box). Isobaths for Albert and Edward follow the same color scheme (right).

Andrew S. Cohen Cynthia Ebinger Thomas C. Johnson James Russell Christopher A. Scholz



Current/Recent Drilling Projects: Hominid Drilling 2013 Lake Malawi 2005 Forthcoming Drilling: Lake Tanganyika

<u>Science Questions to be Addressed</u> <u>thru Studies of Long Cores</u>

- What are the dynamics of late Miocene-Pleistocene
- (last 7 Myr) African climate? (termination of a permanent El Niño, closure of the Indonesian seaway, the onset of Northern Hemisphere Glaciation....development of East African rift topography)
- What is the sensitivity and spatial variability of East
- African hydrology and temperature to orbital-scale
- climate forcings?
- How do the rates and amplitudes of East African climate change on millennial to decadal time scales?

<u>Science Questions to be Addressed</u> <u>thru Studies of Long Cores</u>

- What are the rates of border fault slip in the rift basins, and how they are constrained by geothermal gradients and volatile concentrations?
- What are the relationships between longterm fault slip rates and short-term seismic hazards?
- What are earthquake recurrence intervals?

How due long-term erosion rates, sediment budgets and accumulation, and their temporal variability help to constrain rates of crustal cycling?

Eruptive histories of the most violent of the EAR volcanoes (Rungwe)

Prospective sedimented highs in Lake Tanganyika

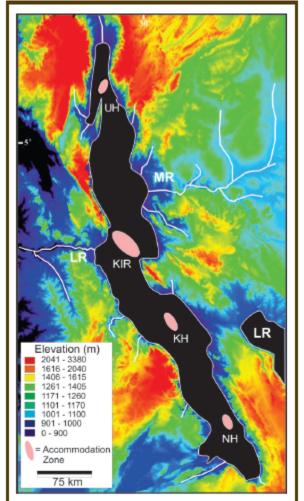


Figure 3. Digital elevation model of the Tanganyika basin showing the location of submerged high-relief accommodation zones within the lake. UH=Ubwari horst, KIR=Kavala Island Ridge, KH=Kalya horst, and NH=Nitiri High. At left, LR=Lukuga River, Tanganyika's outlet. At right, LR=Lake Rukwa, and MR=Malagarasi River. Modified from McGlue et al. (2008).