

**AAPG Annual Meeting
March 10-13, 2002
Houston, Texas**

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Organic Carbon Contrast Between The Kalya Ridge and Slope, Lake Tanganyika, East African Rift

Lake Tanganyika, in the East African rift valley, potentially contains sediment dating back approximately 9-12 million years. This sediment consists largely of organic matter that, over geologic time, has accumulated from the water column and surrounding areas. During the 2000 and 2001 Nyanza Projects, an NSF-funded training program in tropical lakes, sediment samples were collected in different localities to illustrate the sedimentological differences between contrasting depositional environments in the northern end of the South Tanganyika Basin, a relatively poorly investigated region of the lake. We collected sediment gravity cores and sediment/water interface (multi-core) from the Kalya Ridge (Horst block at ~600m water depth) and Slope (~300m).

We found that percentages of organic carbon in these locations are relatively high, ranging between 6-9% on the slope, 9-11.5% on the ridge (highest at 17%). Organic carbon values curves have been corrected for different sedimentation rates on the slope and ridge. Intriguingly, when juxtaposed on a depth scale, organic carbon does appear to be higher on the Kalya Ridge than on the Slope. Sedimentation rates are much slower on the ridge than on the slope, therefore the horst sediment represents much more time than the slope sediment does. An age model is compiled to relate the different values of organic carbon and still, organic carbon values are higher on the horst than on the slope. Since dilution of the organic matter with terrestrial input is less common on the ridge than on the slope, these percentages of OC appear to be correct.