

Cruise Report for R/V Tanganyika Explorer January-March, 1997

1. Introduction

A geological and geophysical study of the central and northern parts of the Tanzanian coast of Lake Tanganyika was carried out by a combined team of research scientists from the U.S., Tanzania and the U.K. The research program is being conducted under the joint direction of the University of Arizona (U.S.), The University of Miami (U.S.) and the Lake Tanganyika Biodiversity Project-Natural Resources Institute/Global Environmental Facility (U.K.). The purpose of the research is to understand both the recent and ancient geological history of this portion of Lake Tanganyika. The research team, which included scientists from the above institutions, and from the University of Dar es-Salaam, the Tanzania Petroleum Development Corporation (TPDC), the Tanzania Fisheries Research Institute (TAFIRI), and the University of Oklahoma (U.S.), worked on the R/V Tanganyika Explorer for 3 10 day cruise legs in February and March, 1997. During that time they collected over 2,000km of single channel and multichannel reflection seismic data (imaging the stratigraphy and structural geology below the lake floor) and approximately 80 sediment cores of up to 12m in length. The research work concentrated on two regions, the Malagarasi Platform and the area immediately north of the Mahali Mountains.

The three research projects each pursued slightly different objectives within the overall coring and geophysical program. The University of Arizona project, under the direction of Andrew Cohen is studying patterns of change and stability in Lake Tanganyika ecosystems over the last several thousand years, using fossils of various lake organisms retrieved from the cores. The University of Miami team, under the direction of Chris Scholz, is developing models of sediment accumulation in rift lakes for application to similar but ancient lake beds that contain petroleum in various parts of the world. The GEF/NRI study, also under the direction of Andy Cohen, is collecting paleolimnological data from cores in an effort to understand the history and magnitude of human impacts on the lake ecosystem during the past few centuries.

2. Cruise Calendar And Participants

2.1 Leg 1 (2-12 Feb.)

Objectives of the first leg of the project included, inspection and trials of all equipment and data collection on the Malagarasi Platform. After several days of successful seismic operations we returned to port to make some minor repairs. Coring operations began on Feb. 7 with 6m vibrocorer and on Feb 9 with 2m gravity corer. Damage to vibrocorer support beam necessitated that we cease coring on Feb. 10 and the following 2 days were used in shooting seismic lines in the southern (Mahali Mtn.) area. We returned to port on Feb. 12, having completed approximately 40% of our original seismic objectives and having collected 13 cores.

Co-Chief Scientists

A. Cohen (Univ. of Arizona)
C. Scholz (Univ. of Miami)

Scientific Party

S. Alin (Univ. of Arizona)-graduate student-paleontology
P. Cattaneo (Univ. of Miami)-geophysical technician
H. Gr!schel-Becker (Univ. of Miami)-post doctoral geophysicist
S. Kapilima (Univ. of Dar es Salaam)-stratigraphy
J. McGill (Univ. of Miami)-geophysical engineer
N Mliga (TPDC)-geophysics
S. Shana (TPDC)-geophysics

Ship Officers/Crew

I. Kimosa (Tanzania)- Captain
R. Makere (Tanzania)-Chief Engineer
N. Chale (Tanzania)-Master Fisherman
R. Suleiman (Tanzania)-Second Engineer
P. Bampiromukeko (Burundi)-Quartermaster
P. Bigirimana (Burundi)-Cleaner

L. Mpawenimana (Burundi)-Cook
Hassan Ali (Tanzania)-Deckhand

2.2 Leg 2 (15-24 Feb.)

Objectives of the second leg of the project included, completion of coring operations on the Malagarasi Platform, resumption of seismic acquisition and initial coring in the Mahali area, and coring and seismic on the Kavala Island Ridge (including a 12m core which will almost certainly provide the longest duration record of sedimentation in any African Great Lake to date). At the completion of this leg approximately 90% of our original seismic objectives had been completed and an additional 38 cores had been collected, plus additional bagged sediment samples. A portable vibracorer was field tested in the Kigoma area during the cruise break between legs 2 and 3, yielding several additional cores.

Co-Chief Scientists

A. Cohen (Univ. of Arizona)
C. Scholz (Univ. of Miami)

Scientific Party

S. Alin (Univ. of Arizona)-graduate student-paleontology
P. Cattaneo (Univ. of Miami)-geophysical technician
H. Groschel-Becker (Univ. of Miami)-post doctoral geophysicist
J. McGill (Univ. of Miami)-geophysical engineer
N Mliga (TPDC)-geophysics
H. Nkotagu (Univ. of Dar es Salaam)-hydrology
S. Shana (TPDC)-geophysics
M. Soreghan (Univ. of Oklahoma)-sedimentology

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2.3 Leg 3 (27 Feb-8 Mar.)

The objectives of the third leg of the project were to complete all original coring and seismic operations in the Malagarasi and Mahali areas, to obtain preliminary seismic information and cores on the area north of Kigoma (in preparation for the 1998 GEF coring cruise, and, to the extent possible, obtain long cores and additional seismic data on the Kavala Ridge area. At the completion of this leg approximately well over 100% of our original seismic objectives had been completed and an additional 30 cores had been collected, plus additional bagged sediment samples.

Chief Scientist

A. Cohen (Univ. of Arizona)

Scientific Party

S. Alin (Univ. of Arizona)-graduate student-paleontology
P. Cattaneo (Univ. of Miami)-geophysical technician
J. McGill (Univ. of Miami)-geophysical engineer
N. Nyandwi (Univ. of Dar es Salaam)-sedimentology
M. Soreghan (Univ. of Oklahoma)-sedimentology
K. West (Univ. of California-LTBP)-paleontology/NRI operations

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Appended Table

List of cores collected during cruise