## NYANZA PROJECT

# Five-year African lake study program funded by NSF

U.S. university undergraduate students and young African researchers will study tropical lake science in a summer program based in Tanzania, on the shores of Lake Tanganyika, for the next five years. Lake Tanganyika is one of the great East African rift lakes, some of the most scientifically important and fast-changing tropical lake systems in the world.

The unique program, called the Nyanza Project, will be directed by Andrew S. Cohen, Professor of Geosciences at The University of Arizona in Tucson. The National Science Foundation (NSF) recently awarded Cohen a $780,000 grant to develop an NSF Research Experience for Undergraduates (REU) program based at Tanzania Fisheries Research Institute facilities at Kigoma, Tanzania.

Students will be paid for all expenses and receive stipends to work with a multinational team of instructors who have a broad range of biological, geological and limnological research experience at Lake Tanganyika and its related lakes. Their course will consist of about three weeks of intensive laboratory and classroom training, followed by three weeks of independent research supervised by the faculty.

At the same time, Cohen and program faculty will run an identical course for young African scientists with funding and research support from the United Nations Global Environmental Facility (GEF).

The joint Nyanza Project fulfills part of the training mission of the International Decade of East African Lakes (IDEAL), a 5-year-old research and training consortium of African, North American and European scientists interested in all aspects of African lake science. Originally, the goal of IDEAL was to expedite a scientific program of coring the African lakes for their unique 10-million-year environmental record. But the consortium has expanded its focus greatly because of rapid environmental change, especially at Lake Victoria, the largest of these lakes. Scientists are trying to understand the degree to which human impact and climate are causing rapid ecosystem changes.

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## EAST AFRICA

# A proposal to establish a new reference data set of climate-proxy indicators in East African lakes

The lithology of a continuous 8.20-meter long sediment profile from Crescent Island Crater in Lake Naivasha (Kenya) has produced some of the strongest evidence yet for major climatic variability in equatorial East Africa over the past 1000 years. The magnitude of reconstructed lake-level fluctuations imply that the region was much wetter than today from the mid-1600s to the mid-1700s, and that severe drought occurred during the 'Medieval Warm Period' (about AD 1000-1250), the late 1500s, and the early 1800s. The more recent of these climatic anomalies were contemporaneous with high- and lowstands of Lake Malawi and Lake Chilwa in southeast Africa that have been estimated to represent episodes when rainfall was as much as 40% higher or 70% lower than today, i.e. well beyond the long-term rainfall variability recorded in historical times. The continuity and excellent time resolution of the Crescent Island Crater record places these climatic anomalies in a chronological context that demands appreciation for the basic unpredictability of East Africa's landscape resources at the scale of human generations.

A collaborative effort by the University of Minnesota (USA), the University of Gent (Belgium), and Queen's University (Canada) now aims to complement and further constrain the late-Holocene lake-level record of Crescent Island Crater with a reconstruction of past salinity fluctuations based on the composition of fossil diatom and chironomid assemblages. The diatom-based, quantitative paleosalinity inferences will be able to make use of known salinity optima and tolerances of diatom species derived from a reference data set of diatom floras in 164 African lakes established by Françoise Gasse and co-workers, but a comparable reference data set of chironomid faunas does not currently exist. With recent progress into the taxonomy and ecology of larval Chironomidae in African lakes increasingly revealing the potential of chironomid-based quantitative paleosalinity reconstruction in semi-arid East Africa, the author now proposes to start an extensive field survey of lakes in Kenya, Uganda, Ethiopia, and Tanzania with the purpose of collecting chironomid and water chemistry data spanning the full gradient of aquatic environments from dilute mountain tarns to hypersaline playa lakes. In consideration of the logistic effort involved (helicopters are not likely to be a regular option), it appears appropriate that a field-survey protocol be established that maximizes the usefulness of collected samples and data to the wider paleoenvironmental research community. The author therefore takes the opportunity of this announcement to invite collaboration and ideas from researchers who would like to take advantage of the proposed large-scale lake survey to collect data that may promote the interpretation (or allow calibration) of other biological and geochemical climate-proxy indicators. This research effort will take 3-4 years to complete; funding has been obtained for a first field campaign planned for the Summer or Fall of 1998.

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A French version of the PANASH-PEP III report has been produced by the CST (Centre des Sciences de la Terre) in Lyon (France).
Entitled 'Paléoclimats des hémisphères Nord et Sud, le projet PANASH, les transversales Pôle-Equateur-Pôle' (*Docum. Lab. Geol. Lyon, n° 146, 1997*), this document is available from the PAGES office in Bern.
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