Core sample taken from Lake Malawi reveals 1.3 million years of African history

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Credit: I. Castaneda, University of Minnesota

A team of researchers with members from the U.S., Australia, Chile and

The Netherlands has conducted a long-term study of core samples taken from the bottom of Lake Malawi back in 2005—in their paper published in the journal *Nature*, the team describes how they analyzed the sample and what was revealed.

A plan to take core samples from the bottom of Lake Malawi (one of the deepest in the world at 700 meters) was first conceived by team member Thomas Johnson with the University of Minnesota Duluth back in 1994, but it was not until 2005 that the drilling began. To carry out such an ambitious project, the team enlisted the assistance of drillers from the oil industry. They obtained a 380-meter-long core sample. Study of the core sample has been ongoing for the past decade—it has been difficult because radiocarbon dating of sediment samples is only accurate back to approximately 50,000 years. To go back further required using a variety of techniques such as tracing reversal of magnetic polarity in volcanic ash, tracing changes in the distribution of organic compounds, noting deposition variances and identifying vegetation by studying the molecules that were known to have come from oils on leaf coatings. In addition to offering information about plant and animal life in the region over the course of many years, it also offered clues about the temperature of the lake.

In studying all the evidence they had acquired, the researchers developed a sense of the climatic history of southeastern Africa going back approximately 1.3 million years. They believe the core sample shows that contrary to conventional thinking, that part of Africa did not experience drier conditions following the Pleistocene Transition—instead, they found evidence of the opposite—that southern East Africa has actually been experiencing a progressively wetter climate. They also found that the area has experienced a cycle of temperature and rainfall fluctuations that coincided with the various ice ages.

The team suggests their findings could have an impact on historical climate models regarding parts of Africa that could in turn have a major impact on the story of human evolution—noting that what they have discovered might make things "a bit more complicated."

More information: T. C. Johnson et al, A progressively wetter climate in southern East Africa over the past 1.3 million years, *Nature* (2016). DOI: 10.1038/nature19065