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## Continental scientific drilling: A game changer for understanding ecosystem evolution in Africa

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Over the past 20 years a series of scientific drilling campaigns around Africa have yielded exciting new information about the evolutionary ecological history of that continent. Most of these records have come from highly resolved lacustrine deposits with rapid sedimentation rates, and primarily, though not exclusively, have come from the East African Rift Valley, spanning the last ~3.5Ma. Important insights about both lacustrine and terrestrial ecosystem evolution have emerged, including ones with implications for the ecological context of human evolution. During the transition from the Late Pliocene warm period into the Quaternary, phytoliths, charcoal, pollen and leaf wax records are reshaping our understanding of fine scale structure of landscape vegetation transformation, and the implications these changes had for resources and cover that mammals (including early hominins) relied upon. Pleistocene drill core paleoecological records from Lake Malawi have provided evidence for transformations of that lake's ecosystem, including water column mixing, transparency and nutrient recycling, that help explain the explosive phylogenetic radiation of that lake's extraordinary endemic cichlid fish fauna. And high-resolution records from that same lake spanning the time of the ~75ka Toba super-eruption allow us to test and falsify hypotheses linking volcanic activity to wholesale transformation of the African ecosystem, including purported links to modern human population bottlenecks. These valuable archives will in the future be complemented by even longer records from Africa's oldest lake, L. Tanganyika, allowing us to build a comprehensive picture of African ecosystem evolution extending back to the late Miocene.