

Research presented at the
2009 annual meeting of the
Geological Society of America

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Ethiopia's climate 27 million years ago had higher rainfall, warmer soil

Thirty million years ago, before Ethiopia's mountainous highlands split and the Great Rift Valley formed, the tropical zone had warmer soil temperatures, higher rainfall and different atmospheric circulation patterns than it does today, according to new research of fossil soils found in the central African nation.

Neil J. Tabor, associate professor of Earth Sciences at Southern Methodist University and an expert in sedimentology and isotope geochemistry, calculated past climate using oxygen and hydrogen isotopes in minerals from fossil soils discovered in the highlands of northwest Ethiopia. The highlands represent the bulk of the mountains on the African continent.

Tabor's research supplies a picture of the paleo landscape of Ethiopia that wasn't previously known because the fossil record for the tropics has not been well established. The fossils were discovered in the grass-covered agricultural region known as Chilga, which was a forest in prehistoric times. Tabor's research looked at soil fossils dating from 26.7 to 32 million years ago.

Fossil plants and vertebrates in the Chilga Beds date from 26.7 million to 28.1 million years ago, Tabor says. From his examination, Tabor determined there was a lower and older layer of coal and underclay that was a poorly drained, swampy landscape dissected by well-drained Oxisol-forming uplands. A younger upper layer of the Chilga Beds consists of mudstones and sandstones in what was an open landscape dominated by braided, meandering fluvial stream systems.

Tabor is part of a multi-disciplinary team combining independent lines of evidence from various fossil and geochemical sources to reconstruct the prehistoric climate, landscape and ecosystems of Ethiopia, as well as Africa.

He will present the research in a topical session at the Oct. 18-21 annual meeting of the Geological Society of America. The session is titled "Paleoenvironments of Upper Oligocene Strata, NW Ethiopian Plateau." His co-researcher is John W. Kappelman, Department of Anthropology, University of Texas.

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When & Where

Paper 134-1: Neil J. Tabor, presenter

"PALEOENVIRONMENTS OF UPPER OLIGOCENE STRATA, NW ETHIOPIAN PLATEAU"