

Plio-Pleistocene climate and environmental reconstruction in the Bogotá basin, northern tropical Andes of Colombia.

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The Pliocene epoch, from 5 to ~2.6 million years ago (Ma), is the last time when Earth's mean temperature was ~2.5-4°C warmer than today, and CO₂ concentrations may have been around 400 ppm. Although global Pliocene warmth is well-known, there is a scarcity of Pliocene-Pleistocene records of terrestrial climatic and environmental change, particularly in the tropics, compared to marine records of mid- to high-latitude change. The Sabana de Bogotá in the Eastern Cordillera of Colombia offers unique sedimentary archives from the tropics (~4°N), including sediment from an extinct lake preserved in the Funza-II core that dates to the late Pliocene (~4 Ma). To evaluate thermal and hydrologic changes preserved in the Funza-II core, we measured branched glycerol dialkyl glycerol tetraethers (brGDGTs), *n*-alkane distribution and concentration, bulk stable isotopes, total organic content, and carbon and hydrogen isotopic compositions of sedimentary plant waxes, C₂₉ and C₃₁. We compared our results with previous pollen and sediment analysis to test whether Pliocene-Pleistocene changes in this terrestrial tropical archive correspond to climate (i.e. drier or wetter Pliocene) or local environmental variability (i.e. a shift from terrestrial to aquatic vegetation). We observed a considerable difference in temperature and hydrology between the late Pliocene and mid-late Pleistocene.