Geophysical Research Abstracts,
Vol. 10, EGU2008-A-08982, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-08982
EGU General Assembly 2008

Amazonian climate during the Holocene

B. Turcq (1), P. Braconnot (2), R.C. Cordeiro (3), A. Sifeddine (1), P.L. Silva Dias (4), T. Jorgetti (4), R. Lima da Costa (3), J. Abrão (3)

(1) I.R.D. - Institut de Recherche pour le Développement-UR PALEOTROPIQUE– Centre IRD d'Ile de France, 32, Avenue Henry Varagnat, 93143 Bondy cedex, France, Bruno.Turcq@ird.fr (2) LSCE-Laboratoire des Sciences du Climat et de l'Environnement, CEA-CNRS, Saclay, France. (3) Departamento de Geoquímica, Universidade Federal Fluminense, Morro do Valonguinho s/nº, 24020-007 Niterói, RJ, Brazil. (4) Instituto de Astronomia e Geofisica, IAG-USP. Sao Paulo, Brazil.

In the middle of the great debate concerning the Last Glacial Maximum (LGM) in Amazonia, the Holocene has always been a little forgotten. An exhaustive analysis of existing data for this period, since 11,500 cal BP, reveals marked changes in the Amazonian environments. Lacustrine level studies show a lower precipitation/evaporation budget than present in the beginning of the period, with the lowest lake levels between 8500 and 6800 cal BP. Although the dominant Holocene vegetation has always been the rainforest in the heart of Amazonia, this forest expanded towards the northwestern and southwestern regions from 6800 to 1550 cal BP. Moreover, pioneer elements of the rainforest developed during the mid-Holocene and the best example is those of *Cecropia*, between 9000 and 5000 cal BP. Soil δ^{13}C indicates a forest expansion over savannas areas in Roraima (north), Mato Grosso and Rondonia (southwest), during the Holocene. The mid-Holocene (8000-4000 cal BP) is characterized by repeated occurrences of forest fires, marked by the presence of charcoals in soils and lacustrine sediments. Early and mid-Holocene paleohydrological data point to a higher variability in the discharge of the main rivers. Therefore, the Amazonian climate during the Holocene was drier and more variable than the present-day one.

Atmospheric Global Circulation Models (GCM) applied to 6000 BP indicate that the lower summer insolation accounts for the lower rainfall rates of that time. New results from coupled Ocean Atmosphere GCM similarly depict a drier climate in most of

the region except at the north of equator where precipitations were higher or equal to modern ones. Data from Amazonia rainforest do not confirm such a transition from a drier region south of equator to a wetter region on the north. Sediment transport to Cariaco basin, north of the Amazon basin, during the middle Holocene suggests that the northernmost part of South America was wetter at that time. The transition between a drier region in the south and a wetter region in the north would indeed exist at 6000 BP but it was situated at higher northern latitudes than simulated by the OA GCMs. An explanation of the observed higher Mid-Holocene climate variability still required a better comprehension of the time scales involved in the observations to be compared to model results.