CARBON ISOTOPE RECORDS IN SOIL IN THE BRAZILIAN WESTERN AMAZON: IMPLICATIONS FOR VEGETATION AND CLIMATE CHANGES DURING THE LATE PLEISTOCENE AND HOLOCENE

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This study was carried out in the Brazilian Western Amazon region (Rondônia state and Humaitá, Southern Amazon state). Carbon isotope (C-12, C-13, C-14) data on soil organic matter have been collected along an ecosystem transect of about 750km that includes a savannah, a wooded savannah (cerrado), a tropical semideciduous forest (cerradão), a forest transition type and a tropical forest. The main objective is to evaluate the expansion - regression dynamics of these vegetation units in relation to climate changes during the Late Pleistocene (Late Glacial) and Holocene. C-14 data of humin fraction and buried charcoal indicate that the organic matter in these soils is at least 17000 years BP at 300 cm depth. In this period, the entire ecosystem transect are characterized by del C-13 soil depth profiles, generated tipically by C3 plants (forest), inferring a humid climate in the Western Amazon region during the last glaciation. C-13 data also indicate that C4 plants (grasses) have influenced significantly the vegetation at the transitional forest and the cerrado sites of Southern Rondônia state and nine distinct points in the forest ecosystem in the Southern Amazon state. These typical C4 type isotopic signatures probably reflect a drier climate during about 8000 yrs BP to 3000 yrs BP. The C-13 records representing the 3000 yrs show a expansion of the forest, due to a climatic improvement, in areas previously occupied by savannah vegetation.