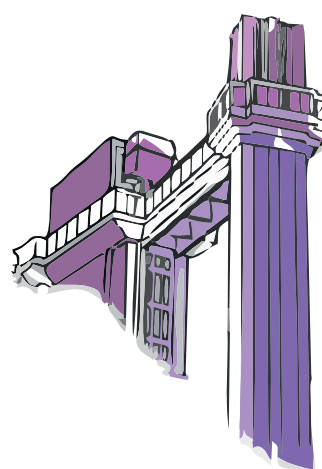


Boletín de la Asociación Latinoamericana de Paleobotánica y Palinología

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XIV IOPC
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*Palaeobotany and Palynology:
towards new frontiers*

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**XIV International Palynological Congress
X International Organisation of Palaeobotany Conference**



Asociación
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Salvador, October 2016

Preliminary study of sedimentary organic matter of the Neogene, Solimões Basin, North Brazil

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Palynofacies patterns were used to detect paleoenvironmental changes in 78 sediment samples of one well (1-AS-46-AM) drilled through the Solimões Formation. The formation consists of mudstones interpreted as fluvial/lacustrine system. Samples were prepared using the standard method of palynological preparation. The three main categories of particulate organic matter (POM), viz., amorphous organic matter (AOM), phytoclasts and palynomorphs were counted and identified. The organic constituents in the studied samples have been grouped into: autochthonous particles (algae); opaques phytoclasts; non-opaque non-biostructured phytoclasts and cuticles (Nop-NBio); structureless particles (AOM, pseudoamorphous and resin) and sporomorphs. The stratigraphic distribution of the groups was used to infer the paleoenvironmental changes. The proximity of the source is the main factor that reflects of dominance of Nop-NBio with average of 80% of the total POM. The section was subdivided into three intervals, according of palynofacies assemblage observed in the section. The first interval (85.17-200.17 m) is characterized for high amounts of Nop-NBio (almost 83%); however two episodic events of increase of autochthones, structureless particles and sporomorphs were recorded. The first event at 192.46 m, the autochthones, structureless particles and sporomorphs were predominant, being the autochthones the most abundant category. The second event was longer (141.91-122.32 m) and is coincident with abundance variations of autochthones, structureless particles and sporomorphs. Nop-NBio was replaced mainly by sporomorphs, especially between 134.26 and 135.19 m, when the Nop-NBio shows the lowest abundance in the whole section. The phytoclast input is continuous indicating a fluvial setting. However, the two episodic events have indicated lacustrine conditions. The second interval (57.59 - 85.17 m) is characterized for a gradual decreased of Nop-NBio and raised of opaque phytoclasts and sporomorphs which could reflect a subaerial exposure or at most shallow lakes. However, in the top of this interval (57.59 - 79.57 m), the Nop-NBio increased again, replacing opaques phytoclasts and sporomorphs. The third interval (41.73 - 55.10) started with Nop-NBio prevailing upon the others POM constituents. However, the significant change occurred at 41.73 m, in which Nop-NBio is replaced for structureless particles. This change has showed again the influence of lacustrine environment in a fluvial system.

Keywords: Palynofacies analysis, paleoenvironments, Miocene, Pliocene, Amazonia

Oligocene taphoflora of Tremembé Formation, Taubaté Basin in Quiririm (SP): palaeoclimatic and palaeoecological inferences based on leaf damage caused by other organisms

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Tremembé Formation, a lithostratigraphic unit of Taubaté Basin, consists of grayish to black argillaceous, papyraceous and bituminous shales, smectite clays and pebbly mudstones. It contains a very rich and diversified fossil faunal and floral record, the latter being among the most important Cenozoic paleofloras of Southeastern Brazil. Macrofossils preserved as impressions and/or compressions were collected from levels of papyraceous shales outcropping in the upper portion of the formation. The taphoflora of Quiririm (Municipality of Taubaté, State of São Paulo) presents a floristic composition constituted by an assemblage of, in general, algae, monilophyta, gymnosperm and angiosperm foliar taxa, probably deposited near the margin of a lake. The taphonomy suggests gradual deposition in a reducing environment, inferred from the horizontal arrangement of phytofossils on the bedding surface and their chaotic direction. Foliar morphographic analysis indicates that during the Late Oligocene the annual average temperature was between 25° - 30°C, forming a tropical / humid or seasonal subtropical biome on the valley and on the slopes of the Paraíba do Sul River graben. Paleoenvironment has been reconstructed based on the inferences

drawn from plant associations corroborated with palynological and vertebrate paleofaunal data. The leaf damages caused by the entomological fauna were recognized as holes, perforations and suction marks, marginal feeding marks, galls and leaf mining, that confirm the wide diversity of insect taxa already detected in the paleoentomofaunal record and those caused by fungal organisms. Galls are the most abundant type of damage noticed and were caused by insects belonging to Lepidoptera, Coleoptera, Hymenoptera and Diptera, whose registers are observed in this and/or other outcroppings of the formation. Leaf minings indicate the abundant presence of moths (Lepidoptera) in the paleofauna. The leaf minings observed in *Xylopia*, typical in present day Nepticulidae, suggest an old interaction between these taxa resulting from putative coevolution. An intense and diversified herbivory and parasitic activity is indicated by the types of leaf damages. This fact associated to a diversified flora and foliar morphographic data is suggestive of a warm and more humid climate for the study area. [CNPq - 304978/2013-2, MECBO; CNPq-306609/2012-6, MJG; CNPq-300578/2015-6, PSK].

Keywords: Angiosperms, entomogenic foliar damages, paleoecological and paleoclimatic interpretations, Late Oligocene, Taubaté Basin

Novel Pleistocene record of plant remains in terrace sediments of Teles Pires River, northern Mato Grosso, Brazil

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As the result of paleontological rescue developed under the Research, Monitoring and Paleontological Heritage Rescue Programme of the Teles Pires hydroelectric plant, a large amount of samples including concretions and mudstones blocks containing plant fossils were recovered. The fossiliferous deposits lie in the current fluvial bed and terraces (levees) of the Teles Pires River, in the area destined for the future reservoir. Initially, we are investigating only the fossil from pelitic deposits, which are represented by unlithified sediments, situated on the banks of the river channel, deposited in the adjacent floodplains, and accumulated by gravitational processes (landslides) and suspension (floods and marginal lakes). Fossil remains preserved with the original organic matter are rare, but we obtained (AMS) ¹⁴C ages of cal. 19,230 +/- 80 years BP, that is, late Pleistocene, in the base of the main phytofossiliferous outcrop. For this contribution, 74 specimens of fossil leaves, preserved in the form of impressions and compressions were selected. We based the analysis and description of the different morphological aspects of the remains on criteria established by the "Manual of Leaf Architecture". The venation patterns observed in the specimens constituted one of the main parameters for the segregation in morphotypes, as well as for taxonomic determination. The samples analyzed were described in detail and, whenever possible, identified with the aid of the work "Flora Pleistocênica do Paleolago Cemitério, Catalão, GO: taxonomia e fitofisionomia" and "Estudo de Impacto Ambiental da UHE Teles Pires (Volume 3)", but also on the information available in the "rede speciesLink" and "INCT- Herbário Virtual da Flora e dos Fungos". To implement the taxonomic study of the material, the specimens were separated into 16 distinct angiosperm morphotypes, which are largely included in the dicotyledonous clade, while a few are associated with the monocots. As a preliminary result, we identified specimens of Fabaceae and Myristicaceae families, and at generic level, two morphotypes classified as *Bauhinia* sp. and *Virola* sp. The remaining material are still under analysis, but will probably match the living taxa, many of which are currently present in the area, given the recent age of the analyzed deposits.

Keywords: Fossil flora, Teles Pires River, Amazon Rainforest, late Pleistocene.