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XINGU RIVER UPSTREAM OF VON MARTIUS FALLS. A COMPLEX DEPOSITIONAL SYSTEM

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Introduction

In the north-west portion of the State of Mato Grosso, in the centre position of Brasil and South America the river Xingu and tributaries presents a large fluvial plain, known in the geomorphologic literature as dust broom of Xingu. a big and complex depositional system, with meandering fluvial plains, fluvial plains, lakes, terraces and a lot of constructional fluvial forms. In works of geomorphological mapping realised for the Social-Economic-Ecological Zoning Project of the State of Mato Grosso, this complexity landscape was identified. This paper presents first ideas about this landscape, including partial results about geomorphological maps using a new system of geomorphologic classification.

Study Area

The Xingu River and its most important tributaries starts at Serra Azul Escarpments in the east of Mato Grosso State and crossing the erosional depression, of Paranatinga. The flow in north direction. In this depression the river did not have fluvial plains and the river flow on hard palaeozoic sandstone of the Diamantino Formation. After the river cross the Parantinga's Depression, it makes a small canyon at Parecis Plato Escarpment. This plateau is elaborated in cretaceous sediments, especially sandstone, capped it by think cenozoic sediments. Over this

sediments a reddish yellow latossol is developed and sometimes there are a lateritic profile between both.

In the extreme north of Parecis Plateau, the Xingu River creates a big fall, called Von Martius. Between Von Martius Falls in the north and the Parecis Plateau Escarpments to the south, there is a complex depositional system inside the plateau.

The complexity of these landforms is correlated to a base level located in Von Martius Falls and the flat surface of the Parecis Plateau. This big basin configures a dendritic pattern, with a rounded shape. At upstream of Von Martius Falls a big system of fluvial plains are mapped. In many times this plains are larger than 10 km. The Xingu River and its tributaries has a high sinuosity pattern, and the floodplain shows abundant ox bow lakes and point bars.

System of Classification

The landforms were identified and mapped using a genetic geomorphological system of classification developed for the Social-Economic Ecological Zoning Project of Mato Grosso State

This system is based on a genetic analysis of the main landforms observed in field works and mapped in regional scale at 1:250.000.

Fluvial Plains - Pf

It corresponds the plains and fluvial terraces that cannot be separate in the scale 1: 250.000. These areas generally happen associated to the courses of smaller dimension, being a lot of times masked by colluvial deposits.

The fluvial plains are formed by the flood plain and the low terraces. Associate peat and swamps are recorded as well. The fluvial plains rise to 1 or 2 m above the medium water level of the rivers. The mean inclination are always less than 1%. The plains are continuous and they present variable widths of 1 to 2,5 km.

The dynamics of the flows is in accordance with the rhythm of the rivers. The hidromorphic conditions produce a high degree of consolidation of these materials and the anaerobic conditions of the system favoured the accumulation of organic material in the superficial layers.

Unconsolidated alluvial sediments were classified as Recent Alluviums from those areas. The derived soils of this material are classified as Humic and Plintic. The fluvial plains are relieves that are characterised by to present a high water tables and seasonal overflow. It is common the burying of the channel in consequence of the erosion in the spaces intercepted by highways.

Alluvium Meandering Plain - Pmd

The plains of this system are characterised by meandering rivers. These plains present ponds with several formats, varying of the circular to those with stocking-moon format.. Marks of sandy belts are observed in the plains, indicating the process of movement of the river along the plain. These plains present variable widths of 2,5 to 6,5 km.

The meandering channels of the rivers Xingu, Suia-Miçu is irregular, with variable widths and lower sinuosity, while the one of the rivers Arraias and San Francisco, have very sinuous patterns.

Quaternary Alluviums, which are distributed along the main, are composed by sands, silts, mud and pebbles. The soils are classified Hidromórfic Húmic and Plintic.

Lakes/Ponds

This unit exists in the central portion of the basin as a series of ponds formed in the plain. The Lake of Itavununu for example formed by the Itavununu River and Seca, Bico-Doce, Curumim, Guará, Vermelha Ponds formed for flowing smaller of the river Xingu and Dourada Pond formed by the Iparu River.

The occurrence of these ponds and lakes should be conditioned to the fact of the drainage network to be of smaller order not to possess enough competence to arrive to the big rivers and its plains. The rivers of larger size act as barriers to the flows of the of smaller tributaries , impeding it of to arrive to the Xingú river.

These plains suffer annual processes of flood. This phenomenon is associated to the rainy events of larger intensity and also to the elevation of the level of the water table.

Low Fluvial Terraces - Tb

Terraces were identified in the Batovi and Xingu rivers, in the north-west portion of the mapped area. They conform low areas, above the level of the Fluvial Plains (Pf) and Alluvium Meandering Plain (Pmd).

These areas were not visited in the field works, having only been interpreted in the satellite images. They should present a composed for unconsolidated sediments with sand and-loamy.

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