

Avulsions and channel switching in the Paraguay River, Brazilian Pantanal

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RESUMO

Flowing from north to south, the Paraguay River (Brazil) is the trunk river for overlapping depositional systems tracts composed of many fluvial megafans that characterize the Brazilian Pantanal. Since the Pleistocene, the Paraguay River has built a fluvial megafan at the northwestern sector of the Pantanal. Prior to entering the Pantanal floodplain, the river runs along a 5-km-wide Holocene-aged meander belt dated to 1-3 ka BP. The meanders in the north transition to a rectilinear channel habit in the south. The meander belt is in an incised valley within Pleistocene deposits aged 10-160 ka BP. Age dates from abandoned meander lobes of the Paraguay megafan were dated to 10-70 ka BP. The abandoned lobes are presently in a state of pedogenesis and fluvial incision by younger tributary channels that have masked the paleo-drainage networks of the distributary channels. This leads to floods and permanently flooded areas where the waters run off along a multichannel complex that forms the Canzi River. The present depositional lobe of the Paraguay River megafan has been built not only from the formation and abandonment of channels and marginal levees, but also from the large quantity of sediment deposited during flood events. These geomorphic features produce a complex megafan with marginal levees, channel aggradation, crevassing and splays, channel switching and flood discharge that produce flood event beds and muddy laminae in the sedimentary record. Discharge measurements in the Paraguay River revealed values of 693.74 m³/s upstream and 389.14 m³/s downstream of the avulsion, with the difference (220.30 m³/s) draining into the Canzi channel. As floodplains are topographically lower than channels and often form wetlands, this area will likely experience a new Paraguay River avulsion, which may ultimately occupy the Canzi River.

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fluvial megafan; avulsion; Paraguay River