



Meander dynamics of a tropical river: the Rio Beni (Bolivian Amazonia)

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Among the numerous studies conducted on meandering fluvial systems, little attention has been given to tropical rivers. This study examines a river of the south-western Amazonian lowlands of Bolivia. The Beni River (282,000 km²), whose upper sub-catchments drain the Andean and sub-Andean ranges, is a major tributary of the Madeira River for water and sediment supply. In the Amazonian plain, the Rio Beni develops very mobile meanders, with an average annual migration of 30 m, and local maxima of 120-140 m.

Our objective is to analyse the evolution of meander-bend morphology at different spatial scales. The first step of our study consists of meso-scale analysis of the inter-annual deformation of a 350-km-section, for the 1996-2001 period, on the basis of satellite images. The calculation of the eroded and the sediment areas at the annual time scale (1996 – 2001) underlines marked inter-annual and longitudinal heterogeneities. It appears that strong bank retreat, that is generally associated with a long duration of efficient discharge, precedes in the space and in the time a marked sedimentation.

Secondly, a large meander loop was precisely surveyed during three years (2002-2005): topometric and bathymetric measurements allow us to elaborate Digital Elevation Models and therefore, make it possible to quantify very precisely sedimentation

and erosion rates in the meander.