TEMPORAL RELATIONS BETWEEN MEANDER DEFORMATION, WATER DISCHARGE AND SEDIMENT FLUXES, THE SPECIFICITY OF THE RIO BENI (BOLIVIAN AMAZONIA)

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The Rio Beni, develops mobile or confined meanders from the Andean piemont to the junction with the Rio Madeira in the wide Amazonian floodplain. An annual time scale approach is developed on the basis of the GIS, coupling the fluvial forms morphometrical analysis with the hydrological and suspended sediments data (daily discharges, 1967–2001, PHICAB and Hibam Programs, IRD France). The results reveal a specific relation between the fluvial forms evolution (in terms of bank retreat, sedimentation areas and meander cut-off) and the hydrological events. Firstly, it appears that the annual sedimentation rate (sedimentation surfaces / erosion surfaces) depends on an efficient discharge, that is not the flood maximal discharge. In fact, we determine a morphogenic discharge lower than the submersion threshold, and its duration is a major factor on the variability of the annual sedimentation rate.
Secondly, the analysis of the fluvial forms conducted on 15 years (1987–2001) informs also about the temporal and spatial variability of the fluvial forms and sedimentological processes. Several factors determine this variability: the morpho-structural features, maturity of the meanders, period and location of the meander cut-off. Four sections have been identified on the river.