

## HYDRO-GEOMORPHOLOGY, SEDIMENT TRANSPORT AND HUMAN IMPACT IN LARGE SOUTH AMERICAN RIVERS: PREFACE

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The research on the hydro-geomorphology, sediment transport and human impact of large rivers has recently increased in South America. The GLOCOPH (Global Commission on Continental Paleohydrology) *Working Group on Large Rivers* chaired by us, organized Symposiums and Field Conferences on key large fluvial systems since 1997 such as the Paraná (1997 and 2006), the Araguaia (1999) and the Amazon (2003). Presently, the activities of GLOCOPH are also linked to TERPO (Terrestrial Processes, Deposits and History) Program supported by the Commission of INQUA- Focus area group Hydrological change and climate. Additionally, joint efforts were made with the IGCP Project 518 *Fluvial sequences as evidence for landscape and climatic evolution in the Late Cenozoic* and two important meetings were organized in China and Brazil during 2006 when the Paraná River Field Conference, an activity related to the GLOCOPH International Symposium, was held at Guarulhos.

Additionally, a special session on Large Rivers took place at Goiania, Brazil, during the Regional Conference on Geomorphology, an official activity of the International Association of Geomorphologists (IAG) at which 700 researchers from 25 countries met.

Presently, together with our colleagues Rajiv Sinha (India) and Z. Chen (China), we are the leaders of the project *IGCP 582 UNESCO, Tropical Rivers: hydro-physical processes, impacts, hazards and management* and chairs of the working group *Tropical rivers* of the International Association of Geomorphologists (IAG).

In relation to the activities mentioned above we

chaired in 2009 a special session on *Quaternary and Geomorphology of Large Rivers* during the Brazilian-Argentinean Congress of Quaternary and Geomorphology that took place in La Plata, Argentina, and that was organized by the Brazilian Association of Quaternary Research (ABEQUA) and the Argentinean Association of Quaternary and Geomorphology (AACG). At the same time we offered an international field trip linked to the RCEM 2009 International Symposium on River Coastal and Estuarine Morphodynamics held at Santa Fé, Argentina.

The main objective we have been trying to reach organizing this set of activities mentioned above had been to increase the collaborations among research groups from several countries of Latin America. In this sense, from 2003 to 2007 we founded the CYTED XIIC-CABAH Network *Abiotic control of vegetation in continental wetlands* and more recently the PROSUL-CNPq project *Hydro-physic responses of large South American rivers to the global change*. The present special issue is part of the contributions of the IGCP 582 UNESCO Tropical rivers projects and the PROSUL-CNPq- Large Rivers network.

Five papers with results from Brazil and Colombia are presented. J.D. Restrepo, A. Lopez and J.C. Restrepo analyze the effects of geomorphic controls on sediment yield in the Andean rivers of Colombia. N. Filizola and collaborators presents results on the Middle Amazon showing how local conditions can affect the estimations of sediment transport. The particular morphologies and fluvial dynamics observed in river confluences are discussed for the Upper Parana basin by J.C. Stevaux and collaborators. Also in the upper Paraná D. Martins, J. P. Bravard and

J.C. Stevaux estimated the rates of bed load sediment transport after the constructions of the huge dam of Porto Primavera. Finally S. Aquino, E. Latrubesse and M. Bayer present estimations of wash load transport in an understudied large tropical river, the Araguaia, located in Central Brazil.

Considering that 24 of the 34 largest tropical rivers of the world in water discharge are located in South America we are sure that our contribution is almost insignificant in relation to the potential for research that our continent offers. While we have been repeating concepts and examples produced on remote areas, mainly from the northern hemisphere - which are badly applicable to our physical reality,

geomorphology in our countries has been neglected as a main discipline of Earth Sciences either in Geology and Geography courses. We expect in a near future having a new generation of young researchers capable of produce new concepts from our own South American research, helping our societies to obtain a more sustainable and fair use of our water resources.

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