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Mega-rivers under the global change: some field observations from Amazon, Congo and Orinoco

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KIT, Geb. 10.81, Room 305

or online:

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Abstract

“Mega-rivers” are defined as those having an average annual discharge much larger than 10000 m³/s. Following this definition, there are 10 mega-rivers on the Earth: Amazon, Congo, Orinoco, Yangtze, Madeira, Negro, Brahmaputra, Japura, Parana and Mississippi. Mega-rivers systems are very interesting in the context of global climate change and other external forcing mechanisms and stressors, including those related to human activities (e.g. damming, sediment mining/dredging, rapid urbanization, deforestation, fragmentation or loss of connectivity, pollution, etc.). The broad scientific question addressed here is: how hydrology, discharge, sediment transport and, ultimately, hydrodynamics, morphodynamics and ecological features in mega-rivers are impacted by anthropogenic stresses that decrease resilience and increase vulnerability to extreme events? Hence some results from field observations about hydrodynamics, morphodynamics and ecology in three mega-rivers: Amazon, Orinoco and Congo.

Biography

The scientific focus of Prof. Carlo Gualtieri (University of Napoli Federico II, Italy) is Environmental Hydraulics. He studied the exchange processes across the environmental interfaces (air-entrainment, hyporheic fluxes, turbulent diffusion) through laboratory experiments and numerical simulations. In the last decade his main research area was the study, in cooperation with many foreign scholars, of hydrodynamics, morphodynamics and sediment transport in large-size rivers and confluences, such as Amazon, Congo, Orinoco, Yangtze, and Yarlung Zangbo-Brahamaputra, using a combination of field investigation and remote sensing imagery