ISTerre
Institut des Sciences de la Terre

Grand Séminaire 2014/2015


Jamuna (Brahmaputra) river in Bangladesh

Himalaya : from mountains to drilling in the Bangal fan

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The Himalaya-Tibet is one region of the world where tectonics and climate interact dramatically. The high elevation of the Tibetan Plateau and the rapid rise from the lowlands of northern India across the Himalaya profoundly affect both the average temperature and structure of the atmosphere responsible for the seasonal winds and the localization of precipitation that characterize the south Asian monsoon. Concurrently, large seasonal variations in precipitation along the Himalaya control erosion rates and distribution. This in turn influences the tectonic structure of the range. In parallel, erosion processes generate organic carbon burial and silicate weathering which act on the global carbon cycle and participated to the Cenozoic cooling.

Understanding these processes requires considering the Himalaya as a source to sink system comprising the Himalayan range and the Tibetan plateau, it's river drainage, floodplain and deltas, and the giant submarine fans of the Bengal and Indus. This presentation will review the different physiographic, geologic and climatic aspects of the Himalayan system and summarize present knowledge on modern erosion processes and sediment transport from mountain to ocean. Sedimentary records of Himalayan erosion in the Bengal Fan will then document past evolution of Himalayan tectonic and climate at Quaternary, Neogene and Cenozoic time scales. Special attention will be given to geochemical and sedimentological proxies, which document through time the evolution of eroded sources, erosion rates, environment and vegetation in the continental basin, and processes impacting the carbon cycle. This will be based on a synthesis of documented sedimentary records on shore in the Siwaliks and offshore from earlier Bengal fan drilling explorations, and on initial results of the IODP Expedition 354: Neogene and latePaleogene record of Himalayan orogeny and climate: a transect across the Middle Bengal Fan.

Mercredi 27 mai 2015 à 11 h

Salle de conférences d'ISTerre

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