Geophysical Research Abstracts
Vol. 13, EGU2011-4574, 2011
EGU General Assembly 2011


# Landscape Dynamics in the Indus Basin: From Harappa to the Flood of 2010

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Abundance of sediment relative to the water discharged by the Indus has been the most important control on the evolution of the Indus alluvial plain during the last 10,000 years. During this time civilizations surged and faded on the Indus alluvial plain interacting with the landscape differently depending on the location in the Indus basin, whether in Punjab, Cholistan, Haryana or Sindh. While its large Himalayan tributaries incised their floodplains in Punjab, the Indus alluvial plain in Sindh has been largely aggradational throughout the Holocene. Consequently, the Indus has repeatedly built stacking mega-alluvial fan-ridges along the entire length of its lower alluvial plain and switched its delta from east to west. In contrast to the cannibalization of Punjabi plain sediments through incision by Himalayan rivers, deposition continued until mid Holocene along the proposed course of the mythical Saraswati River, the Ghaggar-Hakra valley, which appears to have dried up or have been captured before significant incision occurred. We discuss possible scenarios of human-landscape interactions over the last millennia based on new geomorphic, stratigraphic and geochemical data collected in the Indus region, as well as peninsular India during recent projects in the region. Climatic modulation of the water discharge and sediment load on the Indus and its tributaries favoring a highly dynamic landscape emerges as crucial for the development as well as slow disintegration of the Harappan Civilization from ca. 5500 to 3000 years BP. Today, in contrast, almost no water makes it to the Arabian Sea coast and sediment is trapped in reservoirs and along the river as the floodplain is isolated from the river by artificial levees. This new pattern of sediment redistribution inland and the inherited inland fan morphology combines with the increased density of human occupation on a previously unstable dynamic landscape to increase the vulnerability to large floods.