



Human impact and avulsion: a long-standing relationship

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This study demonstrates that avulsions in Upper and Lower Khuzestan (Iran) are the result of interplay between human-induced and natural causes. The importance of human interference during all stages of river avulsion and the long-term consequences for alluvial fan development is proven.

Avulsion can be defined as the diversion of flow from an existing channel onto the floodplain (or the fan surface), eventually resulting in a new channel belt (Allen, 1965). It represents the response of a river system to a wide range of autogenic factors, such as river meandering and vertical accretion, and allogenic controls, such as tectonics, climate change and sea-level change (Jones & Schumm, 1999). The framework used in this study is based on concepts introduced by Slingerland & Smith (2004), regarding avulsion style (i.e. through annexation, progradation or incision), and Makaske (2012), regarding the different phases in the process leading to avulsion (i.e. preconditioning, triggering and post-triggering) on megafans. This study primarily focusses on actions that directly affect river hydraulics, such as the construction and maintenance of dams, embankments, irrigation and diversion canals, the destruction of dams, channel modifications, etc. For several avulsion events, style and controlling factors are examined, and the ways by which human activities have interfered with the natural processes are highlighted. All case-studies are based on an integrated analysis of historical, archaeological, geomorphological and geological datasets.

References:

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