Influence of Lateral Alluvial Fans on the Hydro-Morphological Functioning of the Mikkès River in the Prérif (Sebou Basin, Morocco) (Oral)

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ABSTRACT

Downstream of the Sidi Chahed dam, the Mikkès River (a tributary of the Sebou) flows through a valley incised in marly terrains of the Prérif. Its hydro-morphological functioning is strongly influenced by the activity of alluvial fans originating from lateral tributaries. This study aims to analyze the impact of these fans on the morphological evolution of the Mikkès riverbed over a forty-year period, from 1980 to 2020. The analysis is based on Landsat satellite images (30 m resolution), old topographic maps at a 1:50,000 scale, topographic surveys, and field observations and measurements. A total of seven main alluvial fans were identified along a 55 km stretch of the lower Mikkès valley. Their surface area ranges from 3.5 to 12 hectares, and several of them have caused lateral shifts of the main Mikkès channel on the opposite bank, often exceeding 40 meters. The most significant modifications of the river course were observed between 1994 and 2006, a period characterized by a series of major floods. The impact of the fans is also evident in the sediment granulometry, the perturbation of meander sinuosity, and the formation of secondary channels within the Mikkès riverbed. Overall, the results highlight the active role of lateral fans in the hydro-sedimentary dynamics of the lower Mikkès valley. These fans disrupt the longitudinal profile regularity, modify the riverbed geometry, and enhance bank erosion through lateral undercutting. These influences demonstrate the high sensitivity of the lower Mikkès hydro-morpho-sedimentary functioning to lateral dynamics imposed by the solid and liquid contributions of lateral fans within a fragile marly context.

Keywords: Mikkès River, alluvial fans, hydro-morphological impact, riverbed evolution, meanders.