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## Land-surface quantitative analysis of the alluvial fans along the northern margin of Damascus Basin (Syria): preliminary results and geomorphological mapping

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The Barada River that originates in the Zabadani valley, within the western Anti-Lebanon Mountains (Syria), is the major watercourse within the Damascus Basin at the south-eastern sector of the Palmyrides chain. Since the early-mid Holocene, several human settlements have appeared in the area thanks to the water resource guaranteed by the Barada River, some ephemeral streams developing over a series of alluvial fan bodies fringing the piedmont zone at the margin of the Damascus Basin, and the Al-Ataibeh Lake, in the eastern part of the basin, nowadays rarely reached by the Barada River outside the spring and the flood periods.

The importance of fluvial processes in the development of the active and relict landforms within the Damascus basin, as well as for the development and distribution of historical human settlements, is noticeably pointed out by the occurrence of several alluvial fans and associated deposits in the piedmont area. Their characterization of the piedmont processes and landforms in this specific zone can benefit from a remote approach based on Digital Elevation Models (DEMs) because of the large extension of the area preventing the exclusive field-based mapping and, moreover, in this zone as in the whole Syrian territory, the foreign research has been significantly restricted with the only exception for the archaeological ones. In this work, the interferometric 1-arcsec SRTM and the optical SPOT DEM with 8 m of ground resolution have been adopted for measuring morphometric variables useful to discriminate the prevailing fan feeding processes, considering that the construction and the development of fan deposits can be the results of fluvial processes (fluvial dominated fan), mass movements (debris-flow dominated fan) or by their combination in either space or time (composite fan). Unravelling the principal constructional process can be helpful for deciphering the main factor, amongst climate, tectonics, and human activities, influencing fans formation and their space-time development

The main aim of this study is the mapping and classification of the main alluvial fans along the south-eastern margin of the Anti-Lebanon mountains, distinguishing which kind of constructional process prevails in the area starting from a land-surface quantitative analysis. Eight alluvial fans have been selected, among which the most extensive is the westernmost one, developed by the Barada River. A series of morphometric variables have been computed using GIS useful for describing the surficial expression of the fan deposits, the upstream catchment morphology, and their relationship. This work presents the preliminary results of the study and, for the first time, a preliminary geomorphological scheme of the piedmont zone along the northern margin of the Damascus Basins. Here, the occurrence of several archaeological settlements seems to be strongly influenced by the

geomorphological framework of the area, suggesting a key role of the fans development in the spatial distribution of the early human settlements.