A geomorphometric characterization of Northern basins of Algeria through Arc-Hydro toolbox in ArcGIS environment

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DEM analysis is now used to characterize and to extract relevant geomorphology characteristics in Algerian Northern basins, which are required for various studies namely surface hydrology, Hydrogeology, watershed management, land management. A software tool is described for the extraction of geomorphometric land surface variables and features from Digital Elevation Models (DEMs). The Arc-Hydro-toolbox consists of a series of Python Numpy processing functions, presented through an easy-to-use graphical menu for the widely used ArcGIS package. Although many GIS provide some operations for analyzing DEMs, the methods are often only partially implemented and can be difficult to find and used effectively. Users can control the threshold values for land surface classifications. The size of the processing kernel can be used to identify land surface features across a range of landscape scales. The pattern of land surface units from each attempt at classification is displayed immediately and can then be processed in the GIS alongside additional data that can assist with a visual assessment and comparison of a series of results. The functionality of the Arc-Hydro toolbox is described using an example DEM.