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## New modelling approach to evaluate fluvial erosion and deposition on Mars

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In the context of studying the surface of Mars, it is imperative to undertake a thorough examination of the past and present changes to the surface. The analysis of morphological features formed by ancient water flow enables the drawing of conclusions regarding the velocity and duration of the processes that formerly shaped the planet's surface. The execution of studies of this nature necessitates the utilisation of an erosion model, the parameters and equations of which are such that they permit application not only to Earth, but also to conditions on Mars, for example. The presented results are based on precipitation data from the Zafit catchment area in Israel using QGIS and GRASS GIS, an Earth analogue of Mars, and show the height and velocity of water accumulating in the Tinto B river valley, located next to a well studied Martian area, Tinto Vallis, as well as the modelled erosion and accumulation rates. The objective of the research is to devise a model that can accurately estimate the location and amount of eroded and deposited material. In addition, the model will determine the location and size of rocks and grains that may be transported by river water, to target future sampling missions. Furthermore, the model will provide estimates and refinements of the time scale over which the planet's valleys and flood channels were formed, as well as the location of finest grains and longest water coverage. The uniqueness of the concept is well demonstrated by the fact that no model has yet been developed that would determine the runoff and erosion-accumulation conditions on the surface of Mars using physical parameters and data from terrestrial Mars analogues.

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