

## **Geomorphological tools to assess the preservation of the archaeological record of tell-sites in the Kurdistan Region of Iraq**

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*Keywords:* RUSLE model, geoarchaeology, Near East.

Geomorphology offers fresh tools for mapping landforms that are continually modelled by erosional and depositional processes; the same tools can be applied to archaeological contexts. In arid and semi-arid regions, such as the Kurdistan Region of Iraq, the preservation of the archaeological record is mined by ongoing climate changes and human overgrazing. In our work, we present a multiscalar geomorphological surveys of both the landscape around the archaeological sites of Tell Helawa and Tell Aliawa (SW of Erbil) and detail geomorphological mapping of erosional processes acting on the two archaeological settlements. Remote sensing and field survey highlights that at the scale of single tell sites – meaning archaeological mounds – ongoing erosional processes acting along slopes are threatening the preservation of the archaeological record. For the first time, we applied the RUSLE model for soil loss to tells. Data derived from UAV imagery of each tell and their programmatic elaboration highlight that the erosional risk is maximum where the slope gradient is moderately steep, the incision depth of gullies is higher, and grazing (cultivation and herding) intense. Our results suggest that the RUSLE model and other geomorphological tools allow assessing the erosional rate along anthropogenic mound thus estimating the risk of losing the archaeological record. Our approach allows to estimate the amount of soils/sediments loss and propose mitigation strategies to prevent the loss of the archaeological record.