



Cisterns as sediment archives in arid environments

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Ancient cisterns are frequently occurring archaeological structures in semiarid, arid and hyperarid regions. These systems to collect and store water were constructed to enable the establishment of settlements, livestock farming and agricultural activity even under dry conditions. During precipitation events surface runoff from adjoining slopes erodes and transports sediments, which then can be deposited in the cistern. Therefore, these archaeological structures serve also as sediment traps and represent the fluvial processes of the cistern's catchment. Additionally, the cisterns are usually constructed to prevent any water outlet, resulting in an undisturbed, often continuous sediment record. Crucial for investigating cisterns and their sediments is the establishment of robust chronologies, with optical stimulated luminescence (OSL) dating as the preferred dating method. This enables to determine the time of construction, utilisation and abandonment of the cistern. In addition, the sediment record within the cistern represents an archive including numerous environmental proxies (e. g. pollen), which can be used for palaeoenvironmental reconstruction, serving as an important paleoenvironmental archive in dryland areas, where continuous sediment records are rare.