



Impacts of climate change on Middle Eastern societies over the last 2700 years: new results from the Gejkar speleothem, Iraq

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Climatic and environmental changes are often cited as a major factor for past social, economic, and political changes. This is especially relevant in the semi-arid to arid Middle East, where, however, only few precisely dated, high-resolution climate records are available. Here we present new results from an up to annually resolved stalagmite from Gejkar Cave in the Kurdish Regional Government of Iraq region. Based on Uranium-series dating and annual layer counts, the record dates back ~ 2700 years, and its annual layer thickness and carbon and oxygen isotope profile appear indicative of precipitation and effective moisture. We also assess if observed decadal to multi-decadal shifts in precipitation are synchronous with socio-economic changes as observed in the archaeological and historical record in the wider Middle East over the last 2000 years, such as the largely prosperous Roman and Byzantine periods, the Seljuq invasion, and the decline of the Ottoman Empire.