



Extreme flood events in the Dead Sea basin

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The Dead Sea is a hypersaline, terminal lake located within the Dead Sea basin at the lowest continental elevation on Earth (~425 m below mean sea level). Extreme hydro-meteorological events in terms of flash floods occur regularly during the wet season in the Dead Sea basin and adjacent mountain ranges. However, little is known about the impact of these extreme floods on the sedimentary dynamics in the Dead Sea and possible links to long-term climate changes. The trilateral research project PALEX (Paleoclimate in the Eastern Mediterranean Region – Levante: Paleohydrology and Extreme Flood Events) was recently initiated within the framework of the DFG priority program 1006 ICDP (International Continental Scientific Drilling Program) to investigate extreme flood events in the Dead Sea basin during the Late Pleistocene and Holocene. Within the ICDP Dead Sea Deep Drilling Project (DSDDP) the ~455 m long sediment core 5017-1 was recovered from the northern Dead Sea basin. Previously published results (Neugebauer et al., 2014, 2015) have demonstrated the occurrence of extreme flood events represented in the sediments as thick graded detrital layers during Late Holocene dry phases. Based on these results we will apply a comprehensive analytical approach including microfacies analyses, μ XRF element scanning, and stable isotope geochemistry to different time intervals of core 5017-1. Particularly, we aim to investigate the structure and composition of detrital layers in order to decipher sediment transport mechanisms and the provenance of the flood-triggered sediments. The overarching goal is to establish a high-resolution extreme flood time series for the Dead Sea basin on the basis of a previously established radiocarbon and U-Th chronology (Torfstein et al., 2015; Neugebauer et al., 2014) and to study a possible link between the frequency and magnitude of extreme flood events and the long-term climate trend.

Neugebauer I, Brauer A, Schwab MJ, et al. (2014) Lithology of the long sediment record recovered by the ICDP Dead Sea Deep Drilling Project (DSDDP). *Quaternary Science Reviews* 102: 149-165.

Neugebauer I, Brauer A, Schwab MJ, et al. (2015) Evidences for centennial dry periods at ~3300 and ~2800 cal. yr BP from micro-facies analyses of the Dead Sea sediments. *The Holocene* 25: 1358-1371.

Torfstein A, Goldstein SL, Kushnir Y, et al. (2015) Dead Sea drawdown and monsoonal impacts in the Levant during the last interglacial. *Earth and Planetary Science Letters* 412: 235-244.