

The record of continental climate change from Lake Lisan, the Paleo-Dead Sea

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Lake Lisan existed between ~70-17 kyr as the late Pleistocene precursor of the Dead Sea, and has left a beautiful continental record of laminated aragonite and fine detritus, plus interspersed gypsum and coarse sandy detrital layers. The varves represent regularly occurring dry season aragonite precipitation events and intervening wet season detrital additions, thus give a time resolution of seasons to a few years. The lake was very large, with a maximum extent of >150 km, from south of the present-day Dead Sea to the Sea of Galilee. The aragonite layers are pristine: non-bioturbated due to absence of bottom life, and chemically preserved due to interstitial high Mg/Ca chloride brine which prevents diagenesis to calcite. It is appropriate for U-series dating and as a geochemical proxy for Lisan water. The Lisan Fm is a unique deposit, probably the best continental lake record in existence which is amenable to absolute dating. We believe it should become a standard reference record for comparing the response of the mid-latitude eastern Mediterranean region to the changes in global climate modes from late in Stage 4 to the last glacial maximum. This reference record should be established at LDEO.