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Indian monsoon variations obtained from Lonar crater lake in the Deccan Plateau, India

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Indian monsoon is an important component of the Earth's climate system to understand regional and global climate dynamics. Various geological archives including marine sediment records from Indian Ocean reveal evolutions of the monsoon (e.g. Clemens and Prell, 2003) yet, few reconstructions are available from the Indian sub-continent. Therefore, we study geology of Lake Lonar in the Deccan Plateau, India. Lonar crater is one of the best-preserved impact structures on Earth and there is a saline lake with depth of 6 m in the center of the crater (Maloof et al., 2010). The crater cavity is filled with breccia overlain by 30 to 100 m of unconsolidated sediment (Fudali et al., 1980). 40Ar/39Ar step heating experiments of the Lonar crater melt rocks yielded a precise and statistically robust combined isochron age of 570 +/- 47 ka (Jourdan et al., 2011). This suggests that Lake Lonar sediment can possibly provide the records of Indian monsoon for the last 500,000 years or more.

Keywords: Lake Lonar, Indian monsoon, crater