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## **Holocene climate records from lake sediments in India: assessment of coherence across climate and latitudinal zones**

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Holocene lake records constitute an important archive for the reconstruction of paleoclimate. Despite the overall climatic stability observed in the Holocene, the monsoons in India, both summer and winter, have been reported to show various periods of weakening and strengthening in this time interval. As the Holocene lake records are distributed across the various climatic zones of India, they offer the possibility of assessment of coherence or otherwise in terms of a) the various proxies that have been used in lake sediments in a given climatic zone and b) similar proxies across different climatic zones.

In this connection, data has been compiled from 36 lake records from India; these data were classified as per the various climate zones of India. Initial assessment reveals only 10 records that are supported by a robust chronological framework. The present day precipitation in India varies from <200 to 2000mm, and the climate changes from arid to humid generally from west to east. The lake records were classified with reference to the isohyets and climate/hydrological variability in records were assessed for every 4° latitudinal change between 11° to 34°N and 70° to 96°E.

The various lake proxies indicate fluctuating lake levels throughout the Holocene. Lake records that date back to ~15 kyr, mostly record a drying period between ~13 to ~11.4 kyr which corresponds with the Younger Dryas. The lake proxies also record the abrupt climate shifts like the 8.2 kyr event at Riwasa, and weakening of ISM at 4.1 kyr at Kotla Dahar both lying along the 28°N latitude. Other than these globally recognized Holocene events, Lunkaransar (28°N) records a drying at 4.8 kyr and this dessication coincides with the abrupt drying in Tso Kar Lake (33°N). In the southwest region, the Lonar lake(19°N) also records a prolonged drought between 4.6-3.9 kyr. The shorter duration climate shifts like the MWP and LIA can be observed in records from both the southern (Pookode Lake, 11°N) and the northern (Badanital, 30.4°N) region of the country. The periods of high lake stands are observed to vary between ~11 to ~6 kyr in different lake records.

