

## **Tracking high-resolution record of climate change in the last millennium using XRF scanning of sediment cores from closed lakes in China**

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The reconstruction of climate change in the last millennium may provide important information for the projection of future climate trend. The sedimentary records of closed-basin lakes in the semi-arid areas of China are valuable for the reconstruction because they are the sensitive recorder of past variations in lake-level and water chemistry in response to hydroclimatic changes. The reconstruction is often more reliable when a multi-proxy approach is applied but seasonal/annual signals are usually unavailable due to the limitation of sampling resolution. The method of XRD core scanning was employed in recording the variation pattern of multiple elements with 1-mm resolution for tracking seasonal/annual signals associated with changes in hydroclimatic condition in the lake's large catchment. Lake Tuosu is the terminal lake of Bayin River in Delingha Basin, located in the eastern Qaidam Basin, China. The extreme events of the Bayin River runoff occasionally result in disastrous floods or droughts in the wetland area, inundating farmlands or causing livestock losses. Such events are documented by the multiple elemental records of the sediment cores recovered from the central area of the terminal lake. The proxy record is useful, in combination with the instrumental and tree-ring records, for the investigation or projection of future trend of hydroclimate such as the magnitude and frequency of the extreme events. This study is financially supported by the NSFC grant Nos. 41471013, U1407206, 40871008.