

The Lakes in the Badain Jaran Sand Sea (Inner Mongolia, P.R. China): studies on the sedimentology and geochronology of extant lakes and their variations during the past 20,000 years.

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The aim of this study is to further the understanding of central Asian Lakes and their evolution during the late Quaternary. To this end, interdunal lakes in the Badain Jaran Sand Sea (39°20'N to 41°30'N; 100°E to 104°E, Inner Mongolia) were studied following an actualism-oriented approach. In the SE part of the desert more than 100 lakes of different salinity are concentrated among megadunes with crests as high as 400 m.

Data on the present-day hydrochemical, limnological and sedimentological conditions are presented and compared to findings of ancient lacustrine sediments in the direct vicinity of the lakes. Under the present climatic and hydrological conditions, a variety of limnological types of lake exist in the study area. As well as shallow polymictic subsaline lakes and - a special local feature- meromictic hypersaline lakes with pronounced chemoclines occur. The main lacustrine sediments are dark-grey to grey sandy muds. Besides that also tufa formations („microbialites“) occur in the mixing zone of freshwater springs in saline lakes, carbonate formation and structure being controlled by interaction between biofilms of cyanobacteria and inorganic factors.

The late Quaternary evolution of the lakes is documented by lake carbonates containing microfossils (gastropods, ostracods), semilacustrine sediments and remnants of pillar-shaped tufas. To fit the reconstruction of lake evolution into a chronological framework with regard to reservoir effects, the ¹⁴C-timescale for the largest lake was calibrated using dates obtained from drilling cores of recent lacustrine sediments.