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On paleodrainage evolution in mid-late Epipleistocene based on radar remote sensing in northeastern Ejin Banner, Inner Mongolia

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Radar remote sensing can acquire information of sub-surface covered by sand in arid area, detect surface roughness and vegetation coronet's layer and linear feature such as linear structure and channel sensitively. With sediment facies analysis, this paper studies the features of environmental evolution in mid-late Epipleistocene (60 ka BP-20 ka BP) in northeastern Ejin Banner. The conclusions are listed as follows: (1) The evolution of the three lakes, i.e. Gaxunnur, Sugunur and Tian'e lakes, are dominated by faults and regional climate. (2) By analyzing sedimentary section of old Juyan Lake, the three lakes used to be a large outflow lake before 50 ka BP in northeastern Ejin Banner, and at 50 ka BP, temperature declined rapidly in northwestern China. The event caused the lake's shrinkage. (3) By fault activity uplift in the northern part of old Juyan Lake and depression in the southern part, the lake's water followed from north to south at around 35 ka BP, old Juyan fluvial fan was formed. At the same time, Juyan Lake separated from Sugunur Lake and Wentugun old channel was abandoned. (4) In recent 2000 years, Ruoshui River is a wandering river, sometimes it flows into Juyan Lake and sometimes Sugunur and Gaxunnur lakes. Due to human activities and over exploitation, the oasis ecosystem is rapidly degenerated in 15 years (1986-2000).

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关键词: radar remote sensing; evolution of lake-river; facies analysis; Ejin Banner doi: 10.1360/gso40212