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### ABSTRACT

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#### Corresponding author:

Qijian Li  
[qijianli@hotmail.com](mailto:qijianli@hotmail.com)

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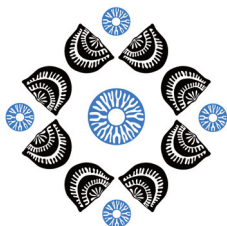
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# Late Ordovician beachrock as a far-field indicator for glacial meltwater pulse

Qijian Li<sup>a</sup>, Lin Na<sup>a</sup>, Shenyang Yu<sup>b</sup>, Oliver Lehnert<sup>c</sup>,  
Axel Munneck<sup>d</sup> and Yue Li<sup>a</sup>

- <sup>a</sup> State Key Laboratory of Palaeobiology and Stratigraphy, Nanjing Institute of Geology and Palaeontology, Chinese Academy of Sciences, East Beijing Road 39, Nanjing 210008, China
- <sup>b</sup> School of Geography and Tourism, Qufu Normal University, Yantai North Road 80, Rizhao 276826, China
- <sup>c</sup> GeoZentrum Nordbayern, Crustal Dynamics, Friedrich-Alexander University of Erlangen-Nuremberg, Schlossgarten 5, D-91054 Erlangen, Germany
- <sup>d</sup> GeoZentrum Nordbayern, Palaeo-Environments, Friedrich-Alexander University of Erlangen-Nuremberg, Loewenichstraße 28, D-91054 Erlangen, Germany

Understanding ancient climate changes is hampered by the inability to disentangle trends in continental ice volume from records of relative sea-level change. As a unique coastal deposit in tropical and subtropical regions, beachrock has been proved to be reliable for constraining the glacial meltwater signal and thus the total volume of land-based ice in Quaternary. However, beachrock is rarely recognized in the fossil record due to (a) the two-dimensional distribution of beach deposits, as opposed, for example, to extended platform sediments, and (b) the fact that specific environmental conditions are required in order to lithify sediments directly on the beach. By combining the stratigraphic architecture with petrography of characteristic carbonate cements, we demonstrate the first known occurrence of Ordovician beachrock in the Tarim Block, northwestern China. According to biostratigraphic data, a middle Katian (Upper Ordovician) palaeokarst surface is capped by carbonate conglomerate beachrock and this is suggesting a significant relative sea-level rise in late Katian. The beachrock can be correlated with widespread subaerial exposure surfaces and a pronounced stratigraphic gap within the Katian in northwestern Tarim. We suggest that the beachrock 'fingerprinted' a strong melt-water pulse in high latitudes after a short-lived Katian glaciation, which has not received much attention in scientific papers so far.



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