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Sedimentary and OSL chronological evidence for formation of the present Hobq Desert landform in northern China

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Hobq desert is one of the important deserts in the central China. Researches of formation and evolvement of such a desert will be helpful to understanding paleoenvironmental and paleoclimatic changes in this region. In this paper, stratigraphic sequence of the Hobq Desert was observed through thirteen profiles and pits along five sections south-north extended through the entire desert. Aeolian sands are found to covering alluvial-, diluvial- and lacustrine-sediments in this desert. OSL dating results are obtained from sands at the bottom of sand dunes/sand hills by using the post-IR OSL protocol to quartz fractions. The Hobq Desert started to form since the Last Glacial maximum is revealed by OSL ages that sands started to accumulated at around 19 ka in the north-western part and at around 9 ka in the eastern part of the desert. OSL ages throughout the entire Hobq Desert support that sand dune activity was strengthened at 6-5 ka and sand covering area especially expended to south and north to form the present desert landform since 3-2 ka. Beginning of formation of the present Hobq Desert landform was considered triggered by retreat of Asian monsoon instead of human activity because human activity is one thousand years later than the last expansion of the Hobq desert at around 3 ka.