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Aeolian and fluvial processes and landscape evolution in the lower reaches of the Orkhon Valley, northern Mongolia

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Geoarchaeological and geomorphological investigations in the middle and lower reaches of the Orkhon River in Northern Mongolia provide evidence for Holocene aeolian sedimentation, soil development, soil erosion and slope wash. Optically stimulated luminescence (OSL) and radiocarbon dating of aeolian and colluvial sediments including paleosols show different sedimention and soil formation periods. OSL data from aeolian sediments provide evidence for Holocene aeolian sedimentation and paleosol formation around 9 ka, 6 ka and 3 ka. A slightly drier period with sand movement cover these soil formations begin around 6 ka, and 1.5 ka, respectively. In addition, we found periods for stronger fluvial erosion at around 6 ka and 3 ka in the vicinity of Harhorin / Karakorum close to the old capital of Dschingis Khan indicating an early human impact on the landscape. These periods can be found in other areas of Central Asia also.