



Has loess sedimentation in Middle Asia been controlled by changing atmospheric circulation patterns during the Pleistocene?

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Loess sequences provide a direct proxy for the sedimentation dynamics of atmospheric dust, giving important information about the origin of the mineral aerosols and past palaeoclimatic conditions at the time of deposition. The parameters that determine the areas of origin, the transport and distribution of the aeolian material, are being accentuated by the dynamic process structures at the interface of the land surface and the atmosphere. Eventually this may allow the reconstruction of past atmospheric circulation patterns through high resolution investigations of loess successions at different loess sites.

The thick loess-palaeosol sequences along the Western and Northern slopes of the Tien Shan Mountains in Uzbekistan and Kazakhstan include a detailed palaeoclimatic record. Within the Eurasian loess belt these loess sequences represent an important link, connecting and correlating the European, the Central Asian and Chinese loess records. These loess deposits have not yet been investigated in detail despite of its thickness and wide spread distribution. The data presented demonstrate the great potential of these loess archives to reconstruct climate and environmental change in Cen-

tral Asia during the Pleistocene.

In this paper we present the first results of highly resolved multi proxy studies of the loess sections Remisowka (Kazakhstan) and Yangi Basar (Uzbekistan). During the fieldwork samples for grain size and magnetic susceptibility were taken at 2 cm and 5 cm intervals from the loess. Particle size measurements of all samples were made on Beckman Coulter LS 13320 PIDS laser sizer with auto-prep station to provide a dynamic range that spans from 0.04 to 2000 μm and ensure accuracy and reproducibility.

The granulometric results show a maximum in the fine and coarse silt fraction and allow a clear distinction between cold and dry and warm cycles. They show an important coherence between the type of dust sedimentation and the prevailing climate. In Central Asia the Westerlies transport fine dust over a long distance, whereas regional and local winds induced by the strong north or north-eastern winds from the Siberian-Mongolian high pressure cell mainly transport coarse-grained dust. It can be assumed that the sedimentological variations resemble a direct palaeoclimatic proxy for the atmospheric circulation system consisting of the differing climates, wind systems and their type of dust sedimentation.