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Short climatic oscillations recorded in a homogeneous Upper Pleistocene loess sequence.

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Fluctuations in climatological conditions in time are often reflected in variations of particle size of loess sediments. The periods of thick loess accumulation are characterised by relatively coarser silt grains, which indicate a high-energetic environment with strong winds and cold conditions. The fine grained sediments, on the other hand, reflect a low-energy deposition and warmer conditions.

During the Pleistocene, strong Westerlies rule over Western Europe, because of the extensive sea ice cover over the North Atlantic. Ice sheets have the tendency to force anticyclonic circulations above them, therefore Easterlies are forced by the Fenoscandinavian ice sheet in colder periods. These Easterlies will at least bend the Westerlies to more northly wind directions in these colder periods. During warmer periods, the ice sheets over Britain and Scandinavia will be smaller, and therefore the anticyclonic circulations will be smaller, resulting in only a weak bend of the westerlies. During these warmer periods a mild oceanic regime rules over Western Europe, because of a more northly location of the polar front. It is obvious that all these variables have a strong influence on the aeolian transport and sedimentation processes, resulting in different grain sizes and shapes.

The Upper Pleniglacial is the main period of loess sedimentation and can be divided in three main sedimentary units. The uppermost part, which is lying above the Nagelbeek Tongue Horizon is generally a unit of homogeneous, calcareous, cover loess. We suspect that during the sedimentation of this homogeneous loess package, also climatic fluctuations took place. In this research we will examine whether grain size as well

as grain shape (both determined by Automated Dynamic Image Analysis) are good proxies for more subtle climatic variations during the sedimentation of this homogene loess cover. By coupling grain size and shape with other proxies, the climatological footprint found in these sediments can be analyzed to disentangle the relative contribution of the influencing variables.