

The Agh Band loess-palaeosol sequence in Northern Iran – a detailed archive for climate and environmental change during the last and penultimate glacial – interglacial cycles

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The northern Iranian loess profiles host important information on quaternary climate and palaeoenvironmental changes in the region. Furthermore, they build an important link to correlate European and Central Asian archives. Due to a significant climatic gradient with decreasing precipitation from the west to the east and from the south to the north, loess-palaeosol sequences which were formed synchronously under different climatic conditions can be studied.

The Agh Band profile is located in the so called Iranian “Loess Plateau”, a semi-arid region with about 300 mm annual precipitation. The loess deposits reach a thickness of > 60 meters and are subdivided by several weak soil horizons in the more upper part and by a pedo-complex of 3 Bw(y) horizons in the lower part of the loess.

The Agh Band profile was sampled in 2 cm intervals for multi-proxy analyses (e.g. magnetic susceptibility and grain size measurements). Furthermore, samples for palaeomagnetic studies and luminescence dating were collected and a pIRIR290 approach was applied to fine-grain polyminerals.

The results show that the Agh Band profile yields a climate archive reaching from MIS 7 to MIS 2. Several chronological hiatuses of some 10 ka show that periods of intense loess accumulation were interrupted by phases of only minor loess sedimentation and/or erosion.

The Agh Band profile hosts an extraordinary good temporal resolution for MIS 4 and MIS 5. The pedocomplex at the bottom part of the profile indicates a period of increased humidity and landscape stability during late MIS 7 and MIS 6 following the luminescence ages.

The loess-profile is also subdivided by several shifts in grain-size distribution. The coarsening- and fining up trends correlate with increasing and decreasing wind- velocity, respectively.