

## **FAR AWAY, SO CLOSE: SIMILARITIES BETWEEN THE PLIO-PLEISTOCENE TERRESTRIAL AEOLIAN DUST DEPOSITS IN CENTRAL EUROPE AND SOUTH AMERICA**

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The widely distributed Plio-Pleistocene aeolian dust deposits are one of the most important terrestrial archives of past climate and environmental changes. The alternation of loess and palaeosol layers is regarded as evidence of the cyclic nature of Plio-Pleistocene climate changes. The loess successions are generally underlain by aeolian red clay, which has been formed under warm-humid climates. According to the studies of red clay-loess-palaeosol sequences from China, Central Asia, Alaska, South America and Central Europe, the mineral dust deposition has shown similar patterns since the Pliocene. The investigated sections from Hungary (Central Europe) have been affected by local and regional geomorphological and climate factors. Even so, they can be correlated fairly well with the major global climate changes. The Hungarian aeolian dust deposits consist of three main groups of sedimentary formations: (1) Pliocene-Lower Pleistocene aeolian red clays, (2) the oldest loess-palaeosol sequences, formed from the almost continuous Early Pleistocene dustfall, and (3) the typical, glacial-interglacial loess deposits of the last one million years, without remarkable dust deposition in the warmer periods. Plio-Pleistocene aeolian dust deposits cover over an area of about 1 million km<sup>2</sup> in the South American Pampas and in the Argentinean Chaco. Glacial-interglacial variations dominated the climatic conditions from the Miocene to the Pleistocene-Holocene boundary. The aeolian sedimentation started around 10 Ma, but the palaeogeographic conditions were not suitable for loess-formation from the accumulated dust. Traditionally, these sediments have been called loess-like, loessoid, loessic deposits or secondary loesses. Even the old (4-5 Ma) silty aeolian sequences, with abundant remains of vertebrate fossils from the Chapadmalalan stage along the Mar del Plata sea-cliffs cannot be fully regarded as loess. The sedimentary record consists of palaeosols, calcrete crusts, carbonate nodules and thin loess layers. According to Rabassa and Coronato (2009), the climate of Patagonia became colder ~2.5 Ma, and this glacial environment could be more suitable for loess-formation. The Ensenada Formation (the lower part of the so-called Pampean sediments) is probably the oldest South American loess-palaeosol succession, made up of loess layers, reddish palaeosols and carbonate accumulation horizons, and concretions. The age of these sediments, based on magnetostratigraphic and palaeontologic investigations is about 2-2.5 Ma (Rabassa et al., 2005). Plio-Pleistocene aeolian dust deposits are widely distributed in the World, recording the palaeo-environmental and palaeoclimatic conditions at least of the last 3.5 Myr. According to the studies of marine sediments and red clay-loess-palaeosol sequences, the amount of the aerosolic mineral dust has risen around the onset of the Northern Hemisphere glaciation.

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