



Red Mediterranean Soils in the Levant: archives of landscape change

Bernhard Lucke (1) and Helga Kemnitz (2)

(1) FAU Erlangen-Nuremberg, Institute of Geography, Erlangen, Germany (bernhard.lucke@fau.de, +49-9131-8522013), (2) Helmholtz-Zentrum Potsdam, Deutsches GeoForschungszentrum

Red Mediterranean Soils (RMS) are one of the major types of paleosol attesting to landscape and climate change at the desert fringes, in particular in the Levant. However, interpretation of these soils as archives of environmental change is complicated due to the fact that there still is no generally accepted theory about their genesis. It is disputed whether they form mainly out of the rock residue, by metasomatism, or from allochthonous material like aerosols, and whether those soils exposed at the surface of current semi-arid landscapes are relic or still forming. These questions were investigated by comparing soils developed on basalt, limestone and sandstone in Jordan. Our results indicate that a multicausal explanation of soil formation must be sought. There are clear indications of bedrock weathering, and partially replaced microfossils in the rock-soil transition zone attest to the presence of metasomatic processes. However, the dominant long-term process driving RMS formation is aeolian deposition. In this context, the presence of foreign granitoidic grains indicates that heavy dust storms took place, probably during the Pleistocene. It seems therefore that the Red Mediterranean Soils in Jordan are relic and part of a paleolandscape that formed under late Pleistocene dust storms.