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Rockmagnetism of a loess-paleosol deposit from the Black Sea shore (Romania)

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A detailed rock magnetic investigation of a new loess/paleosol deposit located on the Black Sea shore, near the village of Costinesti (Dobrogea Plateau, Romania) is presented. The studied section, around 12 m thick, has five paleosols and loess layers To investigate the climatic control on magnetic granulometry of soft magnetic minerals we use several grain-size and concentration-dependent proxies (magnetic susceptibility and its frequency dependence, anhysteretic remanent magnetization, isothermal remanent magnetization, hysteresis properties and FORC distributions) and an unmixing model for isothermal remanent magnetization curves. The contribution of hematite and goethite to the magnetic mineralogy of the bulk samples was determined analyzing high field (up to 8T) isothermal remanence acquisition curves after AF demagnetization. The palaeosol layers from the Costinesti deposits experienced significant pedogenic alteration, resulting in high amounts of ultrafine grained SP, grains at SP/SD threshold, stable SD grains and PSD magnetite /maghemite grains. The loess layers in the Costinesti sequence are dominated by MD and/or PSD oxidized magnetite probably of aeolian origin. The unmixing model for IRM curves shows the presence of two components peaking at $\sim$ 21 mT and $\sim$50mT. The first coercivity component is produced by pedogenesis during interglacial and interstadial periods. The second coercivity component is of aeolian origin, being dominant in loess layers. High –field remanence measurements show that hematite contribution is enhanced in paleosols indicating a pedogenic origin. Relative goethite contribution by contrast shows high values in loess and low contribution in paleosols pointing to an eolian origin of goethite in Romanian loess. A time series for magnetic susceptibility was generated using the Match-2.3 software (Lisiecki and Lisiecki, 2002) and the stack of 57 globally distributed benthic δ18O records as the target curve (Lisiecki and Raymo, 2005). The maximum age of the deposits is around 580 ka. The new results will be discussed in the context of the other loess-paleosol deposits from the lower Danube basin.