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Einladung zum Vortrag am 20.6.2012, 17.00, Institutsbibliothek	Clay mineralogy and chemical weathering of Plio/Pleistocene red clay deposits from the Carpathian basin

Nature of clay mineral assemblages (mineral composition of the clay fraction, <2 μm grain size) is primarily a function of climate, essentially affected by the length of time of weathering, slope, water-rock ratio, and water chemistry. Therefore, clay mineralogy is considered to be a powerful tool for interpreting weathering conditions and paleoclimate.
Red clays in the Carpathian basin are overlain by loess paleosol sequences. The thickness of the red clay (in general) ranges from 4 to 90 m. The red clay sediments in the Carpathian basin are known from both exposures and boreholes. The age of these formations is ~3.5–1.0 Ma. Elemental oxide analyses of red clays were determined by x-ray florescence (XRF), and x-ray powder diffraction (XRD) was used for mineral identification. In this study, we aim to determine the changes of clay minerals due to chemical weathering and age. The dominant clay minerals found in red clay sediments include those of the smectite group, mixed-layer illite/smectites, illite, kaolinite, and chlorite. Additionally, some successions also contain minor amounts of gibbsite and goethite. In general, illite and chlorite are formed during initial stages of chemical weathering by transformation of micas and ferromagnesian minerals, respectively. Their dominance in a sample indicates relatively fast erosion of source area and also cold and/or dry conditions. Smectite is generally suggested to form during weathering in seasonally wet and dry climates with low water-rock ratio and low relief. This corresponds generally to intermittently poorly drained environments, including monsoonal and xeric climates characterized by strongly seasonal precipitation. The abundance of kaolinite is an especially good indicator of landmasses with hot and humid (subtropical to tropical) climate supported by high water-rock ratio and well-drained, steep slopes.