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The layered subsurface – periglacial slope deposits as crucial elements for soil formation and variability

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Still most concepts of soil formation, weathering production rates and weathering front ideas are dealing with a monolayered near-surface underground and subsoil. At best a line is given on so-called moved regolith. In fact the subsurface is often characterized by stratified and multilayered slope deposits with thicknesses exceeding 1 m. These stratified slope sediments play a significant role in the nature of the physical and chemical properties as well as on soil forming processes. Examples are given for sediment sourced chemical elements and common clay minerals, and the significance of slope sediments as both barriers and pathways for interflow that moves through the stratified sediments. The stratified subsurface is often datable by numeric age techniques (OSL) showing up how sediment features contradict weathering effects and meaning e.g. for soil genesis. In the mid latitudes, geomorphic and sedimentologic evidence supports a periglacial origin, involving solifluction, for the origin of these slope deposits. The study areas are situated within the Colorado Front Range, U.S. and the Bavarian Forest, Germany. The projects are currently financed and supported by the German Science Foundation DFG.

Literature: Völkel, J., Huber, J. & Leopold, M. (2011): Significance of slope sediments layering on physical characteristics and interflow within the Critical Zone… - Applied Geochemistry 26: 143-145.