Andic Properties in Non-volcanic Materials - a Freak of Nature? (S05-baeumler826295-oral)

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Abstract:
Increasing numbers of soils are described having properties of Andisols and Spodosols, that have developed in non-volcanic and non-allophanic materials. They cover a wide range of parent materials and types of climate. Up to now they seemed to be restricted to small areas, and they were assigned to Andisols, andic Inceptisols or Spodosols. Soil survey in Bhutan showed that they are widespread between 2200-3500 m at the southern slopes of the Himalayas. One of these sites was analysed including column experiments, NMR, XRD, EDX-REM, and 14C dating. The results indicate advanced soil development, a dominance of Al-interlayered clay minerals and of aromatic and long-chain organic compounds. REM showed pseudosand-like microaggregates in the sand fractions resistant to any dispersion. Column experiments indicate podzolisation by mobilisation and translocation of DOM, Fe and Al. Subsoil 14C ages of 16 ka indicate re-stabilisation of translocated DOM highly resistant to biodecay. The soils appear to have both properties of Andisols and Spodosols, but are neither Andisols nor Spodosols sensu stricto. Classification results in Entisols in most cases. With respect to the worldwide occurrence and the specificity of their physicochemical properties, we suggest a re-definition of existing properties or a separation of non-volcanic Andisols and Andisols sensu stricto.

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