

Thematic Session 12

Soil mineral quantification -from poorly crystalline phases and interstratified soil clay minerals to digital soil mineralogy

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Soils have multi-mineral compositions almost invariably including poorly crystalline and/or highly defective clay phases exhibiting high spatial heterogeneity. Understanding biogeochemical processes occurring in soils requires detailed mineral identification, quantification, and distribution information, and this has been a longstanding challenge. Recent developments have begun to provide more realistic quantitative descriptions of soil (clay) mineralogy. Examples from XRD are disordering models developed for Rietveld refinement, XRD profile modelling and high throughput full pattern fitting. This session seeks contributions to help define what further improvements are possible and desired for the characterization of poorly crystalline phases, hydroxy-interlayered minerals and interstratified soil clay minerals and how various new approaches may be integrated. We invite contributions of studies that highlight the use of quantitative data and interdisciplinary examples such as digital soil mineralogy and chronosequence data for a quantitative assessment of soil mineralogy.

Keywords: Soil mineral quantification, Poorly crystalline phases, Hydroxy-interlayered minerals, Interstratified soil clay minerals.

Potential Journals: JPNSS, Clay Minerals, Clays and Clay Minerals, Geoderma.

