Mineralogy of soils from the Piedmont and Blue Ridge of the southeastern United States

This page presents data from four southeastern soils. Within these soils, clays rich in hydrated 1+ and 2+ cations (smectites and vermiculites) are typical of drier conditions, deeper soil horizons, and more mafic bedrock, whereas clays poor in those cations and Si<sup>4+</sup> (gibbsite, goethite, and hematite) are typical of wetter conditions, shallower soil horizons, and more sialic bedrock.

Sources:

Gibbsite is more abundant in wetter watersheds, whereas kaolinite is more abundant in dryer watersheds within the study area.

Kaolinite

More than 1/2 of the <0.2µ clay in the C and lower B horizons is smectite, as is 1/3 to 1/2 of the <0.2µ clay in the A and lower B horizons - despite the wet climate of North Carolina.

Smectite is present as a fracture-filling or pseudomorphic mineral within the bedrock.

Soil developed on metasedimentary rocks of the Blue Ridge of North Carolina:

Soil developed on metagabbro in the Piedmont of North Carolina:

Soil developed on granitic gneiss in the Piedmont of North Carolina:

Soils developed on the Danburg Granite & Athens Gneiss in the Piedmont of Georgia:

Sources:


Melear, N.D., 1990, Clay minerals and ferruginous minerals formed during weathering of granitic rocks of the Georgia Piedmont: M.S. Thesis, Department of Geology, University of Georgia, under the direction of Vernon J. Hurst.

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