Light Mineral Assessment of Soils formed in Quaternary Silts in Maryland. (S05-wah153302-Poster)

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Abstract:

The area along the Chesapeake Bay on Maryland's Eastern Shore has soils formed in a Late Pleistocene/Holocene loess over a paleosol formed in silts of unidentified age and origin underlain by sandy Coastal Plain sediments. Light minerals (sg<2.4) from these soils were examined in an effort to determine the origin and estimate the age of the silty parent materials of the paleosol and examine climatic conditions at the time the buried paleosurface was subaerial. Light minerals were separated from the 5-100mm fraction from three soils using sodium polytungstate and examined by petrographic microscope. The light mineral fraction was made up of biogenic opal including sponge spicules, diatoms, and phytoliths. The percentage of sponge spicules and diatoms was highest in the sandy Coastal Plain sediments and lowest in the loess. Present surface horizons had increases in phytoliths from C4 grasses and decreases in those from C3 grasses compared to paleosurfaces. Light minerals were not indicative of the origin of the silty parent sediments. Phytoliths implied a subaerial duration for the paleosurface similar to that of the modern surface but with a cooler temperature regime.

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