ABSTRACT

This study documents a paleosol impacted by periglacial features at a site on the Delmarva Peninsula of Southern Delaware. This paleosol is characterized by increased stiffness/density, change in matrix color, evidence of induration and cementation, relict fluvial versus aeolian sedimentary structures, secondary structures associated with permafrost or deep seasonal frost, and fossil roots and animal burrows. Partially-lignitized roots, root channels, animal burrows and secondary sedimentary structures associated with subaerial exposure and soil-forming processes truncate abruptly at the contact with the overlying massive, loose, aeolian sand. We hypothesize that this paleosol developed within fluvial beds of the Beaverdam Formation during a lengthy period of subaerial exposure. Several layers of parent material of different origins were noted: a) structureless clays, b) structureless aeolian sands, c) fluvial, normal-graded, cross-stratified, and laminated sands with gravel lag beds, and d) indurated, sandy clays interpreted to be a paleosol. Sufficient definition of the surface of this paleosol was obtained to reconstruct the paleotopography of the site, which is distinctly different from the current topography. We interpret this buried surface as a former land surface of early Pleistocene to late Pliocene age.