Modeling Seasonal Variability of Soil and Groundwater Properties at Selected Piedmont Wetlands in Mid-Atlantic U.S. (S05-wilson125719-Oral)

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Abstract:

Soil and near-surface groundwater have been sampled quarterly for 3 years from selected Piedmont slope and riverine wetlands in Maryland, Delaware, and Pennsylvania. The objective of this study is to model hydrogeomorphic functions of these wetlands by monitoring water table levels and evaluating seasonal nutrient flux. Soil measurements include Bray, acid oxalate, and water soluble P; water soluble nitrates; total C, N, S; and pH. Electrical conductivity (EC), anions, cations, and pH were measured on water samples. Results indicate that EC for all sites varied erratically among and between seasons, ranging from 0.05 to 0.4 dS/m. Nitrogen and P concentrations in both soil and water were inconsistent with season, water-table level, and selected soil properties. At one site, for example, Bray-P ranged over time from 11 to 26 mg/kg, whereas soil pH ranged from only 5.6 to 5.8. Phosphorus in water was unrelated to Mn, Fe, or Si concentrations. This poor association suggests that nutrient flux in these wetlands is not solely related to equilibrium with soluble soil minerals, but may also be related to fertilizer translocations from surrounding agricultural/urban watersheds.

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