

Tracking nitrogen transport from urban residential neighborhoods to stormwater ponds in a coastal watershed

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The magnitude of nitrogen (N) fluxes in urban stormwater runoff to water bodies in urban coastal systems is largely not known. We present case studies of N dynamics in urban stormwater runoff from residential neighborhoods located in Florida where most runoff is generated by excess rainfall during the wet season. The outlet pipes draining the residential neighborhoods in Florida were instrumented with ISCO samplers, flow meters, and rain gauges. Stormwater runoff samples were collected following variable storm duration and frequencies during the wet seasons (June to September) that receives 60-70% of 125 cm of annual rainfall. Mean concentration of total N in stormwater runoff waters ranged from 1 to 3 mg L⁻¹; of which, nitrate-N was <25% and organic N was >60% in most storm events; suggesting different processes controlling N release and transport during variable storm events. Stormwater samples were analyzed for N and oxygen (O) isotopes of nitrate along with hydrogen (H) and O in water to understand the sources of N and water. This presentation will discuss our ongoing research aimed at better understanding the sources, processes, and unraveling the unknowns and uncertainty of N transport from urban systems.