

ALTERATIONS OF DISSOLVED ORGANIC MATERIAL COMPOSITION AND ITS INFLUENCE ON ECOSYSTEM RESPIRATION

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Dissolved organic material (DOM) in urban streams can have increased lability, decreased aromaticity, and be of more autochthonous origin than in reference streams. Changes in DOM composition are important to understand as increasing labile DOM in reference streams can increase metabolic activity and alter nutrient dynamics. While more labile DOM in urban streams may be expected to increase metabolic activity, previous studies (and preliminary data from this study) have found lower respiration (R) rates in more urbanized sites. While DOM is known to contribute to ecosystem energetics, the relationship between substrate composition and its availability for aquatic organisms remains unclear and is further complicated by the multitude of anthropogenic stressors common to urban streams. We measured DOM composition and whole-stream metabolism of seven subtropical streams across an urbanization gradient over 20-months using fluorescence excitation-emission matrices and parallel factor analysis. In contrast to previous studies, we did not find urbanization as the strongest factor controlling DOM composition across sites. Instead, geomorphology, point sources, and in-stream processing were important factors. This suggests that controls on DOM composition of urbanized streams in subtropical environments may be different than temperate climates, where previous studies have been conducted.

PRESENTER BIO: Emily Taylor is a PhD student in the Soil and Water Sciences Department working in the Urban Systems Ecology Lab working with Dr. AJ Reisinger. She is researching the impacts of urbanization on stream ecosystem metabolism, dissolved organic material, and nutrient cycling.