John Turner, Fordham University. The Effects of Extreme Precipitation on Soil Biogeography in the Riparian Zone of Low Order Watersheds. Mentors: Dr. James Lewis and Mr. Xiupeng Zhang

Abstract: The riparian zone plays an important role in mitigating the ecological implications of natural and anthropocentric disturbances by hosting a variety of biogeochemical processes, which vastly diverse communities rely on (Vitousek et al. 1997, Shibata et al. 2004, Walsh et al. 2005, Hale et al. 2015). The carbon and nitrogen pools of riparian soils of low-order watersheds were examined by measuring: soil organic carbon, nitrite/nitrate, ammonium, and total inorganic nitrogen. This study investigates how such important natural processes are affected by, and recover from, precipitation extremes. Both periods of drought and flooding were observed between May and June of 2015 and were compared to one another, in addition to a baseline sampling event. While no significant difference was observed between baseline and drought sampling events, significant differences were documented among storm sampling events as well as between some storm and baseline sampling dates. This highlights water as a key component in the flow of nutrients from terrestrial to aquatic ecosystems and supports the hypothesis that C and N pools are significantly altered by episodes of heavy precipitation. Furthermore, C and N concentrations decreased along an urban to exurban gradient, with the exception of nitrate—found to be highest in the suburban watershed.