



SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES

GRADUATE EXIT SEMINAR

SHANNON PACE

The impact of spatiotemporal data resolution on monitoring nutrients in The Little Auglaize River.



High-frequency water sampling for nutrient concentrations is difficult to obtain for small scale projects. Watershed managers continuously need to make decisions as to what sampling methods and frequencies in both space and time will give the most representative information with the least amount of observational uncertainty. This research analyzed high-resolution spatiotemporal data over the course of one year for an agricultural watershed located in Ohio's Western Lake Erie Basin. A novel in situ nutrient monitoring device was installed at a reservoir intake that diverts water from the Little Auglaize River. High frequency, two-hour nutrient concentrations for nitrogen (N) and phosphorus (P) paired with discharge were used to calculate a "true" annual cumulative load. This "true" load was compared to load estimations calculated assuming that only daily or weekly samples were collected. A majority of the annual cumulative load was contributed during high-flow events that occurred during the non-growing season. To further explore what can be learned from high-frequency monitoring of nutrients, concentration-discharge relationships were plotted using subsets of the complete monitoring dataset to assess where N and P exhibited mobilizing, diluting or chemostatic responses. Finally, to explore potential source variability across the watershed, high-resolution spatial data were collected during two base-flow synoptic campaigns across the watershed during the growing season (June 2021) and non-growing season (November 2021). High-frequency temporal and high-resolution spatial data collected over the course of one year provided major insights to the nutrient trends in this watershed and could guide the decisions of watershed managers.

Advisor: Dr. Steve Lyon

MONDAY, APRIL 11, 2022
11:00 A.M.

Join the seminar via Zoom:

<https://osu.zoom.us/j/98662512853?pwd=bGpjVXlEQ1pmRCtVL1IBSVpkckxIQT09>

Meeting ID: 986 6251 2853 Password: 236471

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