Abstract

The timing and magnitude of the spring runoff period and associated high nutrient loads, driven by snowmelt and rain, has recently been suggested to be a critical driver of harmful algal blooms in receiving waters during the summer. This project focused on the hydrodynamics of the spring runoff period in the Missisquoi River Basin and quantified macronutrient loads during this critical time period. The macronutrients analyzed include total phosphorus, total nitrogen, and total suspended solids. Phosphorus was critical to analyze as it has significant downstream impacts, such as lake eutrophication and harmful algal blooms (HAB’s). Nutrient and sediment loads were quantified during the spring runoff period (March-June 2014) in the Missisquoi River and Hungerford Brook tributary. A linear regression model and an R script statistical package (WRTDS) were used to quantify load estimations. It is suggested that load estimations using average daily discharge values is not sufficiently accurate, and thus 15 minute discharge values were used instead. This research connects with existing data from the Vermont EPSCoR (Experimental Program to Stimulate Competitive Research) program on Research on Adaptation to Climate Change (RACC) that has monitored the same sites during the summer. The spring 2014 data were compared with the existing (2012-2013) summer data to effectively analyze the seasonal trends and spatial patterns within the Missisquoi Basin during the spring runoff with respect to load estimates.