IMPACTS OF INTERPOLATION SCHEMES ON CRITICAL SOURCE AREAS IDENTIFICATION FOR NON-POINT SOURCE POLLUTION CONTROL BASED ON SWAT MODEL

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The Critical Source Areas (CSAs) have been widely recognized as priority locations for the control of NPS pollution and implementation of best management practices (BNPs). In previous studies, CSAs were identified based on factors such as pollutant concentration, load, and yield at the levels of subwatered and/or hydrologic response unit (HRU); however, the previous studies did not consider the impact of the temporal and spatial uncertainties of precipitation data, which propels most of the NPS pollution. The objective of this study was to assess the impact of using different interpolation schemes on identifying CSAs. This study used five different methods; Thiessen polygons, statistical, geostatistical approaches to incorporate spatially variable of rainfall into the Soil and Water Assessment Tool (SWAT). The study also identified the impacts of five different gauge-density scenarios. The scenarios were evaluated by finding the best performing parameter set and their associated uncertainty ranges using the Sequential Uncertainty Fitting Procedure. By applying different interpolation schemes in SWAT model, the maps of CSAs at the subwatered level for controlling total nitrogen (TN) and total phosphorus (TP) were produced. While the CSAs identified using different interpolation methods were the same, some CSAs were different. This study concludes that using different interpolation methods will affect the location of some CSAs and further investigation on using the interpolation methods is needed.

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