Geospatial & Statistical analysis of Mercury (Hg) and Methyl Mercury (MeHg) distribution in East Tennessee watersheds.
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Water quality changes due to the presence of mercury (Hg) and methyl mercury (MeHg) in East Fork Poplar Creek (EFPC) watershed and surrounding watersheds is being analyzed in this study. Over the past 20 years, EFPC watershed has received wastewater discharges and pollutants from a major US Department of Energy (DOE) facility, which is located in the headwaters of the EFPC watershed in Tennessee. Mercury (Hg) is a potent neurotoxin affecting the human and animal health. The MeHg is an organic form of Hg, which is formed in aquatic systems and has a high bioaccumulation rate in the aquatic food chain. The MeHg is known to impair neurological development in human beings and animals. The major objective of this study is to develop a geospatial database of the Hg and MeHg concentrations in the water and fish of the East Fork Poplar Creek (EFPC) and the surrounding East Tennessee Watersheds. Analyzing and predicting the long-term Hg and MeHg bioaccumulation trends in the study area with the use of principal component analysis. Identifying and mapping the long-term land cover changes in the watershed using multispectral ASTER satellite imagery. The area under study will be analyzed using remote sensing and GIS (Geographical Information Systems). The spatial mapping will help to accurately map the trends and hotspots of Hg contamination.