

## EVALUATION OF MERCURY LOADS FROM CLIMATE CHANGE PROJECTIONS

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McTier Creek is a small coastal plain watershed located in Aiken County, South Carolina. McTier Creek forms part of the headwaters for the Edisto River basin, which is noted for having some of the highest recorded fish-tissue mercury concentrations in the United States. A simple water-quality load model, TOPLOAD, which was developed for McTier Creek, utilizes a mass balance equation in conjunction with hydrologic simulations from the topography-based hydrological model - TOPMODEL. TOPLOAD is an effective tool for analyzing the relative flux contribution of the simulated surface and groundwater flow paths in TOPMODEL. Climate models for the Southeastern United States project increased temperatures across the region but also project differing precipitation results with some models indicating an increase in precipitation and some, a decrease. Climate models for the Southeast generally agree that the frequency and durations of droughts are likely to increase due to the higher temperature and resulting increases in evapotranspiration. To evaluate effect of projected climate change on flow paths for McTier Creek due to changes in hydrology, downscaled data from two global circulation models (GCM) for one emission scenario were used as inputs to TOPLOAD. One GCM, the Community Climate System Model (CCSM), projects an increase in total precipitation whereas the other GCM, ECHO (a hybrid of the European Center atmospheric GCM [ECHAM] and the Hamburg Primitive equation ocean GCM [HOPE]), projects no significant change in total precipitation. Both models project changes in precipitation intensity and duration. The relative changes in the total mercury flux contributions for the flow paths in TOPLOAD for each GCM and the management implications will be given in this presentation.

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