

Modeling the Effects of Forest Harvest on Streamflow through Parameter Regionalization

Forests provide a number of important water-related ecosystem services and play an important role as controllers of the hydrologic cycle. Catchment experiments have found evidence that changes in forest cover can alter streamflow regimes. But can effects of forest harvest on streamflow regimes also be predicted with help of a modeling approach? One promising method is parameter regionalization of a hydrological model, which relates the calibrated model parameters of a catchment to its physical properties. Therefore, the proposed master thesis project aims for

- calibration/validation of the HBV light model for catchments with different percentages of forest cover and different climate regions in Sweden
 - analysis of the relationships between calibrated HBV parameters and land cover percentages
 - identification of model parameters that are most sensitive to forest changes
 - development of a statistical framework to predict forest harvest impacts by modification of sensitive HBV parameters
 - simulation of streamflow for all catchments under different forest-change scenarios
 - comparison of forest-change and climate-change scenario simulations
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Are you interested in this research topic? If you have basic knowledge of the HBV model, programming skills in Matlab, experience in application of GIS software (preferably ArcGIS or SagaGIS) and an affinity to numbers and statistical analyses, then please contact:

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