MISSISSIPPI STATE UNIVERSITY™
FOREST AND WILDLIFE RESEARCH CENTER

DISTURBANCE IMPACTS TO FOREST HYDROLOGY AND BIOGEOCHEMISTRY IN THE SOUTHEASTERN UNITED STATES

A McIntire-Stennis Supported Project

The tree canopy is the first major compartment encountered by precipitation as it moves through forested ecosystems and can dramatically transform the fate and transport of water and nutrients. The relationship between canopy-derived inputs of water and nutrients and subsequent changes in soil biogeochemistry is complex. More research is needed to understand how these two components of the biosphere are impacted by disturbance events. In order to enhance the predictive capability of ecosystem models that guide management and policy decisions, it is imperative to understand the physically-based processes that control these fluxes.

This research seeks to understand how forest canopies alter the quantity and quality of incident precipitation in a variety of forest types, with particular respect to canopy and soil hydrology and soil biogeochemistry, as well as how these measurements are impacted by insect infestation and tree mortality disturbances. This study will provide empirical evidence of biogeochemical and hydrological processes that may be incorporated into ecosystem models and used to improve management capabilities.

COLLABORATION

In addition to Mississippi State, this project includes researchers from Auburn University, Louisiana State University, Louisiana Tech University, Peznan University, and the USDA Forest Service.

ABOUT MCINTIRE-STENNIS

The McIntire-Stennis program, a unique federal-state partnership, cultivates and delivers forestry and natural resource innovations for a better future. By advancing research and education that increases the understanding of emerging challenges and fosters the development of relevant solutions, the McIntire-Stennis program has ensured healthy resilient forests and communities and an exceptional natural resources workforce since 1962.

USDA

IMPACTS

This research will provide **insight into how the forest canopy controls inputs of water and nutrients over a range of forest conditions and disturbance types and how strongly individual species control these inputs**. An improved understanding of forest hydrologic and nutrient inputs will provide an enhanced understanding of the biogeochemical functioning of regional forests and how the ecosystem services they provide may be susceptible to climate change.