# DEVELOPMENT OF GEOSPATIAL SENSORS AND METHODS FOR APPLICATIONS TO FOREST AND NATURAL RESOURCE MANAGEMENT

A McIntire-Stennis supported project since 2014

Advancements in geospatial technology are occurring at a rapid pace. Unmanned aerial systems, structure from motion/photogrammetry, and laser scanning are becoming more and more accessible to a variety of users. However, these technologies have not been exploited to their full potential, particularly in the areas of forestry and natural resource sciences. This project addresses the need to develop new geospatial sensor hardware, collection methods, and processing workflows, and incorporate them into the data-collection toolbox of scientists, managers, and decision makers.

This program has led to the development of methods for measuring tree morphology from ground-based photogrammetry and laser scanning, data fusion and mapping for ecological applications using tower-mounted cameras, flight pattern planning for unmanned aerial system-borne photography and laser scanning to optimize the accurate capture of individual tree structure, and comparative analysis of different systems for automated forest inventory. Results are presented to state, national, and international audiences primarily through scientific journals, professional society conferences, and organizational meetings.
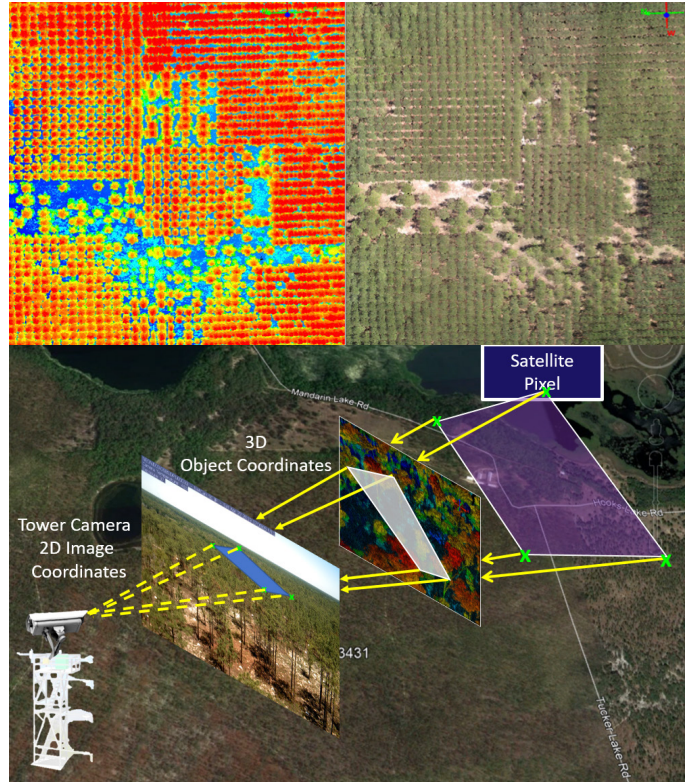
COLLABORATION

In partnership with:
US Geological Survey
NSF/NEON

IMPACT

Insights, hardware, and methods derived from this project have contributed to eight products—including journal articles, presentations, and posters—made available to the public to enhance knowledge of practitioners and researchers locally and around the world.

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