

**PIs and Affiliations:**

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**Project Title:**

Incorporating spatial dependence and measurement error when estimating county level forest biomass.

**Period for Report:**

October 1, 2023 – December 31, 2023

**Progress:**

The project is on-going as planned. One master's level graduate student (Mr. Pratyush Dhungana) has been recruited to work on the project, starting the program on January 16, 2024. Area level small area estimation (SAE) models with and without considering measurement error in the auxiliary remote sensing dataset were developed for the state of Mississippi. PI Poudel presented these results at the 2023 Joint Southern and Northeastern Mensurationists' meeting in Knoxville, TN on October 8, 2023. The SAE models performed better than the direct, or ground-based (FIA) estimate of aboveground biomass and gross cubic volume even after incorporating measurement error in the auxiliary variable. These results will be further validated for additional auxiliary variables in the future models.

**Next Period Plans:**

Auxiliary data for three other states (OR, CO, and MN) will be downloaded and processed. Area-level SAE models will be developed before the next reporting period. Project progress and preliminary results will be presented at the PSAE meeting(s).

**Problems or Delays:**

No problems or delays encountered.