Georgia Statewide Tree Canopy Analysis

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Abstract

A critical question in Georgia is how much population growth is affecting deforestation. When it comes to environmental issues, the loss of tree cover makes our state more vulnerable to high levels of carbon dioxide, biodiversity and habitat loss, and stormwater runoff (Nowak, 2018). The Georgia Forestry Commission provided funding to address this issue. The objective is to map the trees in Georgia and identify changes between 2009 and 2018. This analysis will provide the state of Georgia with useful information and tools to help decision makers manage trees across the state. Machine learning techniques are used to assess 2009 tree canopy, which will be used as a baseline dataset to compare 2009 and 2018 tree canopy changes over time. This research deals with about 4,000 tiles of 1-meter 4-band National Agriculture Image Program (NAIP) imagery, so it is very important to streamline the pre-processing and post-processing procedures of image analysis across Georgia's 24 physiographic regions. The impact of this research project will be huge because the methodology and results out of this project will provide future scientists with scientific tools and technical manuals that they will need to conduct similar forest studies using satellite imagery data. In addition, results from this tree canopy analysis are expected to provide the forestry industry with guidance on renewable forest resource sustainability and forest policies. In this presentation, we will discuss technical challenges for 2009 canopy analysis and present its preliminary results.

Key Words: Tree canopy, Carbon dioxide, Stormwater runoff, Analysis, Machine learning, Data, Research, Satellite imagery, Forestry Industry, NAIP, Habitat, Biodiversity

References

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