

MASTER'S THESIS

Interested in being part of a large-scale experiment where electromagnetism is used to study forests?

Play your part in the BorealScat experiment, where an experimental boreal forest site is studied using radar. The aim of BorealScat is to develop a better understanding of forest biomass measurements using radar satellites for preventing dangerous human interference with Earth's climate system.

The water content of the trees strongly affects the forest radar response. Therefore a very important part of the experiment is to measure and monitor the electromagnetic properties of the tree trunks in this forest site.



The BorealScat radar array tower

In this work you will:

- Design a device for measuring dielectric properties and water content of a tree trunk with a network analyser and a dielectric probe
- Develop a theoretical electromagnetic model for estimating the dielectric properties
- Perform a 3D simulation to verify your design and model
- Test and calibrate your device at the experimental forest site
- If there is time left: Perform experiments with the BorealScat radar tower to study the relationship between the forest radar response and trunk moisture

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