


LabForest: Employing Remote Sensing for an Integrated Forest Management Transition

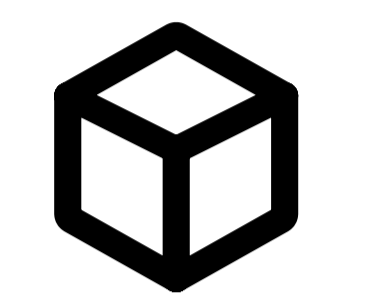
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A Remote Sensing & LabForest

 UAV remote Sensing as only viable choice

 Fast data acquisition

 Very high resolution

 Creation of 3D structure data



B Thermal Remote Sensing

Passive remote sensing of infra-red radiation due to thermal radiation.

 Heat Stress  Water Stress

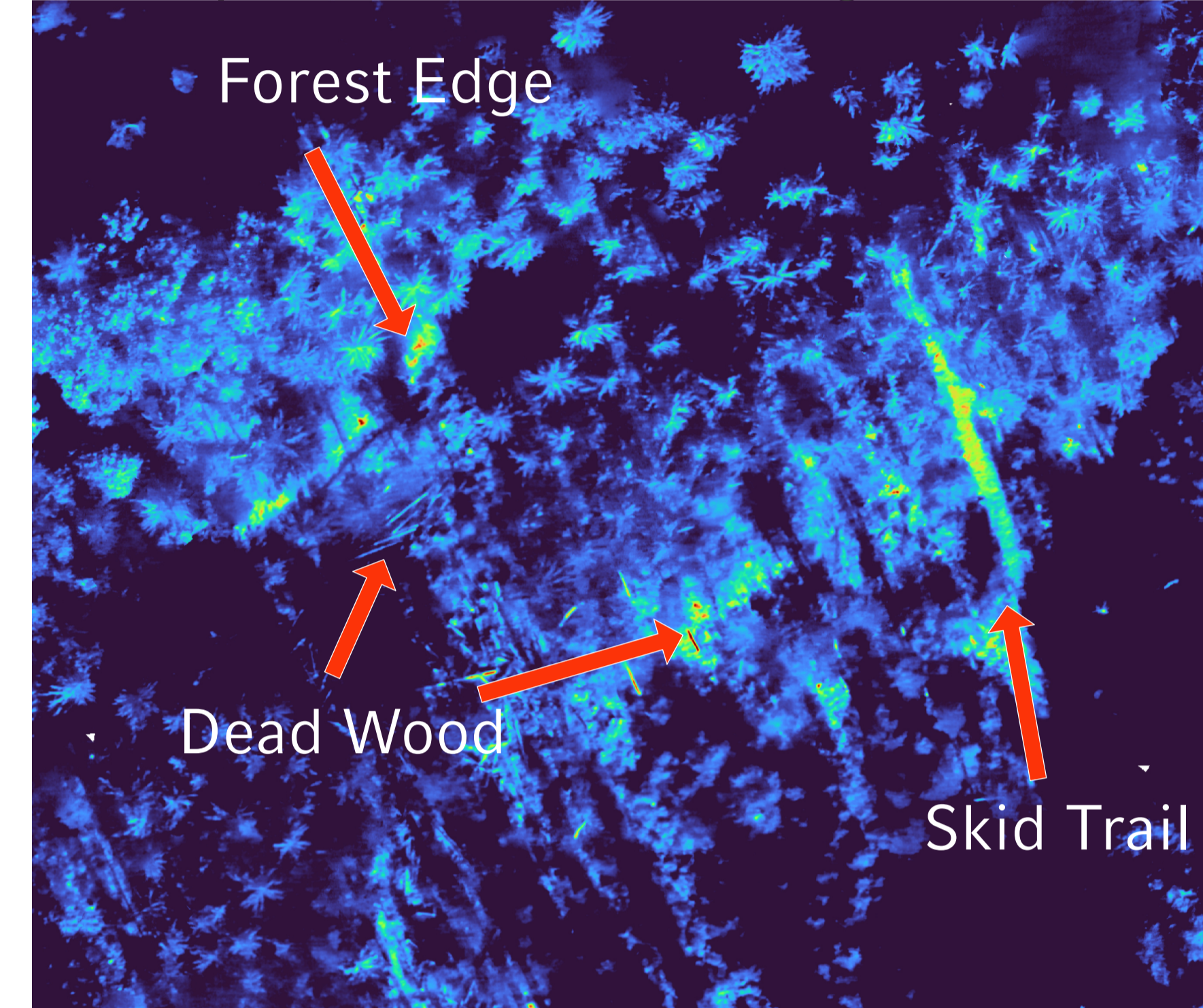
 Herbivorous Infestation  Diseases



Synergies with SURVEY Project

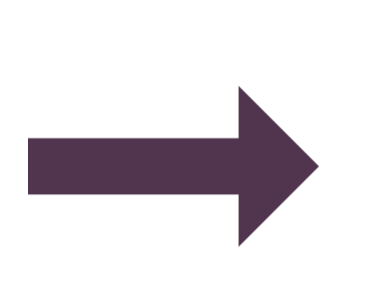


Example of Thermal Image

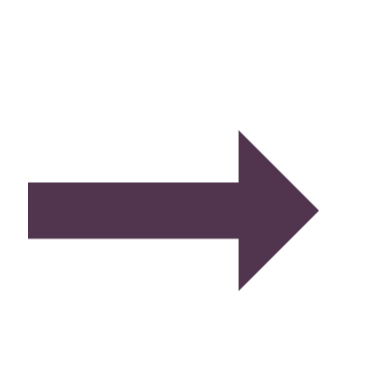


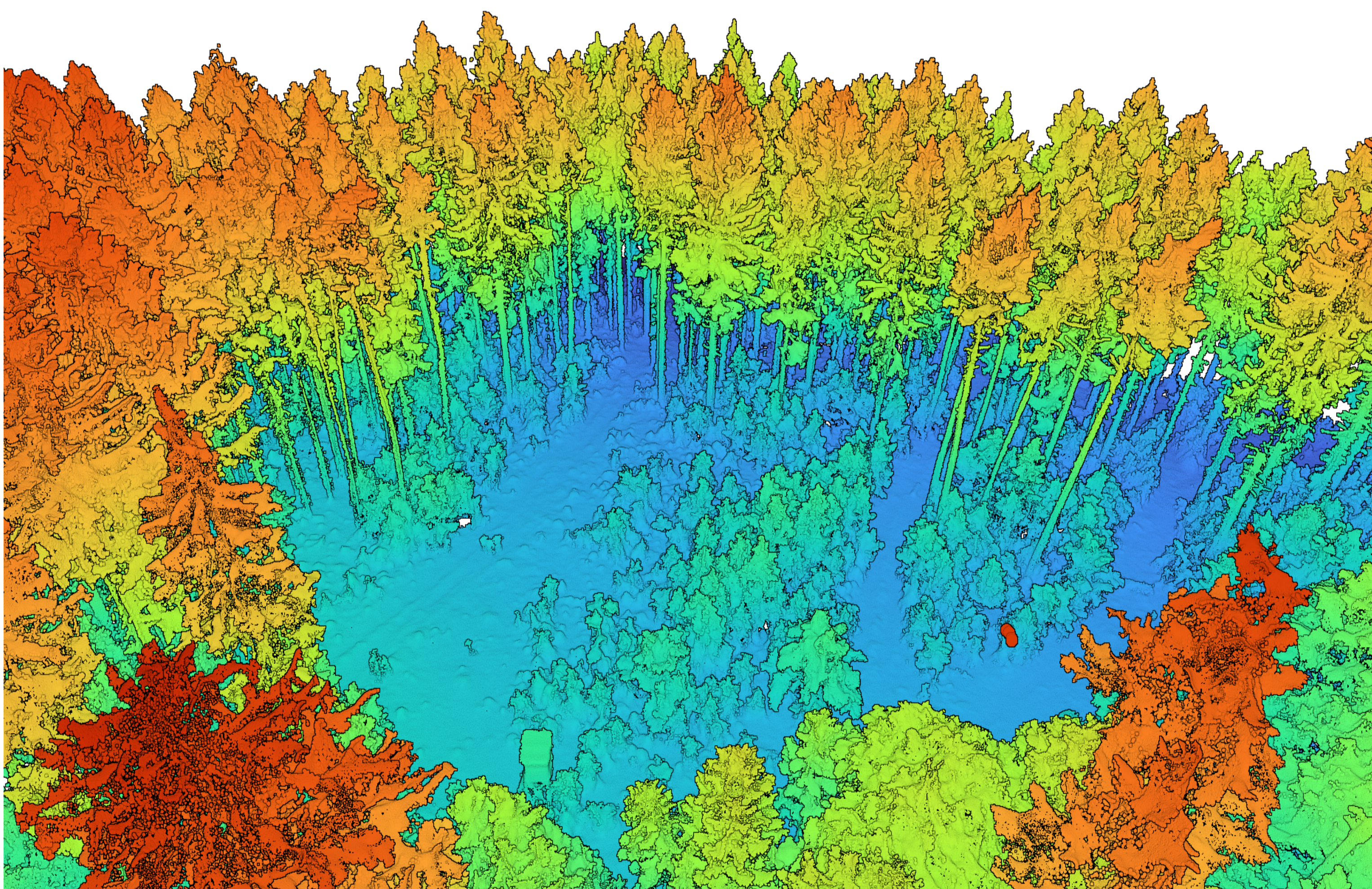
C LiDAR Remote Sensing

Active system for the generation of three-dimensional point cloud data

 Individual Stem Segmentation

 Stem Diameter at Breast Height

 Stem Curvature

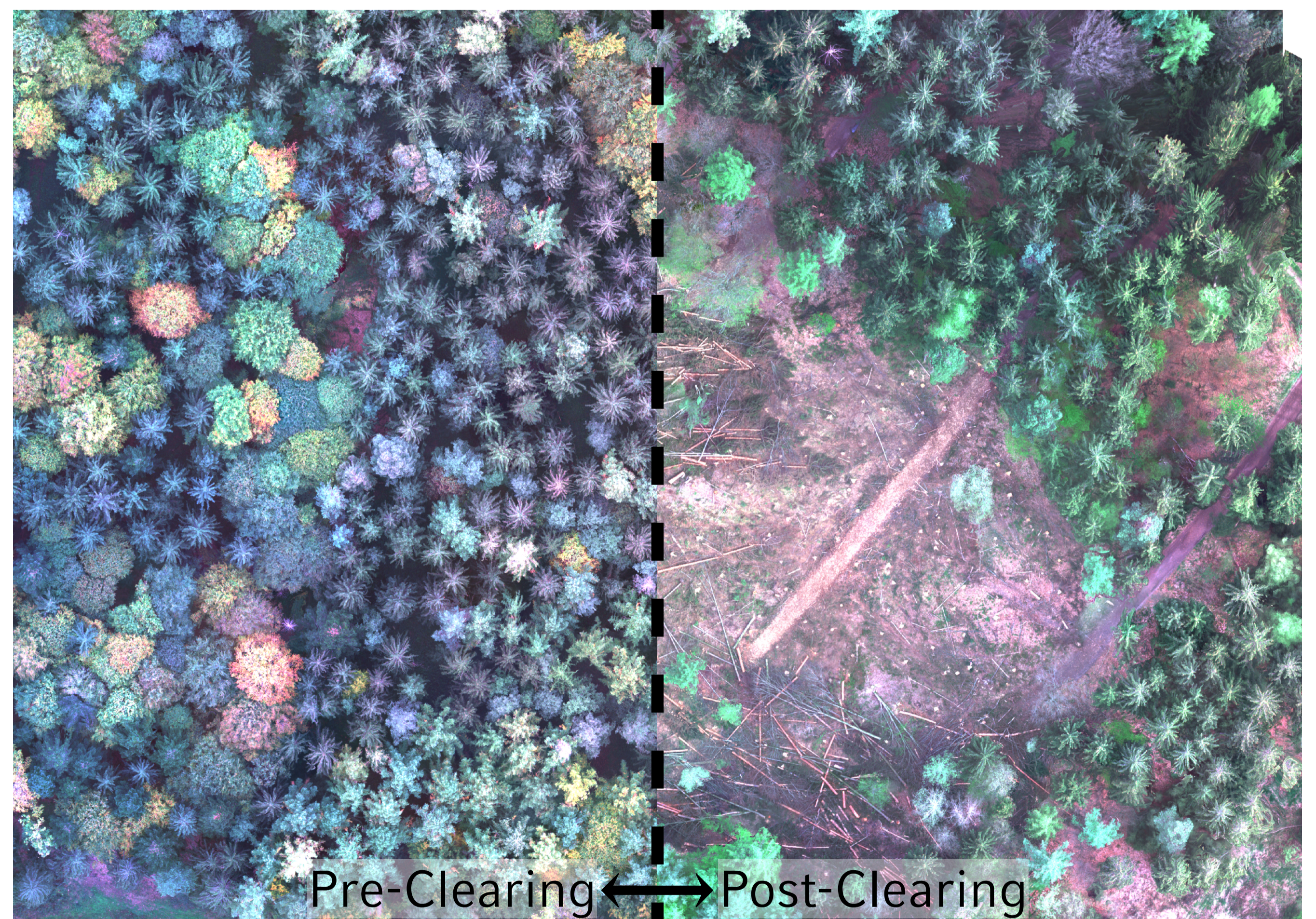


Example of LiDAR point cloud of the university forest close to Landshut, Germany, showing a recent disturbance

D Multispectral Remote Sensing

Passive remote sensing to capture spectral reflectance in different wavelengths

 Tree Species Information



Example of multispectral images, showing experimental clearing on one of the LabForest sites

E Data Synthesis

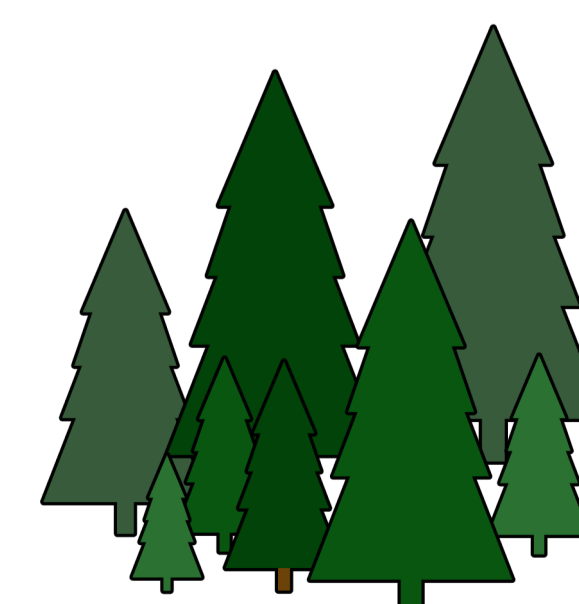
Combined data allows for a holistic image of many forest parameters giving insight into forest heterogeneity, tree value, or forest vulnerability.

 Tree Wood Volume

 Economic Tree Value

 Forest Species Heterogeneity

 Tree Vulnerability



Related Publications:

Eisenschink, P. M., Obermeier, W. A., Zerres, V. H., Suerbaum, A. M., & Lehnert, L. W. (2025). Forest variables from LiDAR: Drone flight parameters impact the detection of tree stems and diameter estimates. *Ecological Informatics*, 88, 103127. <https://doi.org/10.1016/j.ecoinf.2025.103127>

Eisenschink, P., Knoke, T., Obermeier, W., & Lehnert, L. (2026). Towards operational tree-level timber quality and volume estimation using UAV multi-sensor remote sensing (in review).