Research Project / Masterthesis: Generating/Estimating individual tree data based on freely available LiDAR-Data on federal state-level for storm damage risk assessment

Research objectives:

- LiDAR data are freely accessible for several German federal states.
- Several algorithms and packages have been developed to extract single tree information. Ongoing research is concerned with this topic.
- The aim of this work is to suggest a combination of methods to obtain a complete state-wide set of individual tree parameters (e.g. trunk foot coordinates, height, species, dbh, crown base, crown width, stem volume, crown volume)
- Parameters will be derived mostly from LiDAR-Data while also considering related research as well as further data sources
- Suggesting an appropriate combination of sources/algorithms for obtaining such a dataset

Methods:

- Single tree inventory data is available as reference data
- Comparison of algorithms from different R packages (e.g. lidR)
- Optimization of parameter settings for different forest characteristics
- Integrating results of already existing research e.g. for the identification of the tree species
- Statistical evaluation of the suggested methods

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