Project Database of ICP Forests

PROJECT DESCRIPTION

PROJECT INFORMATION

Project title:	**A framework of predicting tree growth using machine learning tools**
Project ID:	274
Contact person:	Volodymyr Trotsiuk // volodymyr.trotsiuk@wsl.ch Arthur Gessler // arthur.gessler@wsl.ch

PROJECT DESCRIPTION

Tree growth and carbon sequestration is strongly affected by changing environmental conditions, site quality and forest stand characteristics. Understanding the impact of the various drivers of forest growth is therefore critical to predict how forest ecosystems can respond to climate change. Many empirical and mechanistical models were developed to account for external and internal factors impacting the tree growth. Most of them, however, not accounted for one of the most important factors, to our knowledge, - crown condition. In this study we aim to evaluate the long-term impact of the crown condition compared to other relevant parameters on the tree growth using the novel machine learning methods.

ICP Forests collects and maintain the extensive dataset on the tree growth over Europe. Our approach allows to include a large number of observational parameters all over Europe since the initiation of ICP Forests Level II plots. We aim to apply, e.g., the Gradient boosting (XGBoost) predictive modeling to quantify the effect of crown condition on tree growth.