

PROJECT INFORMATION

Project title: **Minimierung des Sturmschadensrisikos in Wäldern vor dem Hintergrund des Klimawandels (MiStriKli)**

Project ID: 159

Contact person: Dirk Schindler (dirk.schindler@meteo.uni-freiburg.de)

PROJECT DESCRIPTION

The herein requested data will be required for the recently-begun project, in English translated, “Minimisation of Storm Damage Risk in Forests considering Changing Climate”. The central hypothesis of the project is that climate change influenced storm damage risk in German forests can be minimised by adaptive influence on their future structure and composition.

The aims of this project are to

- create spacial, high-resolution mapping of current and future damage relevant storm events in Germany
- characterise the effects of storm damage risk on forests
- characterise the measures for storm damage risk minimisation
- economically evaluate management strategies for risk minimisation
- optimise management strategies on the basis of robust decision making

In order to accurately calculate parameters, such as storm damage risk and economic value, forest growth modelling is important to forecast the future development of forests. Specifically, the requested data shall be applied in the initialisation of the process-based forest growth model 3-PGmix. The analysed stand data will be then be used to generate windthrow risk probabilities in the given stands, based on calculated gust speeds across the surface of the entire Federal Republic of Germany. The requested data will be used to generate forest growth projections in Germany until the 2100, under which projected climatic changes will be accounted for i.e. the Representative Concentration Pathways (RCPs) as projected by the IPCC.

3-PGmix requires as a minimum initial input - climate data, site data and initial conditions of the forest stand. For this reason our requested data are Meteorological Measurements (level 2), Soil Solid Phase (level 1), Soil Water (level 2) and the Growth and Yield (level 2) in all states of the Federal Republic of Germany. Additional data that could be of use would be stand age, stand stocking & density, soil fertility and management/thinning schedule, if also available.

Both monoculture and mixed stands are relevant for our project. For the purpose of our study, we are interested in data on *Fagus sylvatica*, *Pinus sylvestris*, *Picea abies*, *Quercus petraea/robur*, *Abies alba*, *Pseudotsuga menziesii* and *Acer pseudoplatanus*. Apart from *Fagus* and *Pinus*, these species have not yet been calibrated for 3-PGmix. For the case of tree species calibration, only monocultures are applicable and therefore we will need monocultural examples of each of these species, if available. Calibration will be achieved through Bayesian analysis, utilising Markov Chain Monte-Carlo algorithms. However, future stand simulation scenarios will also be based on mixed species stands.

Therefore, a dataset on the scale of what is available through ICP Forests would make a profound contribution to the actualisation of this project. The utilised data will be appropriately referenced as having been sourced from the ICP Forests database.