Project Database of ICP Forests
PROJECT DESCRIPTION

PROJECT INFORMATION

Project title: Spatial-temporal modelling of defoliation in European forests

Project ID: 25

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The proposed project builds on earlier work (Augustin et al 2007, Augustin et al, 2009, Musio et al, 2007) investigating defoliation in the Baden-Wuerttemberg region of Germany.
Our approach uses a generalized additive mixed model (Lin and Zhang,1999), expressing the mean percentage defoliation as the sum of smooth functions of the year of measurement, spatial location, and tree age. This model has been used to model tree defoliation of trees in Baden-Wuerttemberg. We aim to adapt and apply this model to the defoliation data of Europe. The model will be used to draw inferences about the overall trend in defoliation, and variability across different regions of Europe. In the second stage of analysis, further covariates describing soil chemistry, soil structure and needle characteristics would be considered for inclusion in the model, using appropriate goodness-of-fit statistics (e.g. Akaike Information Criterion, mean prediction error). The aim here is to determine whether soil characteristics can be used to predict susceptibility to defoliation, with a view to focusing protective measures, such as liming, on the most vulnerable areas.