

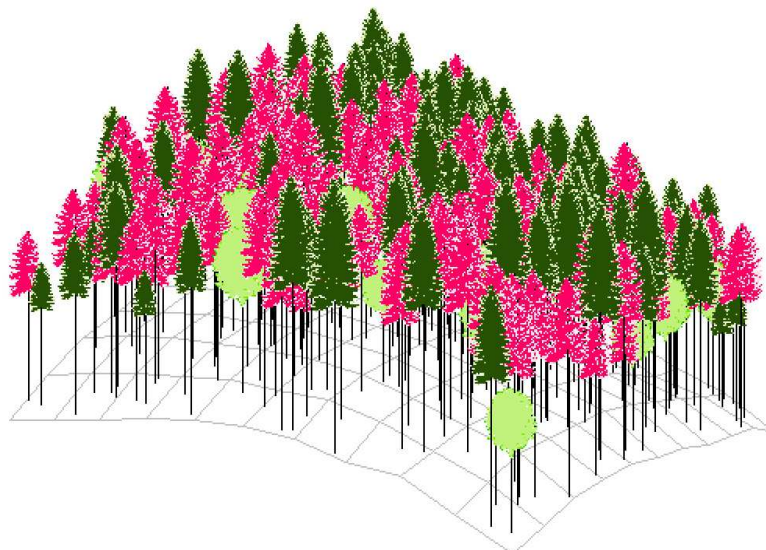
Topic M14:

Implementation of a stochastic model of infestation of spruce trees in Lower Saxony by bark beetles (*Ips typographus* L.) as part of the forest simulation platform SIBYLA



Infestations by bark-mining insects, particularly in spruce stands, got growing attention in the last years due to their large impact on tree mortality and their connection with drought periods which might occur more frequently in the future due to climate change.

Based on monitoring data from the Northwest German Forest Research Station (NW-FVA), we want to parameterize a stochastic risk model for spruce stands and make it accessible within the forest growth software SIBYLA, where a generic risk model for Slovak forest eco-regions is already available. Data analysis will be based on meteorological and stand-related data as well as on evaluated trap-catches of *Ips typographus* from monitored spruce stands in Lower Saxony and will utilize a simple factor analysis to simplify the statistical model (similar to the Slovak case which is already published). The coding and implementation in the SIBYLA software will be done together with the SIBYLA development team from TU Zvolen.



Co-supervision by Prof. Dr. Marek Fabrika (TU Zvolen), Prof. Dr. Wolfgang Rohe (Universität Göttingen and HAWK Hildesheim - Holzminden - Göttingen) and Dr. Rainer Hurling (NW-FVA, Department Forest Protection, Göttingen)

Literature:

- Fabrika, M.; Vaculčíak, T.: Modeling of incidental cuttings in tree growth model SIBYLA. *In: Deutscher Verband forstlicher Forschungsanstalten – Sektion Ertragskunde, Jahrestagung 21.- 23. Mai 2007, Alsfeld-Eudorf*, pp. 57-67.
- Fabrika, M.; Vaculčíak, T.: Modeling Natural Disturbances in Tree Growth Model SIBYLA. Kapitola v monografii: Střelcová, K.; Matyas, C.; Kleidon, A.; Lapin, M.; Matejka, F.; Blaženec, M.; Škvarenina, J.; Holécy, J.: *Bioclimatology and Natural Hazards*, Springer, 2009, 298 p., ISBN 978-1-4020-8875-9, pp. 155-164.
- Vaculčíak, T.: Kvantifikácia faktorov ovplyvňujúcich vetrové kalamity prostredníctvom faktorovej analýzy (Quantification of factors influenced to wind disasters by factor analysis), *Acta Facultatis Forestalis Zvolen Slovakia*, XLIX, Dissertation, Technical University of Zvolen, Zvolen 2007.

M.Sc. thesis for 1 candidate from "Angewandte Informatik" or from "Forstwissenschaften und Waldökologie" with focus on Ecosystem Analysis and Modelling.