Thesis and/or student assistant on lightning-induced tree mortality

Project background

Lightning is an important but often underestimated disturbance in forest ecosystems. Recent research suggests that lightning may be the major cause of large tree mortality in tropical forests. Also in some temperate forests, lightning is considered an important cause of mortality. Lightning thus crucially affects forest structure, composition, and carbon storage. Nevertheless, lightning-caused tree mortality is not represented in state-of-the-art dynamic global vegetation models. This is particularly worrying because the ecological impacts of lightning might even increase in the future given anticipated increases in lightning frequency.

The project *FlashForest* aims to implement lightning-induced tree mortality in the dynamic global vegetation model LPJ-GUESS to assess the global importance of lightning on forest ecosystems and to investigate the impacts of future changes in lightning activity. The implementation of lightning mortality in LPJ-GUESS will be based on field observations from the scientific literature. Once the implementation is finalized, the model will be run driven by present-day observations and future projections of global lightning activity.

Tasks

- The student will assist in the literature review on observed lightning-induced tree mortality and on lightning data/projections (e.g. from climate models) which can be used to run LPJ-GUESS
- Later on, there will also be the opportunity to contribute to model development and analysis of model output

Requirements

- Strong interest in the topic
- Excellent English skills, particularly the ability to read (e.g. extract relevant information from publications) and write scientific English
- Basic knowledge in scientific programming (e.g. R, Python, C++) would be beneficial

Send your application (including a max. 1-page motivation letter, CV and transcripts) to Dr. Andreas Krause (andy.krause@tum.de). For more information on the project contact Dr. Krause.