PROJECT INFORMATION

Project title: Validation of the ForCeeps-Sureau model

Project ID: 294

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PROJECT DESCRIPTION

In order to better simulate the future functions and properties of European forests, we are currently developing a new dynamic vegetation model by coupling the forest gap model ForCEEPs (Morin et al. 2021) and the hydraulic-based SurEau model (Ruffault et al. 2022). This model should be able to better simulate drought effects on tree mortality, especially related to xylem embolism, which is mainly driven by LAI (~water demand).

To validate this hybrid model on a large environmental gradient and for multiple European species, and especially to assess its ability to predict forest productivity and LAI, we would like to use different ICP Forests data sources: the inventory, meteorological, and soil data to initialize the model; and the foliage, LAI, litterfall and tree vitality data to validate the temporal changes in LAI predictions.

We will use statistical techniques commonly used for model validation, e.g., calculating RMSE or percentage bias between observations and simulations at site- and species- levels).

Involved scientists
Cailleret M, Postic T, Morin X, Martin N, Druel A

References

Morin, X., Bugmann, H., De Coligny, F., Martin-StPaul, N., Cailleret, M., Limousin, J. M., ... & Guillemot, J. (2021). Beyond forest succession: A gap model to study ecosystem functioning and tree community composition under climate change. Functional Ecology, 35(4), 955-975.

Ruffault, J., Pimont, F., Cochard, H., Dupuy, J. L., & Martin-StPaul, N. (2022). SurEau-Ecos v2. 0: a trait-based plant hydraulics model for simulations of plant water status and drought-induced mortality at the ecosystem level. Geoscientific Model Development, 15(14), 5593-5626.