

## **STSM Priority topic: Forest water interactions under climate change and alternative robust adaptive strategies**

Forest and water interactions are well understood. However, there are a few tools being able to simulate the interactions and involved processes. 3PG as one of the mostly used forest growth modelling tools can analyze the effects of changes in forest management on the water yielding. Hydrological module of 3PG can be improved to simulate the reality of forest-water interactions with more details. Therefore, this STSM aims to:

- Develop Hydrology module of 3PG further
- Simulate the effects of alternative and adaptive management strategies on forest water
- Calculate the economic implications of water-oriented management
- Analyze trade-offs and synergies between water and other services

3PG is a climate-sensitive model and integrates climate change scenarios as input for forecasting. Further research is needed to analyze the sensitivity of adaptive measures to different climate scenarios e.g. RCPs. As no probability can be assigned to the scenarios, decision-makers face a deep uncertainty and need robust approaches to deal with it. Robustness indicators are useful to find solutions maximizing a minimum outcome (maximin) or optimizing a weighted average of values at risk. Therefore, the following STSM may apply the result of above-mentioned STSM to:

- Develop a set of water specific robustness criteria and apply them to
- Find and propose robust and adaptive forest water management strategies

Both STSM can last a month and should be realized preferably in 2019 or early 2020 before anticipated training school in Freiburg with the similar topic (April 2020). The applicants need to submit a cover letter, CV, and if available information about the case study they want to study (otherwise a case study in black forest Germany will be chosen). Preferred competences for applicants are:

- Knowledge about forest production ecology and hydrology
- Preliminary experiences with forest modelling
- Excel/R/etc calculation packages
- Basics of econometrics

### **PESFOR-W Host:**

Dr. Rasoul Yousefpour and his team (4 PhD and 2 Postdocs students working with 3PG, Adaptive forestry, Ecosystem Economy) will be involved in supervising the applicant(s) at:

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