

## **Proposal for FLUXNET synthesis**

**Title:** Water vapour flux partitioning related to climate, global ecosystem types and vegetation structure

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**Key words:** Total evaporation, transpiration, interception, LAI, canopy height, canopy levels, functional groups

### **Outline:**

Water supply is crucial for carbon gain in all terrestrial ecosystems. Water availability to plants is controlled by climatic factors like precipitation but also by vegetation structure itself affecting interception and root water uptake. Changes in the temporal distribution and intensity of precipitation and available energy as well as changes in vegetation structure and land use will have significant effects on water vapour flux partitioning of different ecosystem types. Within this synthesis activity (1) the suitability of FLUXNET data will be tested to separate total evaporation into transpiration, interception and soil evaporation, (2) water flux partitioning will be analysed with respect to dynamics of weather patterns and extremes of climatic conditions, and (3) gradients along with vegetations structure, functional types and climatic zones will be examined. Physiological controls versus physical controls on total evaporation will be discussed with respect to ecosystem type, temporal dynamics (short-term, seasonal) of precipitation and available energy, and potential future shifts by climate change.

Data on total evaporation and estimates of uncertainties will be adopted from the proposal Bernhofer et al. Measured and derived data on water flux components will be compared with modelled data (interception, SVAT; potential cross-activities with other modelling groups). The study will include as many sites as possible providing sufficient ancillary data like canopy throughfall, leaf wetness, sap flow, soil evaporation, leaf area density.

**Sites involved:** all sites with at least one year of measurements and required ancillary data