

## **Proposal for FLUXNET synthesis**

**Title:** Factors controlling total ecosystem respiration in boreal forests

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**Key words:** temperature, radiation, gross primary productivity, soil moisture, litter fall, leaf area, soil carbon, biomass

**Outline:** The effect of climate change on the future carbon balance of forests requires knowledge of how environmental as well as biological and management/disturbance factors are affecting total ecosystem respiration (Reco) and gross primary productivity (GPP). Processes controlling GPP are fairly well known but Reco is not so well understood. In a recent analyses in Scandinavia we found that variation in key parameters related to Reco and GPP among forests of different types was largely explained by LAI besides temperature and radiation. This analyses was made with one year of data from each forest and by expanding this in space and time we hope to be able to find also how other factors such as soil carbon content, C/N ratios, litter fall, litter quality, above ground biomass, soil moisture etc can explain the variation in Reco between forests.

We will work with quality controlled half-hourly data (no gapfilling) measured under well-mixed conditions ( $u^* > \text{threshold}$ ) in order to avoid the ‘night-time problem’. Data will be parameterized using response functions for 2-week periods (tentatively) and then the parameters will be used in different statistical analyses.

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

### **Rules applied for co-authorship:**

- Every site that contributes data can nominate as many co-authors they wish considering the crucial need for ancillary data, data processing etc
- All co-authors are expected to actively contribute to the manuscript