PROPOSAL FOR FLUXNET SYNTHESIS PUBLICATION

Initial coordinators: Collaborators needing access to data:

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Affiliations:

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DATASET PROPOSED

We request access to the whole LaThuile data set.

TITLE OF PAPER AND OUTLINE

TITLE: Global Estimates of Evapotranspiration over the Terrestrial Ecosystems

Evapotranspiration (ET) is a major component of the global water cycle and represents a critical link between terrestrial water, carbon, and surface energy changes. However, ET is inherently difficult to measure and predict, especially at large spatial scales. Currently, there are numerous of method for simulating ET at the regional and global scales. Large differences among estimated ET values have been reported due to the scaling methods. FLUXNET data offers a unique opportunity to undertake this task, at a spatial scale that is commensurate with the size of satellite pixels (i.e., the tower "footprint" and satellite pixels both integrate over several hundred meters) and at a range of time scales (e.g., daily and annual productivity integrals, as well as seasonal dynamics). In our previous, eddy covariance data from more than 50 towers were used to calibrated and validate the revised RS-PM model (Yuan et al., 2010). Jung et al (2010) also used 253 eddy flux towers for global ET estimation. However, these sites are still scarce for evaluating global ET patterns with very few sites in eastern Asia. Our team has built a consortium to access much of the data in China where researchers remain reluctant to archive their data at the FLUXNET. Currently, there are 100+ EC sites in China along. Various ET models still have not been examined and compared based on a set of standard dataset. In this study, we will first develop a combined dataset to fill the geographic gaps and, then, examine multiple ET modeling methods (e.g., advanced statistical methods of neural network and regression tree, satellite-based model such as MODIS-ET, RS-PM model, NDVI-LST triangle method, and process-based model). We will estimate global ET integrating various model results using ensemble prediction method.

PROPOSED SITES TO BE INVOLVED

We will use FLUXNET data from 2000 to the present, corresponding to the availability of MODIS data products. We request access to the whole LaThuile data set for this analysis. This database will be merged with dozens of sites in China and Mongolia for our analysis.

PROPOSED RULES FOR CO-AUTHORSHIP

All data contributors making an intellectual contribution will be included as named coauthors. Data contributors not making an intellectual contribution will be included as group coauthors in the author list, if possible with the journal (i.e., "and the FLUXNET Synthesis Group"). Group coauthors will be identified by name in the acknowledgements. We will circulate a summary of initial findings to all data providers, and solicit feedback; this will be followed by a draft manuscript, which we will also circulate for feedback. Data providers who have contributed intellectually and will be included as coauthors will be sent the final version of the manuscript prior to journal submission.