PROPOSAL FOR FLUXNET SYNTHESIS PUBLICATION

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DATASET PROPOSED

We request to access the LaThuile data set

TITLE OF PAPER AND OUTLINE

TITLE: Evaluations of global hydrological modelling over different land cover types

Description:

Accurate simulation of global hydrological variables, such as actual evapotranspiration is a challenge in a changing climate. Numerous studies have been carried out to stimulate water fluxes across global land surface.

We are conducting a synthesis global hydrological project in which several hierarchical global actual evapotranspiration algorithms are developed (Glenn et al., 2011; Zhang et al., 2012; Yebra et al., 2012), and are incorporated into a global landscape hydrological model that will be used to simulate water balance components – runoff, actual evapotranspiration, and soil moisture – across the global land surface.

The LaThuile fluxnet data will be used for two purposes. The first one is to evaluate global actual evapotranspiration algorithms across different land cover types – forests, shrubs, savannas, grasslands, cropland, etc. We are especially interested in some globally important irrigation areas that are located in water-limited environments (Thenkabail et al., 2007). The second one is to calibrate the global landscape hydrological model using flux data together with catchment streamflow data (Zhang et al., 2012), which will improve overall skills of the hydrological model in simulating and predicting global land surface evapotranspiration and runoff.

References

Glenn, E. P., T. M. Doody, J. P. Guerschman, A. R. Huete, E. A. King, T. R. McVicar, A. I. J. M. Van Dijk, T. G. Van Niel, M. Yebra, and Y. Zhang (2011), Actual evapotranspiration estimation by ground and remote sensing methods: the Australian experience, *Hydrological Processes*, *25*(26), 4103-4116.

Thenkabail, P. S., et al. (2009), Global irrigated area map (GIAM), derived from

remote sensing, for the end of the last millennium, *International Journal of Remote Sensing*, *30*(14), 3679-3733.

Yebra, M., A. I. J. M. Van Dijk, R. Leuning, A. R. Huete, J. P. Guerschman (2012), Evaluation of optical remote sensing to estimate actual evapotranspiration and canopy conductance, *Remote Sensing of Environment, 129*, 250-261.

Zhang, Y., R. Leuning, F. H. S. Chiew, E. Wang, L. Zhang, C. Liu, F. Sun, M. C. Peel, Y. Shen, and M. Jung (2012), Decadal Trends in Evaporation from Global Energy and Water Balances, *Journal of Hydrometeorology*, *13*(1), 379-391.

PROPOSED SITES TO BE INVOLVED

This project focuses on global hydrological cycle. Therefore, we are interested in all sites with at least 1 year of data, surrounded by relatively homogeneous terrain and which provide the energy balance and meteorological fields. This will make sure that credible model calibration and validation of model forcing inputs and outputs can be conducted.

PROPOSED RULES FOR CO-AUTHORSHIP

The data contributors who make an intellectual contribution will be included as coauthors; those who do not make an intellectual contribution, if possible within a journal, will be included as group co-authors, i.e. Fluxnet Synthesis Group. The group coauthors will be identified by name in the acknowledgements, if possible.