

## PROPOSAL FOR FLUXNET SYNTHESIS PUBLICATION



### Initial

coordinators::

<sup>1</sup>Dr. Elham Rouhollahnejad

Collaborators

needing

access to

data:

Prof. James Kirchner<sup>1</sup>, Prof. Sonia Seneviratne<sup>1</sup>,  
Dr. Diego Miralles<sup>2</sup>, Prof. Ying Fan Reinfelder<sup>3</sup>

<sup>1</sup>Environmental Systems Science, ETH Zurich, Switzerland. <sup>2</sup>Lab of Hydrology & Water Management, Ghent University, Belgium.

<sup>3</sup>Department of Earth and Planetary Sciences, Rutgers University, USA.

Affiliations:

## DATASET PROPOSED

LaThuile

## TITLE OF PAPER AND OUTLINE

### Does Groundwater contribute to global evapotranspiration significantly?

As widely known, soil moisture is one of the key controllers of ET enhancement. However, it is not easy to estimate large-scale soil water storage, due to both the scarcity of observations and the inherent spatial heterogeneity of soil texture across the globe. Soil water storage is far greater in nature than assumed in most land-surface models, in which excess infiltration drains through the soil column and is routed directly to the oceans. In nature, soil water storage is often filled in the wet season and supports ET in the following dry season. Shuttleworth (1988) and Fan et al. (2010) showed based on an observational syntheses, that in the Amazon forest, ET is equally high in the wet and dry seasons, indicating adequate water supply. This highlights the importance of groundwater as a surrogate source of water, which is often accessible for plant ET especially in dry conditions.

At present, groundwater has never been explicitly included into the more observational-based (diagnostic) methods dedicated to derive ET. As an initial step, we would like to investigate where and when groundwater resources affect ET patterns at global scale. We plan to compare FLUXNET eddy covariance measurements at sites around the globe against ET estimates from the GLEAM model to investigate whether the model shortcomings in ET estimates is attributed to groundwater misrepresentation.

## PROPOSED SITES TO BE INVOLVED

all sites around the globe

## PROPOSED RULES FOR CO-AUTHORSHIP

What is requested to the PIs to be co-author:

**Substantial scientific contribution to the planned research.**