PROPOSAL FOR FLUXNET SYNTHESIS PUBLICATION

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Collaborators needing access to data:

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DATASET PROPOSED

LaThuile Access

TITLE OF PAPER AND OUTLINE

TITLE: Impacts of disturbances on carbon and water cycling in the world's grasslands

Description:

Drought and human grazing are the common disturbances over grasslands, which have substantial effects on grassland carbon fluxes and terrestrial carbon budgets. However, the effects of disturbance have rarely been explicitly compared over different grassland ecosystems across continents. Here we plan to combine the LaThuile database of the FLUXNET, satellite observations, and climate data to investigate the impacts of disturbances on inter-annual and intra-annual carbon and water fluxes in the world's grasslands. By linking disturbance (drought and human grazing) and flux observations, we will investigate the spatial patterns, magnitude, and inter-annual variability of carbon and water fluxes, particularly the impacts of disturbances on carbon and water cycling.

We hypothesize that there are significant differences between vegetation types across the continents with respect to the effect of disturbances on carbon/water fluxes. A comparison of these effects among the different grassland ecosystems will be conducted. We will identify the different response of NEE/GPP/WUE to drought and human grazing by examining the dynamics of NEE/GPP/WUE across grassland types, latitudinal zones, and geographical regions. The main questions for this research are:

1) How are carbon and water fluxes of grasslands sensitive to temperature and precipitation within and across the world's grasslands?

2) How do the inter-annual and intra-annual variabilities in carbon and water fluxes differ among different grassland ecosystems across continents?

3) How do the responses of carbon/water fluxes to disturbances differ among different grassland ecosystems (e.g., water-limited vs. temperature-limited, C_3

vs. C_4, high-latitude vs. low-latitude, North America vs. Eurasia vs. Australia (and other continents))?

PROPOSED SITES TO BE INVOLVED

All grassland sites containing at least one year of flux and meteorological data will be considered for this analysis.

PROPOSED RULES FOR CO-AUTHORSHIP

Co-authorship will be extended to those who make significant intellectual contribution to the analyses and the resulting manuscript.

NB: add the CV of the proposers

Li Zhang is an associate professor at Center for Earth Observation and Digital Earth, Chinese Academy of Sciences. Her research interest includes the application of remote sensing, GIS, and spatial analysis of ecosystem and land-surface dynamics.