

Proposal for Fluxnet-La Thuile-dataset publication

Title: The impact of land surface heterogeneity on temperature variability

Initial coordinator and proposal groups

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Short outline

The main focus of this study is the impact of land cover (forest vs grassland) on temperature variability. From model simulations, it is known that soil moisture, through its impact on surface fluxes, impacts summer temperature variability at regional and larger scales (Seneviratne et al, 2006). Soil moisture control on surface fluxes is also known to be a function of climate (Teuling et al, 2009). On smaller scales, the impact of soil moisture on surface fluxes strongly depend on land cover conditions and plant behavior (Teuling et al, 2006a and b). Here we investigate if and when local land cover-induced soil moisture conditions impact air temperature and its variability, and what the impact of patch size in relation to boundary layer mixing. Data from Fluxnet stations (which are mainly located in forests) will be combined with data from weather stations (which are mainly located in grasslands). In addition, land surface temperature from satellite images will be analyzed.

Research questions

Is the reported difference between evaporation persistency also apparent in Central and Western Europe under current climate fluctuations?

Does the difference in persistency result in different temperature variability and extremes?

What is the impact of patch size on the temperature variability?

Sites

The proposal focuses on Central and West-Europe. All sites in this region with more than 1 year of observations of radiation, latent and sensible heat, wind, air temperature and humidity will be considered.

Rules applied for co-authorship

Persons that have contributed data and/or have given intellectual input to the paper will be contacted to invite them for co-authorship. All data contributors will be invited to give intellectual input.

References

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Teuling, A.J., M. Hirschi, A. Ohmura, M. Wild, M. Reichstein, P. Ciais, N. Buchmann, C. Ammann, L. Montagnani, A.D. Richardson, G. Wohlfahrt, and S.I. Seneviratne, 2009: A regional perspective on trends in continental evaporation. *Geophys. Res. Lett.*, 36, L02404, doi:10.1029/2008GL036584.

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