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Interactive comment on "Environmental controls on the greening of terrestrial vegetation across northern Eurasia" *by* P. Dass et al.

Anonymous Referee #2

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The authors use the satellite-based GPP to examine environmental controls on vegetation greening in Eurasia. An attempt was made to look at the controlling factors of vegetation greening, an aspect which I unfortunately found rather superficial and where I expected a much more systematic approach. The topic is certainly of interest. Major Issues 1. GPP products. The authors used GPP from eddy covariance towers to validate the two satellite-based GPP products. To be more comprehensive, the gridded GPP product developed based on a combination of FLUXNET sites, satellite indices and climate drivers (Jung et al., 2009) can be used for inferring the product performance in capturing mean spatial GPP characteristics.

2. Data inconsistency. The authors used temperature and precipitation from UDEL but cloud cover from CRU. The inconsistency because of different interpolation meth-

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ods between UDEL and CRU may introduce the uncertainty into the attribution and correlation analysis.

3. Correlation analysis. The simple correlation analysis between GPP and target climate driver cannot statistically remove the impacts of other climate drivers. Why the authors do not adopt the partial correlation analysis to explore the environmental controls of vegetation greening?

4. Spatial analysis. As the authors stated, there is a high spatial heterogeneity in GPP and climate drivers but the authors still used their spatial averages to explore the drivers for GPP changes and the correlation between climate drivers. This definitely cannot give us detailed insights into the underlying mechanisms of GPP and its changes in Eurasia.

Minor issues: p9130 line11-12: please describe it in details Figure 2: to separately give the spatial pattern of two satellite-based products; there are only two products and is it meaningful to give the ensemble uncertainty?

Jung, M., Reichstein, M., Bondeau, A. (2009): Towards global empirical upscaling of FLUXNET eddy covariance observations: validation of a model tree ensemble approach using a biosphere model. Biogeosciences, 6, 2001-2013.

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