



Alexander von Humboldt
Stiftung/Foundation



Max Planck Institute
for Biogeochemistry

MaNiP –

A large scale nutrition manipulation
experiment in a tree grass ecosystem
to understand ecosystem-physiological
response to changing N/P stoichiometry
and water availability



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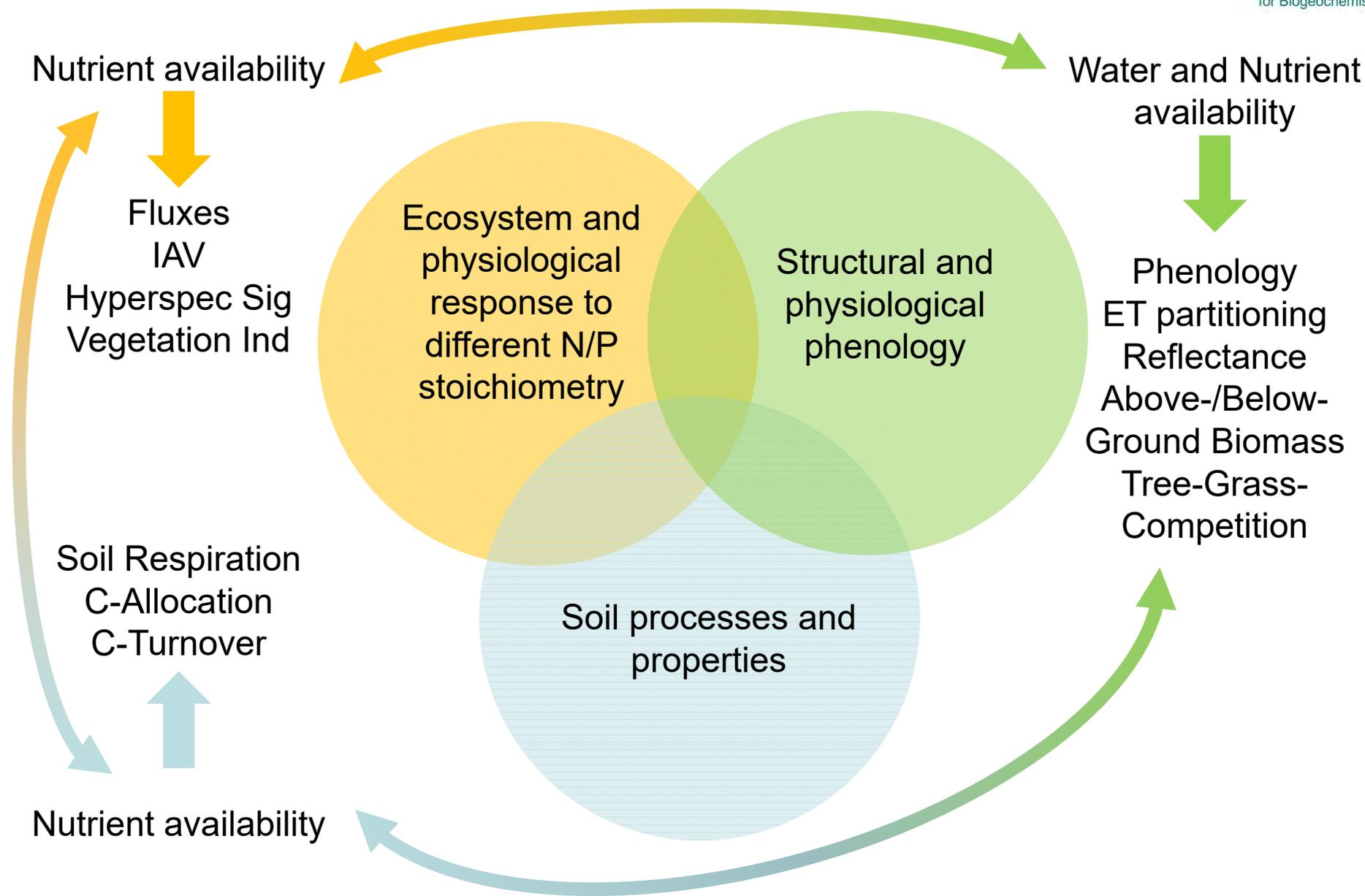
³ Forest Research Group - INDEHESA University of Extremadura, Spain

⁴ Consejo Superior De Investigaciones Cientificas, Spain

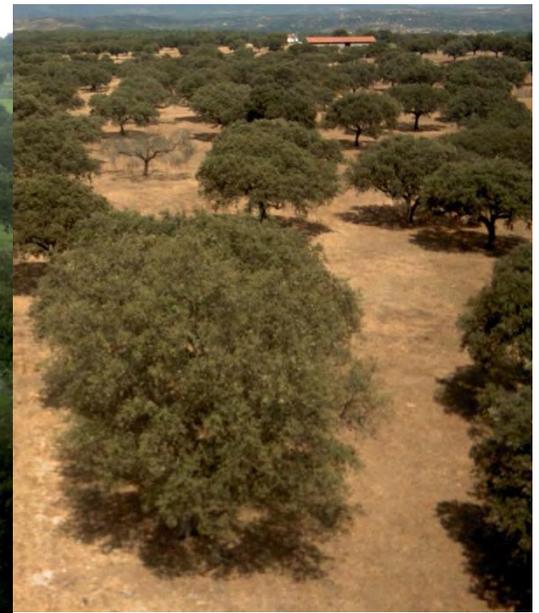
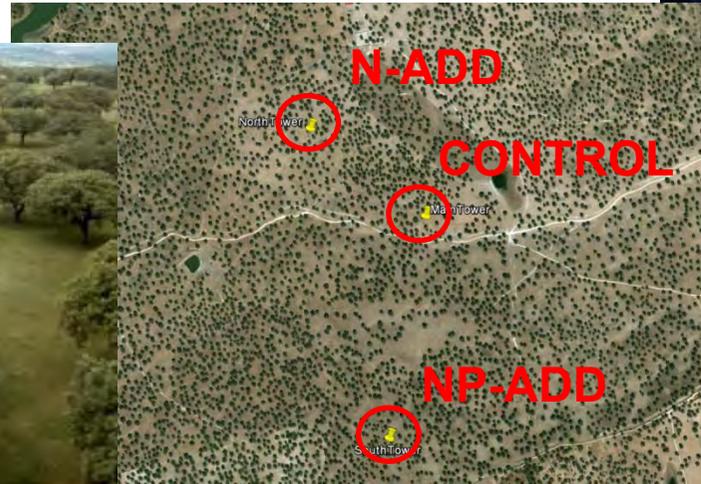
2nd ICOS Scientific Conference on greenhouse gases and biogeochemical cycles

28.09.2016, Helsinki

Experimental Goals



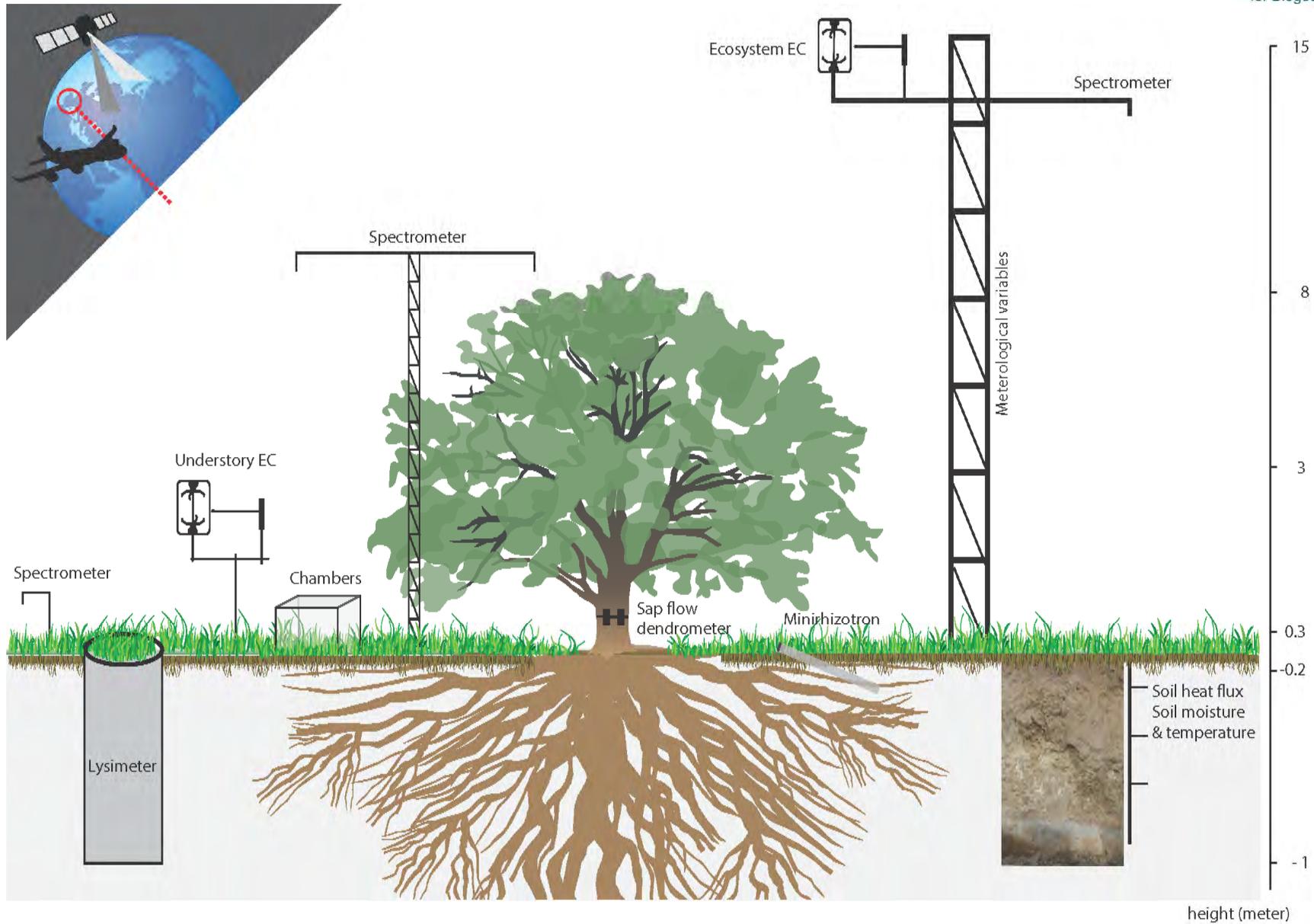
Study site – Majadas del Tietar



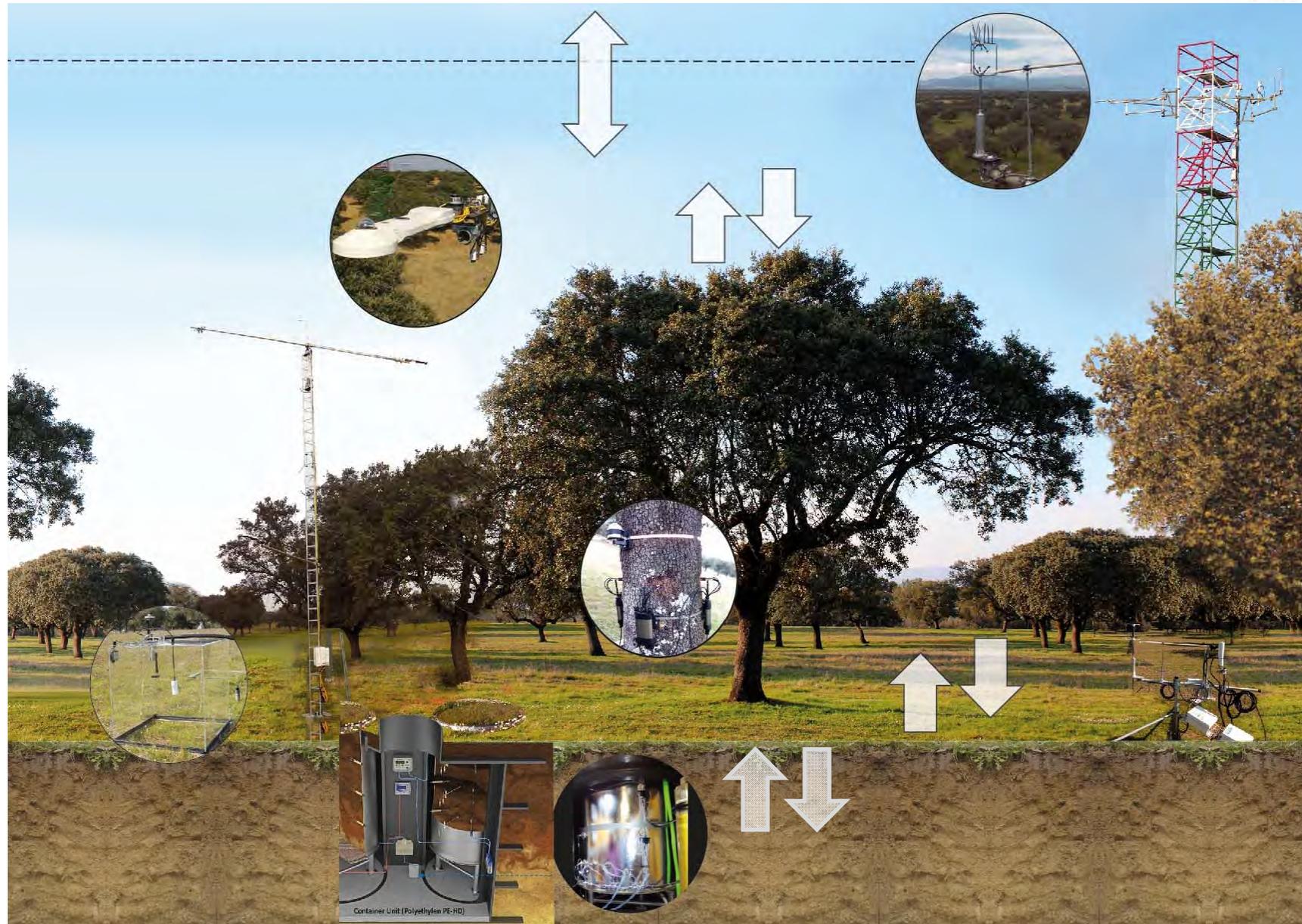
Instrumentation

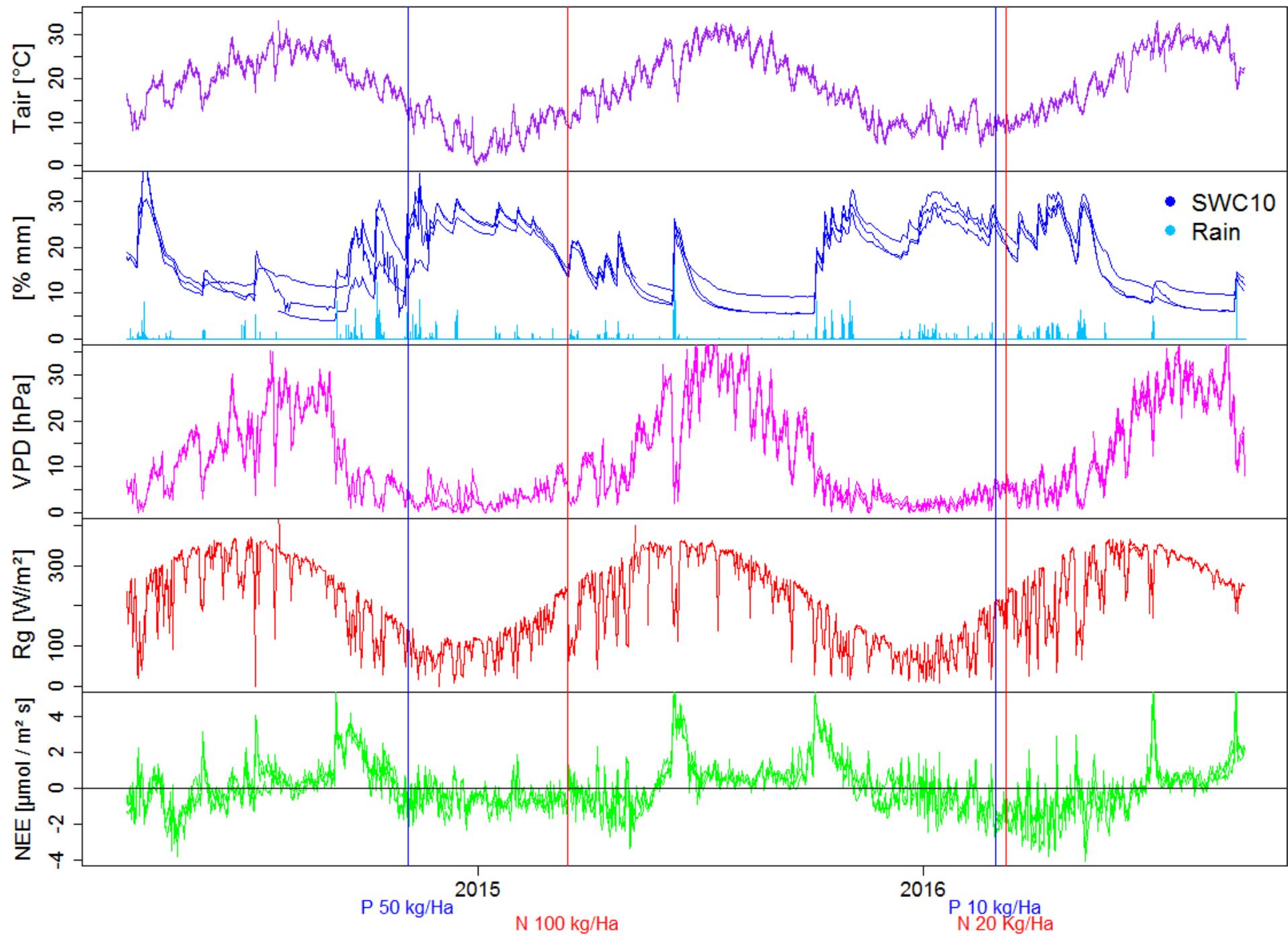


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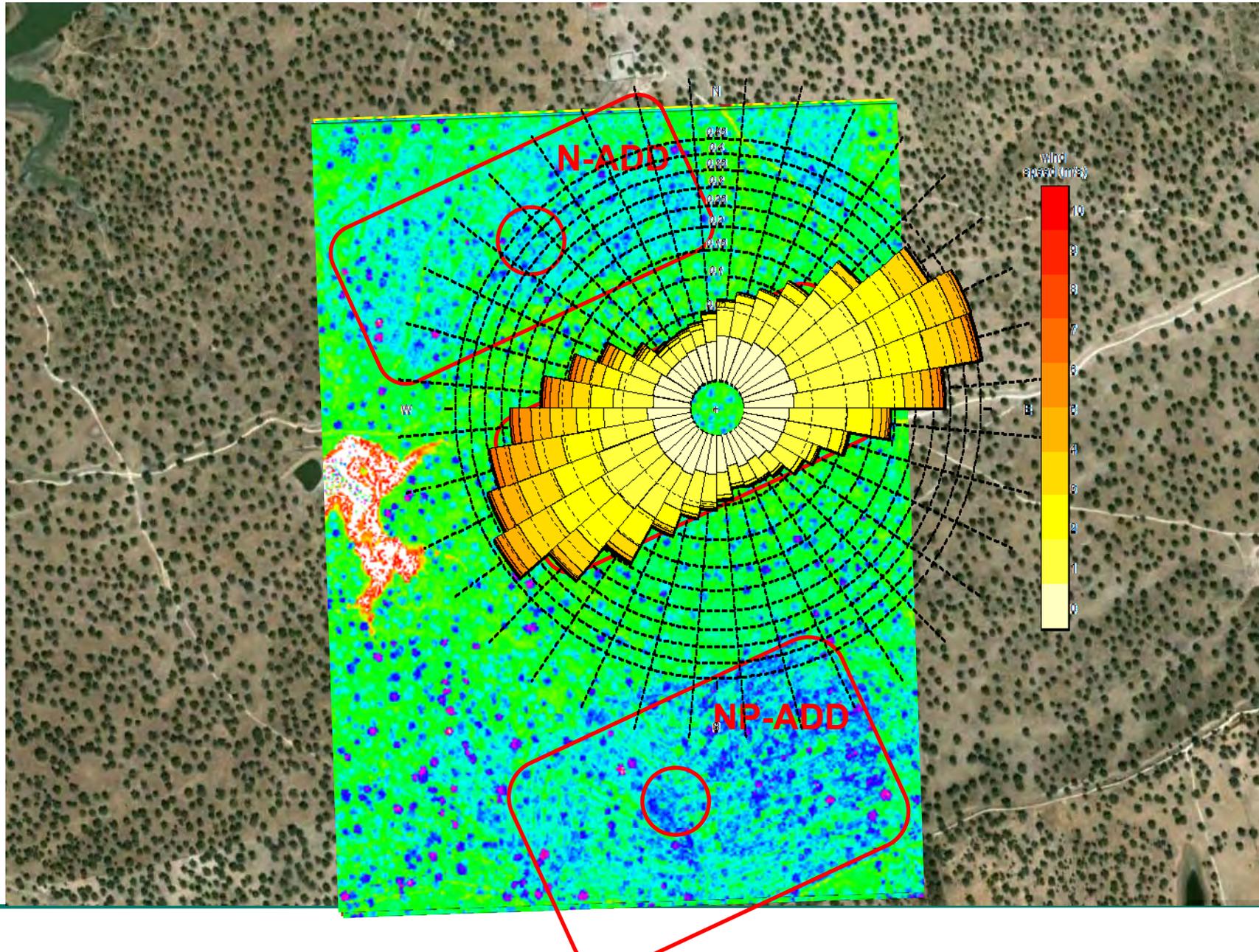


Instrumentation

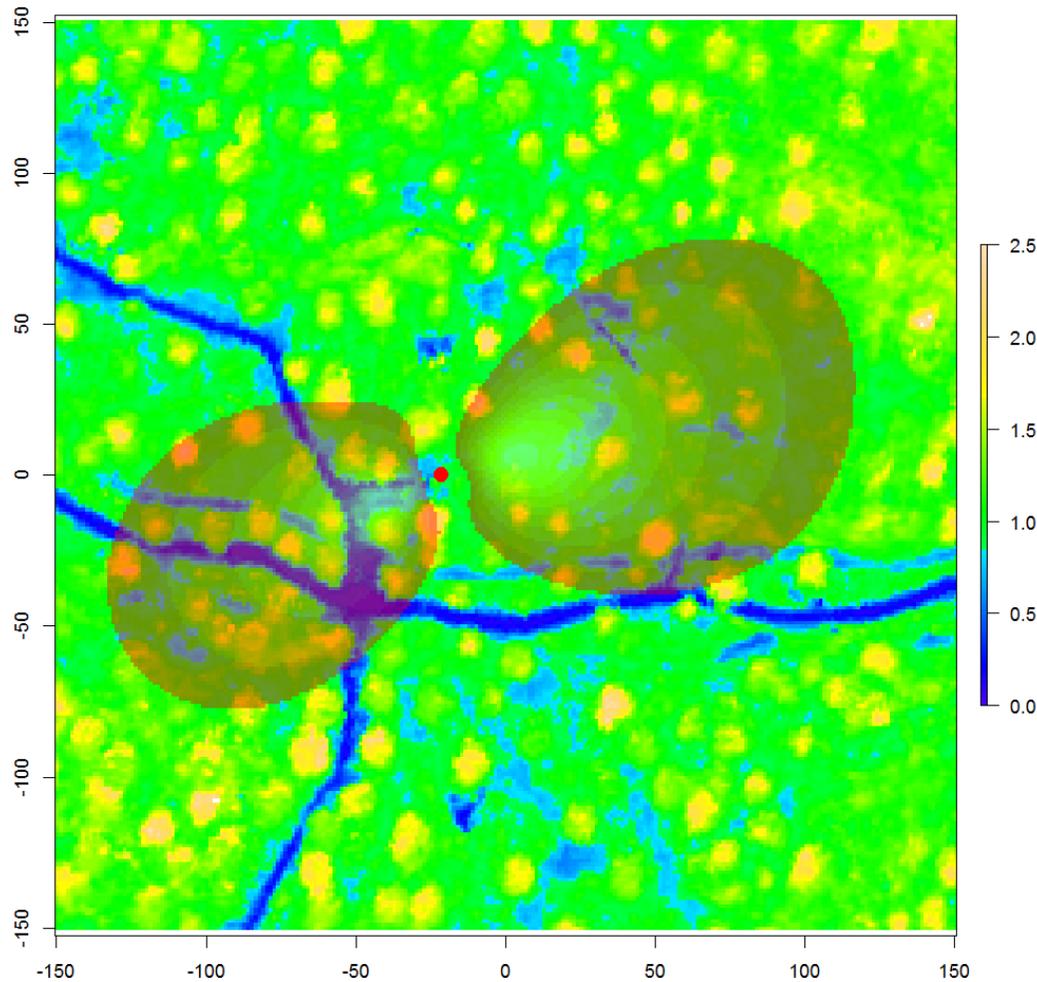




'Wet' study site – Majadas del Tietar



Surface properties and fluxes



High resolution surface property map

Classification of PFTs

Calculate 2-D footprint (Detto et al., 2006, Hsieh et al., 2000)

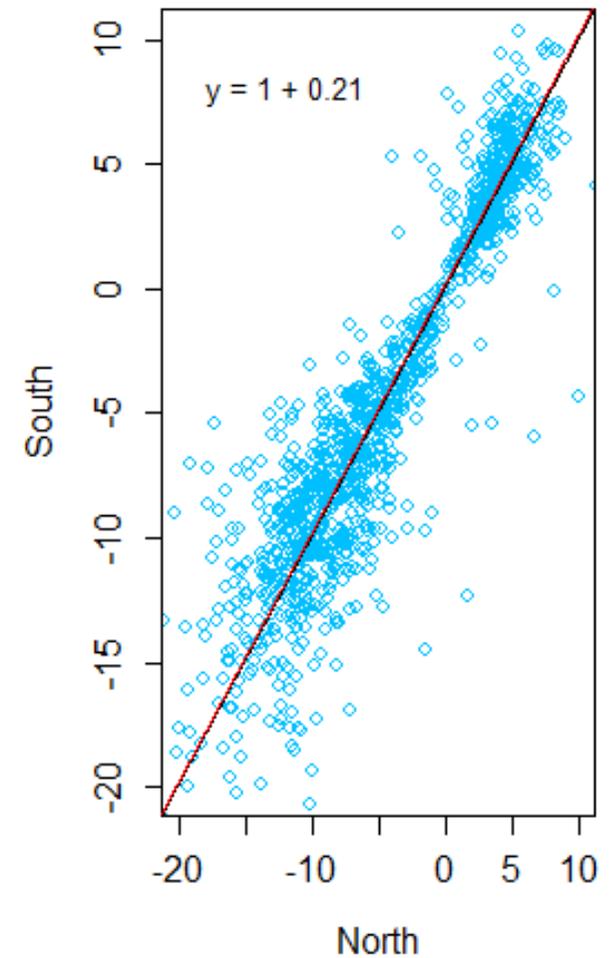
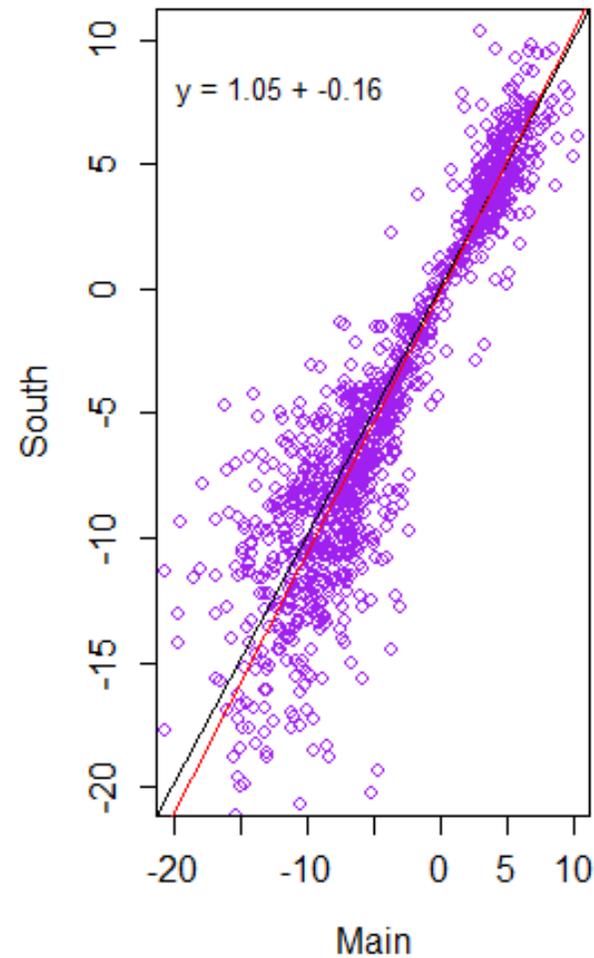
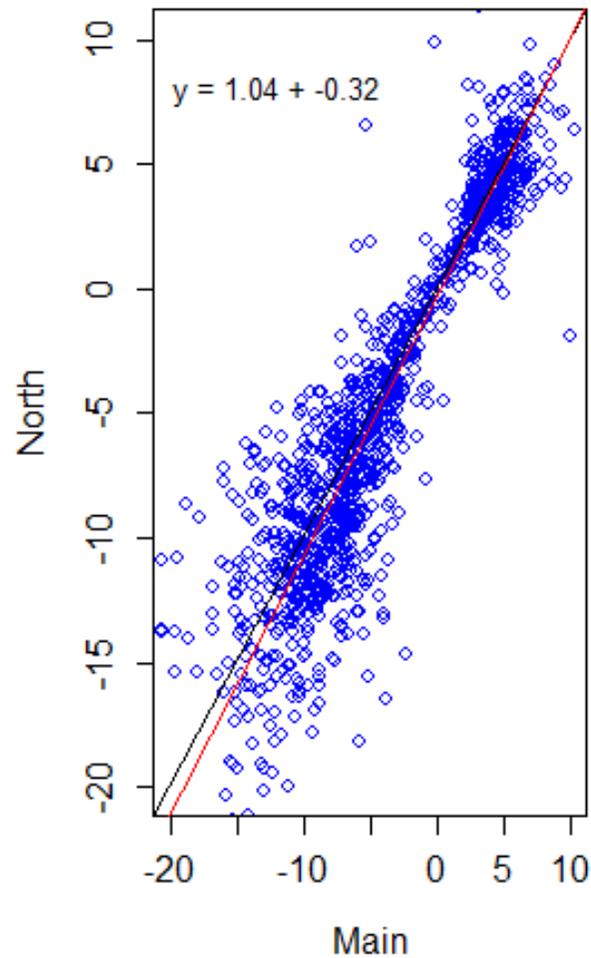
Intersect FP with classification and VI maps

Weighing according to FP-pdf

Pre-fertilization Benchmarking (Spring)

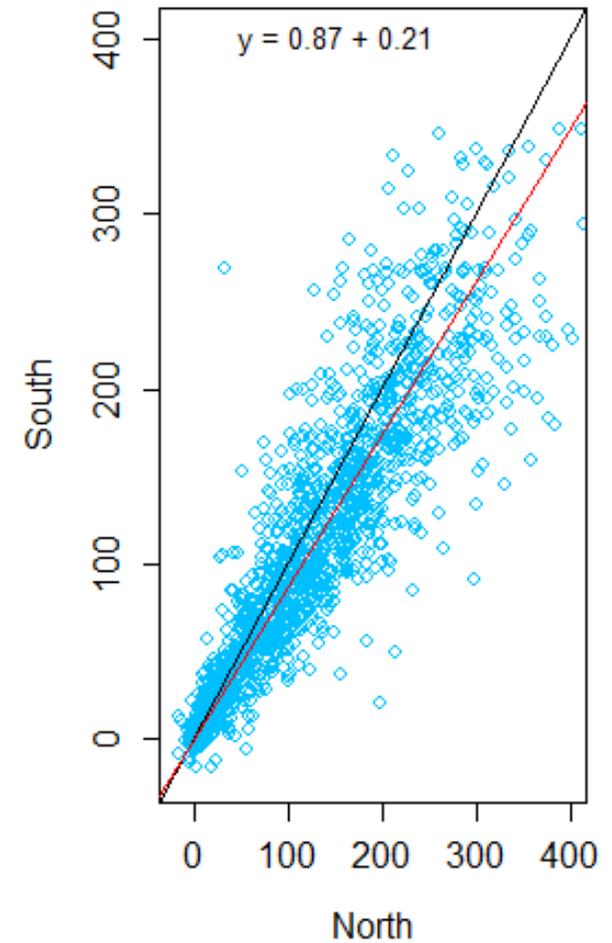
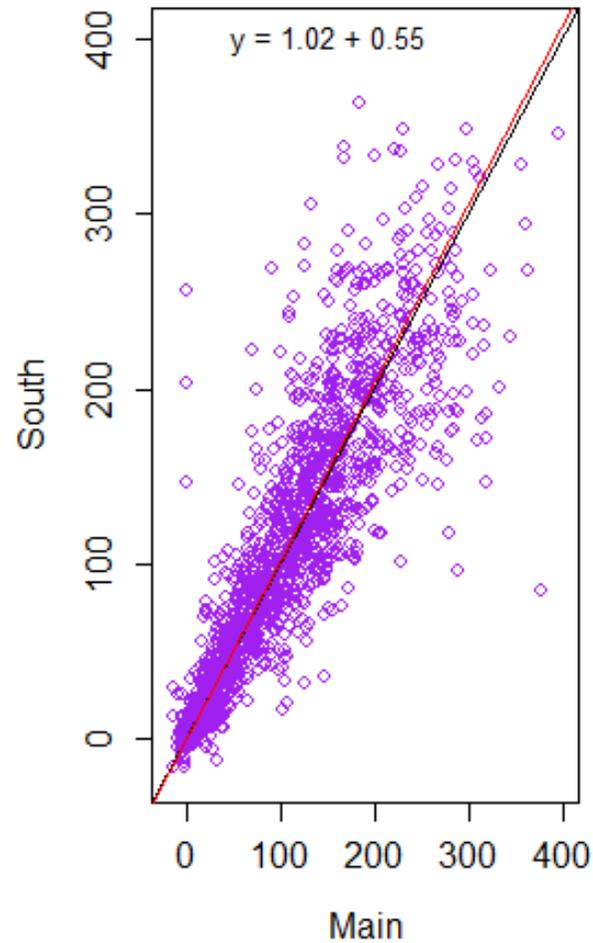
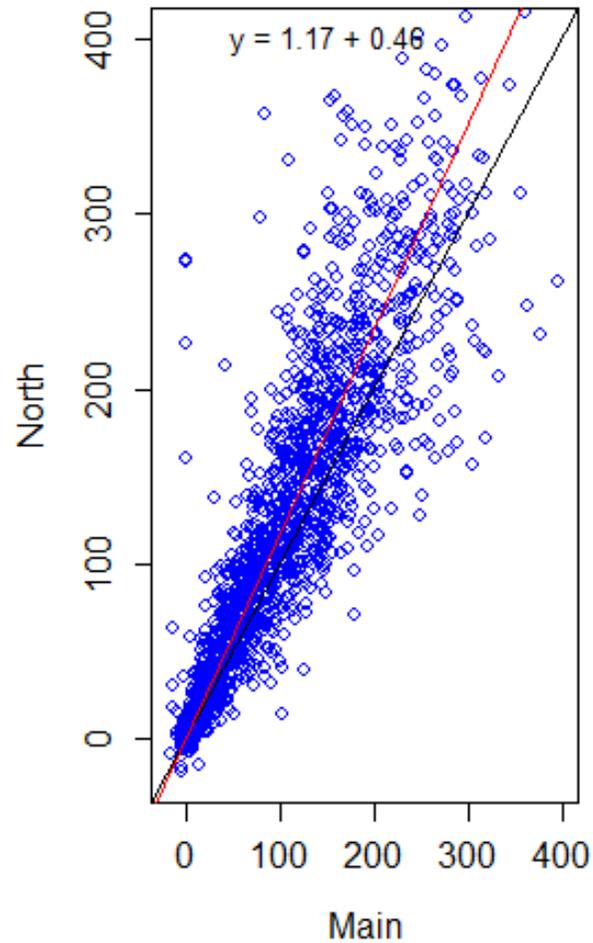


Half-hourly NEE fluxes

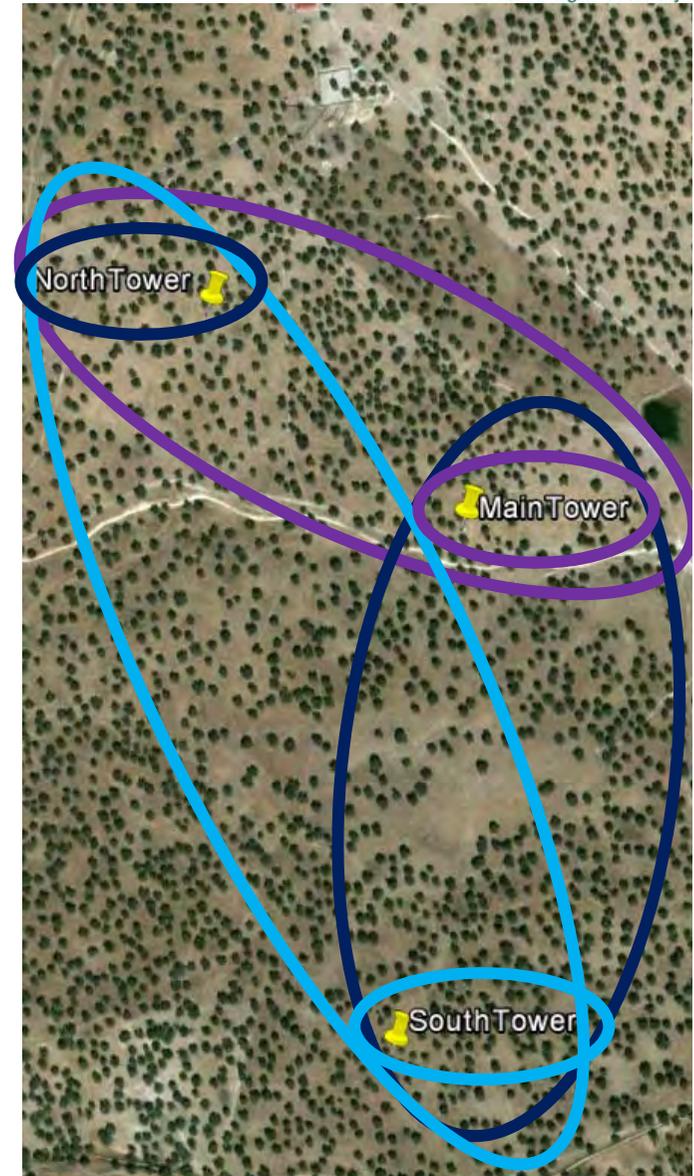
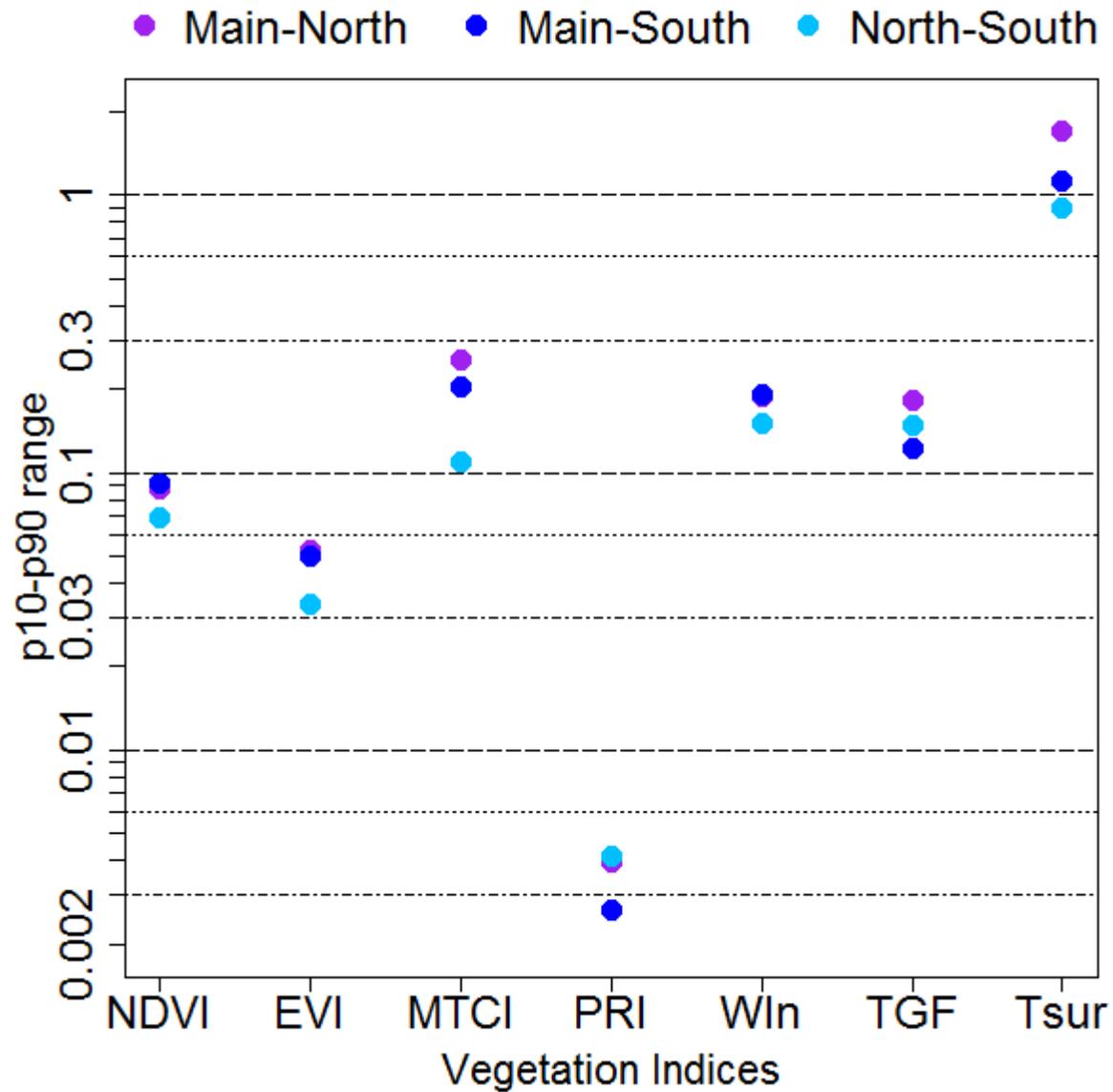


Post-fertilization (Spring)

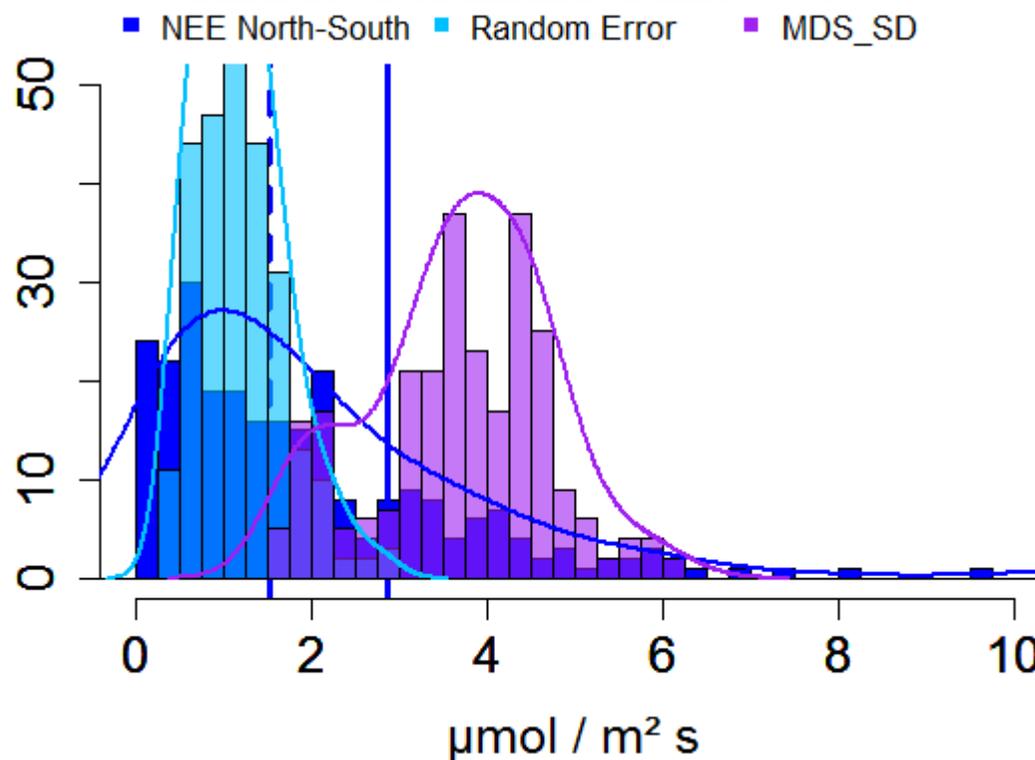
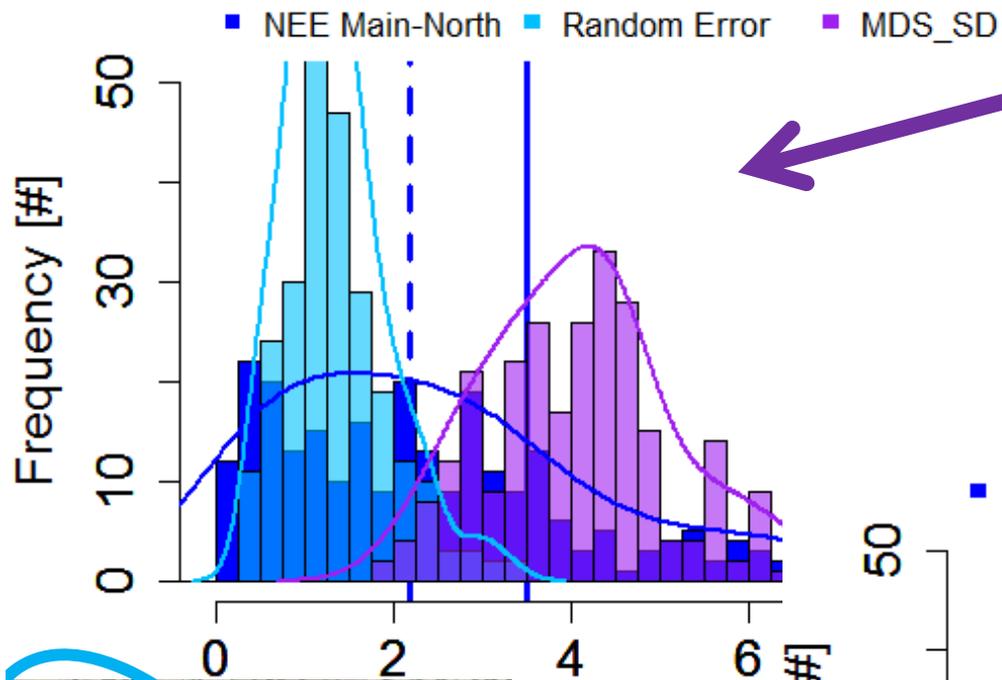
Half-hourly LE fluxes



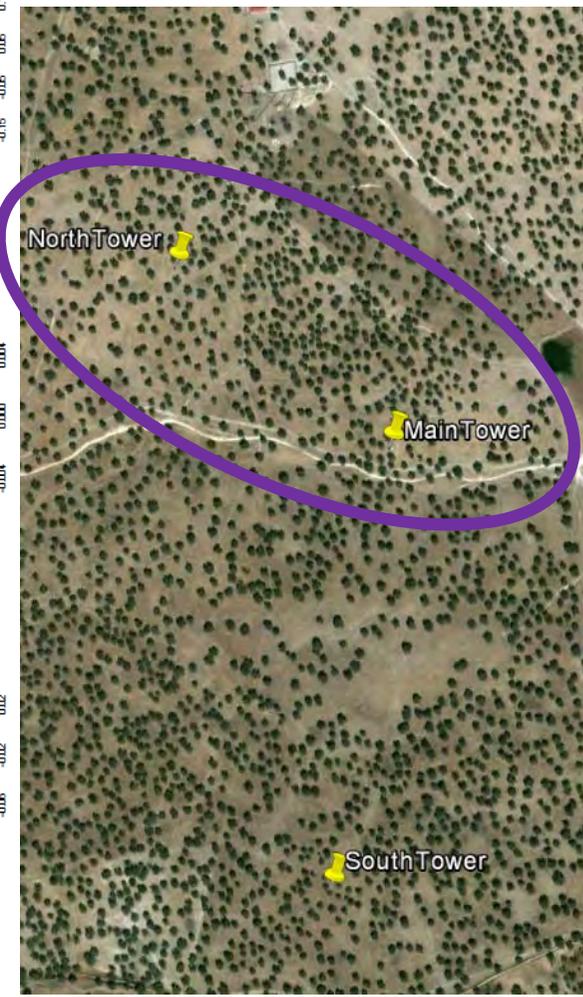
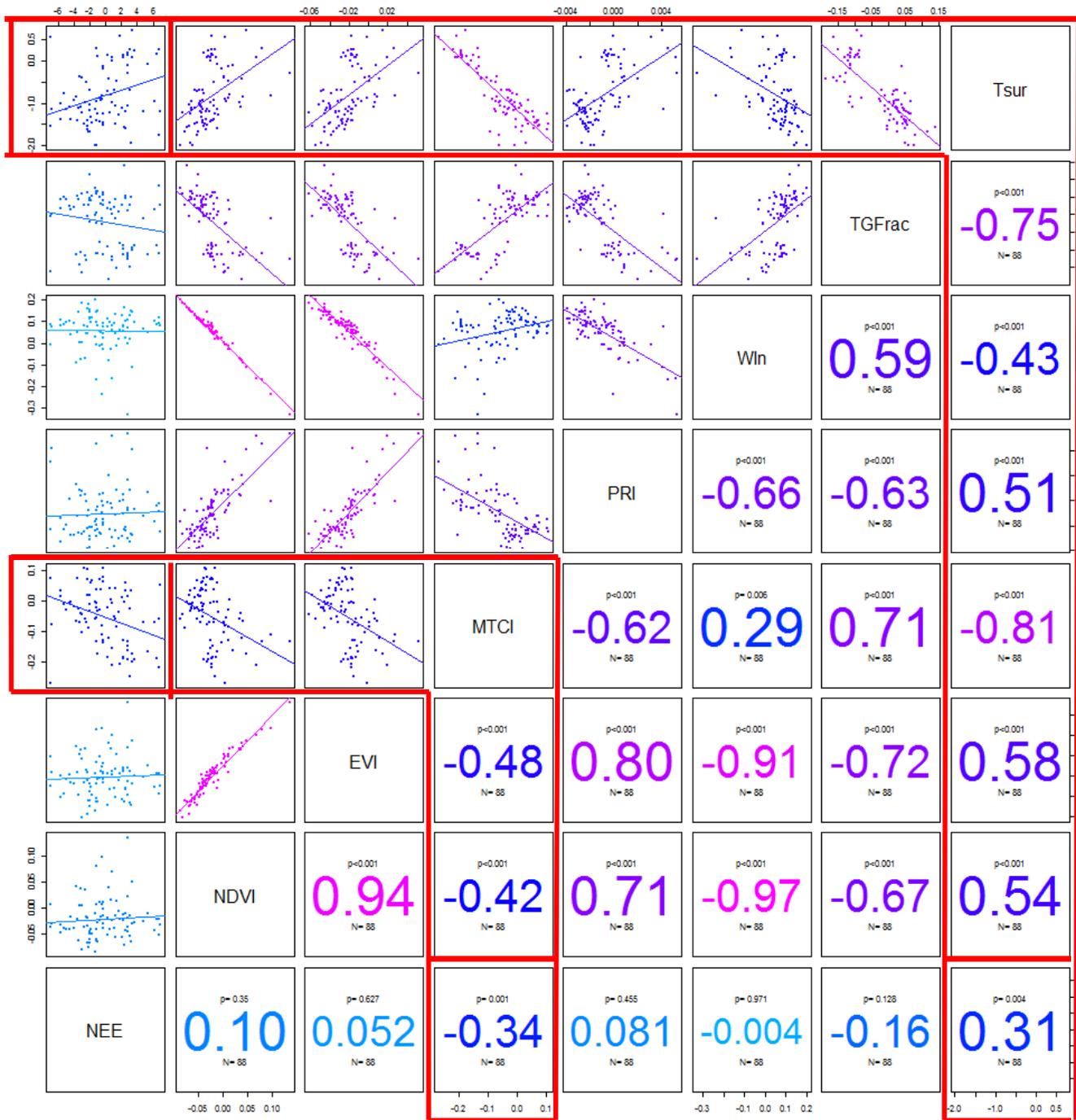
Spatial Heterogeneity



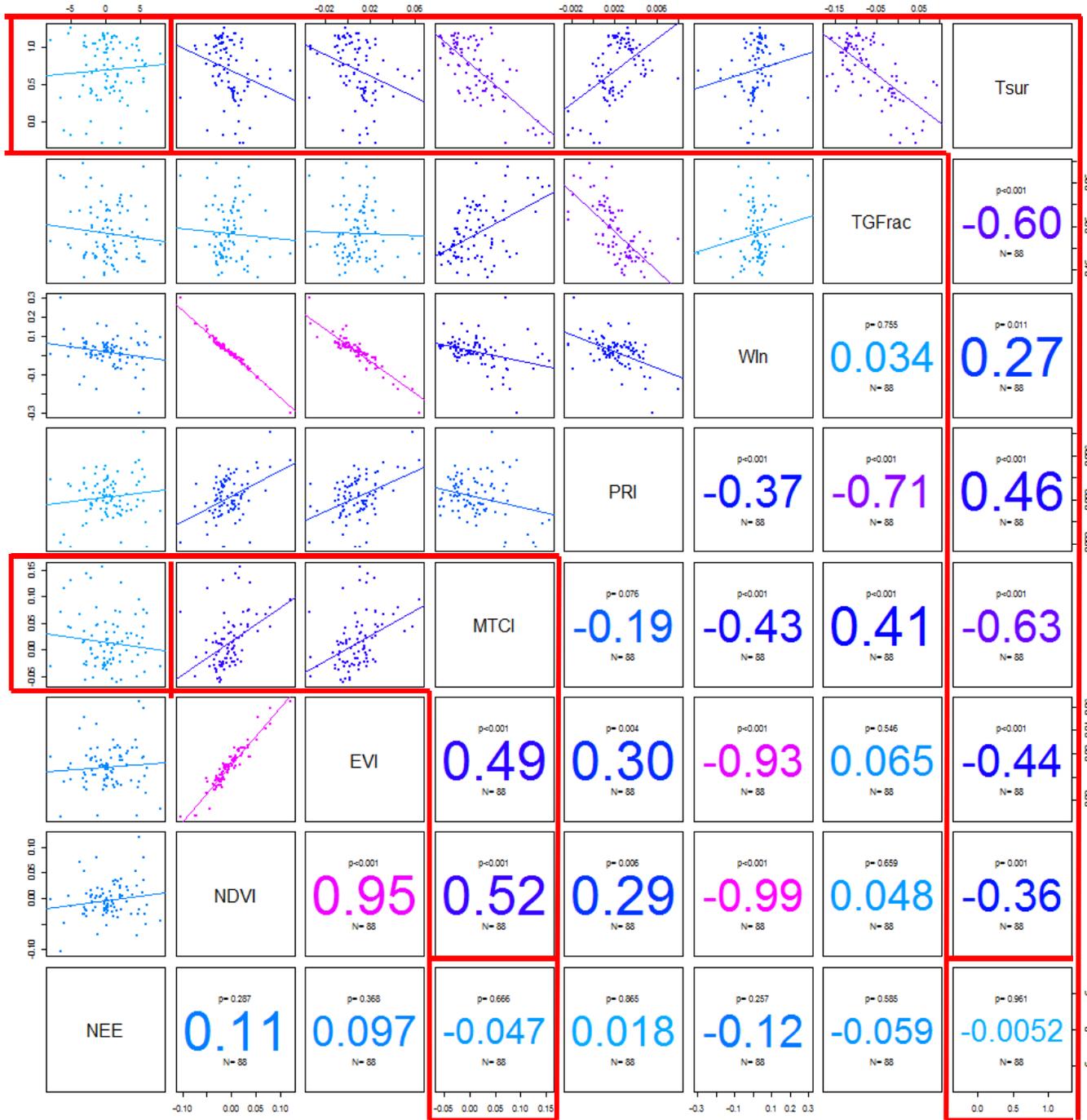
Spatial Heterogeneity



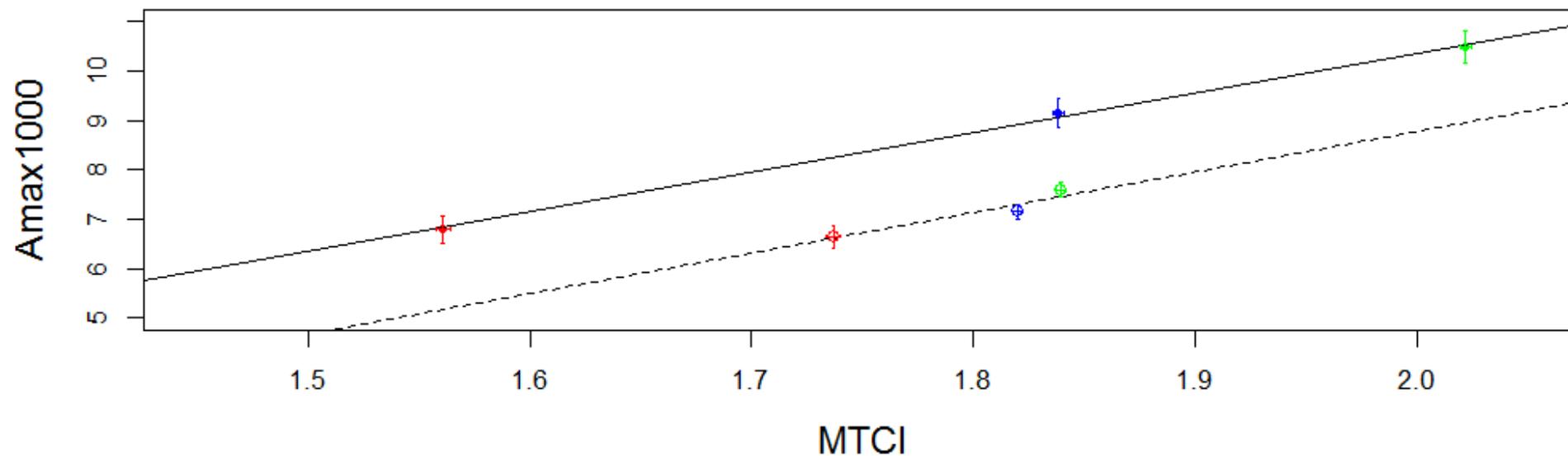
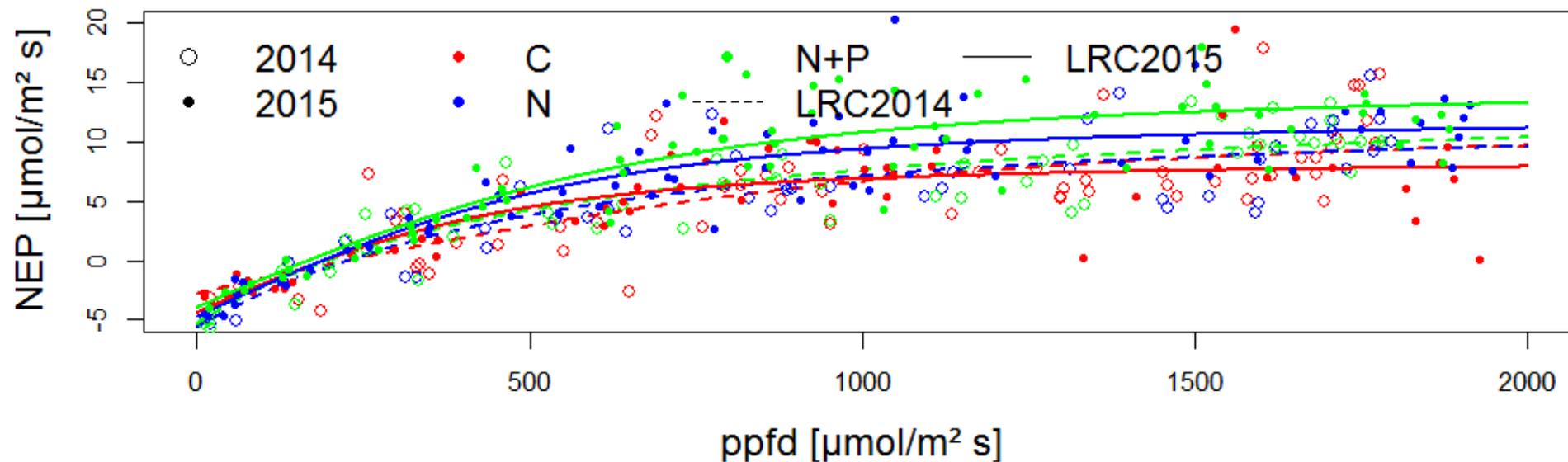
Main - North



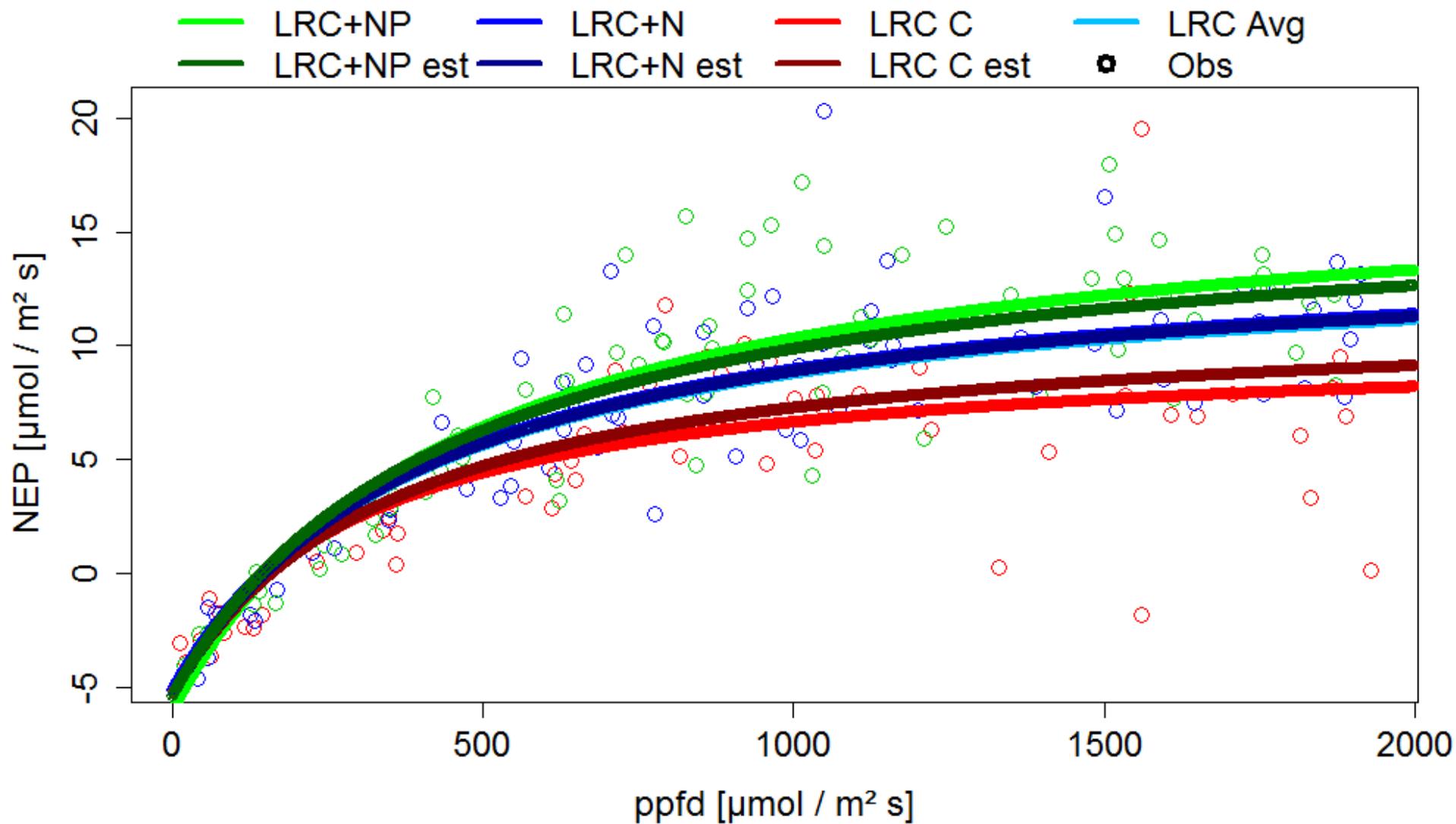
North - South



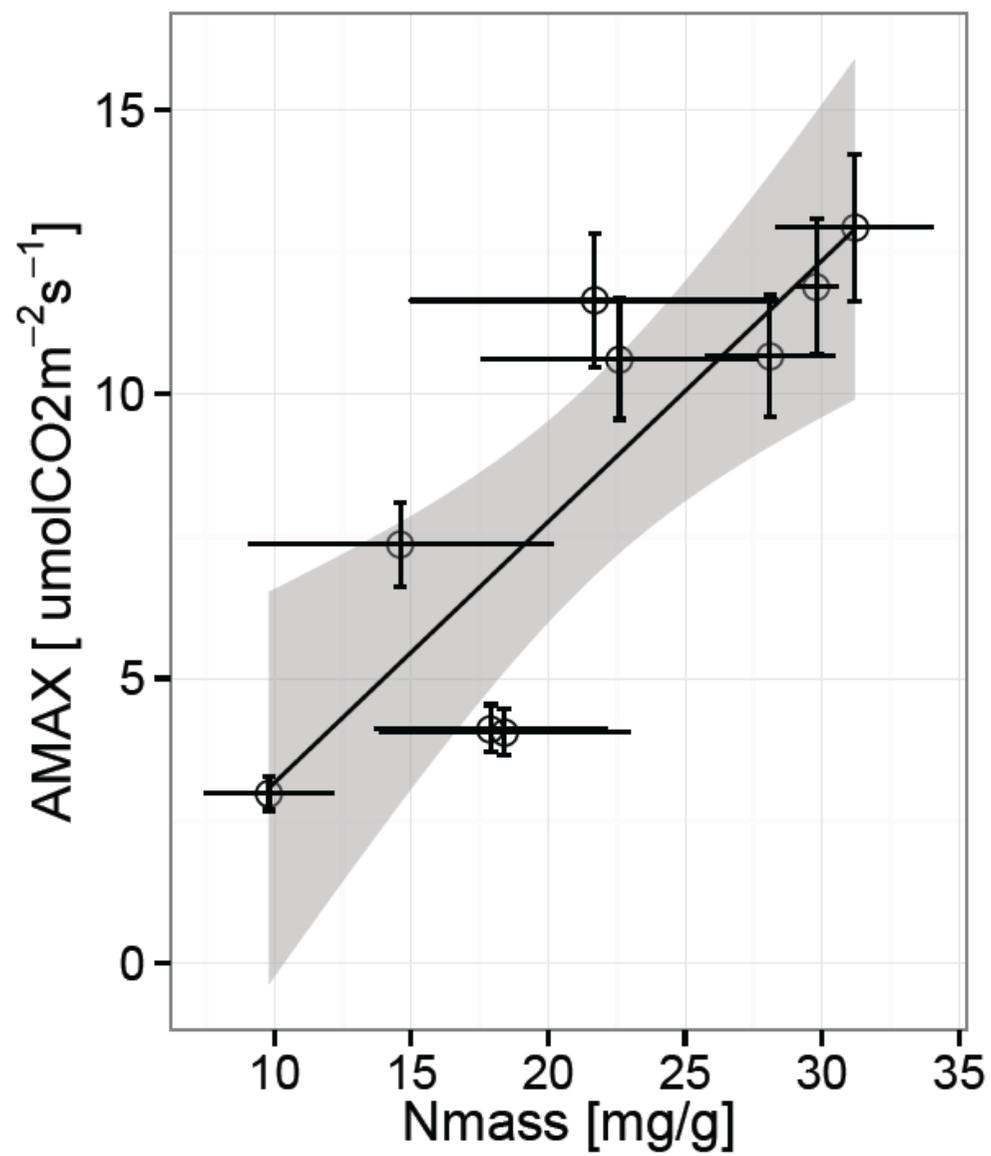
LRC - MTCI



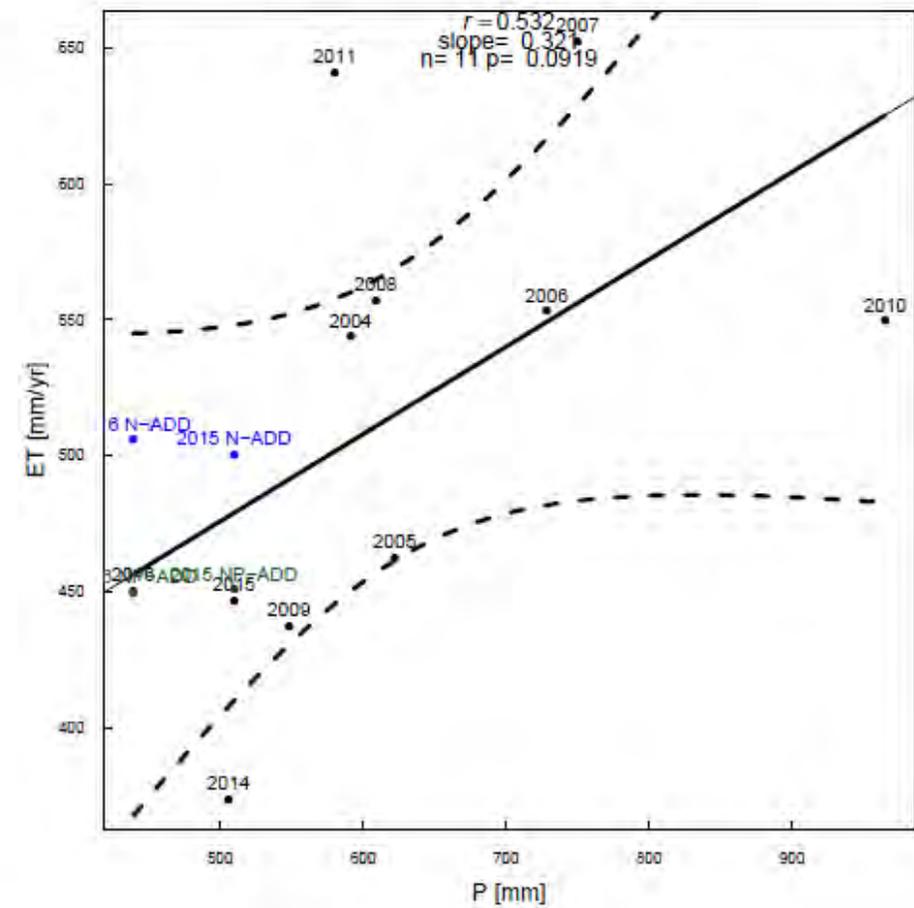
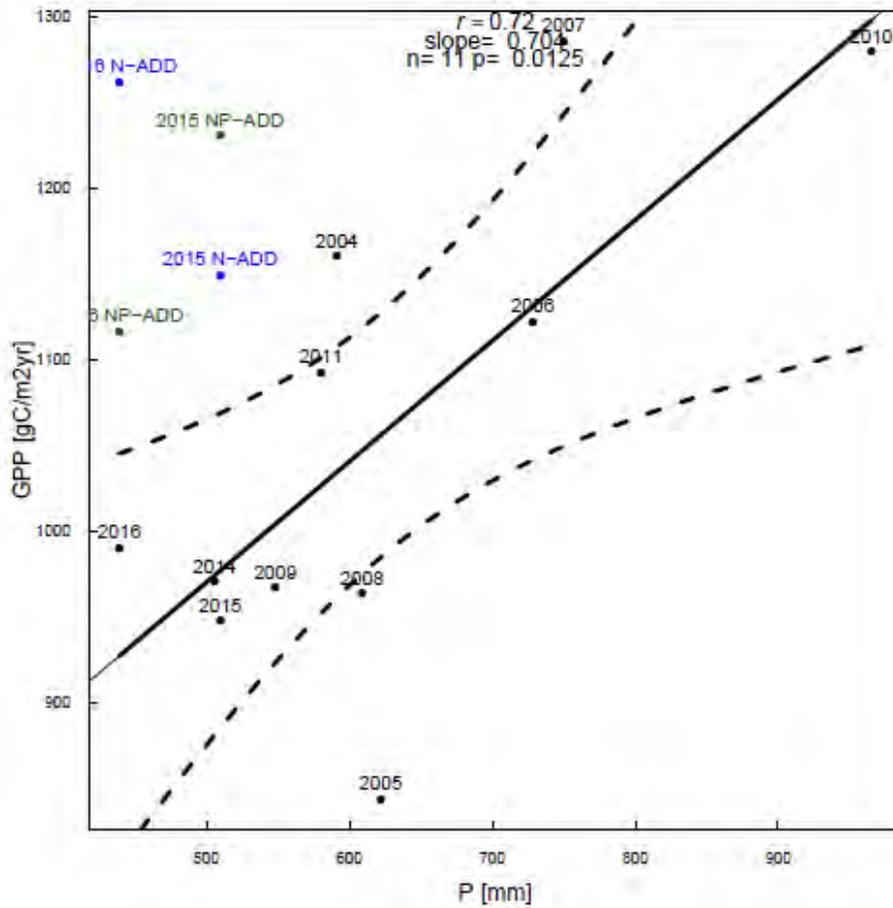
LRC - MTCI



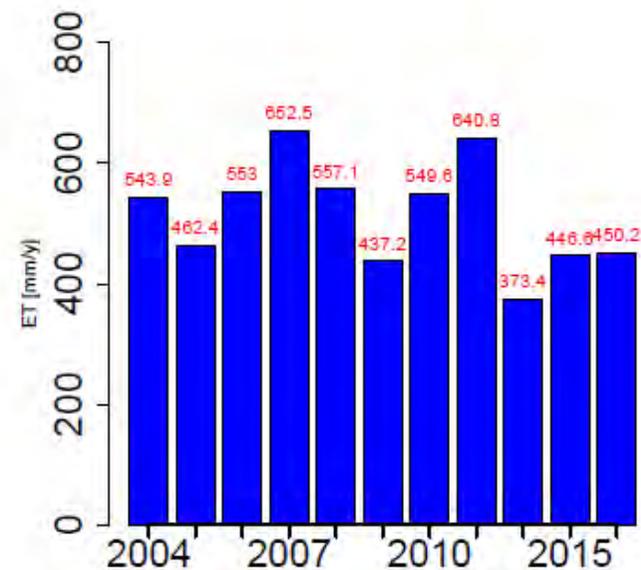
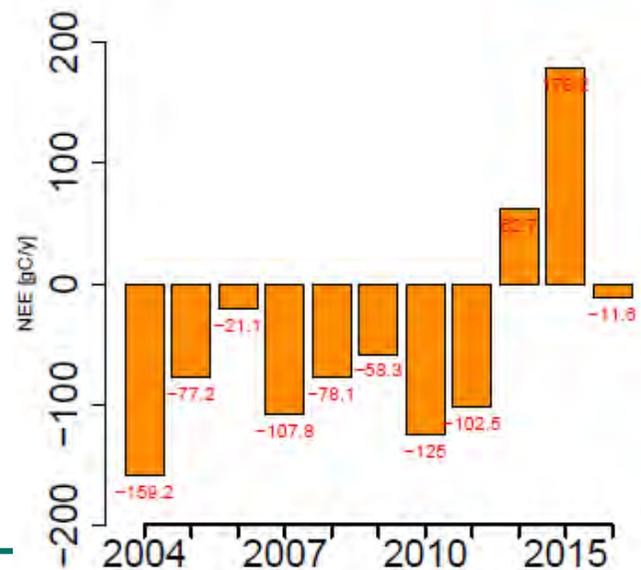
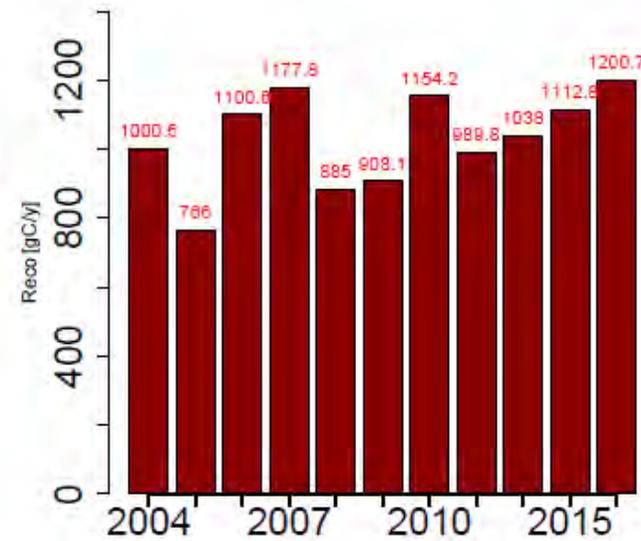
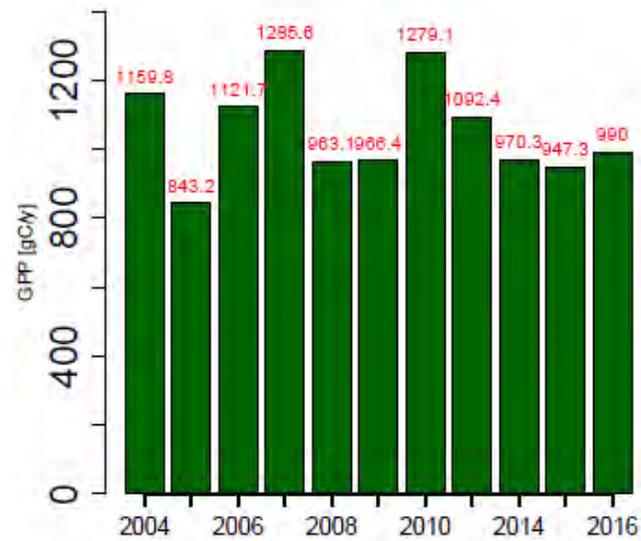
LRC – Nitrogen content



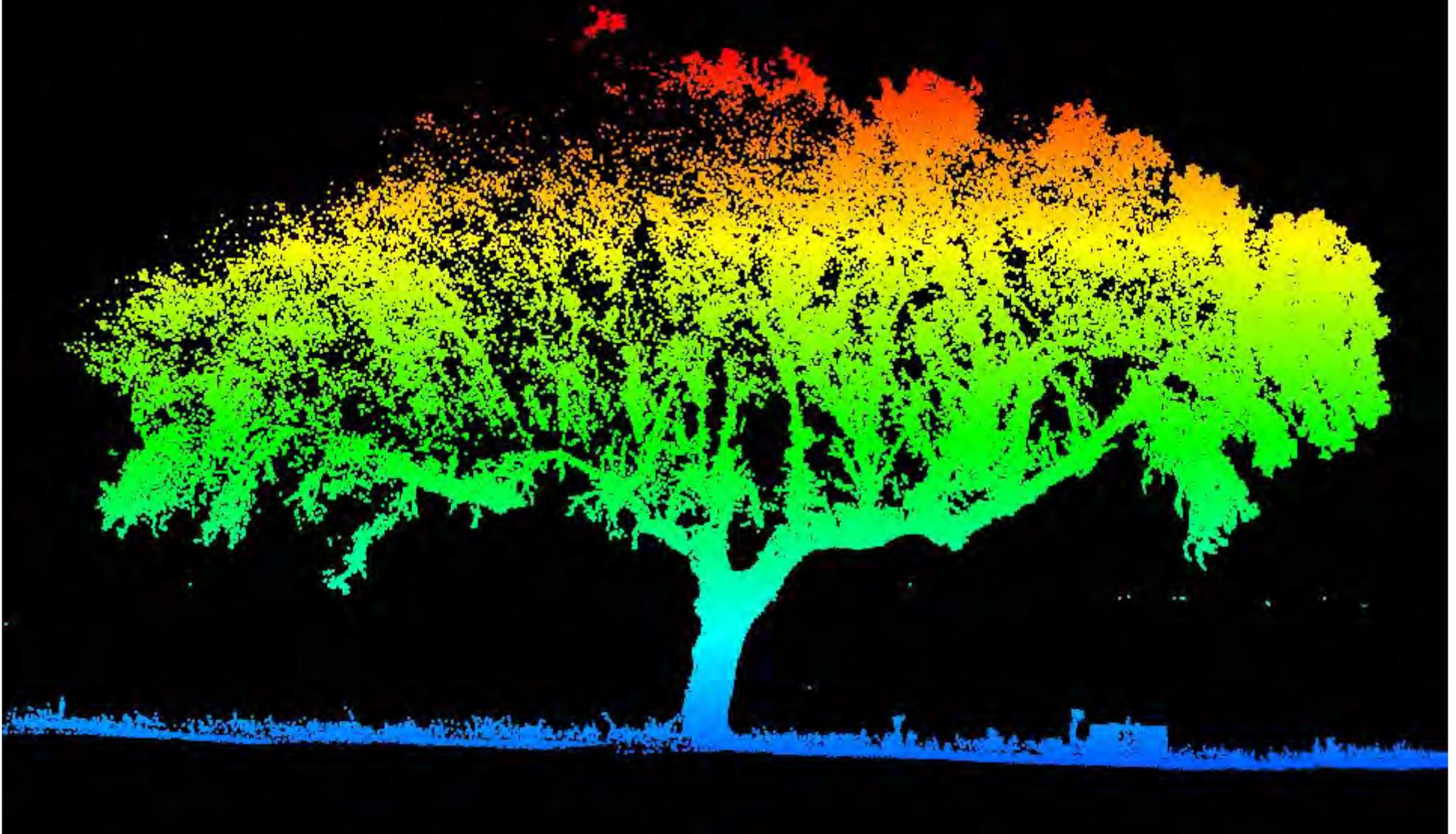
Flux-Precipitation-Relation



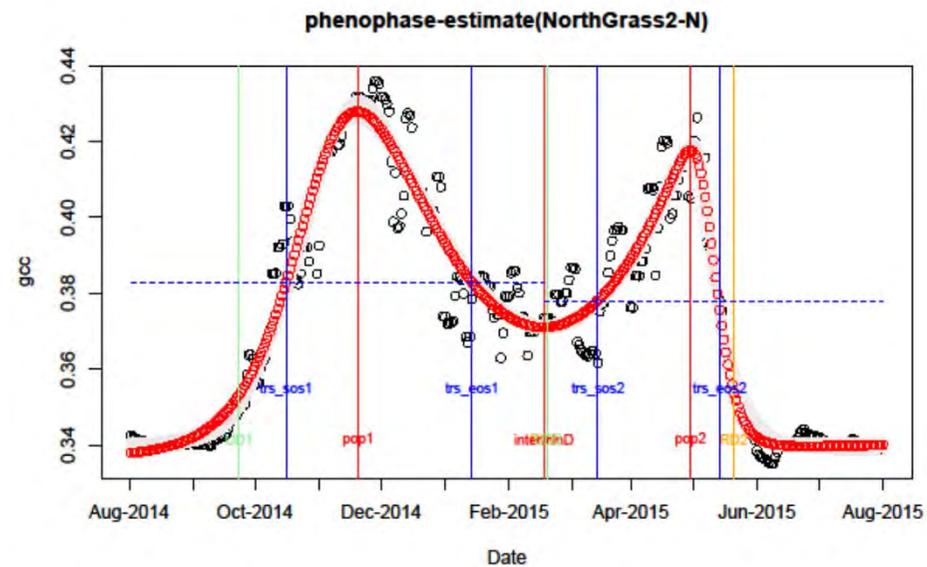
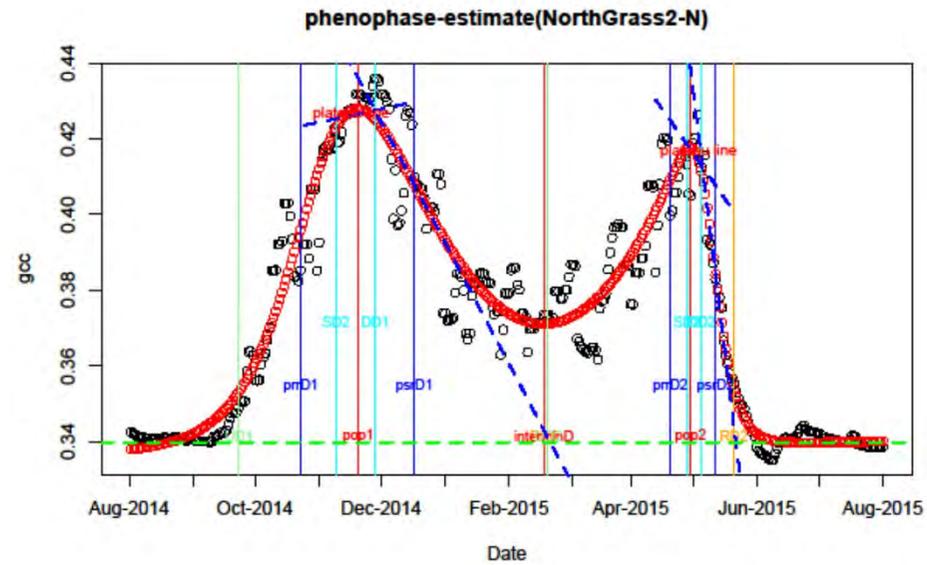
Flux-Precipitation-Relation



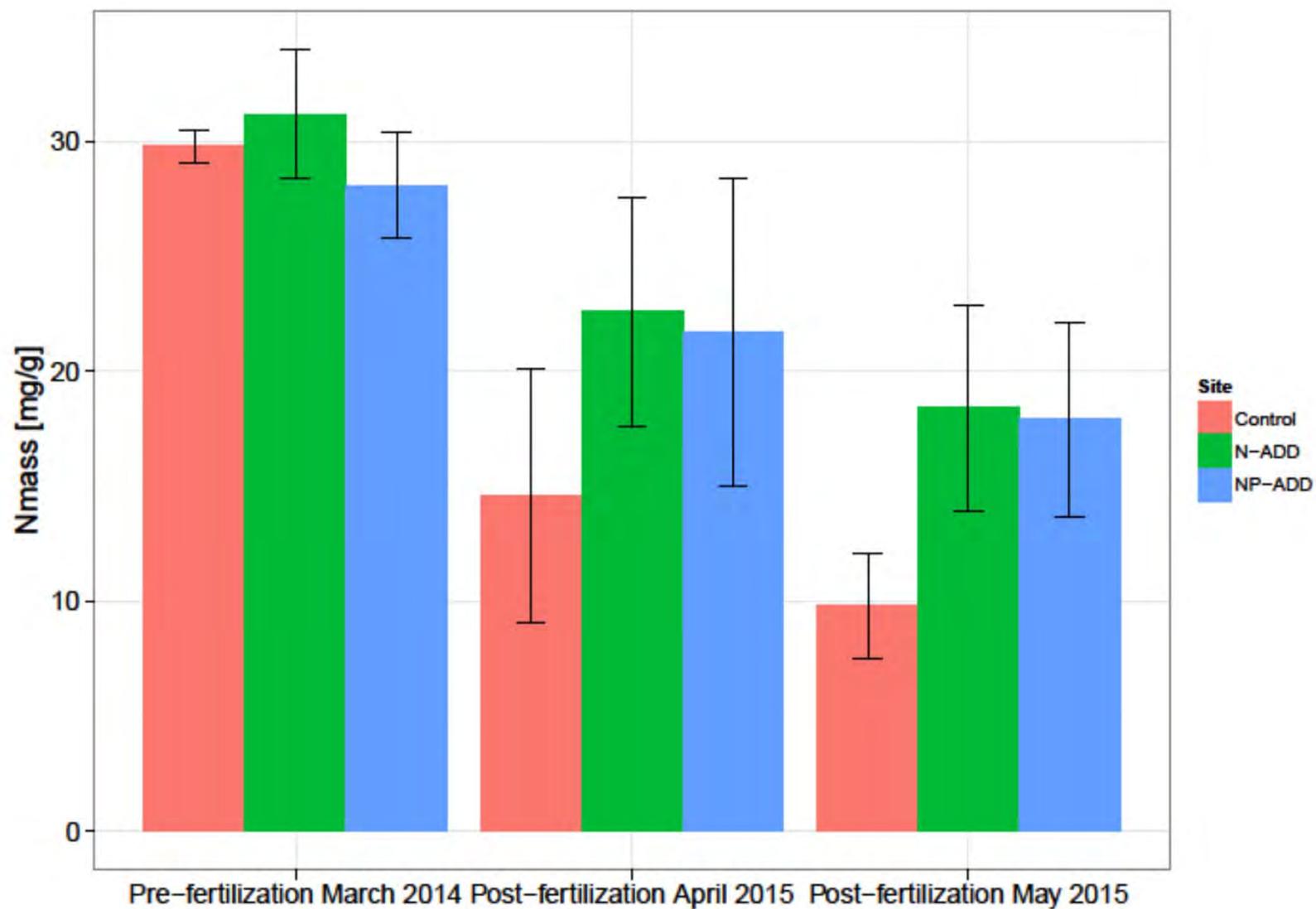
Thanks for your attention



Phenocam season estimation



N in Biomass

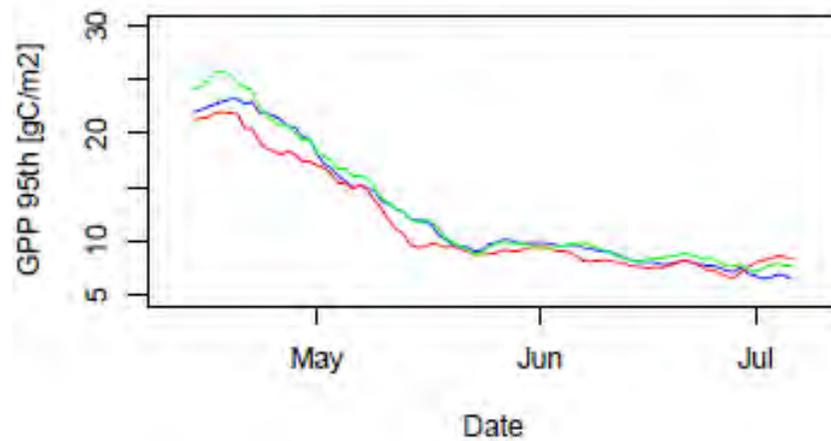


Drying out

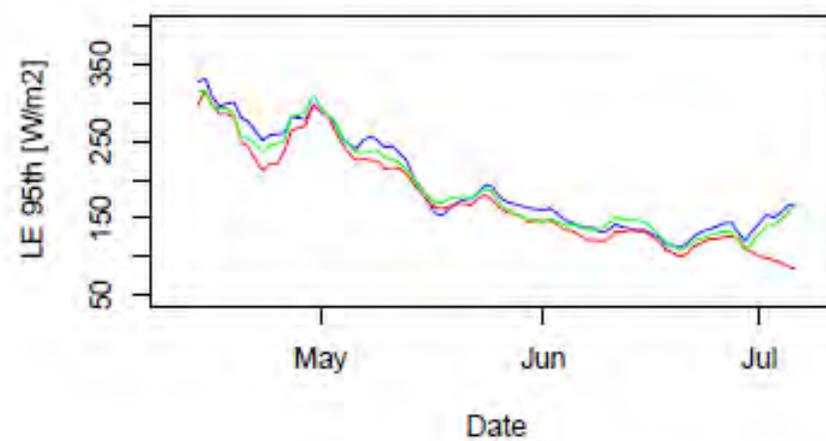


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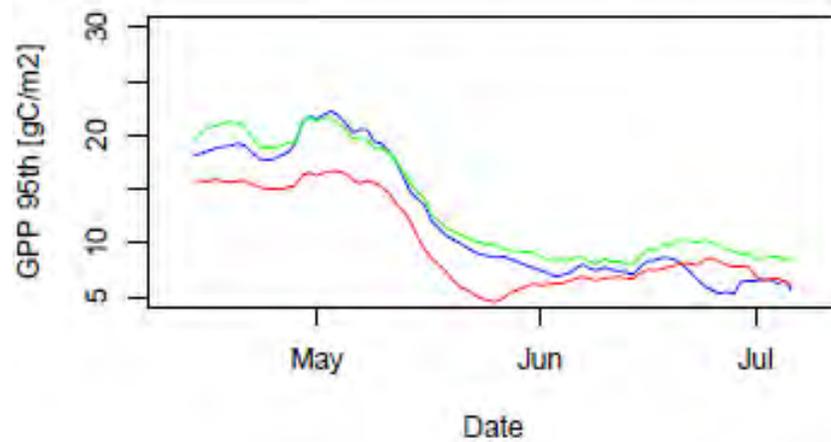
Before fertilization



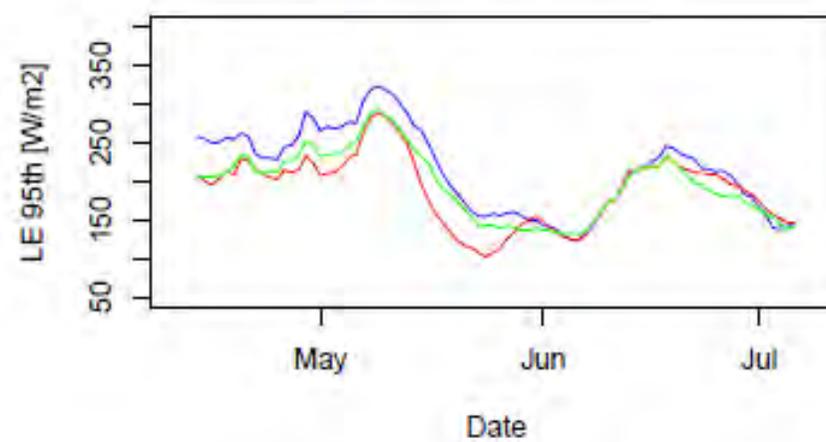
Before fertilization

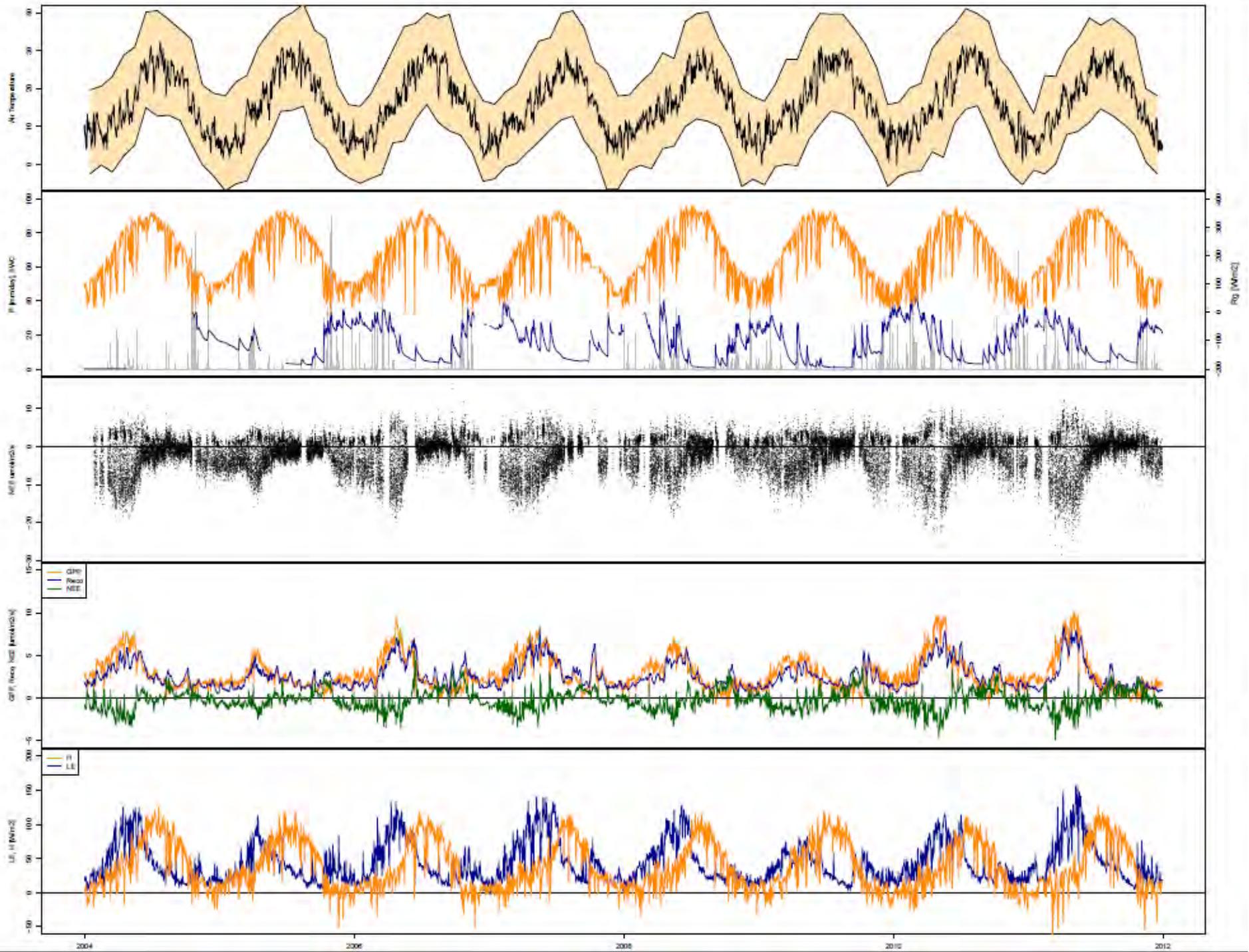


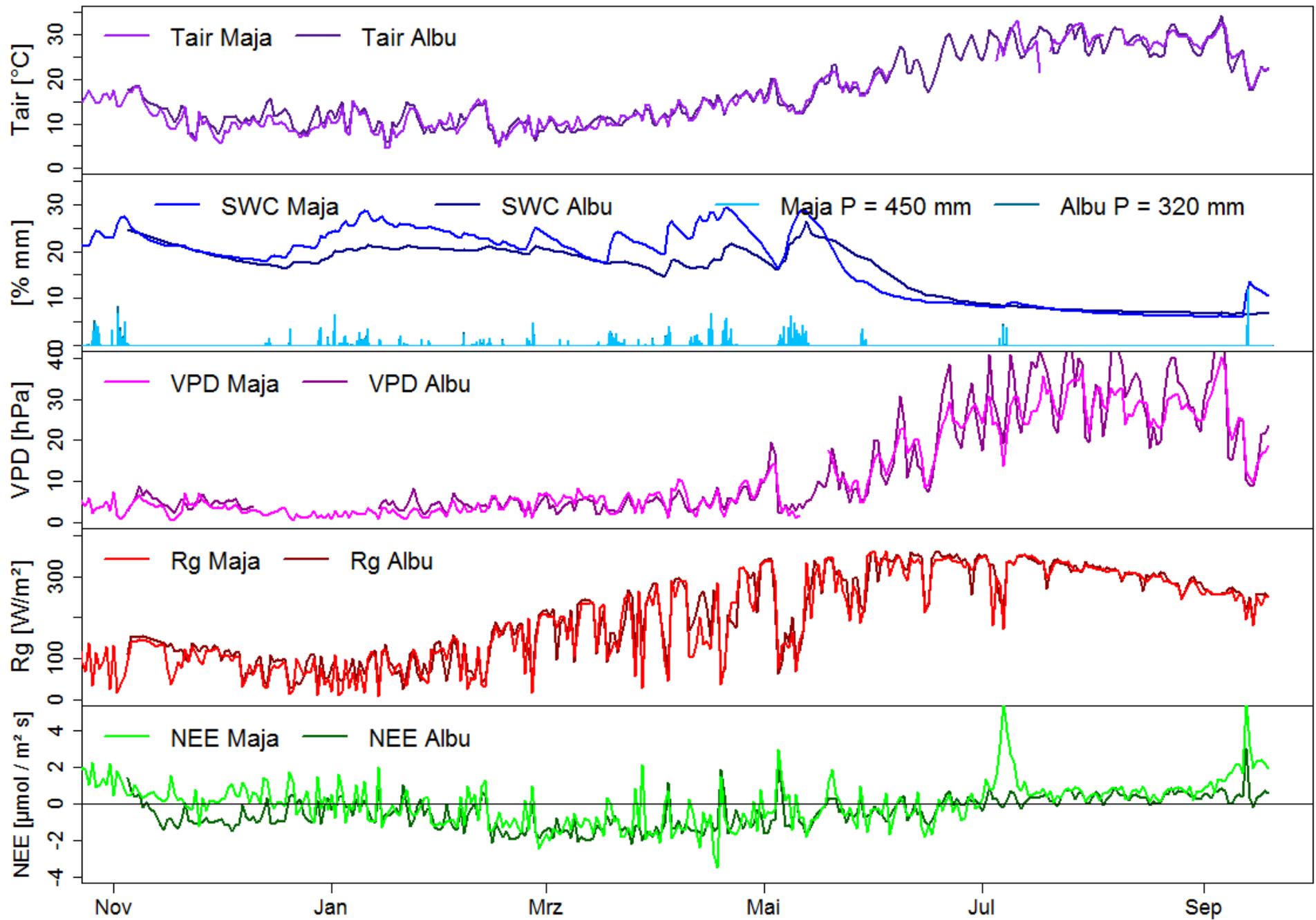
After fertilization 2015



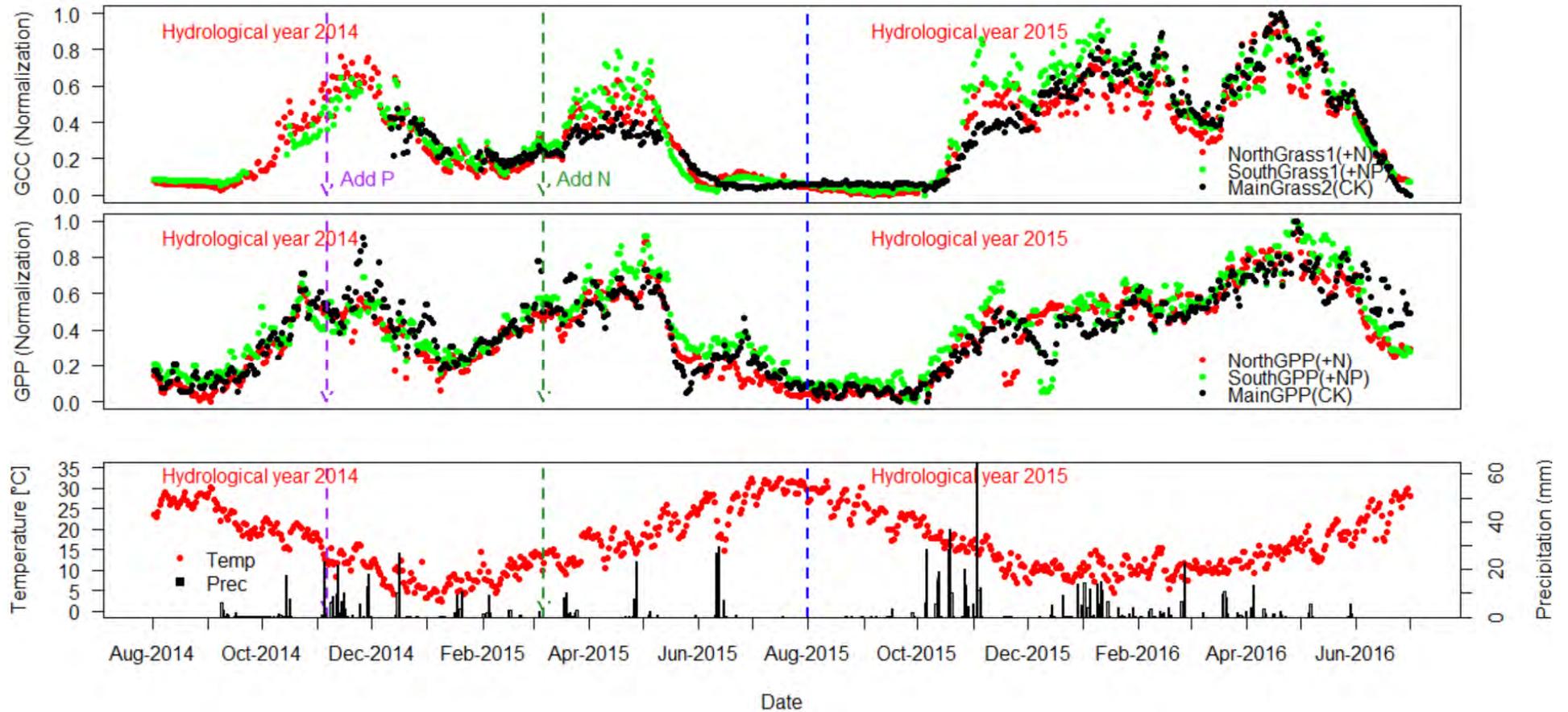
After fertilization 2015



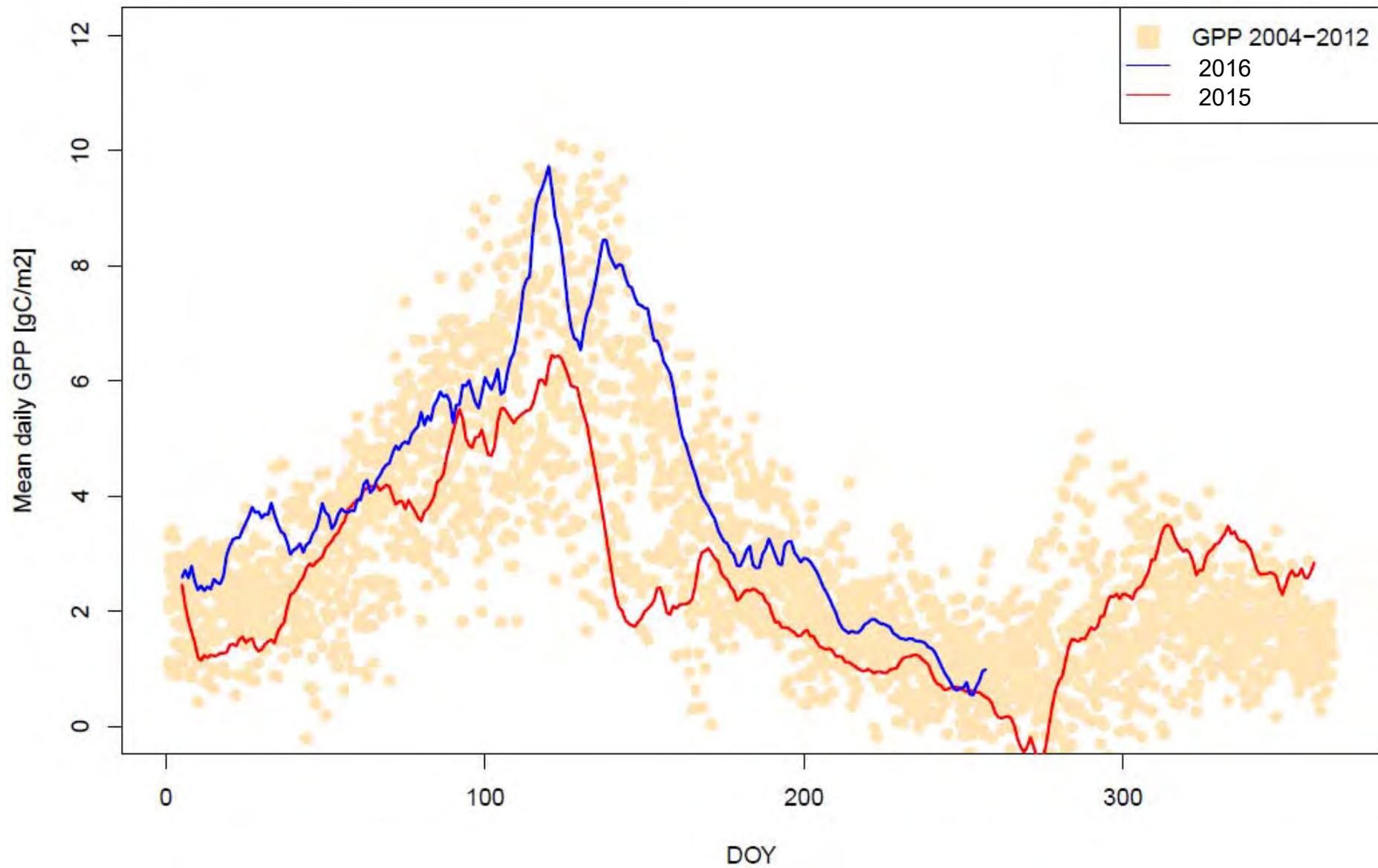


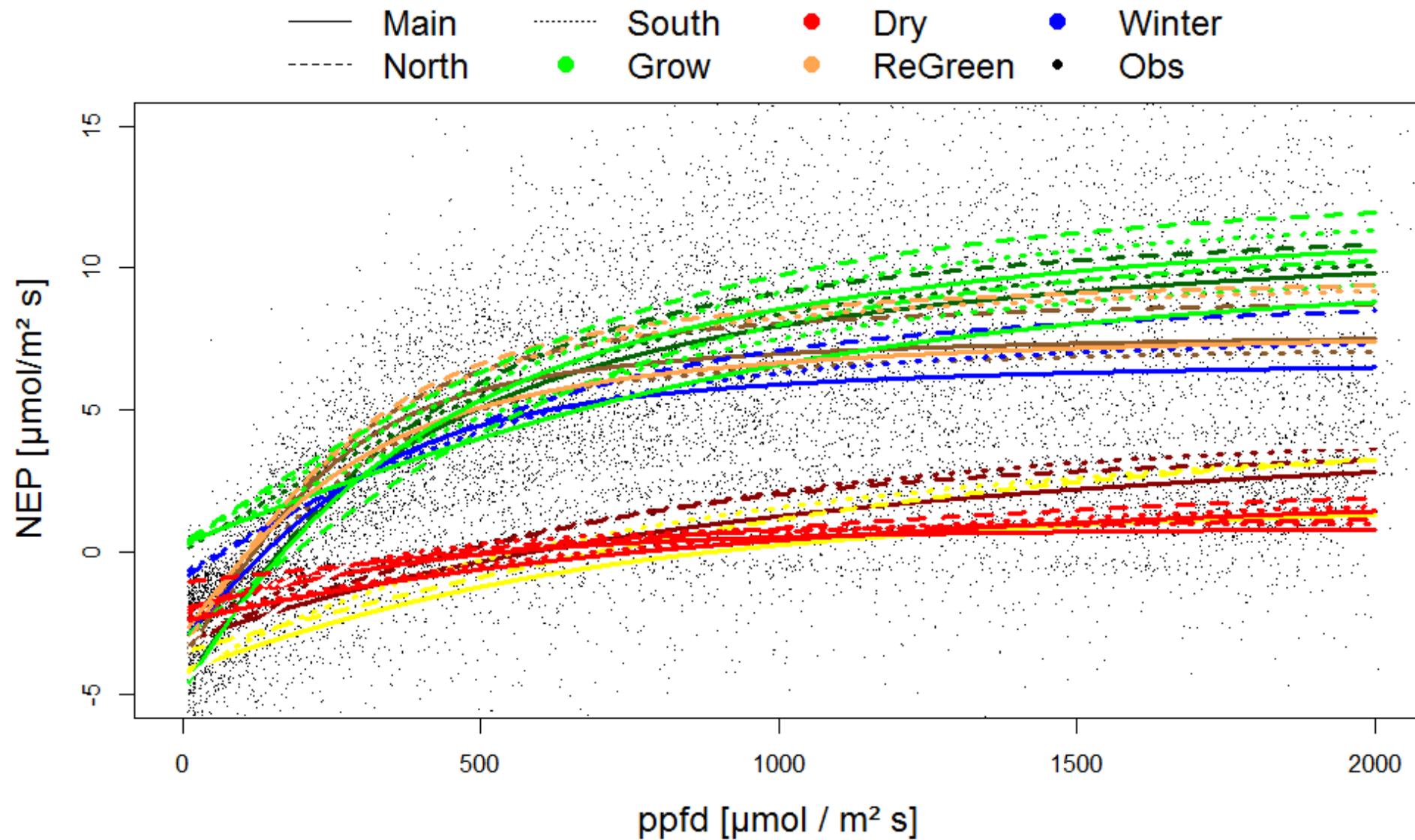


Phenocam analysis

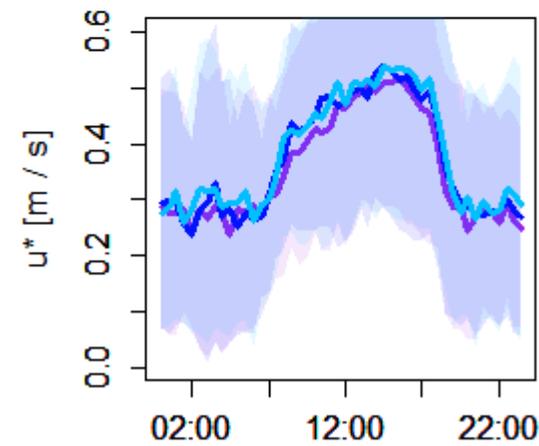
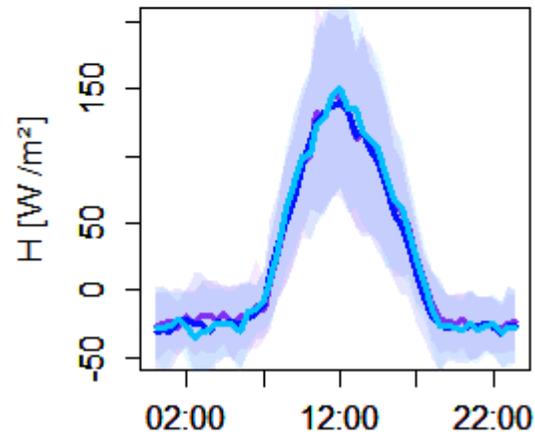
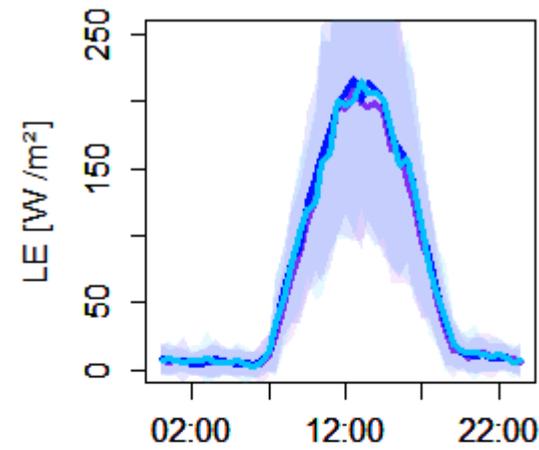
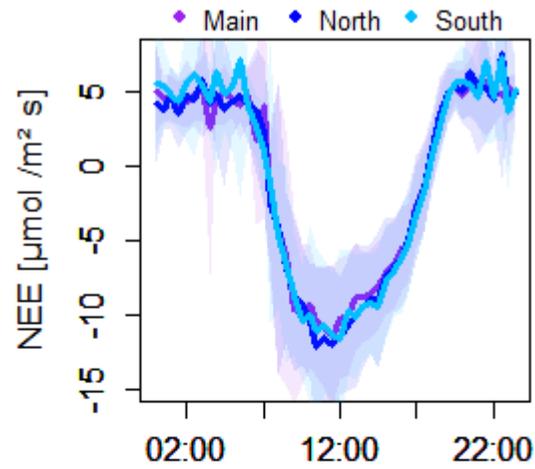


Seasonal cycle GPP 2015/2016

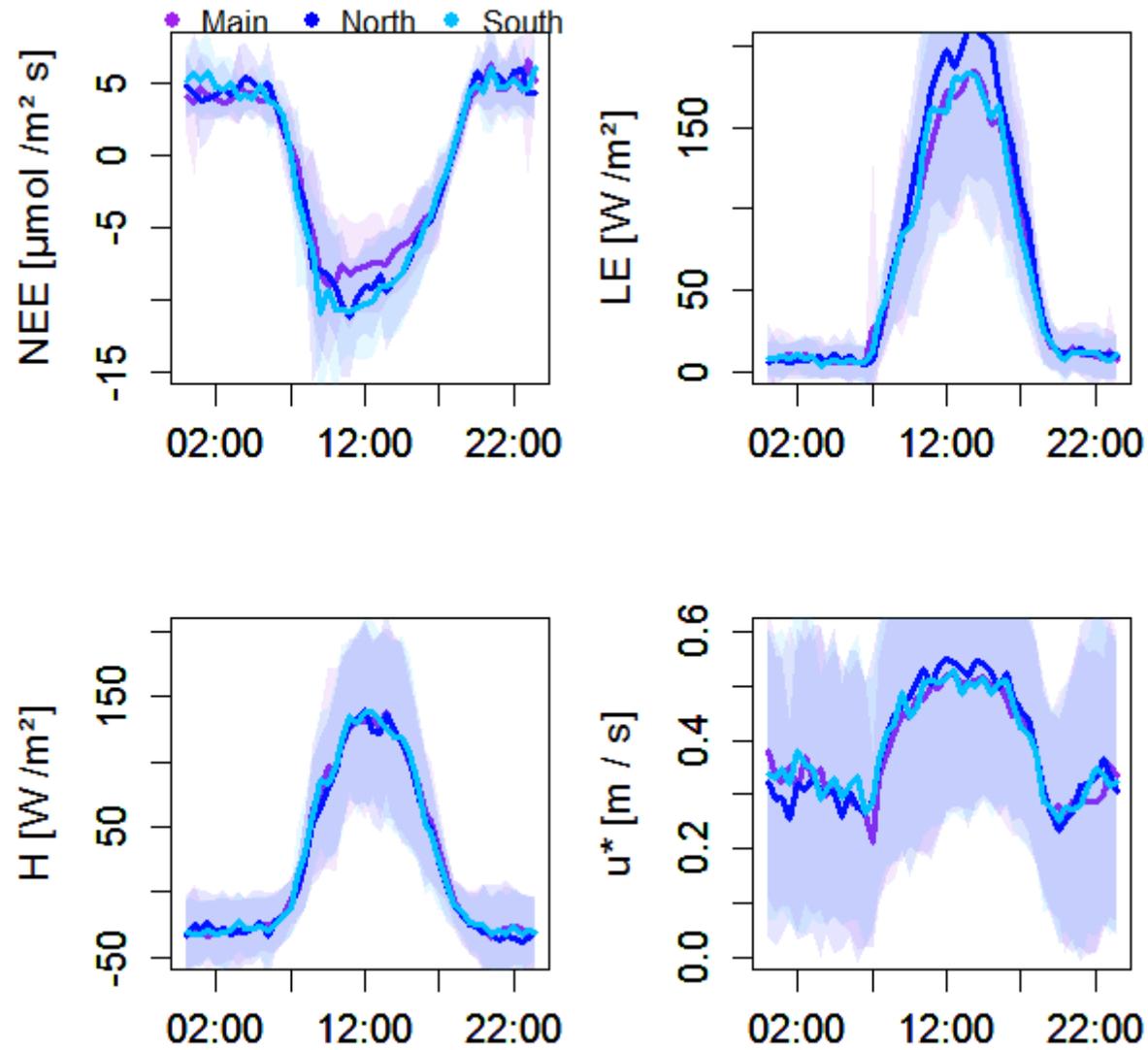




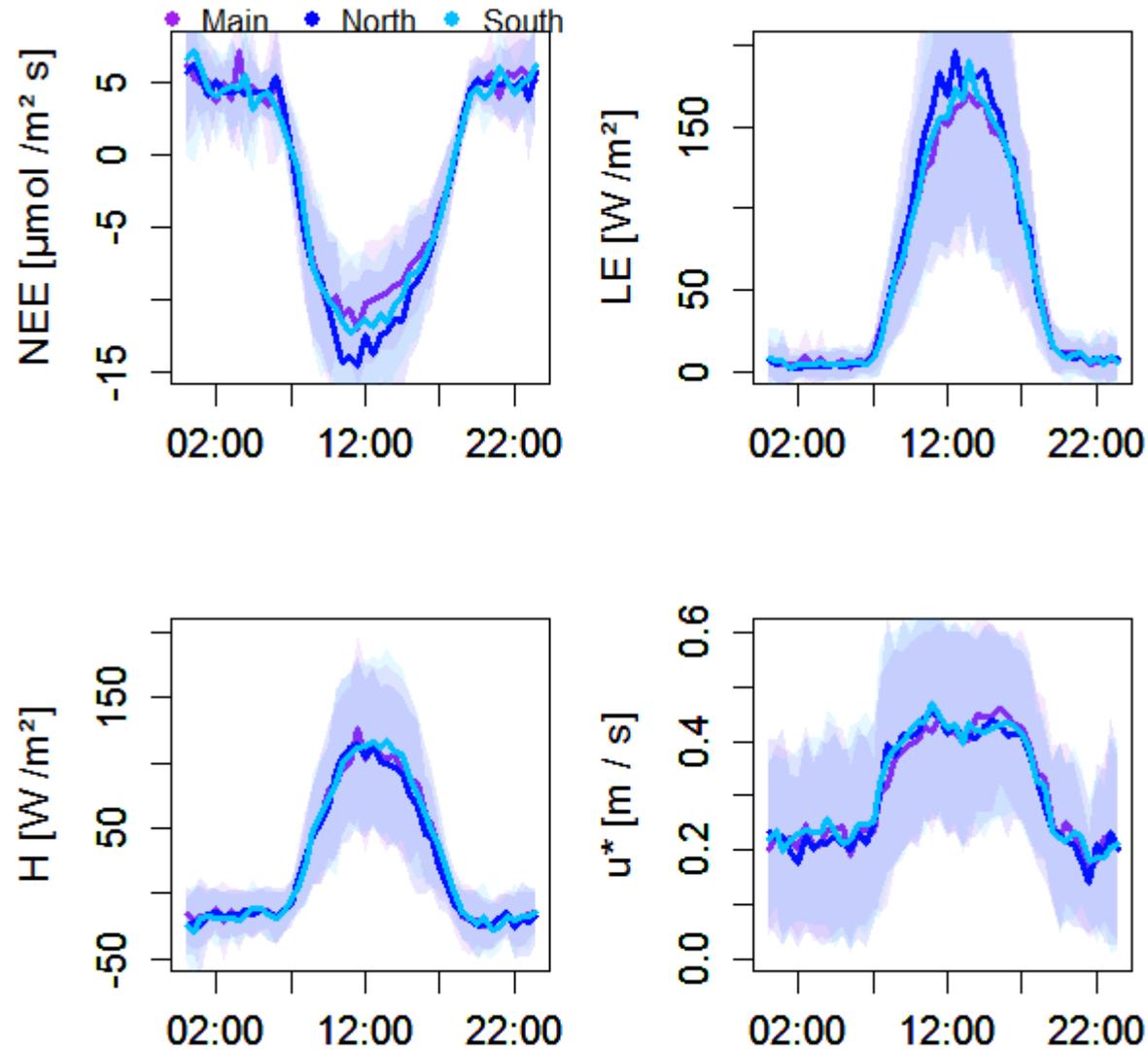
MDC 2014 Spring



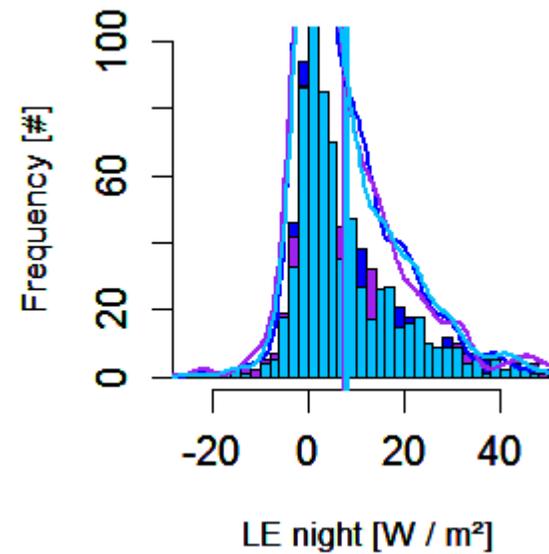
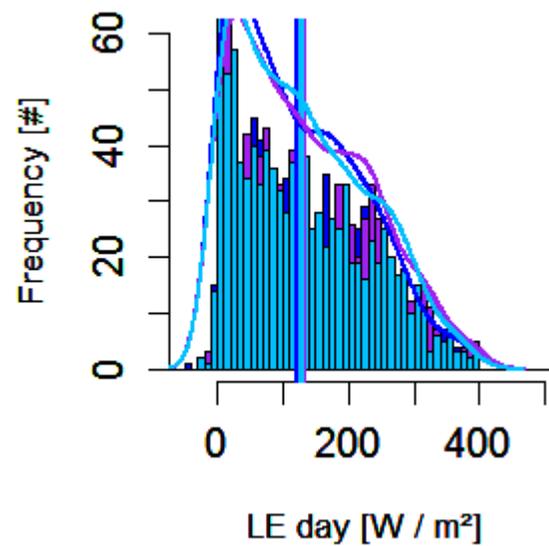
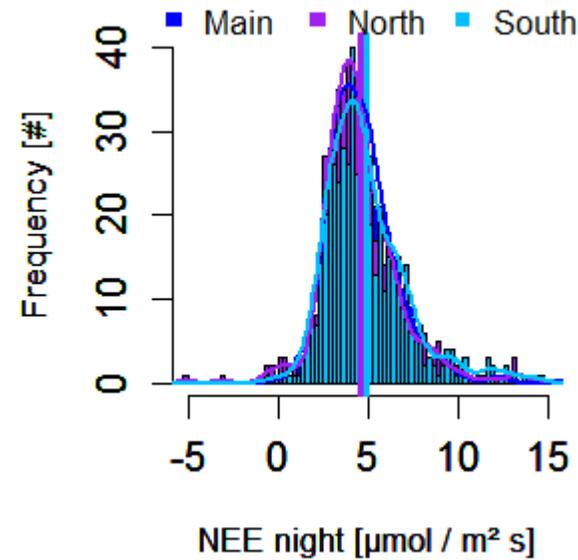
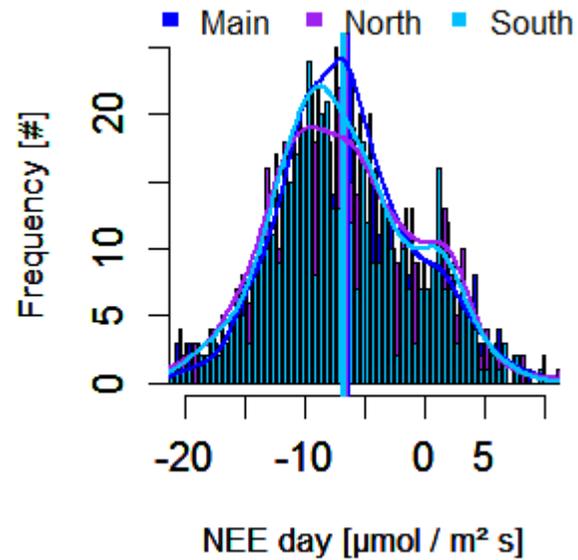
MDC 2015 Spring



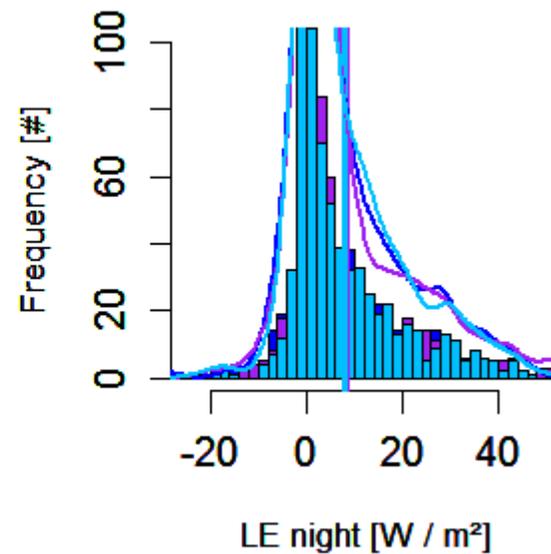
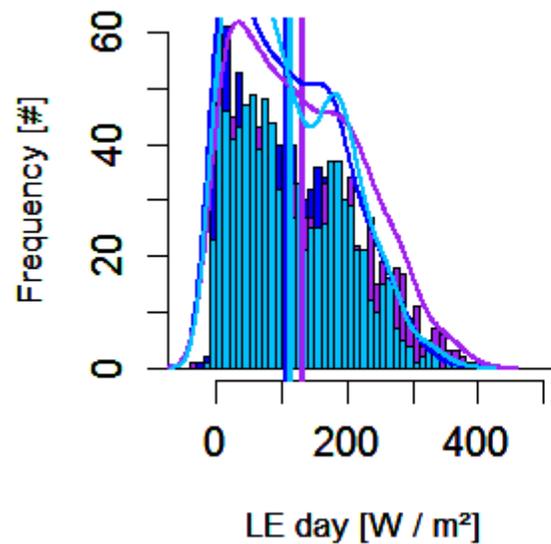
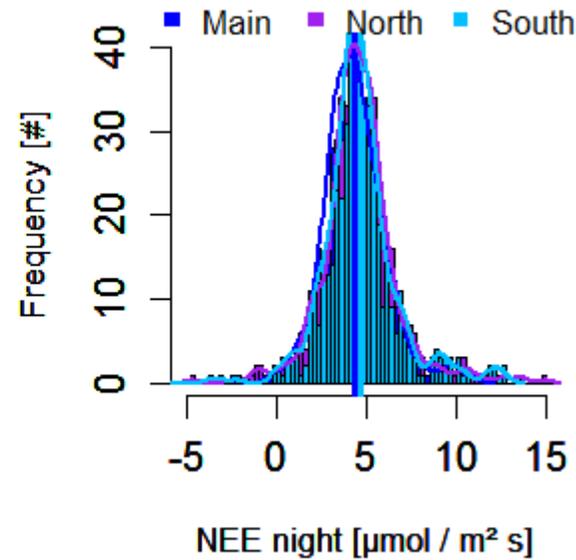
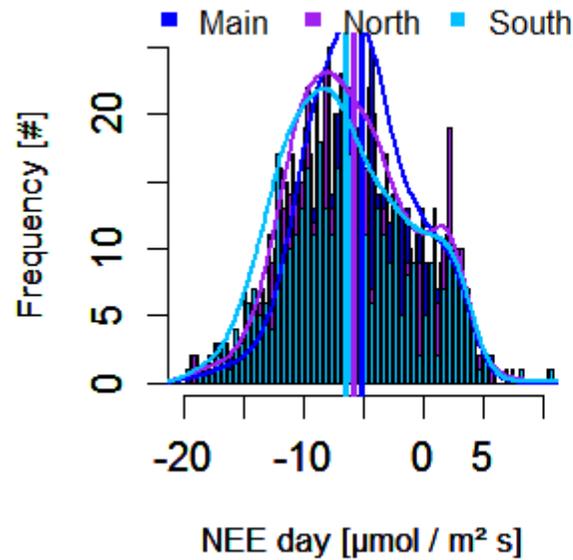
MDC 2016 Spring



Histogram and median 2014 Spring



Histogram and median 2015 Spring



Histogram and median 2016 Spring

