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Global GPP based on Plant Functional Types

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Vegetation variables like Gross Primary productivity (GPP) and the Normalized Difference Vegetation Index (NDVI) are key variables in vegetation carbon exchange studies. Field measurements of the NDVI are time consuming due to landscape heterogeneity across time. Typically a sampling protocol adopted during field campaigns is based on the VALERI protocol in that case toe estimate LAI. Field campaign GPP or NDVI measurements can be scaled up to using in-situ FLUXNET radiation raster maps. Regression analysis can then be applied to construct transfer functions for the determination of GPP raster maps raster imagery from Normalized Difference Vegetation Index (NDVI) raster maps derived from in-situ FLUXNET radiation raster maps. Subsequently, in the VALERI approach the scaling up of raster maps is performed by aggregation of high resolution in-situ FLUXNET radiation raster maps data into high resolution raster maps and subsequently aggregating these to 1x1 km MODIS NDVI raster maps by calculating average NDVI values for the low resolution data. The up-scaled 1x1 km pixels are then used to validate the MODIS GPP and NVI products. Hence up scaling based on in-situ FLUXNET radiation measurements are not a luxury for large and heterogeneous sites. Therefore this paper tackles the problem of up scaling using in-situ FLUXNET radiation measurements.

Key Words: FLUXNET, GPP, Plant Functional Types, Up-scaling