Change of outlook for the forest productivity estimated with remote sensing using the new Collection 6 GPP/NPP MODIS product

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Estimates of forest productivity from remote sensing data, such as the MOD17 GPP and NPP values derived from MODIS data, are becoming increasingly important tools for monitoring forest productivity in light of the climate change. Hence, small sensor degradation, like the one in the case of MODIS sensor on-board satellite Terra could lead so significant bias in results and false conclusions of the path that the ecosystem is on. In new Collection 6 (C6) of the MOD17 product, the sensor degradation problem has been addressed compared to the previous version Collection 5.5 (C5.5) products, offering a new outlook on the trends in forest productivity.

In our work we compared the C5.5 and C6 for MOD17 GPP and NPP products against estimates from eddy covariance and field measurements ('ground truth') at young Pedunculate oak site in Jastrebarsko forest.

In order to assess the outlook of forest productivity at larger scale we intersected in GIS maps of forest areas under management and MODIS pixels with 1km spatial resolution. After selecting only those pixels that have at least 90% forest coverage according to the management plans, we analysed the temporal trends and variability in MODIS derived GPP and NPP both from C5.5 and C6 products. Analysis was performed for four main forests classes according to the dominant tree species (Pedunculate oak, Sessile oak, Common beech and Silver fir).