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Assessing forest productivity (NPP/GPP) estimates from remote sensing, flux measurement and field observations

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Monitoring forest productivity and understanding effects of key environmental drivers becomes essential for forest management. This is a challenging task, particularly due to great costs related to it. In our work we compared the available annual productivity (GPP and NPP) assessments from the MODIS sensor with assessments from: a) eddy covariance and soil respiration measurements; and b) bi-weekly field measurements of increment of 640 trees in 24 plots set in a 100m x 100m grid. The research is conducted in lowland forest dominated by pedunculate oak. The comparison was made on a five year dataset of measurements, spanning from 2008 to 2012.
The research provides the first evaluation on the quality of MODIS GPP and NPP estimates for Central-European lowland forests. Results indicate that GPP/NPP from MODIS MOD17 dataset (version 55, Numerical Terradynamic Simulation Group, University of Montana) are in good agreement with the NPP/GPP estimates from field measurements.