Project Database of ICP Forests
PROJECT DESCRIPTION

PROJECT INFORMATION

Project title: FORMIT – Forest management strategies to enhance the mitigation potential of European forests

Project ID: 90

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Within FORMIT we work with several modelling concepts to improve the understanding of forest productivity and their response to forest management, climate and disturbances.
The MOD17 algorithm (Running et al. 2004, Zhao and Running 2010) provides gross and net primary production using various satellite-based products, biome-specific biogeochemical vegetation parameters and climate data. Previous research confirmed that MOD17 results using local climate data are comparable with productivity derived from Terrestrial forest data both on regional and European scale (Neumann et al. 2015; 2016).
Tree litterfall is an important component of forest productivity and the global carbon cycle, but remains poorly understood. Litterfall for the Terrestrial productivity within FORMIT are currently estimated using regression functions developed using Eurasian data (Liu et al. 2004).
During analyzing the growth and yield data already provided by ICP Forests, we discovered that forest litterfall comprise a substantial part of net primary production. Thus the litterfall data from ICP Forests Level 2 research plots will help to understand the reliability of this component in process-based models such as the MOD17 algorithm and will allow to quantify the associated errors in litterfall estimates using the currently applied methodology in FORMIT.
We would require annual litterfall rates (biomass and –preferably also- carbon) in kg/ha for as many plots in Europe as possible in the period 2000-2013. Information on the litterfall compartments (foliage, branches, etc.) would also be very valuable. In addition we require meteorological data, deposition (in particular precipitation), growth and yield (to describe the forest stand), LAI (for comparing with MODIS satellite LAI) and phenological observations (for determining vegetation length). Information on biomass of ground vegetation allow us to assess the total biomass. Location of the plots is required to link with remote sensing maps.
We will use this data within FORMIT until the end of the project in September 2016. Beyond that we want to apply for a follow-up project to continue our research. Thus we extend the examination period for 1 year beyond the end of FORMIT to September 2017.

References:

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Neumann, M., Zhao, M., Kindermann, G., Hasenauer, H., 2015. Comparing MODIS Net Primary Production Estimates with Terrestrial National Forest Inventory Data in Austria. Remote Sens. 7, 3878–3906. doi:10.3390/rs70403878

Running, S.W., Nemani, R.R., Heinsch, F.A., Zhao, M., Reeves, M., Hashimoto, H., 2004. A Continuous Satellite-Derived Measure of Global Terrestrial Primary Production. Bioscience 54, 547. doi:10.1641/0006-3568(2004)054[0547:ACSMOG]2.0.CO;2

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