

Interactive comment on “Validation of modelled forest biomass in Germany using BETHY/DLR” by M. Tum et al.

Anonymous Referee #1

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General comments

The paper presents a new approach for validation of simulated Net Primary Productivity (NPP) using the growth increment of timber-growing stocks. After a general description of modeling approaches for NPP, the model used for this study (BETHY/DLR) is described. Also the input data which are used for this study and their preprocessing are described. Results of a short model evaluation using station based GPP also are shown and discussed. After this, the validation strategy is explained and the results of validation are well discussed. Additional to the validation, biomass energy potentials for Germany are calculated. The paper is in well written and will provide a usefull contribution for further validations of model based NPP. I recommend to accept the paper after a few points have been checked.

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Specific comments

P1686, line 3. Is BETHY/DLR really a dynamic biomass model in the sense that BETHY/DLR calculates a annual cycle of biomass (including phenology) itself? From my point of view BETHY/DLR is rather a SVAT model with focus on a detailed parametrization of photosynthesis. The sense of "dynamic" should be checked here.

P1690, line 26 and P1691, line 4. Why is it important to simulate a coupled energy-, water-, and carbon balance? I recommend to write a few sentences about the couplings between these cycles, e.g. why simulation of water balance is necessary for the simulation of NPP and how the interactions between these cycles are.

P1694, line 16. Is the soil water content of ECMWF used only for initialisation of the soil water content in BETHY/DLR or is the model driven with time series of ECMWF based soil water content? If it is need just for initialization: How long is the spin-up time for soil water in the simulations of this study?

Chapter 4. GPP can not be directly measured by flux towers using Eddy Covariance Measurements. So, is GPP in FLUXNET measured by another method, or is it parameterized? The FLUXNET-method for the derivation of GPP should be described in one or two sentences, or at least a citation should be given, because this is important for the discussion of the results.

P1695, line 26/27. Is the meaning of the growth increment the same as the MAI, mentioned in the abstract?

Chapter 6 P1701, line 5-27 and Conclusions The hypothesis, that the age dependency of maximum carboxylation rate and the maximum electron transport rate is responsible for underestimation of the simulated NPP, is important and should be mentioned also in the Conclusions as a recommendation for further studies (e.g. sensitivity studies).

Technical corrections

P1689, line 4. Citation of Valentini, 2001. It's not listed in the References.

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P1692, line 10. Replace databank with database.

P1704, line 13. Eq. (10) should be Eq. (9)

Interactive comment on Geosci. Model Dev. Discuss., 4, 1685, 2011.