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Supplement of

Improved estimate of global gross primary production for reproducing its long-term variation, 1982–2017

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Supplement:

Figure S1: Time-series changes of (a) tower estimated GPP, model simulated GPP, and LAI, and (b) environmental factors (i.e., air temperature, VPD, and PAR) for low R^2 site in Fig. 2, taking US-UMB site as an example.
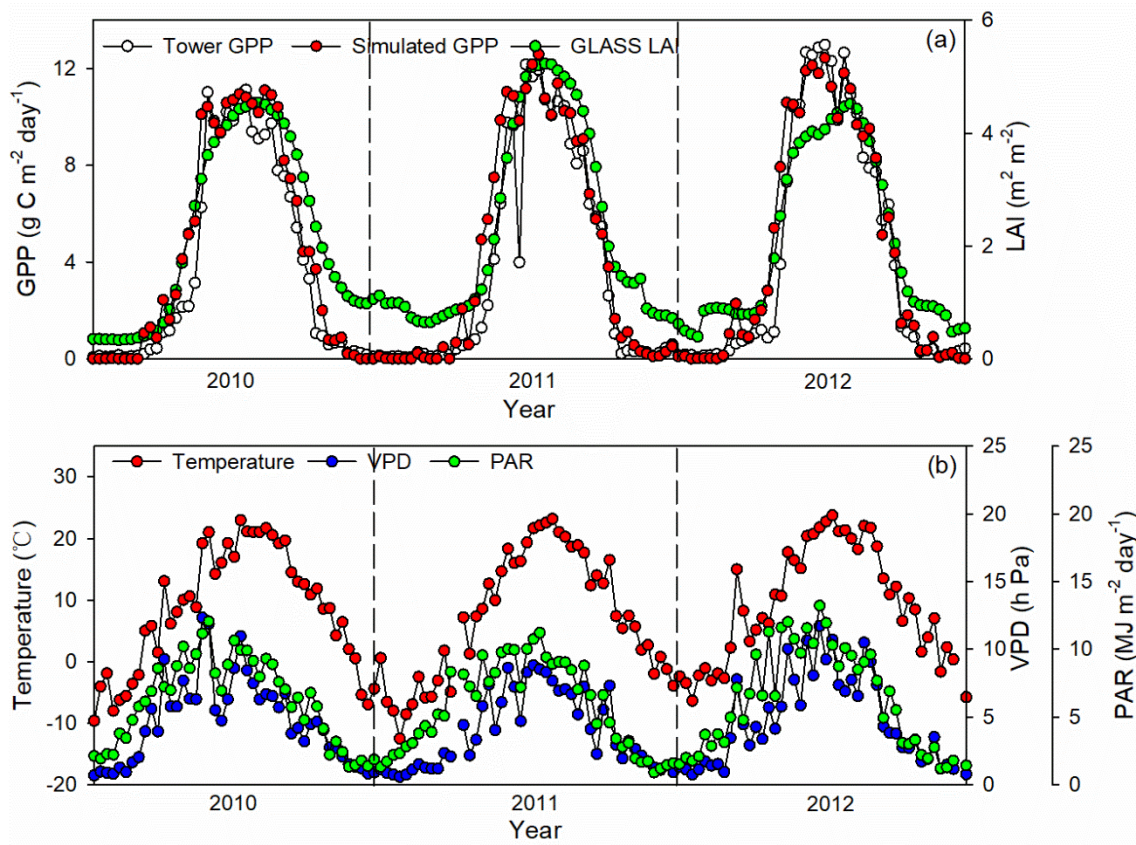

Figure S2: Time-series changes of (a) tower estimated GPP, model simulated GPP, and LAI, and (b) environmental factors (i.e., air temperature, VPD, and PAR) for low R^2 site in Fig. 2, taking CN-Din site as an example.
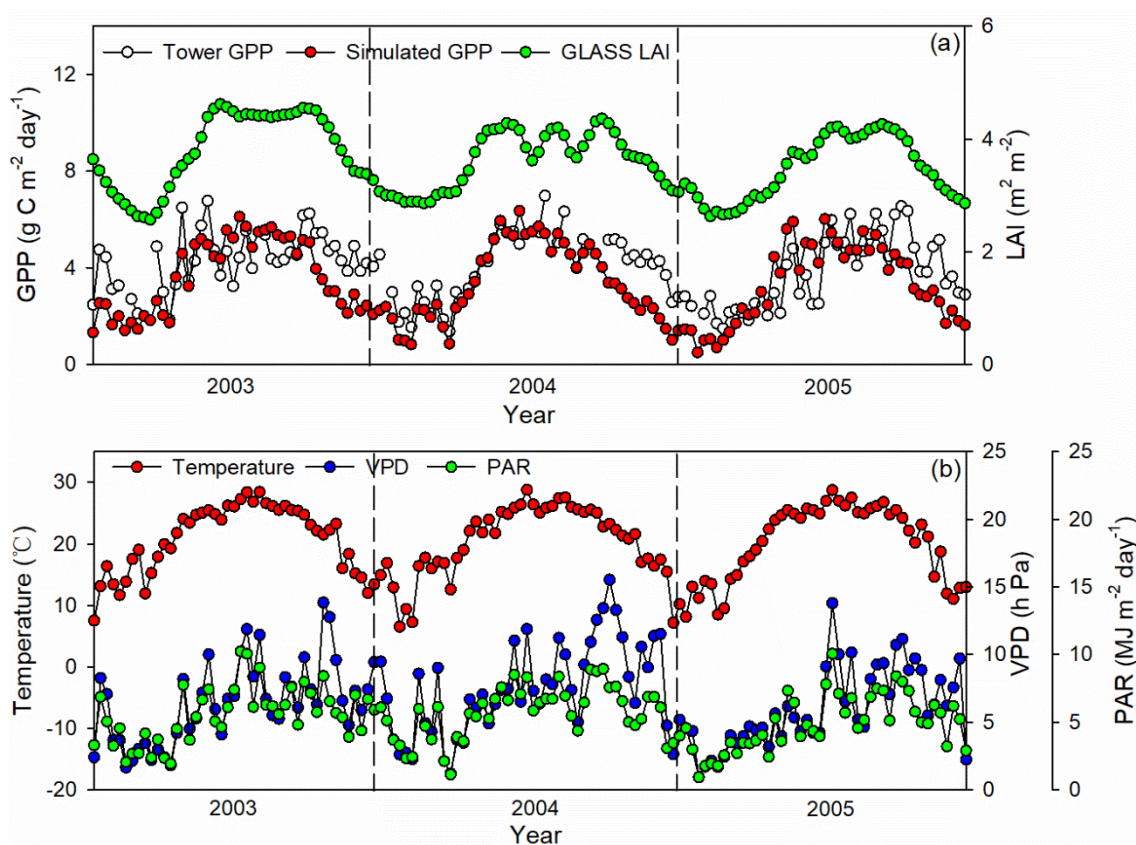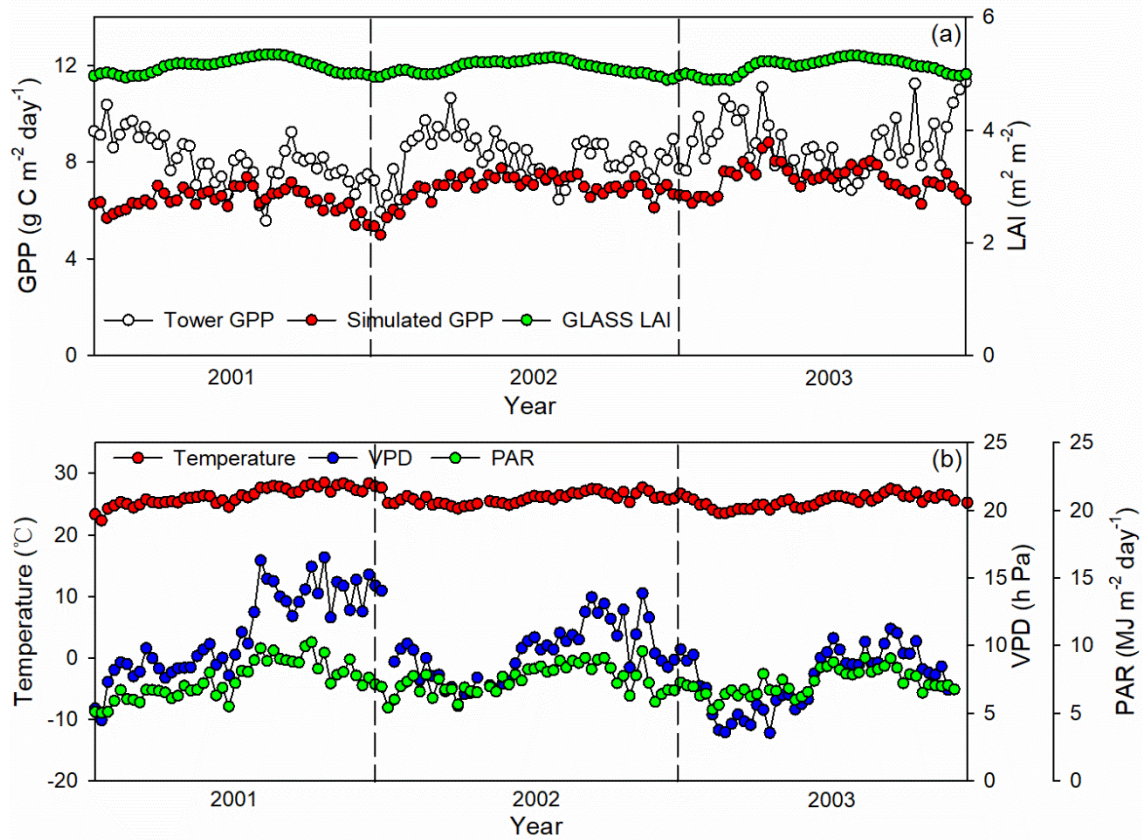
Figure S3: Time-series changes of (a) tower estimated GPP, model simulated GPP, and LAI, and (b) environmental factors (i.e., air temperature, VPD, and PAR) for low R^2 site in Fig. 2, taking Br-Sa3 site as an example.
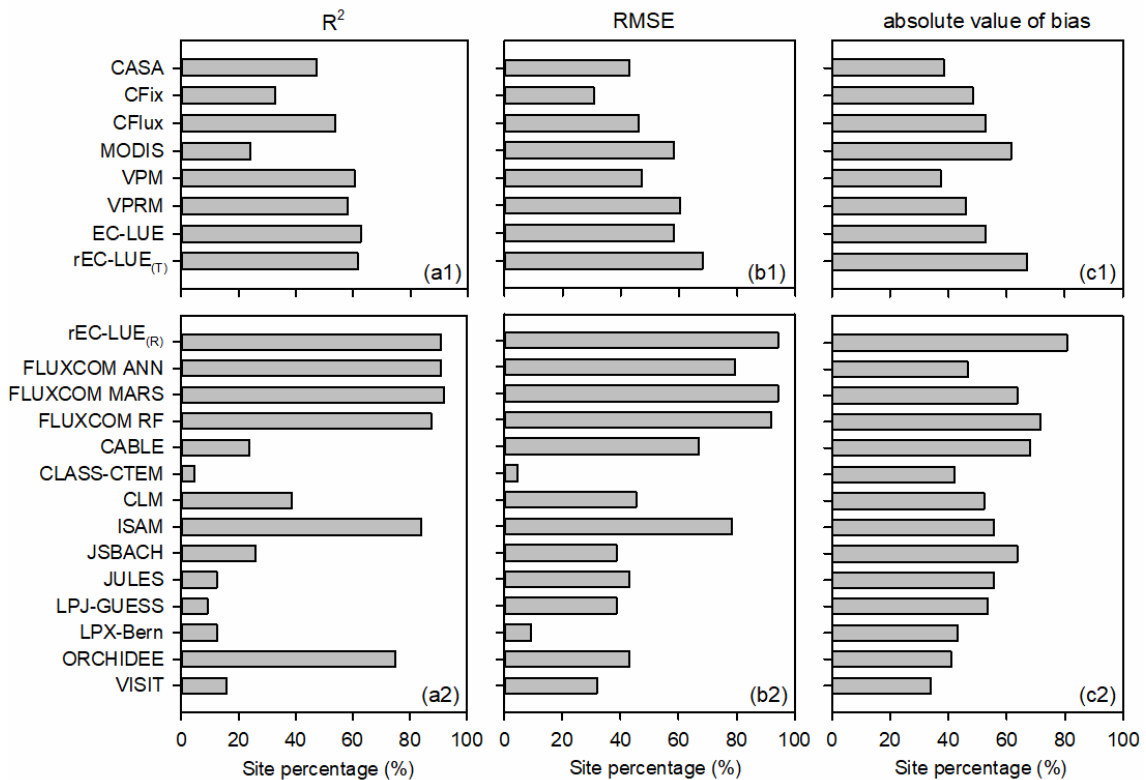

Figure S4: Percentage of sites for each model in Fig.4 where (a1, a2) R^2 of individual model > averaged R^2 of all models, (b1, b2) RMSE of individual model < averaged RMSE of all models, and (c1, c2) RMSE of individual model < averaged absolute value of bias of all models. All the monthly GPP simulations in (a1)-(c1) derived from tower-derived meteorology data, and all the monthly GPP simulations in (a2)-(c2) derived from global reanalysis meteorology data.
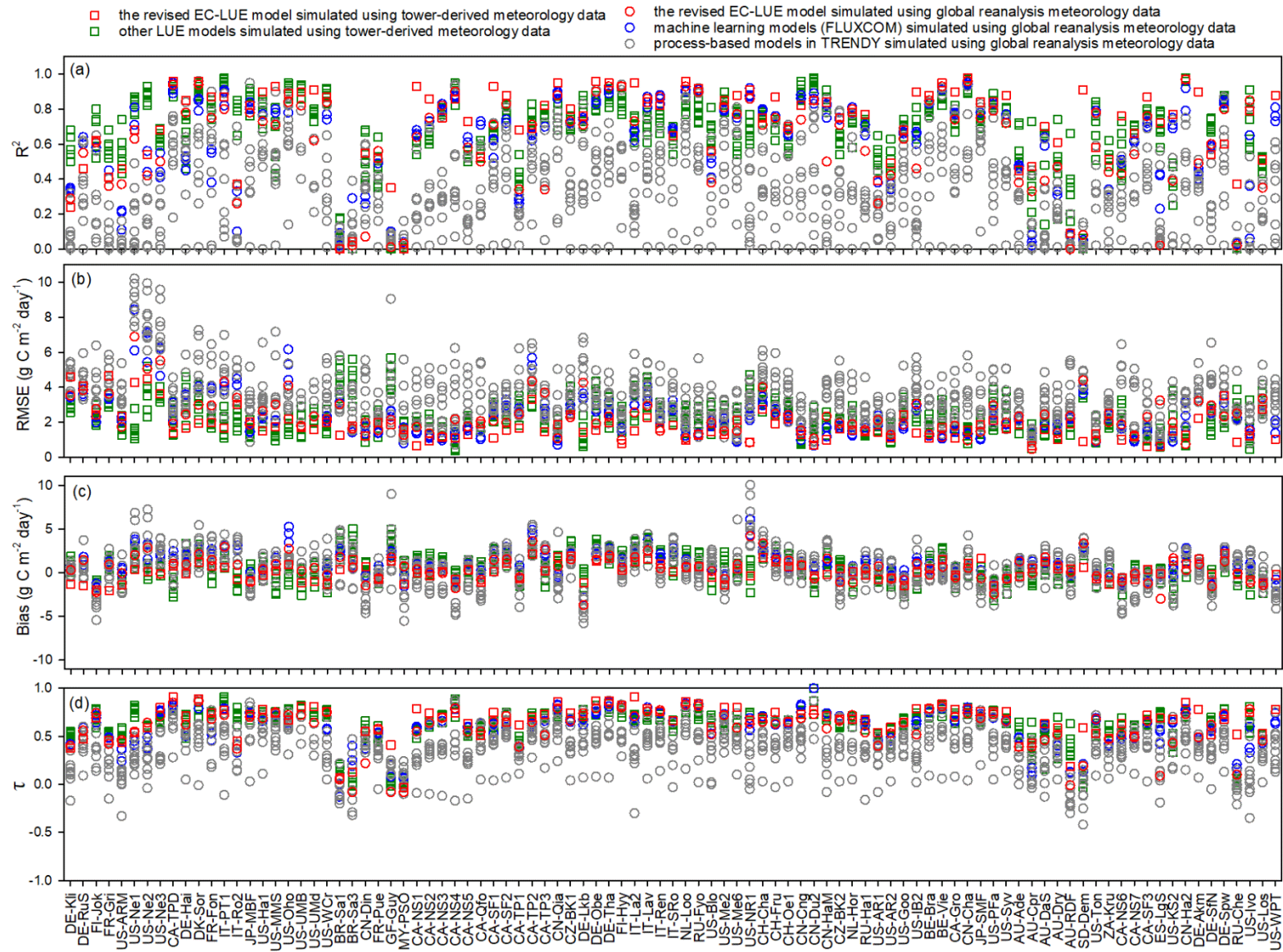
Figure S5: Site level comparisons between estimated GPP based on EC measurements and GPP simulations by the 22 models in Fig.4 at monthly step. This figure includes 8 LUE models (CASA, CFix, CFlux, MODIS, VPM, VPRM, EC-LUE, and the revised EC-LUE model) simulated using tower-derived meteorology data; the revised EC-LUE model, 3 machine learning models (FLUXCOM ANN, FLUXCOM MARS, and FLUXCOM RF), and 10 process-based biophysical models in TRENDY (CABLE, CLASS-CTEM, CLM, ISAM, JSBACH, JULES, LPJ-GUESS, LPX-Bern, ORCHIDEE, and VISIT) simulated using global reanalysis meteorology data.