

Supplementing Material for “ CLM4-BeTR, A Generic Biogeochemical Transport and Reaction Module for CLM4: Model Development, Evaluation, and Application”

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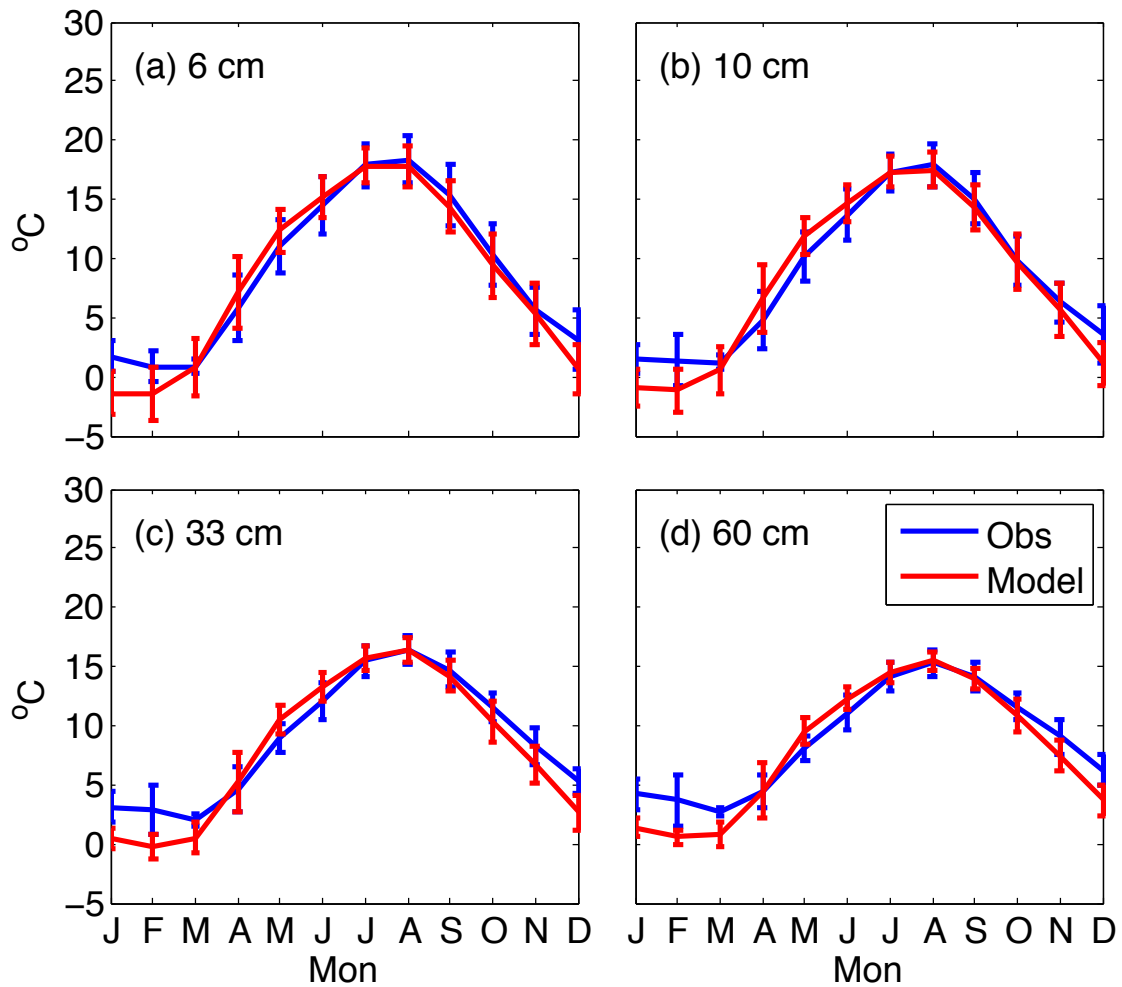


Figure S1. Comparison of model simulated and field measured soil temperature at the Harvard Forest site. Both the 10-year model output and the irregularly sampled multi-year field soil temperature measurement were aggregated into the monthly time series for the comparison. The error bars indicate the one standard deviation uncertainty for the data point being compared.

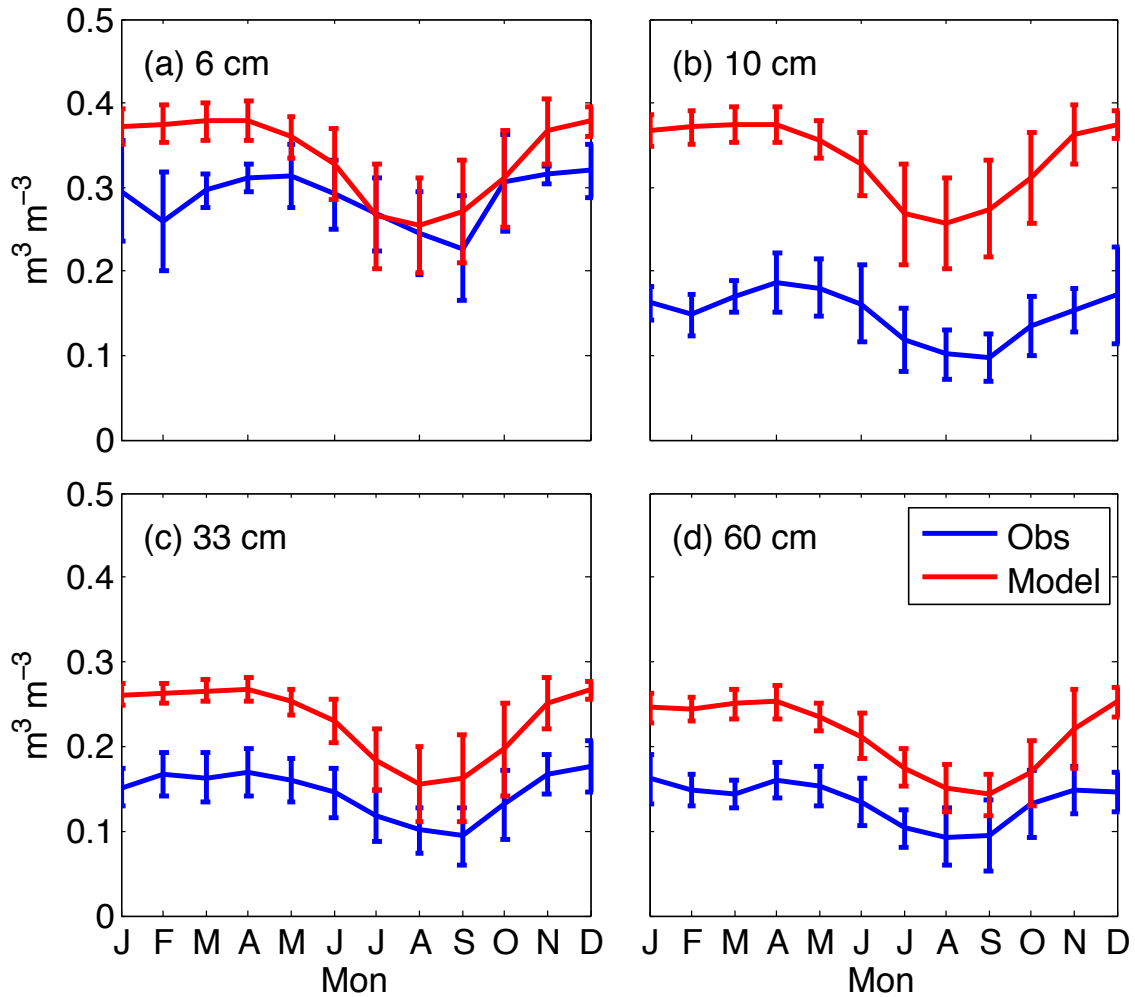


Figure S2. Comparison of model simulated and field measured soil moisture at the Harvard forest site. Both the 10-year model output and the irregularly sampled multi-year field soil moisture measurement were aggregated into the monthly time series for the comparison. The error bars indicate the one standard deviation uncertainty for the data point being compared.

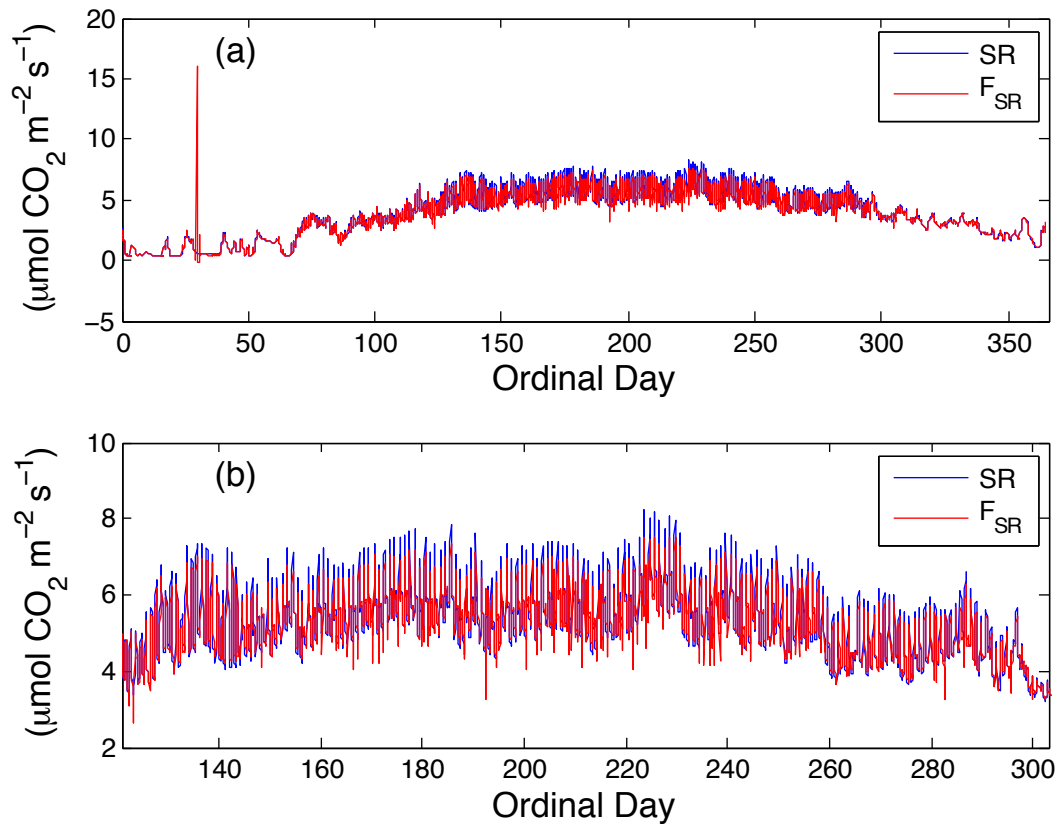


Figure S3. (a) Comparison of hourly time series of surface CO₂ efflux F_{SR} with its production from soil respiration SR, including both soil heterotrophic respiration and autotrophic root respiration. (b) Same as panel (a), except restricted to the growing season.

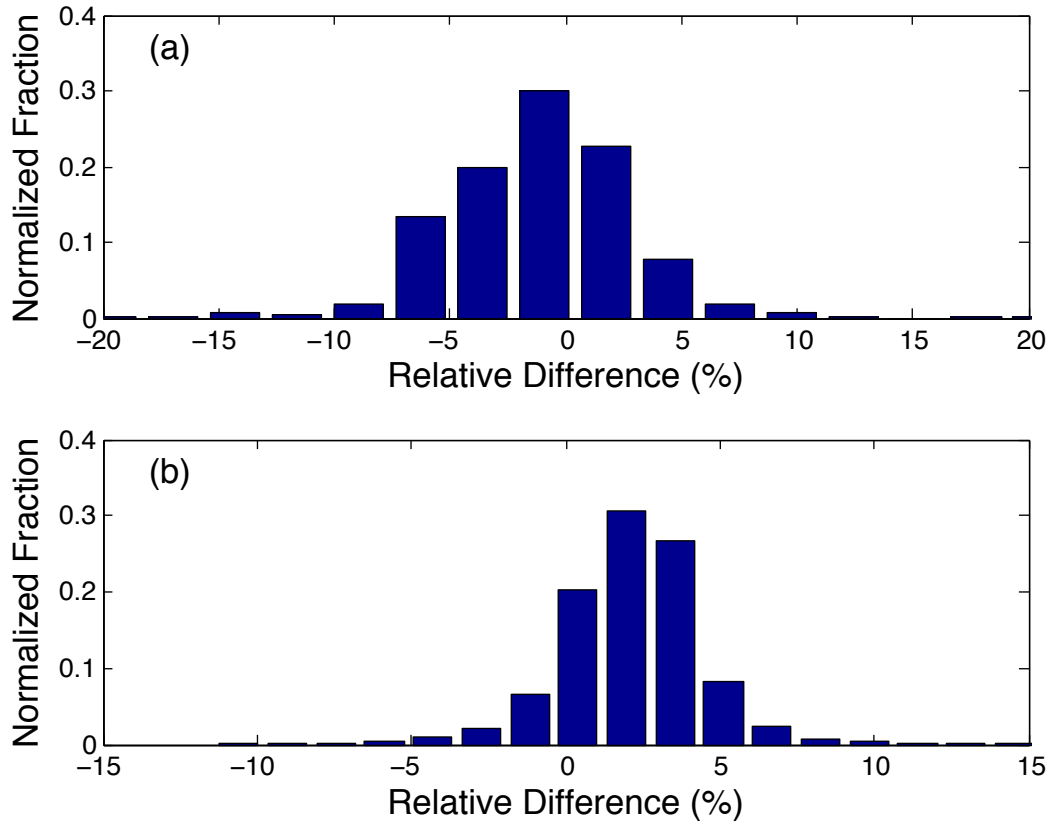


Figure S4. Histograms of the relative differences $((F_{SR} - SR)/F_{SR} \times 100\%)$ at hourly time step: (a) day time and (b) night time. F_{SR} is the soil surface CO₂ efflux and SR is the belowground respiration.