Biogeosciences Discuss., 8, C1948–C1950, 2011
www.biogeosciences-discuss.net/8/C1948/2011/

Biogeosciences Discussions

Interactive comment on "Quantification of terrestrial ecosystem carbon dynamics in the conterminous United States combining a process-based biogeochemical model and MODIS and AmeriFlux data" *by* M. Chen et al.

Anonymous Referee #1

Received and published: 11 July 2011

General comments

The authors present a comprehensive study on the coupling of the biogeochemical terrestrial ecosystem model TEM with MODIS data and its evaluation at eddy-flux tower sites. They present results of the regional application of the modified model of carbon fluxes over the conterminous US. The manuscript is overall carefully prepared, well-structured and well written. Results are presented concisely and are well explained and discussed. They are embedded into a thorough literature study.

Specific comments

Pg. 2728, ln. 3: Please clarify which previous similar effect you are referring to when stating "having the similar effect on . . .". Pg. 2728, ln. 16.: Please add further references to models which use satellite vegetation indices as the sentence states that they are "widely" used in satellite-based carbon models. Pg. 2729, ln. 18: Please explain how/when the maximum LSWI is estimated! Is it an input parameter which is calculated in the data pre-processing? Pg. 2731, ln. 8: Shouldn't it be "7" major vegetation types instead of 6? Table 2 lists 7 types. Pg. 2732, ln. 7: I assume that 50 sets of parameters are sampled, each set from another error level? If yes, please change to ". . . sampled 50 sets of parameters, one for each level". Otherwise clarify. Pg. 2732, ln. 18-28: Please explain more explicitly which (climate) data are used for the equilibrium run and the spin-up run. Pg. 2738/2739: Please elaborate why TEM (not SAT-TEM) shows the different temporal pattern of GPP and NPP, because it is lacking which information specifically in these years?

Technical corrections

Pg. 2727, ln.: 1: better "the" (instead of "a") process-based biogeochemistry model TEM" Pg. 2728, ln.: 8: "." Instead of ";" at end of sentence. Pg. 2729, ln.: 12: "while maintaining" instead of "while maintain" Pg. 2729, ln.: 14: the expression of the CO2 effect (f(CA, GA)) on GPP is missing in equation 4. Pg. 2730, ln.: 11/12: Change reference to Papale and Valentini, 2003, from capital to lower case. Pg. 2732, ln.: 20: Please change to ". . . spatial resolution with a total of 322287 grid cells." Pg. 2733, ln.: 23. Add "." After "Xiao et al. (2008)" Pg. 2735, ln.: 17: Please correct sentence: "with . . . of" instead of "and". Pg. 2735, ln.: 26: Better ". . . but our estimation of . . ." than ". . . but the estimation of. . ." Pg. 2736, ln.: 2: Please complete sentence. Maybe just add ". . ., and the land-based analyses. . ." Pg. 2736, ln.: 22: delete "the" Pg. 2737, ln.: 1: better ". . . have passed the range of optimums temperature . . ." Pg. 2737, ln.: 11: add "to" at the end of the line. Pg. 2740, ln.: 24: Please add "and" after "August 2005" Pg. 2741, ln.3: Add "." after "temperature". Pg. 2759, Table 7: Column "Comments":

change to passive form of “release” in “. . . the carbon assimilated by crops would be released back . . .” Pg. 2768, Fig. 4: blue regression lines should be drawn solid or caption needs to be changed. Pg. 2779, Fig. 6: Please make legend colors of graph (a) the same as for the other graphs.

Interactive comment on Biogeosciences Discuss., 8, 2721, 2011.