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Interactive comment on “Biophysical constraints on gross primary production by the terrestrial biosphere” by H. Wang et al.

Anonymous Referee #2

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I don't think this should be published as a research paper. However, it may have some value as a teaching tool. The paper makes a good start by noting the large uncertainties in the photosynthesis parameterizations used in the CMIP-5 inter comparison, and they note the variety of approaches used to parameterize productivity in existing models. However, the analysis that follows does little to address any of these uncertainties; their estimate of global GPP is an extreme outlier (nearly 2x the mean); the structure of model itself is not innovative (similar to CASA and SDBM), and no new result is presented to demonstrate how existing models could be improved. The sequential approach of narrowing-in, starting from the top of atmosphere solar radiation to consider, atmospheric attenuation, elevation, satellite determined FPAR and temperature limits is implicit in other light use efficiency models. It would be helpful if there were some discussion of the relative merits of this approach relative to other alternatives. While I

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would agree with the observation (last line of the abstract) that water is the most important factor limiting global productivity, there is no analysis to support this. I also agree with the conclusion that Earth system models should make greater use of satellite data, but again, this is basically a statement of opinion.

Interactive comment on Biogeosciences Discuss., 11, 3209, 2014.

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