

## ***Interactive comment on “Global cropland monthly Gross Primary Production in the year 2000” by T. Chen et al.***

**Anonymous Referee #2**

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The manuscript uses flux data, augmented with values from the literature, to apply crop-specific LUE to a GPP model. There are a number of efforts and methods currently being tested to improve global and regional estimates of crop GPP and NPP. This manuscript represents one of those methods. There are many assumptions associated with this method, including (a) the limited flux site data that is intended to represent crop LUE globally, (b) the fact that there are multiple crops within each grid cell, and (c) that LUE can differ across space and time for each crop species. The authors have acknowledged all of these assumptions. The authors provide the LUE estimates from flux sites and from their literature search in tables 1 and 2. Also provided, are the results and global estimates of GPP per crop and per region. While there is still much improvement to be made, these values should prove useful for comparison to other methods and, as such, help move this field of discipline forward.

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The manuscript is well-written.

Page 3474, 1st paragraph. Efforts to estimate LUE by crop type were also conducted by the late Paul Doraiswamy at US Department of Agriculture. He did this using inventory data on a state-by-state basis. A similar effort was also recently conducted by Bandaru et al. 2013. ISPRS Journal of Photogrammetry and Remote Sensing 80:61-71. I agree that refinement of LUE per crop will be useful, even if the mixed pixel issue (multiple crops per pixel) is not addressed. You might refer the reader to some of these recent studies.

Page 3476, 1st paragraph. "On average, the LUE values based on biomass measurements are higher than our estimates based on Fluxnet observations. ...we adjusted the literature-based LUE values using ratios between the fluxnet and literature based estimates.... values finally used in our model are therefore higher..." This line of reasoning leads me to believe that the values in your model should be \*lower\* not higher than other models. Please review this and make sure this isn't mistated.

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Interactive comment on Biogeosciences Discuss., 11, 3465, 2014.