

Interactive comment on “Incorporating grassland management in a global vegetation model: model description and evaluation at 11 eddy-covariance sites in Europe” by J. Chang et al.

Anonymous Referee #1

Received and published: 28 May 2013

General comments : Chang et al., couples a grassland module into a global dynamic vegetation model (DGVM) (ORCHIDEE). The revised model (ORCHIDEE-GM) is validated against 11 Eddy Covariance sites across Europe. Both the main DGVM and grassland module have been published previously and the integration and validation approaches are sound. My primary criticism of the study is that there are no validation sites outside of Europe where ORCHIDEE-GM is run. This limits the climatic space over which the integrated and original ORCHIDEE models are compared, and it limits testing in grasslands dominated by C4 photosynthetic pathway species. Only one validation site has a C4 grass (invasive species). Including validation sites outside of Europe (e.g. Ameriflux, OzFlux?) would increase the impact of ORCHIDEE-GM and

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would encourage use outside of Europe.

Specific comments: Page 2770 - Line 22: Do you have a citation for area coverage? Page 2770 - Line 25: Can you provide a quantitative range for the uncertainty? Page 2771 – Line 6: Is the radiative balance forcing reported in Schulze et al., 2009 or 2010? Page 2773 or 2774: Does either ORCHIDEE or PaSim account for nitrogen deposition? If not, please state so, since N deposition can be significant downwind of major urban areas. Page 2779 – Line 1: Again, I think validation at non-European sites could be highly useful. Page 2802 – Table 1: Validation would be good at additional mountain sites (altitude>1500 m) and sites with warmer mean annual temperatures. Page 2811 – Figure 6: It would be good to include r and RMSE at higher timescales (daily).

Interactive comment on Geosci. Model Dev. Discuss., 6, 2769, 2013.