Interactive comment on “Using satellite data to improve the leaf phenology of a global Terrestrial Biosphere Model” by N. MacBean et al.

Anonymous Referee #2
Received and published: 24 September 2015

MacBean et al. used MODIS NDVI to optimize phenology-related parameters in a famous terrestrial biosphere model, ORCHIDEE and found that the model-predicted vegetation phenology had been overall improved via the optimization and the improvements varied with PFTs. The improved vegetation phenology led to shorten growing season lengths and resulted in a substantially decreased prediction of global annual GPP by $\sim 10$ Pg C yr$^{-1}$. These information indicates the important role of accurate representation of vegetation phenology in terrestrial biosphere models/earth system models, therefore is useful and helpful for a better simulation of the climate system. The manuscript is very well organized and written, I only have a few minor suggestions.

1) Page 13323, Line 8-9: why select "the greatest % reduction" first guess MS optimiza-
tion rather than the one with lowest cost function? 2) Section 4.5: were the numbers calculated with area-weighted grid-level values? Please clarify. 3) Figure 2: NC3 and NC4 are the same figure.

Interactive comment on Biogeosciences Discuss., 12, 13311, 2015.