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Climate of the Past Discussions

Interactive comment on "Response of the carbon cycle to the different orbital configurations of the last 9 interglacials" *by* Nathaelle Bouttes et al.

Anonymous Referee #2

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Bouttes et al did an excellent job running a coupled EMIC model with carbon cycles to study the model's response to the different climate conditions of the last 9 interglacials. Unfortunately, even though the data show about 35ppm changes among the 9 interglacials, the model can only produce about 4 ppm changes, and the authors conclude that the fail of reproducing the 35 ppm is due to "mis-representation of some key processes in the model".

First, I suggest that the title needs to be changed to something like below to better represent the major topic of this paper.

"Response of the carbon cycle in an intermediate complexity model to the different climate configuration of the last 9 interglacials".

So the readers know that it's a model's carbon cycle response and doesn't imply that

the response is derived from the data. Also since this study did simulations with the different orbital, vegetation and ice sheets, so it's better to use climate configuration other than orbital configuration in the title.

Second, the authors need to explain how the increase of vegetation on land can produce HUGE global ocean warming (Figure 8).

Third, MIS17 in Figure 2 looks more like glacial instead of interglacial.

Fourth, P10L22, Change "Using a fully coupled climate model" to "Using a fully coupled climate model with an intermediate complexity"

Interactive comment on Clim. Past Discuss., doi:10.5194/cp-2016-108, 2016.