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***Interactive comment on* “Technical Note: The Simple Diagnostic Photosynthesis and Respiration Model (SDPRM)” by B. Badawy et al.**

Anonymous Referee #1

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The authors present a simple observation-driven model of the terrestrial biosphere. Its driving observations mainly come from the AVHRR satellite instrument. This development is motivated by carbon data assimilation applications, even though this prospect is not illustrated here. The new scheme is evaluated with NEE data from an atmospheric inversion, with simulations from a prognostic model and by expert judgment on some of the sensitivities of its inputs to its outputs. The model itself inherits from other models (e.g., MOD17) and, being very simple, its novelty appears to be very relative. However, the study has been well done, the paper is well written and as such is an interesting review of the topic. I recommend its publication provided the following points are addressed:

- p. 15128, l. 20: “According to SDPRM, the results show that temperature...”
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- could be better phrased by “In SDPRM, temperature ...”
- p. 15138, l. 10: “focuses”
 - p. 15139, l. 11: “the vegetation function”
 - p. 15140, l. 13: “In STD-inv”
 - p. 15141, l. 11: “does not”
 - p. 15142, l. 4: “more sophisticated” indeed, but also not observation-driven
 - p. 15143, l. 14: IAV already defined earlier
 - p. 15144, l. 2: climate variables are all coupled together: none is independent
It should be made clear that the sensitivities of carbon fluxes to climate that are shown are results of computations and are therefore uncertain. A few sentences should be corrected in this spirit (p. 15145, l. 3; p. 15146, l. 2, l. 16, l. 20)
 - p. 15145, l. 7-8: talking about SDPRM, the link should be made first with its equations rather than with the true world
 - p. 15146, l. 17: “are consistent”
 - p. 15147, l. 2: why is the resolution restricted to this coarse grid?
 - p. 15147, l. 11: the authors should restrict their statement to the specific time-space scales that are addressed in the paper
 - p. 15147, paragraph starting in l. 24: the fact that SDPRM is driven by satellite data is a limitation as well that should be discussed there as well.
 - p. 15147, l. 27: “are specified”

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- p. 15147, l. 28: “the real world”
- p. 15148, l. 18: to fit concentration measurements completely for good reasons, one would need a perfect transport model.

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