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Geoscientific Model Development Discussions

Interactive comment on "GLEAM v3: satellite-based land evaporation and root-zone soil moisture" *by* Brecht Martens et al.

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I find the manuscript very well written and full of useful information both for using GLEAM algorithm and the generated datasets. This document is of high importance to document recent advances in the generation of datasets of water cycle components for climate studies.

As this paper aims at clearly and fully describing the new algorithm and validation, I have a couple of questions regarding its implementation.

- GLEAM v3 uses MOD44B product for partitioning the land cover classes. Which version and how is it used (updated regularly throughout the time period of the dataset or fixed at one specific date or else ?) In the conclusion (on p16, l.31-33),

there is mention of an update. Does it mean the land cover fraction is different from a previous GLEAM dataset ?

- Air temperature is used to force GLEAM v3. While details are given about forcing v3a (ECMWF ERA-Interim, 3h spacing), I do not find the complete information regarding the forcing of v3b and v3c. Could you indicate the source providing the dataset, and its temporal frequency?
- Thank you for providing the link to the dedicated website. I found also a visualizing tool on the H2Observe project portal (https://wci.earth2observe.eu/), it may also be mentioned.
- For the validation, if I am not mistaken, the choice of correcting here the observed fluxes using the Bowen ratio (p10, l29) differs from the strategy of validation presented in Michel et al, 2016, for evaluating WACMOS-ET datasets. Is there a reason for that ?
- Extreme outliers are screened, what is the mask applied ? For gaps in data, what is the strategy if less than 25

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