

Interactive comment on “The CarbonTracker Data Assimilation Shell (CTDAS) v1.0: implementation and global carbon balance 2001–2015” by Ingrid T. van der Laan-Luijkx et al.

Anonymous Referee #1

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1 General comments

This paper presents the new developments of CarbonTracker, a well known data assimilation system used to estimate carbon fluxes. These developments are possible thanks to the implementation of a new shell based on python. The presentation of this new shell is clear and well structured. The results are also well presented, comparing the system with other versions and other systems and highlighting the main achievements and challenges, as well as future plans for development. The technical aspects of the shell and the strategy to allow a flexible use of different components (e.g. observation operator, data assimilation methodology) are very interesting and relevant in

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this fast evolving field of carbon cycle data assimilation. I recommend this paper to be accepted with minor corrections (see specific comments below).

2 Specific comments

- Page 3, lines 4-6: Include the sections relevant to each of the aspects addressed in the paper.
- Page 11: The posterior fluxes are net fluxes, therefore any change in the net sink can only be interpreted as a change in the net uptake. I would advice to replace 'uptake' by 'net uptake' and 'sink' by 'net sink'.
- Page 11, line 22: It would be interesting to show the standard deviation of the bias, as it reflects the capability of the posterior fluxes to represent the spatial patterns in the fluxes, i.e. the inter-station bias.
- Page 11, line 24: The winter transport is also easier to simulate (with large-scale planetary waves) than the smaller-scale convective transport during summer.
- Page 11, line 33: remove 'e.g.' before Janssens.
- Page 14, line 5: replace 'biospheric' with 'biogenic'.
- Page 22, Table 2: provide a reference for all the prior fluxes.
- Page 28, Figure 6: The last line is not clear.

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