

***Interactive comment on* “Trend analysis of the airborne fraction and sink rate of anthropogenically released CO₂” by Mikkel Bennedsen et al.**

Anonymous Referee #2

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Bennedsen et al. analyse trends of airborne fraction and sink rates of the global carbon cycle using a Kalman filter approach which should not be very sensitive to variations like El Nino. The analysis is very clearly presented and the results seem robust. Thus in my view the paper should be accepted.

I have very few suggestions - and also a general comment - which does not affect acceptance of the paper though. Firstly in the introduction the authors state: 'a key question is whether the airborne fraction is increasing ' but they do not say why. It would be good if they would add why this is so.

Sentence just above - 24% and 31% - I would add a reference here - and possibly

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uncertainties - just for completeness.

When applying the Kalman filter the authors will need to initialize it. I may have missed it but if not it would be good if the authors would add this in the main text.

Finally my comment - while all the results are sound - what the paper does not explain is the true reason for the decrease in sink rates - and thus it is not clear whether a decreasing sink rate is alarming or not. It would be nice if the authors could comment on that - but it is not a necessary condition.

Some earlier papers actually give a clue what the real reason may be.

Interactive comment on Biogeosciences Discuss., <https://doi.org/10.5194/bg-2018-402>, 2018.

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