

Interactive comment on “Re-evaluating the 1940s CO₂ plateau” by Ana Bastos et al.

I G Enting (Referee)

ian.g.enting@gmail.com

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The anomalous 1940's dip in CO₂ was noted twenty years ago and a definitive explanation is still lacking. By presenting an extensive range of comparisons, this paper brings into focus the difficulties. As such, it is a valuable contribution and, subject to clarifying the issues noted below, is suitable for publication in Biogeosciences.

I would have liked a clearer statement, for each of the comparisons, of the "boundary conditions" applicable for each case, i.e. what is being assumed as "fixed" in each case (e.g. single deconvolutions assume fixed (i.e. time-invariant) ocean response, while double deconvolutions assume invariant mixed-layer response).

With regard to the results presented in fig 2, the authors note that they are comparing (by taking the difference) AGR based on a 25-yr cutoff spline and AGR based on splines with a longer cutoff. This can be simply described as applying a band-pass filter to

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AGR. Saying this explicitly might help the reader, but it also suggests that the analysis in figure 2 adds little to the overall analysis in the paper.

A minor point is the implication that zero AGR requires zero fossil emissions (or a change on uptake processes). This is not correct. Zero growth rate can be achieved by a rapid reduction in emissions, with uptake processes responding to higher atmospheric concentrations. Note for example stabilisation calculations, or the discussion by Gloor 2010 (Atmos Phys Chem, 10, 7739). (This a case of poor wording and it in no way invalidates the overall analysis in the paper).

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