Atmospheric
Chemistry
and Physics
Discussions

Interactive comment on "Introduction to the SPARC Reanalysis Intercomparison Project (S-RIP) and overview of the reanalysis systems" *by* Masatomo Fujiwa et al.

Anonymous Referee #1

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Review of " Introduction to the SPARC Reanalysis Intercomparison Project (S-RIP) and overview of the reanalysis systems" by Fujiwara et al

This paper is a summary of reanalysis systems for a stratospheric inter comparison project. It is a useful summary, but could be much more focused on the implications of the qualitative comparison of reanalyses for the stratosphere. The manuscript hints at this, but there is too much exposition, and not enough high level analysis. This would should be suitable for publication with revisions.

Overall I learned a great deal about reanalysis systems. I think the work need not focus on SRIP programatic functions at the beginning and end (the table of report chapters is not relevant). This should be less a summary and preview of an SRIP report than a

stand alone qualitative summary of reanalyses: with implications for the stratosphere.

I would like to see some of the very nice comments sprinkled throughout the text about how the reanalysis system structure impacts the stratosphere put into the conclusions. For example: assimilation methods may introduce variance which affect transport and may induce spurious gravity wave momentum transport. These are mentioned, but this and other features of the systems could be better highlighted at the end.

As mentioned, table 1 could be deleted. Figure 1 is probably not discussed enough to be necessary. Also, Figure 6 I think is only mentioned once in passing, and may not be necessary (it is sufficient to state weighting functions are broad).

Specific comments

Along the lines above, the title might be better as "Overview of the reanalysis systems in the stratosphere for the SPARC Reanalysis Intercomparison Project (S-RIP)"

P2, L25: I think it would be wise to spell out the Acronyms where they first appear, as is typical custom. That is an editorial decision for ACP.

P3, L7: A list of 13 papers as examples is not really necessary. Probably just citing examples in Fujiwara et al 2012b is appropriate, unless you want to specifically describe any examples in a sentence.

P3, L22 through P4, L14: Describing a report is not helpful or necessary. These paragraphs, table 1 and figure 1 could be deleted.

P5, L6: Since the NOAA/NCEP systems are the oldest, maybe section 2.4 should be placed first in section 2.

P15, L5: here is a good summary about what impact assimilation and reanalysis system structure may have on results: suggest this result and other similar ones be part of the conclusions.

P17, L6: Is this the only mention of Figure 6? Suggest deleting it. All the figure shows

is the 'deep vertical weighting functions' you mention.

P18, L25: What is homogenized data?

P19, L22: State why GPS-RO is unbiased in a sentence or two.

P21, L33: What is the impact of the simplified H2O treatment on the stratospheric analysis?

P22, L10-12: How are each of these affected by the reanalysis systems themselves? This would be a good place to spend a few paragraphs in summary

P22, L15-31: I don't think project plans for SRIP belong in ACP.

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