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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Extending the SBUV PMC Data Record with OMPS NP" *by* Matthew T. DeLand and Gary E. Thomas

Anonymous Referee #2

Received and published: 26 December 2018

This paper has extended PMC data using recent OMPS NP observation, to investigate a 40-year PMC variation. Although methods used in the data analysis are not new, their effort is vitally important to reveal a long-term PMC trend, which cannot be captured by a single satellite. The manuscript is mostly well written, but more explanation/discussion would be needed in some points. In particular, it seems that interpretations of the obtained results are missing. Thus, a section "Discussion" would be needed. The reviewer recommends publication after revising the manuscript regarding the comments below.

p.5, l.115-125: The validation is qualitative and insufficient. Can the authors show quantitative validation for the results with some specific definitions? For example, how large are error values for the data points in Figures 3-5? If we can see error values, it

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Discussion paper

would be easier to make a judgement about "anomalous" or not. BTW, which dataset is anomalous in the case of NH 2016 season at 64°-74°N? Do the authors include also some anomalous data in the merging analysis? Please give more careful information about it.

p.9, l.169-175: Can the authors explain what is a scientific reason of the break point? How concrete or confident is the reason? Do we have to consider possibilities for any other break points or no break point?

p.11, l.193-210: Can the authors give more discussion for the obtained results? For example, concerning to (a), what is a scientific reason for "the trends for segment 2 are smaller than those derived in 2015"? Is that a new important finding? In the same way, the authors should have careful reconsiderations for the results from (a) to (d). The reviewer suggests that it should be summarized as a section "Discussion". Otherwise, it would be difficult to understand scientific importance and/or impacts of the main results, i.e., the trend update, compared with DeLand and Thomas (2015).

p.12, l.242-244: Information on data source for OMPS NP is missing.

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