

Review of “Improved methods for PCA-based reconstructions: case study using the Steig et al. (2009) Antarctic temperature reconstruction”, by R. O’Donnell, N. Lewis, S. McIntyre, and J. Condon.

General Comments:

The manuscript is now much improved as a result of responding to reviewer comments. I think some revisions are still needed before acceptance. In particular, I am even more convinced that the Supplementary Information is not needed, but will defer to the Editor’s opinion. In general, this manuscript is an important contribution to the debate about whether Antarctic Peninsula warming extends into West Antarctica. Clearly much more will be written on this important topic relating to global climate change.

Specific Comments:

1. Page 6: The NOAA polar orbiters are not the Polar Pathfinder series of satellites. To my understanding, Polar Pathfinder is the name given to derived data sets from AVHRR measurements.
2. Page 8: Is equation (6) correct? Based on (4) and (5) you seemed to have dropped one A_j . Please clarify.
3. Page 9: “During 1982-2006, the PCs appear in A (not b) ..” This appears to contradict the text on page 7, line 13. In general, the authors should be very careful throughout the text to qualify their use of the term “PCs”. In some places they are described as satellite PCs and in many places they are not qualified with satellite when it appears as though they should be.
4. Page 13, discussion of Fig. 2: West Antarctica= red plus green. I think more careful discussion is needed as to what precisely the reader should see from this figure (and Fig. 7) and which symbol (circles or stars) are “better”.
5. Page 17: Do \wedge and \vee mean the same thing as on page 8?
6. Page 24: Your Peninsula warming is maximized in fall and winter, rather than winter and spring, as stated.
7. Page 25: The observed trends at South Pole should be stated along with their statistical uncertainty. Probably only the winter value is meaningful as a confirmation of your trend map.
8. Page 33: Is Lathauwer et al. (2000) used in the text?
9. Page 35: Note the repetition of the Trishchenko and Li (2001) reference.
10. Page 46, Fig. 1: Show geographic boundaries for EA, WA, and AP on this figure. Caption: You mean Fig. 7 rather than 5 as stated?
11. Page 50, Fig. 5: Please give statistical significance for RLS and E-W seasonal trend maps, equivalent to Fig. 4.
12. Page 51, Fig. 6: Caption: Correct to Bellingshausen.

13. For Figs. 2 and 7, it would be valuable to list the stations considered along with their period of record, probably in another table.