

Review of the revised paper:

“Extending and understanding the southwest Western Australian rainfall record using a snowfall reconstruction from Law Dome, East Antarctica”

By: Zheng, Jong, Phipps, Roberts, Moy, Curran, and van Ommen

Submitted to *Climate of the Past*

I have read the revised manuscript and also checked the authors’ responses to my suggestions in the first review. I’m happy to recommend the revised manuscript for publication in CoP, but I include below a few final suggestions for edits before going to print. Line numbers here refer to the track-changes version of the latest revised manuscript.

1. Line 52: Thank you for adding the discussion of other drivers of SWWA rainfall here — however the lead into this paragraph could be improved to be clearer on this point. Best to start with something along the lines:

“Variability in the SAM is not the sole driver of SWWA rainfall anomalies; for example local Indian Ocean sea surface temperatures can also play a role. In particular, negative sea surface temperature anomalies.....”

2. Table 3 and lines 202–209: Thank you for adding the explained variance % metrics in both the table and the text here. I agree that 30-40% is a sizeable contribution for reconstructing SWWA rainfall variability. The wording here could be tightened up a little though:

“The square of the correlation coefficients have shown the explained variance is maximum at around 30–40%. This is a significant fraction of the variance, although the tropics and subtropics can also play an important role in driving rainfall changes in SWWA (Smith et al., 2000; England et al., 2006; Ummenhofer et al., 2008). Thus using the Law Dome ice core snow accumulation proxy to reconstruct the SWWA rainfall focuses in on the SAM-related component of the rain-bearing systems, not the tropical / subtropical components. However, explaining 30–40% of SWWA rainfall variations is a valuable contribution to our ability to reconstruct past climate, so we construct a linear model for SWWA rainfall and DSS snow accumulation”.

3. Line 322 and Figure S7. Thank you for following up on my suggestion to explore the latest BoM rainfall data during 2016 – 2020. Best to tighten the wording to read:

“This drought continued during 2015-2020 (Figure E7)”.  
because as time goes on, the drought may eventually be broken, and then the statement would become invalid.

4. Nice final sentence added to the paper, thank you for sorting that. This paper will make a valuable contribution to the literature.

Matthew England  
UNSW

----- END OF REVIEW -----