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Interactive comment on "Interactions between Antarctic sea ice and large-scale atmospheric modes in CMIP5 models" *by* Serena Schroeter et al.

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In response to Reviewer 2, comment p.4 ll.29:

The authors mention the use of monthly reanalysis data, but they never specify the time resolution of the CMIP5 model output used. I assume this is also monthly. Please specify this here. Further the authors use reanalysis data from 1979 to 2014 but historical model output only until 2005. Why don't the authors prolong the historical simulations until 2014? At least I would like to know whether the results remain qualitatively the same when prolonging the simulations by the last 10 years, i.e. with RCP4.5.

The previous author response to this question was incorrectly based on the SLP-SIE

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cross-correlations of the reanalysis and the simulations, which actually use piControl and not historical data. The CMIP5 historical data in question is used for EOFs, which is to what we assume this reviewer is referring. The shortened timeseries (1979-2005) has been applied to the EOFs of the reanalysis, and yielded qualitatively largely the same results as the longer timeseries (1979-2014). As such, our previous decision not to extend the historical simulations for the 73 ensembles on the basis that no substantial difference was detected between shorter and longer timeseries in the reanalysis still stands, given the additional work required to perform this. Figure S1 has been updated to show the reanalysis EOFs of the shorter timespan, not the cross-correlations.

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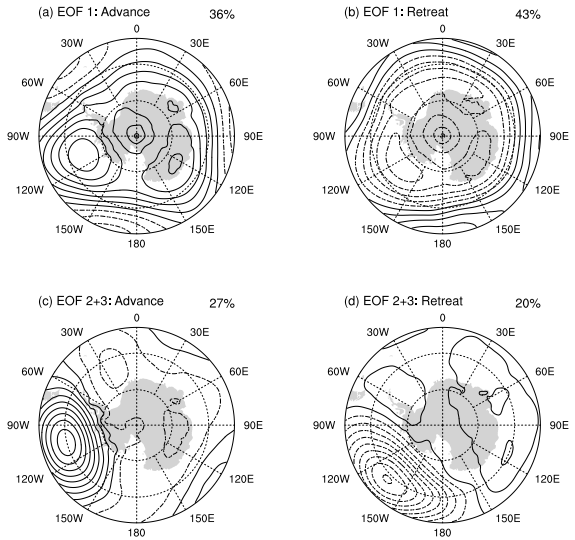

Fig. 1. Updated Figure S1 - EOFs of ERA-Interim reanalysis SLP between 1979-2005.

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