

cp-2018-164

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Identifying teleconnections and multidecadal variability of East Asian surface temperature during the last millennium in CMIP5 simulations

Ratna et al.

Suggested minor changes listed by page in revised PDF manuscript:

Page 1

Line 23: ‘when interpreting internal variability teleconnections’- this phrase is long and confusing- for clarity, please divide up and clarify

Line 27: ‘adjacent’ continents- suggest ‘both nearby and remote regions’

Line 30: ‘each of which’ – this implies you have already listed the methods

Page 2

Lines 13-15: the wording seems to imply that the models mentioned in previous lines were uncoupled- but the CMIP5 past1000 models used in previous studies are coupled, correct?

Page 3

Line 7: suggest change to ‘time-varying external forcings’

Line 10: ‘some PI simulations’ and ‘some LM simulation’- this wording sounds vague- please be more specific

Line 17: portion of variability in what? Please be more specific

Line 20: ‘the all the’

Page 4

Lines 12-13 and 19-20: IPCC AR5 WG1 Chapter 9 summarizes AMO and PDO observation-model comparisons. May be helpful for the reader to cite this summary.

Flato, G., J. Marotzke, B. Abiodun, P. Braconnot, S.C. Chou, W. Collins, P. Cox, F. Driouech, S. Emori, V. Eyring, C. Forest, P. Gleckler, E. Guilyardi, C. Jakob, V. Kattsov, C. Reason and M. Rummukainen, 2013: Evaluation of Climate Models. In: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V.

Line 14: Please cite a paper related to how PDO is calculated so the reader can find more information if they need to replicate analysis, etc. (I assume you didn’t come up with this method)

Page 9

Line 18: ‘Turning to correlations some key behaviours are clear.’ This sentence sounds vague – can you please clarify behaviours and be more specific with your wording?

Page 10

Line 23: I think 'their being' should be 'there being'

Page 11

Line 11: A mention of potential lagged relationships between modes of variability and volcanic eruptions is an important factor to acknowledge- for example, Pausata et al. (2015, PNAS) show that volcanic eruptions can impact AMOC variability decades after the eruption. The zero-lag regressions won't account for this kind of impact on the climate system.

Line 14: 'This is especially for two models'- This what? Please be more specific.

Page 12:

Much of this section reads like it hasn't been proofread or hasn't been fully been updated after the first round of revisions (wording that still references three models, also wording that still references background red spectrum on figures, which has been removed post-revision)- I tried catching the most obvious problems, but please carefully read over this section to be sure it matches the figures and data presented.

Line 4-5: the text mentions 'elevated above the background red spectrum'- there is no background red spectrum shown on Figure 10a. Please change wording or add in red spectrum.

Line 5: '(CCSM4 has elevated' never has a closing parenthesis

Line 9: Why are the authors only referring to three models? Are these the three models referred to at the end of the last paragraph, or have the authors not updated the text to discuss all 7 models? Not sure which.

Lines 10-11: 'Landrum et al found the same frequency for both control and last millennium simulations'. Unless the reader knows this paper, it is not clear what model this refers to. Please be more specific.

Line 12: 'weaken the PDO-TAS correlation'- In the CCSM4? All models? In the reconstructions? please be more specific.

Lines 14-15: 'The instrumental record...forcings at multidecadal timescales'- If a reader skips to this section and starts reading, they will have no frame of reference what you are talking about here- does this statement apply to all aspects of climate? The PDO? AMO? E Asian temps? please be specific.

Lines 23-24: Please reference your figure here for the reader. Also, among other papers, Parsons et al. 2017 (J Clim, Figure 6) show spectra of North Pacific and North Atlantic SST/SAT variability in CMIP5 piControl, CMIP5 Last Millennium, and instrumental-based data. Fleming and Anchukaitis (Clim. Dyn, 2016, Fig. 5) also show power spectra of the PDO time series.

I recognize you cite these papers earlier, but it would be good to acknowledge that others have shown the power spectra of these 'modes' of variability in these CMIP5 models before.

Page 13

Lines 1-4: Great points here

Line 9: please be specific (e.g., spell out what effect is, or 'the effect mentioned in point (4) above')

Line 11: What does 'much but not all' mean? Please be more specific

Line 18: "This partly arises"- which part about what you were discussing? Confusing to follow- please be more specific.

Lines 22-27: Great points

Line 28: "there are a number of ways to attempt this"- please be more specific what 'this' means

Page 14

Line 21: 'determine its' – typo? This sentence doesn't make sense.