Dear Dr. Dow and co-authors:

Thank you for your thoughtful responses to the concerns and comments of the Reviewers on your manuscript. Reviewer #2 has remaining concerns that must be addressed before the paper can be accepted for publication in WCD (posted to you, I believe). Below I add my concerns which should be addressed, and some suggestions to make text. Line numbers refer to the uploaded pdf named "egusphere-2023-1595-manuscript-version3.pdf"

Regards, David

- In his original review, Reviewer 2 asked: "What does it mean to express the anomalies between NUDGED and CONTROL "per standard deviation of the PDO index"? And how does one compare the amplitudes between the two?" Your response (reproduced next in blue) was very helpful and I strongly urge you to include this in the text – and to add similar text to the caption of Figure 1.

  The anomaly between NUDGED and CONTROL is projected onto the first EOF from the control run to generate a pseudo-PC. The anomaly is divided by the pseudo-PC to calculate the anomaly per standard deviation of the PDO index expressed in a similar way to that derived from CONTROL.

- The schematic in Fig. 7. is somewhat misleading: The negative SLP anomaly north of the equator is centered near ~30N and not 10N as presently shown. This is important because the south of the maximum (near 10-20N) there will be anomalous westerlies – reduced trade winds, and thus reduced evaporation. Also, the red arrows just south of the equator that point northward are inconsistent with the SLP field (they should point southward). Finally, the text in the figure caption should be sharpened to avoid confusion (in particular, subtropics usually refers to ~10-30N, while extratropics includes the midlatitudes and subpolar regions). I suggest replacing the caption with the following (or something like it):

  "**Figure 7:** Schematic depicting the mechanisms involved in the tropical SST anomalies manifest as a result of an intensification of the AL. An intensified AL (dashed black line) imposed during boreal winter is associated with westerly anomalies (reduced easterlies; solid red arrows) in the subtropics and downward latent heat transfer. The migration of the SST anomalies southward during boreal winter is associated with westerly anomalies in the subtropics (reduced trades). The westerly anomalies act to weaken the background trades (filled red arrow) which reduces latent cooling due to decreased evaporation and hence an increase in subtropical Pacific SSTs. In the season after nudging, the temperature asymmetry about the equator induces an SLP gradient (solid black line, positive SLP; dashed black line, negative SLP) that drives southerly winds across the equator. The Coriolis force acts to turn the southerly winds in the southern hemisphere westward and in the northern hemisphere eastward. When these anomalous winds are imposed on the background easterly trade winds (filled red arrows), the southerlies south of the equator increase the wind speed and therefore evaporative cooling, whilst north of the equator the background trades are weakened, reducing evaporative cooling. The westerly wind anomalies along the equator

deepen the thermocline in the eastern tropical Pacific (red dotted line) and reduce upwelling/divergence of cooler waters at the equator."

- The paragraph on lines 73-93 is not relevant and is a distraction for the reader. Please remove it.
- There is some sloppiness in Eqns. 1-6 that need to be fixed. I will attach at the end of this document a page that will help.
- Line 154, change to read "within the nudging period (d = 0 is 15 Jan)".
- Line 158-162, this is confusing. How the amplitude of the imposed anomaly compares to the maximum amplitude in ERA5 isn't helpful. What is relevant is how the variability in the CONTROL compares to the variability in ERA5. With this in mind, I suggest you change the text on line 158 to read "… with an NPI anomaly of-10.76 hPa, or -3.02 σ, where σ = 3.53 hPa is the standard deviation …" , change the text on line 161-2 to read "… reanalysis data from 1979-2020, a 1 σ NPI anomaly is 5.20 hPa.", and change the text on line 163 to read "… conducted using a comparably sized NPI anomaly in reanalysis data."
- Line 223, "… Pacific Ocean …"
- Line 275, change to read "… There are positive (downward) …"
- Line 279-282, change this sentence to read "The pattern of surface latent heat flux anomalies in JJA in the extratropical North Pacific resembles the SST pattern associated with the internal PDO (Fig. S1d) and represents a damping of the SST anomalies; positive flux anomalies extend eastward from the KOE region, which are enveloped by negative anomalies in the northeast Pacific and subtropical North Pacific. The … "
- Line 299, change to read "…zonal wind anomalies represent a …"
- Line 331, change to read "…from the surface in the northern subtropics due to reduced…"
- Line 340-3421, the NPO is an intrinsic mode of atmosphere variability, not an intrinsic coupled atmosphere-ocean mode. Change to read "…the North Pacific Oscillation (NPO), but they imposed …"
- Line 350, change to read "…coincides with an anomalous northward…"
- Line 358, replace "Investigation into" with "The"
- Line 355, change to read "…the warming in the central near-equatorial Pacific…"
- Figure caption 3: change "NUDGED-CONTROL" to read "NUDGED minus CONTROL". Also, add the text "The subtropical North Pacific and Nino3.4 domains are indicated by the boxes in Fig. 1".
- Figure caption 6: change "NUDGED-CONTROL" to read "NUDGED minus CONTROL".
- Figure caption S1: change "Seasonal mean surface" to read "Seasonal mean skin"
- Figure caption S4: What are the box limits? The whisker limits? Presumably 10, 25 75 and 90%, but best to state this explicitly rather than making the reader guess. The text on line 36 in parentheses is confusing. Suggest replacing this text with the sentence: "The maximum and minimum values of Nino3.4 in the HadISST4 and Control run are indicated by an "x" (and then put the x's on the plot.