



Supplement of

Building blocks of localized storm tracks: revisiting asymmetries between the NH and SH in storm track strength

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Abstract. The supplemental material includes figures S1 through S9.

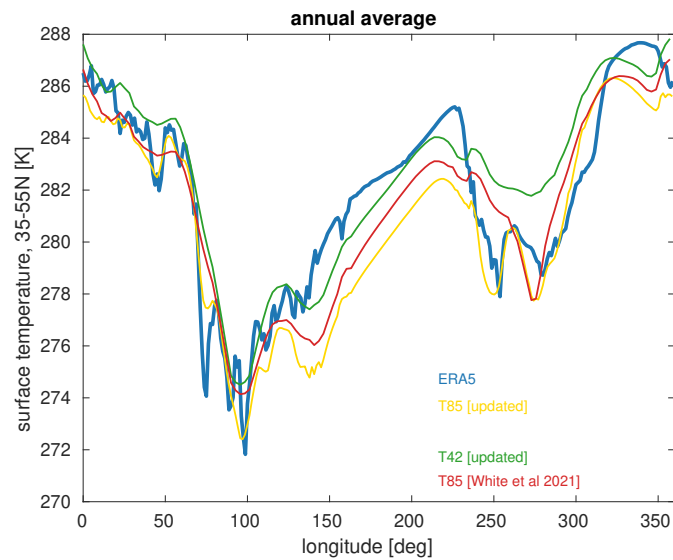


Figure S1. Comparison of NH midlatitude surface temperature in ALL3 and in ERA5

References

- White, I. P., Garfinkel, C. I., Cohen, J., Jucker, M., and Rao, J.: The Impact of Split and Displacement Sudden Stratospheric Warmings on the Troposphere, *Journal of Geophysical Research: Atmospheres*, 126, e2020JD033989, <https://doi.org/https://doi.org/10.1029/2020JD033989>, e2020JD033989 2020JD033989, 2021.

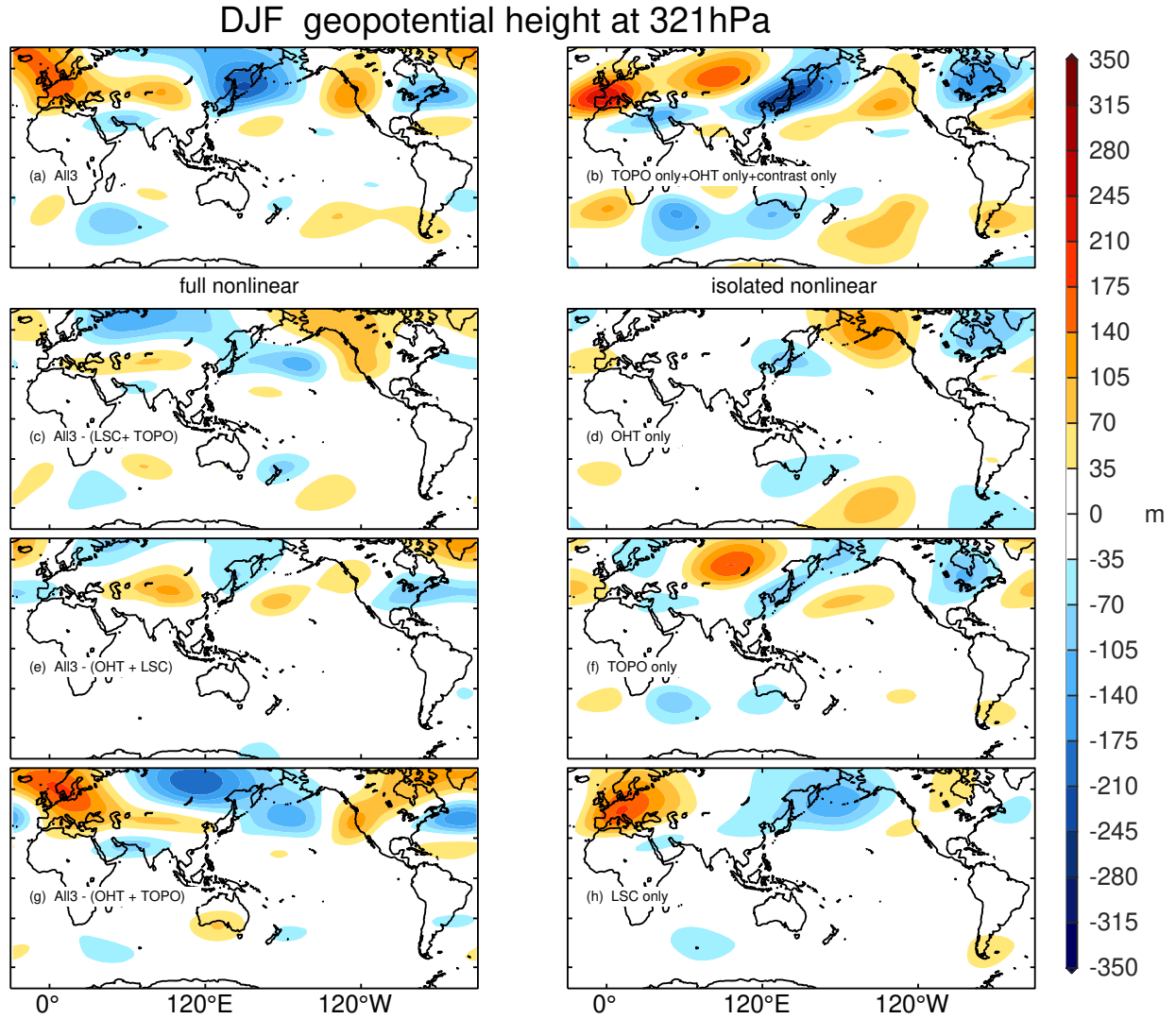


Figure S2. (a) Deviation of DJF 321-hPa geopotential height from the zonal average in ALL3. (b) As in (a), but for the sum of integrations with topography only, land–sea contrast only, and ocean heat flux only. (c) The difference between ALL and the integration with land–sea contrast and topography. (d) The integration with only ocean heat flux. (e) The difference between ALL and the integration with ocean heat flux and topography. (f) The integration with only land–sea contrast. (g) The difference between ALL and the integration with ocean heat flux and land–sea contrast. (h) The integration with only topography. The contour interval is 35 m.

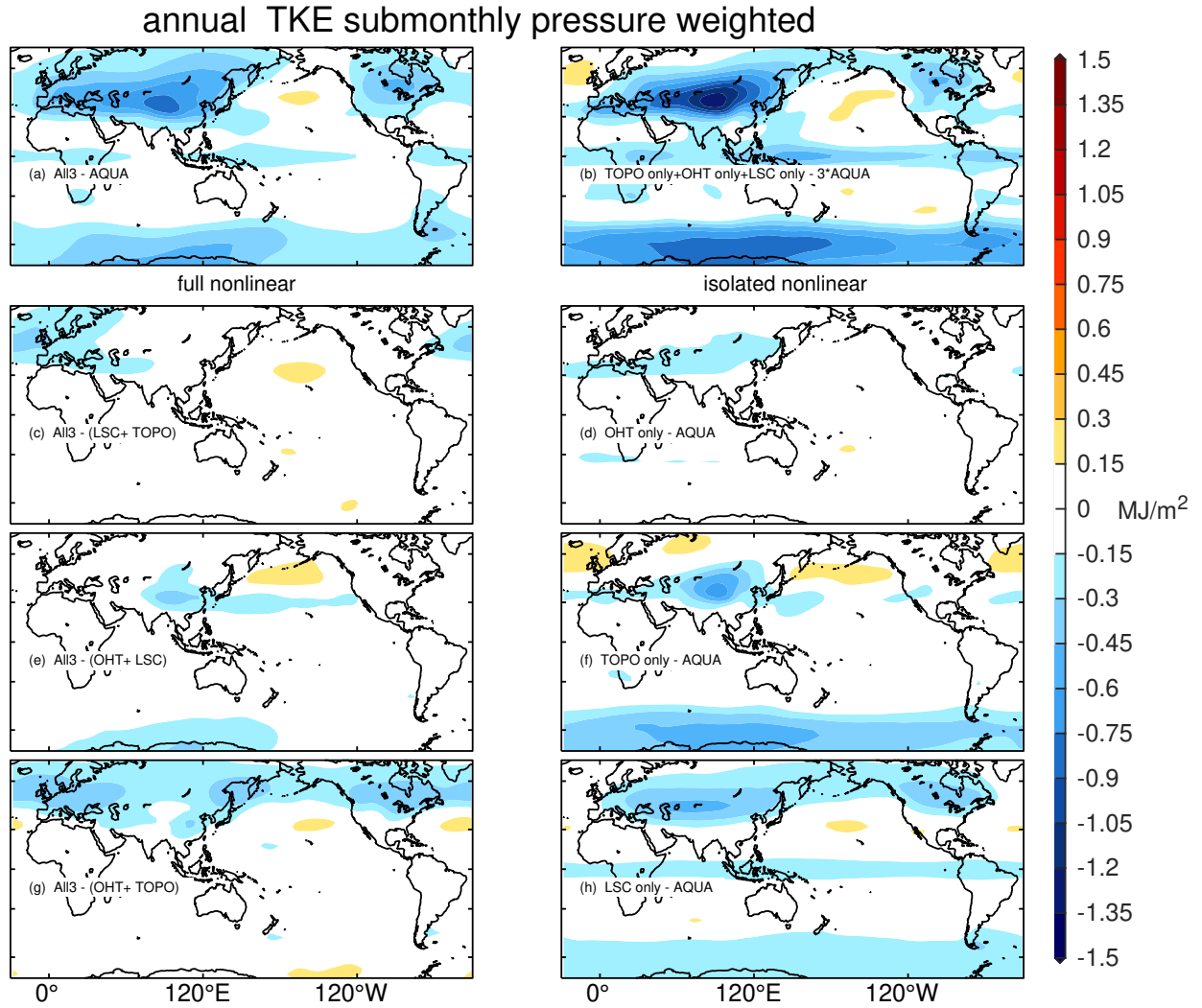


Figure S3. As in Figure 6 in the main text but for transient kinetic energy on sub-monthly time scales. Note the difference in color-scale with Figure 6.

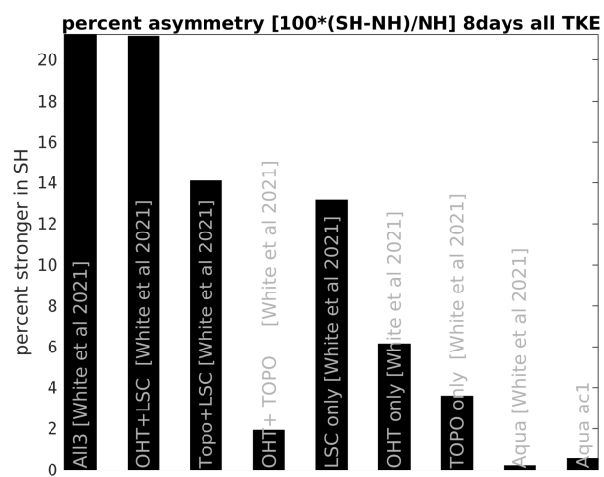


Figure S4. As in Figure 7 in the main text but for the White et al. (2021) configuration.

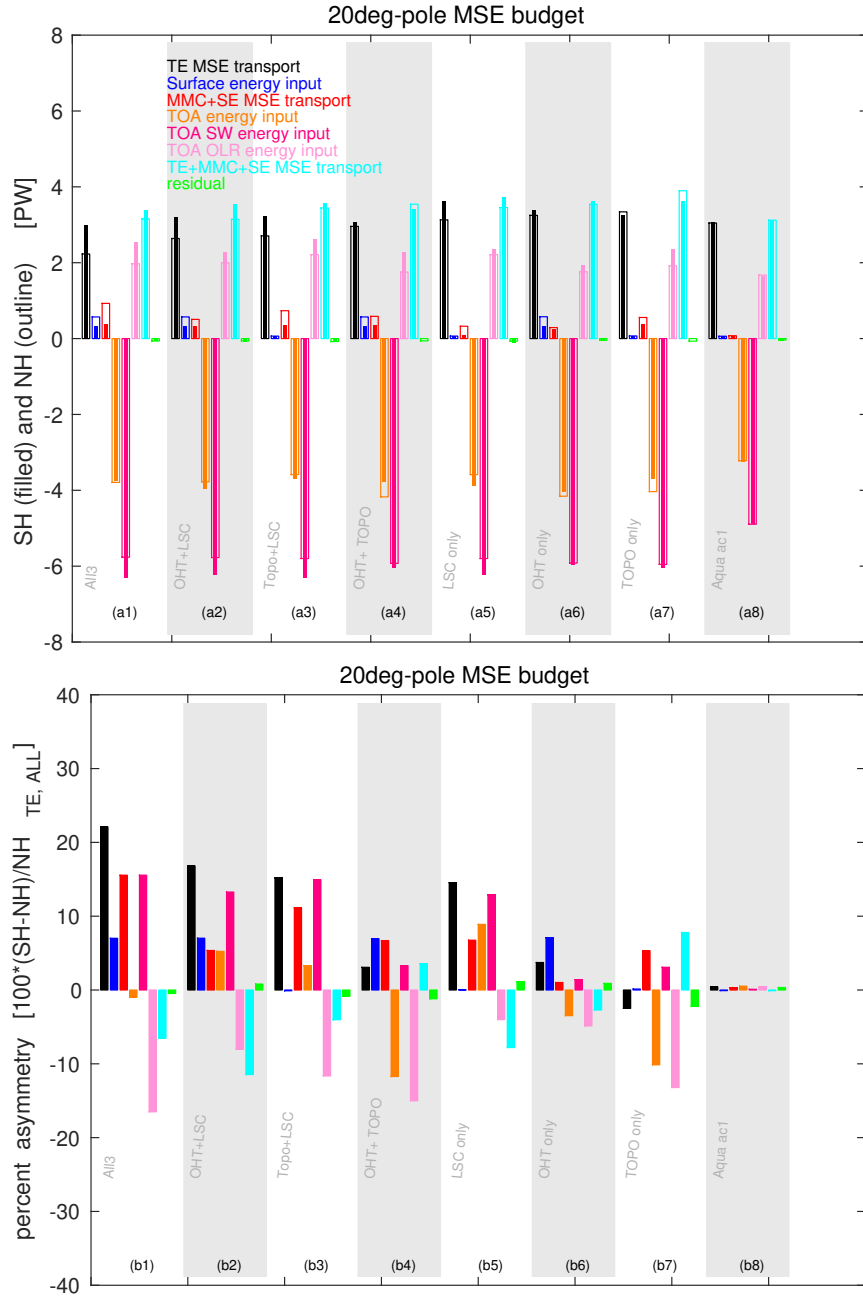


Figure S5. As in Figure 9 in the main text but for the White et al. (2021) configuration. First we show SH and NH separately, and then below the percent difference.

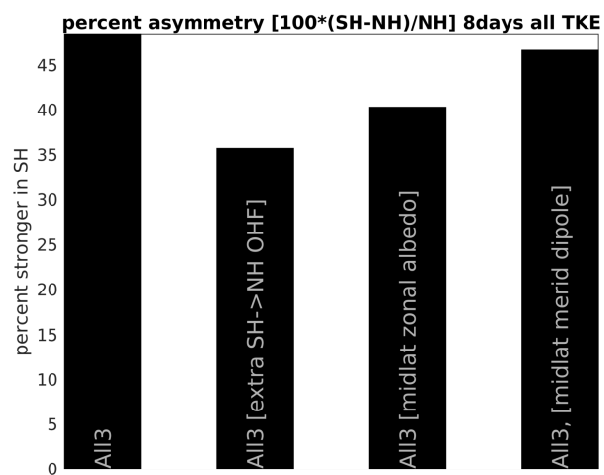


Figure S6. As in Figure 7 in the main text but for the sensitivity runs isolating the role of the extra SH to NH ocean heat flux, and changing the midlatitude albedo profile.

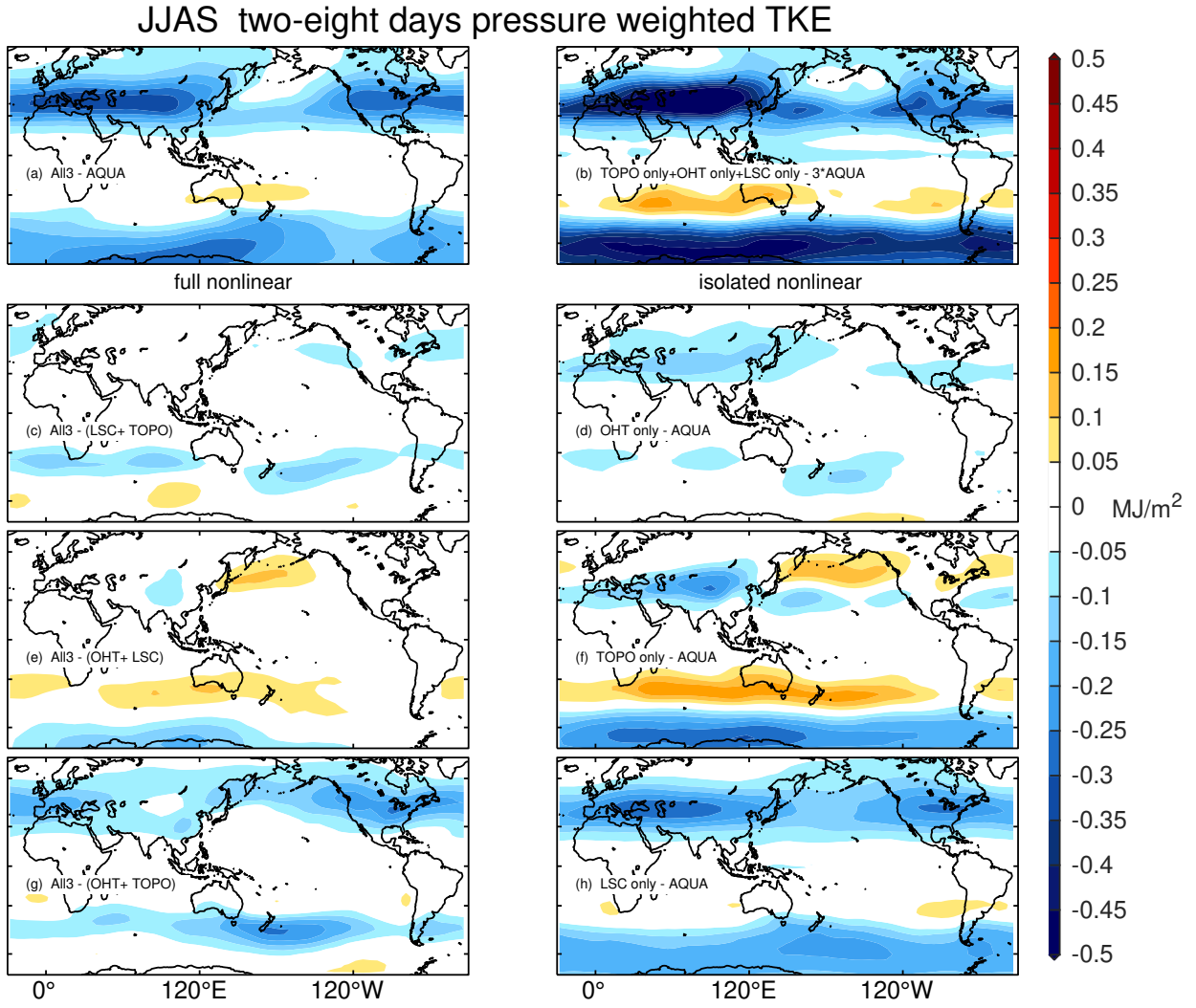


Figure S7. As in Figure 6 in the main text but for JJAS.

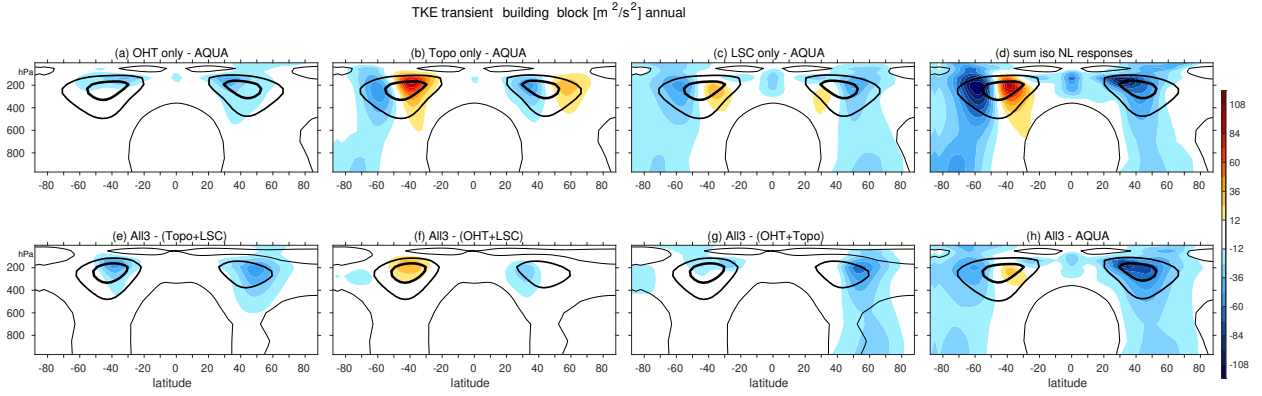


Figure S8. Contribution of each of the core building blocks to the vertical and latitudinal structure of annual-averaged 2-8 day bandpass filtered TKE. (a,e) response to OHT; (b,f) response to TOPO; (c,g) response to LSC; (d) sum of the isolated nonlinear responses in panels a through c; (h) All3 minus AQUA. Top row focuses on the isolated nonlinear responses, and the bottom on the full nonlinear responses. Each panel also includes the time mean TKE in black contours for (a-d,h) Aqua and (e-g) All3.

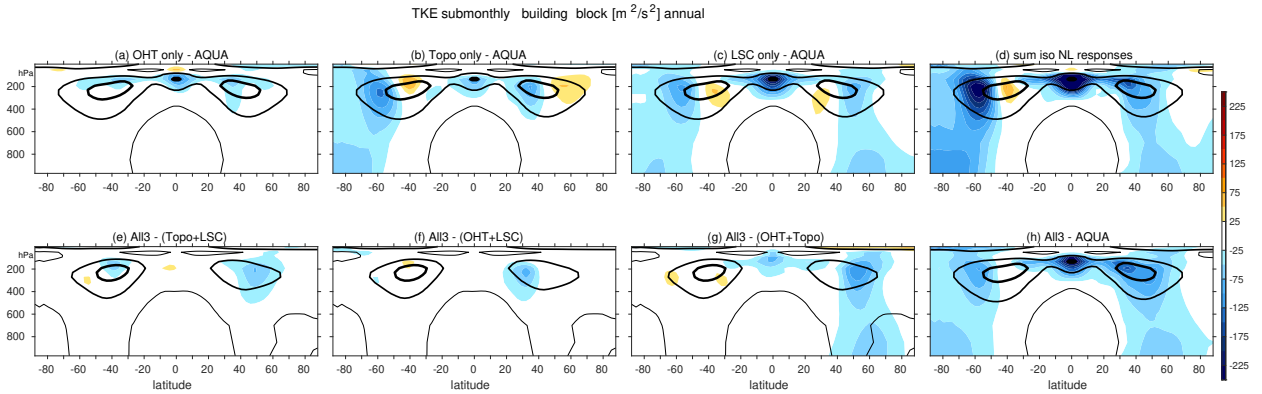


Figure S9. As in Figure S8 but for submonthly TKE.