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## Supplemental Material

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# **Supplemental Materials for “Linkages between Amplified Quasi-stationary Waves and Humid Heat Extremes in Northern Hemisphere Midlatitudes”**

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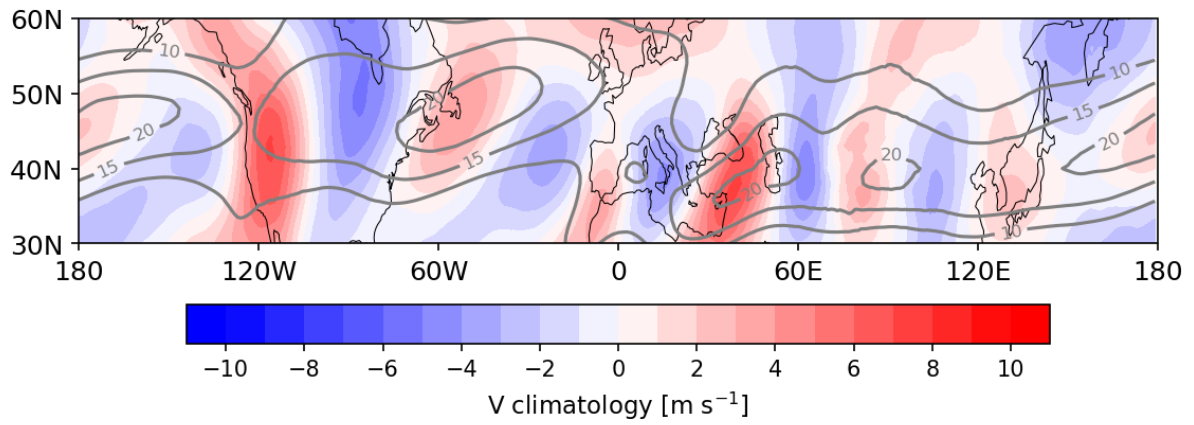


FIG. S1. Climatology of 300-hPa meridional wind (shadings; unit:  $\text{m s}^{-1}$ ) and 300-hPa zonal wind ( $>10 \text{ m s}^{-1}$ ; gray contours; contour interval =  $5 \text{ m s}^{-1}$ ) in 1979-2020 JJA. Red shadings represent anomalous southerlies while blue shadings represent anomalous northerlies.

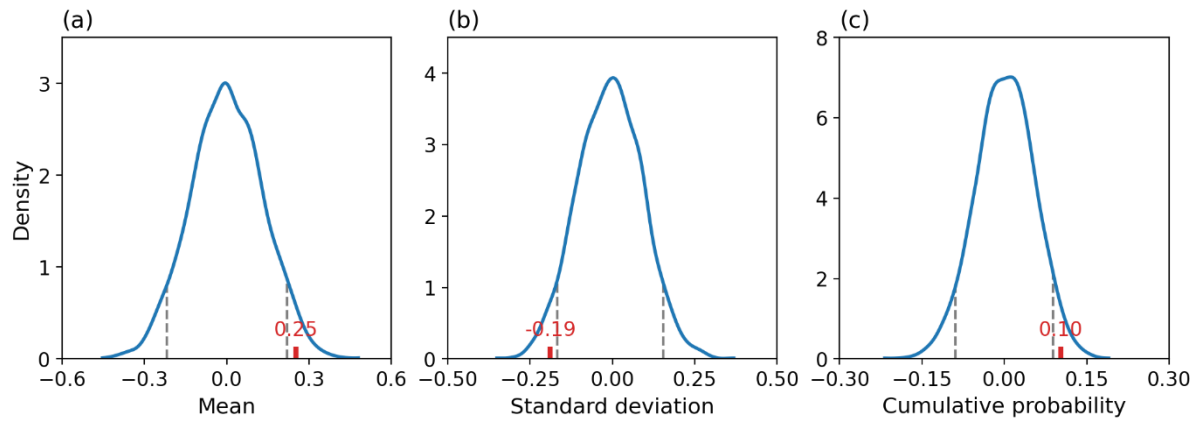


FIG. S2. Probability densities of differences in (a) mean, (b) standard deviation and (c) cumulative probability of positive MEX between N and M months based on the Monte Carlo approach. The 5<sup>th</sup> and 95<sup>th</sup> percentiles of the distributions are marked with gray dashed lines. The observed differences between high-amplitude months and the remaining months are labeled with red vertical bars.

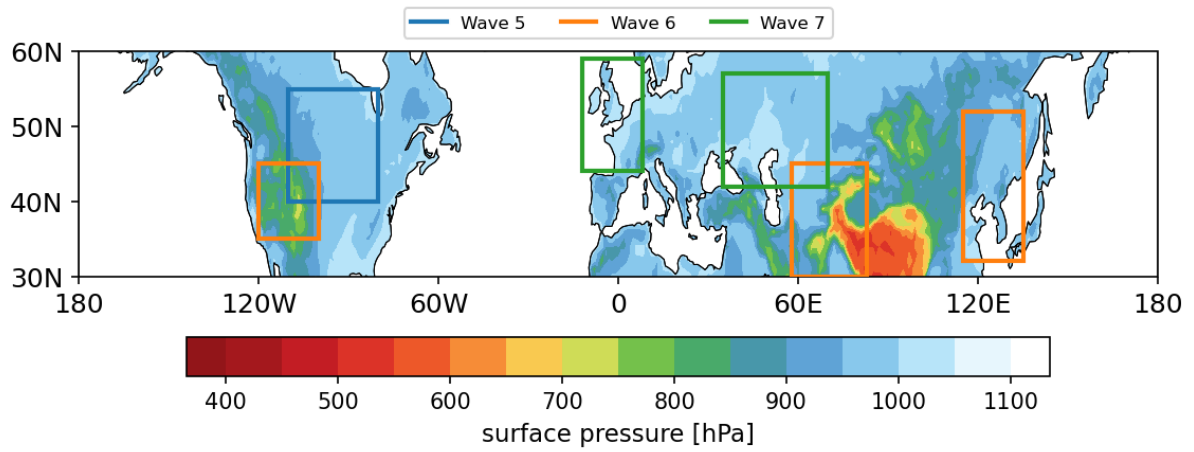


FIG. S3. Climatology of surface pressure in 1979-2020 JJA (unit: hPa). Rectangles mark the key regions affected by amplified Wave 5 (blue), Wave 6 (orange) and Wave 7 (green), respectively.

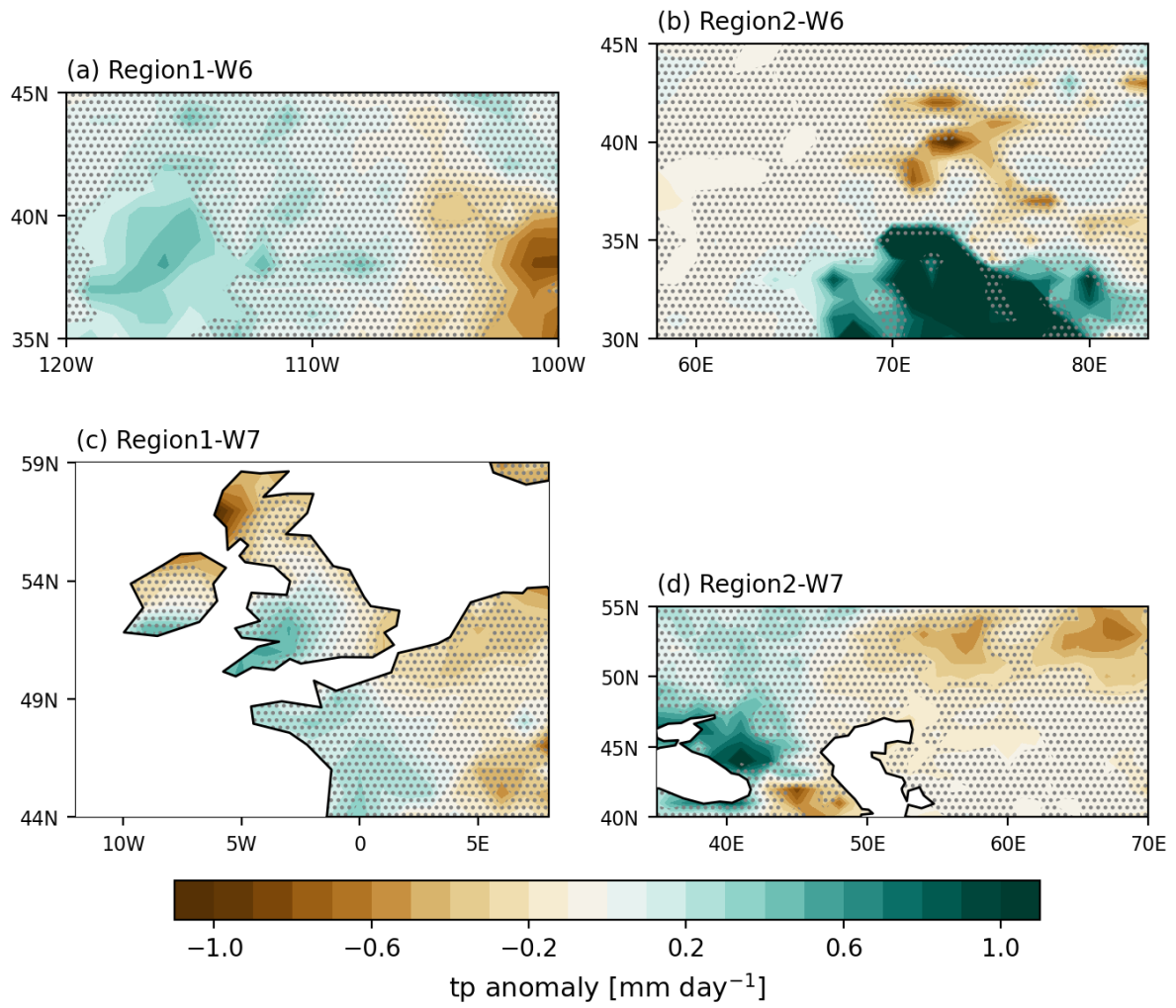


FIG. S4. Composite anomalies of total precipitation (unit:  $\text{mm day}^{-1}$ ) in (a) Region1-W6 and (b) Region2-W6 during months of high-amplitude Wave 6, and in (c) Region1-W7 and (d) Region2-W7 during months of high-amplitude Wave 7. Gray stippling indicates areas where anomalies are **not** statistically significant.