Supplemental Material

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Variable Rainfall over Steady SST: The Effect of the Free Troposphere on Surface Pressure in the East Pacific
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Supplemental Materials for Variable Rainfall over Steady SST: The Effect of the Free Troposphere on Surface Pressure in the East Pacific

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1. Supplemental Figures

Rainfall Region	Longitudinal Extents
A	[90°W, 86°W]
B	[120°W, 86°W]
C	[160°W, 86°W]

Tab. S1. The longitudinal extents for each of the precipitation binning regions applied in the analysis. The latitude range of each region is set according to the seasonal mean where rainfall is greater than 0.2 mm/hr.

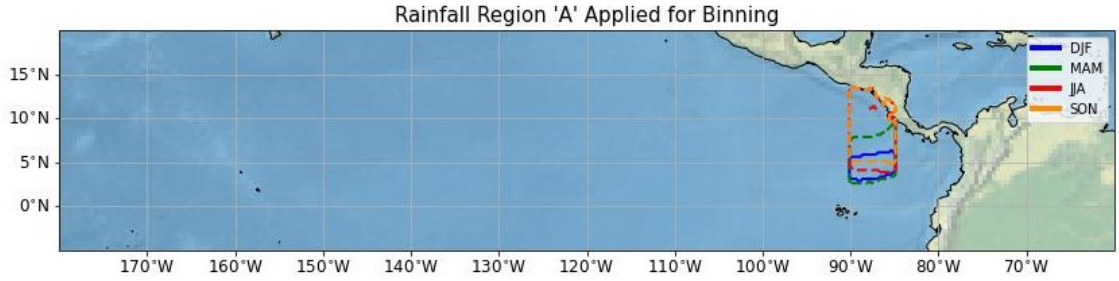

Fig. S1. This figure demonstrates the rainfall region, denoted A, used for precipitation binning.

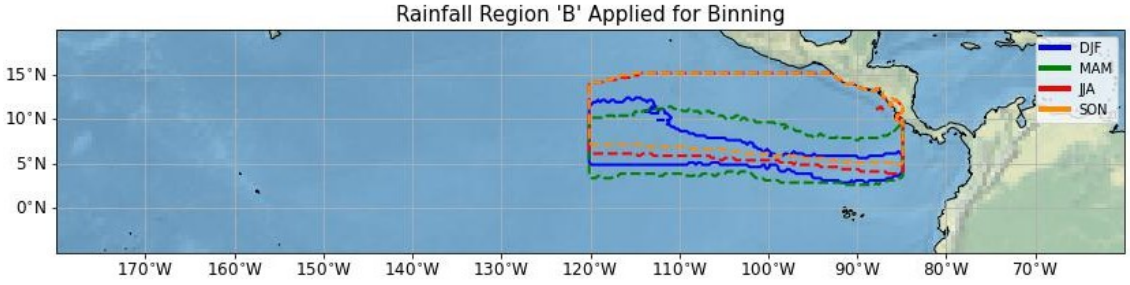

Fig. S2. This figure demonstrates the rainfall region, denoted B, used for precipitation binning.

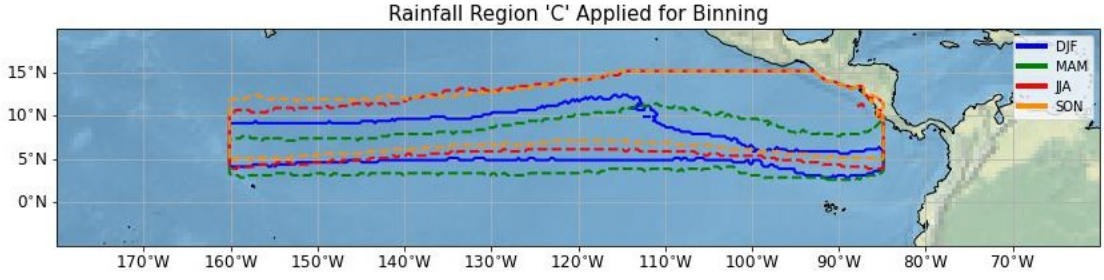

Fig. S3. This figure demonstrates the rainfall region, denoted C, used for precipitation binning. The results for binning done over region C are presented in the paper.

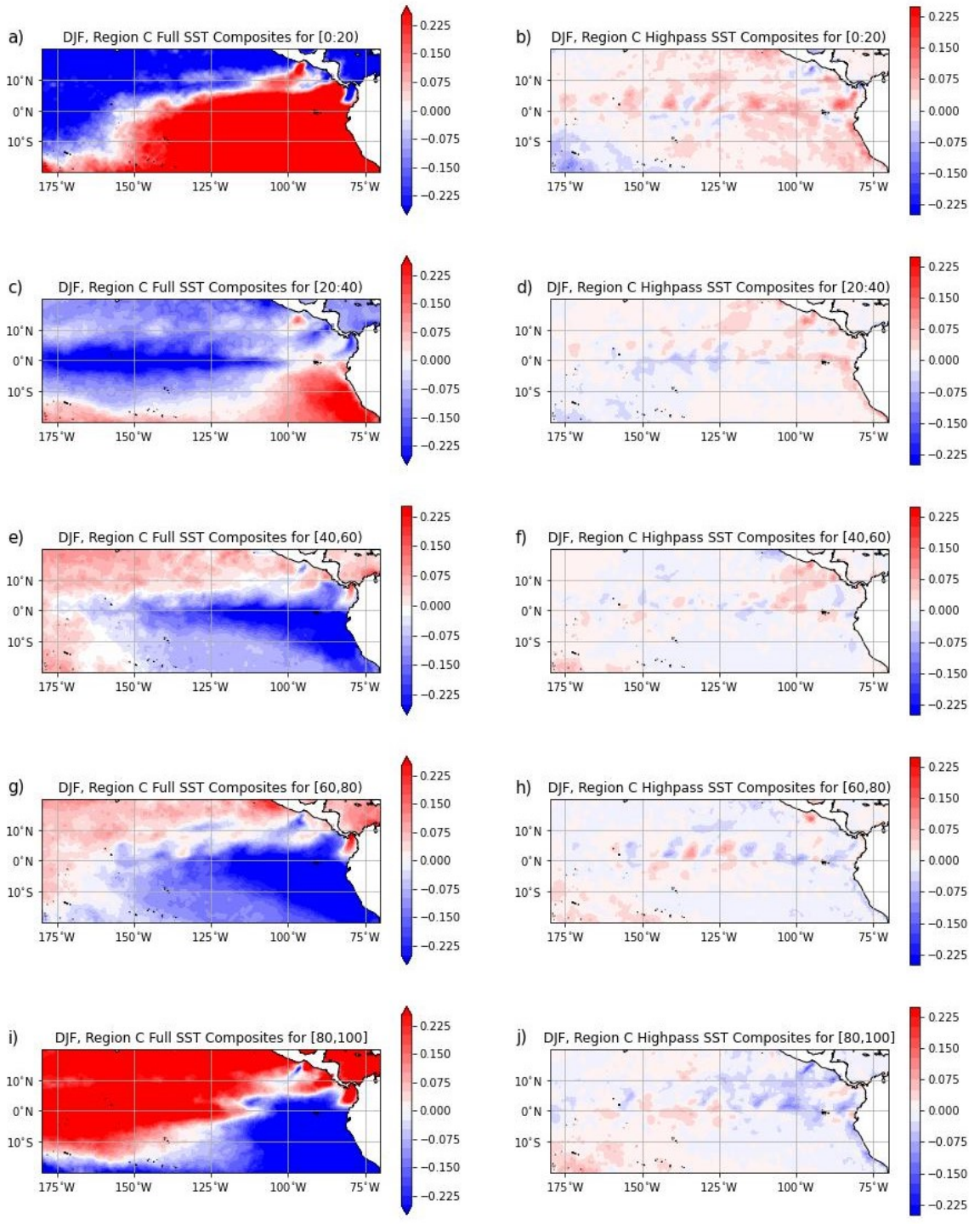

Fig. S4. Figures (a), (c), (e), (g), and (i) show the unfiltered DJF SST composited on each of the rainfall quintiles. Figures (b), (d), (f), (h), and (j) show the same composites, but for the high-pass filtered DJF SST.

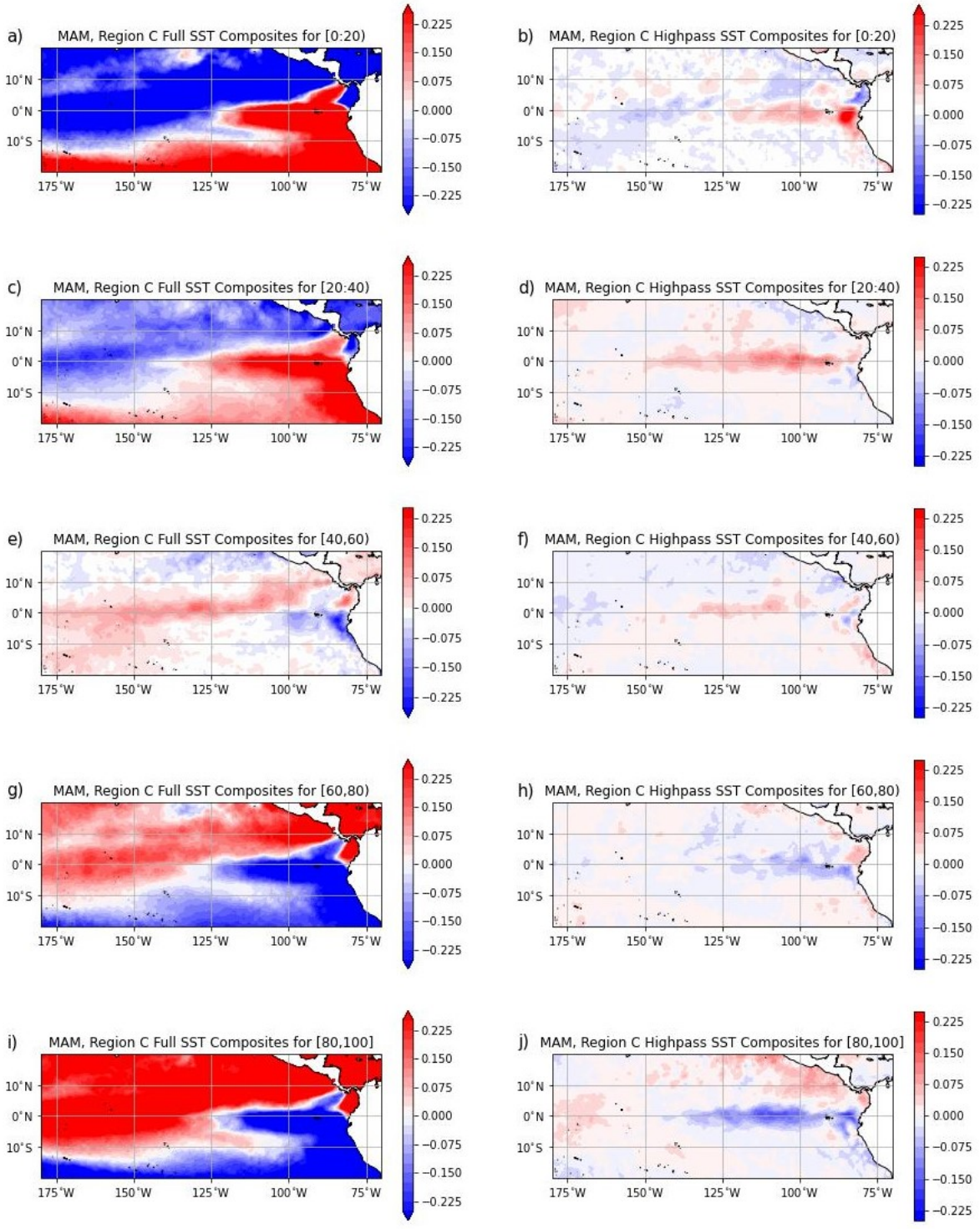

Fig. S5. : Same as Figure S4, but for the unfiltered and high-pass filtered data from MAM

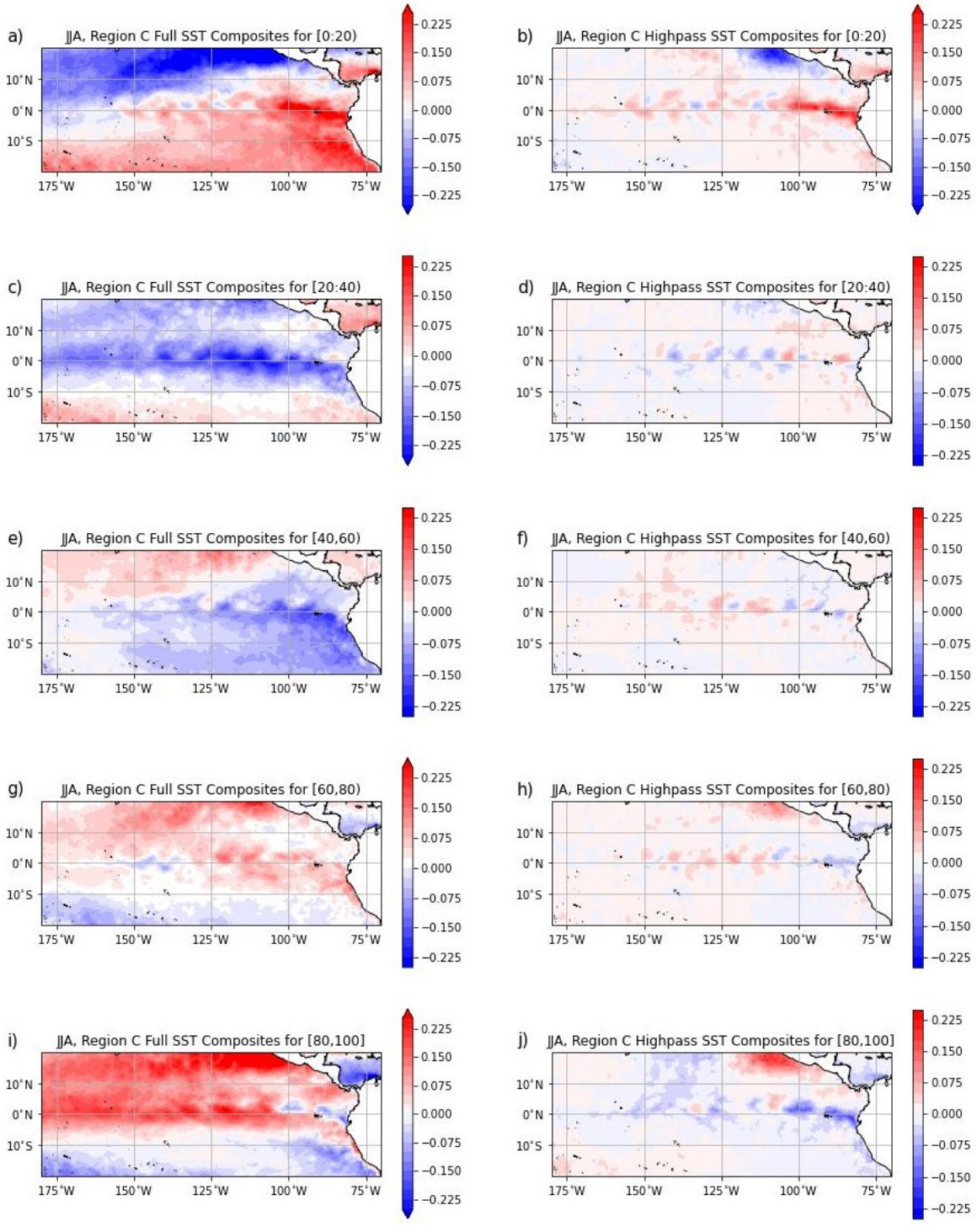

Fig. S6. : Same as Figure S4, but for the unfiltered and high-pass filtered data from JJA

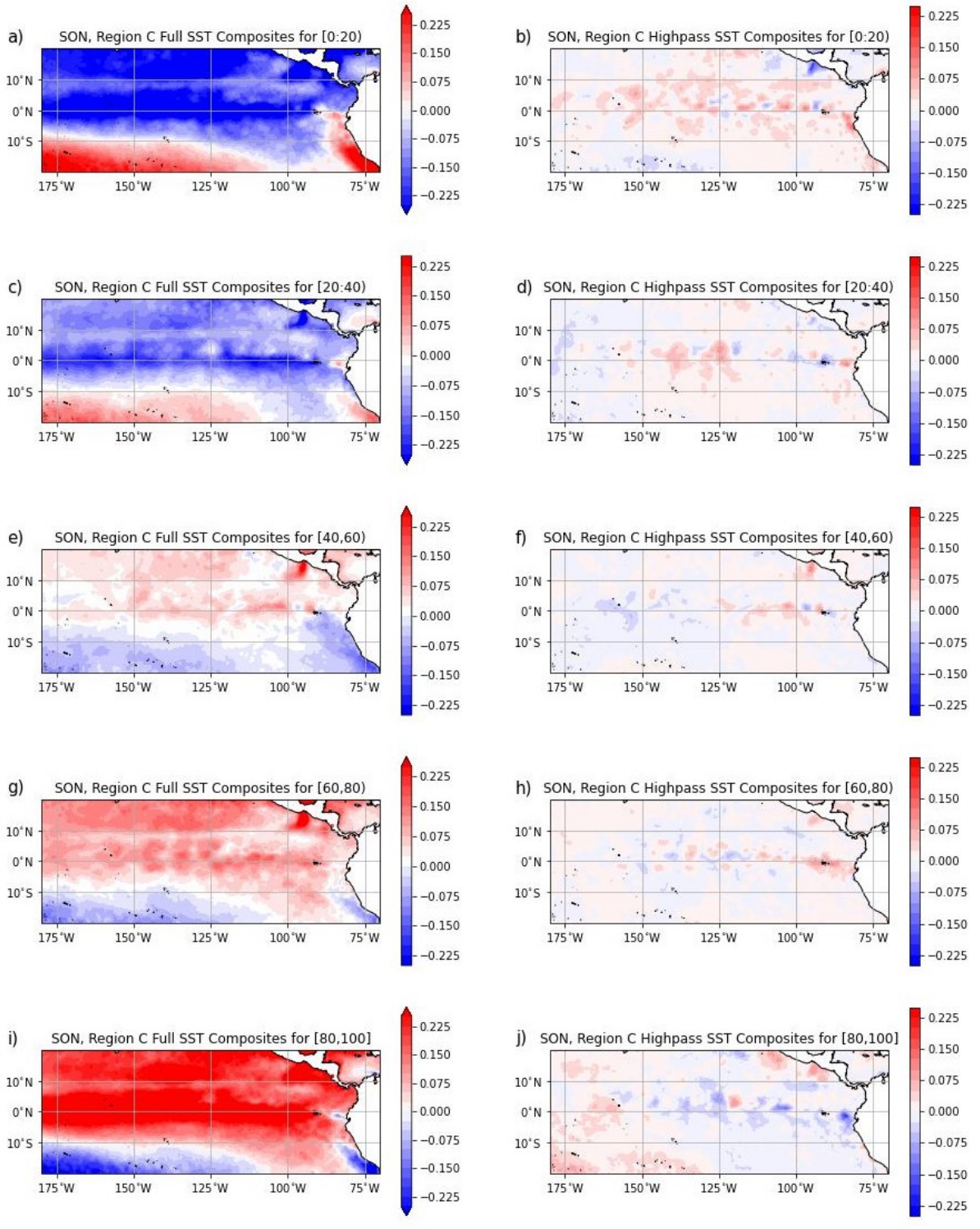

Fig. S7. : Same as Figure S4, but for the unfiltered and high-pass filtered data from SON

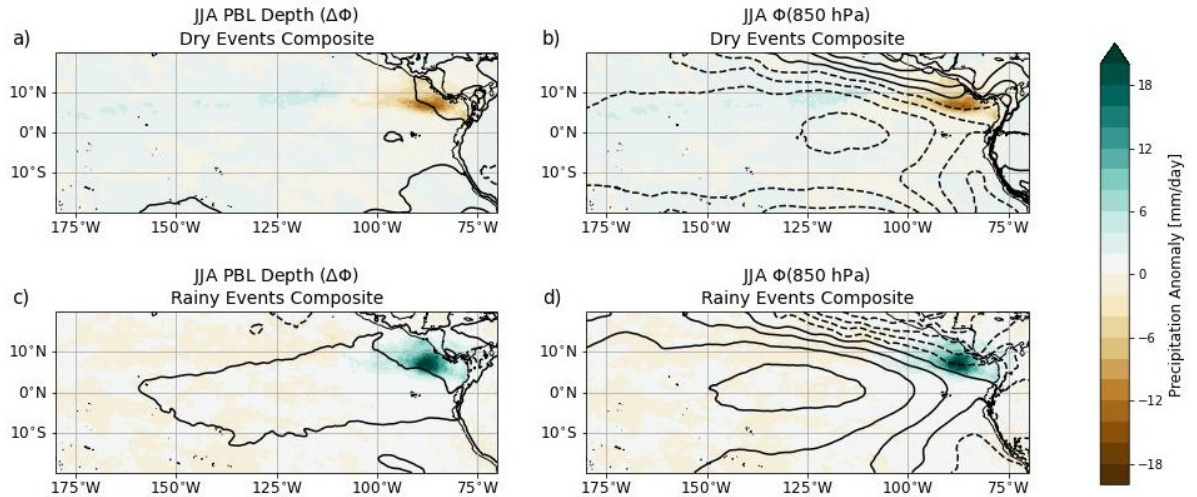

Fig. S8. The JJA daily geopotential component anomalies composited by daily precipitation quintiles over region A. Figures (a) and (c) show the PBL depth anomalies for the driest and rainiest quintiles, respectively. Figures (b) and (d) show the 850 hPa geopotential anomalies for the driest and rainiest quintiles, respectively. The contour interval for the geopotential anomalies is 10 m^2s^{-2}. The color shading indicates the composite precipitation anomalies associated with each quintile.

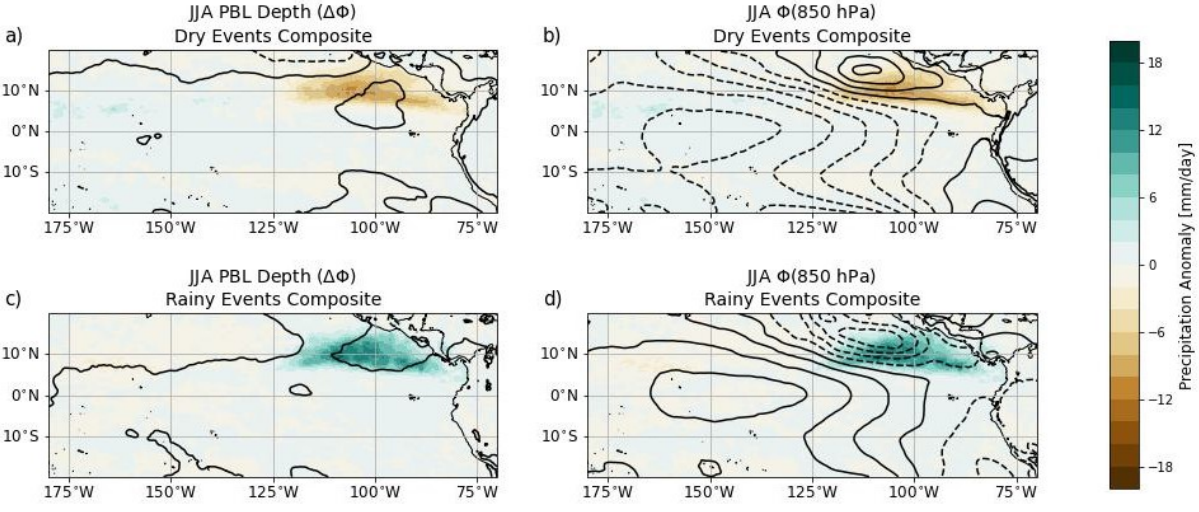

Fig. S9. As in Fig. S8, but the precipitation quintiles are now set over region B.

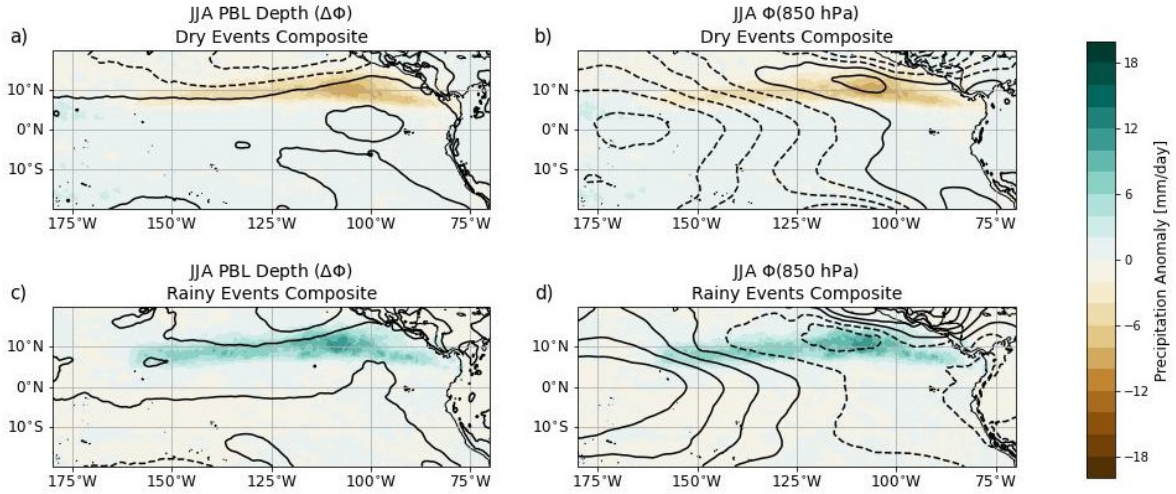

Fig. S10. As in Fig. S8, but the precipitation quintiles are now set over region C. These are the results shown in the paper.

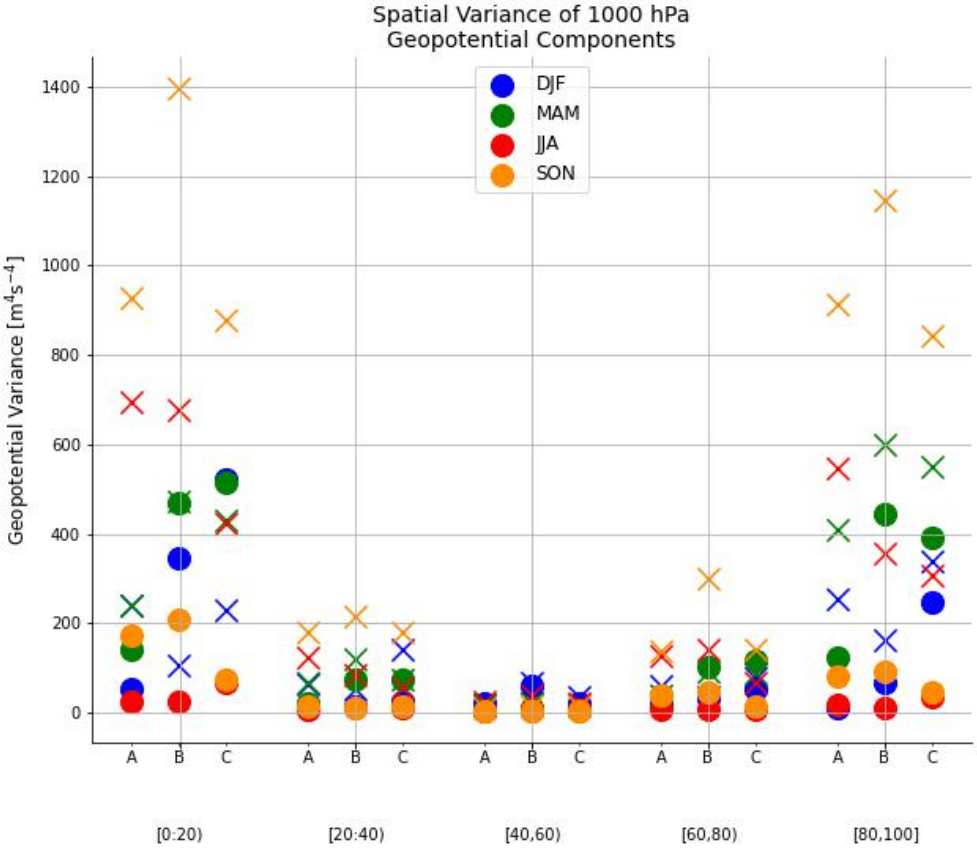

Fig. S11. Spatial variance of the geopotential components for compositing done over separate regions for the daily data. The spatial variances of the PBL depth is denoted by the circle marker and the spatial variances of the 850 hPa geopotential is denoted by the x markers.

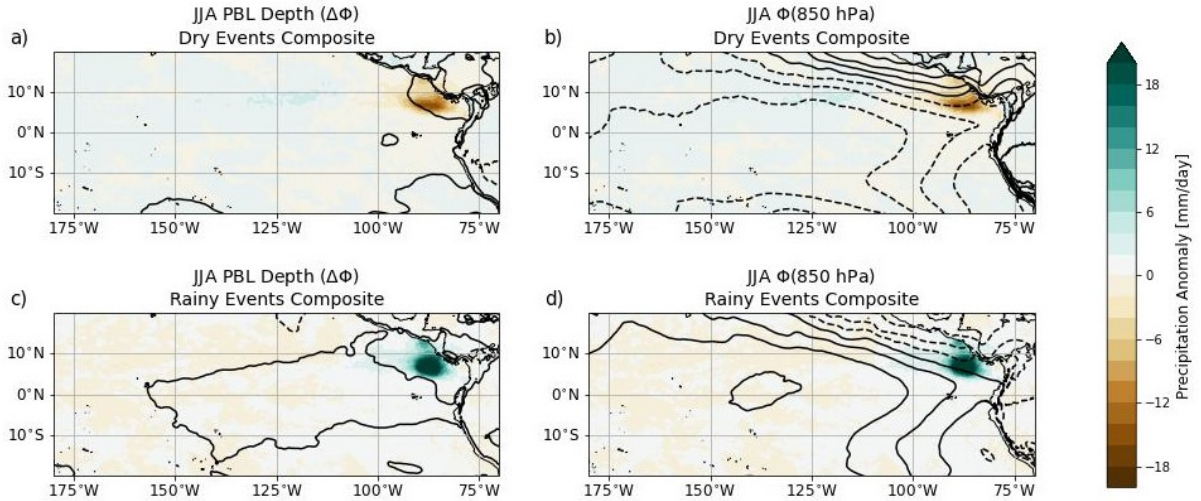

Fig. S12. The JJA 6-hourly averaged geopotential component anomalies composited by 6-hourly averaged precipitation quintiles over region A. Figures (a) and (c) show the PBL depth anomalies for the driest and rainiest quintiles, respectively. Figures (b) and (d) show the 850 hPa geopotential anomalies for the driest and rainiest quintiles, respectively. The contour interval for the geopotential anomalies is 10 m^2s^{-2}. The color shading indicates the composite precipitation anomalies associated with each quintile.

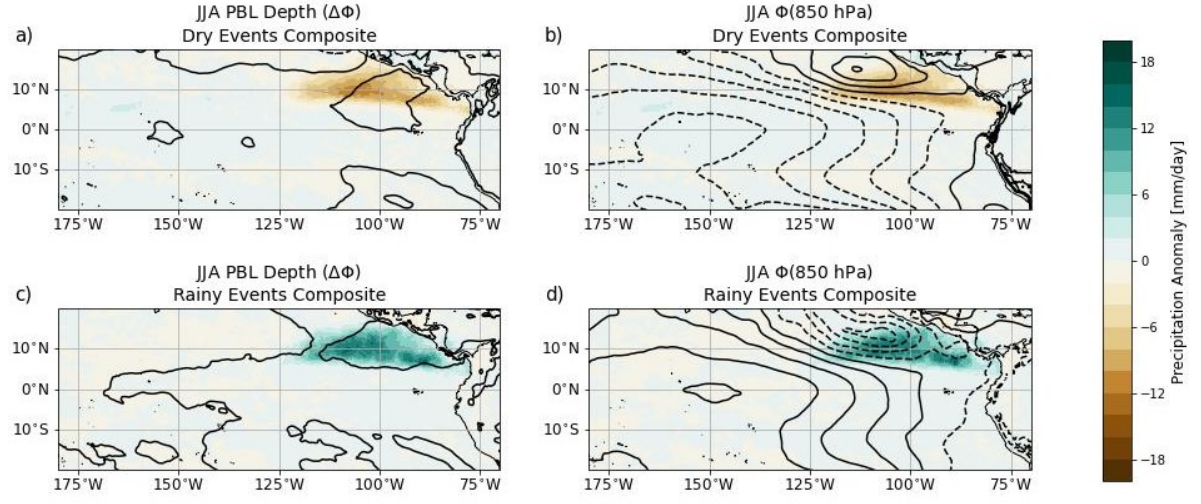

Fig. S13. As in Fig. S12, but the precipitation quintiles are now set over region B.

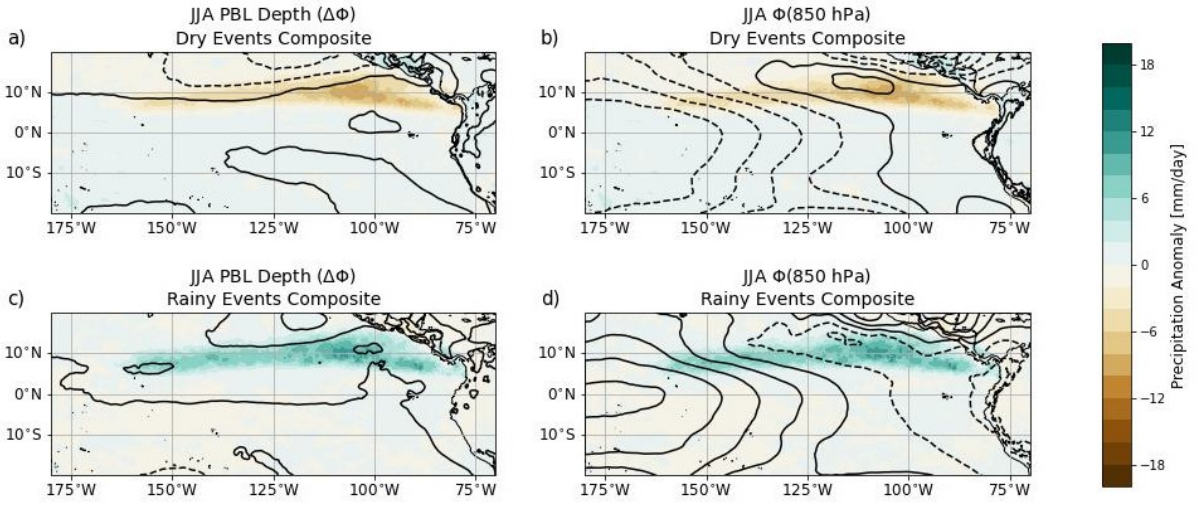

Fig. S14. As in Fig. S12, but the precipitation quintiles are now set over region C.

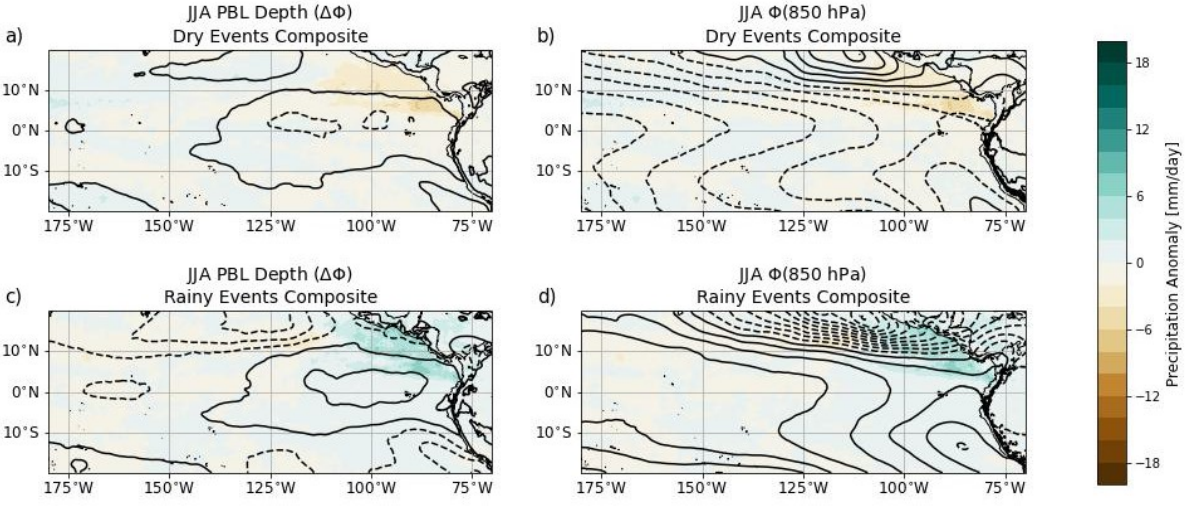

Fig. S15. The JJA 10-day averaged geopotential component anomalies composited by 10-day averaged precipitation quintiles over region A. Figures (a) and (c) show the PBL depth anomalies for the driest and rainiest quintiles, respectively. Figures (b) and (d) show the 850 hPa geopotential anomalies for the driest and rainiest quintiles, respectively. The contour interval for the geopotential anomalies is 10 $m^2 s^{-2}$. The color shading indicates the composite precipitation anomalies associated with each quintile.

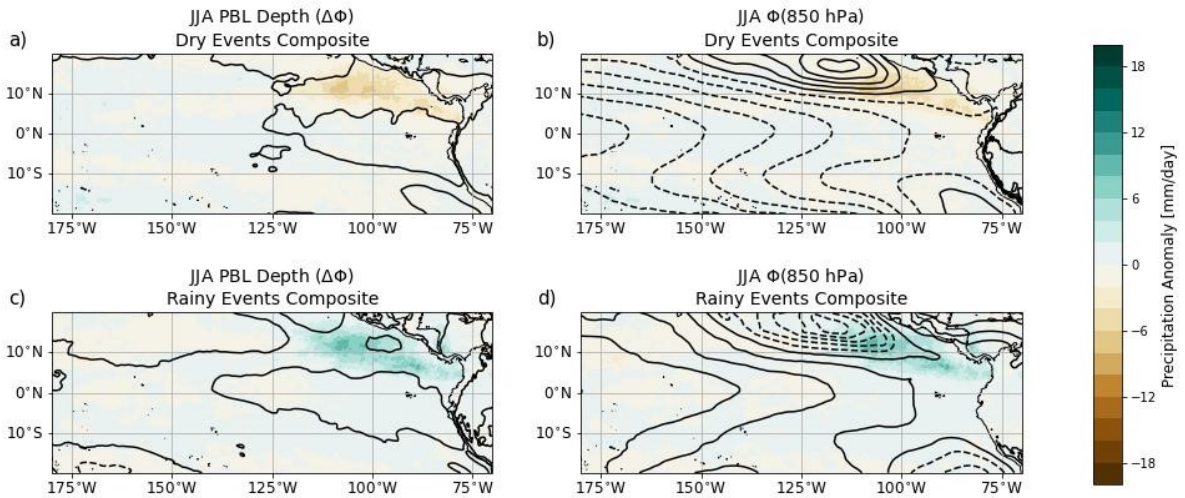

Fig. S16. As in Fig. S15, but the precipitation quintiles are now set over region B.

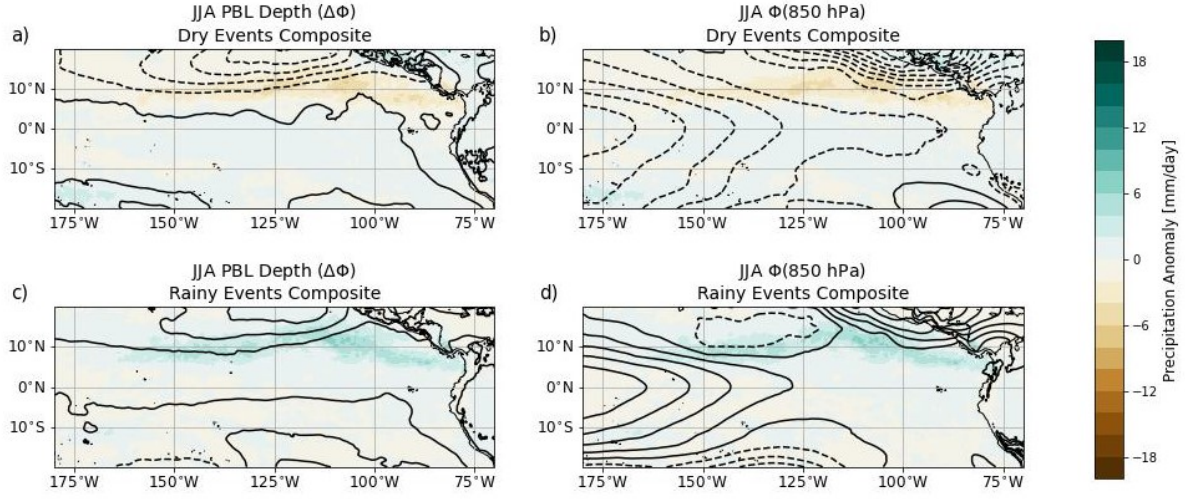

Fig. S17. As in Fig. S15, but the precipitation quintiles are now set over region C.

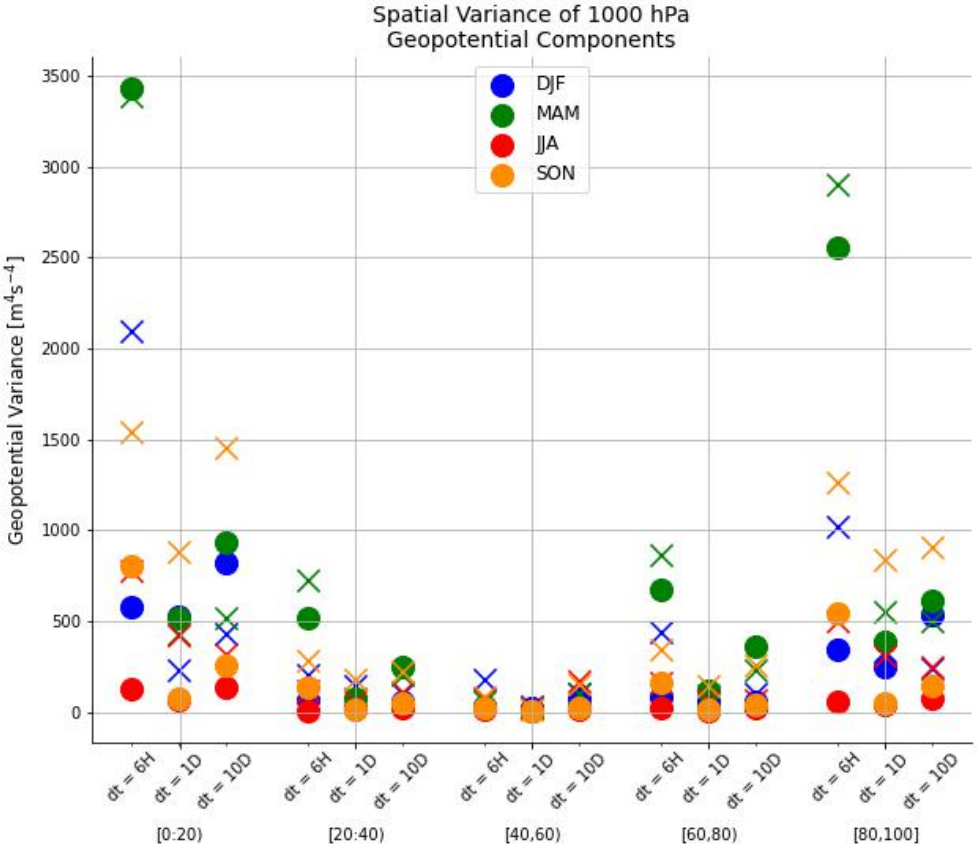

Fig. S18. Spatial variance of the seasonal geopotential components for compositing done over region C for the 6-hourly, 1-day, and 10-day averaged data. The spatial variances of the PBL depth is denoted by the circle marker and the spatial variances of the 850 hPa geopotential is denoted by the x markers.