

**Concurrent Heat and Intense UV Extremes in North America: Divergent
Dynamical Drivers and Exacerbated Ozone Pollution**

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Figure S1-S6

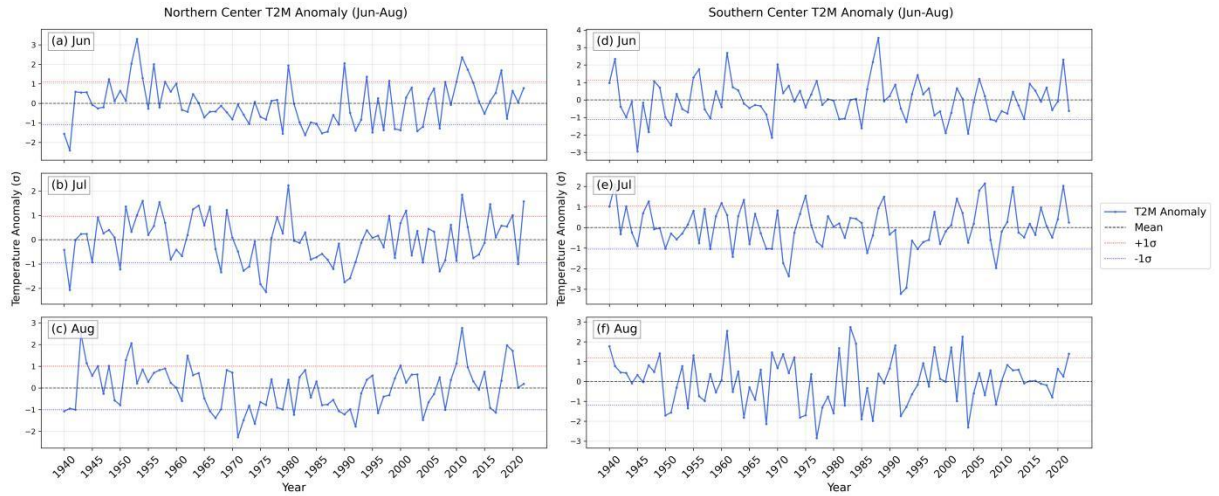


Figure S1: Time series of monthly mean 2 m air temperature during 1940–2022 in the northern center (a-c) and southern center (d-f), based on the ERA5 reanalysis dataset. The gray dashed line denotes the climatological mean, the red dashed line represents the mean plus one standard deviation, and the blue dashed line represents the mean minus one standard deviation.

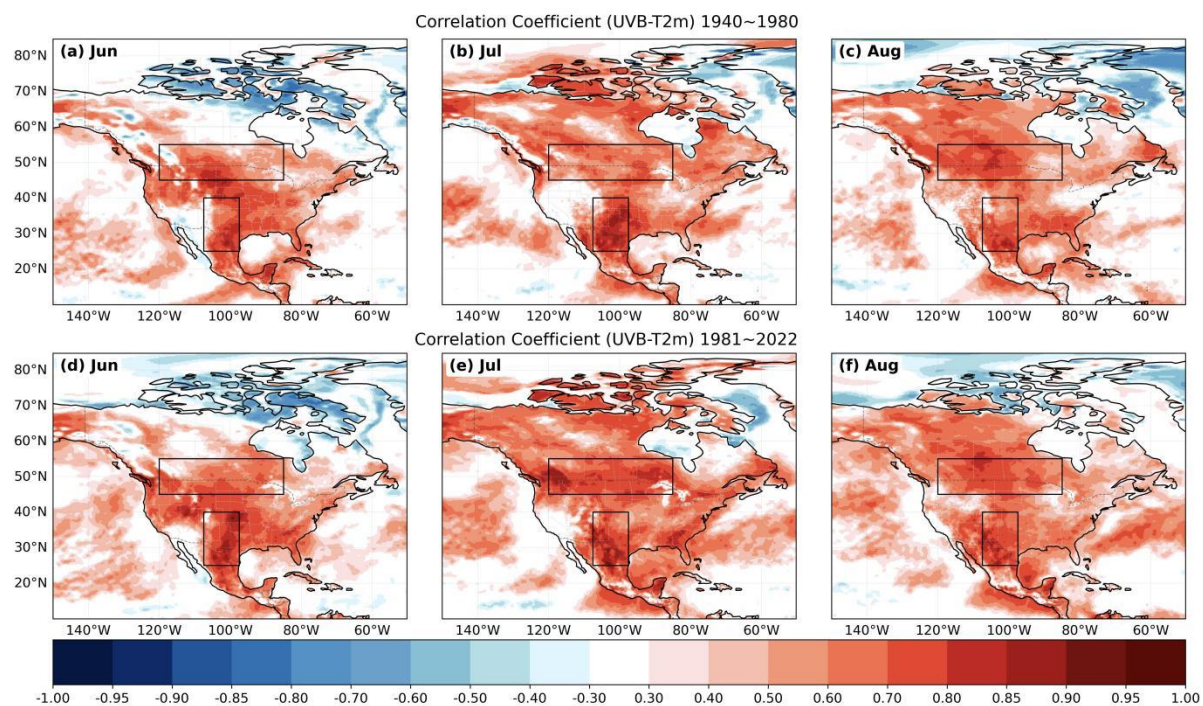


Figure S2: Spatial distributions of correlation coefficients between 2 m air temperature and surface solar ultraviolet radiation at each grid point during 1940–1980 (a-c) and 1981–2022 (d-f), based on monthly ERA5 and ERA5-Land reanalysis data. Correlation coefficients exceeding ± 0.3 correspond to approximately the 94 % confidence level for a sample size of 42 years.

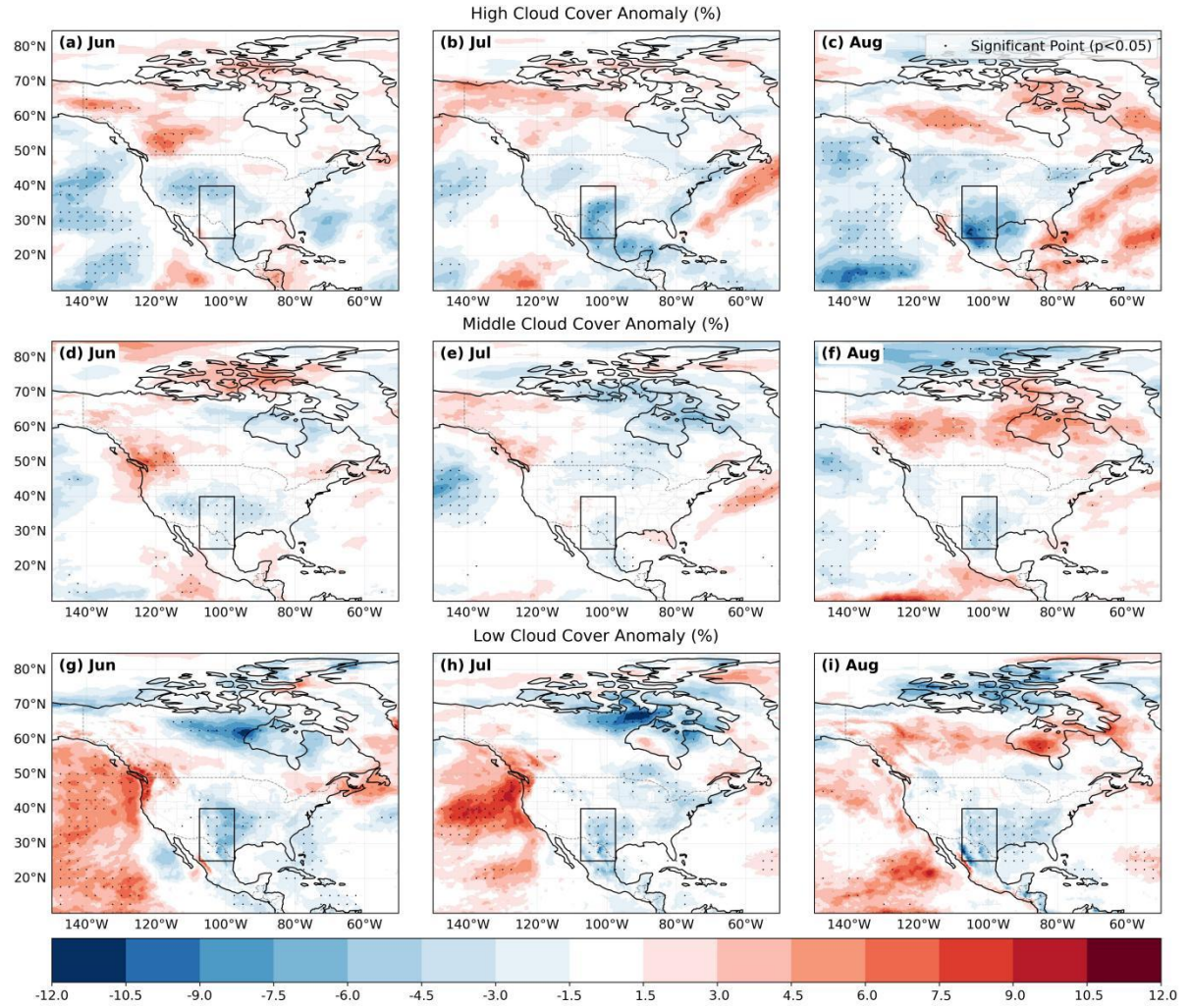


Figure S3: Spatial distributions of composite anomalies in cloud cover associated with extreme heat events during June–August in the southern center, based on ERA5 reanalysis data. Panels (a-c) show high cloud cover, (d-f) middle cloud cover, and (g-i) low cloud cover (unit: %). Dotted regions indicate that the composite anomalies are statistically significant at the 95 % confidence level.

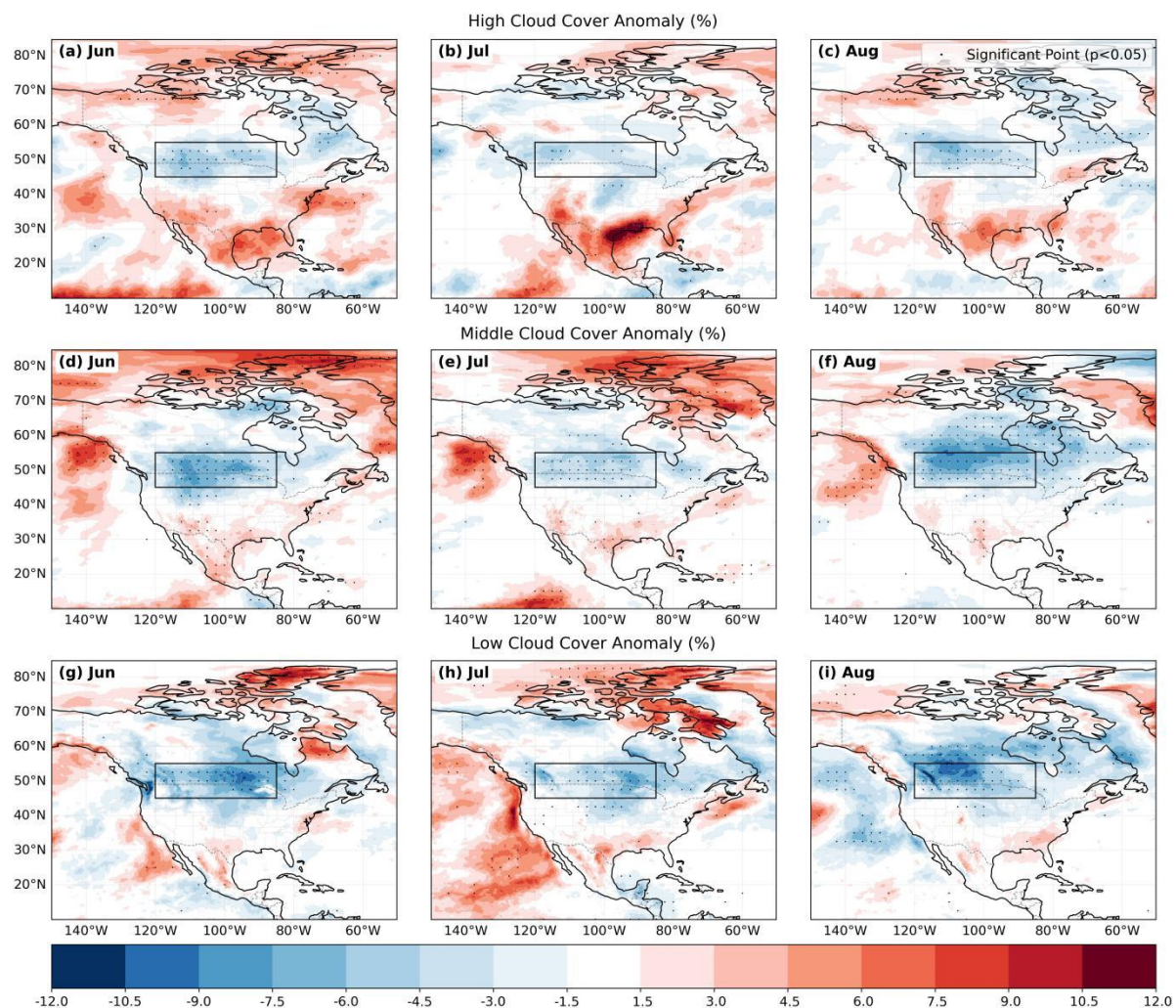


Figure S4: Spatial distributions of composite anomalies in cloud cover associated with extreme heat events during June–August in the northern center, based on ERA5 reanalysis data. Panels (a-c) show high cloud cover, (d-f) middle cloud cover, and (g-i) low cloud cover (unit: %). Dotted regions indicate that the composite anomalies are statistically significant at the 95 % confidence level.

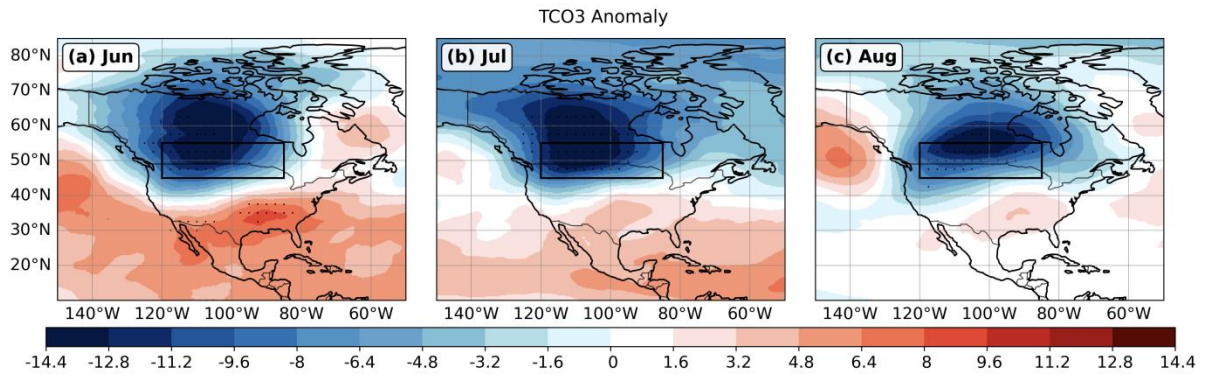


Figure S5: Spatial distributions of composite anomalies in total column ozone associated with extreme heat events during June–August in the northern center, based on ERA5 reanalysis data (unit: DU). Dotted regions indicate that the composite anomalies are statistically significant at the 95 % confidence level.

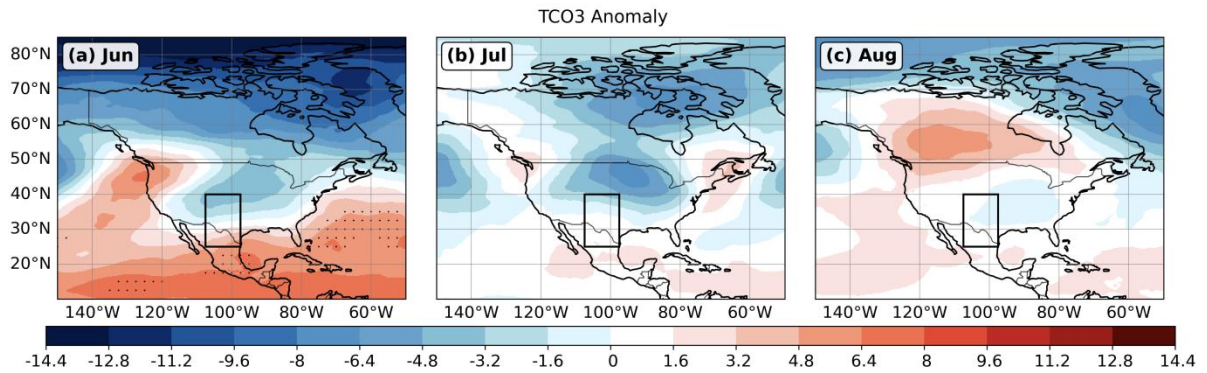


Figure S6: Spatial distributions of composite anomalies in total column ozone associated with extreme heat events during June–August in the southern center, based on ERA5 reanalysis data (unit: DU). Dotted regions indicate that the composite anomalies are statistically significant at the 95 % confidence level.