

Mogi, A., and M. Watanabe, 2022: Qualifying contributions of teleconnection patterns to extremely hot summers in Japan. *J. Meteor. Soc. Japan*, **100**, 509-522.

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**Plain Language Summary:** Severe high-temperature anomalies in Japan are often accompanied by three teleconnection patterns. This study examined the effects of the three major teleconnection patterns on the temperature anomalies in July and August with a statistical model. The model shows that they together accounted for half of the total variance of the temperature anomaly for extremely hot summers, to which each of the three teleconnection patterns have a similar degree of contribution.

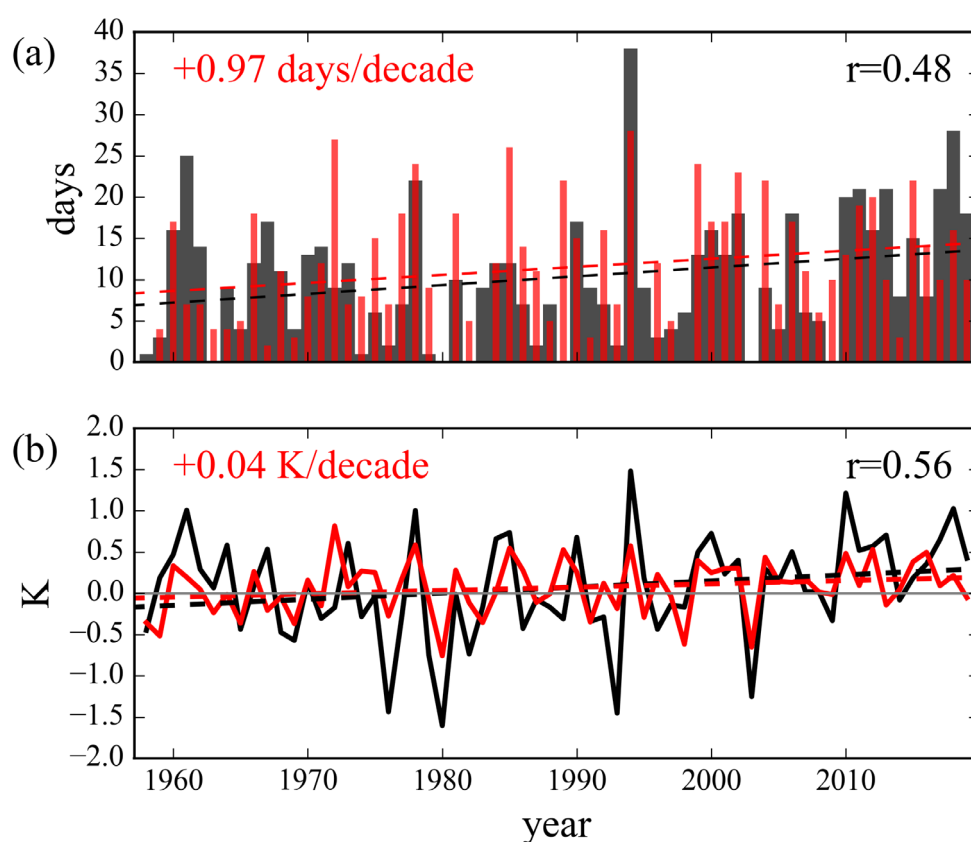


Figure 1. Time series of (a) the number of days when the daily temperature anomaly exceeds one standard deviation and (b) July-August (JA) mean temperature anomaly, both obtained from the statistical model (red line and bars) imposed on the observed time series (black line and bars). Dashed lines denote their trends, which are all statistically significant at the 95% level.

- The contribution of teleconnection patterns to temperature anomalies is quantified.
- On the daily time scale, the three patterns contribute equally; on the interannual variability, the Pacific-Japan pattern with the longest time scale contributes the most.
- An increasing trend in the circumglobal teleconnection pattern index is suggested to be a factor to explain the long-term increase in the heat wave frequency in Japan.