

Diagnosing seasonal changes in temperature distributions in large climate model ensembles using quantile regression

Objective

Characterize changes in modeled temperature distributions using quantile regression

Approach

We analyze seasonal changes in daily temperature using an ensemble of 50 simulations of the Community Earth System Model (CESM) under a scenario of increasing radiative forcing to 2100, focusing on North America.

Our approach leverages the large number of simulations to create a continuous representation of seasonality rather than breaking the dataset into seasonal blocks.

Impact

Results can be useful for model intercomparisons and/or applications vulnerable to extreme temperature.

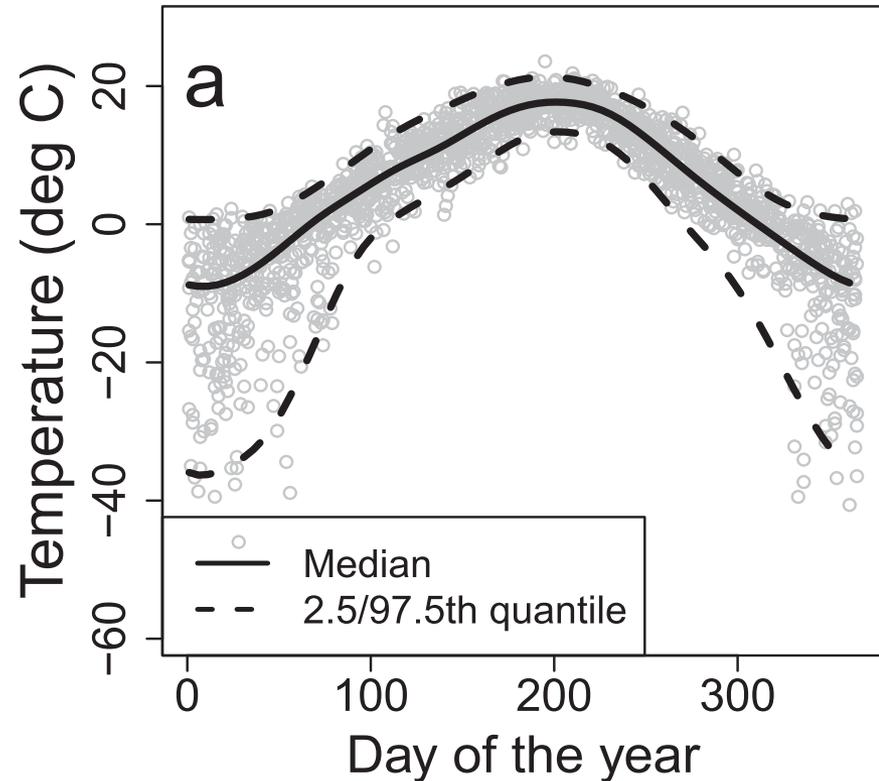


Figure: Quantile estimations of the seasonal cycle of daily temperature using CESM for a location in the upper Midwestern US.

Haugen, M. A., Stein, M. L., Moyer, E. J., and Srivier, R. L. (2018), Estimating changes in temperature distributions in a large ensemble of climate simulations using quantile regression, *Journal of Climate*, 31, 8573-8588, doi:10.1175/JCLI-D-17-0782.1.



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