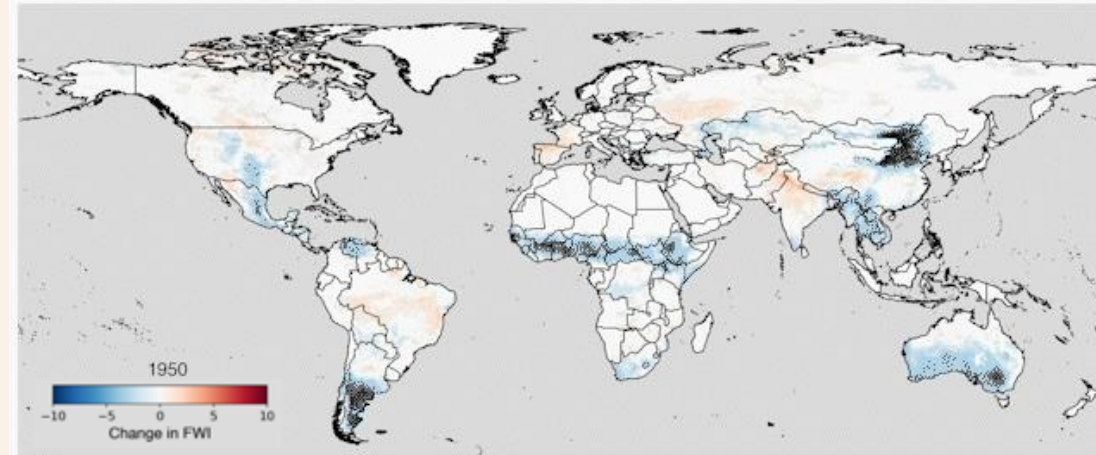


What does global land climate look like at 2 degrees warming?

Background: Robust understanding of the spatial patterns of climatic change as the world approaches 2°C warming is a priority for policy makers preparing actionable adaptation and mitigation plans. The recently released [NASA Earth eXchange Global Daily Downscaled Projections](#) (NEX-GDDP) data is a unique tool for assessing these changes with unbiased projections at 16-64 times finer spatial scale than the ones originally available. Our work uses the NEX-GDDP data to answer a simple but important question, “What does global land climate look like at 2°C warming?”

Main findings: NEX researchers at ARC analyzed the downscaled projections to take a broad look at the changes projected when warming passes 2°C. Analysis shows significant changes in six key climate variables (mean air temperature, precipitation, relative humidity, downwelling shortwave and longwave radiation, and wind speed) but with geographically varying magnitude and direction of changes. These changes collectively result in increasing risks of heat stress and fire weather which already manifest as life-threatening impacts resulting from climate change.

Impact: Many of the projected changes are expected to exacerbate climate impacts, and this fine-scale spatial analysis reveals that certain regions (e.g., countries in lower latitudes) will experience significant climate impacts even if pledges to limit warming to less than 2°C are fulfilled. This study provides a comprehensive assessment of projected climate changes under 2°C warming and highlights the urgent need for further studies focused on identifying key hotspots and advancing region-specific actionable adaptation and mitigation plans.



Animation: Spatial pattern of changes in global fire weather index with respect to the baseline period (1950-1979). This animation is based on the ensemble median of fire weather index simulated from downscaled 33 global climate models (SSP2-4.5 scenario) participated in the Coupled Model Intercomparison Project Phase 6 ([CMIP6](#)).

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