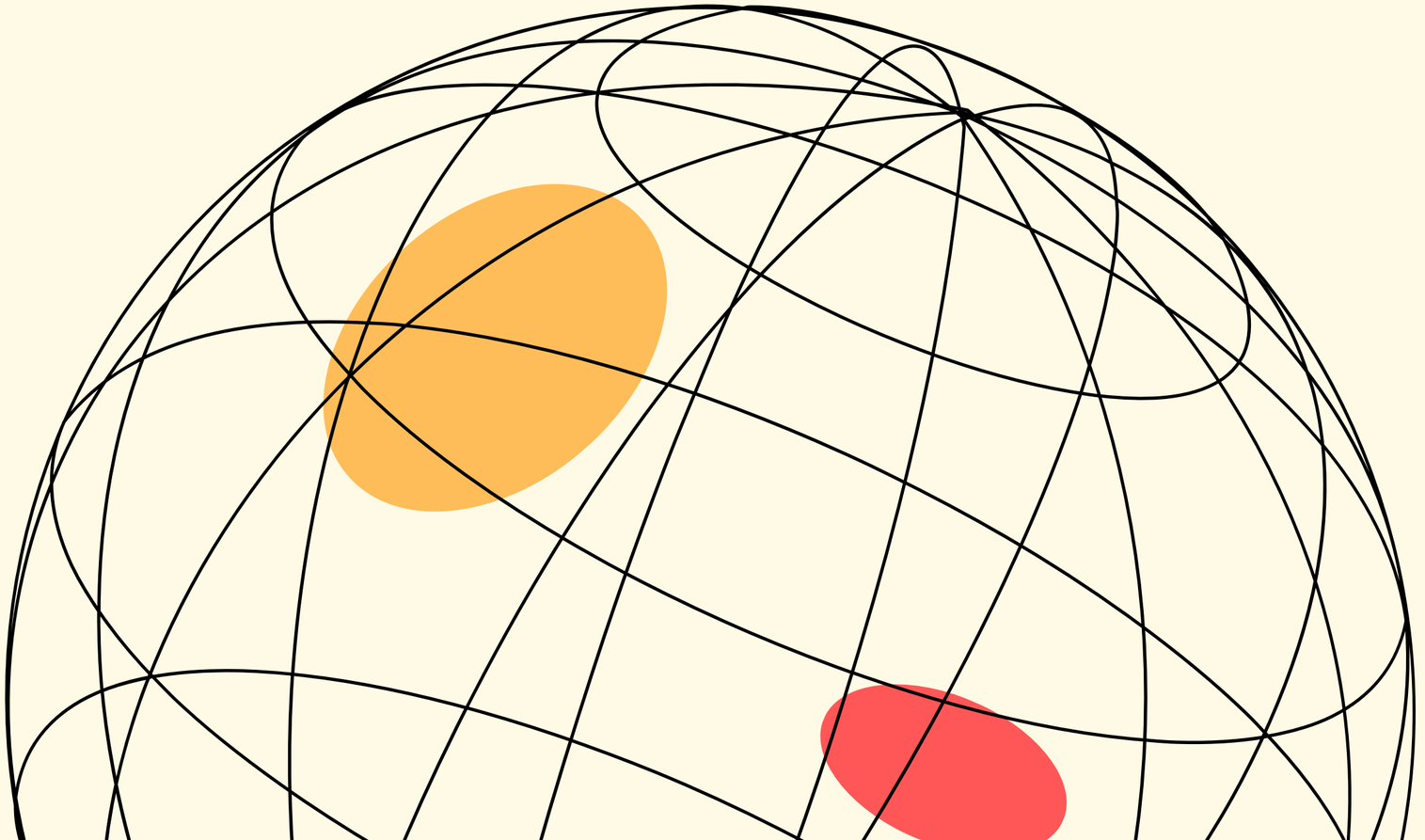
How Climate Change Feels Around the Globe

Spiced Academy

14 August 2023

Radek Kříček



Motivation

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How much is it related to the global temperature anomaly?

Is there a clear link between wealth and heat exposure of populations?

Datasets

872,695 data points
(Extreme temperature)

Based on Maes, M., et al. (2022), "Monitoring exposure to climate-related hazards: Indicator methodology and key results", OECD Environment Working Papers, No. 201, OECD Publishing, Paris.

374,792 data points
(Historical population)

There are three sources for the data: national statistics offices, Eurostat and the United Nations.

Datasets

872,695 data points
(Extreme temperature)

374,792 data points
(Historical population)

Monthly data 1880 - 2023
(Temperature anomaly)

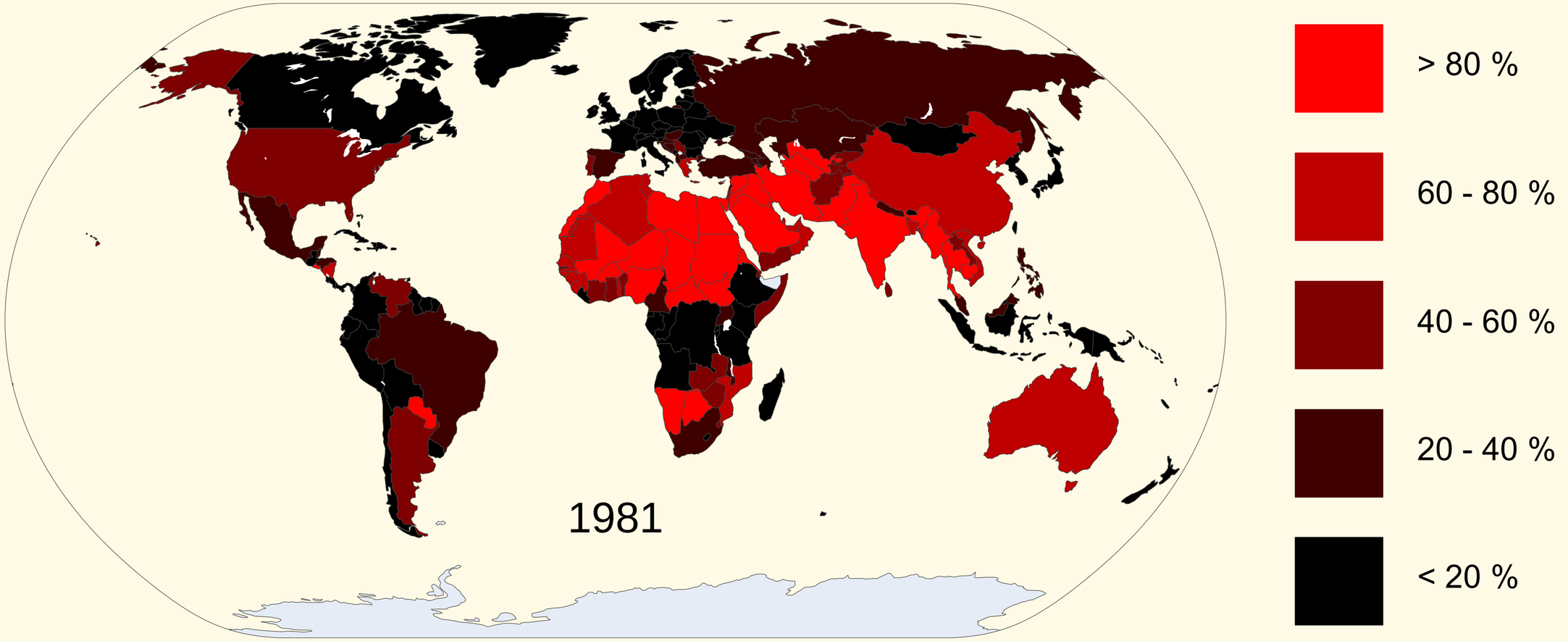
Tables of Global and Hemispheric Monthly Means and Zonal Annual Means,
Combined Land-Surface Air and Sea-Surface Water Temperature Anomalies (Land-Ocean Temperature Index, L-OTI).

1060 data points
(GDP per capita)

The National Accounts Section of the United Nations Statistics Division.

Exposure of populations to heat

Daily maximum temperature > 35 °C & minimum temperature > 20 °C, in %
Rolling average over 5 years



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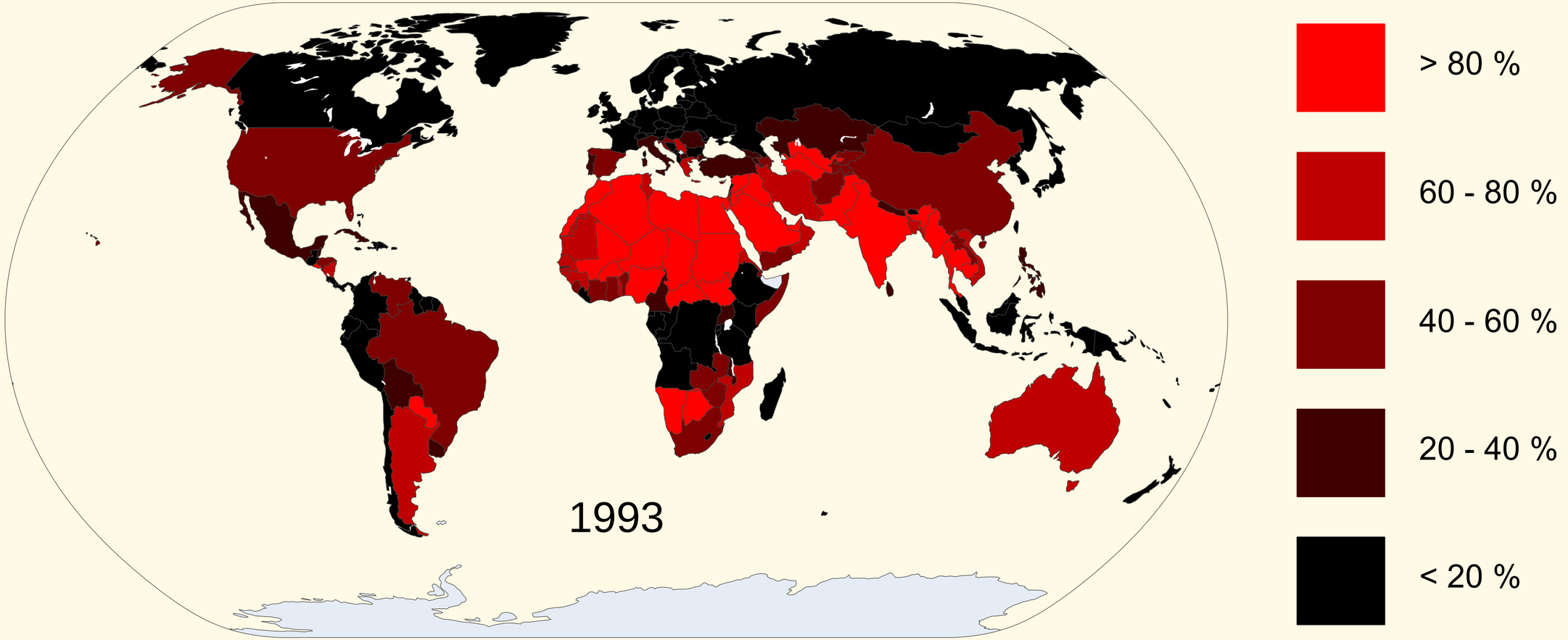

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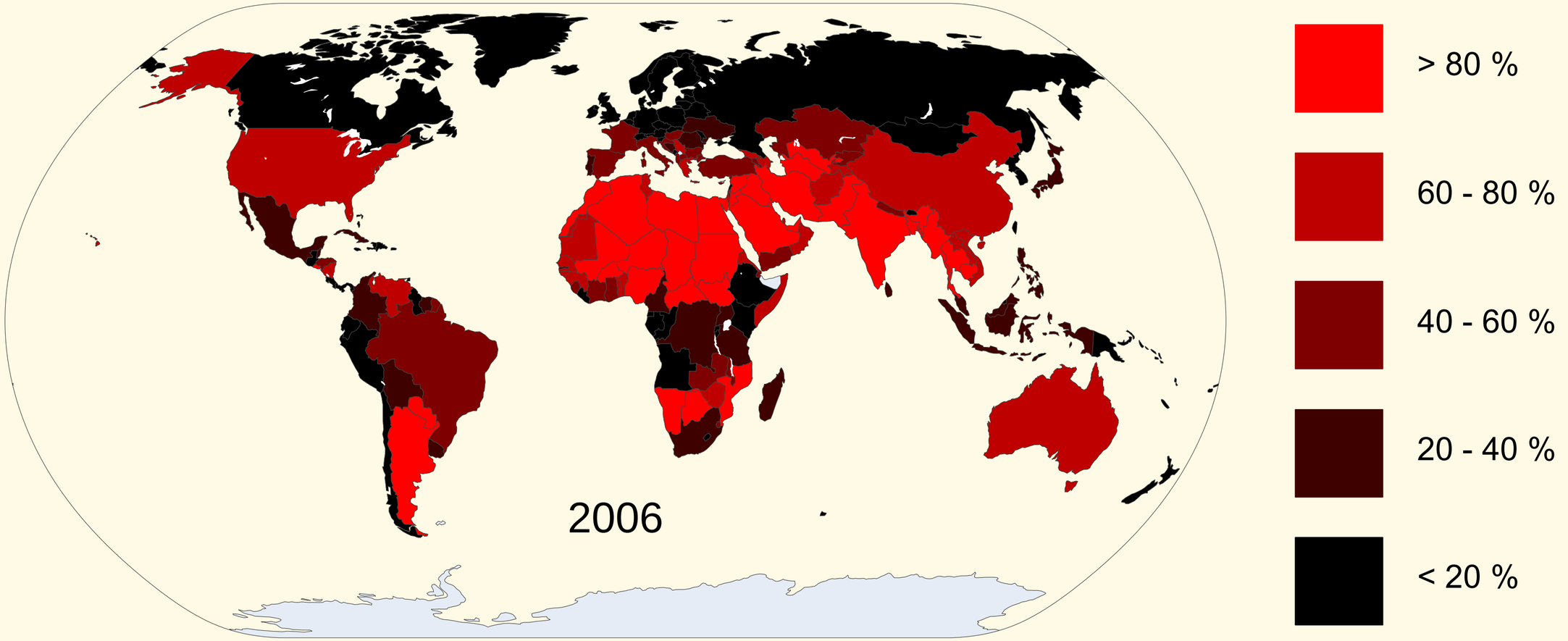

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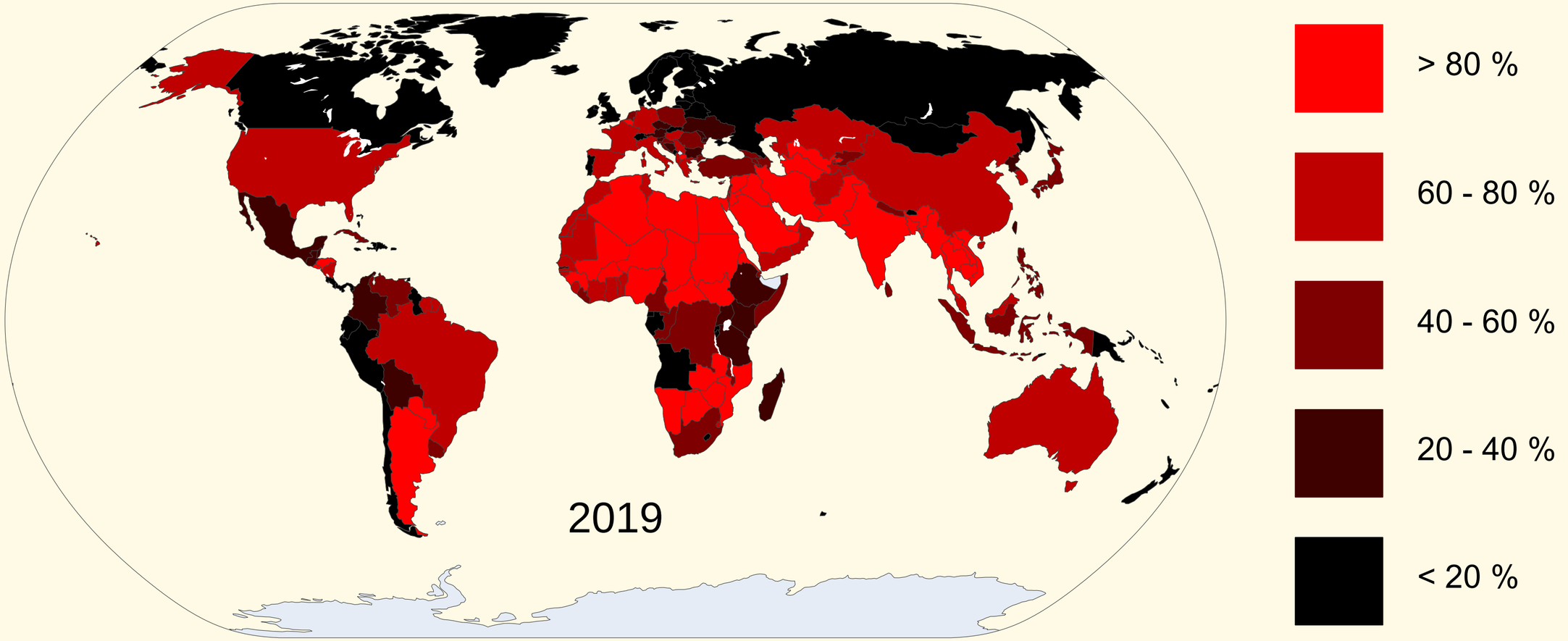
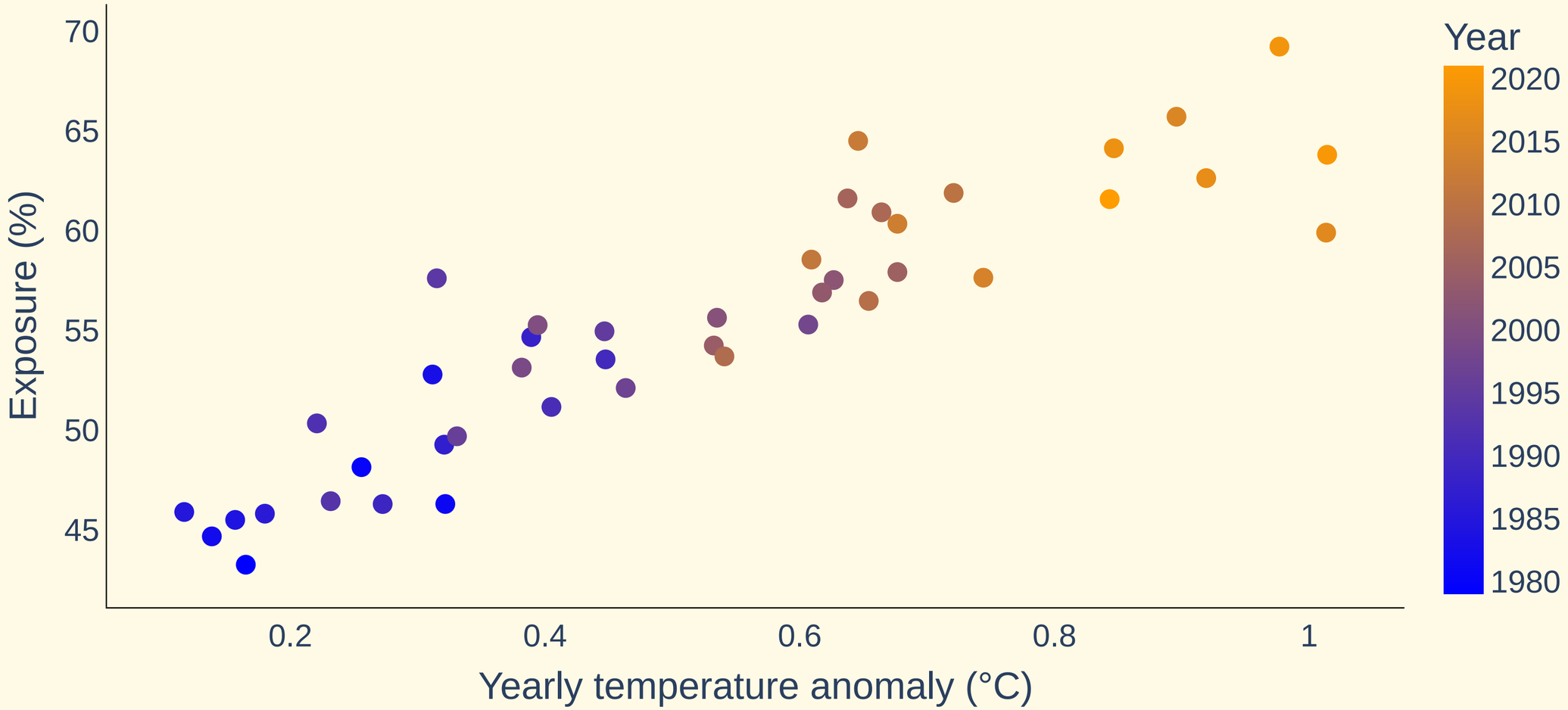


Exposure vs temperature anomaly

Daily maximum temperature > 35 °C & minimum temperature > 20 °C
Deviations from 1951-1980 mean temperature



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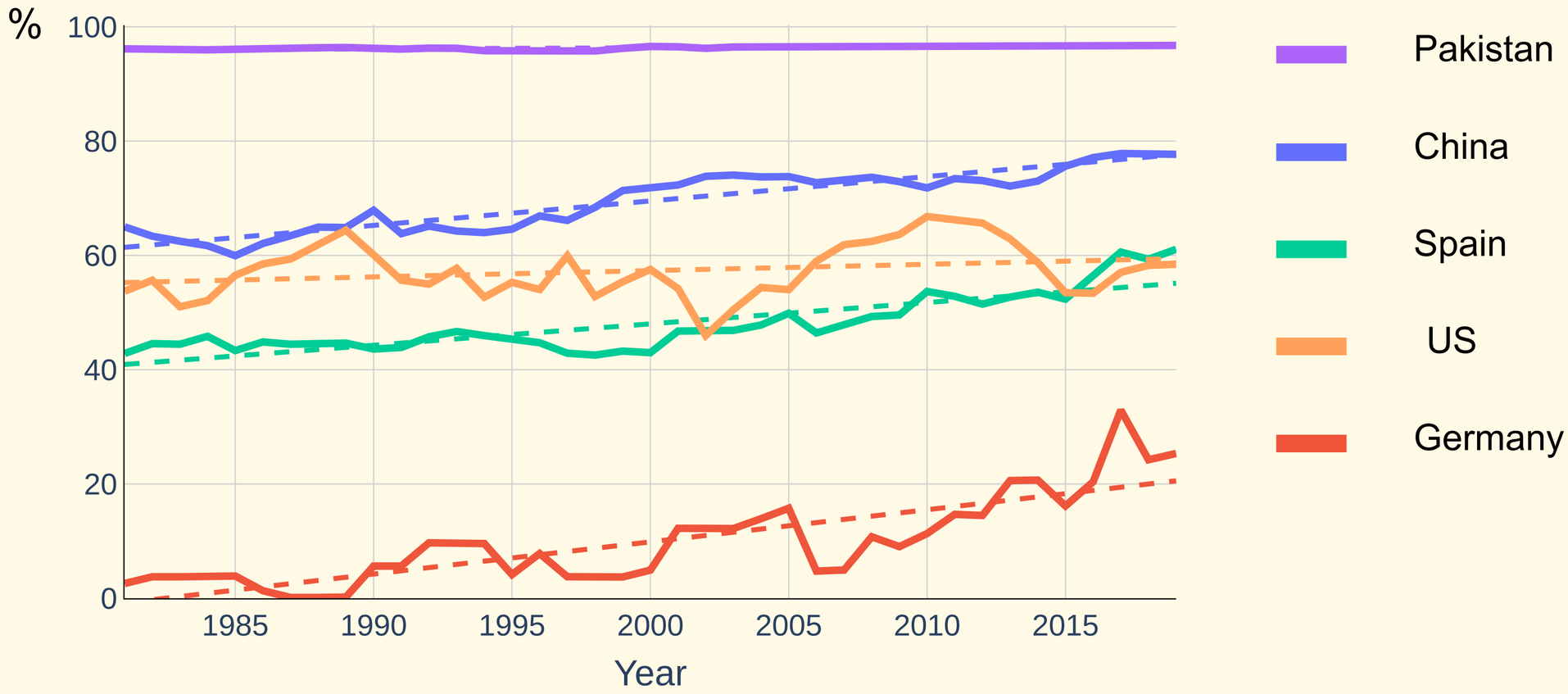

Pakistan: different durations

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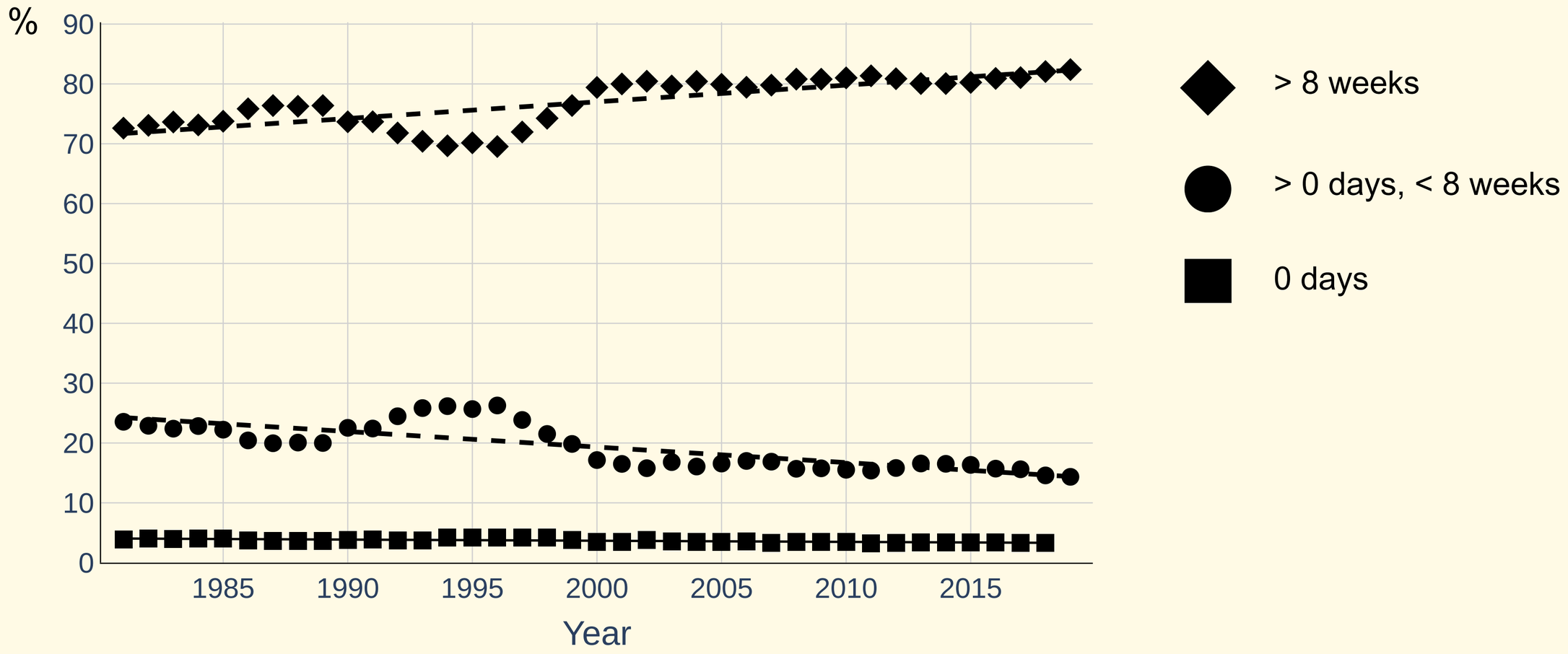

Correlation exposure vs time

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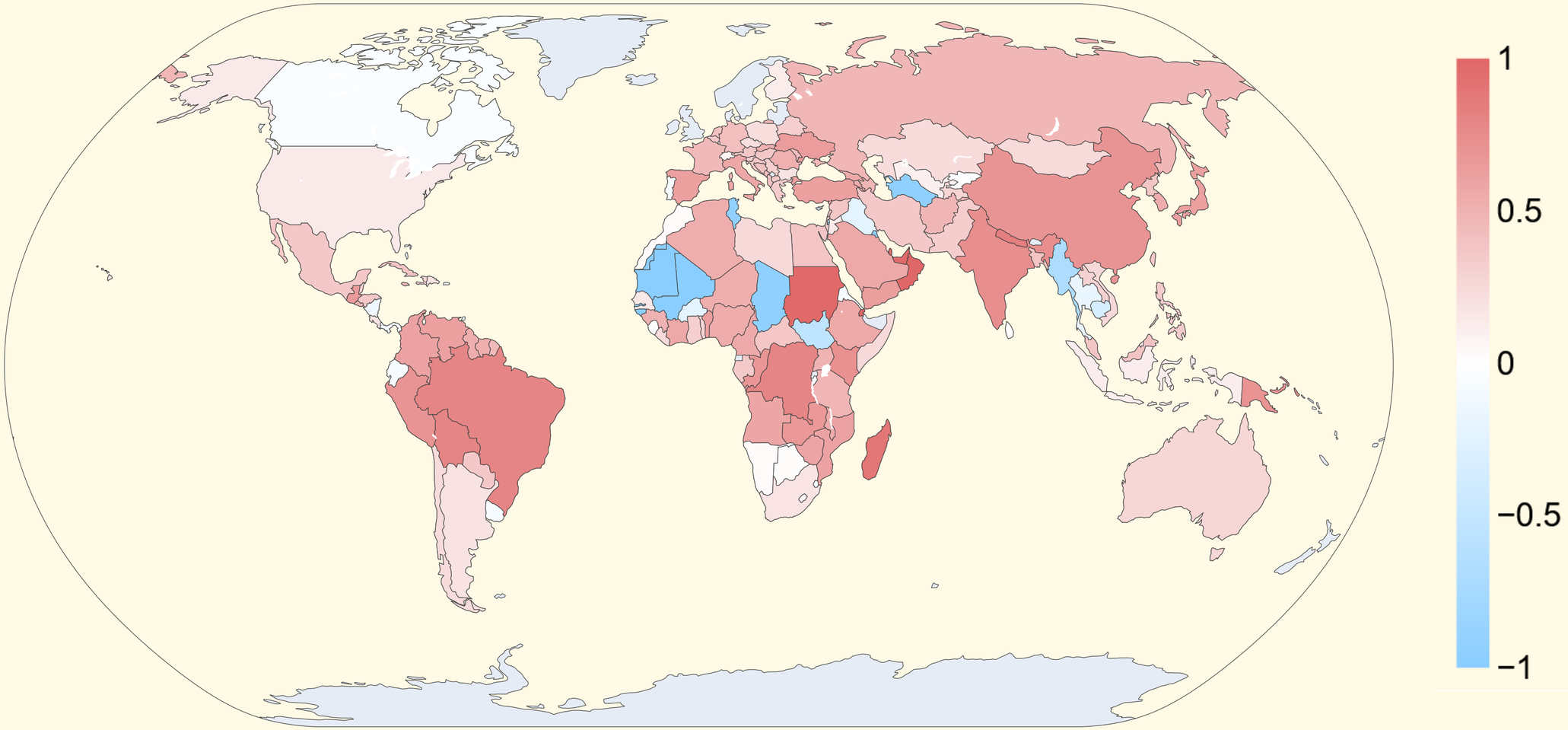
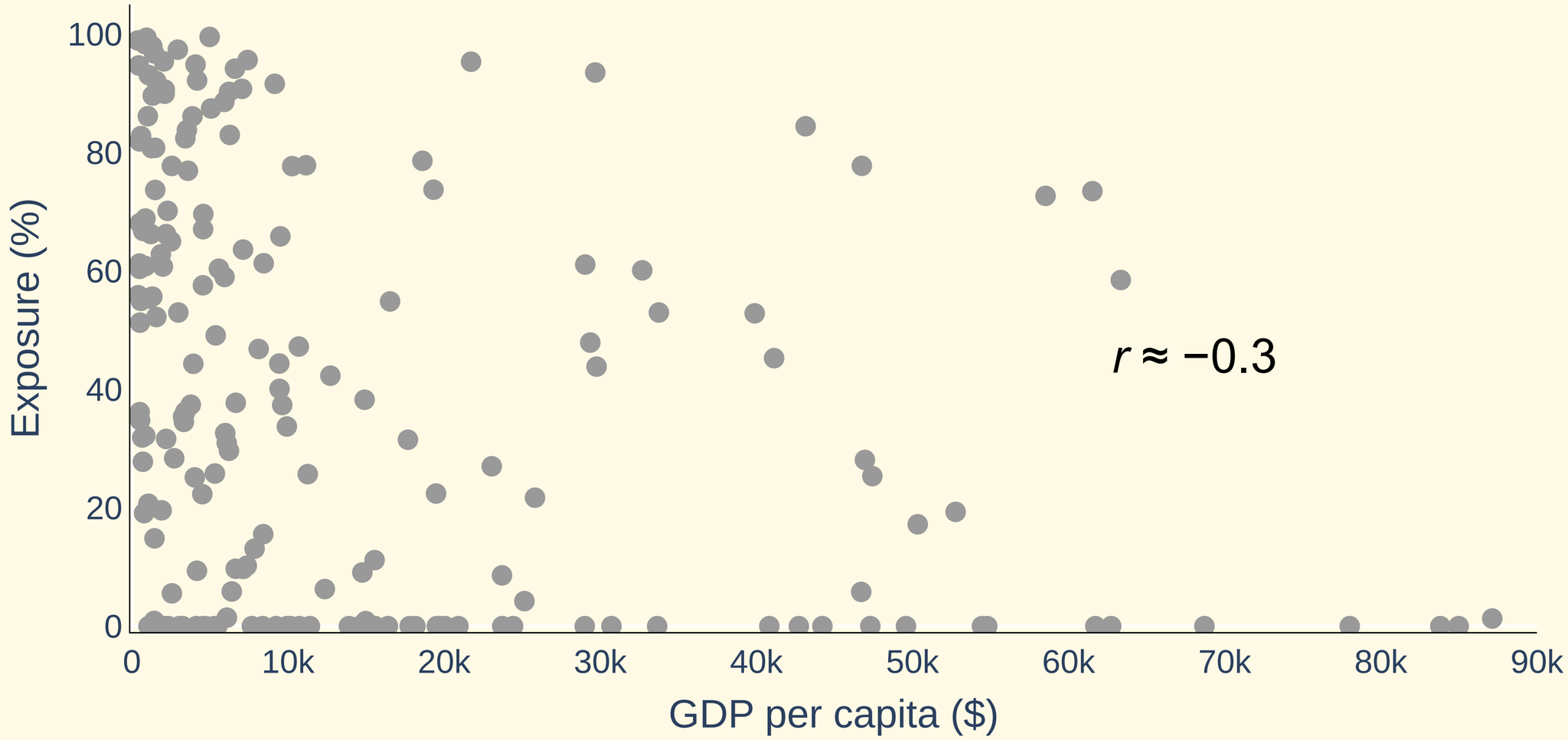


What countries have in common

Exposure to heat + GDP per capita, average values from 2017 to 2021



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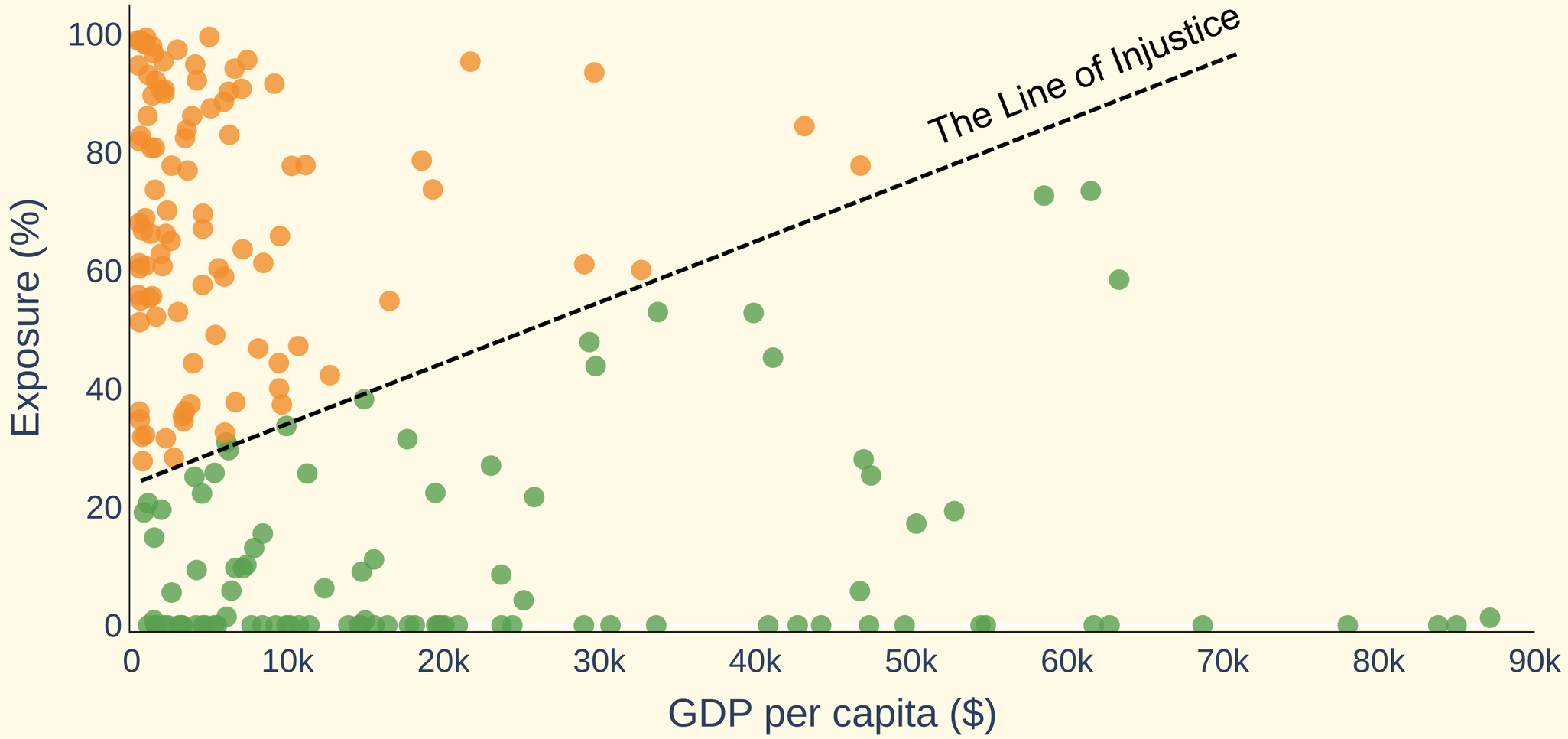

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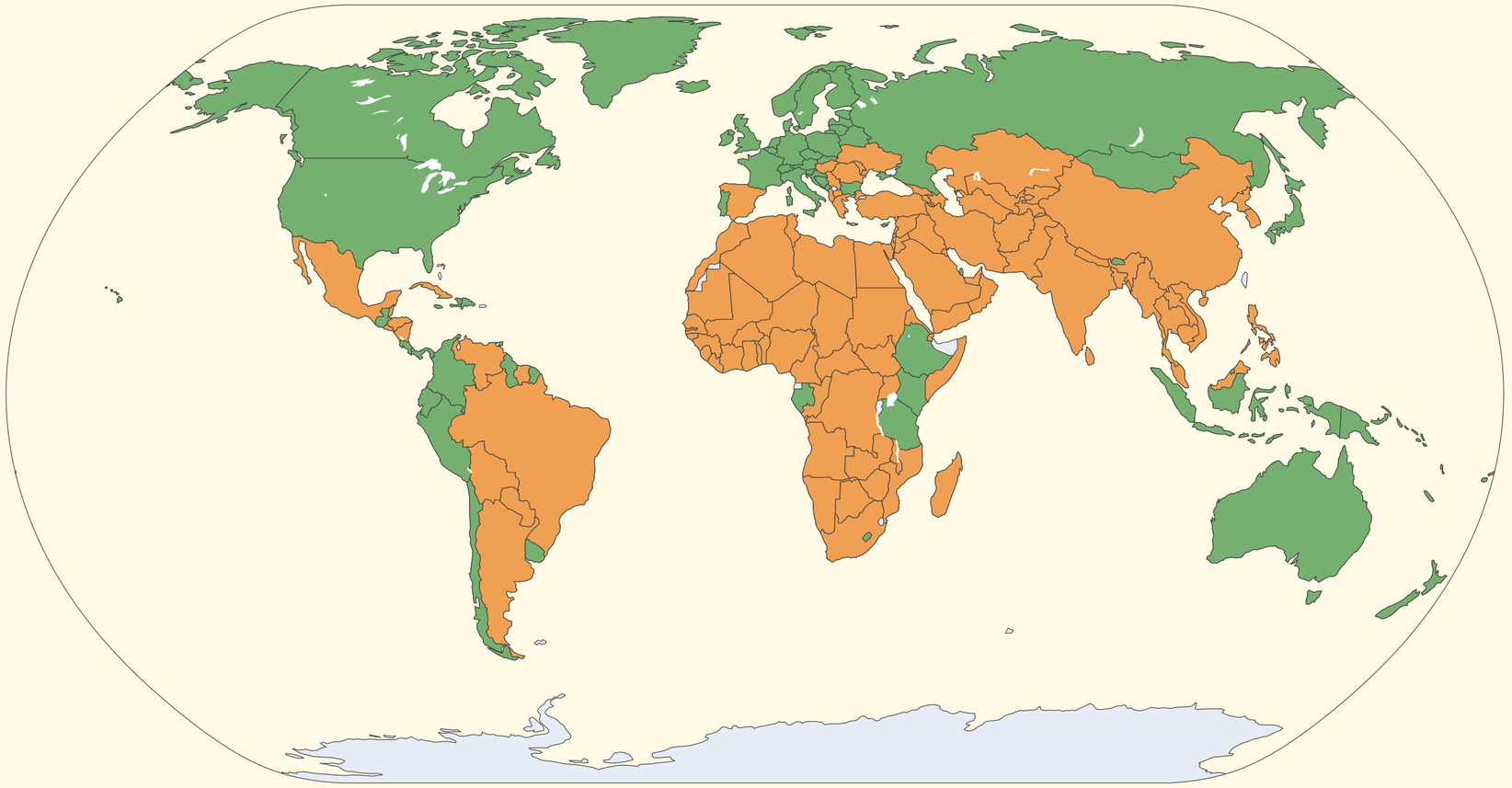
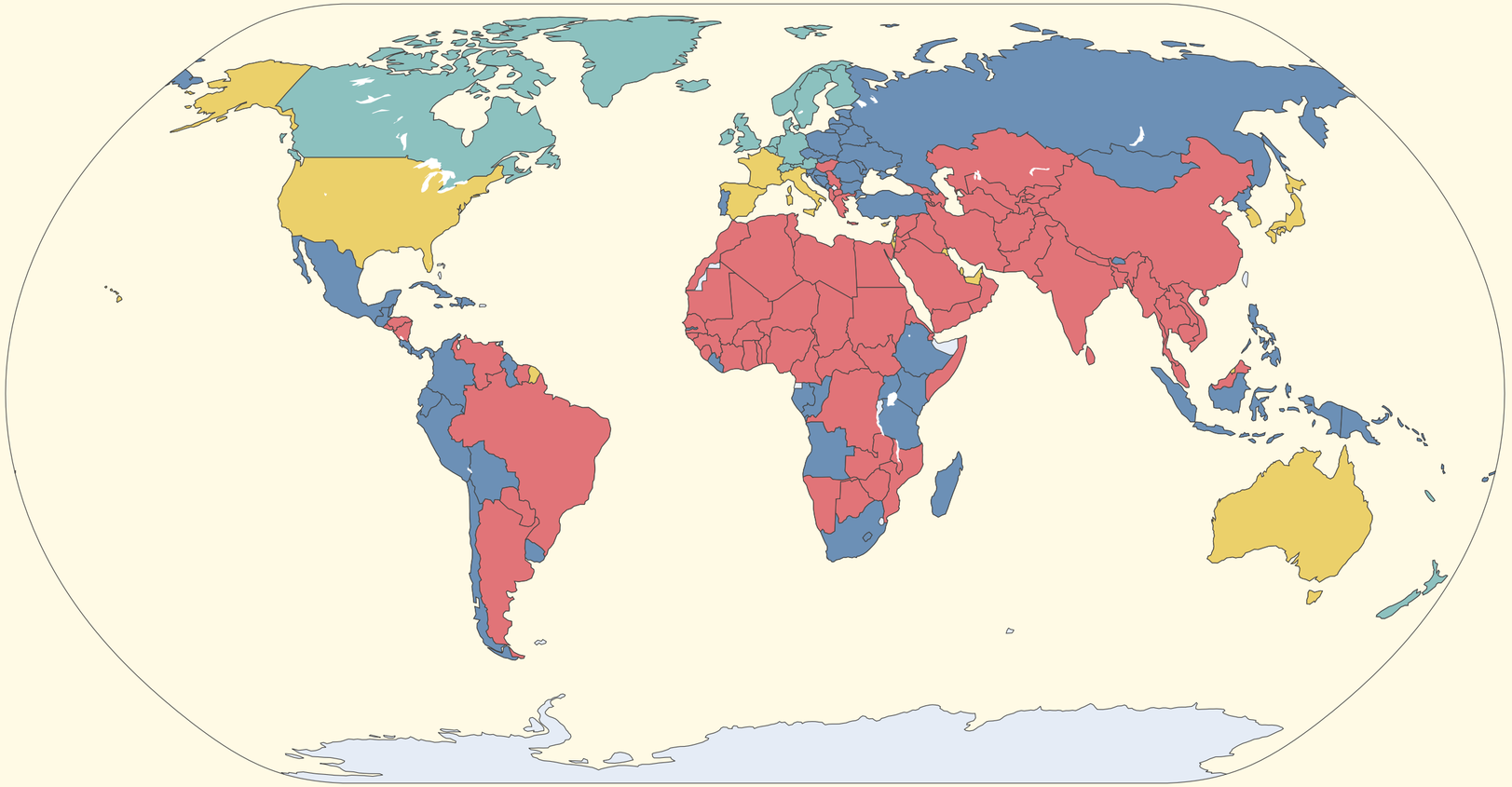


Privileged

Disadvantaged

4 clusters

Exposure to heat + GDP per capita



cold and rich

cold and poor

hot and rich

hot and poor

Summary

Exposure to extreme heat increases worldwide and within countries.

Warming of ~ 1 °C increased the exposure from 45 to 65 % worldwide.

There is large amount of countries with both high exposure and low income.