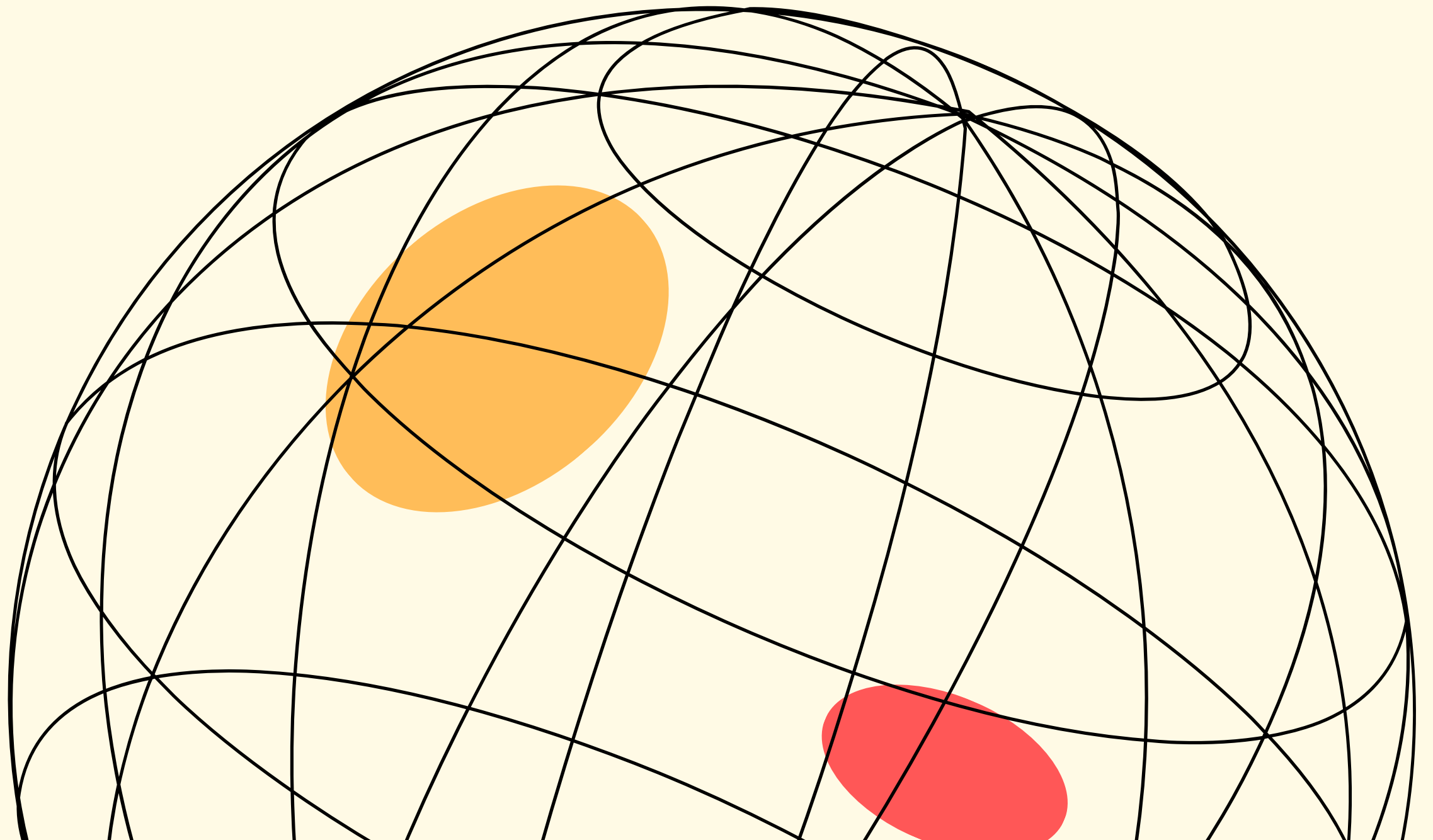


How Climate Change Feels Around the Globe

Spiced Academy

14 August 2023

Radek Kříček



Motivation

"Climate crisis is worsening and developing countries are particularly affected."

Motivation

"Climate crisis is worsening and developing countries are particularly affected."

What percentage of people has direct experience with extreme heat?

Motivation

"Climate crisis is worsening and developing countries are particularly affected."

What percentage of people has direct experience with extreme heat?

Does this number change over time?

Motivation

"Climate crisis is worsening and developing countries are particularly affected."

What percentage of people has direct experience with extreme heat?

Does this number change over time?

How much is it related to the global temperature anomaly?

Motivation

"Climate crisis is worsening and developing countries are particularly affected."

What percentage of people has direct experience with extreme heat?

Does this number change over time?

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)

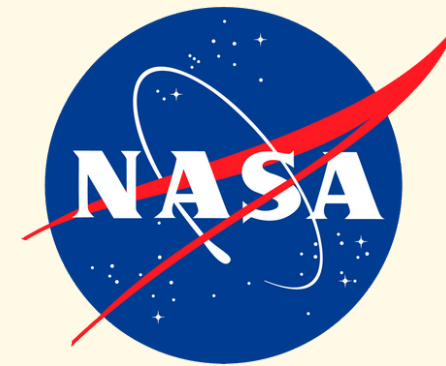
There are three sources for the data: national statistics offices, Eurostat and the United Nations.

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).



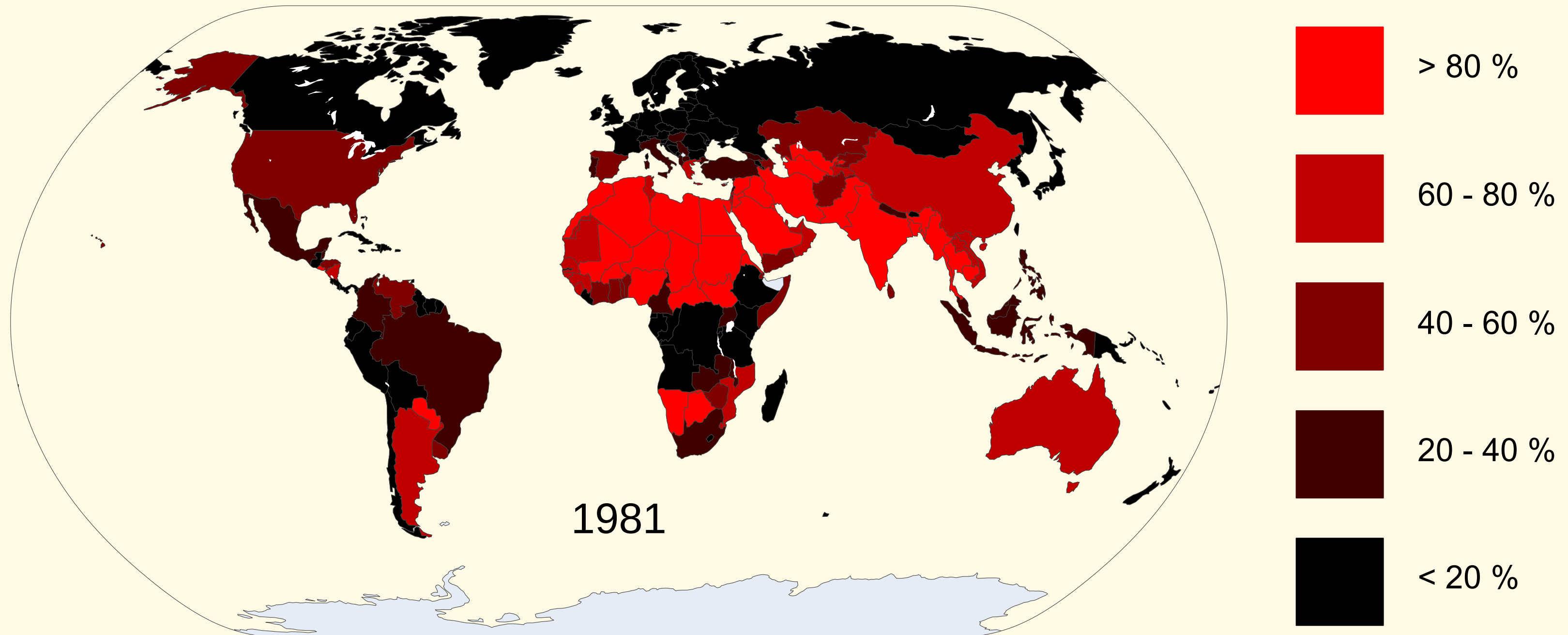
1060 data points
(GDP per capita)

The National Accounts Section of the
United Nations Statistics Division.

Exposure of populations to heat

Daily maximum temperature $> 35^{\circ}\text{C}$ & minimum temperature $> 20^{\circ}\text{C}$, in %

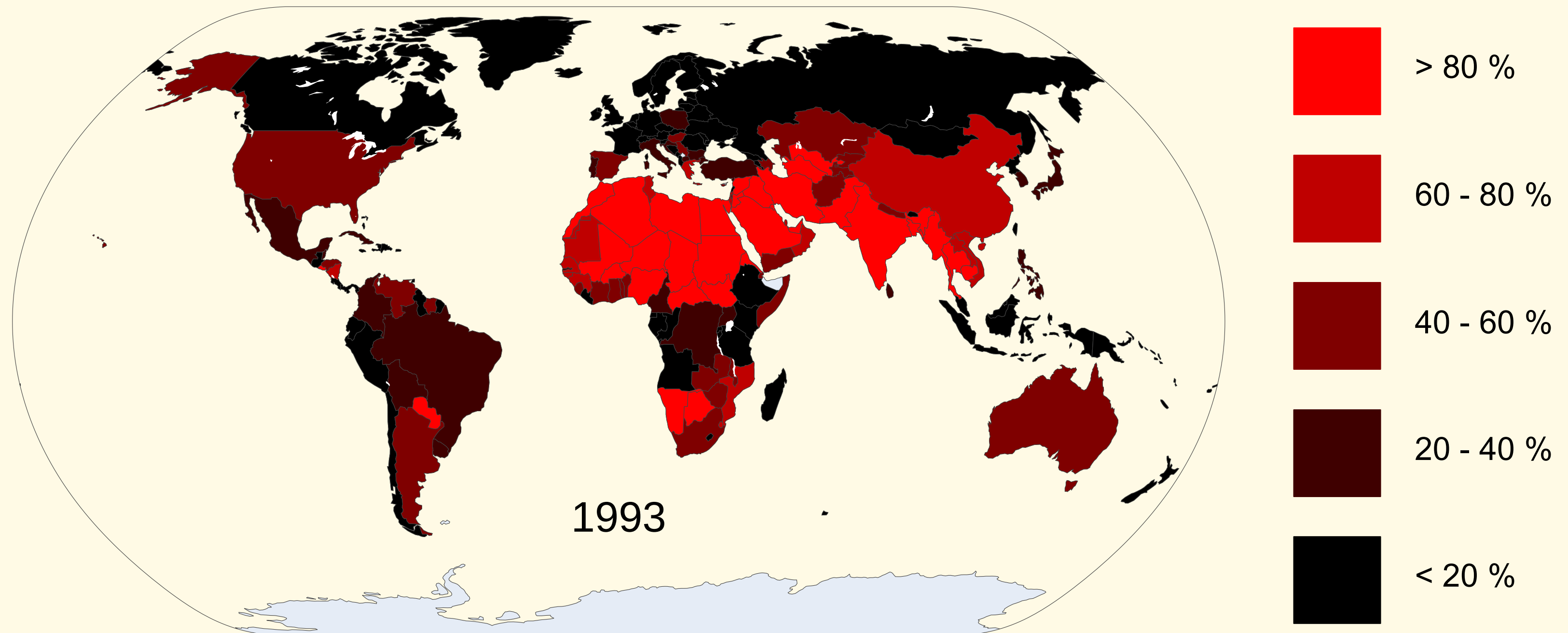
Rolling average over 5 years



Exposure of populations to heat

Daily maximum temperature > 35 °C & minimum temperature > 20 °C, in %

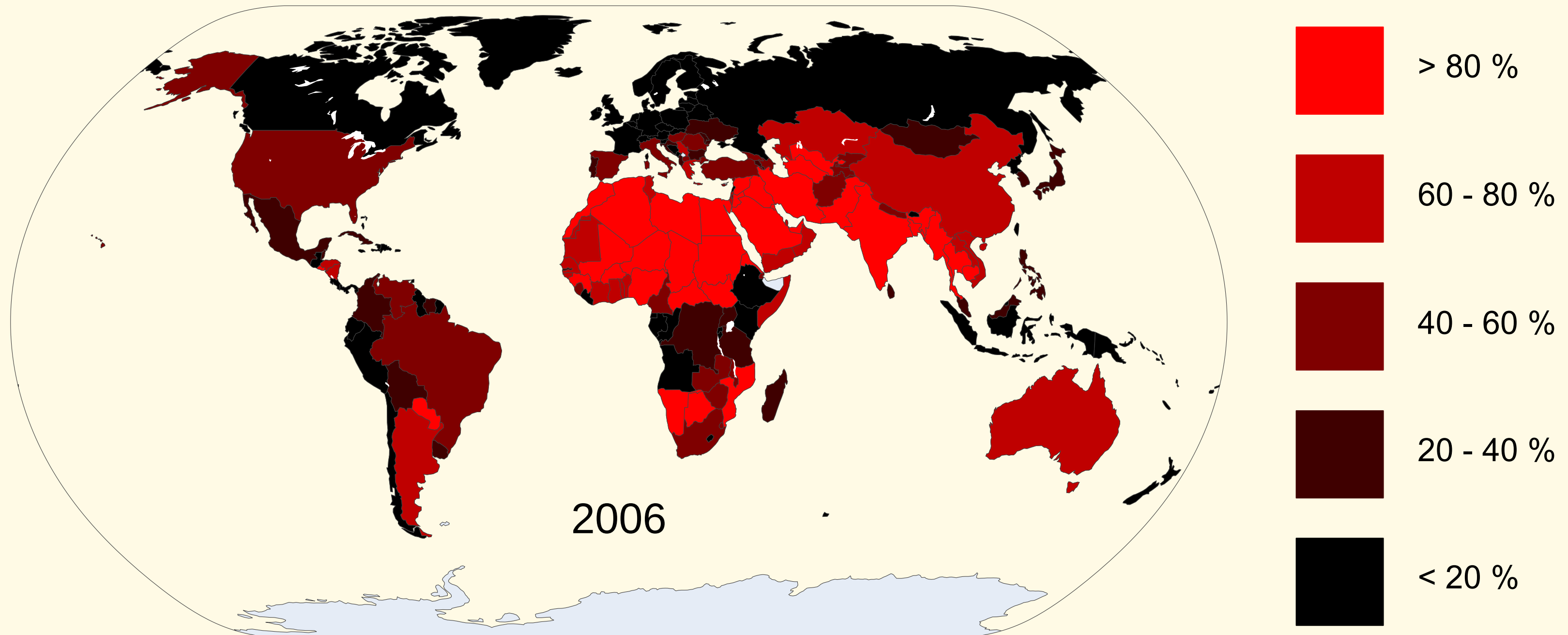
Rolling average over 5 years



Exposure of populations to heat

Daily maximum temperature $> 35^{\circ}\text{C}$ & minimum temperature $> 20^{\circ}\text{C}$, in %

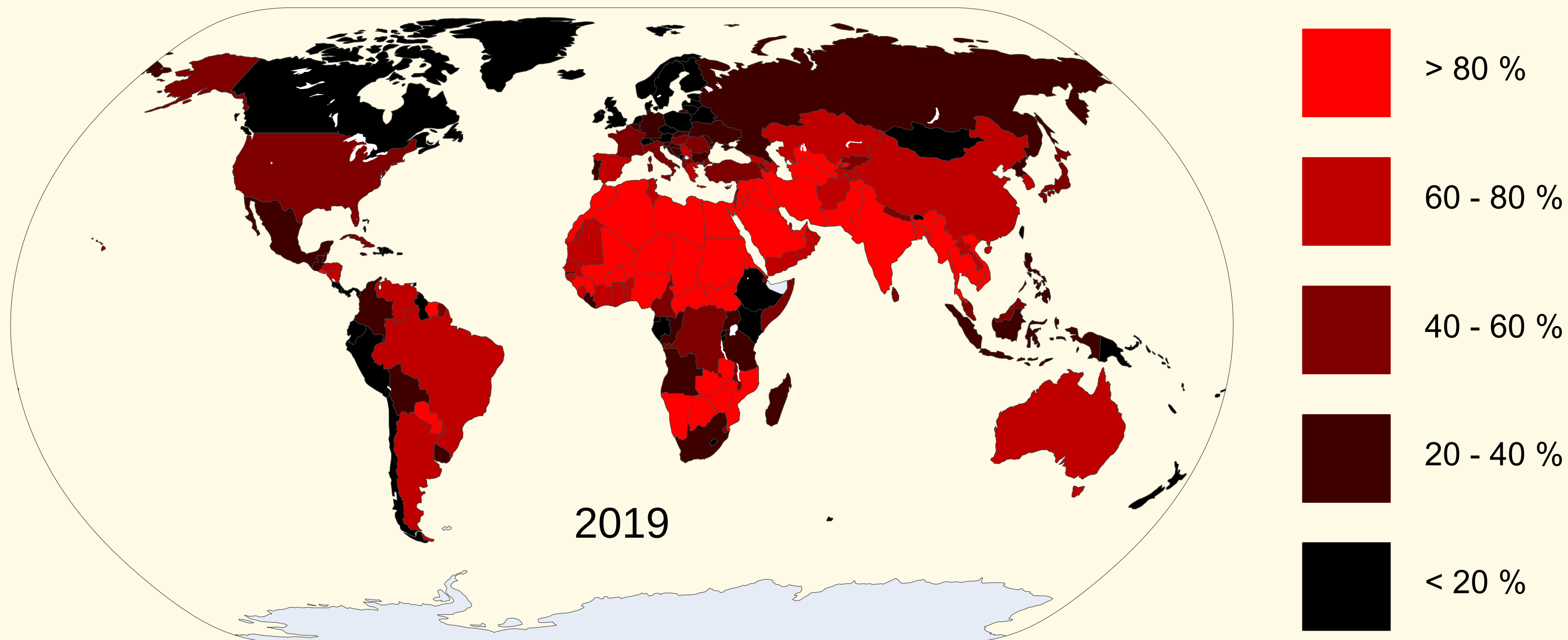
Rolling average over 5 years



Exposure of populations to heat

Daily maximum temperature > 35 °C & minimum temperature > 20 °C, in %

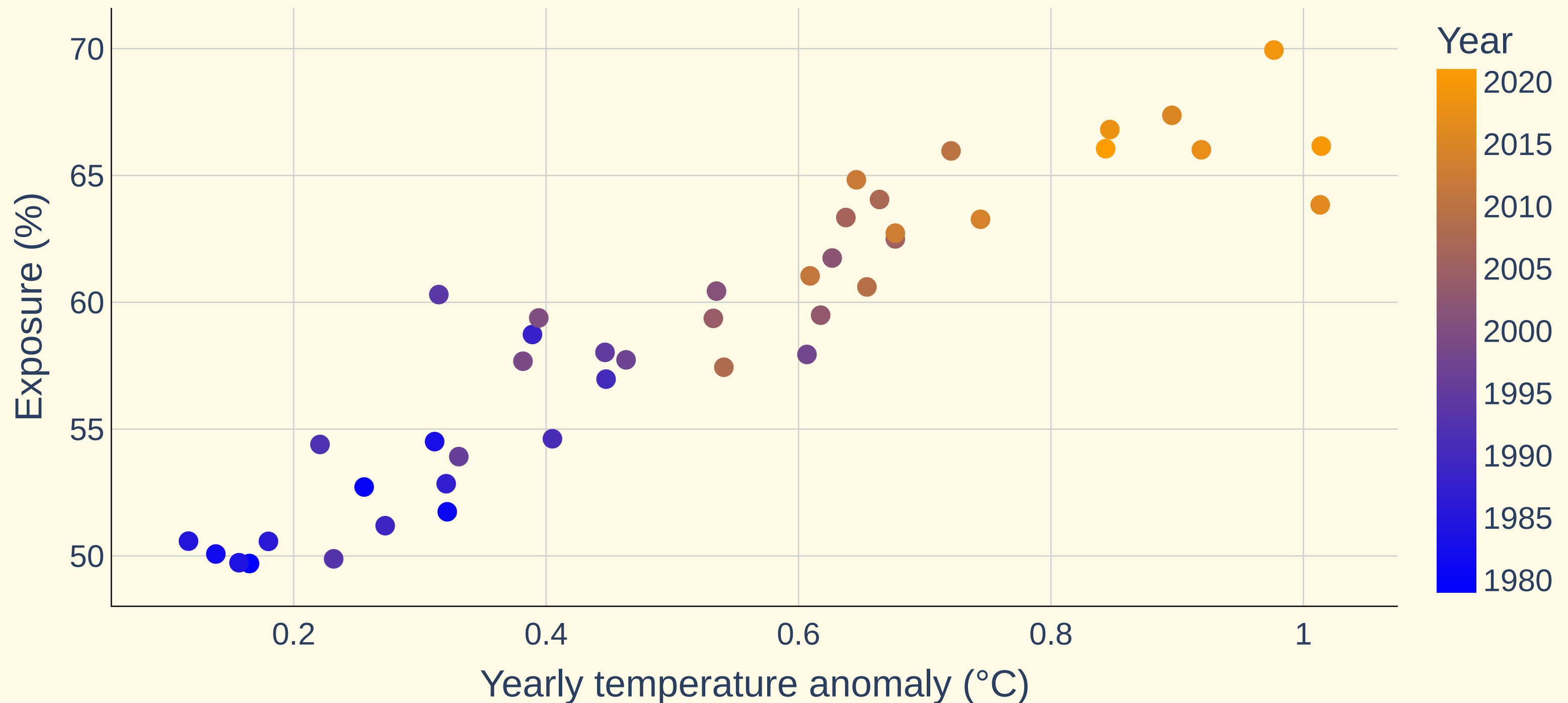
Rolling average over 5 years



Exposure vs temperature anomaly

Daily maximum temperature > 35 °C & minimum temperature > 20 °C

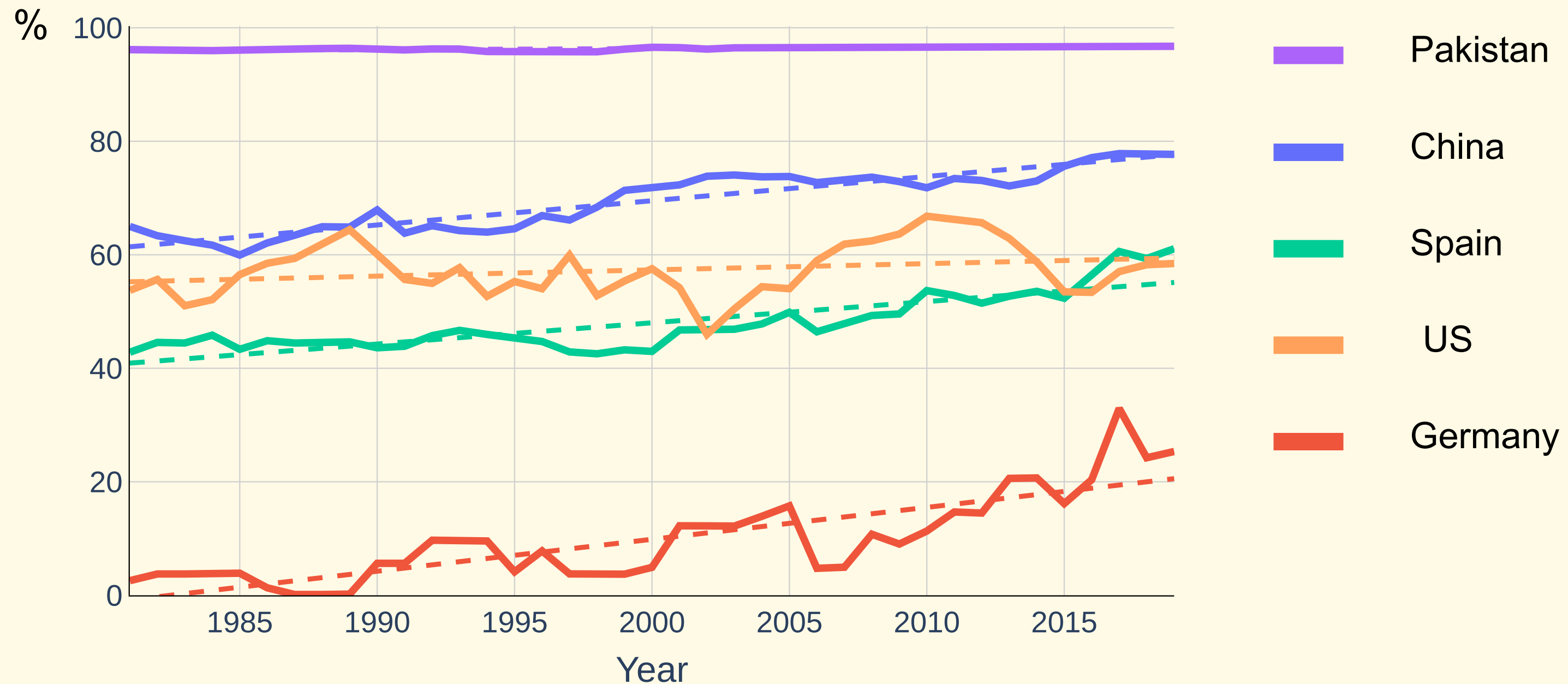
Deviations from 1951-1980 mean temperature



Exposure of populations to heat

Daily maximum temperature > 35 °C & minimum temperature > 20 °C

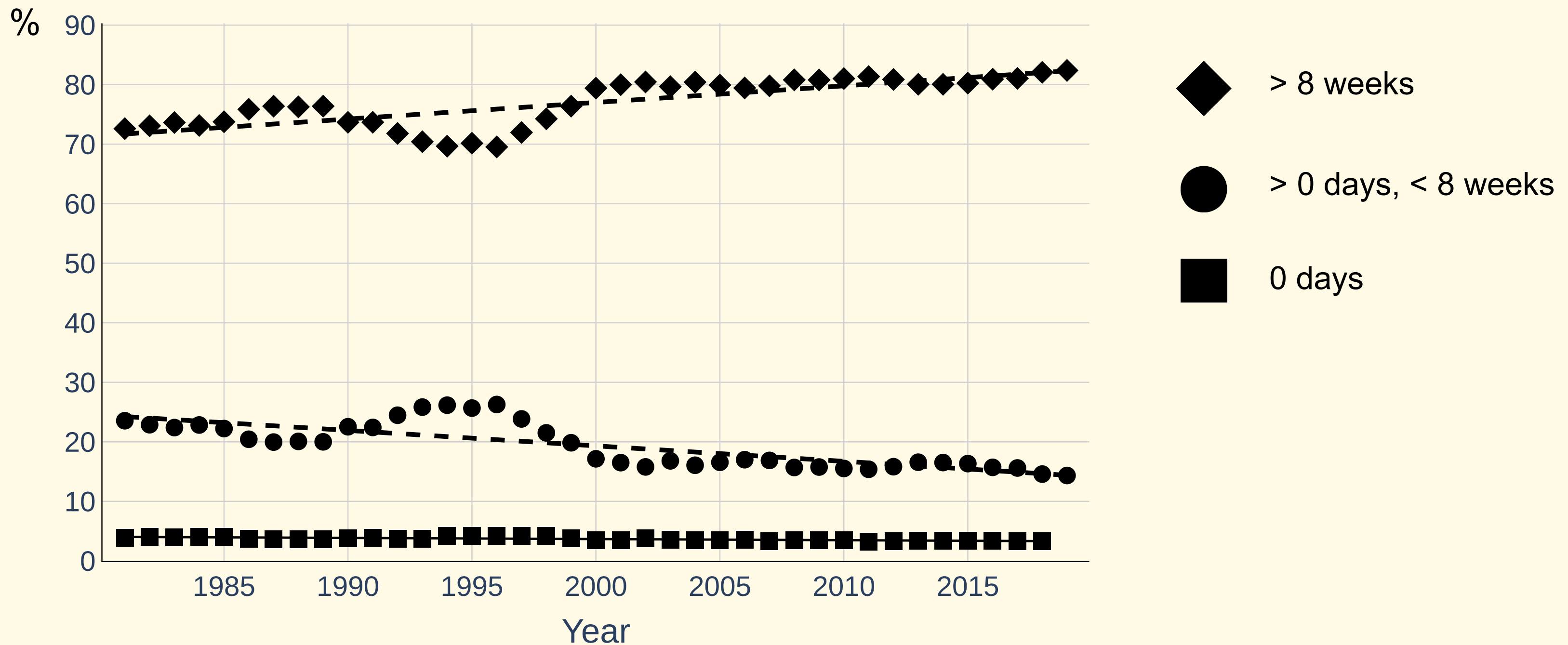
Rolling average over 5 years



Pakistan: different durations

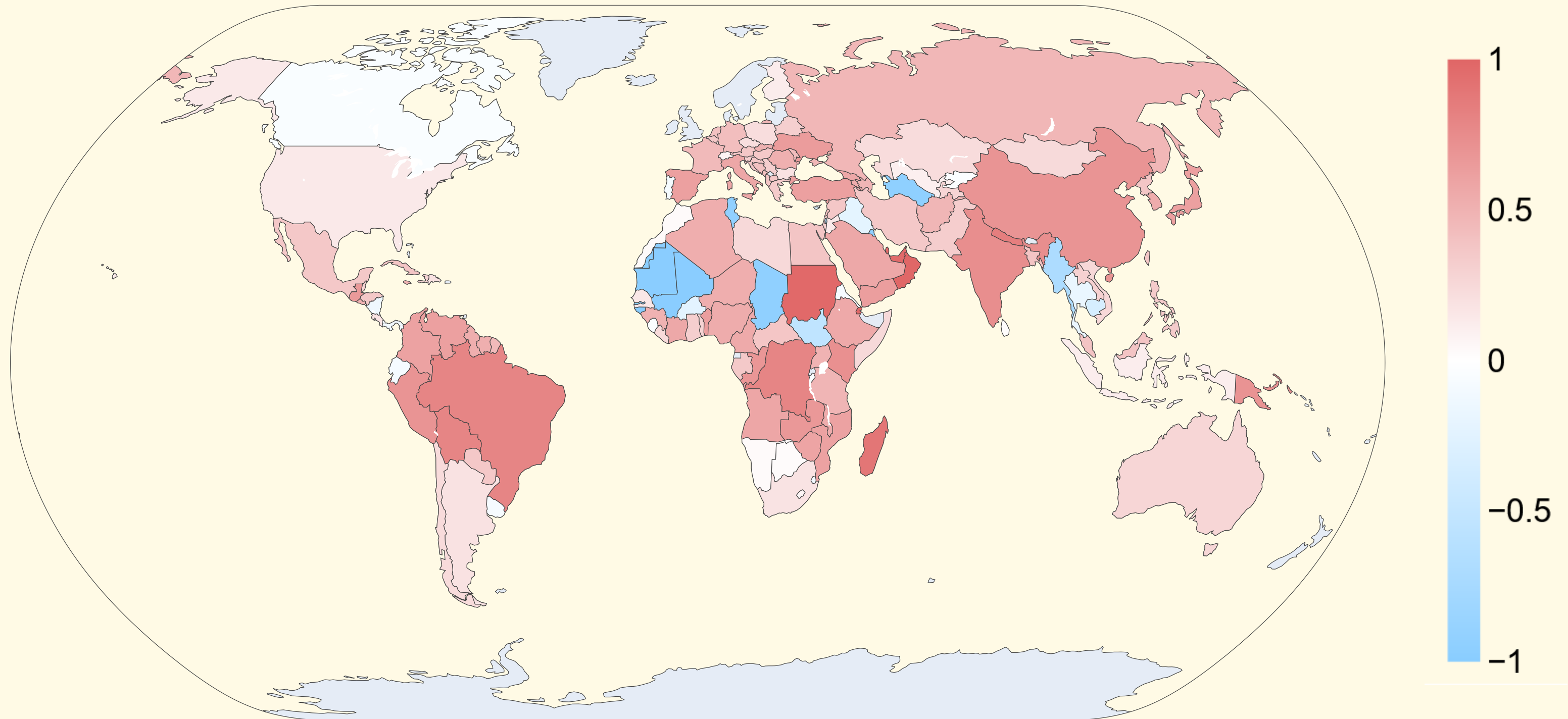
Daily maximum temperature $> 35^{\circ}\text{C}$ & minimum temperature $> 20^{\circ}\text{C}$

Rolling average over 5 years



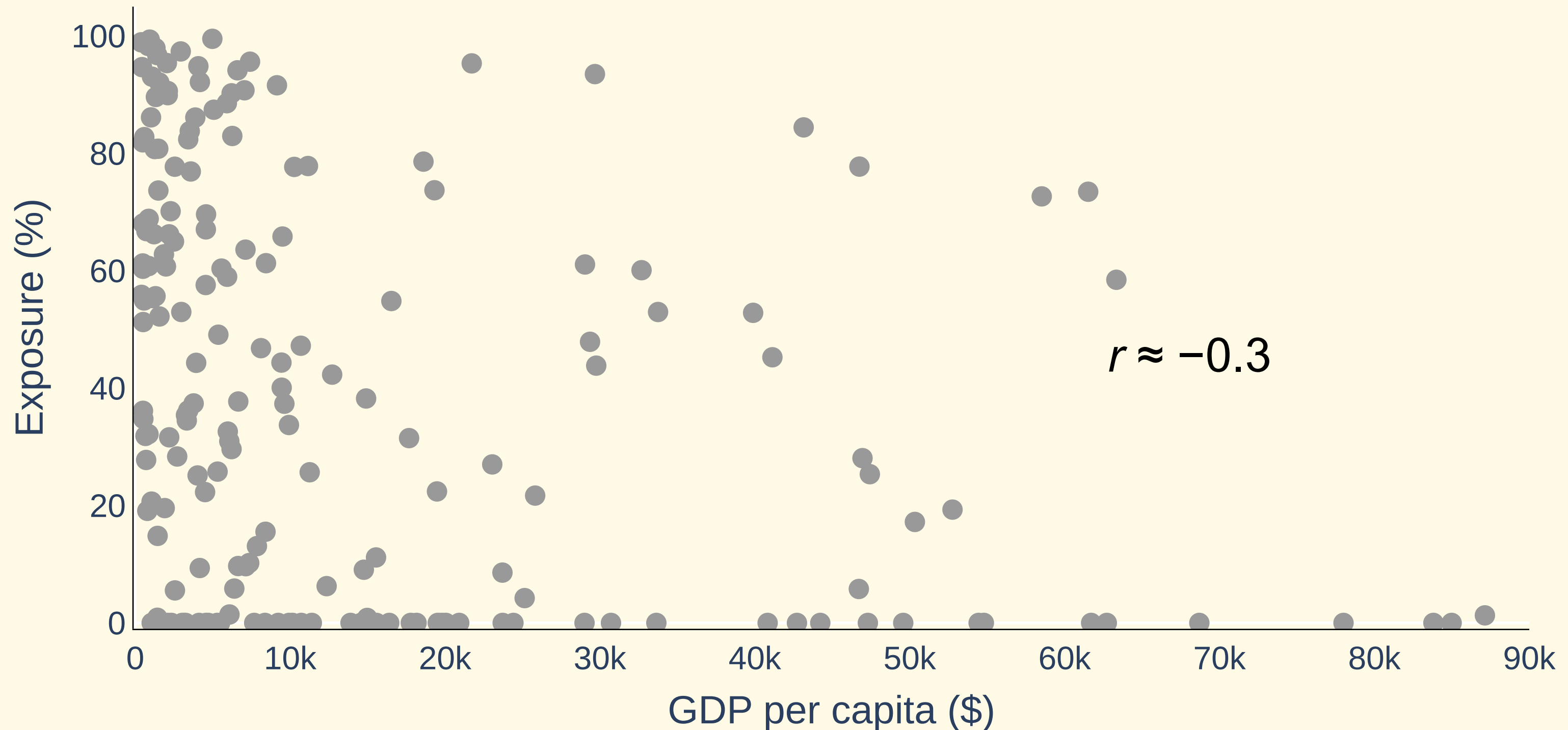
Correlation exposure vs time

Daily maximum temperature > 35 °C & minimum temperature > 20 °C



What countries have in common

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



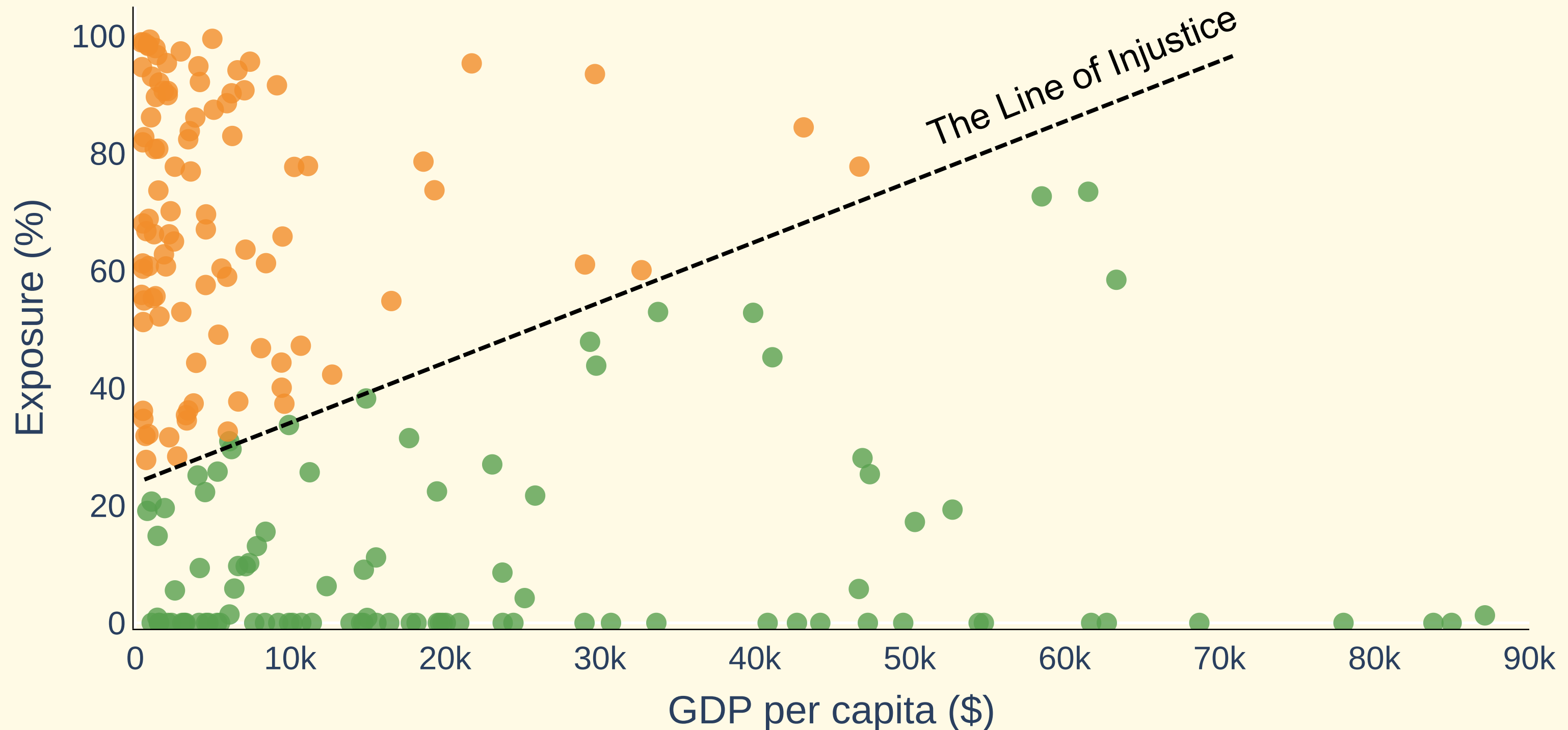
What countries have in common

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

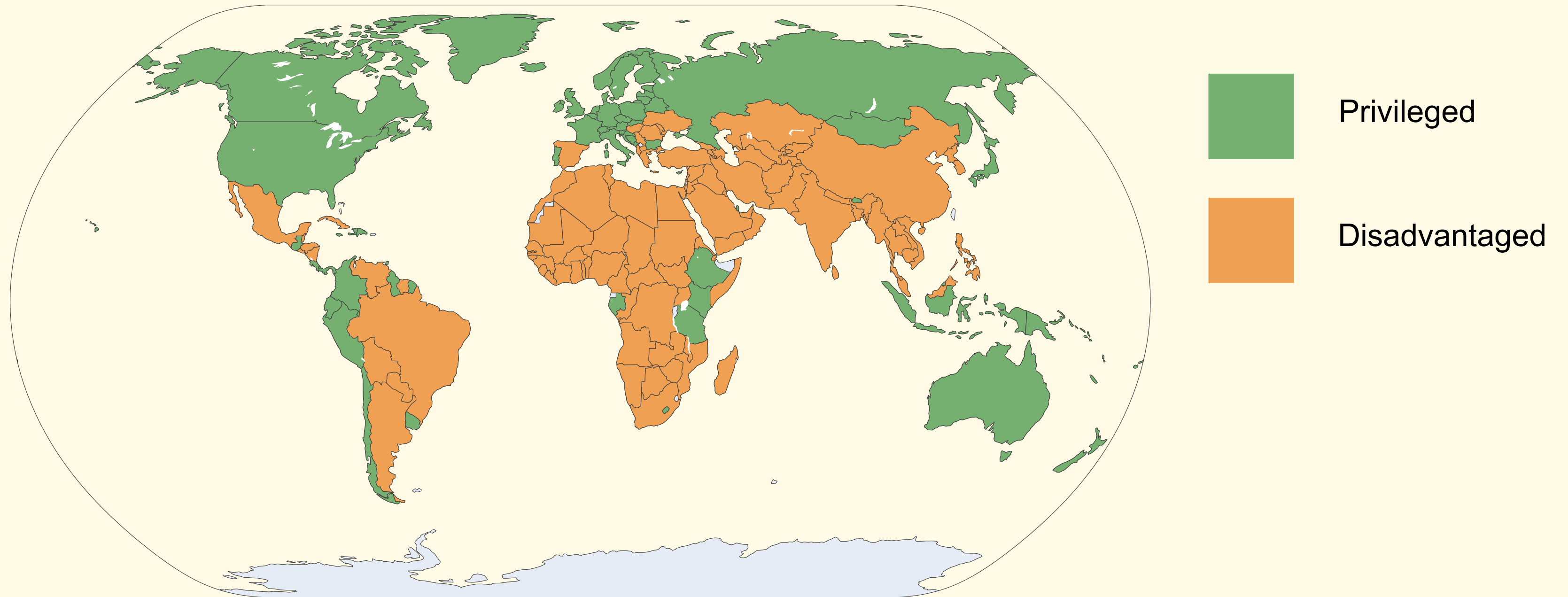


What countries have in common

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

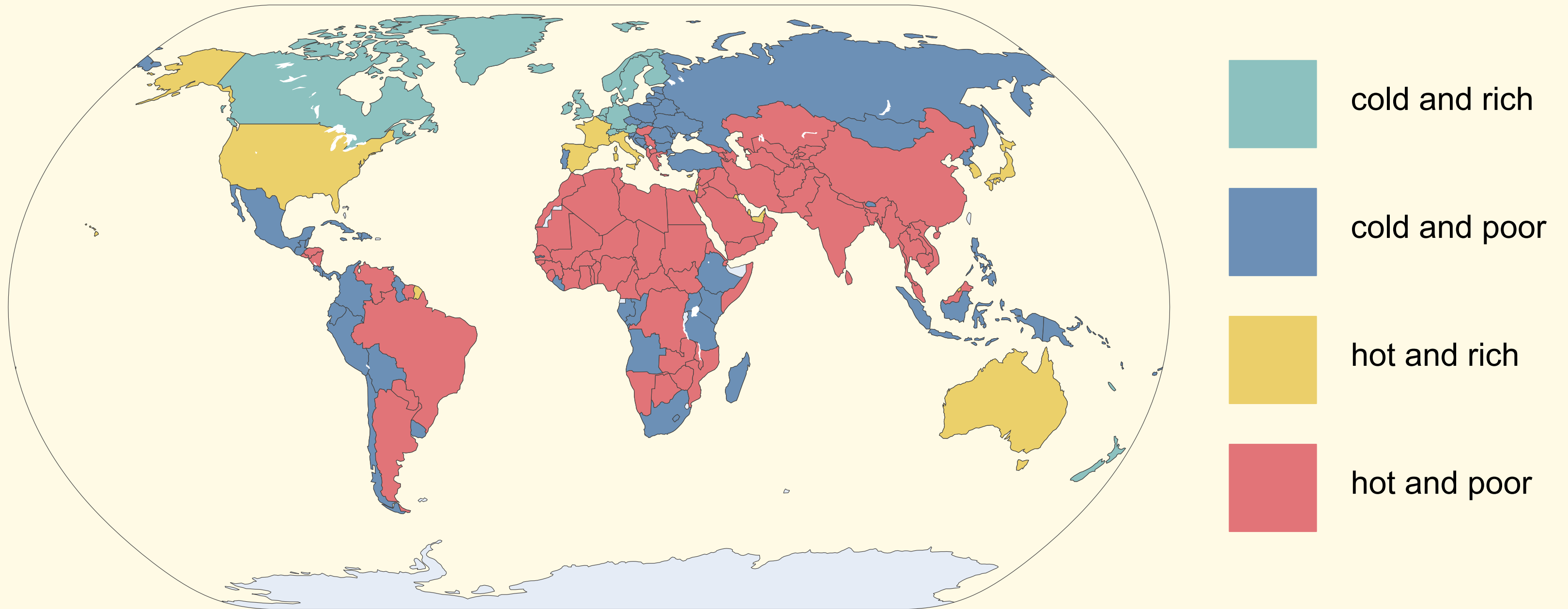


What countries have in common



4 clusters

Exposure to heat + GDP per capita



Summary

Exposure to extreme heat increases worldwide and within countries.

Warming of $\sim 1^{\circ}\text{C}$ increased the exposure from 50 to 65 % worldwide.

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