The kids aren’t alright

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Katja Frieler, Kerry Emanuel, Tobias Geiger, David Bresch, Fang Zhao, Sven Willner, Matthias Büchner, Jan Volkholz, Nico Bauer, Jinfeng Chang, Philippe Ciais, Marie Dury, Louis François, Manolis Grillakis, Simon N. Gosling, Naota Hanasaki, Thomas Hickler, Veronika Huber, Akihiko Ito, Jonas Jägermeyr, Nikolay Khabarov, Aristeidis Koutroulis, Wenfeng Liu, Wolfgang Lutz, Matthias Mengel, Christoph Müller, Sebastian Ostberg, Christopher P. O. Reyer, Tobias Stacke, Yoshihide Wada

(Alexander Radtke)

Will a newborn experience more extreme events than a 60-year old?

Yes, of course.

But how many more?

This we haven't quantified (yet).

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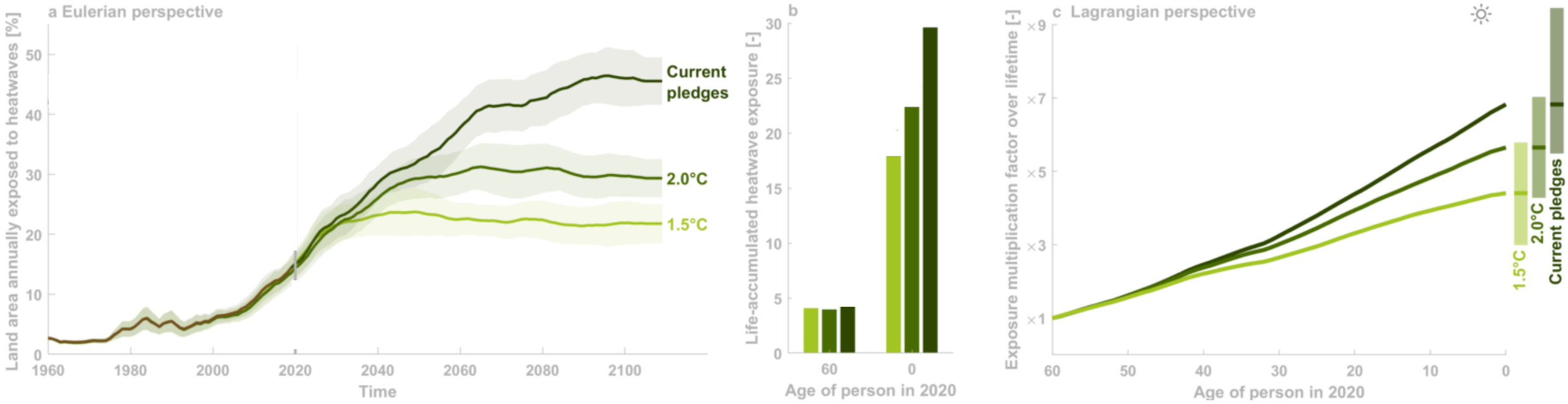
The idea

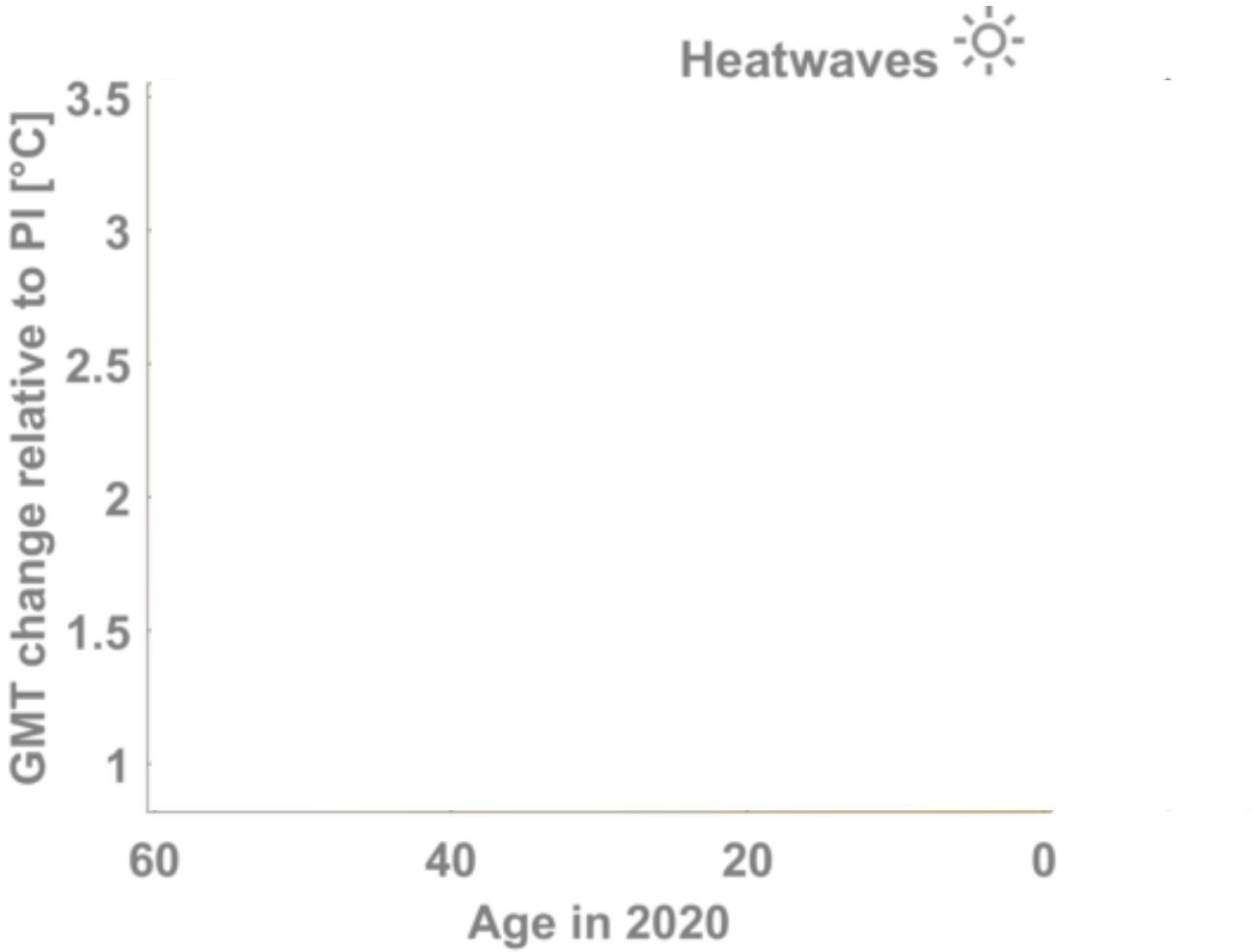
Integrate exposure of an ‘average person’ to extreme events across lifetime



By combining five sources of data:

1. ISIMIP2b impact projections
2. GMT trajectories from the IPCC SR1.5
3. Life expectancy data from the UN WPP
4. Gridded population reconstructions and projections (SSP3)
5. Cohort size data from the Wittgenstein Center

Burning embers for the kids

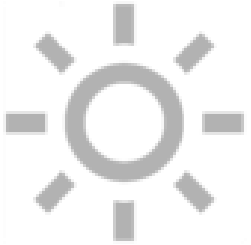


six impact categories

15 ISIMIP2b models, 273 global-scale projections

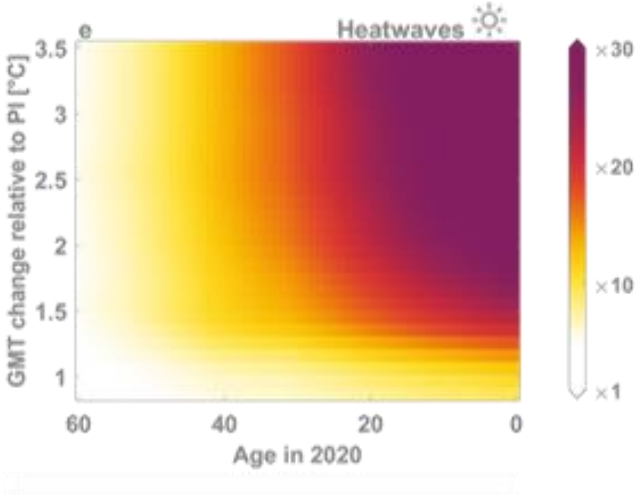




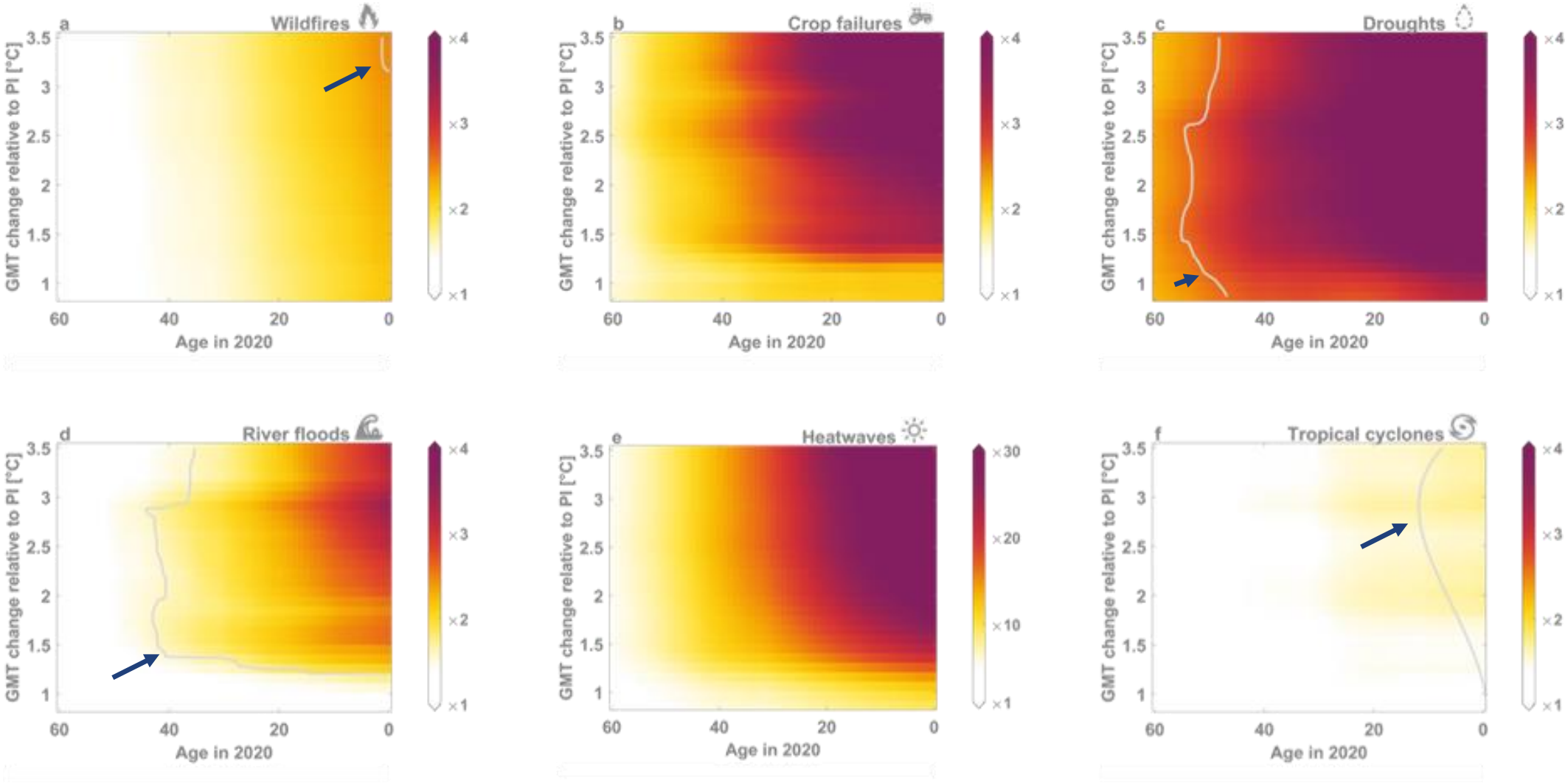



(Lange et al., 2020 EF)

six burning embers



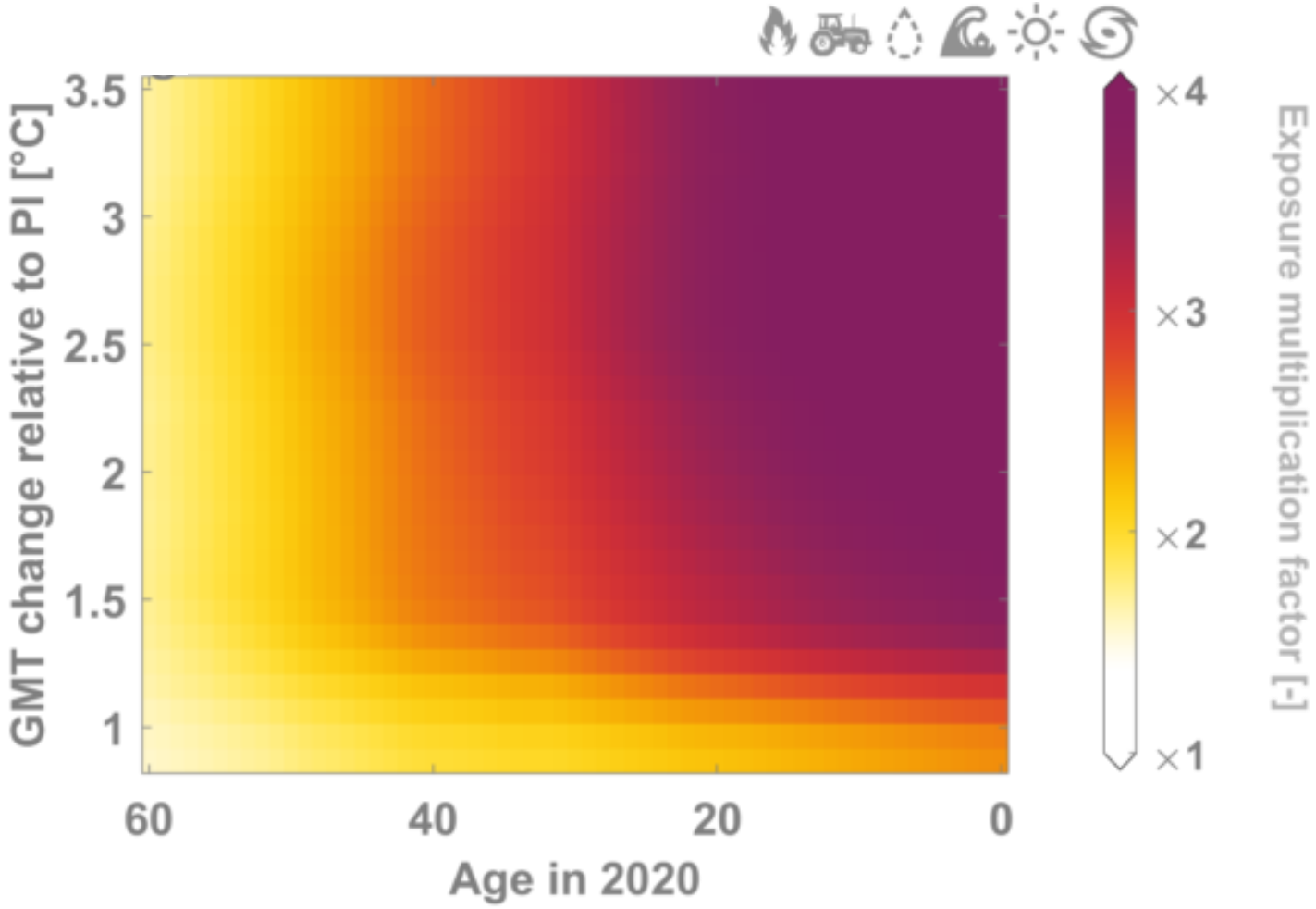
six burning embers



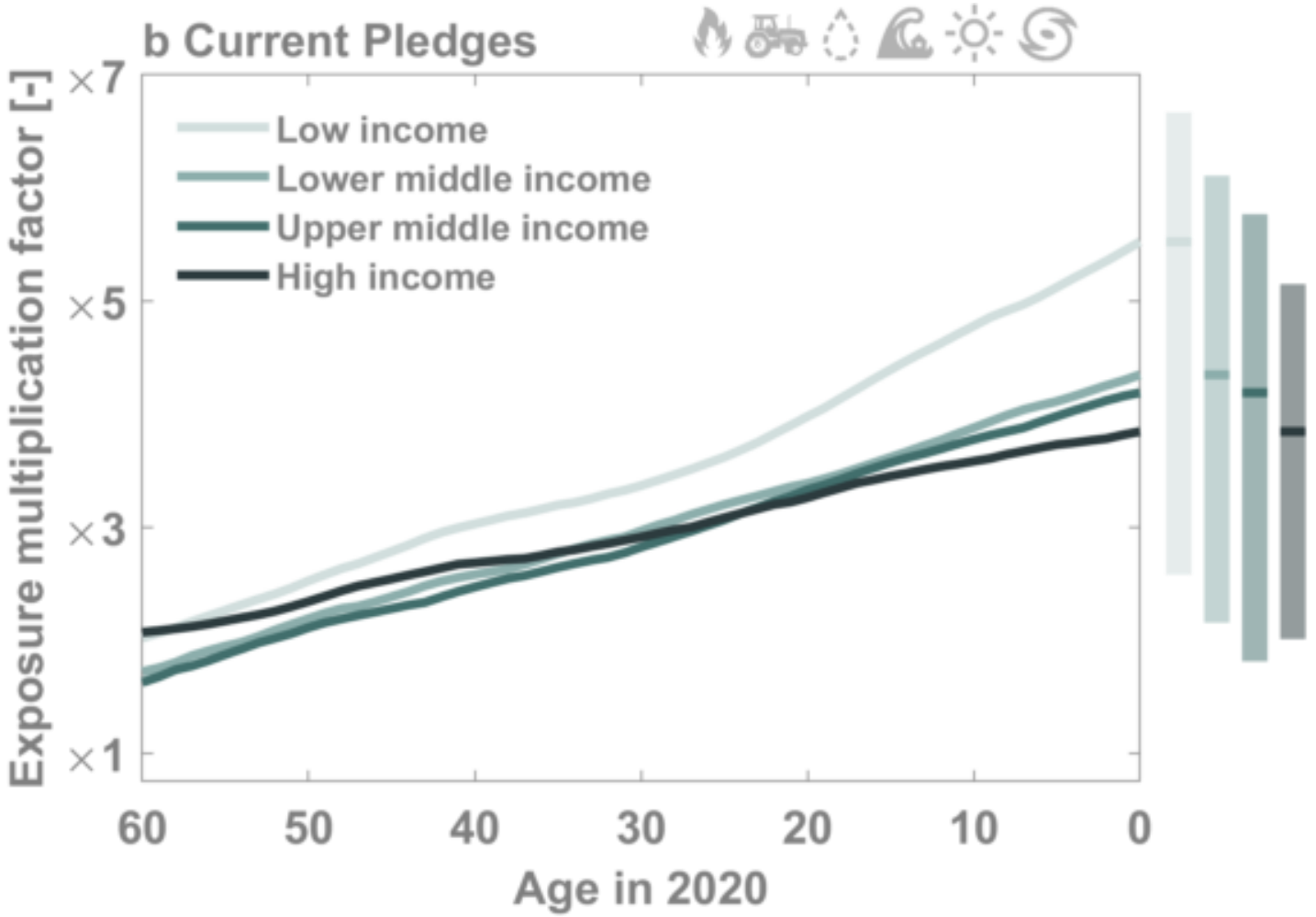
e.g. 6-yr old under 3°C: wildfires/TCs x2; river floods 3x; crop failures x4; droughts x5, heatwaves x36

The youth will face strong increases, older generations won't

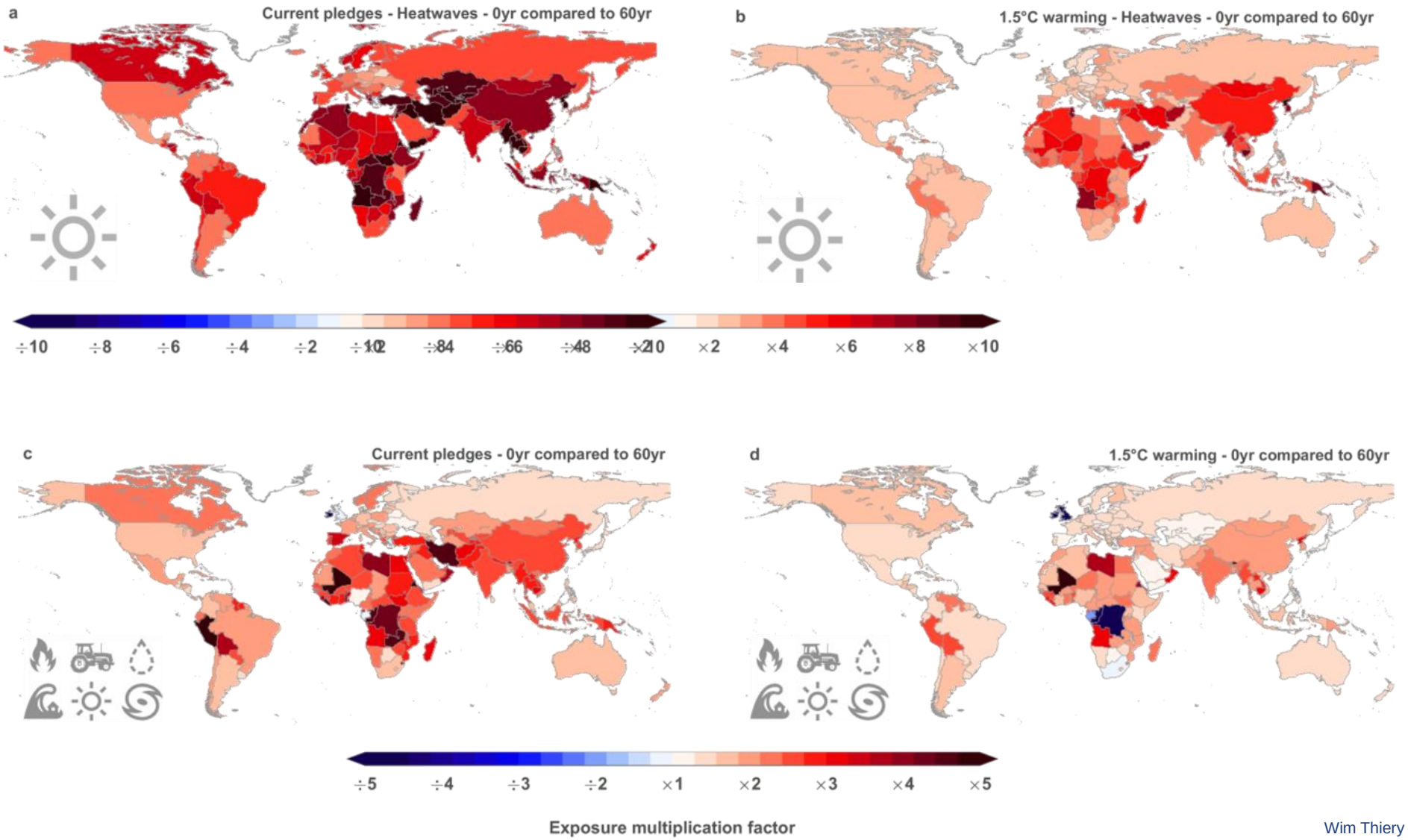
under 10: x4 under 1.5°C warming
under 8 : x5 under 3°C



Current pledges – income categories



local value of global mitigation



outcomes

Science
INSIGHTS

POLICY FORUM

CLIMATE CHANGE

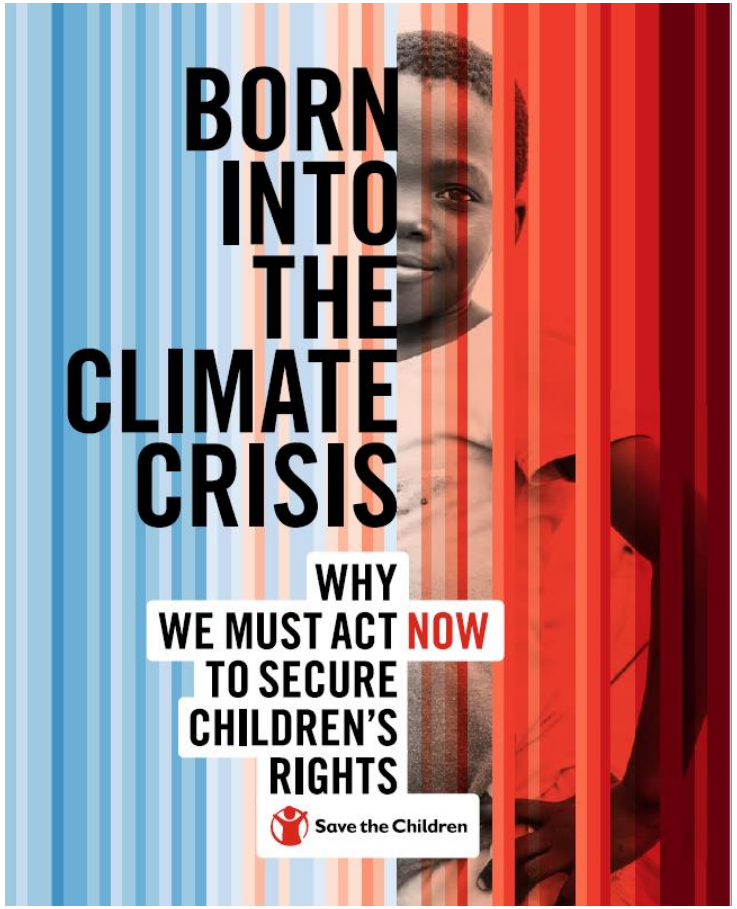
Intergenerational inequities in exposure to climate extremes

Young generations are severely threatened by climate change

By **Wim Thiery, Stefan Lange, Joeri Rogelj, Carl-Friedrich Schleussner, Lukas Gudmundsson, Sonia I. Seneviratne, Marina Andrijevic, Katja Frieler, Kerry Emanuel, Tobias Geiger, David N. Bresch, Fang Zhao, Sven N. Willner, Matthias Büchner, Jan Volkholz, Nico Bauer, Jinfeng Chang, Philippe Ciais, Marie Dury, Louis François, Manolis Grillakis, Simon N. Gosling, Naota Hanasaki, Thomas Hickler, Veronika Huber, Akihiko Ito, Jonas Jägermeyr, Nikolay Khabarov, Aristeidis Koutroulis, Wenfeng Liu, Wolfgang Lutz, Matthias Mengel, Christoph Müller, Sebastian Ostberg, Christopher P. O. Reyer, Tobias Stacke, Yoshihide Wada**

Under continued global warming, extreme events such as heat waves will continue to rise in frequency, intensity, duration, and spatial extent over the next decades (*1*–*4*). Younger generations are therefore expected to face more such events across their lifetimes compared with older generations. waves will increase from ~15% around 2020 to ~22% by 2100 under a scenario compatible with limiting global warming to 1.5°C, and to ~46% under a scenario in line with current emission reduction pledges (see the first figure). Recent studies extended this approach, studying aspects of climate change as a function of global mean temperlimited to 2°C or 18 ± 8 heatwaves if it is limited to 1.5°C. In any case, that is seven, six, or four times more, respectively, compared with that of a person born in 1960. Repeating this analysis for all cohorts born between 1960 and 2020 highlights clear differences in lifetime exposure to heat waves between older and younger cohorts globally (see the first figure). The effect of alternative future temperature trajectories on the lifetime exposure multiplication factor becomes discernible only for cohorts younger than 40 years in 2020, with the largest differences for the youngest cohorts.

The previous example only uses one hazard indicator and a subset of all possible future temperature pathways. We expanded this approach and considered six extreme event categories: wildfires, crop failures, droughts, river floods, heat waves, and tropical cyclones (see table S1), which we analyzed under a wide range of temperature pathways that resulted in future warming that ranges from constant present-day levels up to 3.5°C by 2100 (see materials and methods and fig. S1). To this end, we generated a total of 273 global-scale projections with 15 impact models forced by four bias-adjusted global climate models (see table S2). Inspired by the



#myclimatefuture

#myclimatefuture

How will I experience climate change?

Here you can find out how many more climate extremes you will face across your lifetime relative to a world without climate change. The results are based on solid science.

We don't store your data.

When were you born?

Born in 2013

1961 — 2021

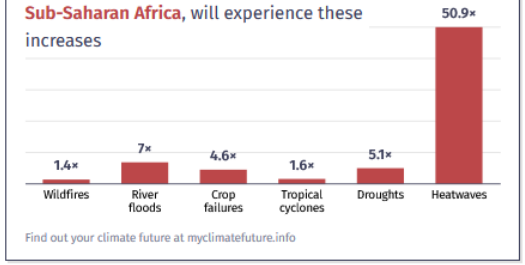
Select the warming scenario

1.5°C | Climate promises | High warming

Where are you from?

World | East Asia & Pacific | Europe & Central Asia | Latin America & Caribbean | Middle East & North Africa | North America | South Asia | Sub-Saharan Africa

In a 3.5°C world, I, as an 8-year-old from Sub-Saharan Africa, will experience
wildfires 1.4×,
river floods 7×,
crop failures 4.6×,
tropical cyclones 1.6×,
droughts 5.1× and
heatwaves 50.9×
more than without climate change.
#myclimatefuture
Do the test myclimatefuture.info



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Thanks! Questions?

@WimThiery

(Jersey warming stripes vandalised, bailiwickexpress.com)

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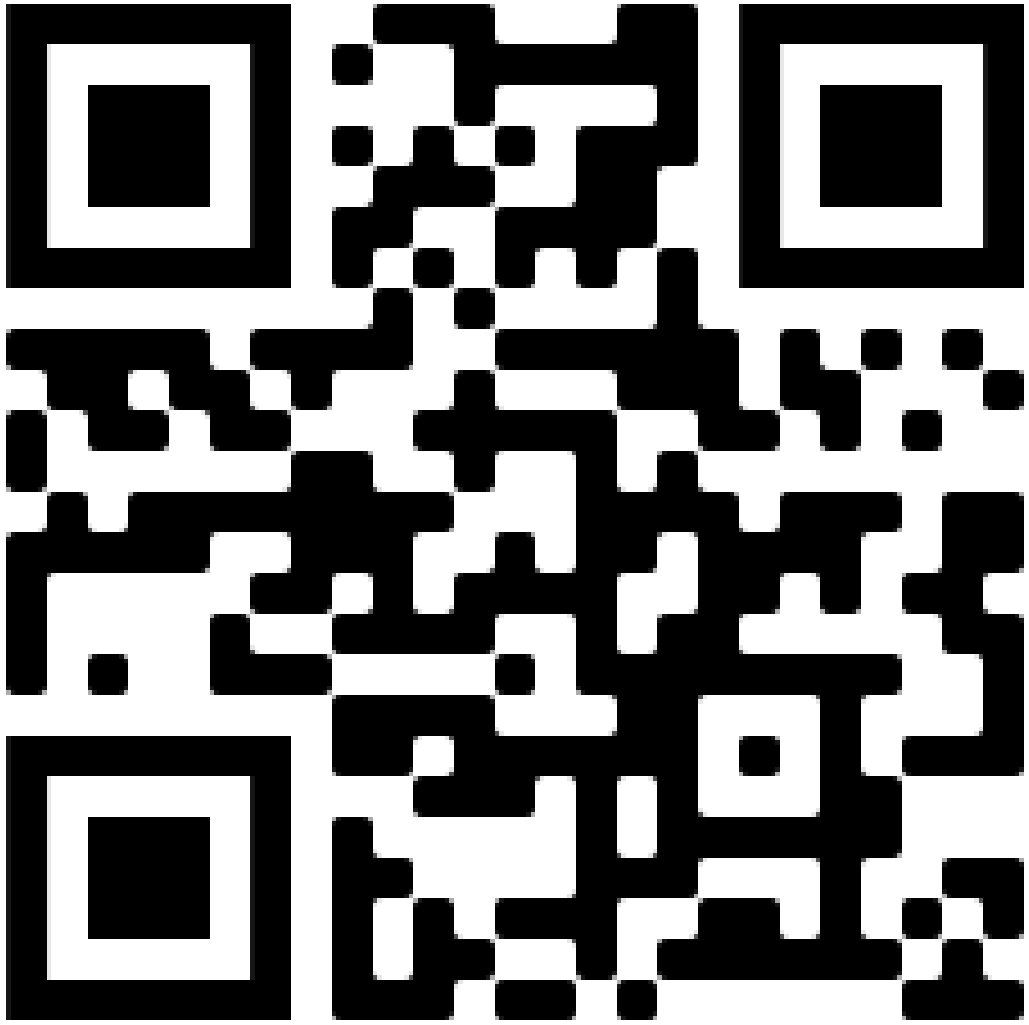

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