

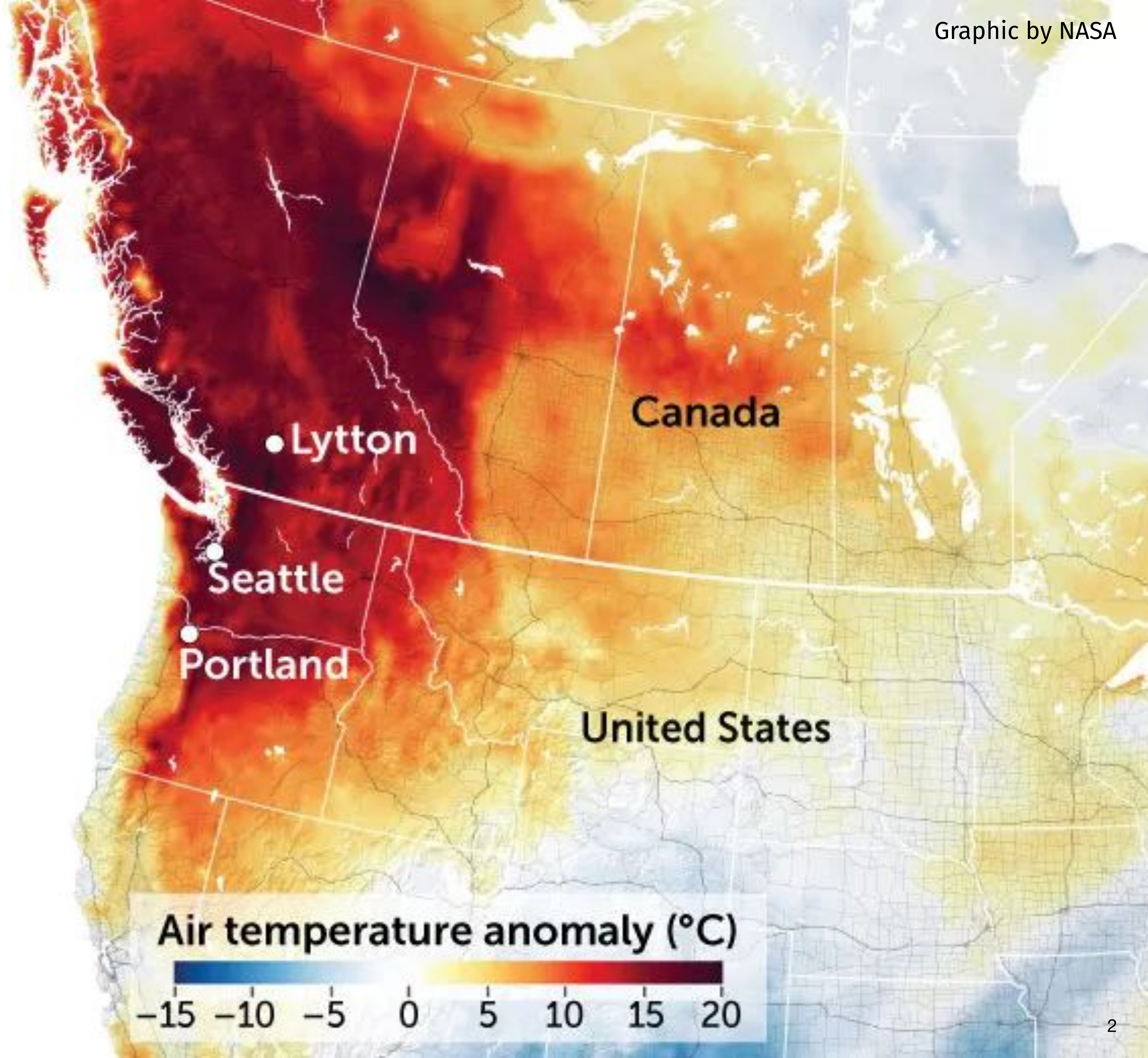


West Virginia Public
Broadcasting

Carbon majors and the scientific case for climate liability

**Christopher Callahan
Stanford University**

with Justin Mankin,
Dartmouth College



• Lytton

• Seattle

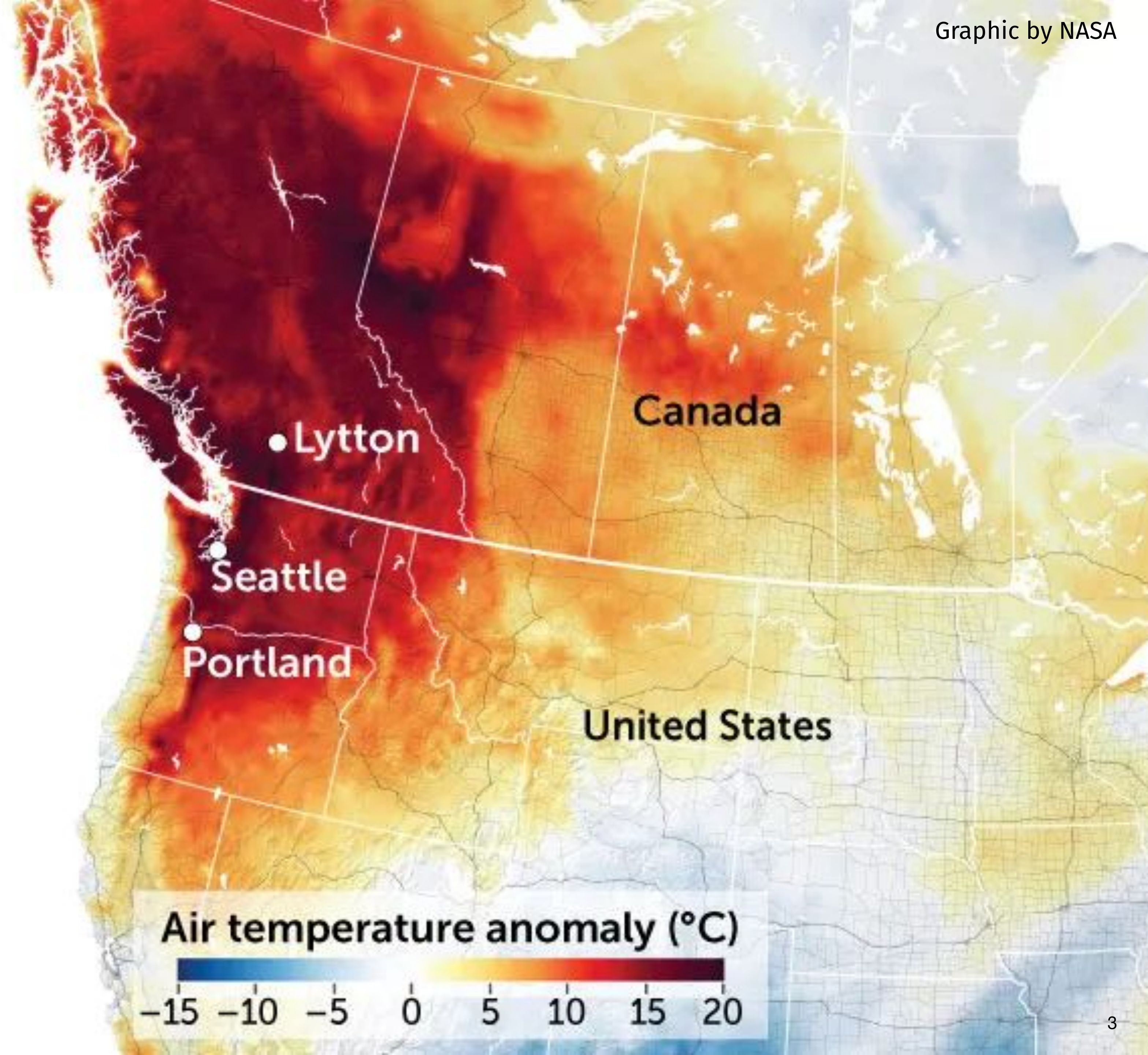
• Portland

Canada

United States



“The heat dome... was not a natural weather event. [...] The heat dome was a direct and foreseeable result of the Defendants’ decision to sell as many fossil fuel products over the last six decades as they could...”



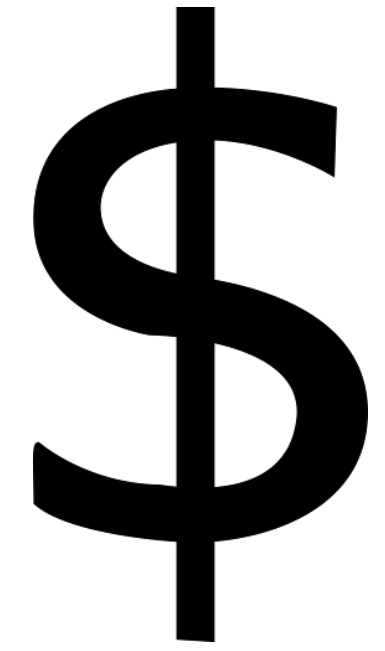


Ricardo Arguendo/AFP/Getty



“The Defendants... represent more than a substantial cause, jointly and severally, for the Atlantic Hurricane storms that devastated Puerto Rico in 2017.”

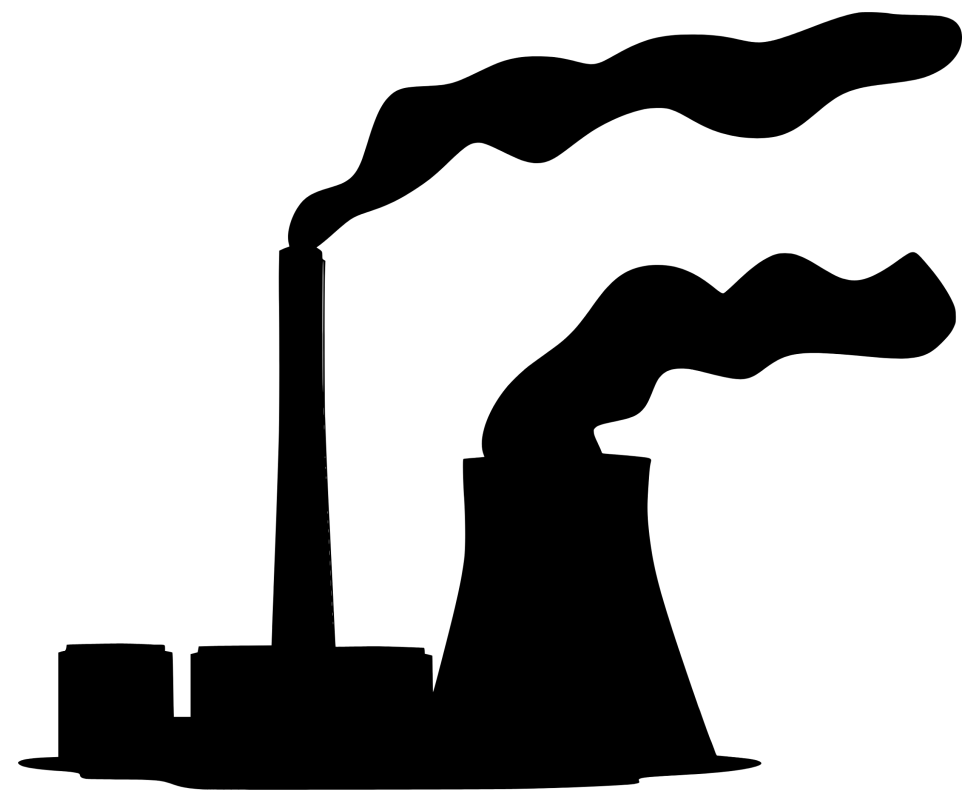
Can a fossil fuel emitter be linked to a particular impact?



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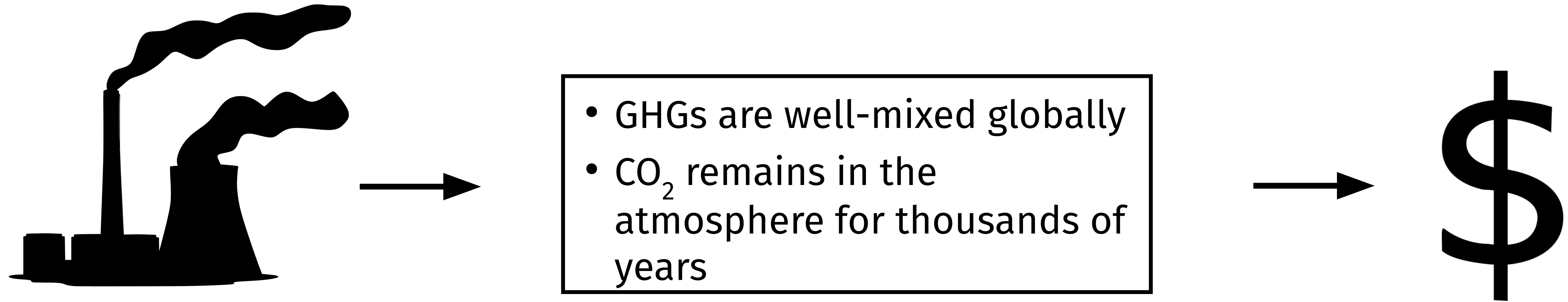
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- GHGs are well-mixed globally
- CO₂ remains in the atmosphere for thousands of years



Can a fossil fuel emitter be linked to a particular impact?

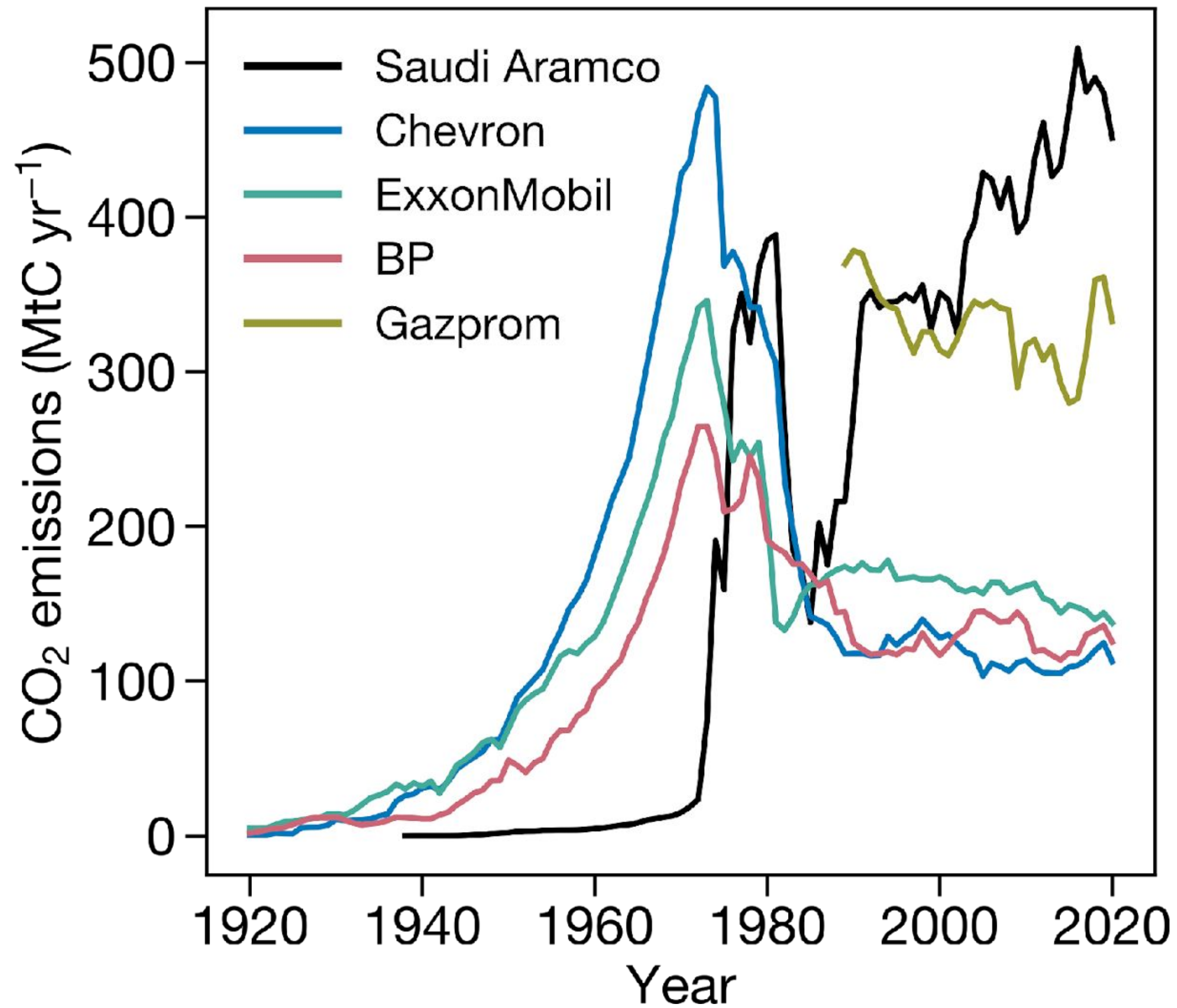


Climate damages are dislocated in space and time from the emissions that caused them.

Attributing global warming to fossil fuel producers

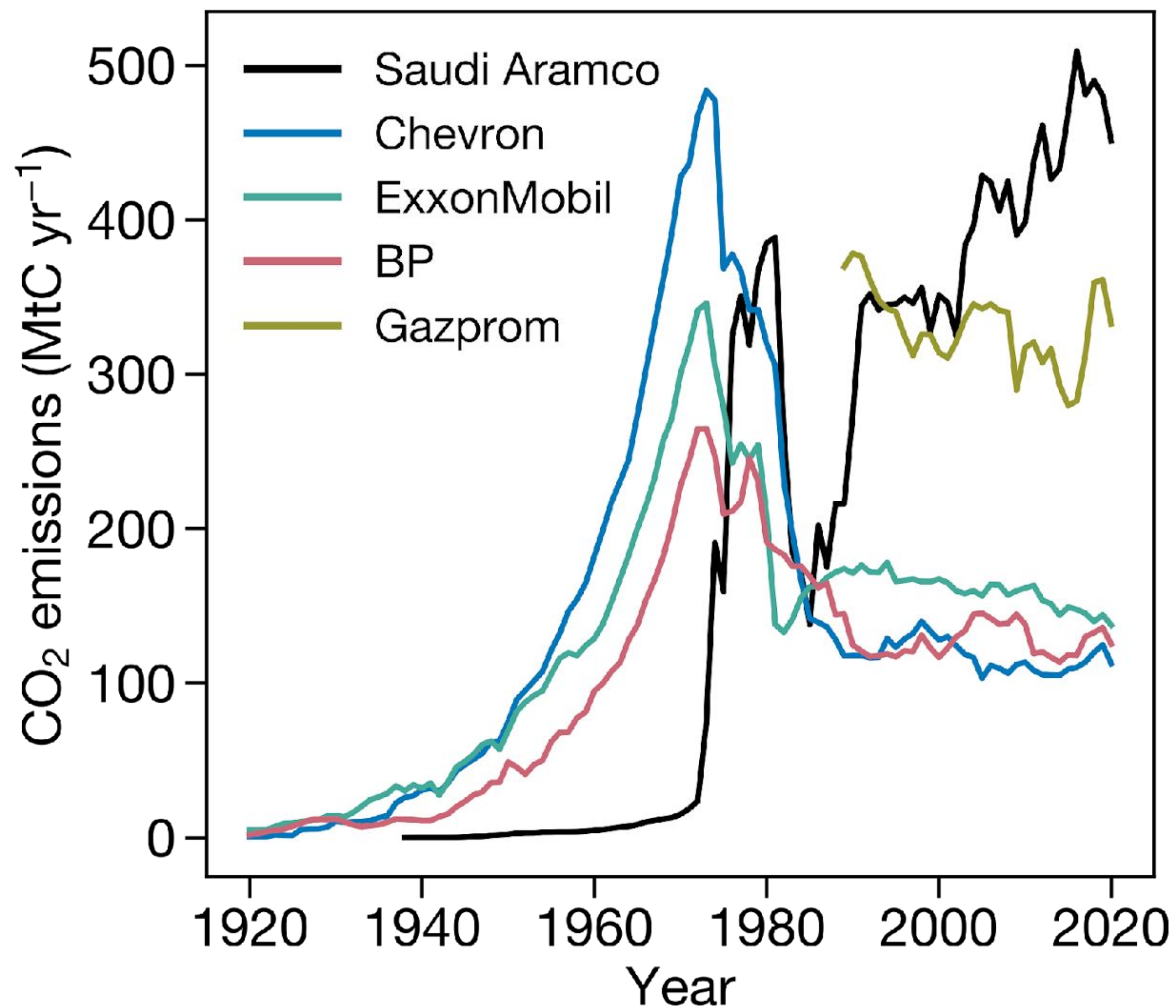
Attributing global warming to fossil fuel producers

Emissions by carbon majors

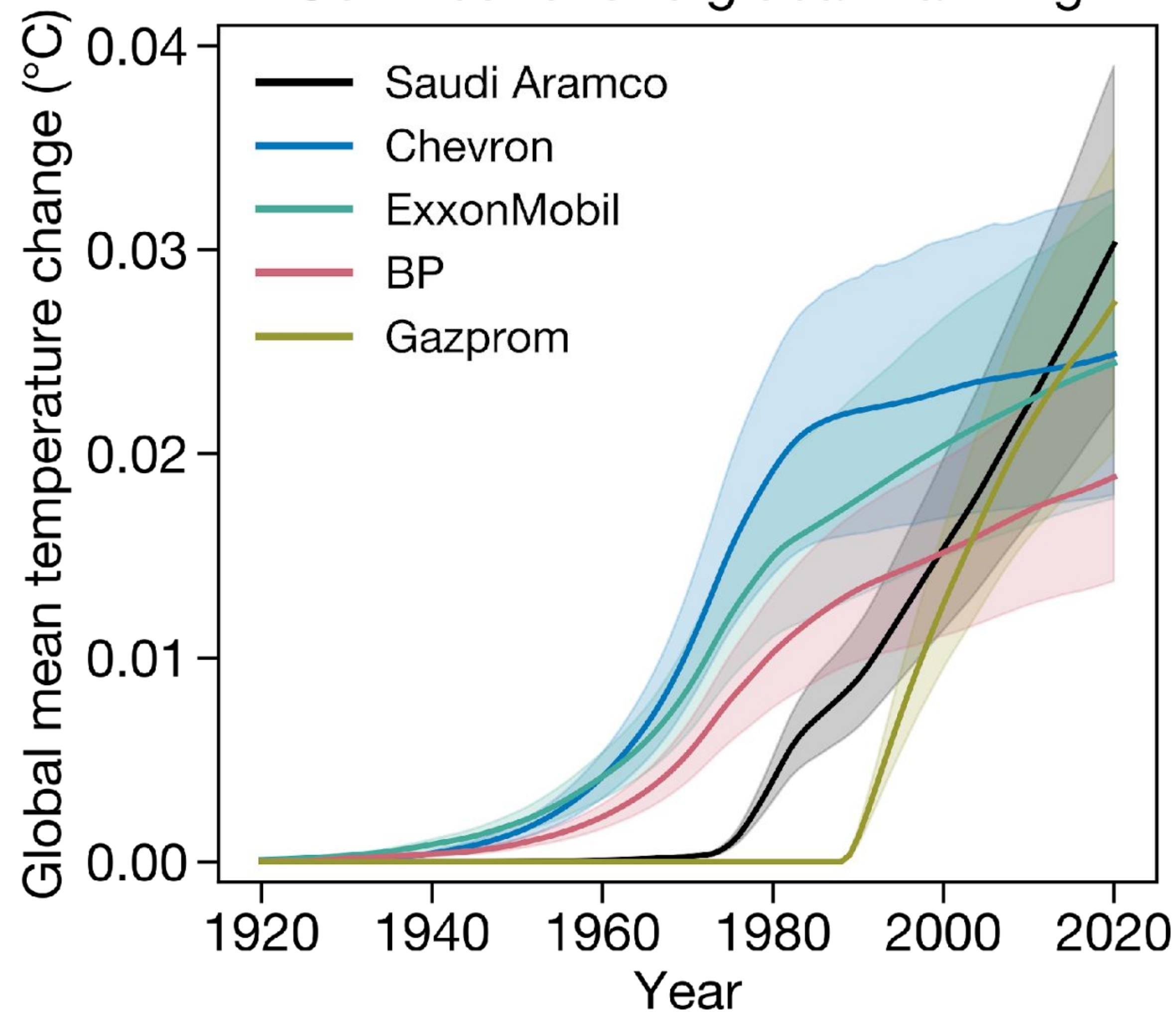


Attributing global warming to fossil fuel producers

Emissions by carbon majors

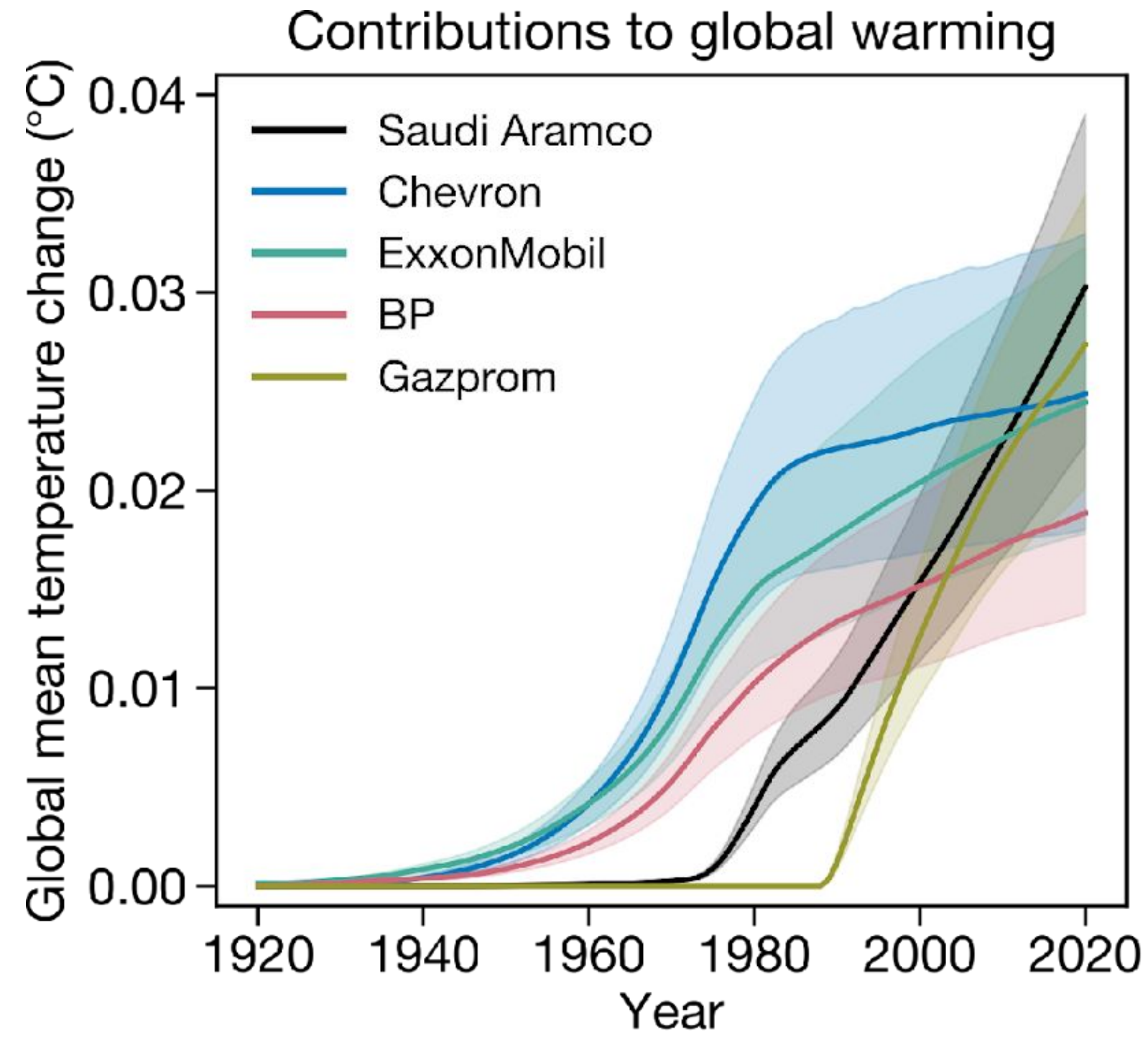


Contributions to global warming



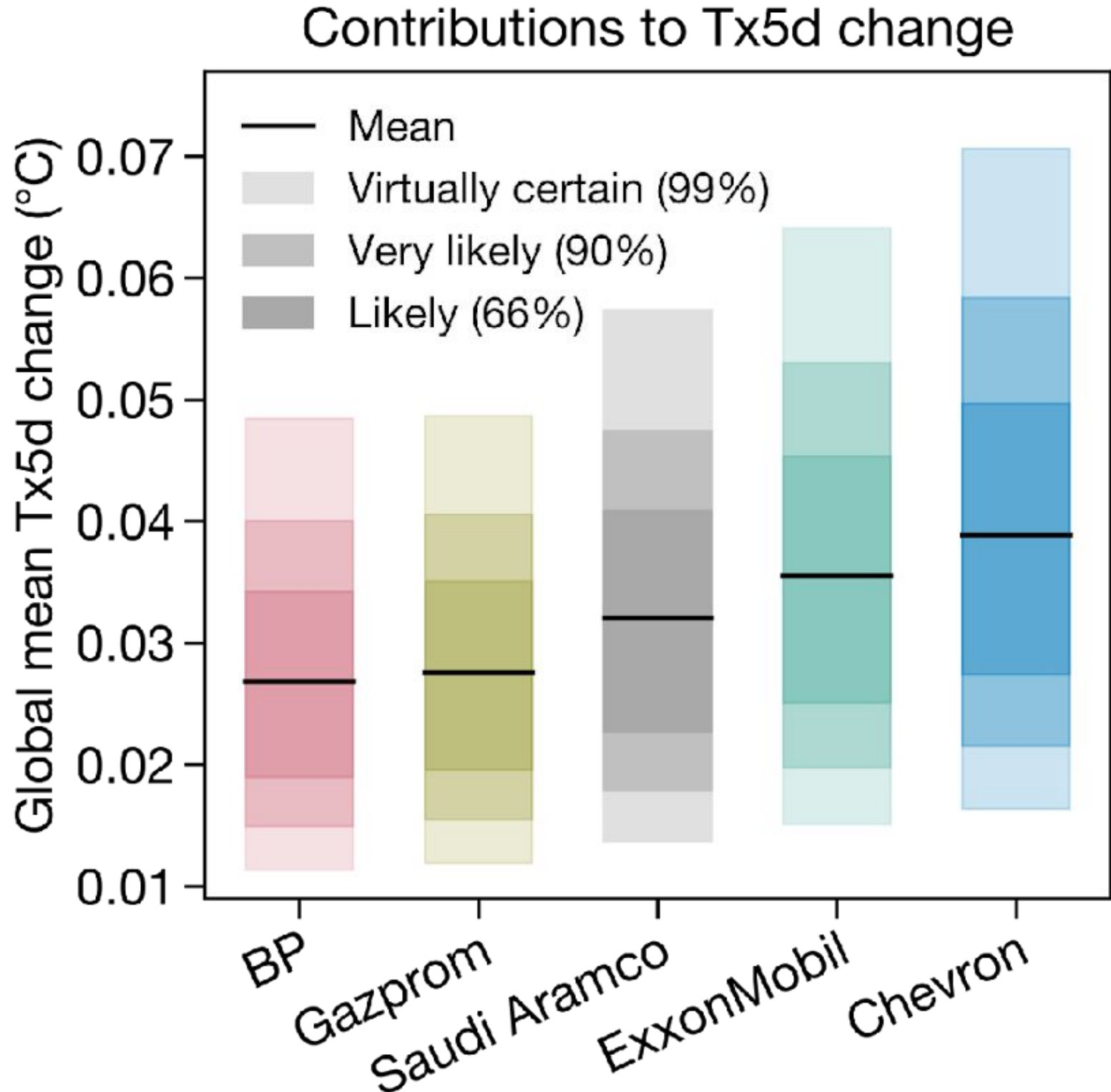
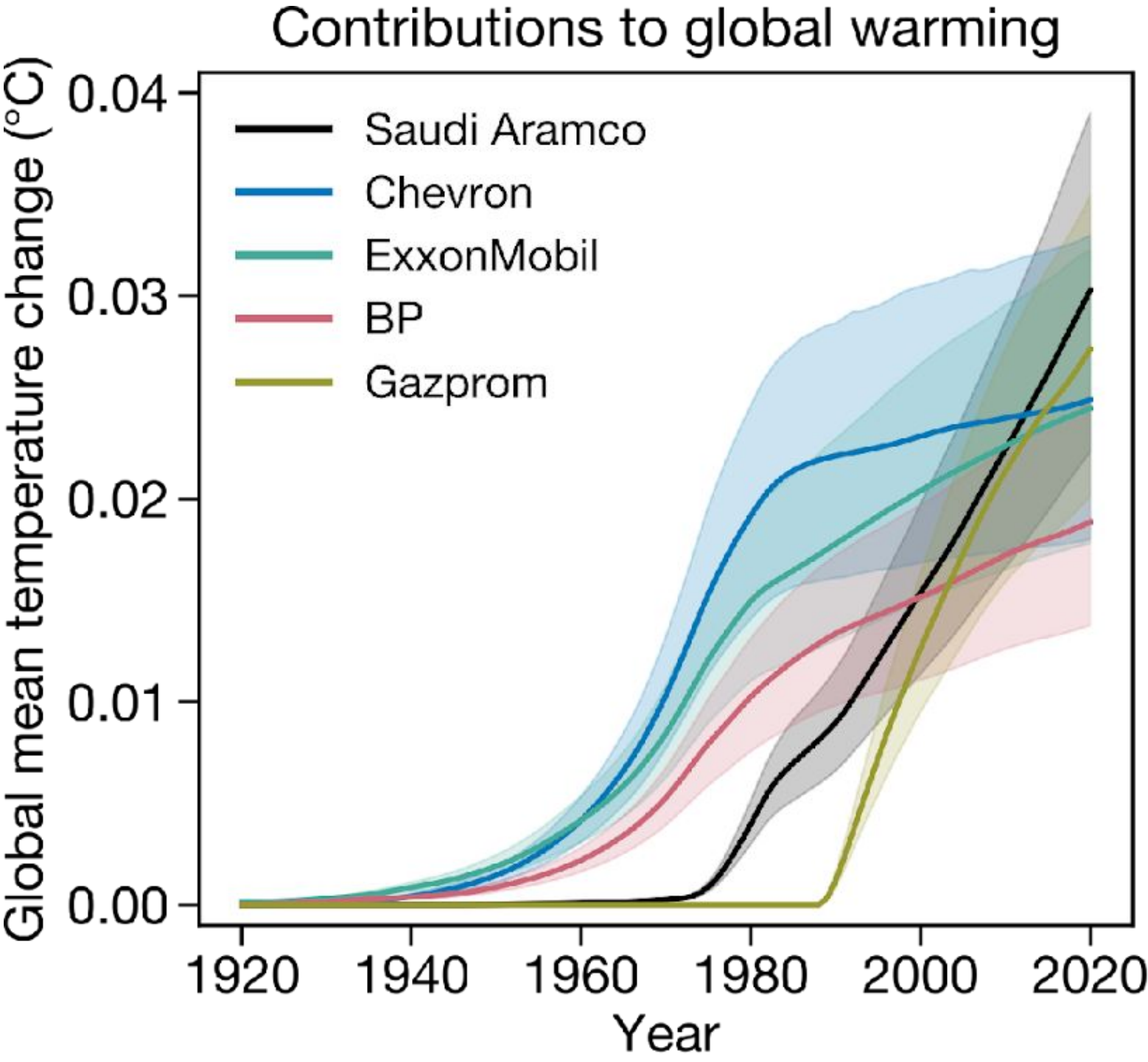
Attributing extreme heat impacts to fossil fuel producers

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Attribute global warming to emitters

Attributing extreme heat impacts to fossil fuel producers

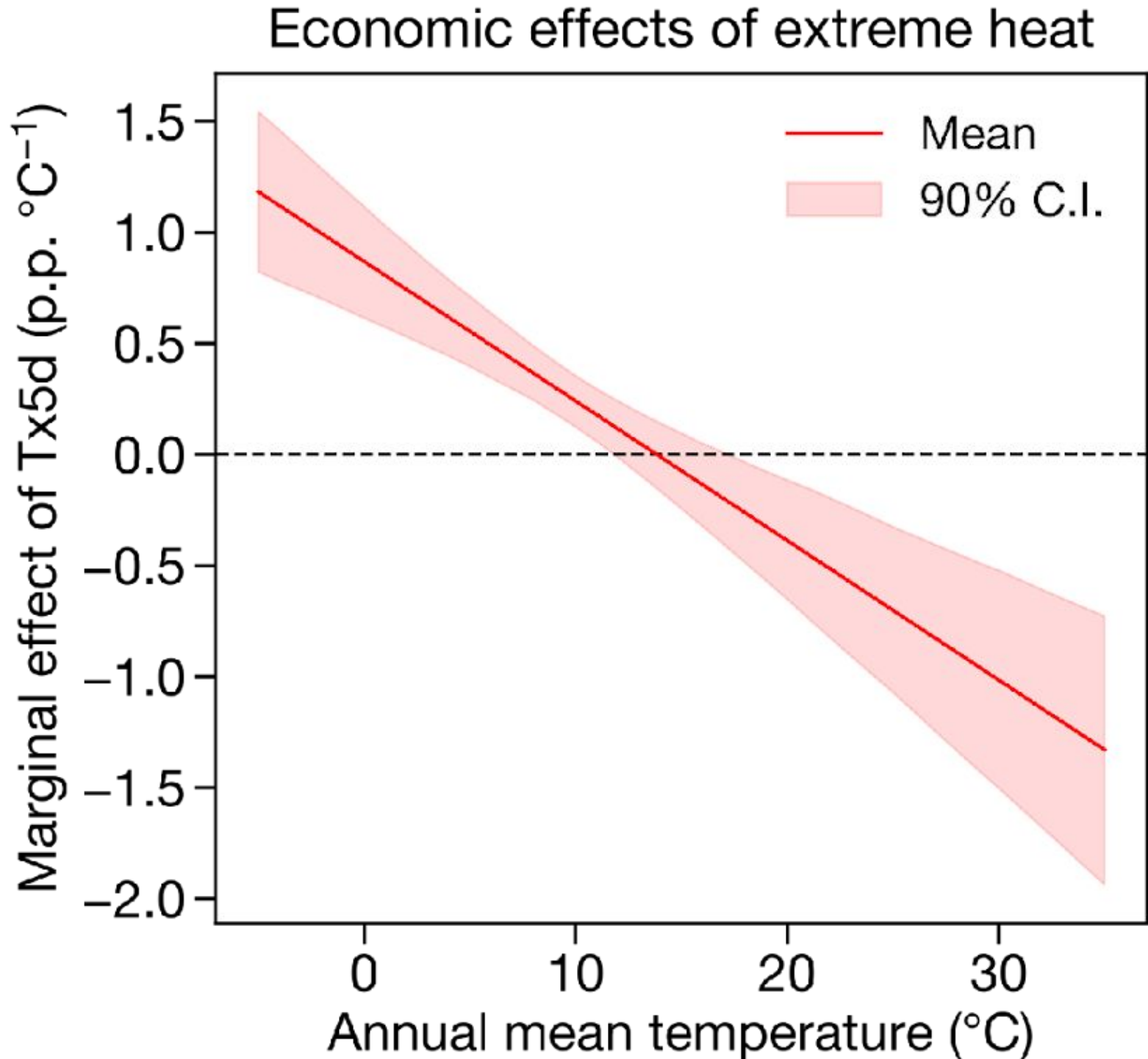
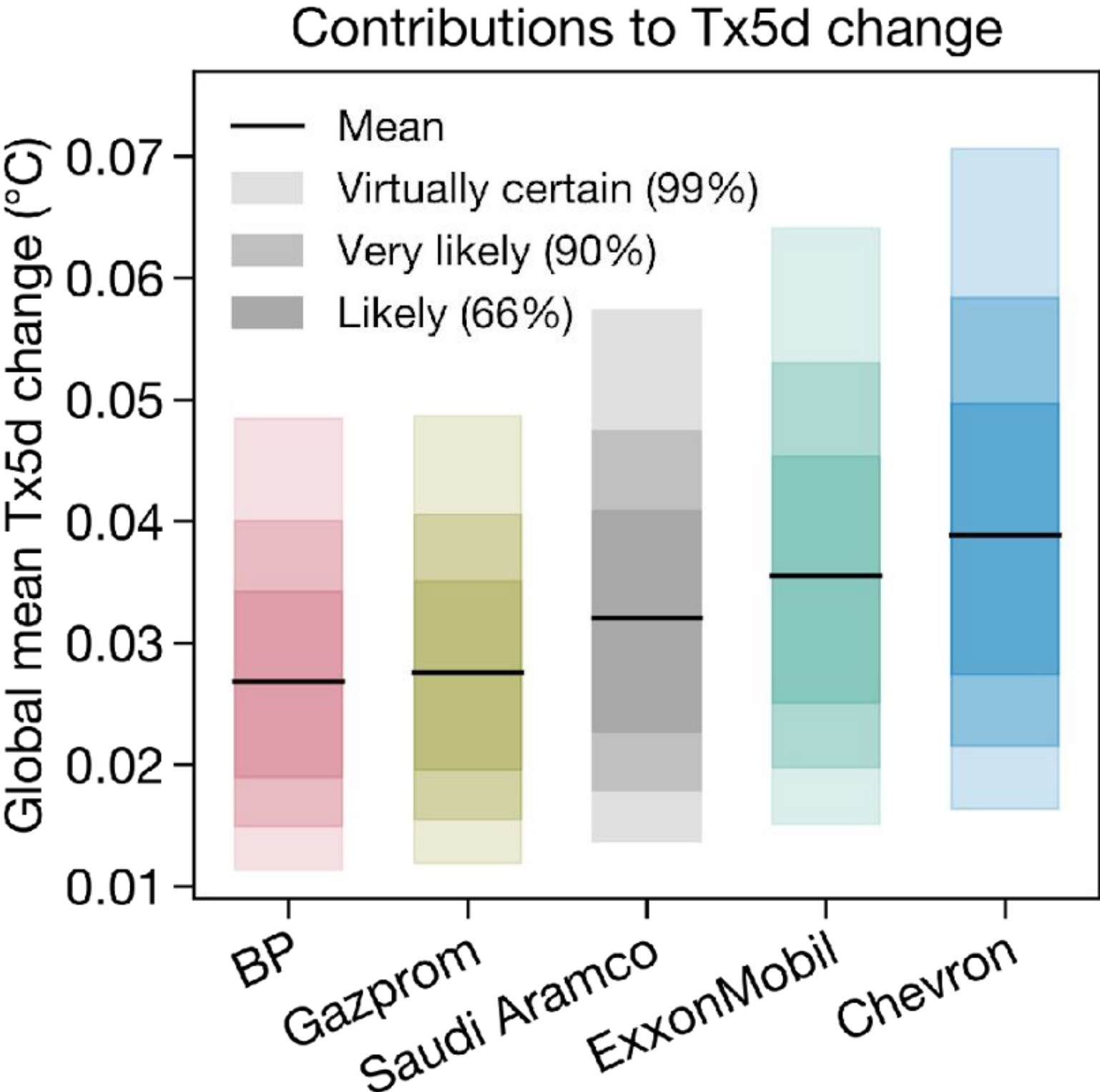
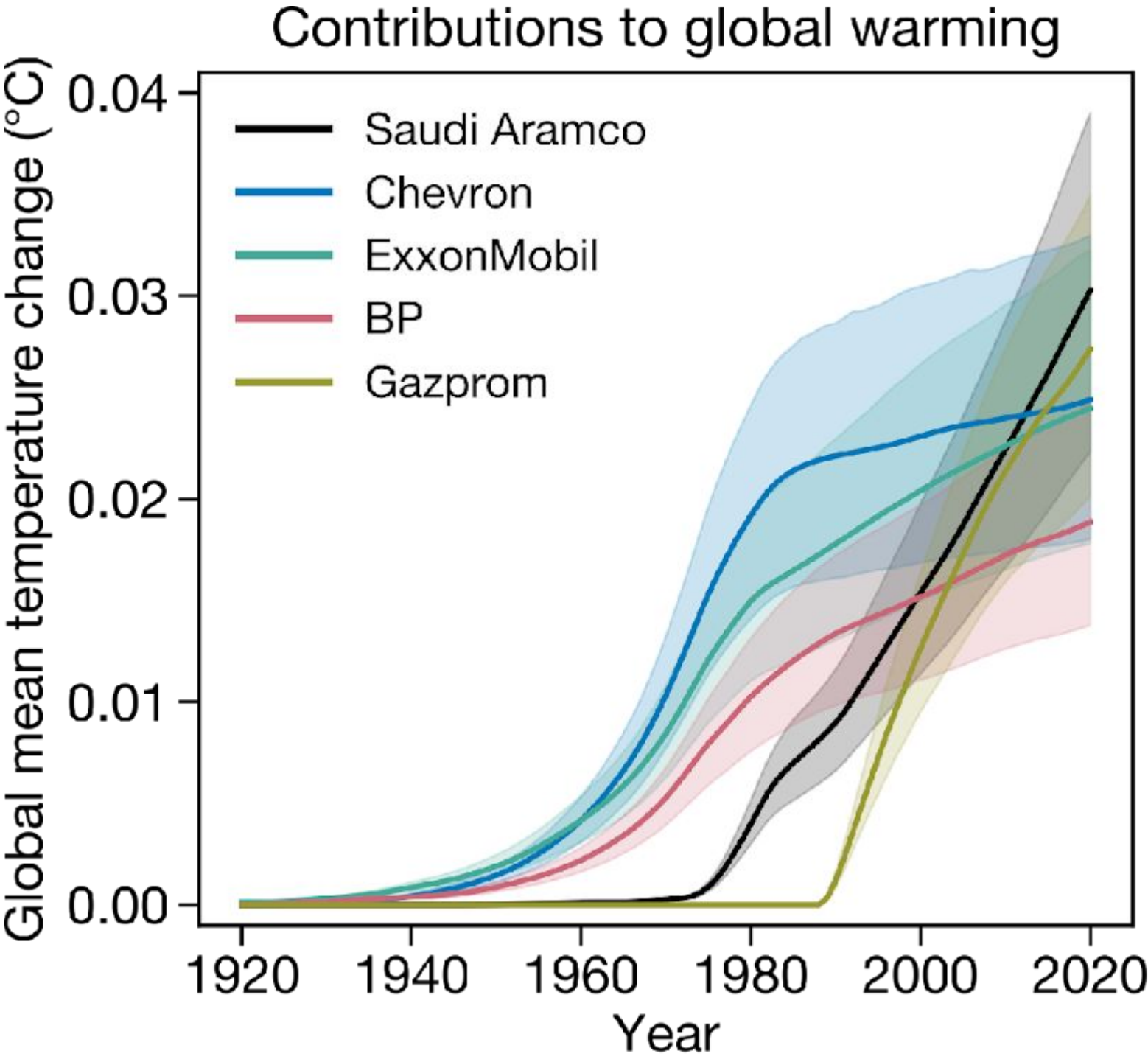


Attribute global warming to emitters



Downscale to local climate hazard

Attributing extreme heat impacts to fossil fuel producers



Attribute global warming to emitters



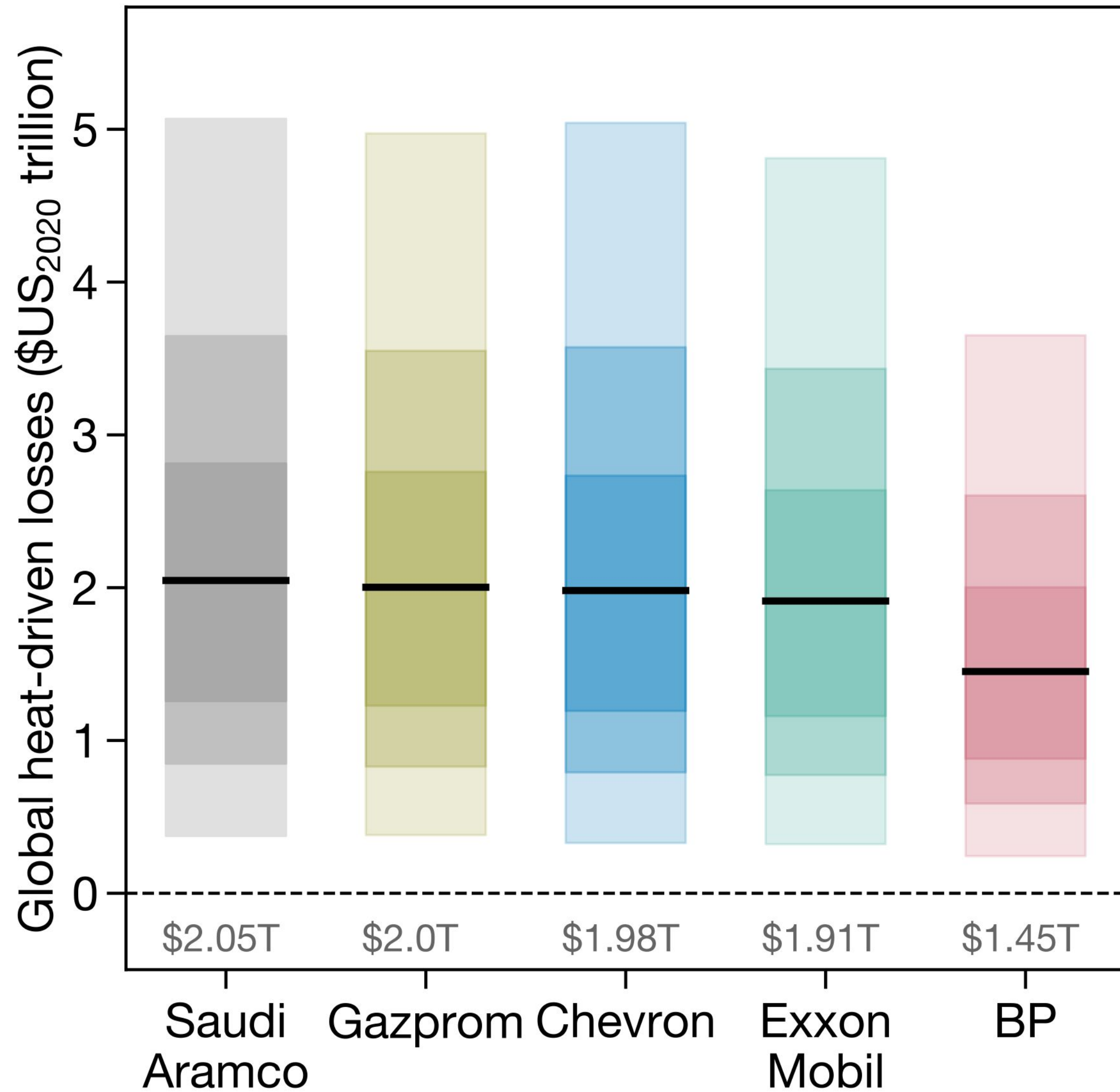
Downscale to local climate hazard



Calculate human impacts of hazard

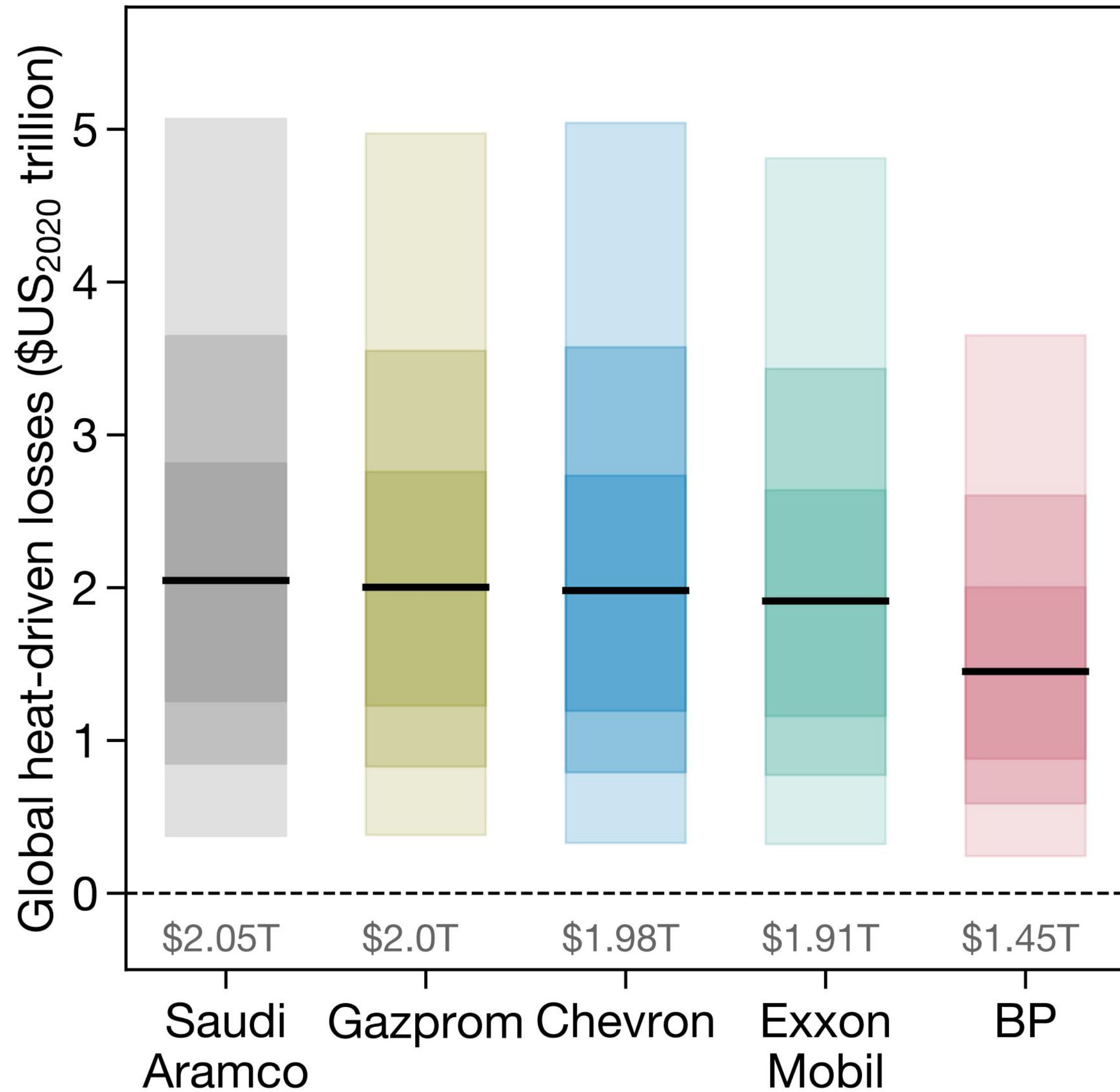
Extreme heat damages from fossil fuel producers

Losses from individual firms

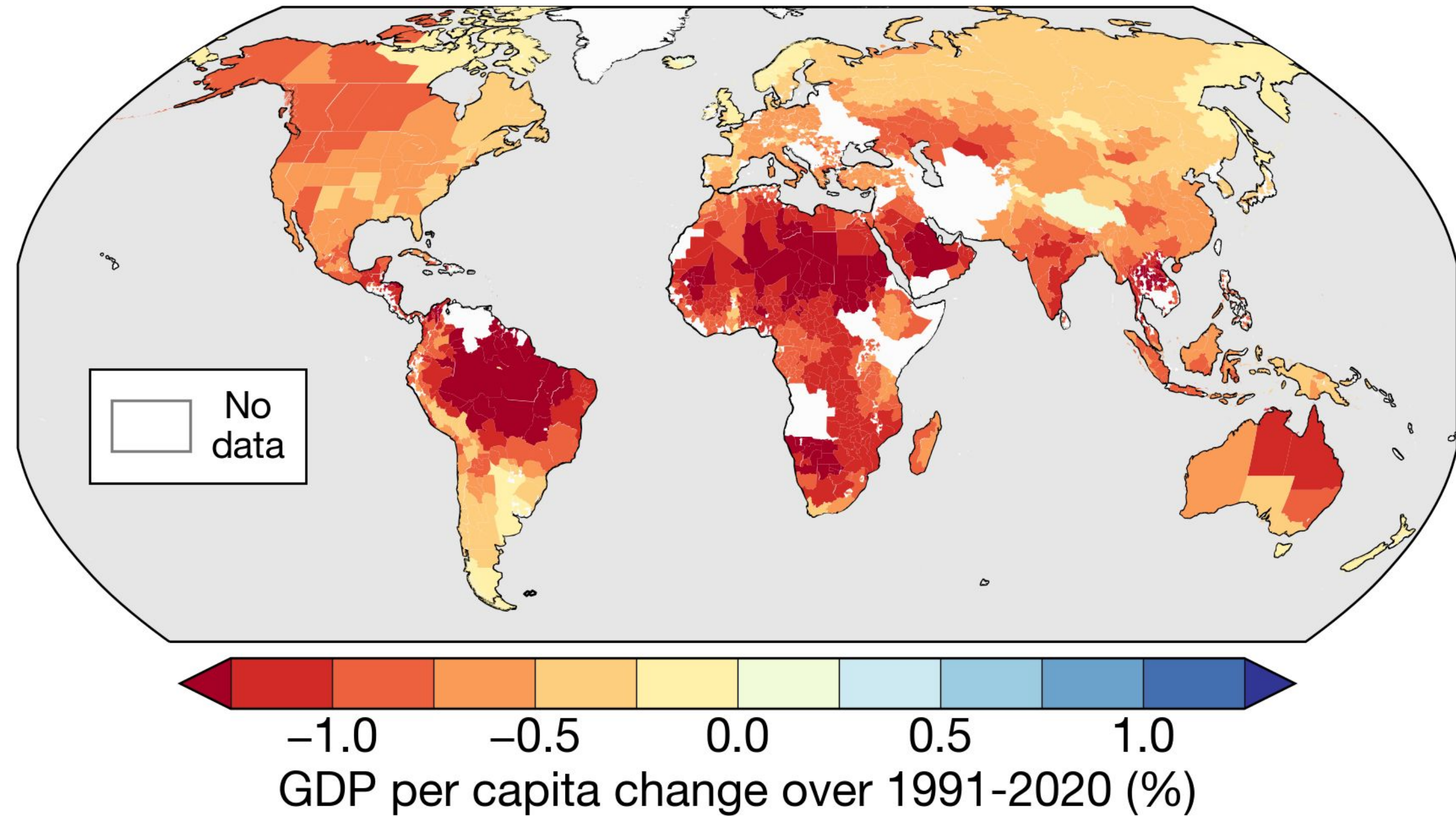


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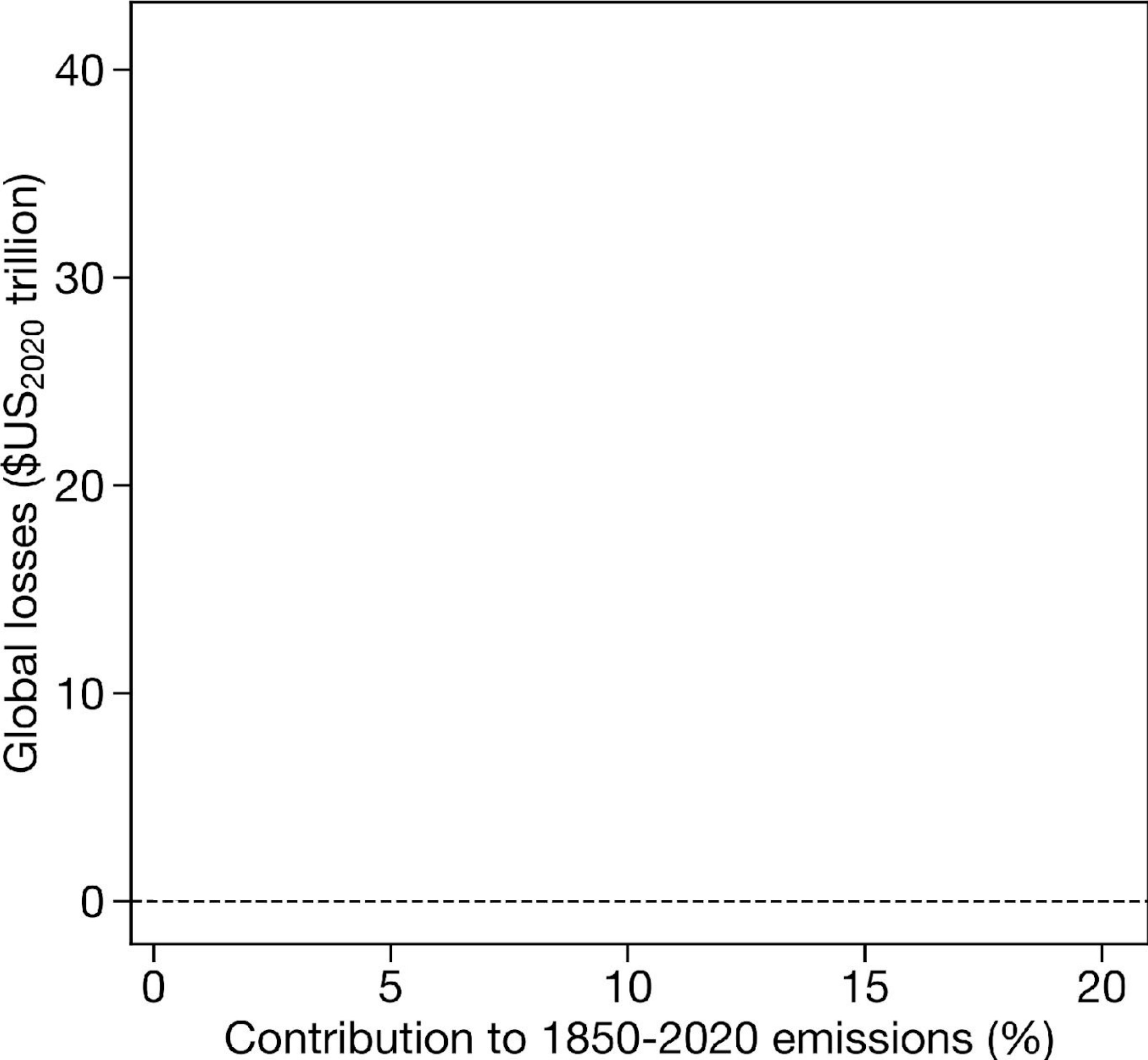


Losses from top five

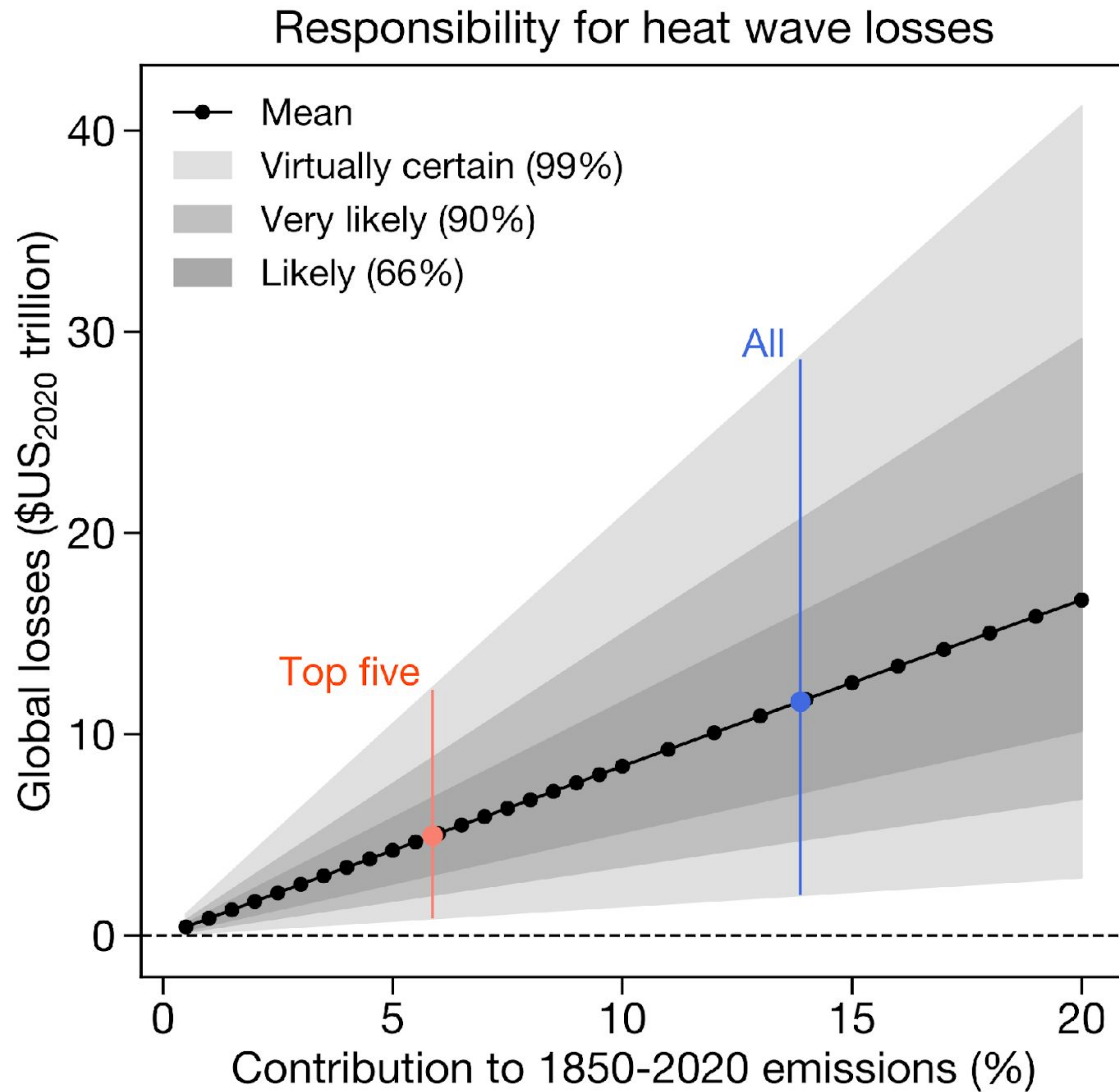


Damages from generalized contributions

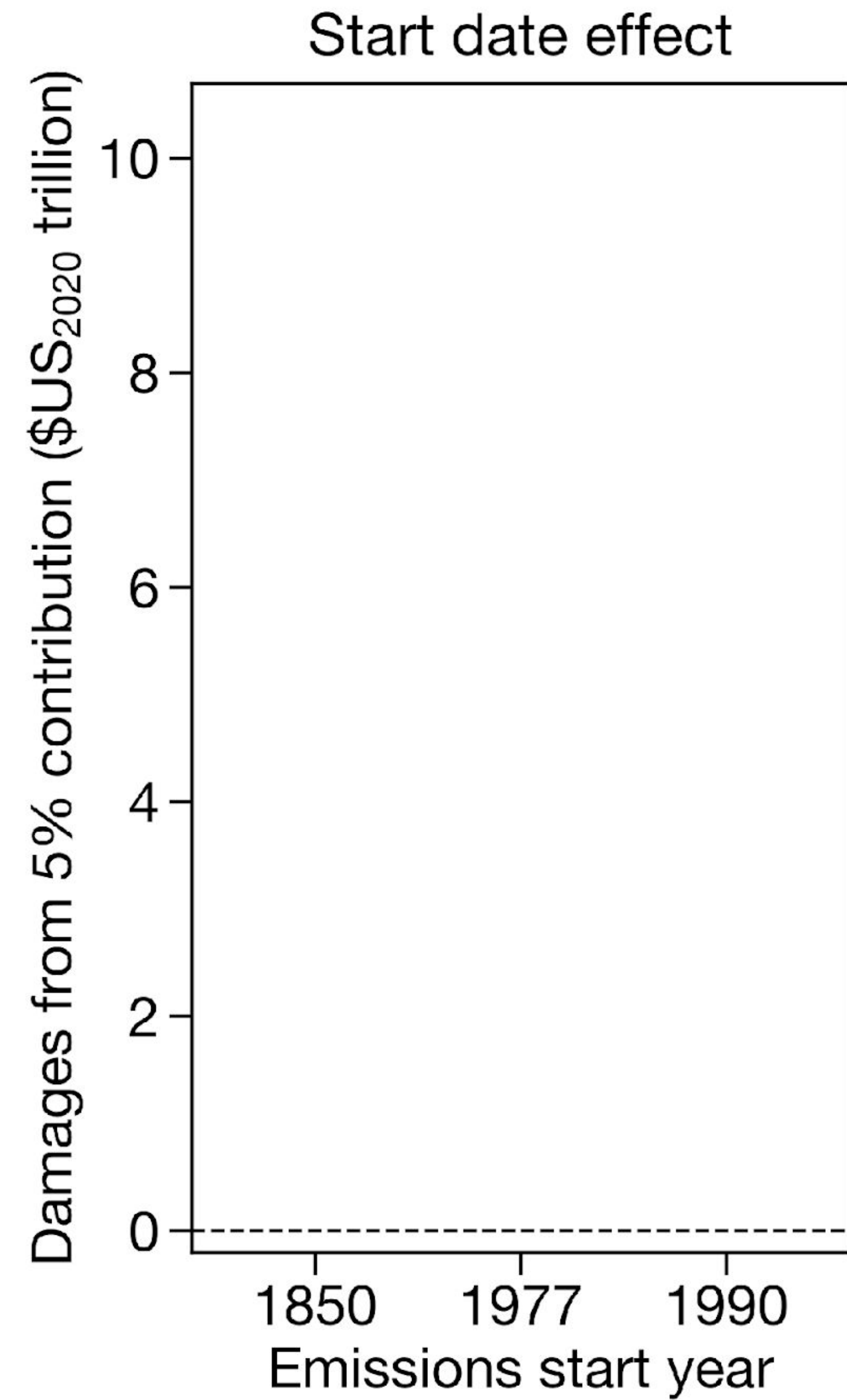
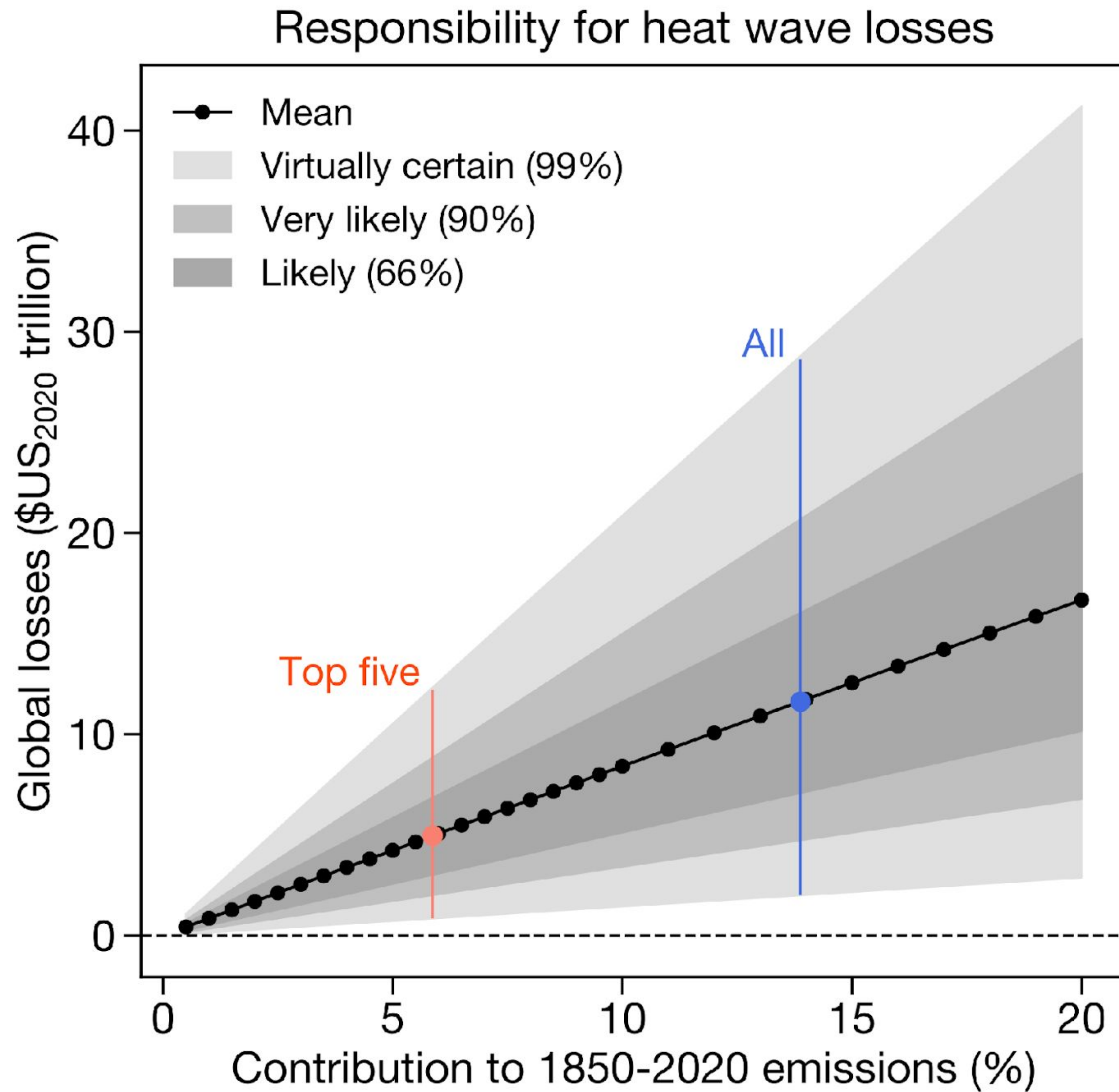
Responsibility for heat wave losses



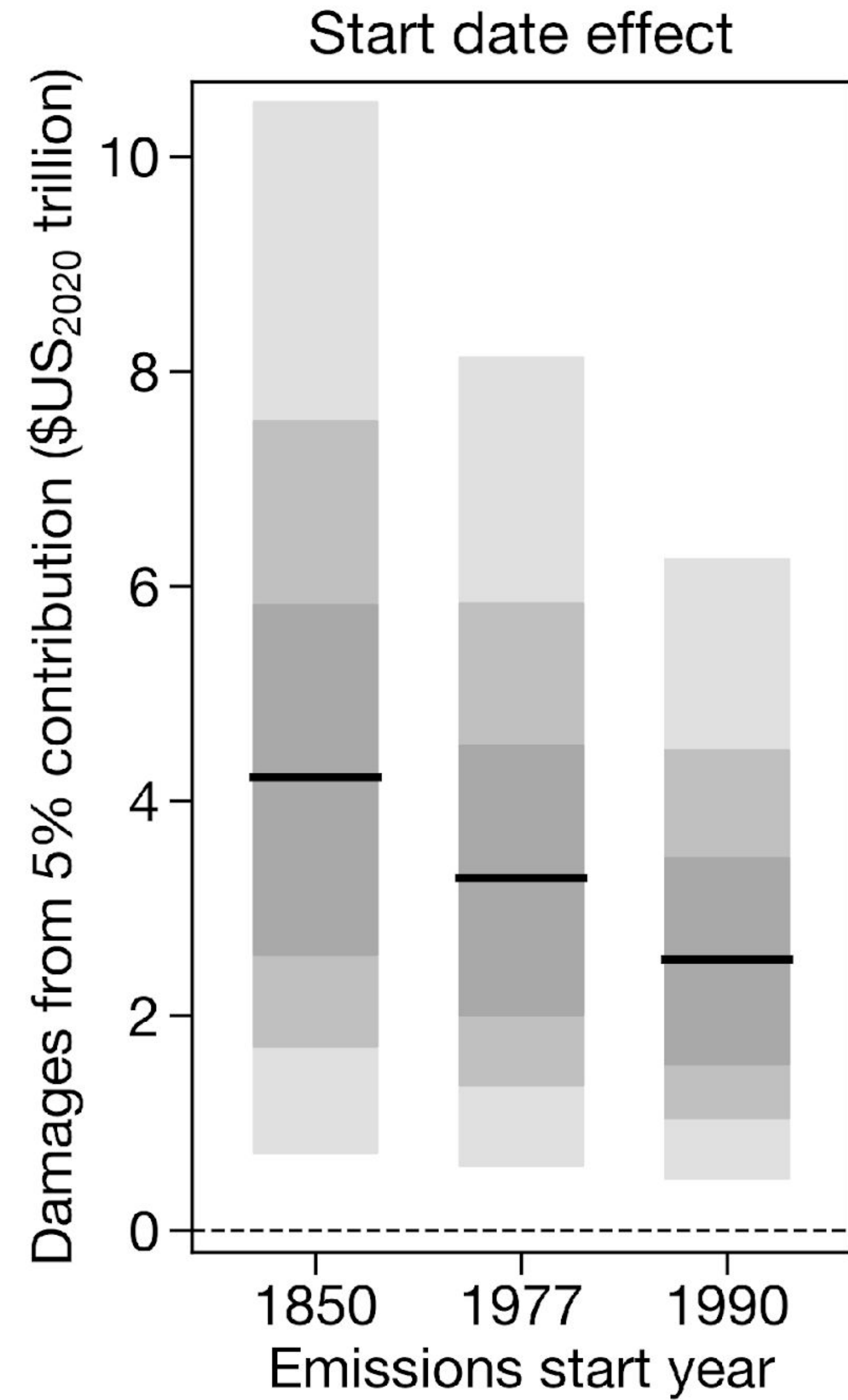
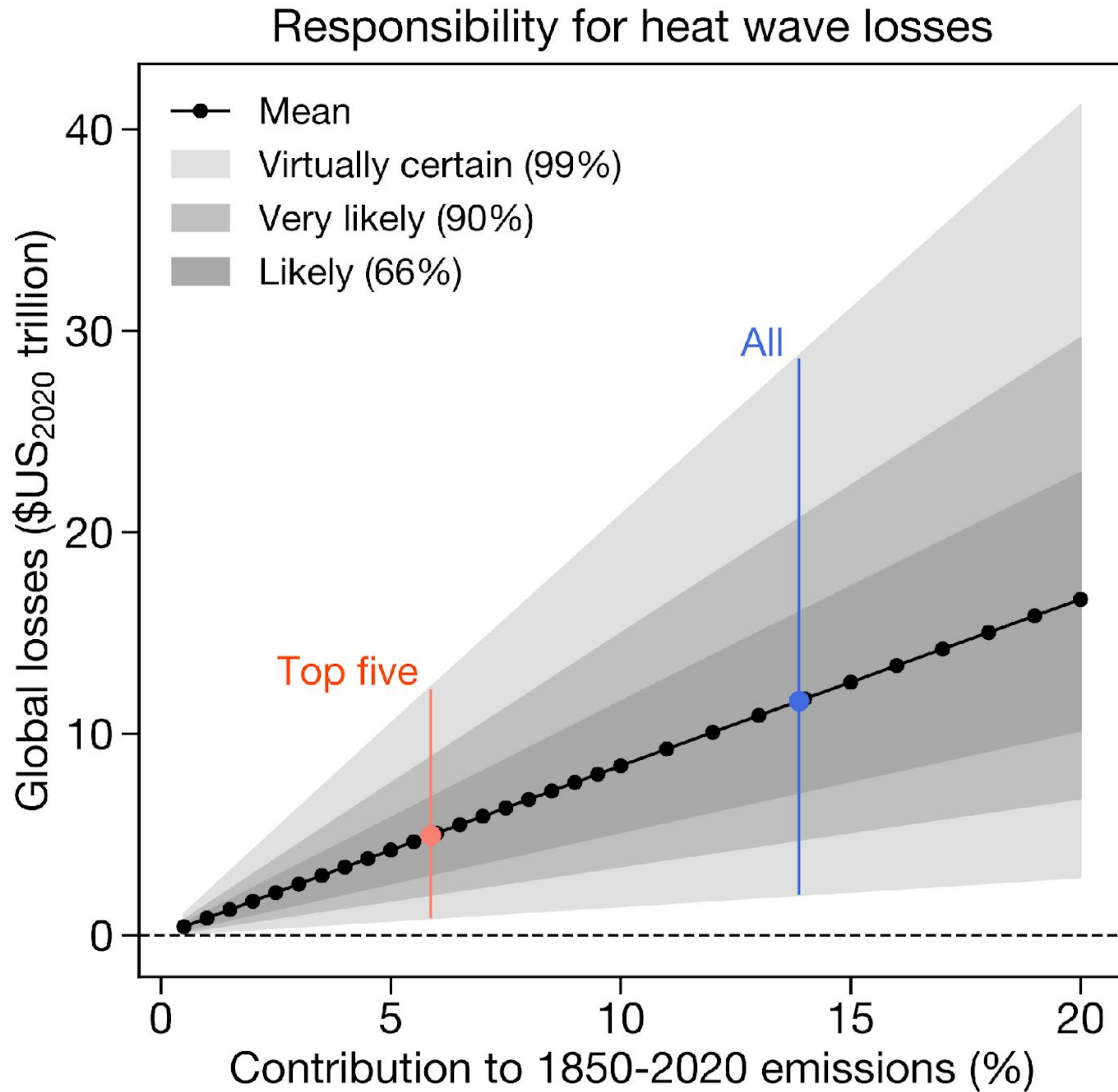
Damages from generalized contributions



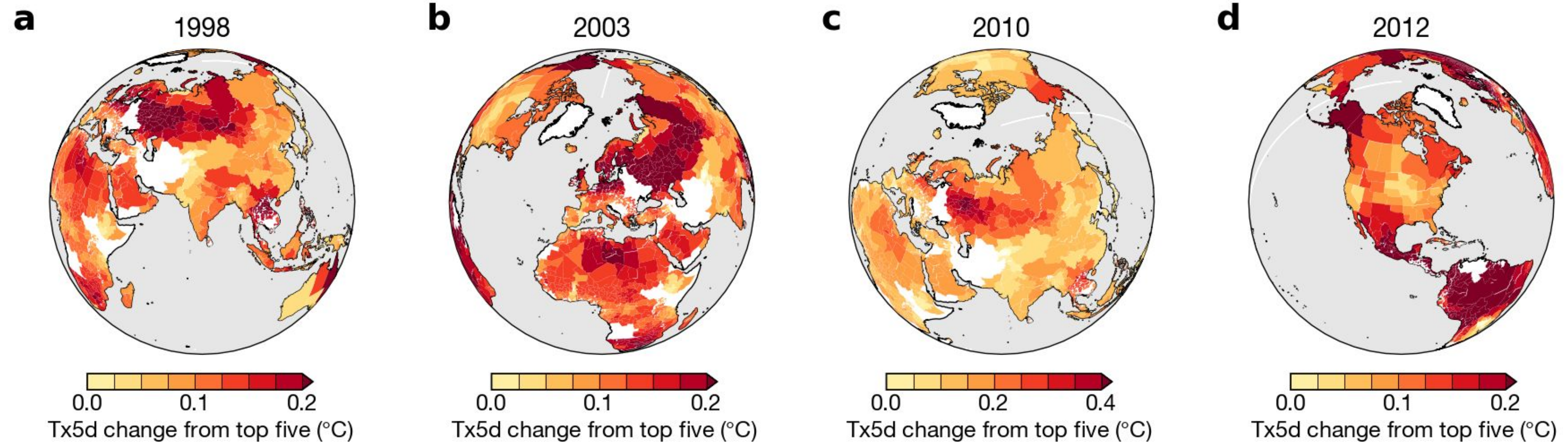
Damages from generalized contributions



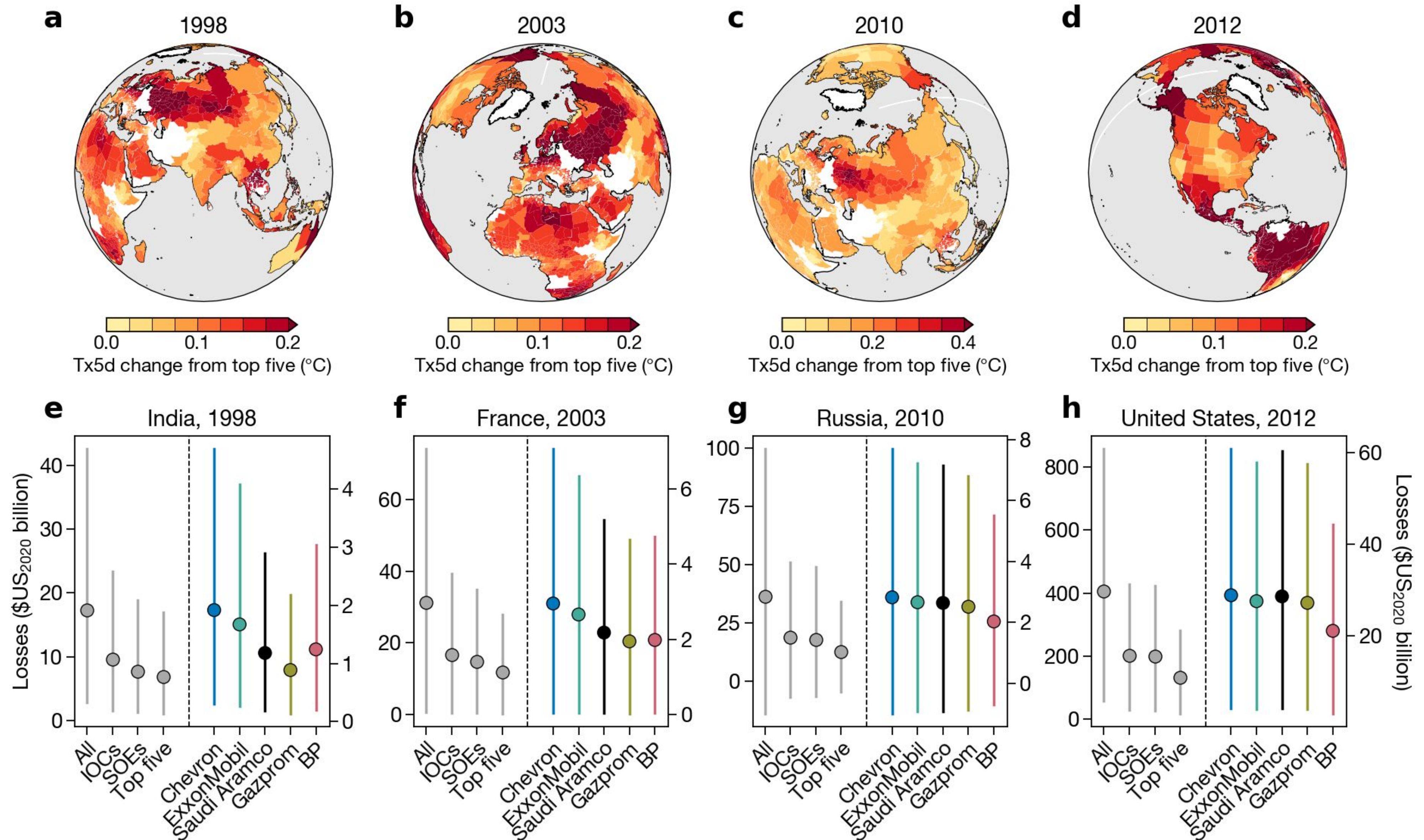
Damages from generalized contributions



Damages from individual extreme events



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Some remaining questions

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What type of actor is considered responsible?

One person's Scope 3 emissions are another person's Scope 1 emissions

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