

EGU24-3917, updated on 27 Mar 2025

<https://doi.org/10.5194/egusphere-egu24-3917>

EGU General Assembly 2024

© Author(s) 2025. This work is distributed under the Creative Commons Attribution 4.0 License.



## Mapping the end of the world: Understanding plausible routes to collapse from 2°C of warming

Sam Stephenson<sup>1</sup> and Luke Kemp<sup>2,3</sup>

<sup>1</sup>Department of Engineering, University of Cambridge, Cambridge, UK (sds70@cam.ac.uk)

<sup>2</sup>Centre for the Study of Existential Risk, University of Cambridge, Cambridge, UK (lkemp@nd.edu)

<sup>3</sup>Institute for Advanced Study, University of Notre Dame, Indiana, USA (lkemp@nd.edu)

Climate risk is systemic risk. Despite this, extreme risk cascades from climate change are underexplored. This is a mistake since such cascades are likely to occur even at relatively low temperature rises of 1.5-2°C. Such heating risks triggering six or more tipping elements in the Earth system. Here we use a novel form of expert elicitation and systems mapping to trace out potential paths from climate impacts to societal collapse at 2°C of warming. We contacted 8 experts from a range of different fields, including climatology, earth systems science, and existential risk studies, and had them compose systems diagrams of the most likely scenarios in which expected climate impacts cascade into widespread systems failures. We then compared and synthesised these to identify key, common feedbacks and pathways. These include food crises and extreme weather events undermining state legitimacy and triggering socio-political violence. Climate resilience efforts need to account for such extreme cascades.