POTSDAM INSTITUTE FOR CLIMATE IMPACT RESEARCH

PIK

Rapid and living evidence

Using Recent Advances in Artificial Intelligence to Accelerate & Scale Evidence Synthesis for Evidence-based Climate Policy and Science Assessments

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Science Europe Webinar

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Leibniz Association

Living Evidence

- Providing the best and most recent evidence ever more important
- Disconnect between need for and delivery of evidence is a fundamental problem at science-policy interface
- Living evidence: constantly updating high-quality systematic maps and reviews

Elliott JH, Lawrence R, Minx JC, et al. Nature 2021;600:383-385

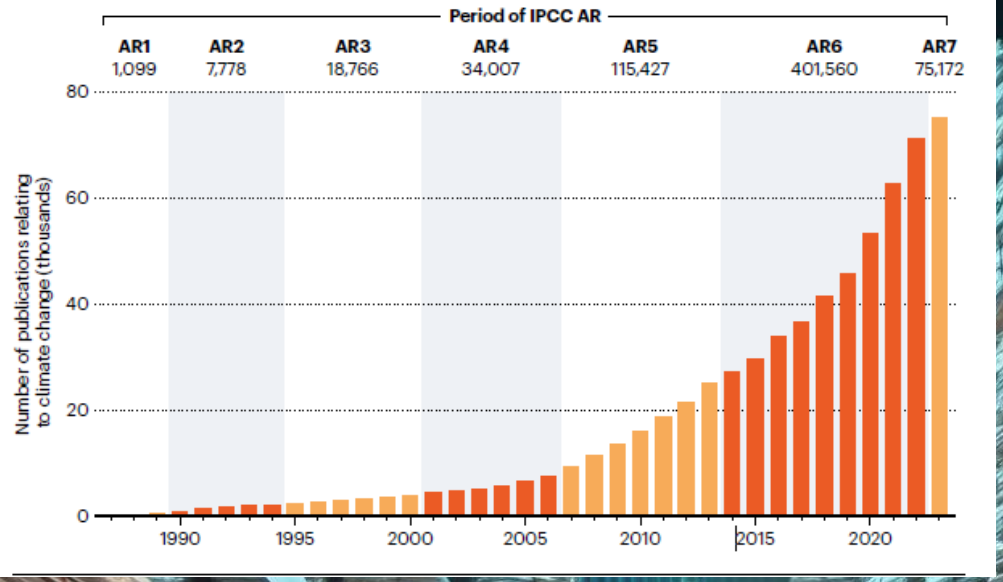
Decision makers need 'living' evidence synthesis

Julian H. Elliott, Rebecca Lawrence, Jan C. Minx, Olufemi T. Oladapo, Philippe Ravaud, Britta Tendal Jeppesen, James Thomas, Tari Turner, Per Olav Vandvik & Jeremy M. Grimshaw

Fund and use dynamic evidence summaries of the latest data to steer research, practice and policy.

Council, worried that the cacophony would create confusion and anxiety among already-stressed clinicians. We argued for key bodies to come together quickly and use robust, evidence-based processes to find signals in the noisy flow of COVID-19 research. Two weeks

the evidence pipeline[1]. Take the example of remdesivir, an intravenous treatment originally developed for Ebola virus. In May 2020, weak but promising data suggested it could be used to treat COVID-19. Over the next 18 months, 52 papers from 14 randomized trials were pub-



Exponential growth of climate evidence poses new challenges for rigorous assessments of the state of knowledge (scale; quality)

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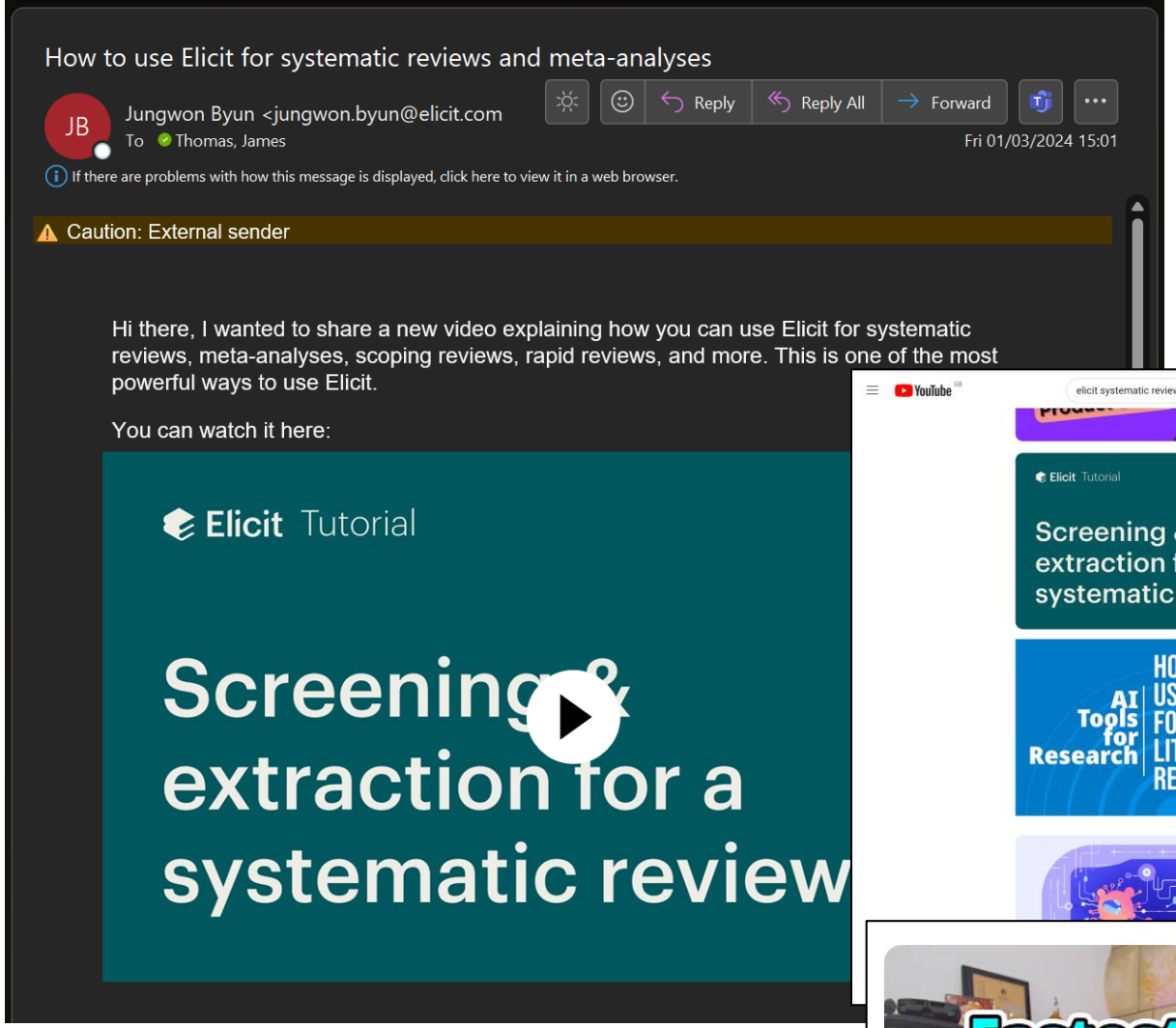
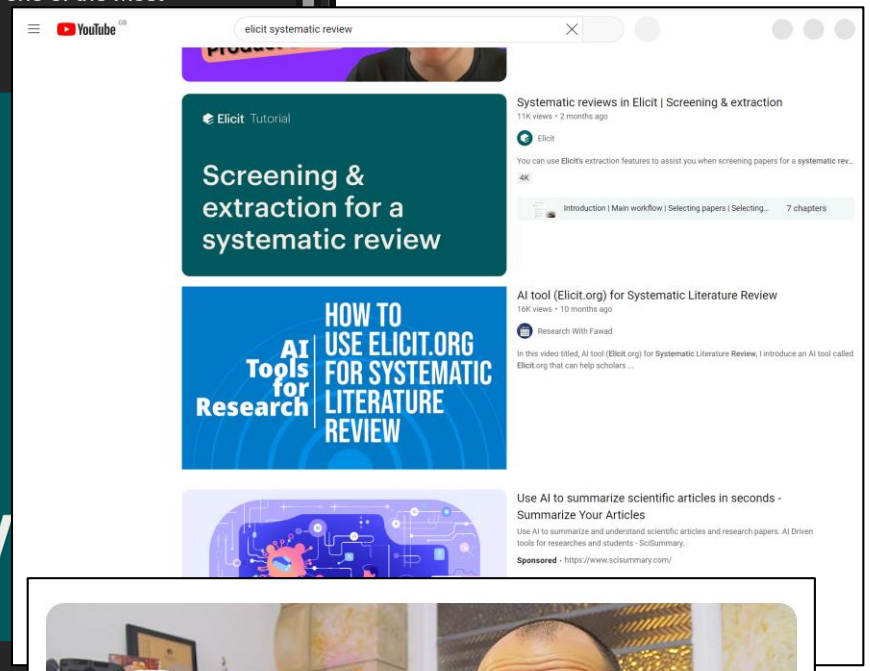
But maybe most recent advances in AI can help us rise to the challenge?

LLMs have created a lot of enthusiasm around digital evidence synthesis tools (DESTs)





WILD WEST – evidence synthesis needs to remain a scientific process!

Cochrane

But guidance is becoming available

RAISE: Responsible AI in evidence synthesis

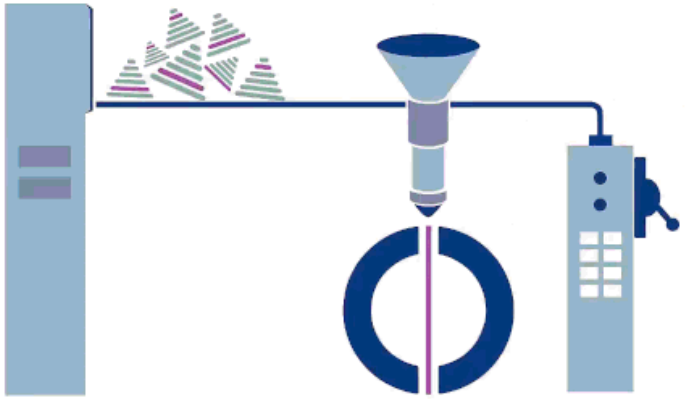
Three-paper RAISE collection for AI use in research

1. Responsible AI in Evidence synthesis 1: Recommendations for practice
2. Responsible AI in Evidence synthesis 2: Building and evaluating evidence synthesis tools
3. Responsible AI in Evidence synthesis 3: Selecting and using evidence synthesis tools

Cochrane · ICASR · JBI · Campbell Collaboration · EPPI Centre Evidence for Policy & Practice · Collaboration for Environmental Evidence · wellcome · 3ie International Initiative for Impact Evaluation · World Health Organization · GDN Global Development Network · SEI · AHRQ · IQWiG · Education Endowment Foundation · NIH · NICE National Institute for Health and Care Excellence · JUNO

Making rigorous evidence synthesis faster, cheaper and living

Funded by Wellcome



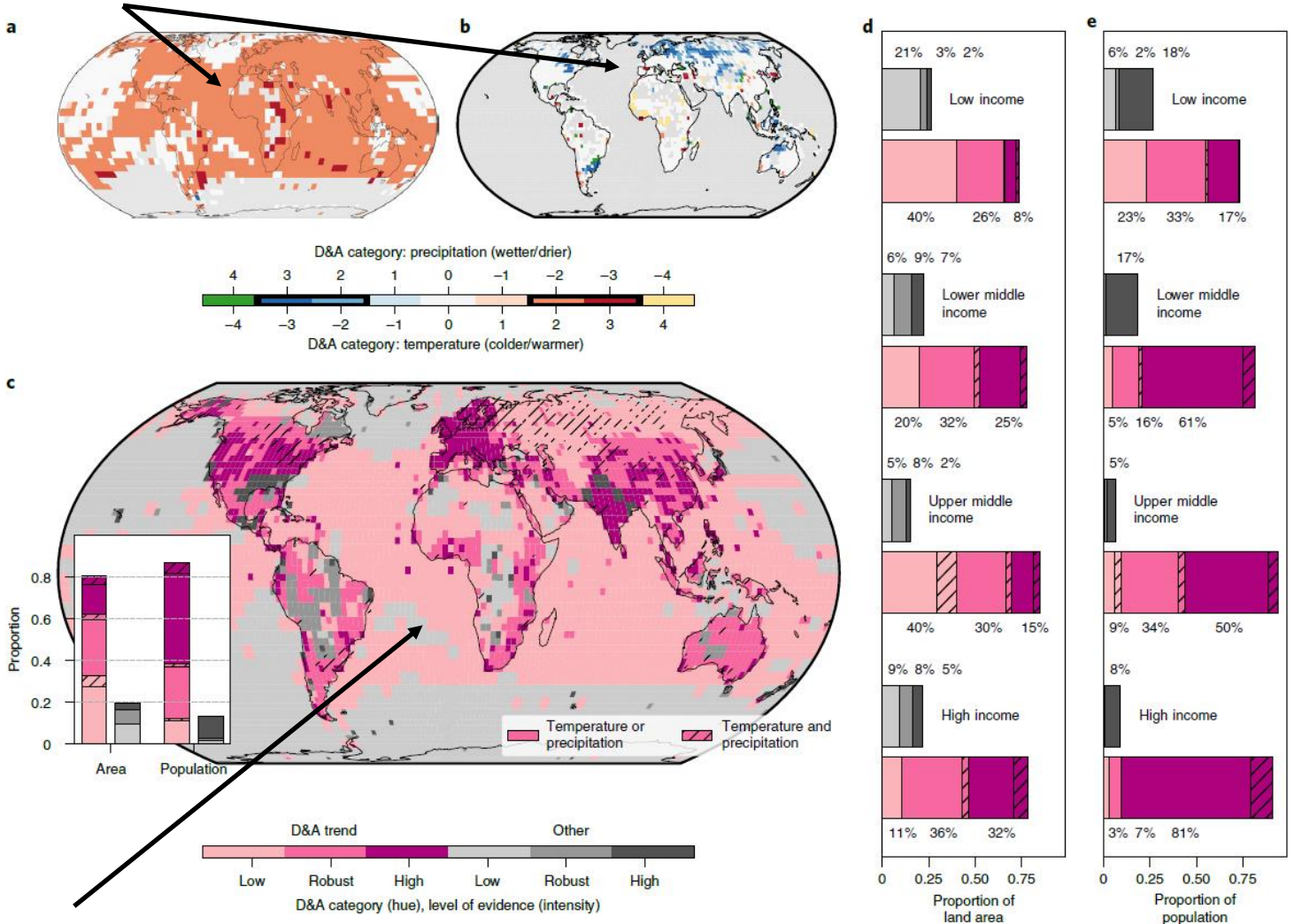
Digital Evidence Synthesis Tool Innovation Yielding Improvements in Climate & Health

DESTINY will co-develop a new generation of digital evidence synthesis tools (DESTs) and showcase their transformational power for the delivery of rigorous living evidence in climate and health that matters to policymakers and other evidence users.

- **New DESTs** – leverage recent advances in AI to develop a new generation of DESTs for making evidence synthesis faster, cheaper and more useful (WP2);
- **Responsible use of DESTs -** engage in DEST evaluation to design safe and responsible applications without eroding methodological standards (WP3);
- **Creating impact on the ground through co-production -** build communities of practice with decision makers around the globe and across scales to ensure DESTs are fit-for-purpose, work for all and are applied to six impact cases that matter (WP1, WP4);
- **Mainstreaming the use of DESTs -** Support users, producers, and funders of climate and health evidence synthesis to establish best practices (WP5).

AI for evidence synthesis at scale in science assessments

Climate change attribution



100,000 studies on observed climate impacts

Callaghan et al. (2021), Machine-learning-based evidence and attribution mapping of 100,000 climate impact studies, *Nat. Clim. Change*

Climate impacts can be observed and are documented for 80% of the land surface, where 85% of the world population lives.

Climate & Environment Climate Solutions

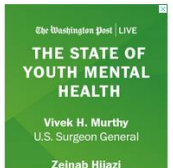
CLIMATE AND ENVIRONMENT

At least 85 percent of the world's population has been affected by human-induced climate change, new study shows

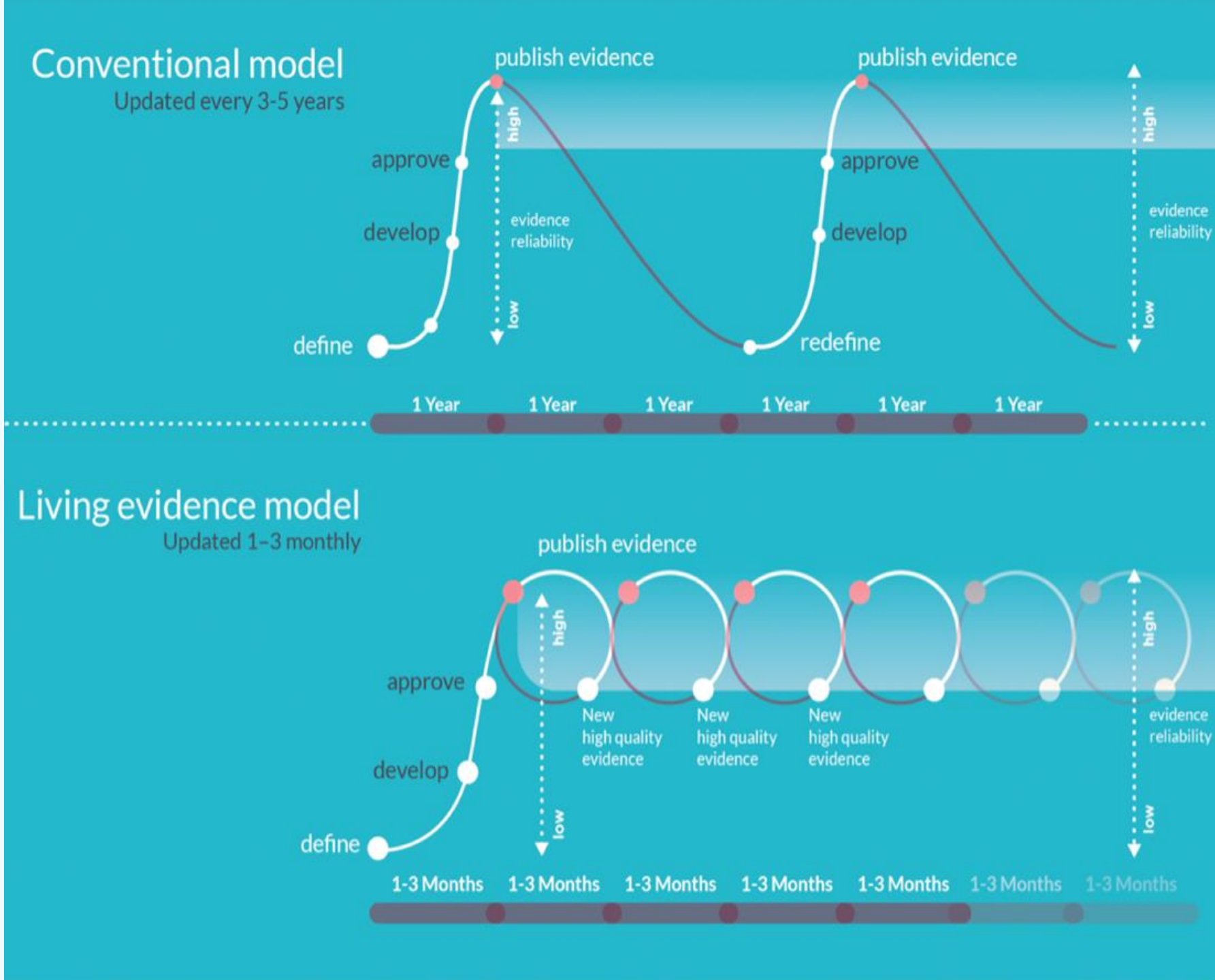
Researchers used machine learning to analyze more than 100,000 studies of weather events and found four-fifths of the world's land area has suffered impacts linked to global warming

By Annabelle Timsit and Sarah Kaplan

Updated October 11, 2021 at 6:46 p.m. EDT | Published October 11, 2021 at 12:00 p.m. EDT



Let’s be efficient: rapid and living evidence to support evidence-based decision-making



Thank you!

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