Draft date: 8/14/23

2023 Summer National Meeting
Seattle, Washington

CLIMATE AND RESILIENCY (EX) TASK FORCE
Tuesday, August 15, 2023
10:45 a.m. – 12:15 p.m.
Seattle Convention Center—Ballroom 1—Level 5

ROLL CALL

Lori K. Wing-Heier, Co-Chair	Alaska	Mike Chaney	Mississippi
Ricardo Lara, Co-Chair	California	Chlora Lindley-Myers	Missouri
James J. Donelon, Co-Vice Chair	Louisiana	Troy Downing	Montana
Mike Kreidler, Co-Vice Chair	Washington	Francisco D. Cabrera	N. Mariana Islands
Mark Fowler	Alabama	Eric Dunning	Nebraska
Peni Itula Sapini Teo	American Samoa	Scott Kipper	Nevada
Barbara D. Richardson	Arizona	D.J. Bettencourt	New Hampshire
Alan McClain	Arkansas	Justin Zimmerman	New Jersey
Michael Conway	Colorado	Alice Kane	New Mexico
Andrew N. Mais	Connecticut	Adrienne A. Harris	New York
Trinidad Navarro	Delaware	Mike Causey	North Carolina
Karima M. Woods	District of Columbia	Jon Godfread	North Dakota
Michael Yaworsky	Florida	Judith L. French	Ohio
Gordon I. Ito	Hawaii	Glen Mulready	Oklahoma
Dana Popish Severinghaus	Illinois	Andrew R. Stolfi	Oregon
Amy L. Beard	Indiana	Michael Humphreys	Pennsylvania
Doug Ommen	Iowa	Alexander S. Adams Vega	Puerto Rico
Sharon P. Clark	Kentucky	Elizabeth Kelleher Dwyer	Rhode Island
Timothy N. Schott	Maine	Michael Wise	South Carolina
Kathleen A. Birrane	Maryland	Kevin Gaffney	Vermont
Gary D. Anderson	Massachusetts	Scott A. White	Virginia
Anita G. Fox	Michigan	Nathan Houdek	Wisconsin
Grace Arnold	Minnesota	Jeff Rude	Wyoming

NAIC Support Staff: Aaron Brandenburg/Libby Crews

AGENDA

1.	Consider Adoption of its Spring National Meeting Minutes—*Director Lori K. Wing-Heier (AK)*	Attachment One
2.	Hear a Presentation from the ASU Global Futures Laboratory/Bermuda Institute for Ocean Sciences on Rising Sea Levels —*Dr. Peter Schlosser (ASU Global Futures Laboratory)*	Attachment Two
3.	Hear a Presentation from Ceres on an Inclusive Insurance Study—Steven Rothstein *(Ceres)*	Attachment Three
4.	Hear a Presentation on Atmospheric River Storms—*Mike Peterson (CA)*	Attachment Four
5.	Receive an Update from the Solvency Workstream—*Commissioner Kathleen Birrane (MD)*	
6.	Discuss Any Other Matters Brought Before the Task Force —*Commissioner Ricardo Lara (CA)*	
7.	Adjournment	

Draft Pending Adoption

Draft: 4/4/23

Climate and Resiliency (EX) Task Force
Louisville, Kentucky
March 24, 2023

The Climate and Resiliency (EX) Task Force met in Louisville, KY, March 24, 2023. The following Task Force members participated: Lori K. Wing-Heier, Co-Chair (AK); Ricardo Lara, Co-Chair (CA); James J. Donelon, Co-Vice Chair (LA); Mike Kreidler, Co-Vice Chair (WA); Mark Fowler (AL); Peni Itula Sapini Teo (AS); Barbara D. Richardson (AZ); Michael Conway represented by Peg Brown (CO); Andrew N. Mais represented by Wanchin Chou (CT); Trinidad Navarro represented by Susan Jennette (DE); Michael Yaworsky represented by Anoush Brangaccio (FL); Gordon I. Ito (HI); Doug Ommen (IA); Dana Popish Severinghaus (IL); Amy L. Beard represented by Patrick O'Connor (IN); Sharon P. Clark represented by Shawn Boggs (KY); Gary D. Anderson represented by Rachel M. Davison (MA); Kathleen A. Birrane (MD); Timothy N. Schott (ME); Anita G. Fox represented by Chad Arnold (MI); Chlora Lindley-Myers represented by Cynthia Amann (MO); Mike Chaney represented by Andy Case (MS); Troy Downing represented by Bob Biskupiak (MT); Mike Causey represented by Jackie Obusek (NC); Jon Godfread (ND); Eric Dunning (NE); Jennifer Catechis (NM); Scott Kipper represented by David Cassetty (NV); Adrienne A. Harris represented by John Finston (NY); Judith L. French (OH); Glen Mulready (OK); Andrew R. Stolfi represented by Alex Cheng (OR); Michael Humphreys represented by Michael McKenney (PA); Elizabeth Kelleher Dwyer represented by Matt Gendron (RI); Michael Wise (SC); Scott A. White (VA); Kevin Gaffney (VT); Nathan Houdek represented by Sarah Smith (WI); and Jeff Rude (WY). Also participating were: Alan McClain (AR); Christian Citarella (NH); Tregenza A. Roach (VI); and Allan L. McVey (WV).

1. Received Updates from its Workstreams

Director Wing-Heier said the Pre-Disaster Mitigation Workstream will continue to be led by Director Richardson. She said the Climate Risk Disclosure Workstream will continue to be led by Commissioner Stolfi. She said the Technology Workstream and Innovation Workstream will be combined into one Technology Workstream that will be led by Commissioner Donelon. She said the Solvency Workstream will continue to be led by Commissioner Birrane.

Commissioner Birrane said in the first half of 2022, the Solvency Workstream developed and sent three referrals to three different Financial Condition (E) Committee working groups to propose specific enhancements to the existing financial solvency tools to more explicitly consider climate-related risks. She said the Workstream is reaching back out to those groups to see what the status is regarding their consideration of the referrals. She said the Workstream focused on climate scenario analysis in 2022, holding three public panels to discuss the topic. She said the first panel was held Oct. 12, 2022, and it provided a foundational education on climate scenario analysis, including what it is intended to accomplish and what data is needed to do the analysis effectively. She said the second panel was held Nov. 4, 2022, and it included presentations from international jurisdictions that have required the industry or a subset of the industry to participate in mandatory analytical risk evaluation exercises. She said the third panel was held Nov. 29, 2022, and it included presentations from a property/casualty (P/C) carrier and a life insurance carrier on how they utilize climate scenario analysis in their risk management and business strategy.

Commissioner Birrane said the Solvency Workstream is now tasked with understanding what role climate scenario analysis plays in the oversight of insurers in the U.S. She said on Feb. 1, the Workstream met in regulator-to-regulator session to: 1) receive a presentation from the Federal Reserve on its recently exposed proposed climate scenario analysis exercise; and 2) discuss members' initial view on the role of climate scenario analysis as a financial oversight tool for U.S. state insurance regulators.

Commissioner Birrane said the next steps for the Solvency Workstream include developing and sending out a survey to its members and interested state insurance regulators on whether the Workstream and the NAIC should look at the development and incorporation of any form of specific climate scenario analysis approach with regard to current oversight tools. She said the Solvency Workstream would also begin to look at stress testing. She said it would hold public meetings that would include education for state insurance regulators and others on climate stress testing, as well as hearing from international jurisdictions that are using climate stress tests.

2. Adopted its 2022 Fall National Meeting Minutes

Director Wing-Heier said the Task Force met Dec. 15, 2022.

Commissioner Kreidler made a motion, seconded by Commissioner Donelon, to adopt the Task Force's Dec. 15, 2022, minutes (*see NAIC Proceedings – Fall 2022, Climate and Resiliency (EX) Task Force*). The motion passed unanimously.

3. Heard a Presentation from PSC on Flood Risk

Matthew Godsoe (Public Safety Canada—PSC) said with the increase in frequency and severity of disaster events, the need to address flooding and other disasters has become an elevated priority within the Canadian government. He said a December 2021 mandate from the Canadian Prime Minister sets out provisions to take actions to help Canadians be prepared for and recover from the impact of floods in high-risk areas by creating a low-cost national flood insurance program to protect homeowners who are at high risk of flooding and do not have adequate insurance protection. He said this issue has to be addressed by the federal, provincial, and territorial governments working together.

Godsoe said flooding is Canada's most frequent and costly natural disaster, causing over $1.5 billion in direct damage to homes each year. He said 94% of Canadians in high-risk areas remain unaware of their flood risk. He said most of the major cities in Canada are wholly or partially located in flood zones, and new unmitigated developments in these cities are the current number one driver of flood risk in Canada. He said financial and social hardships that occur because of disasters disproportionately affect vulnerable and marginalized populations. He said to date, almost all residential flood losses have been ineligible for insurance coverage; therefore, those losses had to be covered by provincial and territorial government disaster assistance programs.

Godsoe said the PSC created a Task Force on Flood Insurance and Relocation to explore viable solutions for insurance in high-risk areas and considerations for the potential relocation of homes most at risk of repeat flooding. He said the Task Force did not decide on an insurance or relocation solution, but it undertook research, costing, and analysis to inform future decision-making processes. He said this work concludes with its report titled *Adapting to Risking Flood Risk: An Analysis of Insurance Solutions for Canada*.

Godsoe said the Task Force created six public policy objectives to serve as a framework to later assess the viability of insurance arrangements. He said those objectives were: 1) provide adequate and predictable financial compensation for residents in high-risk areas; 2) incorporate risk-informed price signals and other levers that promote risk-appropriate land use, mitigation, and improved flood resiliency; 3) be affordable to residents of high-risk areas, with specific consideration for marginalized, vulnerable, and/or diverse populations; 4) provide coverage that is widely available for those at a higher risk across all regions; 5) maximize the participation of residents in high-risk areas; and 6) provide value for money for governments and taxpayers. He said the Task Force also focused on the need for targeted risk reduction activities through the mitigation and relocation for those in high-risk areas, which included household defenses, community flood mitigation, national support for risk reduction, and strategic relocation.

Godsoe said the Task Force studied international examples of how other countries were dealing with flood risk and other natural disasters. He said it referenced the work of Australia, France, the United Kingdom (UK), and the U.S. He said the Task Force put forth six potential insurance arrangements for analysis, and four were determined to be viable options in Canada. He said two of the arrangements were based on public-private pooling, and two arrangements were based on direct intervention in the insurance and reinsurance markets.

Godsoe said the report highlights four obstacles that Canada could potentially face based on the flood arrangements: 1) uncertainty; 2) market penetration; 3) affordability; and 4) moral hazard. He said the report also includes recommendations to overcome these obstacles.

Godsoe said the Canadian federal government will need to put forth its position based on the recommendations in the report. He said once that position has been determined, the PSC will go back to working with the provincial and territorial governments to implement one of the models.

4. Heard a Presentation from the CCIR on Flood Risk

Lucas Neufeld (Canadian Council of Insurance Regulators—CCIR) said a CCIR working group released a paper in 2016 that focused on the impact of catastrophic floods and other perils on personal property insurance. He said with the increase in frequency and severity of these perils, the CCIR has released multiple reports that highlight findings on its research on these perils and property insurance. He said the common element in all of its reports is that there remain consumer protection gaps, which is the cost to rebuild plus additional living expenses, less insurance coverage. He said this includes both uninsured and underinsured consumers.

Neufeld said the CCIR has identified consumer awareness gaps, such as low awareness of one's property specific risk, low awareness of available insurance coverage options, low awareness of actual coverage purchased, and low awareness of what is and is not covered by provincial disaster financial assistance programs. He said these are limiting the uptake of flood coverage and potentially adding to the overall consumer protection gaps. He said industry is aware of the knowledge gaps and has created materials to address these gaps. He said there is still a disconnect between consumers having access to those materials and actual action to address and decrease the gaps. He said one example of this is that even though flood mapping is generally widely available, 80% of surveyed Canadians say they have not seen a flood map for the community they live in.

Neufeld said an important element of the work of the CCIR is to address property-specific risk. He said these include knowing the likelihood of flooding and the severity and frequency that could increase due to climate factors. He said structure and land-specific risks also need to be addressed, as these could potentially be mitigated due to personal or public action.

Neufeld said a forthcoming report from the CCIR working group highlights five recommendations: 1) identify and implement best practices for assessing and communicating property-specific natural catastrophe risk at the point of sale and renewal; 2) identify and implement best practices that insurers and intermediaries may use to communicate natural catastrophe related insurance options to customers; 3) take steps to ensure that consumers understand the insurance product they are being offered, including a simplified approach to summarizing coverage on the first page of the policy; 4) design innovative products and create incentives to encourage customers to act on personalized advice and product features; and 5) train and educate those selling insurance products to ensure that they understand the product's key features, including how it aligns with the customer's needs.

Director Wing-Heier asked if there will be a mandate for insurers and intermediaries to disclose the need for flood insurance. Rob O'Brien (CCIR) said in Canada, that decision would occur at a provincial or territorial level.

Director Richardson asked whether strategic relocation would kick in when there is no insurance available or because insurance is so expensive that current residents cannot afford it. Godsoe said some provinces provide dedicated relocation funding even if insurance has not been purchased, but the funding amount is capped and usually does not meet the market value of properties. He said with the future government decision on a national flood insurance arrangement, there may be a more consistent approach.

Commissioner Lara asked who is responsible for creating the flood maps. Godsoe said regulatory flood maps are developed by local governments, provinces, or territories. He said while most Canadian residents are covered by these flood maps, they only represent a small percentage of Canadian land mass. He said the PSC has been working with insurers to look at flood models to create maps in addition to the already created regulatory flood maps.

Chou asked how big the private flood insurance market is in Canada. O'Brien said in 2020, direct written premiums were about $71 billion, but that is not broken out between auto and property coverage.

Chou asked who is working on the model validation in the PSC work. Godsoe said the Task Force is using a composite of private sector models that are overlaid on top of one another and calibrated against the regulatory flood maps. He said after a federal government decision, the PSC would come up with a Canadian model based on interventions from private catastrophe modeling firms that would provide a standard view to bring to the provinces and territories.

Aaron Brandenburg (NAIC) said the NAIC has collected private flood insurance data starting with premium and loss data from the NAIC Financial Annual Statement State Page. He said the NAIC issued a data call in 2020 to collect 2018 and 2019 data at a much more granular level, which led to the inclusion of a Private Flood Insurance Supplement in the Annual Statement. He said the data call and supplement collected data split out between commercial and residential, as well as data on a standalone, first dollar, excess, and endorsement basis. He said it also included data elements such as the number of policies, number of claims, and claims closed with payment. He said this data showed that in 2021, there were over 360,000 residential flood insurance policies, which was a 29% increase over the previous year. He said the 2022 NAIC Annual Statement State Page showed an increase of 21% in direct written premium for private flood.

5. Heard an International Update

Ryan Workman (NAIC) said the International Association of Insurance Supervisors (IAIS) launched one of three public consultations planned for the next year and a half looking at the initial approach of its work to address climate risk. He said the IAIS started off doing an assessment and review of existing insurance core principles (ICPs), which found the way those principles are drafted to accommodate climate risk and are applicable, but they also identified some areas where it might be helpful to provide additional supporting material on ways climate plays on in different contexts.

Workman said the IAIS has a workstream that is developing an application paper that is looking at climate issues as they relate to enterprise risk management (ERM) and macroprudential supervision.

Workman said the IAIS published a special topic edition of its *Global Insurance Market Report* (GIMAR) in 2021. which was a first attempt to look at doing a quantitative global study on the impact of climate change in the insurance sector. He said the current global monitoring exercise (GME) has seen the addition of data elements that would help the IAIS collect annual data on insurance sector risks, looking particularly at climate risks.

Workman said the Sustainable Insurance Forum (SIF) is continuing its work on net zero, which is identifying a potential role for insurance supervisors in the net zero transition. He said this group is looking at how to leverage

existing practices around the globe to address access and affordability issues. He said the group plans to meet in the second quarter of this year.

Workman said the (European Union) EU-U.S. dialog project has two workstreams focused on climate: 1) Climate Risk and Financial Oversight; and 2) Climate Risk and Resilience. He said the project is holding a public stakeholder event on June 16.

6. Heard a Federal Update

Shana Oppenheim (NAIC) said the National Flood Insurance Program (NFIP) authorization is set to expire on Sept. 30. She said it has been reauthorized on a short-term basis 25 times since 2017. She said on March 10, the U.S. House of Representatives (House) Financial Services Subcommittee on Housing, Community Development, and Insurance, led by Chairman Warren Davidson (R-OH), held a hearing entitled "How Do We Encourage Greater Flood Insurance Coverage in America?" She said Republicans were focused on encouraging private flood uptake, especially in regions outside of flood zones. She said they also expressed interest in examining federal regulatory barriers to private flood insurance, consumer information, and public awareness. She said Democrats expressed an interest in bipartisan, long-term authorization and looking at the diversity, equity, and inclusion (DE&I) aspects of flood risk and insurance. She said U.S. Sen. John Kennedy (R-LA) has introduced bills to cap annual flood insurance premium increases and force the Federal Emergency Management Agency (FEMA) to explain price changes under Risk Rating 2.0. She said U.S. Rep. Blaine Luetkemeyer (R-MO) has introduced bills to require that FEMA purchase reinsurance to pay for flood losses and allow communities to develop alternative flood maps.

Oppenheim said the U.S. Securities and Exchange Commission's (SEC's) climate risk disclosure is expected to be finalized in the next few months. She said the chair, Gary Gensler (D-MD) may be signaling a departure from the International Sustainability Standards Board (ISSB) standards.

Oppenheim said the Federal Insurance Office (FIO) has not yet released the climate report that was expected at the end of 2022. She said in October 2022, the FIO published a notice and request for comment on a proposal to collect data from certain P/C insurers to assess the potential for major disruptions of the private insurance coverages in the U.S. market. She said the NAIC sent a letter expressing disappointment that the FIO did not engage state insurance regulators in a credible exercise to identify data elements gathered by either the regulatory community or industry that is indicative of climate risk. She said the NAIC letter expressed a willingness to work with the FIO on this issue.

Oppenheim said President Joe Biden's budget plan calls for significant investments in clean energy and billions of dollars to help build community resilience to flood, wildfire, storms, extreme heat, and drought. She said the budget also calls for investment in green climate funds and loan guarantees; reasserting U.S. leadership in the Indo-Pacific region to finance energy, security, and infrastructure projects; and reducing reliance on volatile energy supplies.

Oppenheim said the NAIC continues to support the Disaster Mitigation and Tax Parity Act of 2021, which would ensure that state-based disaster mitigation grants receive the same federal tax exemption as federal mitigation grants.

Oppenheim said the NAIC is in dialogue with the Federal Deposit Insurance Corporation (FDIC) and the Federal Housing Finance Agency (FHFA) over concerns about coverage caps in the property insurance market in areas that are being affected by rising sea levels and increasing storms, floods, and wildfires.

7. Heard a Presentation from the NAIC Catastrophe Modeling COE

Jeff Czajkowski (NAIC) said the Catastrophe Modeling Center of Excellence (COE) is fully operational and staffed with catastrophe risk modeling experts and resilience subject matter experts (SMEs), and they are integrated and well aligned with the catastrophe modeling community. He said the COE has several regulator-oriented tools and training, and they are engaged with individual departments of insurance (DOIs) and a number of NAIC committees.

Czajkowski said the goal of the COE is to provide the same level of technical expertise and tools to state insurance departments that the industry has at their disposal. He said they are implementing that goal through their three pillars of activity: 1) vendor models; 2) education and tools; and 3) applied research. He said the central coordination for the provided tools is the CAT COE SharePoint site, which is available for state insurance regulator access. He said the COE has entered into agreements with seven catastrophe modelers, and their information is accessible on the SharePoint site.

Czajkowski said in terms of education and training, the COE is expected to debut its Catastrophe Modeling 101 training in the spring of 2023. He said it also has access to the International Society of Catastrophe Managers training. He said the COE provides virtual and in-person training for state insurance departments on peril-specific catastrophe models.

Jennifer Gardner (NAIC) said the COE is developing tools to work in conjunction with the provided training. She said the COE has developed peril model cards that provide high-level summaries of models. She said the COE is developing a compendium of legislative and regulatory actions relative to catastrophe models. She said the COE is using catastrophe models to develop risk assessments.

Gardner said the COE is combining market insights from NAIC data with different risk assessments to focus on resilience and mitigation efforts.

Gardner said the COE has been bringing members of state insurance departments to the Insurance Institute for Business and Home Safety (IBHS) facilities to highlight wildfire risks and severe convective storm risks.

Gardner said the COE had the opportunity to involve a couple of states in a panel discussion at the National Disaster Resilience Conference hosted by the Federal Alliance for Safe Homes Inc. (FLASH). She said the organization was initiated by the insurance industry, and it does advocacy and awareness campaigns around risk reduction, flood losses, building code awareness, and hazard preparedness. She said the COE also hosted several state insurance regulators at the Reinsurance Association of America (RAA) Catastrophe Risk Management conference, where they spoke about earthquake risk, insurance market stability, and state resiliency initiatives.

Gardner said the COE is working with the Colorado Division of Insurance to identify potential resources that could be developed by Catastrophe model vendors to support risk assessment and regulatory initiatives.

Gardner said the COE is continuing to engage with NAIC working groups on catastrophe and mitigation matters, as well as engaging in discussions on support tools needed to stand up a mitigation grant program.

Commissioner Donelon said he endorses the important work of the COE and the training for state DOIs, and he said he encourages state insurance regulators to learn about the tools and training available.

8. Discussed Other Matters

Dave Snyder (American Property Casualty Insurance Association—APCIA) said he wanted to offer a future presentation from the Global Federation of Insurance Associations (GFIA), which has produced a report on global

protection gaps and recommendations for bridging them. He said there is growing concern about political polarization that is leading to potentially undercutting diverse business models and time-tested regulation of the insurance markets by state insurance regulators.

Birny Birnbaum (Center for Economic Justice—CEJ) said there is a bill in the Texas legislature that would ban economic scenario generator (ESG) considerations, therefore banning climate risk consideration for state insurance regulators.

Amann said the Catastrophe Risk (C) Working Group is undergoing revisions to the Catastrophe Risk Primer, and it would invite participation from any states.

Having no further business, the Climate and Resiliency (EX) Task Force adjourned.

SharePoint/NAIC Support Staff Hub/Committees/EX CMTE/CRTF/2023_Spring/CRTF_Minutes

Julie Ann Wrigley Global Futures Laboratory™

Arizona State University

Attachment Two

Shaping tomorrow, today

Peter Schlosser

Vice President and Vice Provost of Global Futures

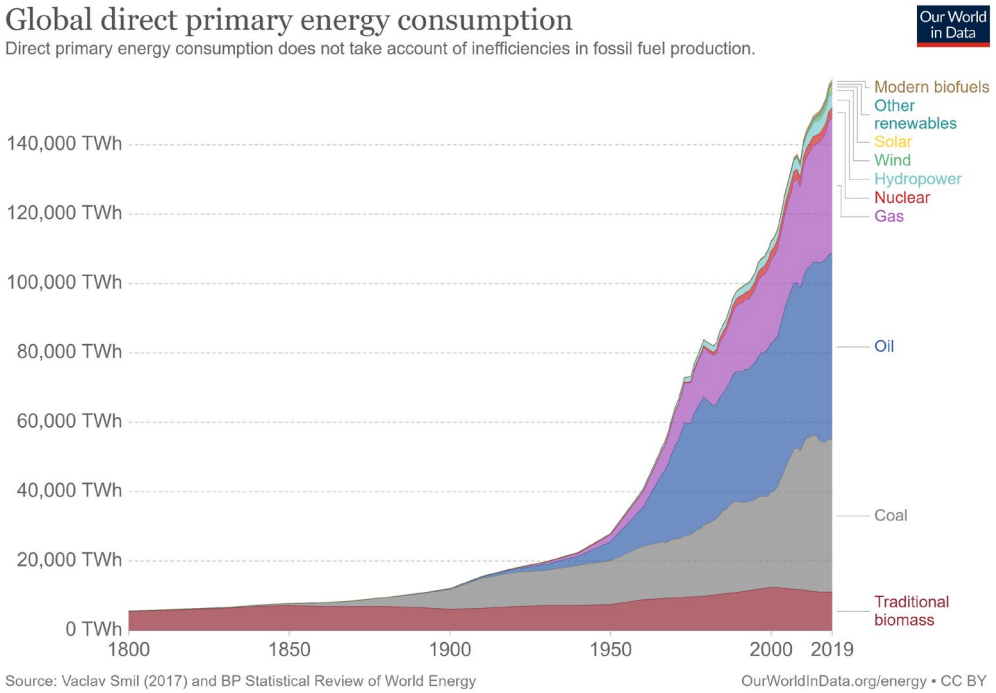
Director, Julie Ann Wrigley Global Futures Laboratory

University Global Futures Professor

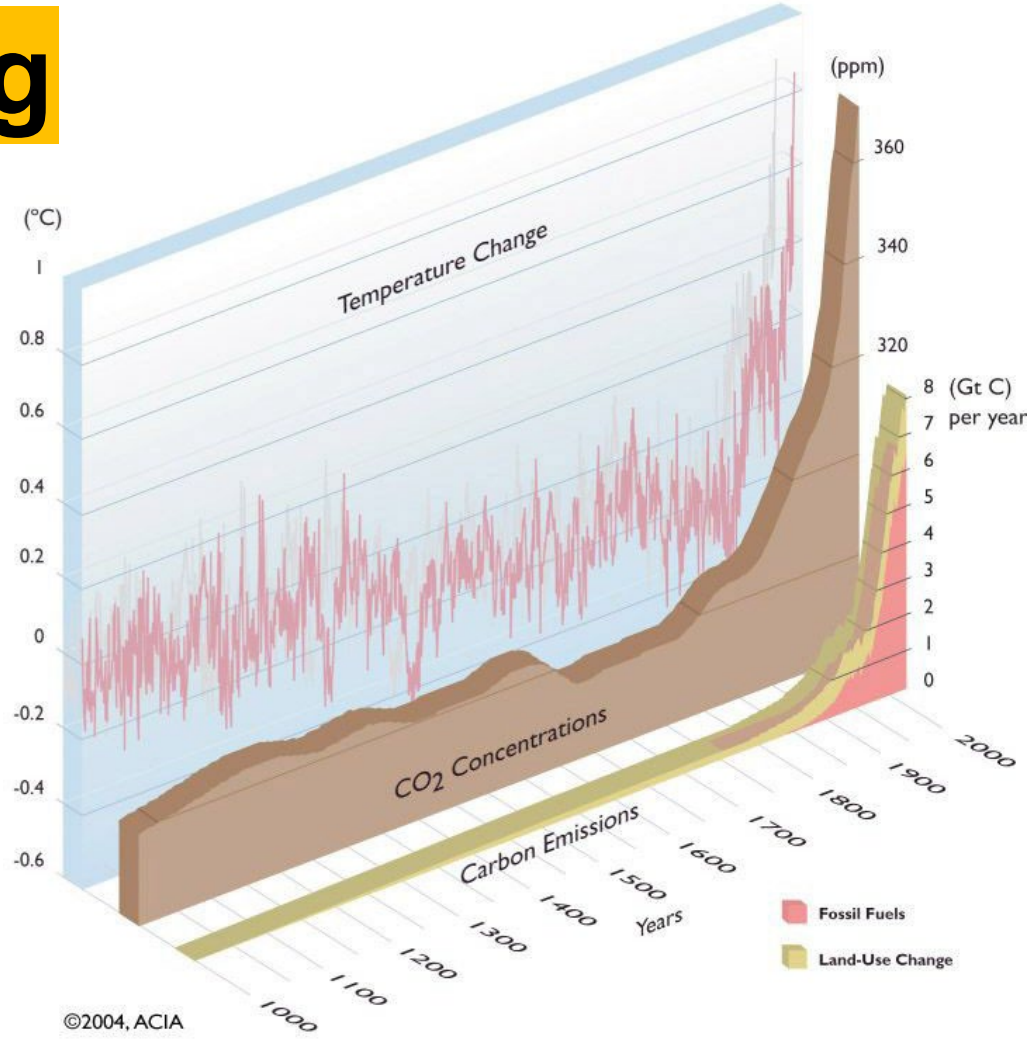
A planet under pressure: How did we get here?

- We have entered the Anthropocene
- The impact of human activities can be felt in every part of the Earth system
- We are shaping and engineering our planet at global scales
- Humankind is no longer in a safe operating space
- More extremes are seen at more places at higher amplitudes
- Responses on fast time scales are needed

Energy: GHGs: Warming



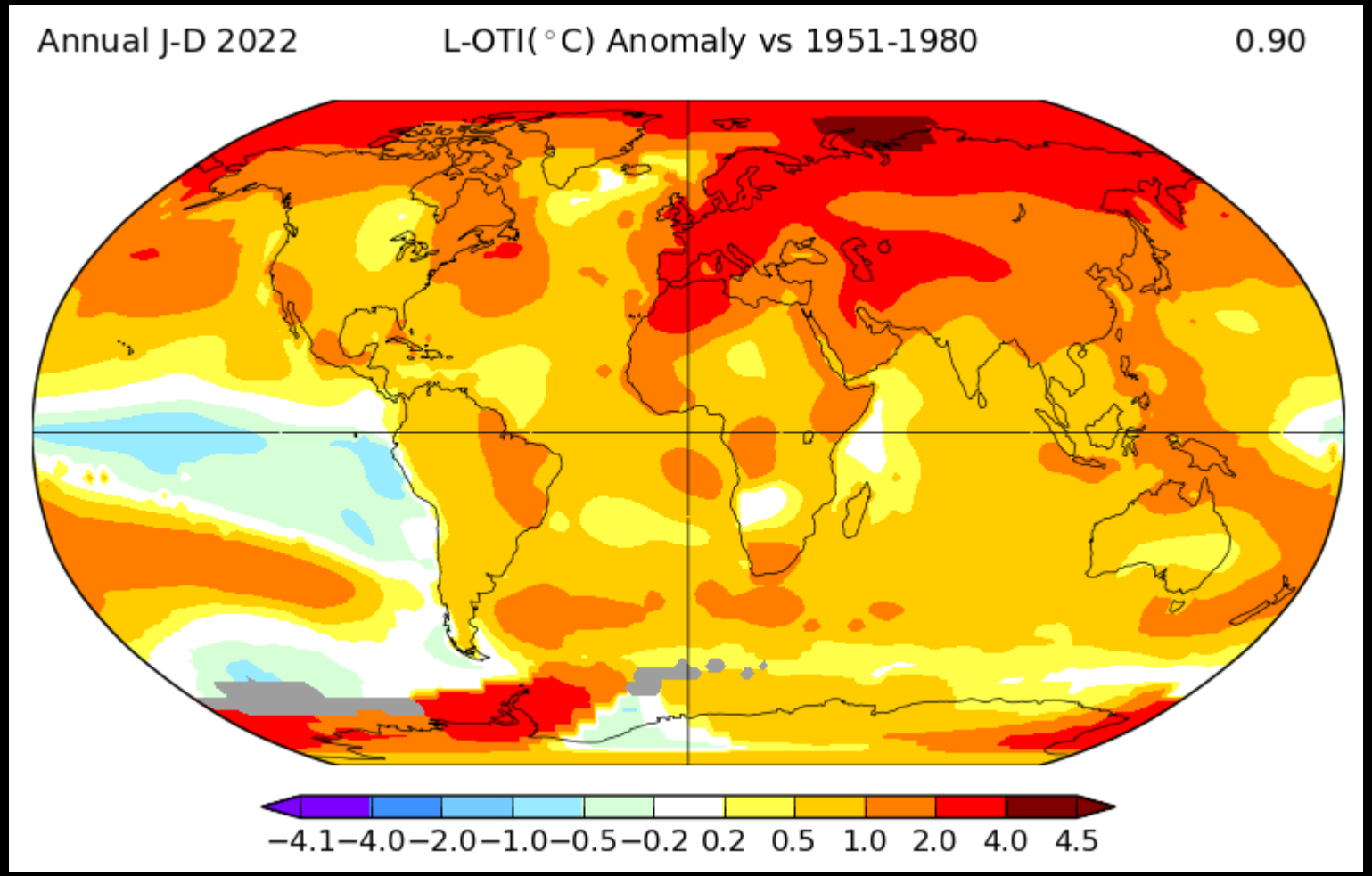
Source: https://ourworldindata.org/energy

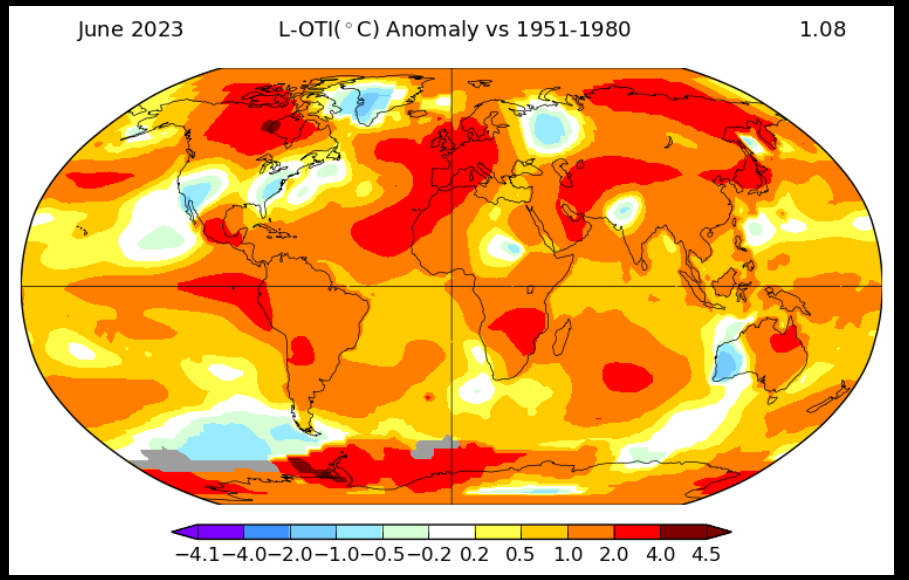


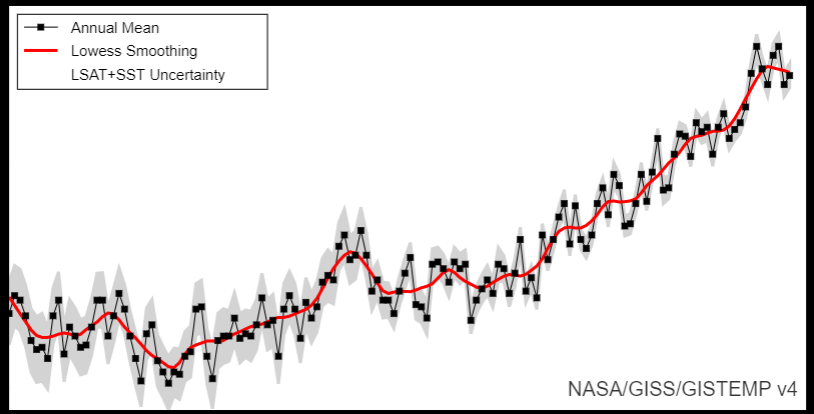
Source: http://www.amap.no/acia/Files/1KYrsofChg_150.jpg

Ca. 17 TW **equivalent** to the energy production of **15,500 nuclear power plants**

Global warming







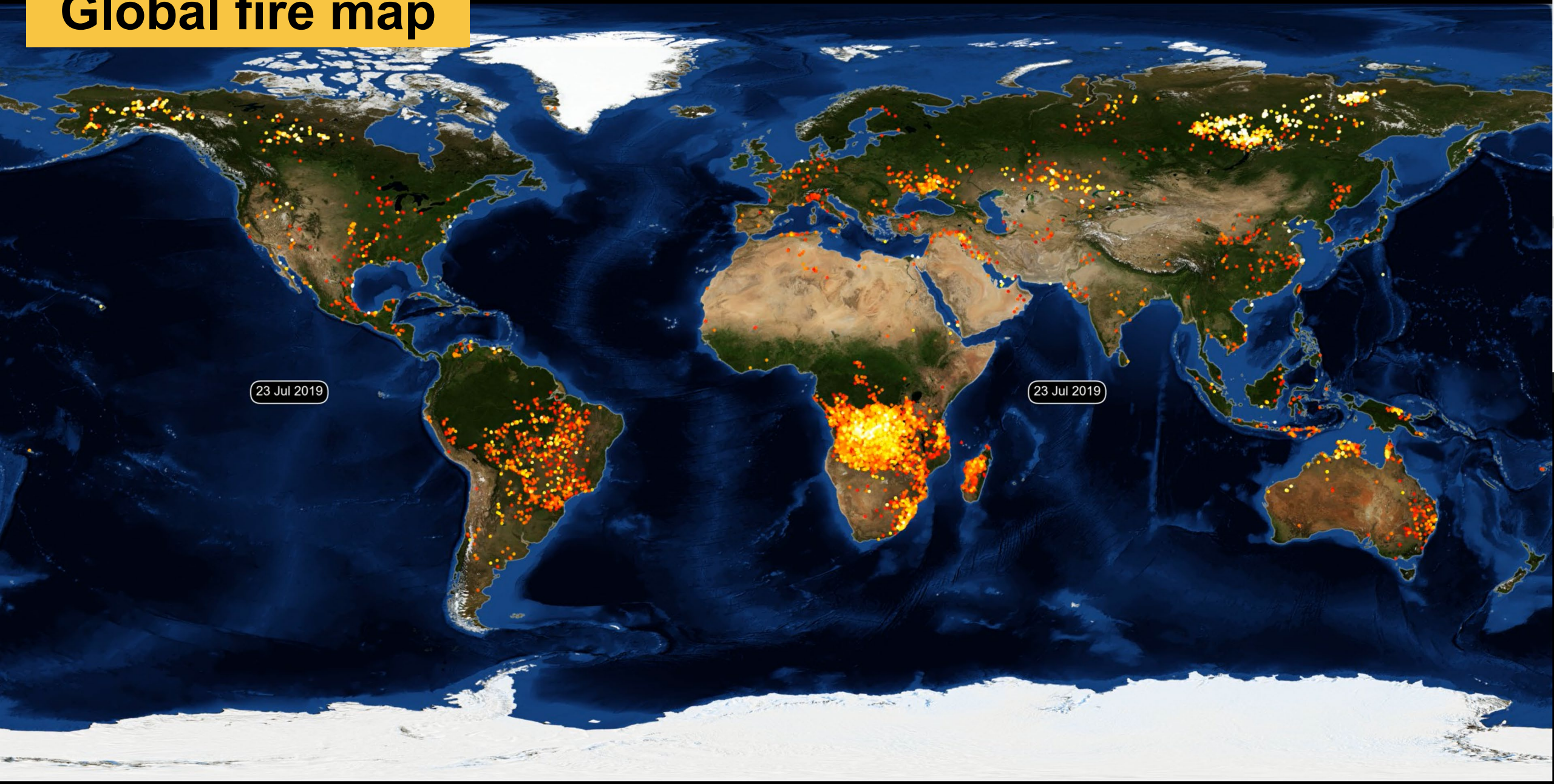
https://data.giss.nasa.gov/gistemp/maps/

World on fire: Australia 2020

3 billion animals killed or displaced
46 million acres burned

World on fire: Hawaii 2023

Global fire map



Western Drought

How Bad Is the Western Drought? Worst in 12 Centuries, Study Finds.

Fueled by climate change, the drought that started in 2000 is now the driest two decades since 800 A.D.

By Henry Fountain

Feb. 14, 2022

The New York Times | https://www.nytimes.com/2022/02/14/climate/western-drought-megadrought.html

Summer 2021 European Extremes: Flooding and Fires tear across continent

REUTERS/Yves Herman

Konstantinos Tsakalidis/Bloomberg

Sea-ice trends: ice extent

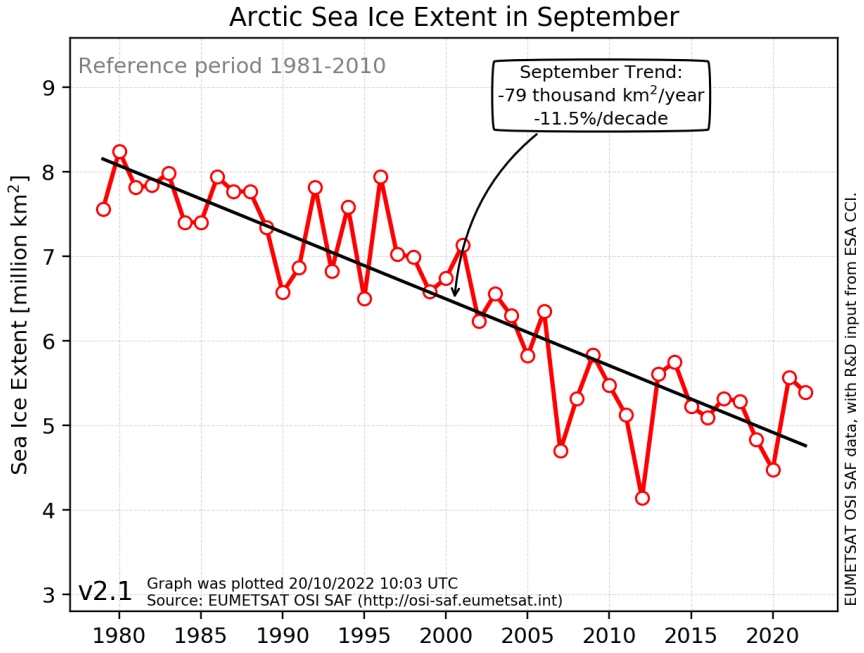
2007: Minimum sea ice extent
2008: Record-low sea ice volume
2012: New sea ice extent minimum
2019: Ties 2nd lowest sea ice extent

ca -13% per decade

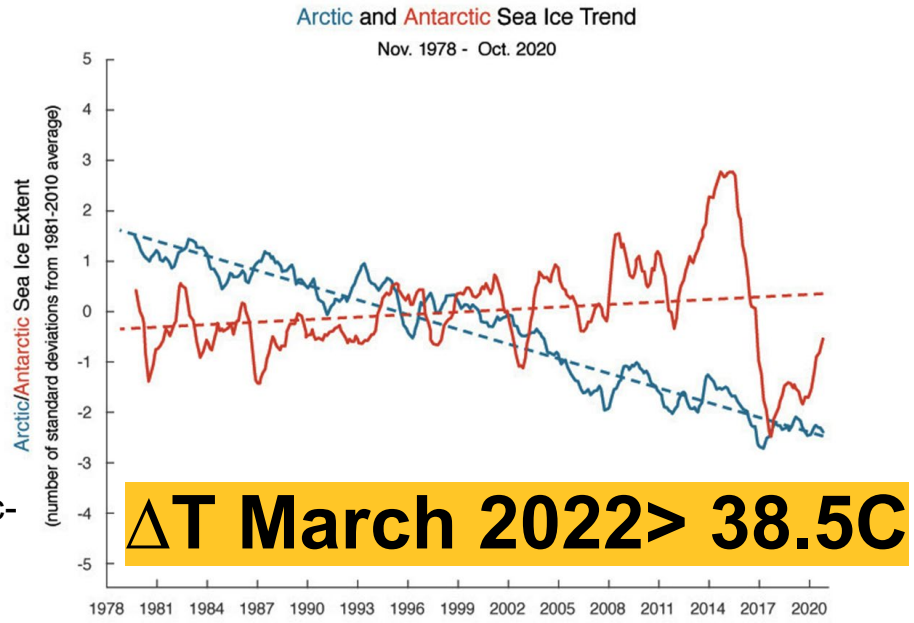
Nature of Arctic Ocean is changing dramatically at present – changes will be more fundamental in a 2ºC world

Antarctic sea ice extent reverses trend in 2017

https://www.severe-weather.eu/global-weather/antarctic-sea-ice-extent-all-time-low-february-marked-negative-anomaly-rrc/

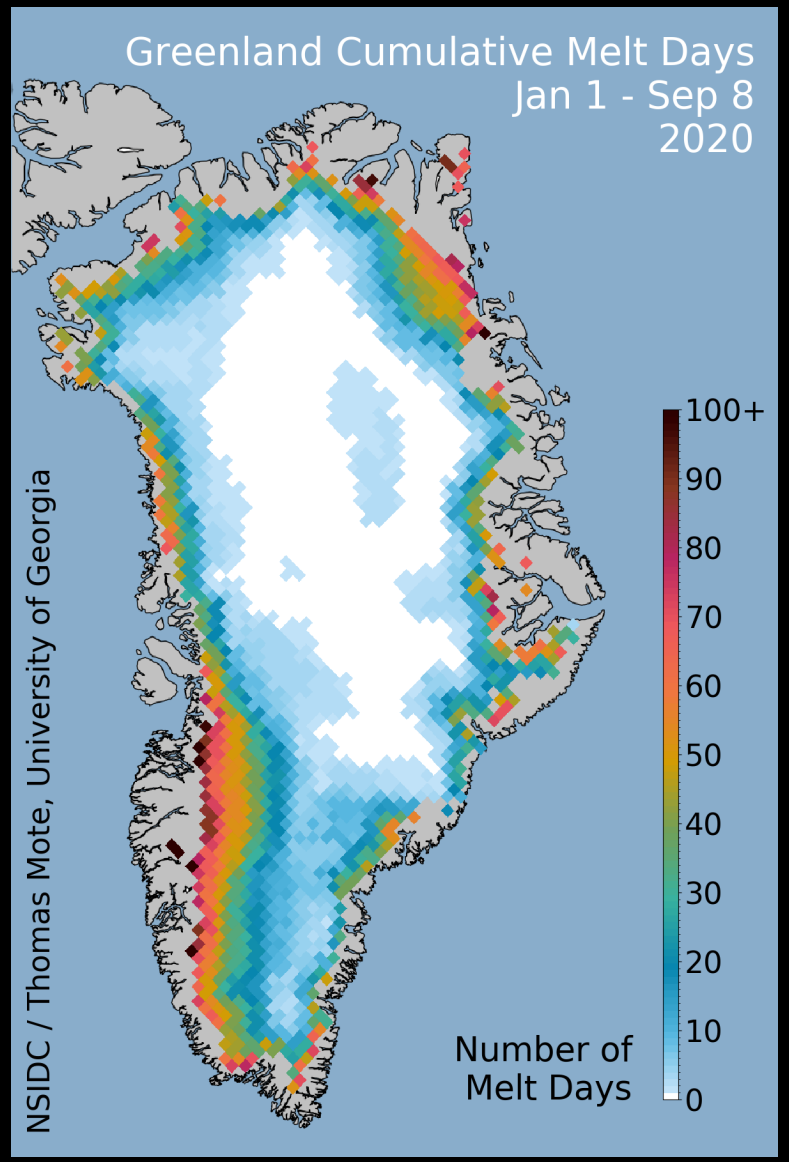


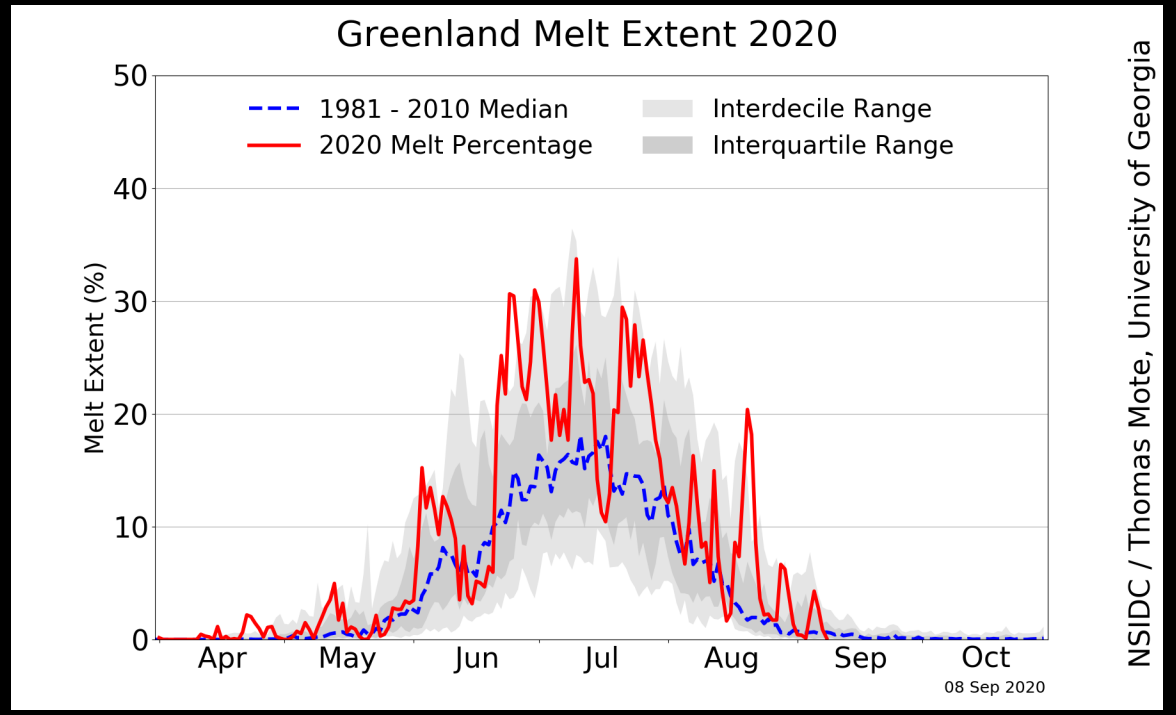
Source: National Snow and Ice Data Center



ΔT March 2022> 38.5C

Greenland Ice Sheet



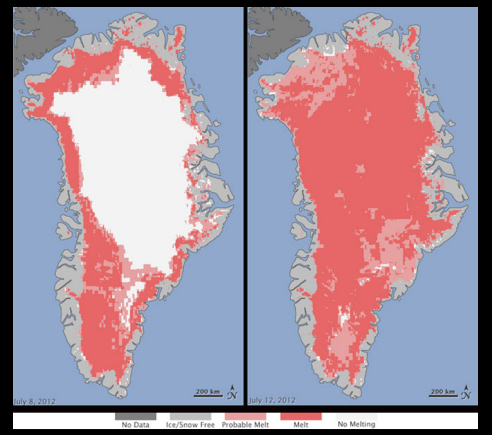


NSIDC: https://nsidc.org/greenland-today/

V = 2.8*10⁶ km³
ca. 7m in global sea level

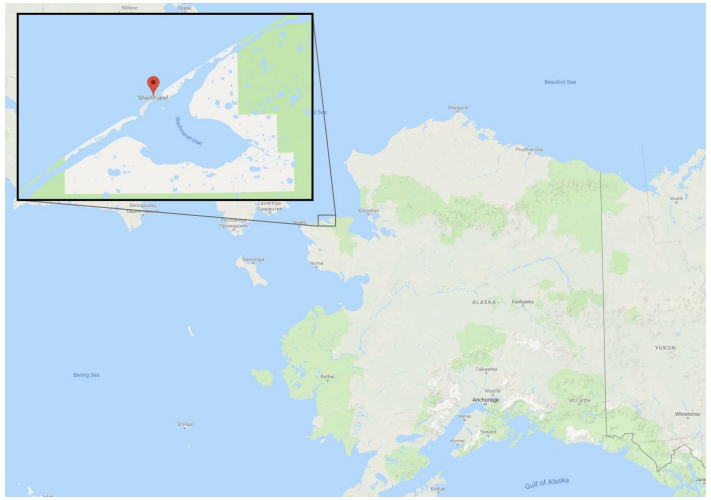
Antarctica: ca. 65m

2100: ca. 1 to 3m



'For several days this month, Greenland's surface ice cover melted over a larger area than at any time in more than 30 years of satellite observations.'

Impacts: Shishmaref



1.5 C goal has been missed

THE CONVERSATION

Academic rigor, journalistic flair

Young activists have been pushing to keep a 1.5-Celsius limit, knowing their future is at stake. AP Photo/Nariman El-Mofty

After COP27, all signs point to world blowing past the 1.5 degrees global warming limit – here's what we can still do about it

Published: November 22, 2022 8.29am EST

Peter Schlosser

Vice President and Vice Provost of the Julie Ann Wrigley Global Futures Laboratory, Arizona State University

Industrial pollution

Daniel Feldman/Reuters

Plastic everywhere

www.nature.com/articles/d41586-022-03835-w

Societal Instability

https://theglobepost.com/2020/05/29/minneapolis-riots

https://www.click2houston.com/news/local/2021/01/07/5-things-for-houstonians-to-know-for-thursday-jan-7/

Refugee crises

Ververidis Vasilis/
Shutterstock

Environmental and Societal Planetary Boundaries

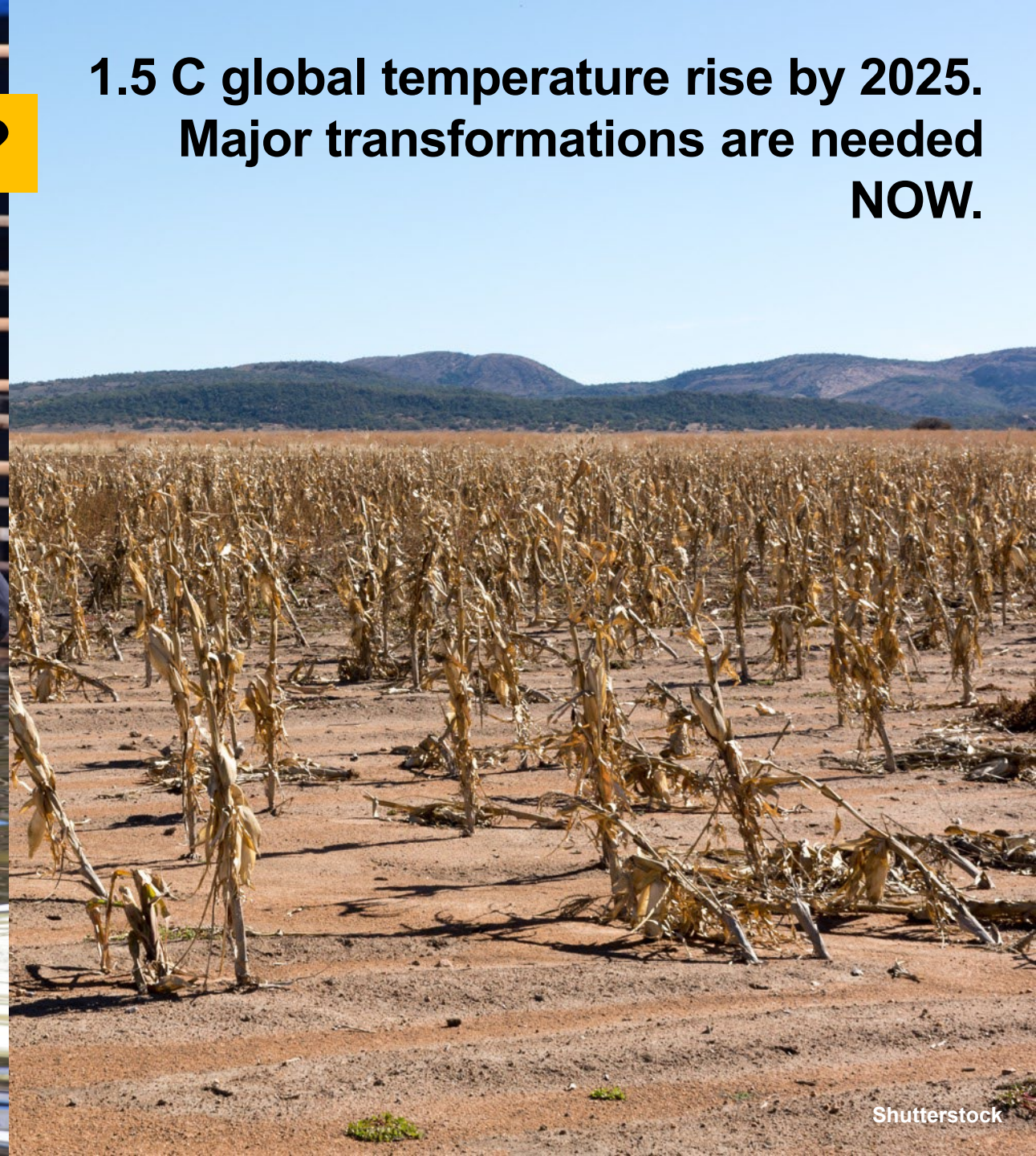
- We are approaching Environmental **Planetary Boundaries**
- The fundamental reason is that global society is **asking our planet to give more than it has to offer**
- We have reached the point where **Societal Choices** endanger the future of our planet

How much time do we have?

Jakarta, Indonesia
Sea rise forcing move of capitol
by 2050.

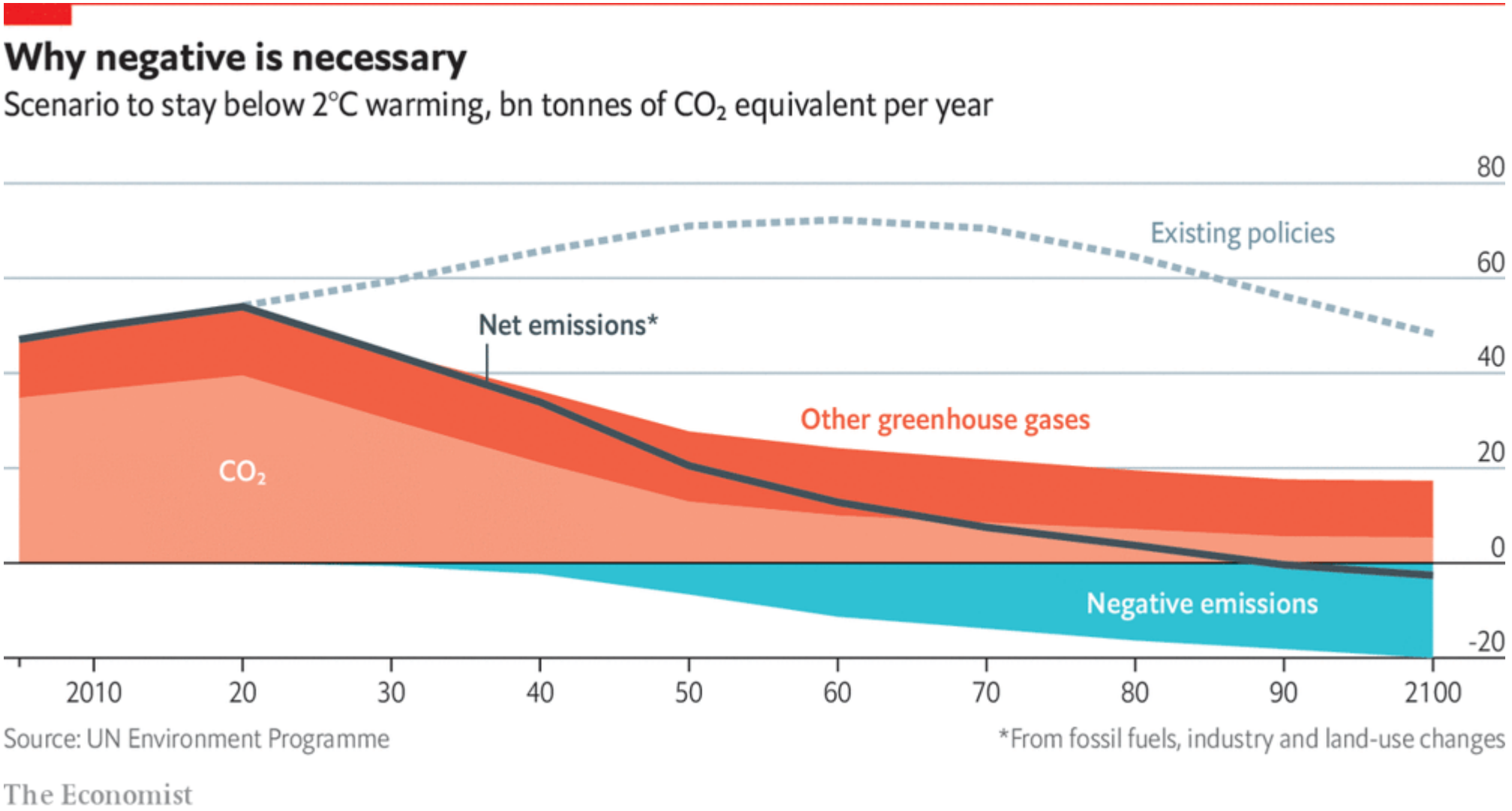
Shutterstock

1.5 C global temperature rise by 2025.
Major transformations are needed NOW.



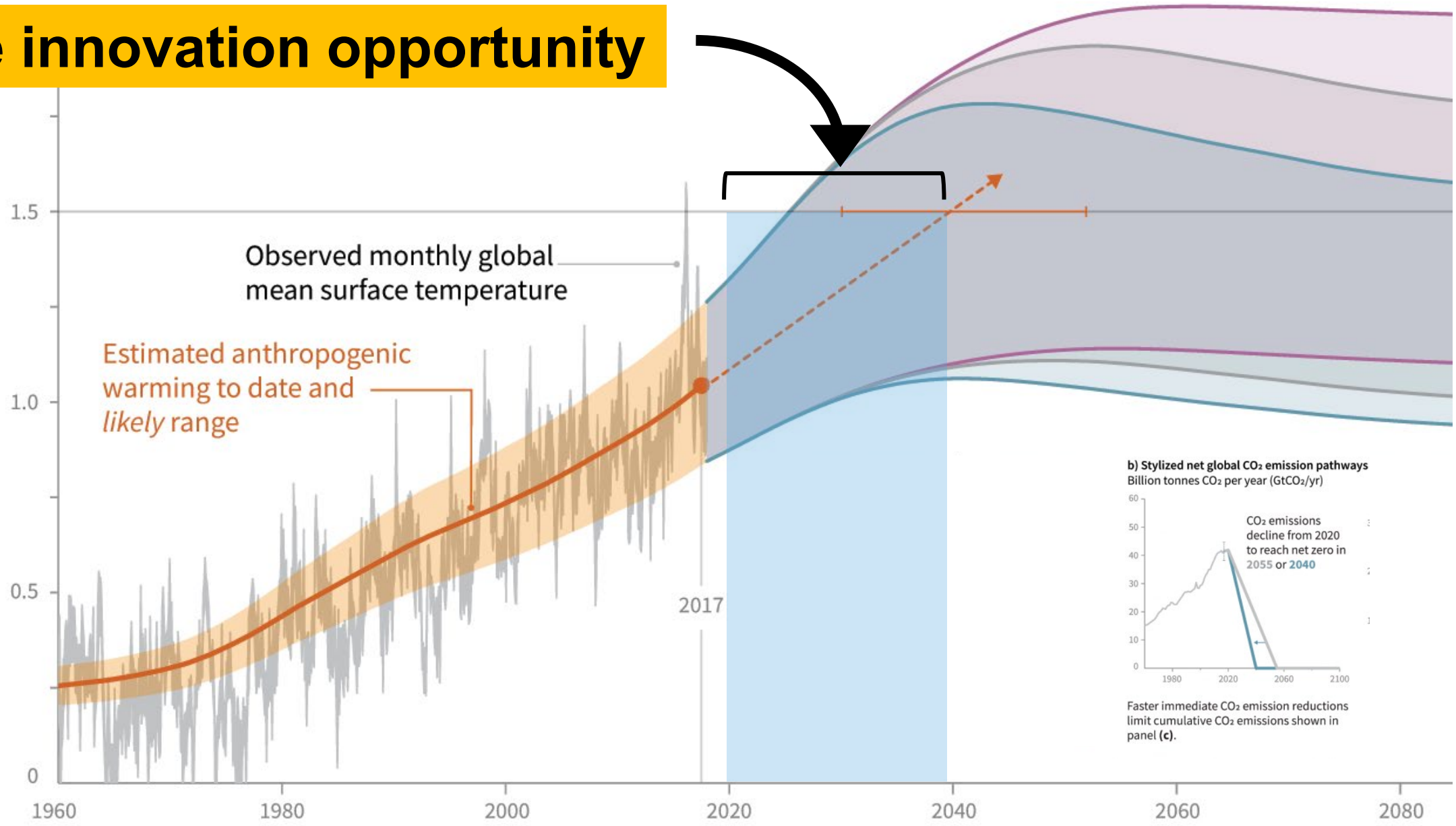
Shutterstock

Negative emissions



https://www.economist.com/special-report/2021/10/27/why-the-world-needs-negative-emissions

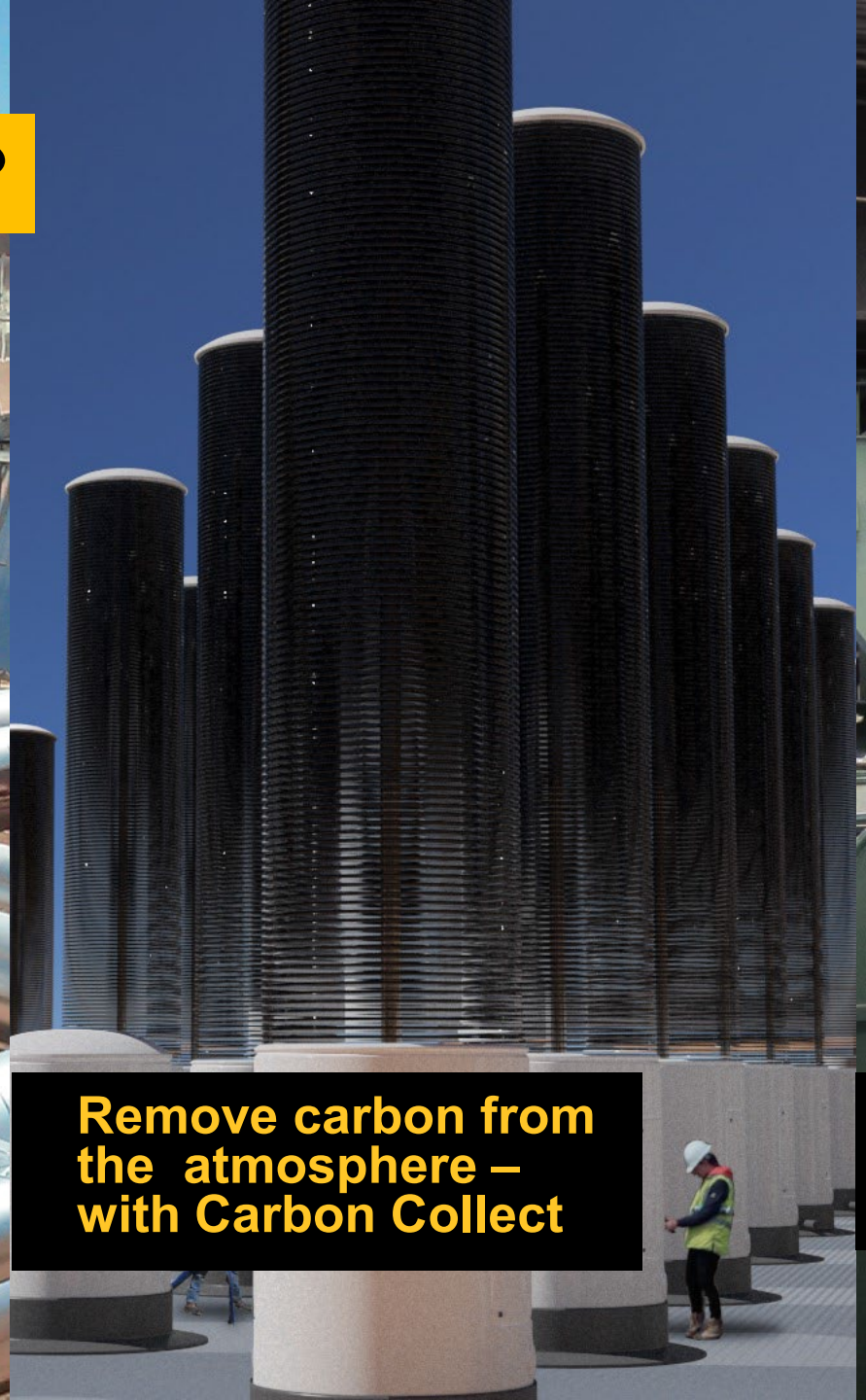
The innovation opportunity



IPCC

What is possible?

Transition to renewables



Remove carbon from the atmosphere – with Carbon Collect

Optimize Material Cycles

Central role of society

Society's willingness to change and recognize planetary boundaries
is the key to success in embarking on a trajectory toward a sustainable future.

Different choices have to be made in the future

What is the Global Futures Laboratory doing?

Creating climate solutions to keep our planet from overheating

Center for Negative Carbon Emissions

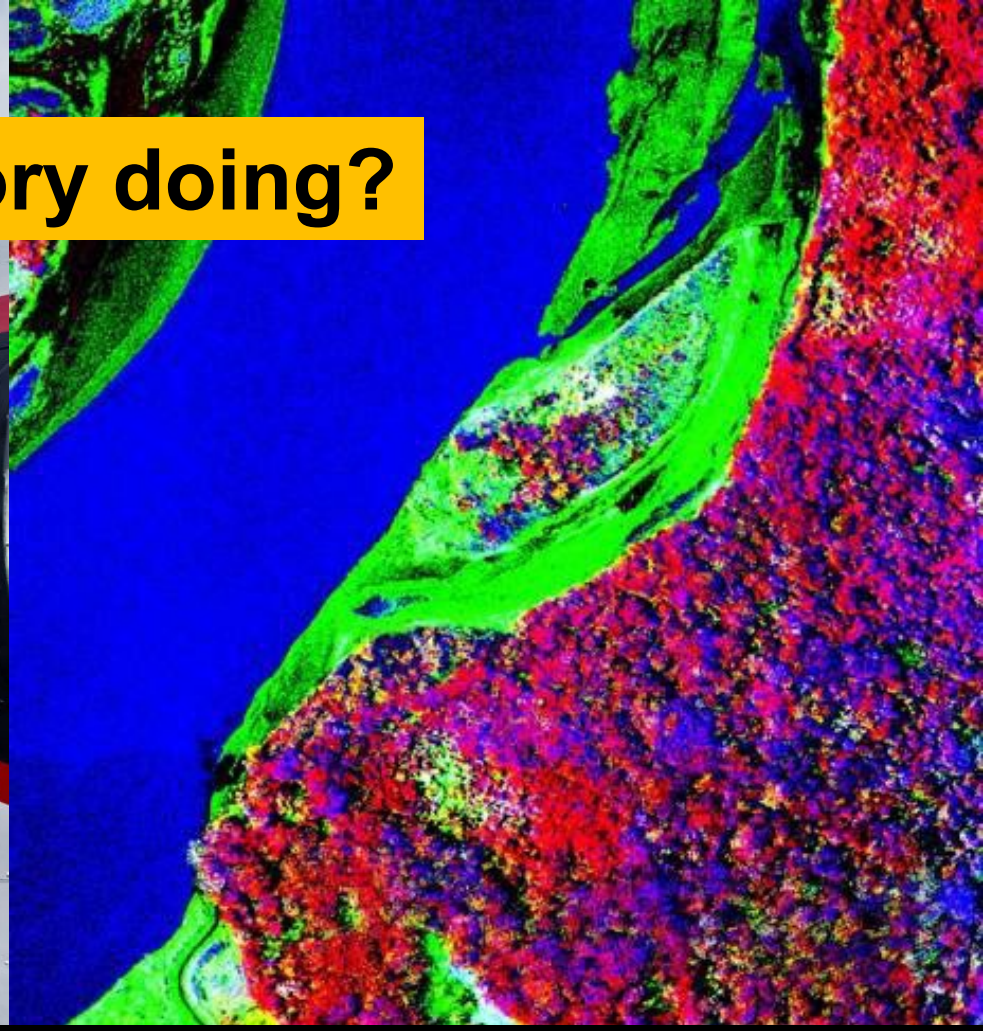
What is the Global Futures Laboratory doing?

Expanding ocean research, education opportunities at ASU

Bermuda Institute of Ocean Science

BIOS

What is the Global Futures Laboratory doing?



Monitoring the health of critical ecosystems

Center for Global Discovery and Conservation Science

What is the Global Futures Laboratory doing?

Innovating ethical energy system transformation

Laboratory for Energy and Power Solutions

What is the Global Futures Laboratory doing?

Providing advanced decision support

Decision Theater

What is the Global Futures Laboratory doing?

Accelerating new approaches to water conservation

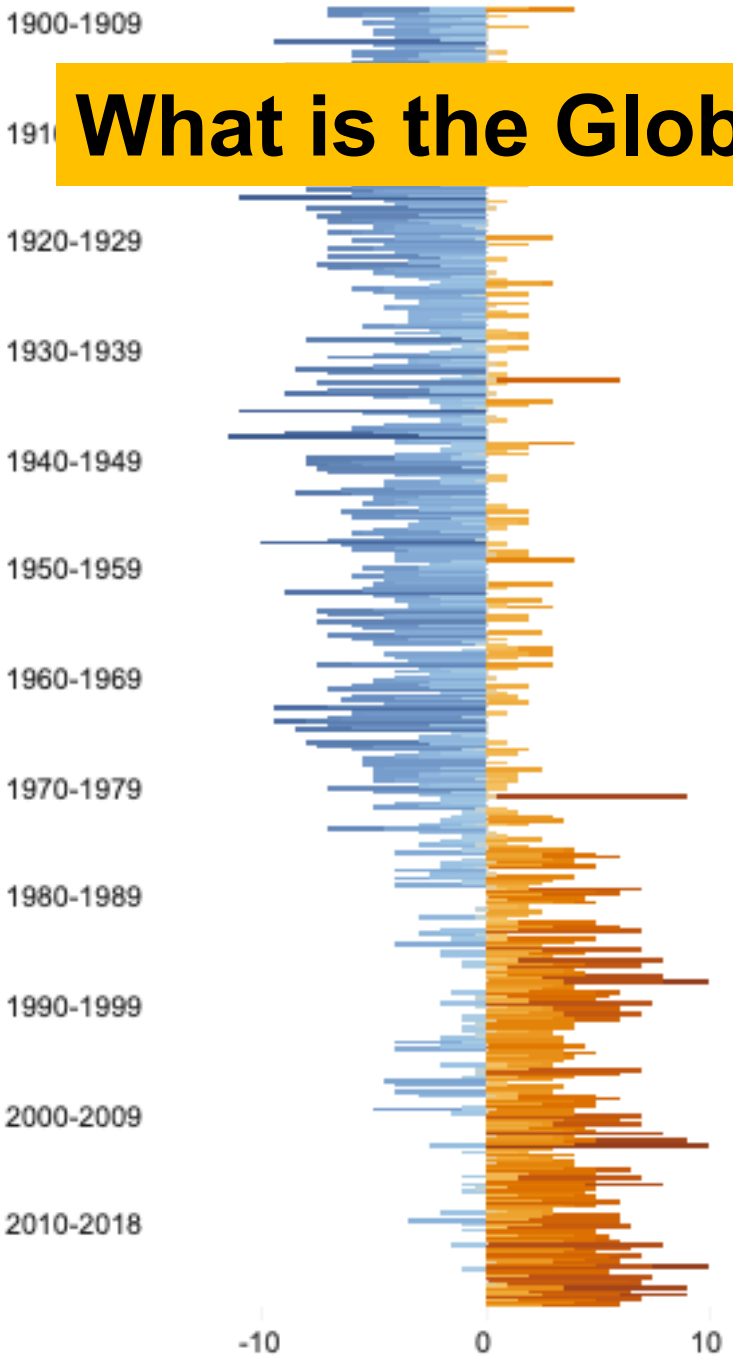
Arizona Water Innovation Initiative

https://www.usatoday.com/story/travel/news/2021/08/07/water-levels-lake-powell-sink-record-lows-tourism-houseboat/5524401001/

What is the Global Futures Laboratory doing?

Building innovative modules for advanced learning

Dreamscape Learn

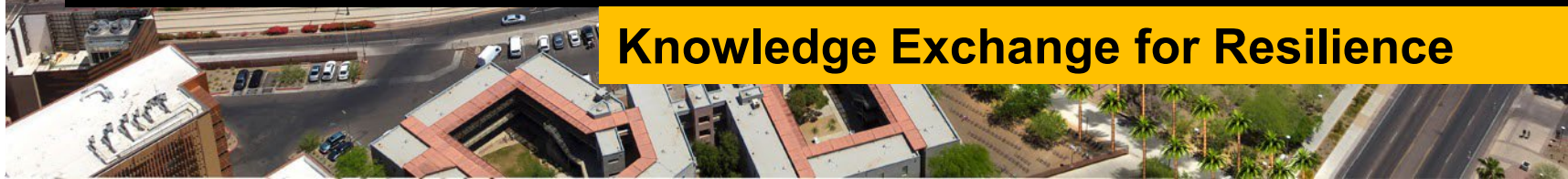


What is the Global Futures Laboratory doing?

July 2023: 31 days above 110F

Engaging stakeholder dialogues to support urban settings under pressure

Knowledge Exchange for Resilience



- Global Change is progressing
- The impacts of Global Change are increasingly visible
- GFL has been designed as ASU wide initiative to meet these challenges emphasizing opportunities
- The gap between evolution of the problem and solution spaces is increasing
- Our opportunity is NOW!

It is up to society to make the right choices to get our planet back on track

Thank you

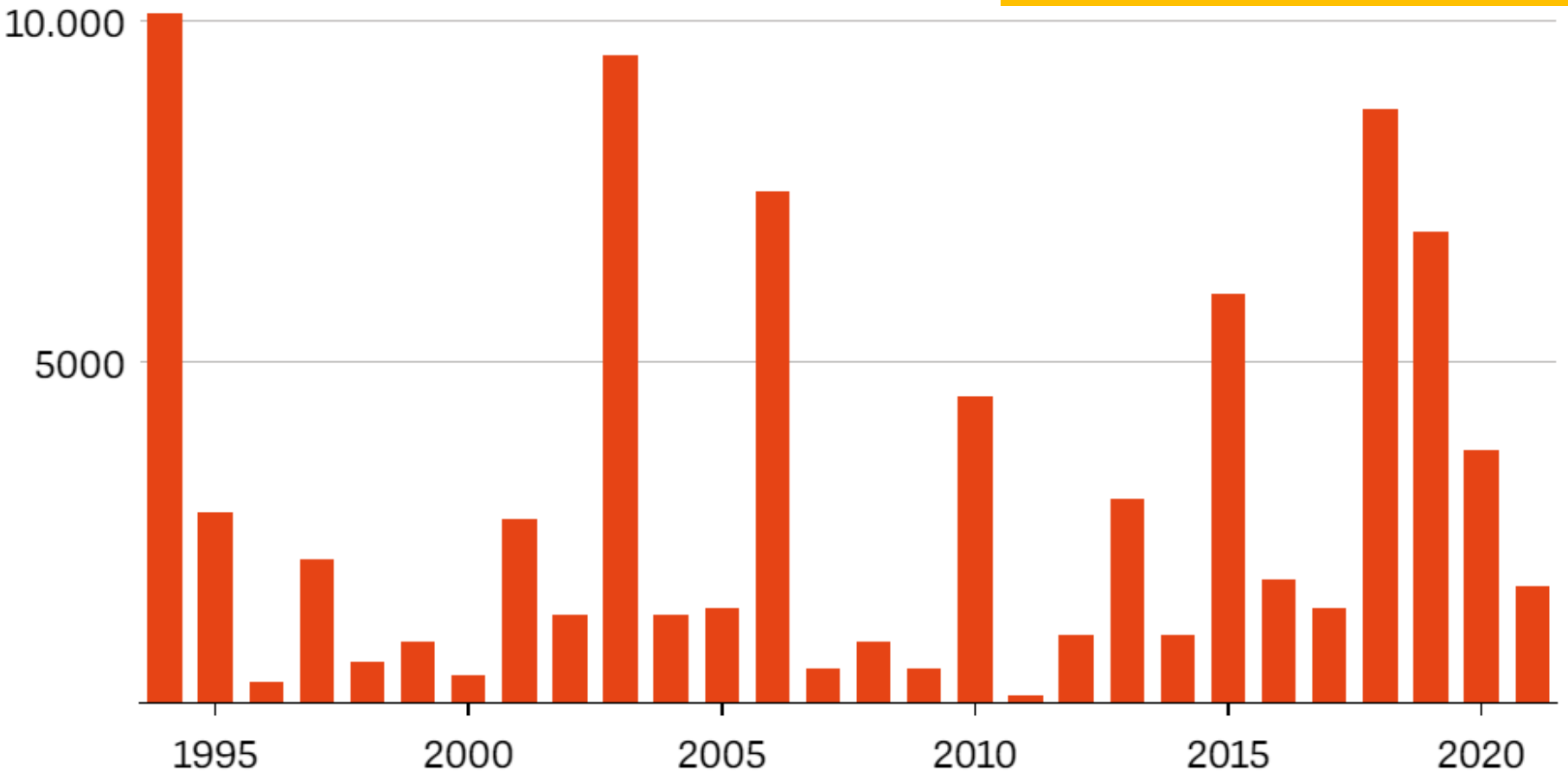
Julie Ann Wrigley Global Futures Laboratory™
Arizona State University

globalfutures.asu.edu

Estimate of Heat Related Deaths in Germany

Tödliche Temperaturen

Hitzebedingte Sterbefälle in Deutschland, Schätzung

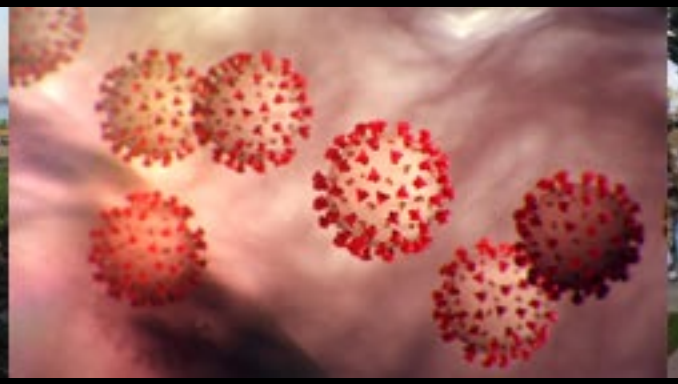


Quelle: Deutsches Ärzteblatt

Gefahr durch Erderwärmung
Zwei Milliarden Menschen droht der Hitzekollaps

DER SPIEGEL

Due to human activity, our planet is under increasing distress, pushing against natural and societal boundaries.



What if we could anticipate these challenges in advance and avoid them altogether?

Julie Ann Wrigley Global Futures Laboratory™

Arizona State University

Our vision:

A future in which life thrives on a healthy planet.

Shutterstock

Our Mission:

Design options to sustain global habitability and improve well-being for all humankind.

Julie Ann Wrigley Global Futures Laboratory™
Arizona State University

We seek to shape a future in which humanity not only survives, but thrives on a healthy planet.

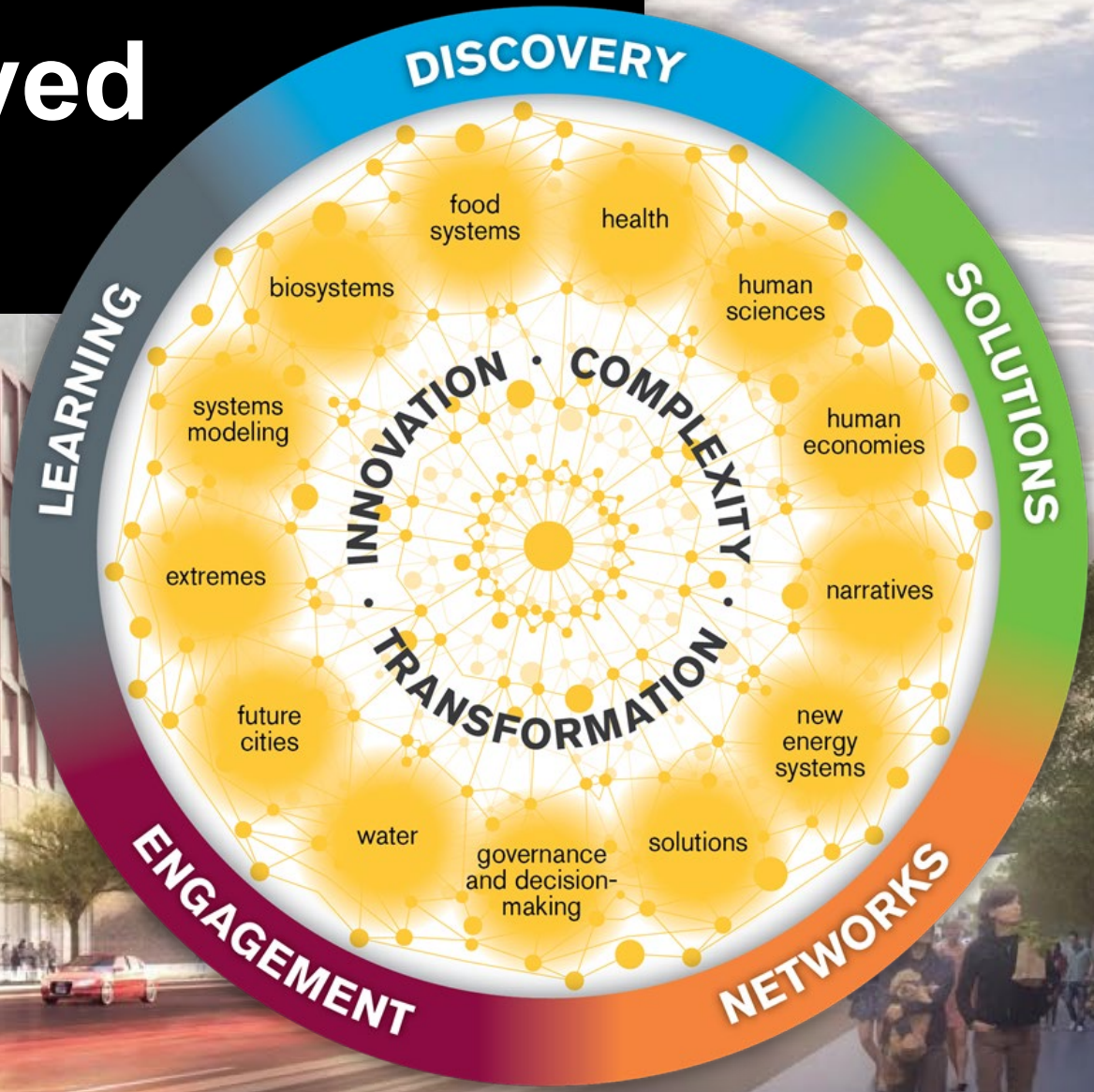
Julie Ann Wrigley Global Futures Laboratory™

Arizona State University

The world's first comprehensive laboratory empowering visionary leaders to unite and create bold ideas for a more prosperous, equitable and resilient planetary future through opportunity, not sacrifice.

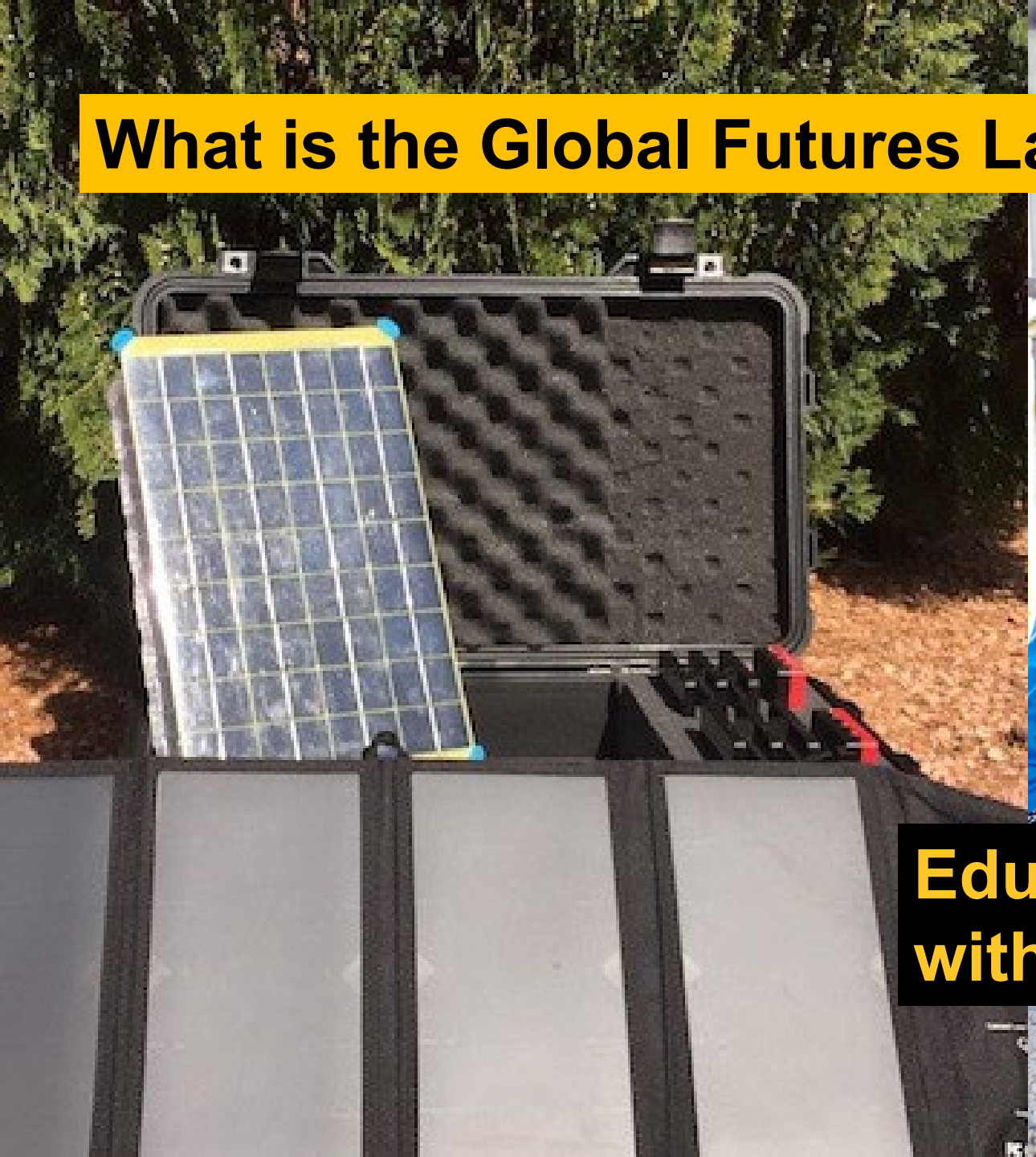
globalfutures.asu.edu

The design:
14 Focal Areas deployed via 5 Spaces



ASU Arizona State University

What is the Global Futures Laboratory doing?



Educating people in remote areas without modern infrastructure

Solar SPELL

Providing global thought leadership

GF23 GLOBAL FUTURES

1. A limit of global warming as close to 1.5°C as possible by 2050
2. An immediate halt and reversal of the loss of nature's functions and diversity
3. Economies that operate within safe and just planetary boundaries
4. Equitable access to resources needed for human well-being
5. Governance transformations to stay within planetary boundaries
6. Healthy, safe and secure food for the global population
7. Reconnection of human well-being to planetary health
8. An ethical digital world providing for human security, equity and education
9. Stability and security in a global society
10. A resilient global society ready to respond to planetary crises

10 Must Haves Initiative

Ceres

Sustainability is the bottom line.

Ceres Accelerator for Sustainable Capital Markets

NAIC Presentation
August 15, 2023
Steven Maze Rothstein

Our Mission

Ceres is a nonprofit organization working with the most influential capital market leaders to solve the world's greatest sustainability challenges. Through our powerful networks and global collaborations of investors, companies and nonprofits, we drive action and solutions throughout the economy to build a just and sustainable future.

Our work includes:

- **Advancing Climate Solutions**
- **Protecting Global Water Resources**
- **Accelerating Sustainable Capital Markets**
- **Building a Just and Inclusive Economy**
- **Advocating for Smart Public Policy**
- **Protecting and Restoring Life on Land**

Ceres Networks Overview

Through our powerful networks of investors, companies, and nonprofits, we **drive action and inspire solutions** throughout the economy to build a just and sustainable future

Company Network

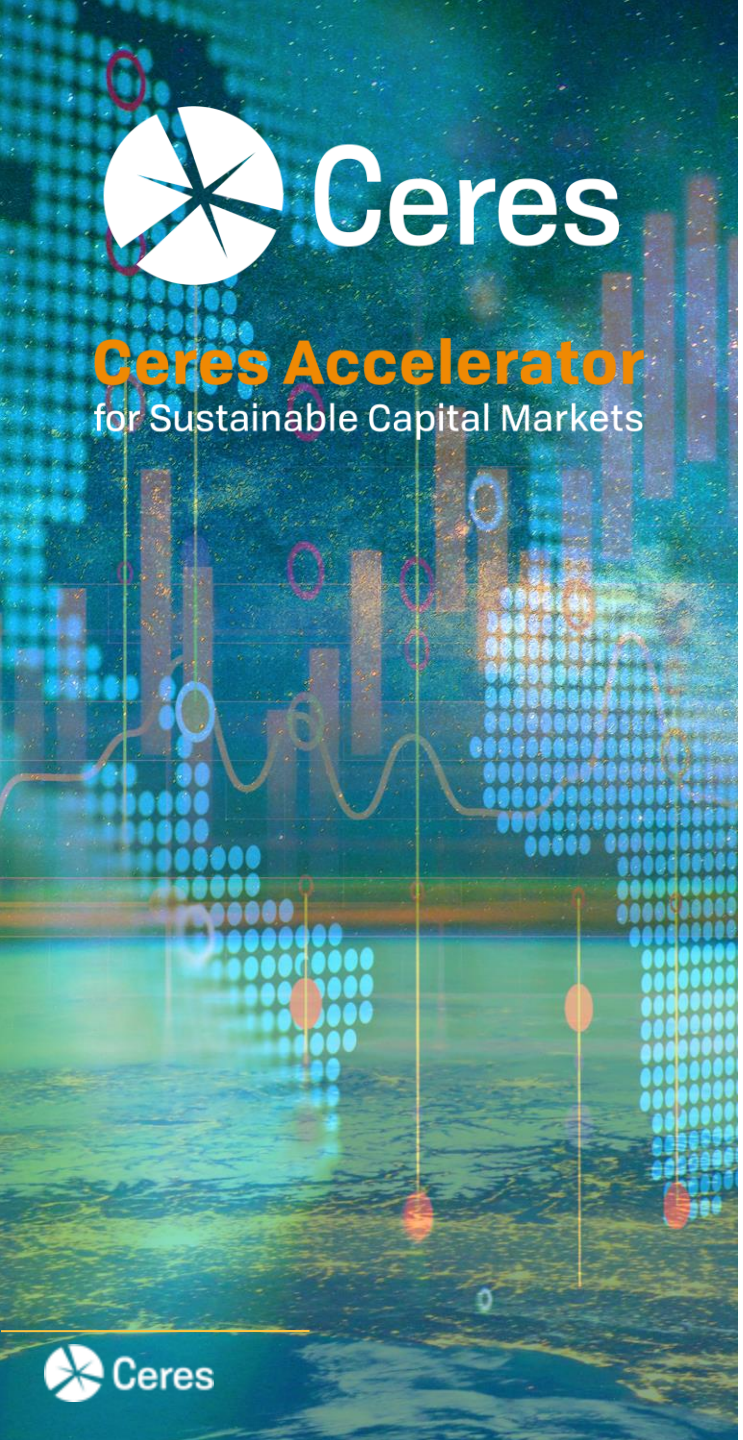
50+ companies, 70% in the Fortune 500, committed to driving sustainable business leadership

Investor Network

210+ Institutional Investors managing more than $50 trillion in assets

Policy Network (BICEP)

85+ leading companies, with dozens of consumer brands and Fortune 500s



GOAL

The Ceres Accelerator for Sustainable Capital Markets is a center within Ceres that aims to transform the practices and policies that govern capital markets in order to reduce the worst financial impacts of the climate crisis. It spurs action on climate change as a systemic financial risk—driving the large-scale behavior and systems change needed to achieve a net-zero missions economy.

TACTICS

Through flagship initiatives, scale action by key capital market influencers on climate change more quickly, boldly, and proudly than ever before:

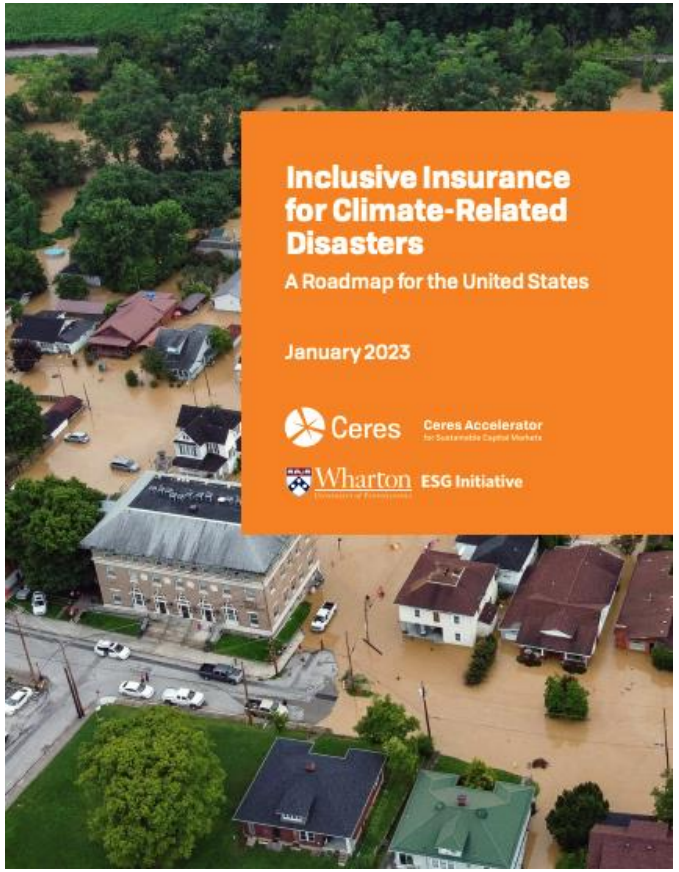
- Achieving Paris-Aligned Portfolios
- Regulating Climate as a Financial Risk
- Financing a Net Zero Economy
- Board Governance for a Sustainable Future

IMPACT

Since launch, it has:

- Engaged with thousands of regulators, banks and other capital market players
- Seen significant developments and actions from federal and state regulators
- Seen the largest banks establish net zero goals and work on next steps for implementation
- Engaged hundreds of corporate board directors on addressing climate risk

Ceres Recent Insurance Reports



January 2023

July 2023

August 2023

Report published on January 24, 2023

Webinar hosted on February 22, 2023 with author, CT Insurance Commissioner Mais and community activist

South Carolina report published on May 20, 2023

Three takeaways

- Disaster insurance is **critical for recovery**.
- **Too many people are uninsured against disasters, unable to afford coverage**, or unable to find coverage that meets their needs. Many policyholders feel the claims process can be unfair or biased.
- There are new **policies, regulatory changes, and innovative insurance products and partnerships that can improve inclusivity** in disaster insurance.

Barriers to Inclusivity

- Disaster insurance gaps
- Limitations in coverage, which may not be apparent initially
- Affordability challenges
- Certain post-disaster needs not well covered by current approaches
- Indirect discrimination and differential impact may persist in certain parts of the insurance value chain
- Lack of regulatory oversight

Inclusive Insurance

The **policies, programs, and products** that make appropriate and affordable insurance available to those currently unserved or underserved by the market.

- **Affordable**
- **Accessible**
- **Transparent and understandable**
- **People-centered**
- **Just**

Ceres

Inclusive Insurance

14 Recommendations (value the NAIC's work)

Actions for a More Inclusive Insurance System

Federal or State Policy

Subsidize disaster insurance for low-income households and/or mandate disaster coverage backed by federal reinsurance

Mandate **data disclosures** from insurers for research

Create a **Community Reinvestment Act** for insurance

Provide **grants** to support inclusive insurance pilot programs

Regulatory Reform

Develop **enabling regulations** for inclusive insurance models

Establish inclusive disaster insurance **regulatory sandboxes**

Reform claims **contestation procedures**

Establish complexity and baseline **coverage standards**

Support research on potential direct and indirect discrimination in disaster insurance markets

Local Government Programs

Subsidize disaster insurance for low-income households

Provide insurance **consultations** to households

Develop **community-based models** for inclusive insurance

Private Sector Offerings

Expand offerings to include accessible insurance products

Provide discounts and transparency for **disaster mitigation**

Direct assistance for affordability

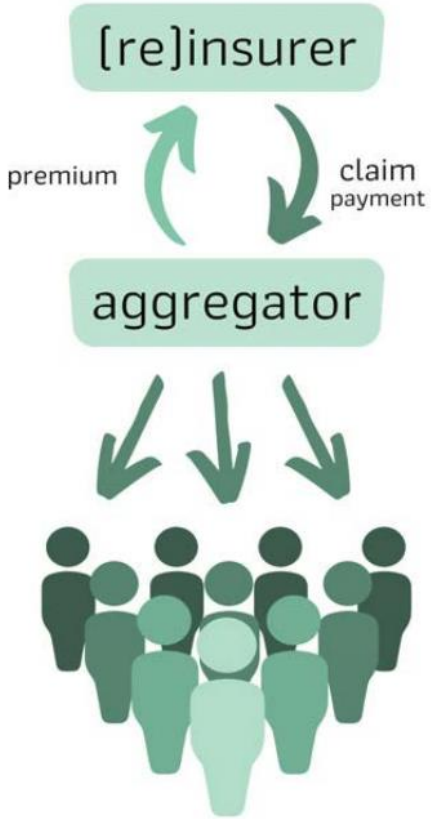
- Means-tested assistance programs
- Consultations and support
- Targeted mitigation grants to communities in need

Inclusive Insurance

Filling gaps with new products

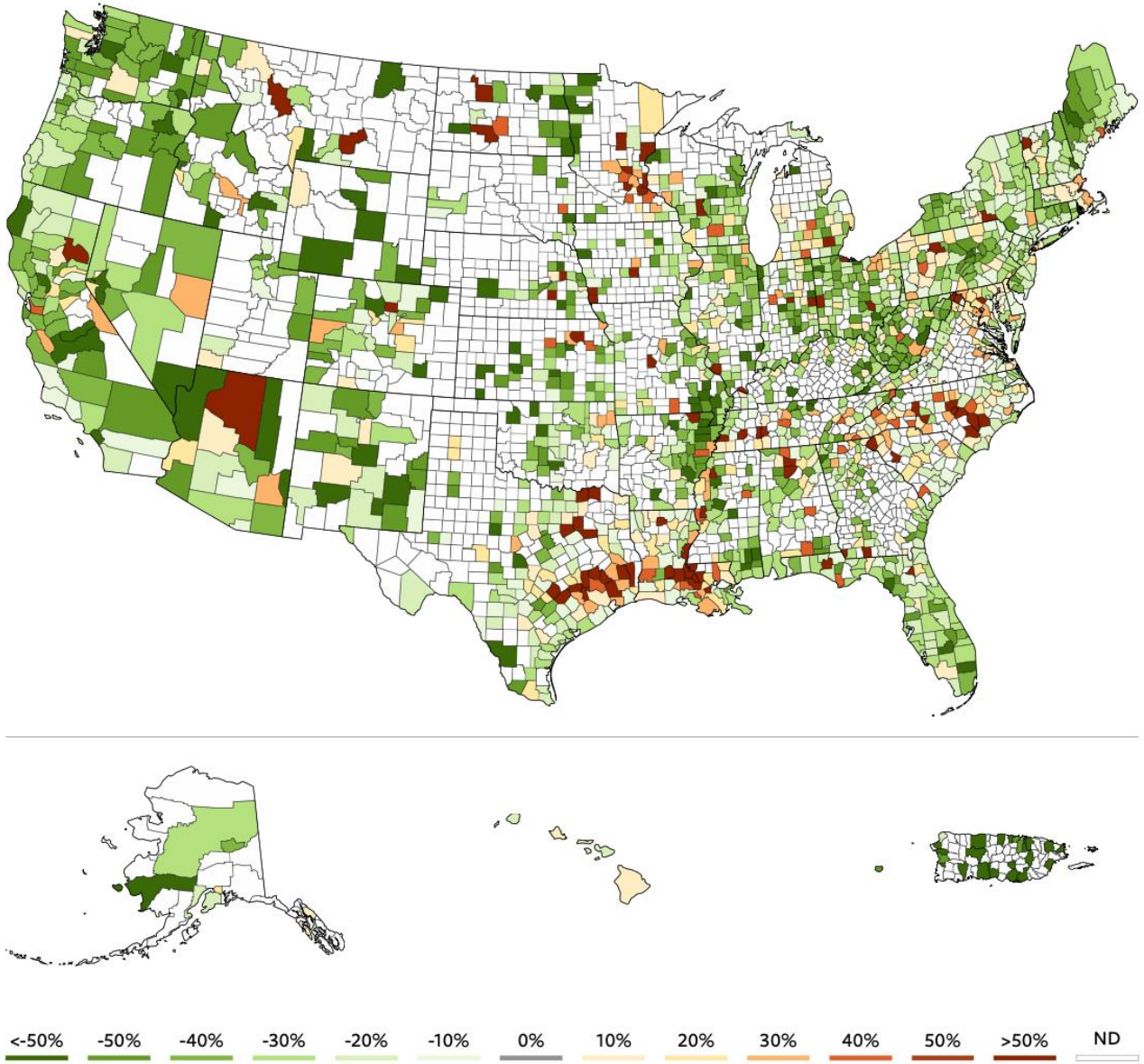
Community/group insurance

Microinsurance & parametric insurance

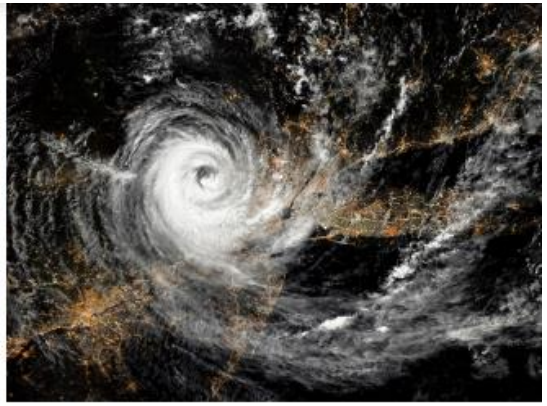


- *Support new models through enabling regulations and regulatory sandboxes when further information is needed*
- *Encourage innovation aimed at unserved populations through a state insurance Community Reinvestment Act*

Figure 5 · Percent Change in Overall Residential NFIP Take-up by County (2009–2019)



DATA SOURCE: OpenFEMA NFIP Redacted Policies (v1) and American Community Survey five-year estimates.
NOTE: Data limited to counties with over 50 policies in 2009. Alaska, Hawai'i, and Puerto Rico are depicted out of their respective scales and locations.



Climate risk management in the U.S. insurance sector

An analysis of climate risk disclosures

July 2023

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Ceres Accelerator
for Sustainable Capital Markets

THE TCFD RECOMMENDATIONS

Governance	Strategy	Risk Management	Metrics and Targets
a Describe the board's oversight of climate-related risks and opportunities.	a Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.	a Describe the organization's processes for identifying and assessing climate-related risks.	a Disclose the metrics used by the organization to assess climate- related risks and opportunities in line with its strategy and risk management process.
b Describe management's role in assessing and managing climate-related risks and opportunities.	b Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.	b Describe the organization's processes for managing climate-related risks.	b Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.
	c Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	c Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.	c Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.

TWO COMPLEMENTARY REVIEW METHODS

Ceres

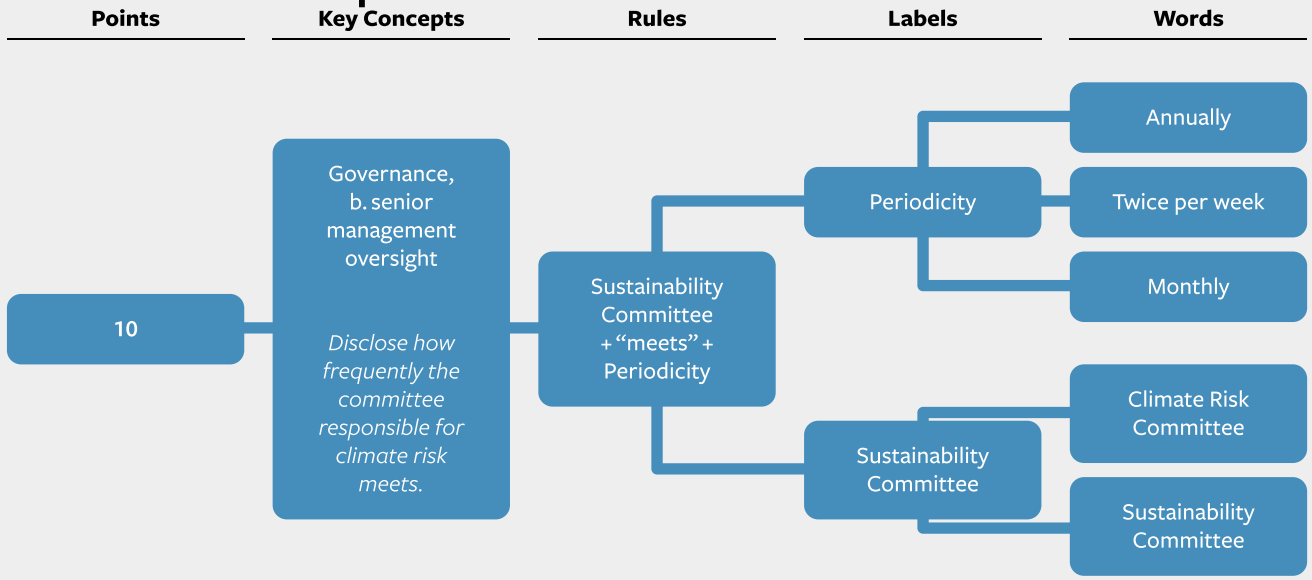
Manifest Climate AI

Reviews whether the report content broadly aligns with each of the 11 TCFD recommendations.

California Department of Insurance

Rules-based Text Mining

Adapted from method used by financial supervisors in Spain; reviews the report content using specific criteria.



KEY FINDINGS

Diverse Strategies for climate risk management

Examples of companies across types of business (life, P&C, health) with detailed climate risk disclosure survey responses aligned with the TCFD framework

Detailed responses on Risk Management and Strategy; less on Metrics & Targets

Over 95% of the reports provided information on Risk Management and Strategy

39% provided information on Metrics & Targets

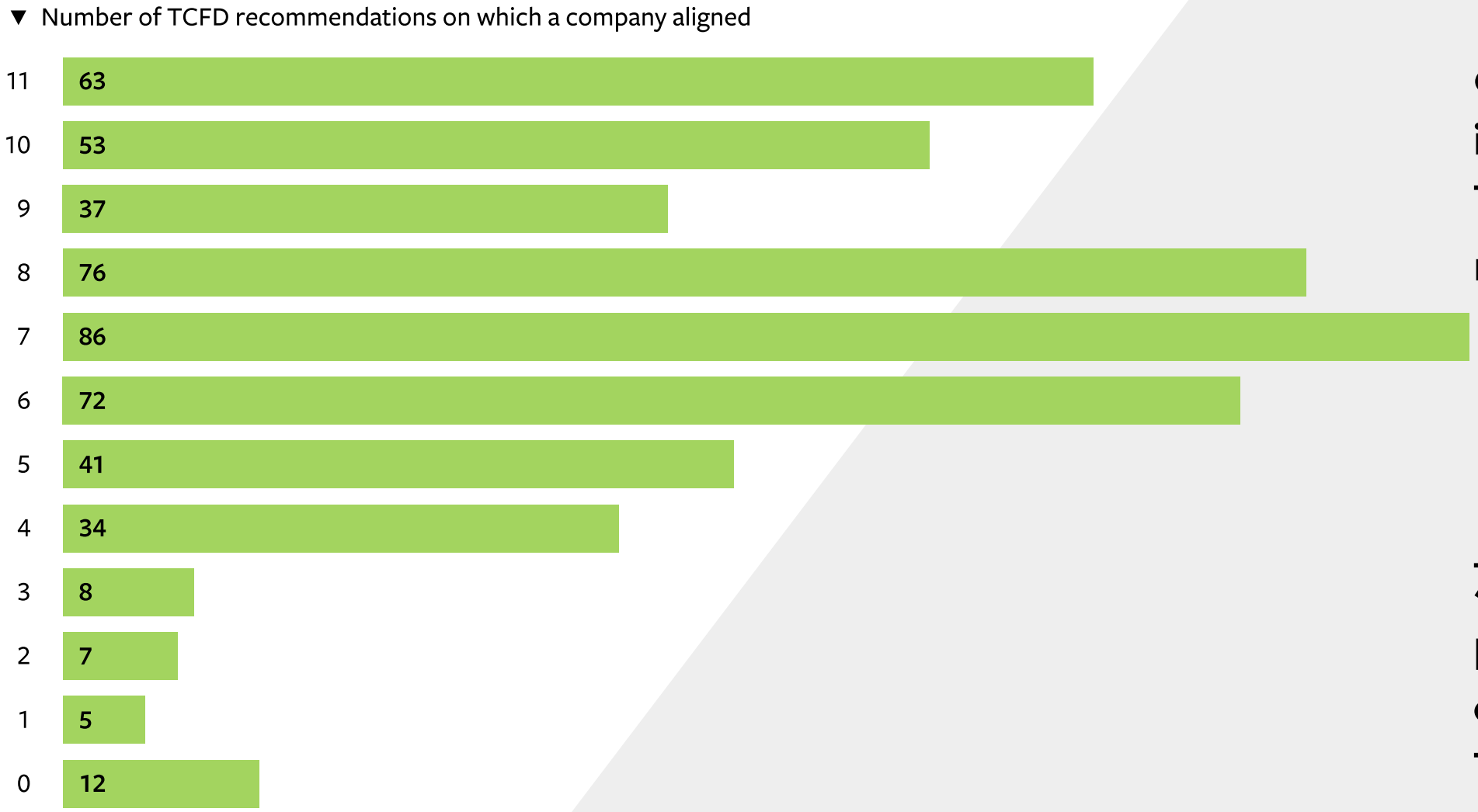
Insights for Regulators

Insurers describe purchasing reinsurance as their strategy for managing climate risk, while reinsurers describe repricing or reducing offerings to manage the same risks

Insurers rely on reinsurance providers for climate education, expertise, and resources

Insurers offer products to support risk reduction among customers or support clean technology

HOW MANY OF THE TCFD RECOMMENDATIONS DID THE RESPONSES FOLLOW?



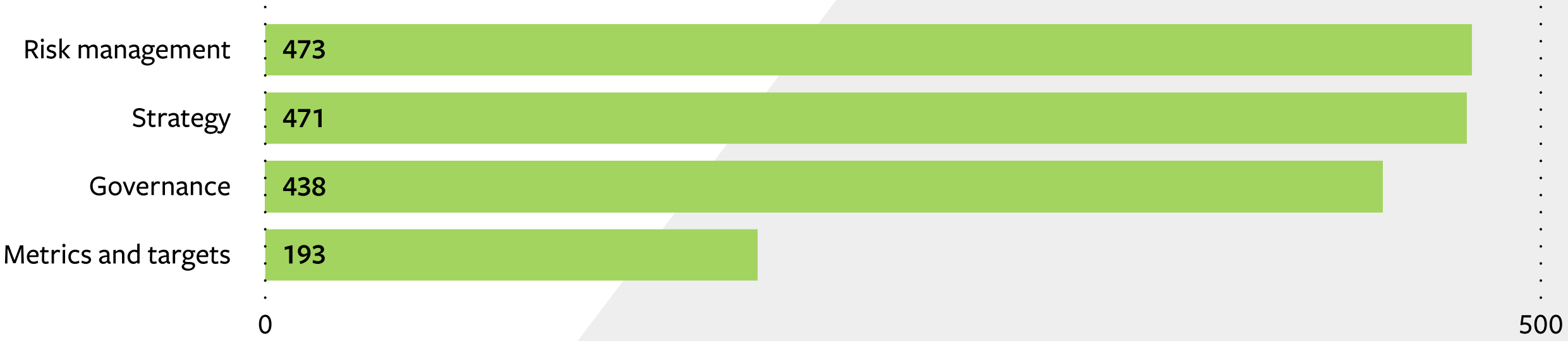
63 reports provided information on all 11 TCFD recommendations.

78% of the reports provided information on 6 or more of the TCFD recommendations.

Results from Manifest Climate AI

RESPONSES ACCORDING TO THE TCFD PILLARS

Strong response rates on Risk Management and Strategy; weak responses on Metrics & Targets



Results from Manifest Climate AI

Methodology of 15 Company Deep Dive

- 15 companies selected from broader 450
- Reviewed against 200 TCFD-aligned data points to assess decision-utility
- Manifest Climate groups data points into 23 “action item indicators”

E.G. Decision-Useful Elements of Climate

Board Awareness	*Establish a regular cadence for the Board review of climate-related matters*
Board Oversight	*Assign clear responsibility for climate oversight with Board members that have the right expertise*
Board Decision-Making	*Integrate climate-related matters into key areas of Board/Board Committee decision-making*
Board Workflow	*Set up a documented process to govern the Board's oversight of climate-related risks, opportunities, goals and targets*
Management Role	*Delegate appropriate and clear authority to promote management-level authority on climate matters*
Management Workflow	*Establish a clear process to inform and enable management-level authority for climate matters*

Insights from 15 Company Deep Dive

- All 15 companies disclosed broadly, but notable gaps in decision-utility
- Good disclosure of risk and opportunity identification, esp. with respect to resource efficiency, products and services
- 0 of 15 provided comprehensive disclosures on Governance, but some level of detail.
- 1 company disclosed well defined process for board to consider risks and opportunities in executive decision-making processes
- 3 assigned climate responsibility to C-suite executive, president or exec committee
- Many discussed financial planning of climate impacts but only 5 of 15 provided detail on transition plans

Insights from 15 Company Deep Dive

- Good disclosure of short-term risks, but few provided detailed disclosure on physical risks over longer time horizons
- Only two companies disclosed climate-linked compensation in detail, some discussion of “ESG metrics” in incentive plans.
- 12 of 15 integrate climate risk into ERM process
- Almost all companies provided ghg metrics for scopes 1, 2 and 3. 6 companies provided no disclosures on scope 3.
- Two companies voluntarily adopted carbon pricing, one of these discussed how it might change over time.

See detailed disclosure references in **Manifest Climate’s live benchmarking application** sharing the results of the detailed disclosure review.

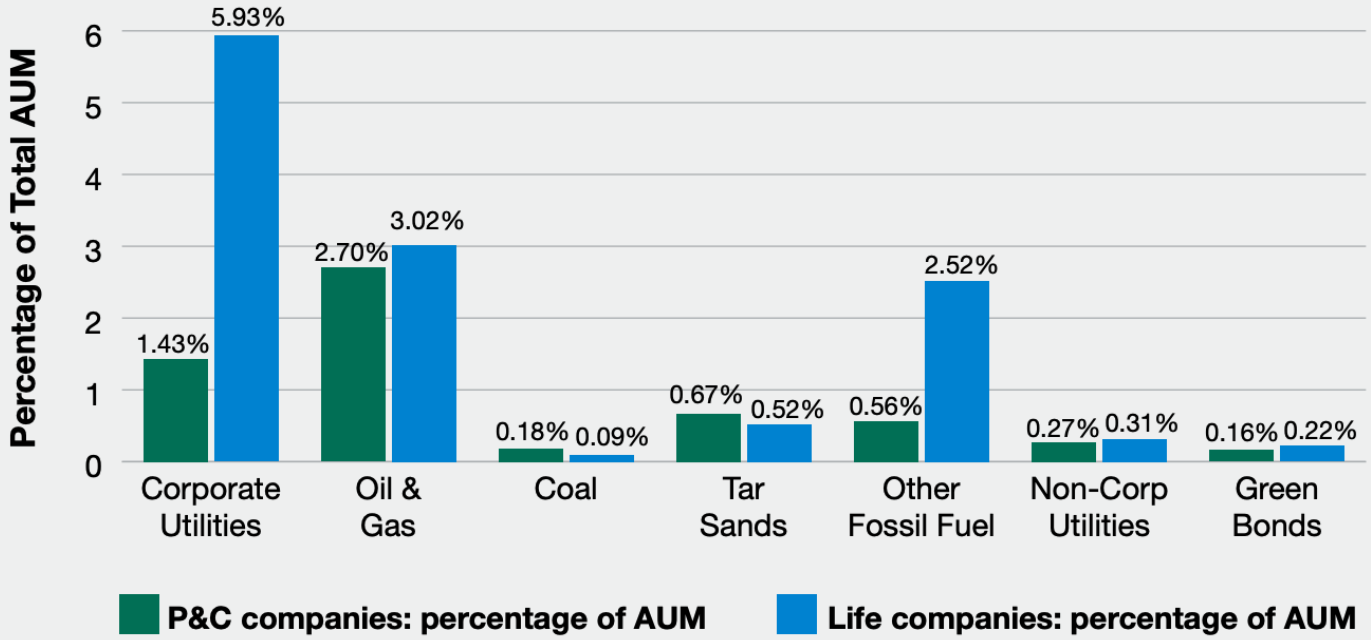
Insurer Investments

- Analysis of insurance company portfolios
- Looked at over 400 insurer investment data
- From California Dept of Insurance 2019 analysis, through S & P Global

Ceres

Insurer Investments

Figure 1
Investment breakdown by sector
(percentage of assets under management (AUM) and Green Bonds)

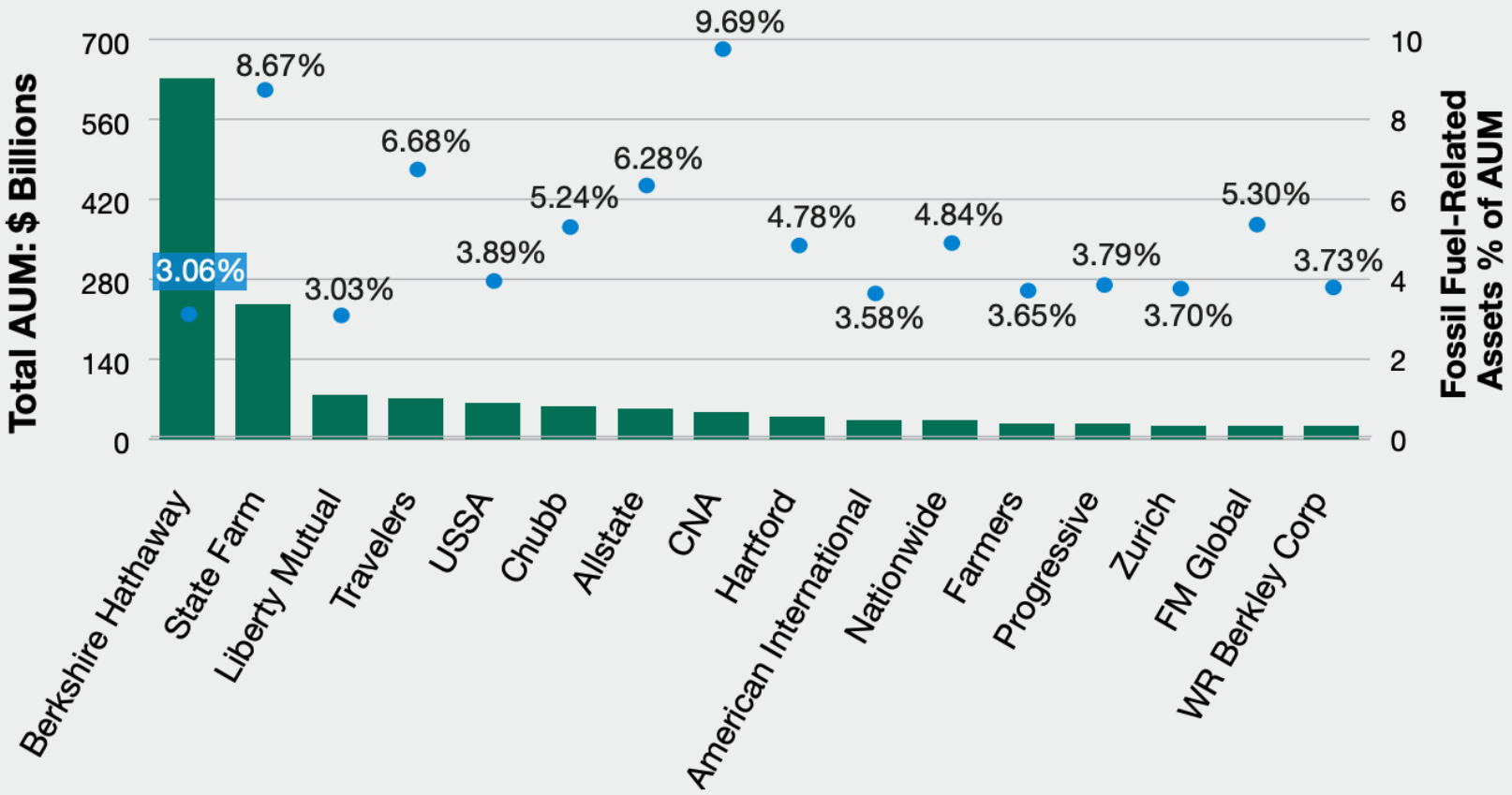


The United States insurance sector has notable holdings in a range of different fossil fuel-related investment types. This graphic illustrates the relative size of these investments, as well as in Green Bonds, for both life insurers and property & casualty (P&C) insurers, based on the 2019 California Insurance Commission dataset.

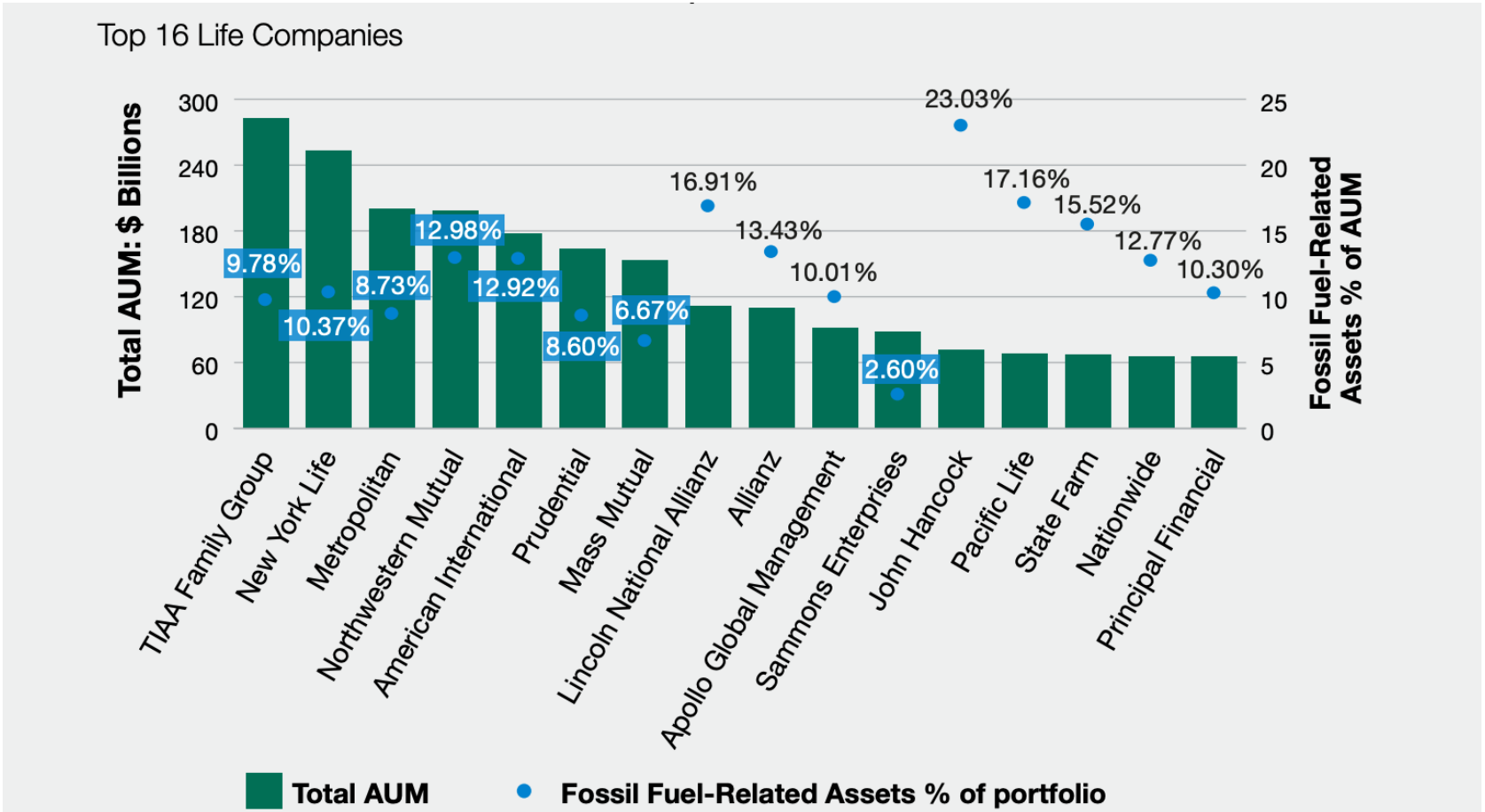
Figure 2

Total AUM vs Fossil Fuel-Related Assets Percentage of Portfolio

Top 16 P&C Companies



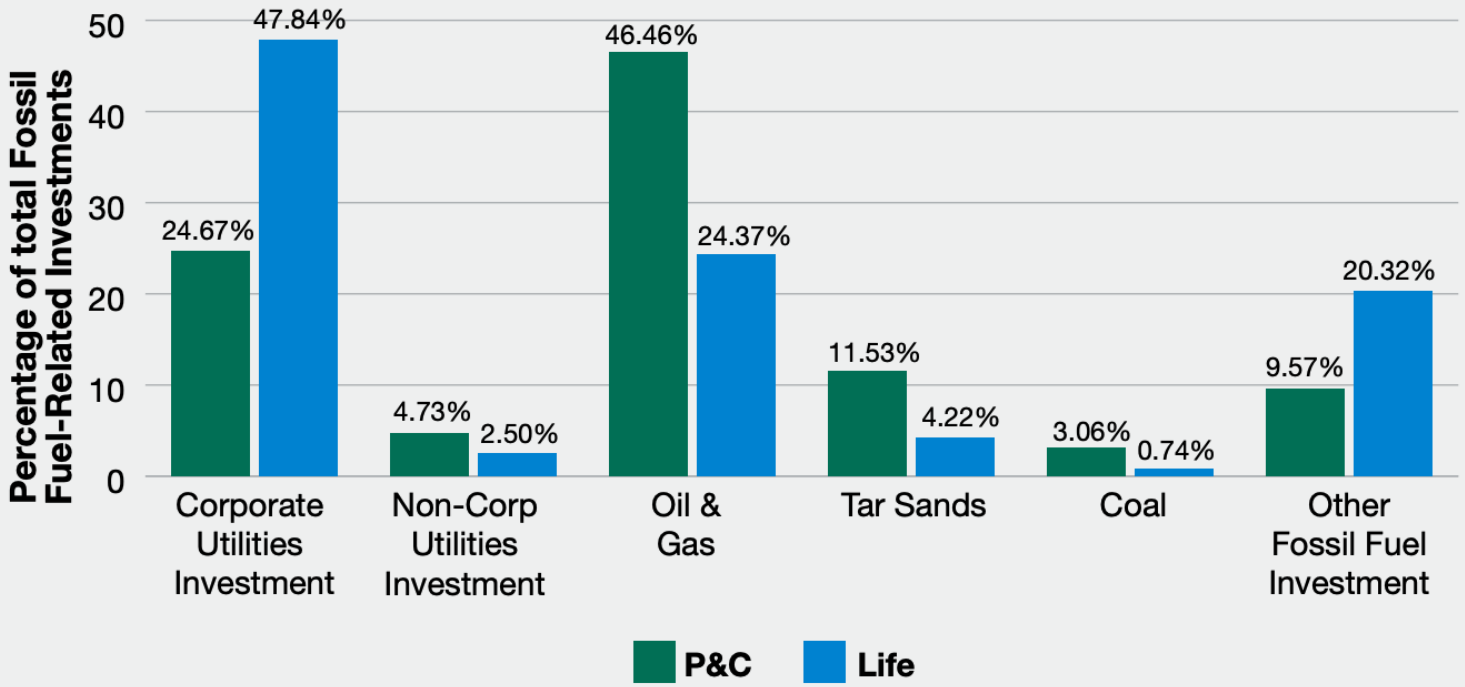
Insurer Investments



Insurers are some of the largest asset owners in the financial system, and many of them have large holdings in fossil fuel-related assets. This visualization shows the investing power of the property & casualty companies, as well as the magnitude of their fossil fuel-related investments. On average, property & casualty companies have a lower percentage of investment in fossil fuel-related assets than life insurance companies.

Figure 5

Fossil Fuel-Related Investment Type as a Percentage of Total Fossil Fuel-Related Investment, by Sector



This chart displays the patterns in fossil fuel-related investment by business line. The amount of investment in different types of fossil fuel-related assets compared to total fossil fuel-related investment on a sector basis is shown, which allows for discernment of investing patterns of both sectors.

Protect the

Freedom to Invest

Join leading investors and companies to call on policymakers to protect the freedom to invest responsibly.

Reaffirm your commitment to factoring all material financial risks into decision-making.

Sign the Freedom to Invest statement
at: freedomtoinvest.org or scan QR code to learn more.

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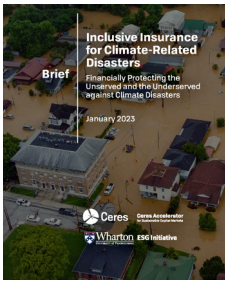
617-247-0700 ext. 104

Climate Risks in the Insurance Sector

Insurance companies are the risk managers of society. Extreme storms, wildfires and floods have devastated communities across the nation, endangering lives and costing billions in losses. Climate change is expected to increase the frequency, intensity, and duration of severe events, as well as the damages from these disasters. Transitions of industries is also a growing risk for insurers and the businesses they insure. Insurers that are forward-looking and solution-oriented regarding climate risks can limit the amount of destruction and loss, benefiting both themselves and society at large.

The following reports produced by the Ceres Accelerator for Sustainable Capital Markets provide critical research, analysis, and solutions for the U.S. insurance industry.

BRIEF: INCLUSIVE INSURANCE FOR CLIMATE-RELATED DISASTERS
January 2023



Insurance needs to work for everyone, but worsening climate disasters are further exposing a glaring—and growing—coverage gap. This brief offers a framework for expanding the financial protection of insurance against climate disasters to those whose needs are not currently met, and recommendations for how insurance for climate-related disasters can be made more inclusive in the U.S. The brief summarizes a larger analysis commissioned by Ceres: Inclusive Insurance for Climate-Related Disasters: A Roadmap for the United States.

https://www.ceres.org/resources/reports/inclusive-insurance-roadmap

CLIMATE RISK MANAGEMENT IN THE U.S. INSURANCE SECTOR
July 2023

This report from Ceres and the California Department of Insurance, reviews over 400 responses from insurance companies to the National Association of Insurance Commissioners' 2021 Climate Risk Disclosure Survey utilizing the Task Force for the Related Financial Disclosures. The goal of this analysis, which used two independent methods to review the responses, is to provide insights that may be helpful for other insurers in developing their climate-related disclosures and to encourage improvement in the comprehensiveness of those disclosures.

https://www.ceres.org/resources/reports/climate-risk-management-us-insurance-sector

THE CHANGING CLIMATE FOR INSURANCE INVESTMENTS
August 2023

This report from Ceres, ERM, and Persefoni finds that the U.S. insurance sector held $536 billion in fossil-fuel related assets in 2019, despite some insurers citing climate-related risk and natural disasters as factors in raising premiums and/or dropping coverage within certain high-risk regions. The research reveals that the top 16 U.S. insurers alone held more than 50 percent of the half trillion dollars in fossil fuel-related assets owned by the sector.

https://www.sustainability.com/thinking/analysis-of-the-insurance-sectors-investors-in-fossil-fuel-related-assets/

To learn more, reach out to Steven Rothstein (srothstein@ceres.org) and Jaclyn de Medicci Bruneau (jdemediccibruneau@ceres.org).

About Ceres and the Ceres Accelerator for Sustainable Capital Markets

Ceres is a nonprofit organization working with the most influential capital market leaders to solve the world's greatest sustainability challenges. The Ceres Accelerator for Sustainable Capital Markets is a center of excellence within Ceres that aims to transform the practices and policies that govern capital markets to reduce the worst financial impacts of the climate crisis. It spurs action on climate change as a systemic financial risk—driving the large-scale behavior and systems change needed to achieve a net zero emissions economy through key financial actors including investors, banks, and insurers. The Ceres Accelerator also works with corporate boards of directors on improving governance of climate change and other sustainability issues. For more information, visit ceres.org and ceres.org/accelerator and follow @CeresNews.

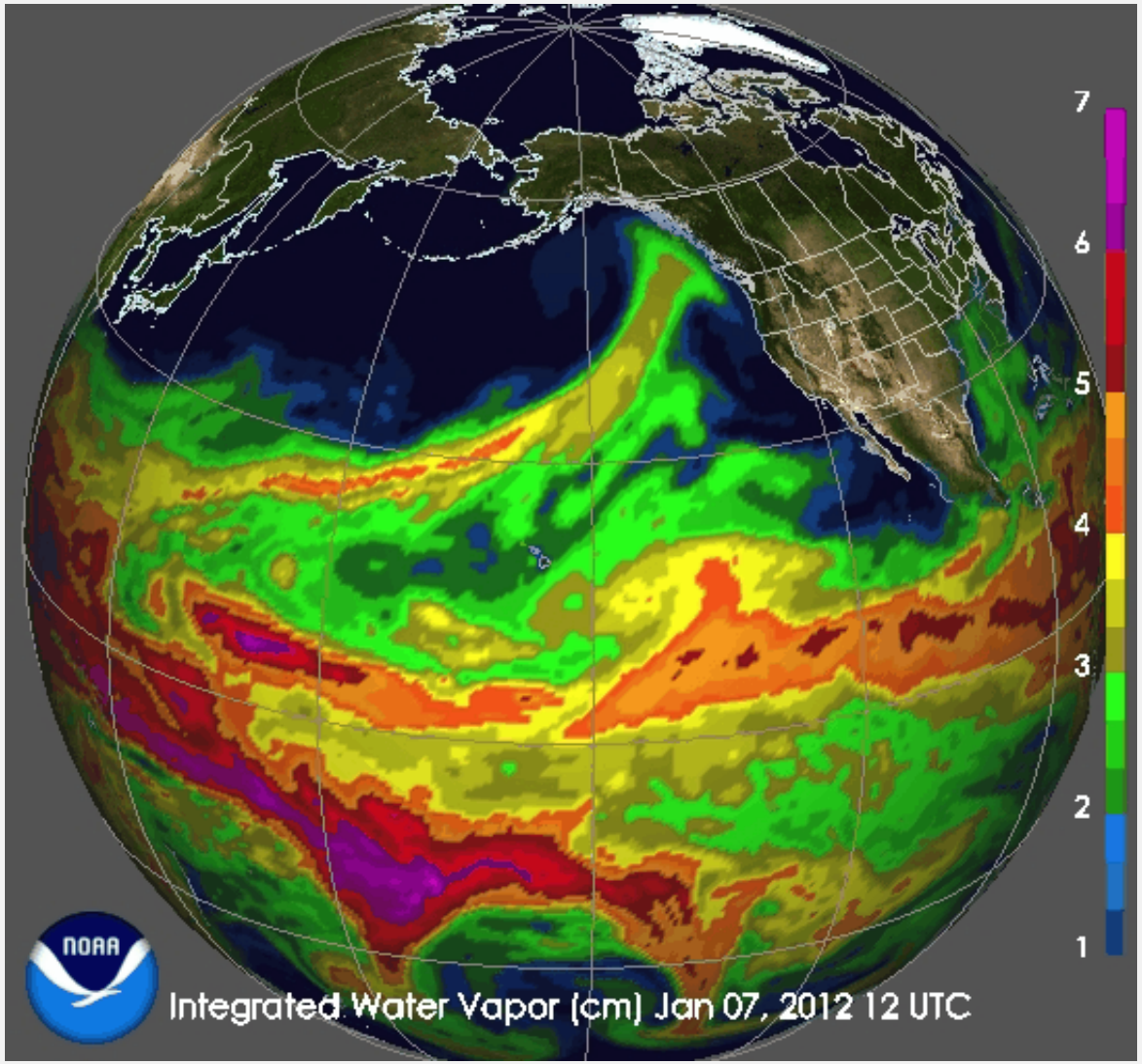
Atmospheric Rivers

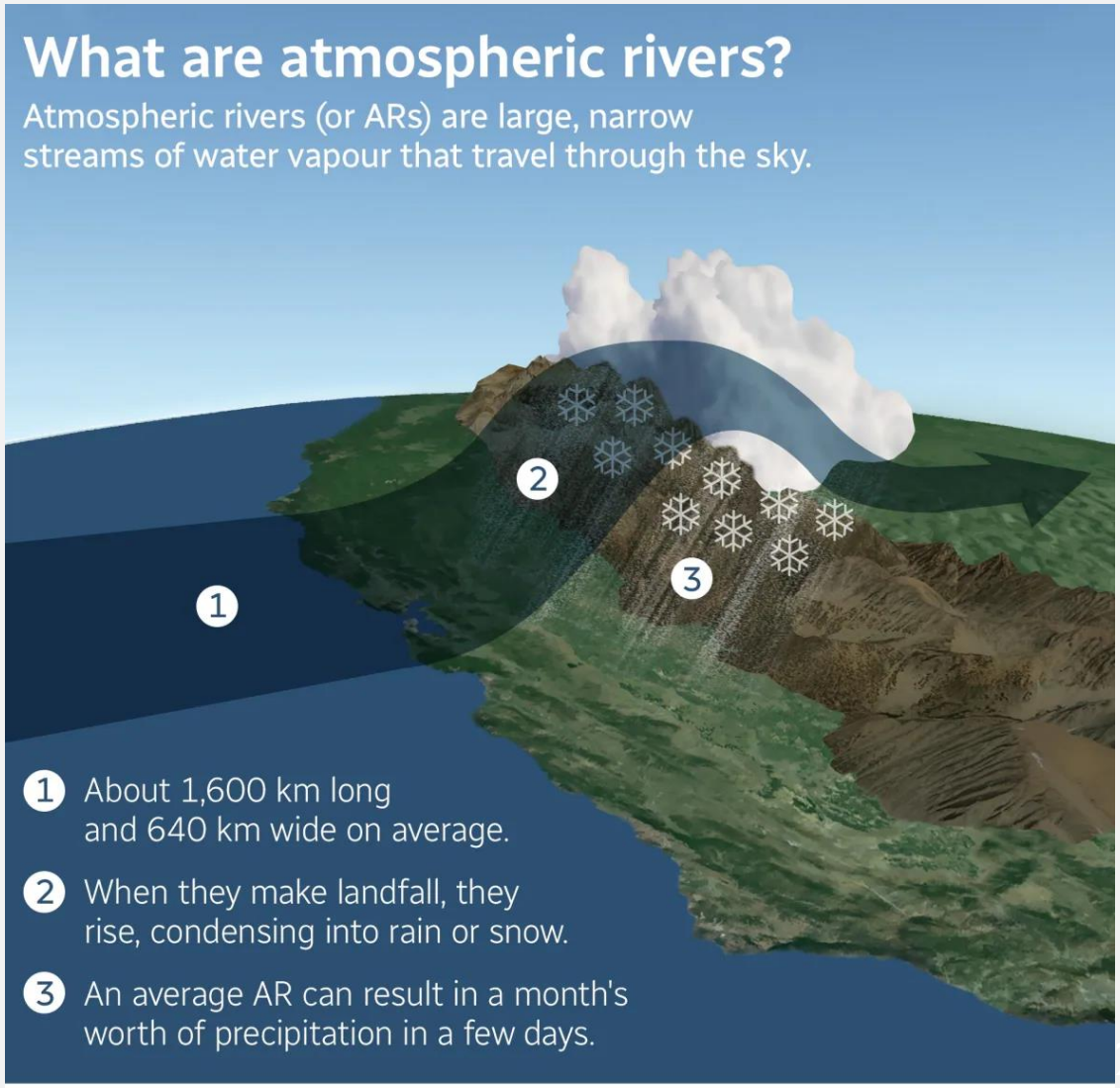
Mike Peterson and Kara Voss
California Department of Insurance
NAIC National meeting
August 15, 2023

Visual from ***Scientific American,*** 2022

Scientific American, 2022

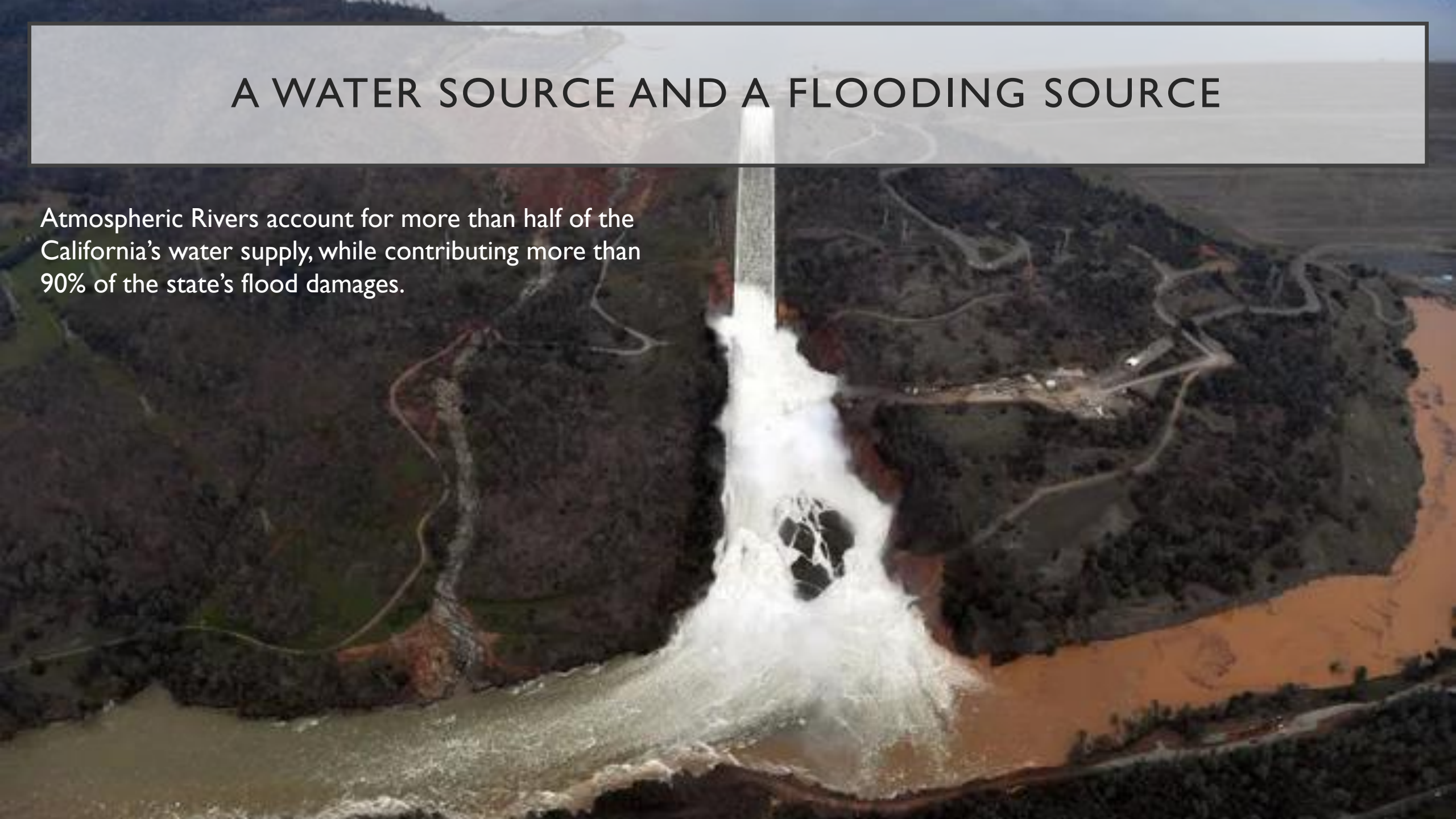
HIGH RAINFALL FROM MOST ATMOSPHERIC RIVERS ORIGINATES IN THE TROPICS





A WATER SOURCE AND A FLOODING SOURCE

Atmospheric Rivers account for more than half of the California's water supply, while contributing more than 90% of the state's flood damages.



Building a vocabulary for high intensity rainfall

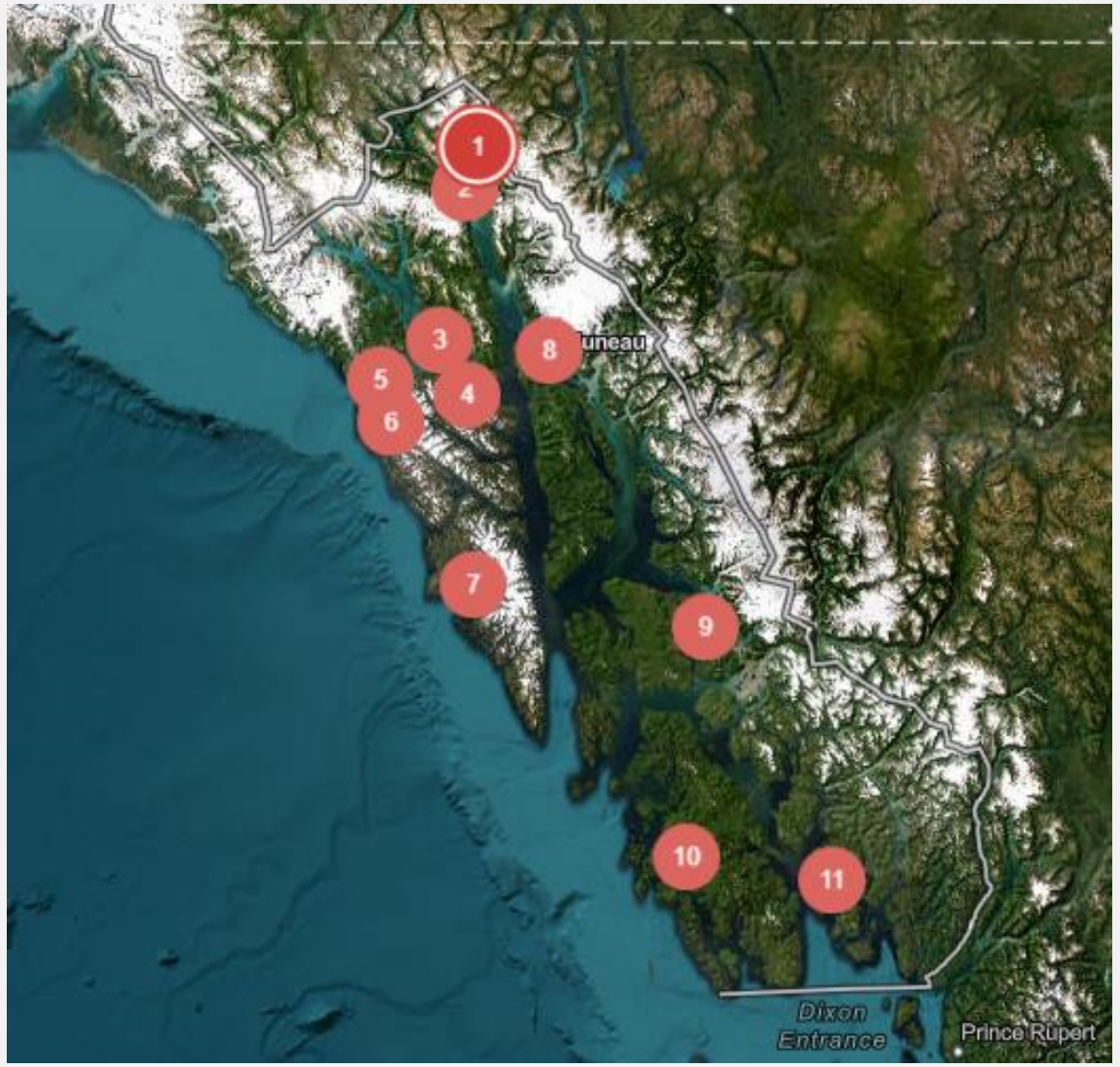
Alaska

In 2020, winds, flooding, and landslides caused an estimated $29M worth of damage to public infrastructure, not including private property losses.

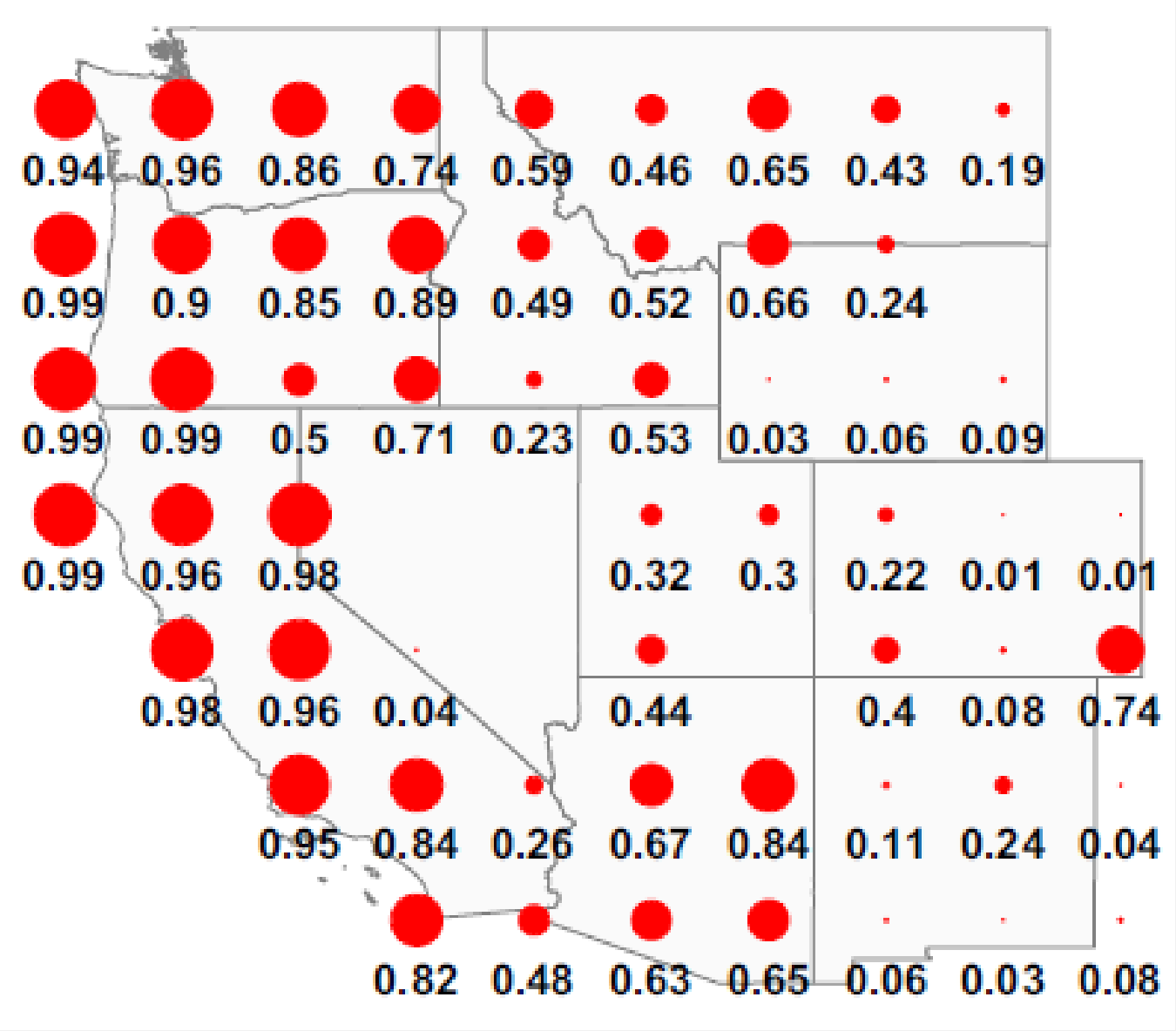
California

In the two weeks around January 1, 2023, an atmospheric river caused an estimated $5-7 Billion in economic losses; less than 1/3 were insured losses.

***Estimates from Moody's Analytics**



Nearly all flood losses in some Pacific Coast areas are driven by Atmospheric Rivers

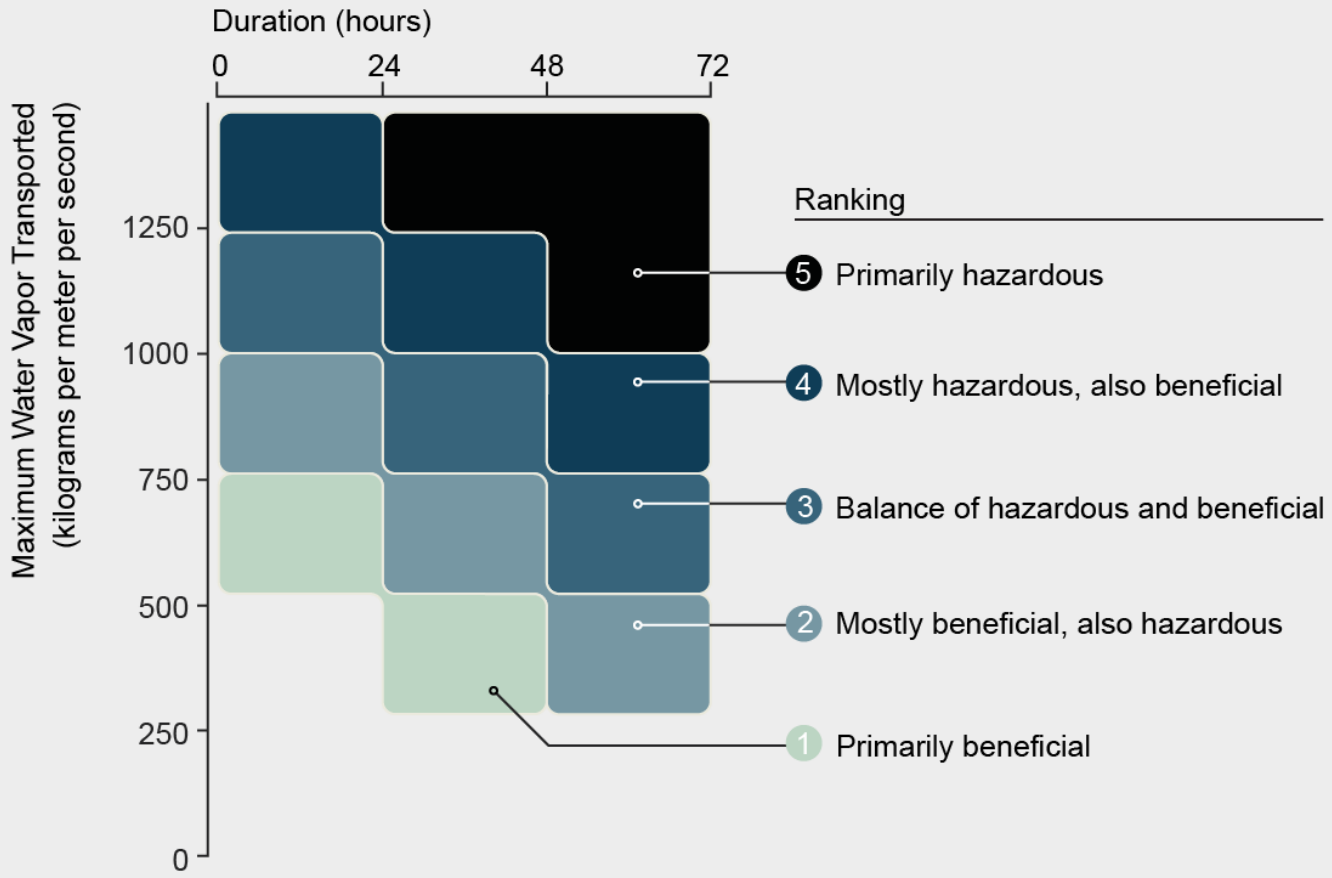


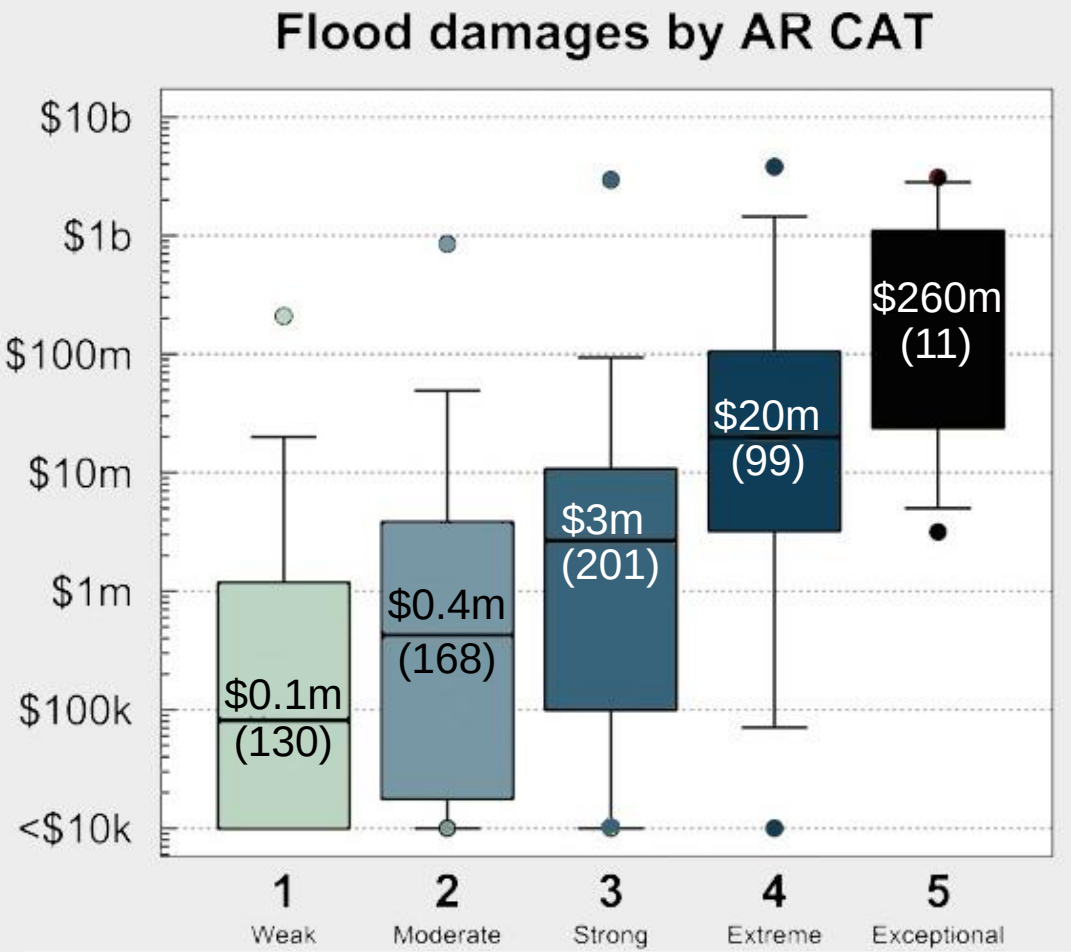
The proportion of flood losses from 1978 to 2017 are shown by the red circles

- Nearly 85% of all flood losses
- Over 95% in many areas, including those that will be impacted by coastal storm surge as well

Citation: Corringham et al. 2019. Atmospheric Rivers Drive Flood Losses in Wester United States. ***Scientific Advances***

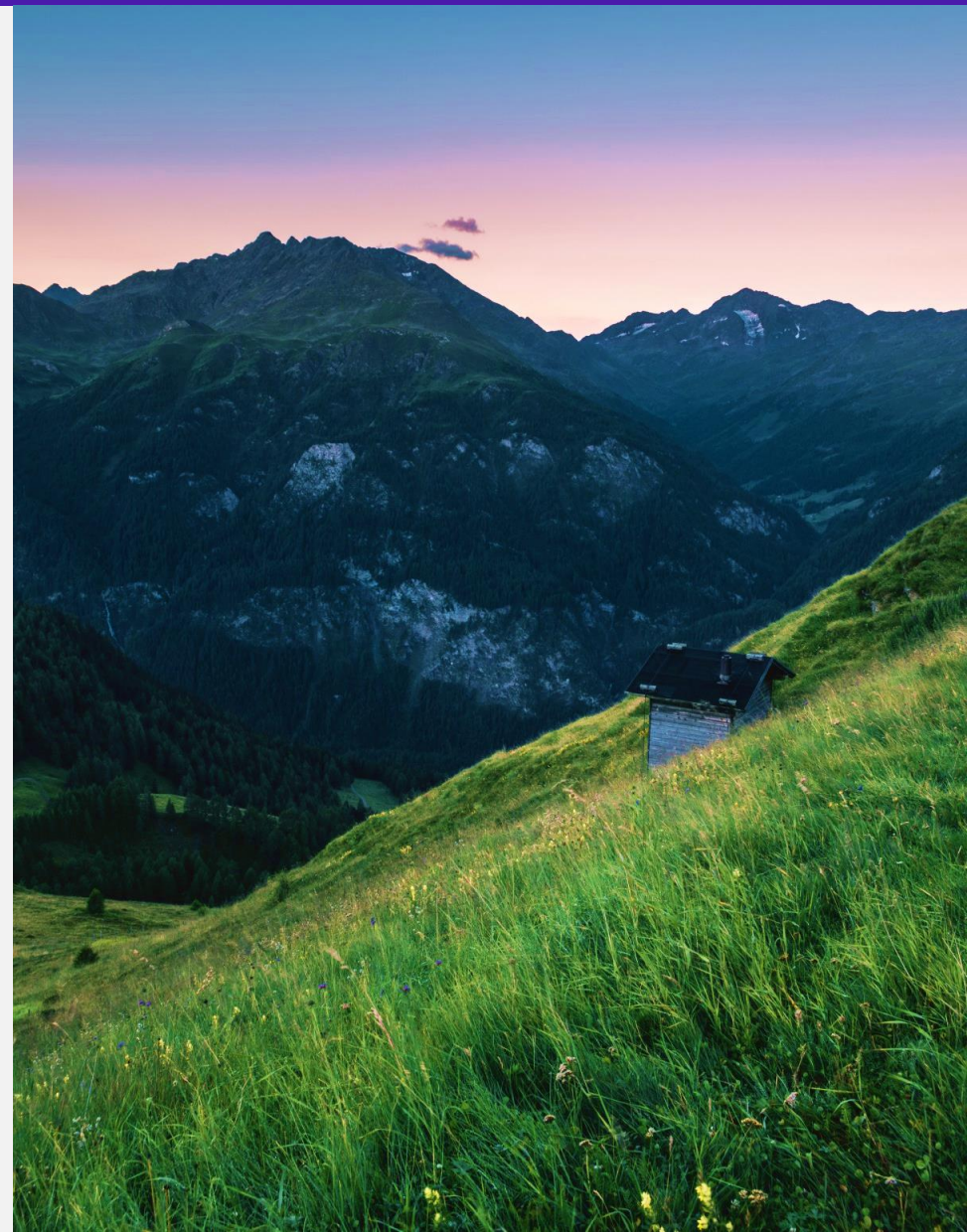
Building a vocabulary for high intensity rainfall





Focusing on protection gaps and risk mitigation opportunities for Atmospheric Rivers?

- High risk to intense atmospheric rivers, and low insurance uptake
- Growing source of insured and uninsured losses
- Highly specialized to certain parts of the United States, but high severity of losses, including when rain-on-snow
- Opportunities for better risk communication and risk mitigation to reduce future losses



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