

2025/09/15

Extreme Weather as a Systemic Stress Test

Stone Stone

The Planet's Feverish Response

Consequences of Climate Change Exceeding Earth's Limits

Last week, we traced how awareness of climate change has evolved. Today we shift from awareness to consequences. The Earth is now exceeding limits set by its physical systems

Hottest Year on Record

2024 was confirmed by the World Meteorological Organization as the hottest year on record, with global temperatures breaching the 1.5°C threshold. The financial and human toll is mounting, with billion-dollar climate disasters multiplying

01

Art and Activism

"As the Lake Fades" at UMOCA



This exhibition from January 26 to June 1, 2024 in the Utah Museum of Contemporary Art (UMOCA) brought together a diverse group of local, national, and international artists to explore the multilayered consequences of the lake's decline.

This exhibition confronted the ecological crisis of the shrinking Great Salt Lake, a critical issue for Utah's environment and the health of its residents

"As the Lake Fades" at UMOCA

The Causes

Water Diversion

* For over a century, vast amounts of water from the rivers that feed the Great Salt Lake have been diverted for agriculture, industry, and municipal use, particularly the cultivation of water-intensive crops.

Drought and Climate Change

* "Consistent extreme weather and rising temperature" increased evaporation, acting as a powerful threat multiplier. This further reduces the amount of water available to flow to or stay in the lake.

A warmer and dryer climate essentially "cooks" the water away faster than it can be replenished.

"As the Lake Fades" at UMOCA



The exhibition delved into themes of drought, climate change, and the potential for toxic dust from the exposed lakebed to impact the air quality of the Salt Lake Valley. Through a variety of artistic mediums, the exhibition aimed to foster a deeper public understanding of the environmental challenges.

By bridging the gap between art and environmental science, UMOCA has not only provided a platform for artists to address the fading of the lake, also created a space for the community to engage with the issue on a deeper, more emotional level, offering a space for reflection, dialogue, and a search for sustainable solutions

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Gideon Mendel: Drowning World and Deluge



For over a decade, instead of taking disaster scene, British photographer Gideon Mendel's on-going project creates portraits that defy traditional photojournalism, documenting the intensely personal and universally shared experience of flooding .

He has been travelling to flood zones in 11 countries, including the UK, India, Haiti, Pakistan, Australia, Thailand, Nigeria, Germany, and the United States, Mendel

Gideon Mendel: Drowning World and Deluge



The flood victims stand calmly in murky water, looking directly at the camera. This deliberate approach creates a profound sense of intimacy and dignity.

The portraits are both haunting and deeply human, highlighting a "shared vulnerability" that transcends geography, wealth, and culture.

Mendel's work argues that climate change is not a localized disaster but a global human crisis we are all facing together.

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Boris Maas: The Urge To Sit Dry



Dutch artist Boris Maas takes a more monumental approach to the same threat.

His sculpture, *The Urge To Sit Dry*, is a striking critique of political inaction on climate change.

The piece is a giant high-chair, with dramatically oversized legs.

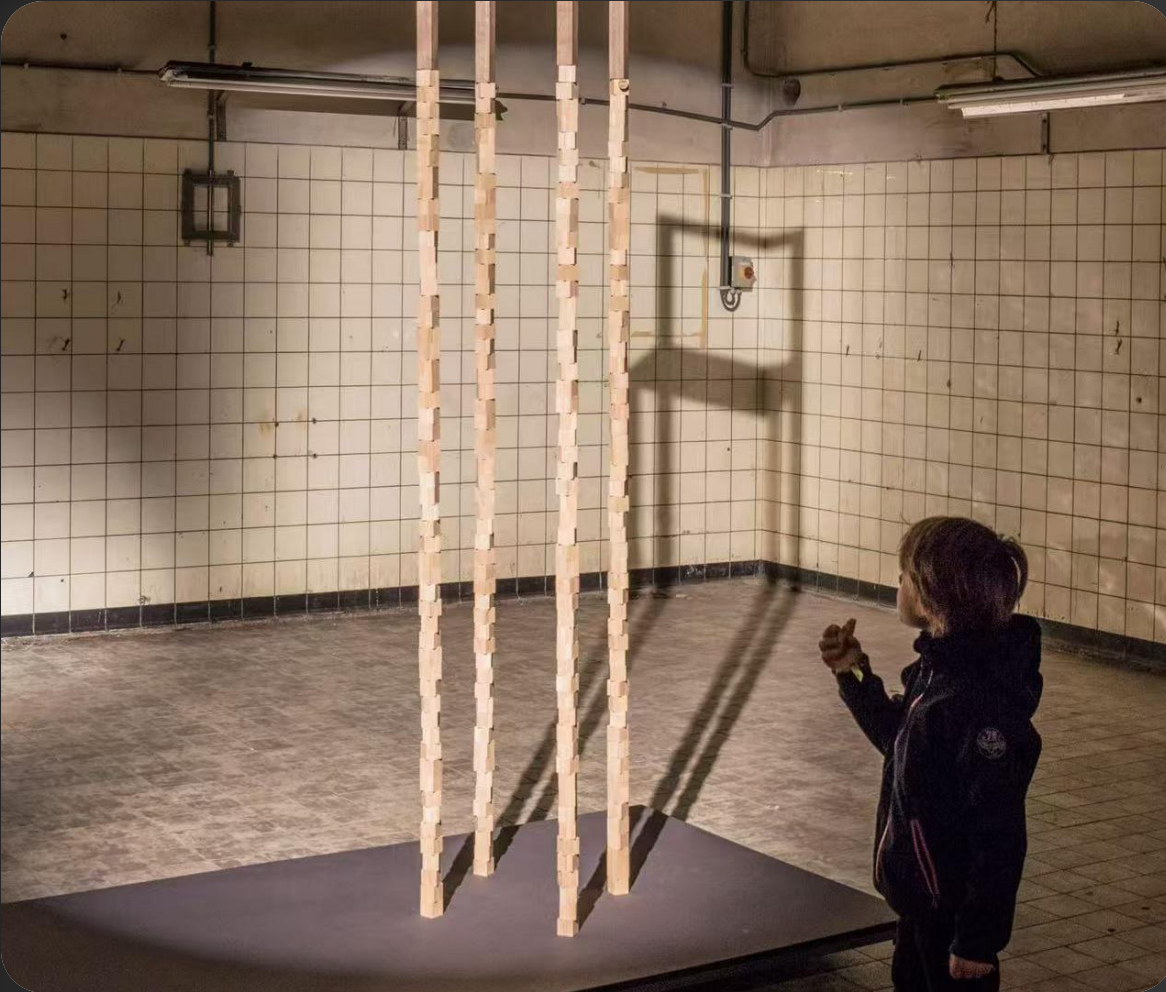
Boris Maas: The Urge To Sit Dry



The critical detail of the sculpture is its height: the seat's positioned precisely predicted flood line for the year 2100.

By creating a functional object that is absurdly non-functional for the present, he provides a tangible, physical marker of a scientifically projected future, forcing a confrontation with imminent action.

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Eve Mosher: HighWaterLine



American artist Eve Mosher transforms the abstract data of flood predictions into a community-level experience through her ongoing series of actions, HighWaterLine.

The project began in New York City in 2007 when Mosher used a sports field chalk marker to draw a ten-mile-long blue line through neighborhoods in Brooklyn and Manhattan. This line traced the contour of land that would be inundated by a ten-foot storm surge, a scientifically projected risk for the city.

Sara and Marc Schiller invite you
To An Evening of Discussion on the

HighWaterLine Project

With **Eve Mosher, Artist** & **Heidi Quante, Catalyst**

DATE

Wednesday September 25th | Cocktails at 6:30pm

LOCATION

Meet at the Apartment
101 Crosby Street | New York, NY 10012

RSVP

events@woostercollective.com

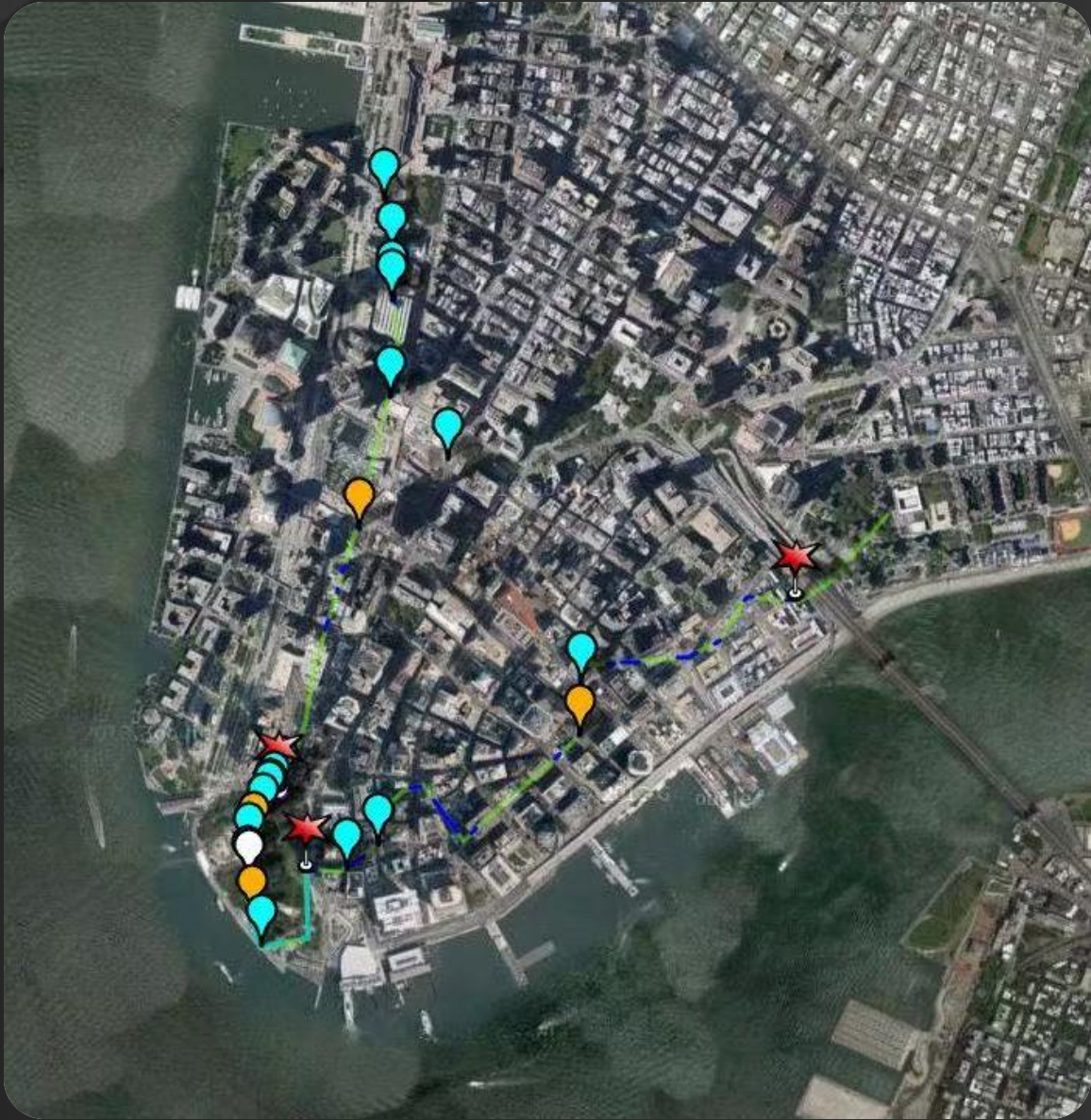


Eve Mosher: HighWaterLine

Mosher's action is part public art, part community engagement, and part activism.

The process involves walking the route, talking to residents, fostering dialogue and raising awareness at a climate risk.

The project has been replicated in other vulnerable coastal cities becoming a powerful tool for communities to begin conversations about adaptation and resilience.



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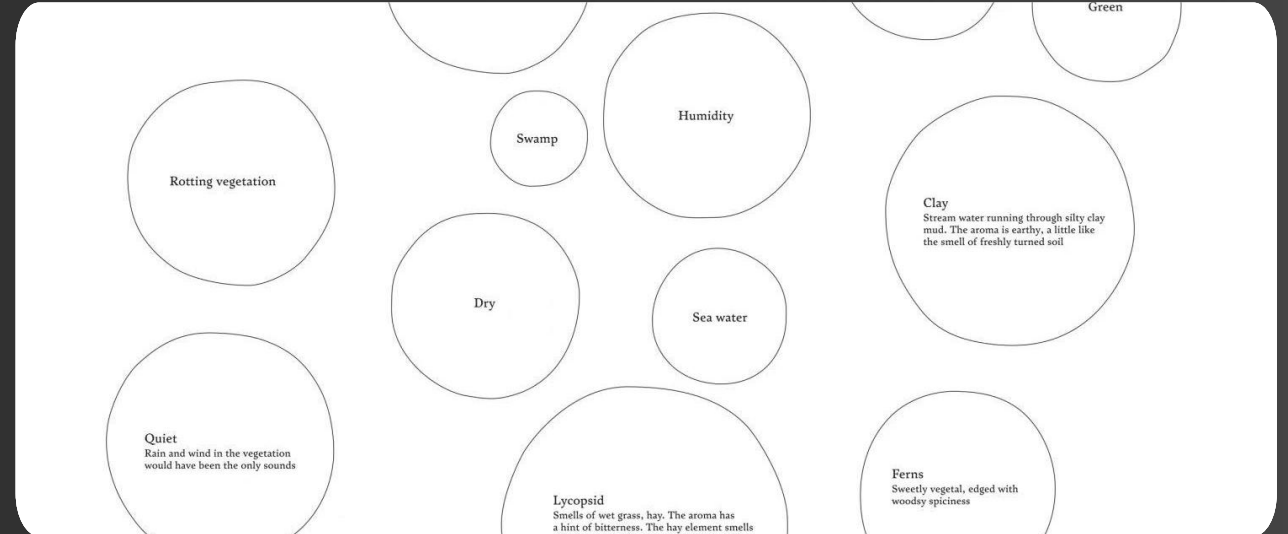
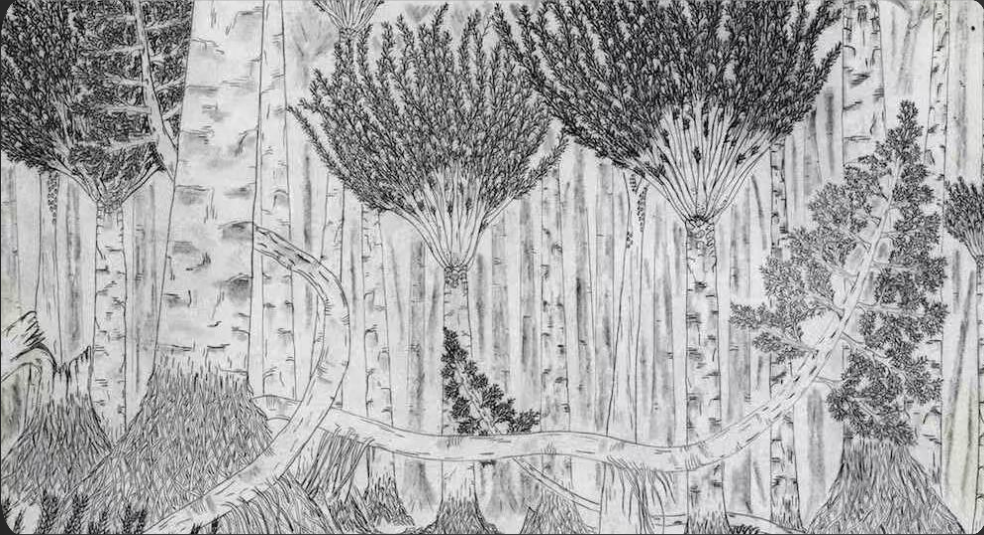
Katie Paterson: To Burn, Forest, Fire



This long-form artwork is a multi-layered sensory experience that connects the vastness of geological time with the intimate, evocative power of scent. It serves not only as a living sculpture and a recurring ritual but also as a profound and direct response to the "extreme change incident" of our current ecological crisis.

Paterson's genius lies in making the abstract threat of climate change tangible and deeply personal. By allowing participants to smell the scent of a tree from a threatened ecosystem, she collapses the physical and emotional distance between us and the crisis.

Katie Paterson: To Burn, Forest, Fire



The project consists of two parts. " The first forest is a living library of 100 tree species from across the globe, planted in England. This collection includes common trees alongside those that are rare, threatened, or critically endangered due to deforestation and climate framing the work as an archive of loss in the face of the Sixth Mass Extinction.

The heart of the project, however, is its ritualistic component. Paterson, in collaboration with scientists and perfumers, has meticulously created incense sticks corresponding to each of the tree species in a series of ceremonial events. The title itself—To Burn, Forest, Fire—evokes the dual nature of fire in our era. It directly references the destructive, catastrophic wildfires that have become a hallmark of extreme weather.

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02

The Planet's Feverish Response

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Systemic Stress Tests

But the real lesson is this: these events are not random natural shocks. They are systemic stress tests, revealing how our infrastructures, policies, and social systems fail — or succeed — under pressure

Three Hazards Examined

We will examine three hazards through three lenses — drought, flood, fire

Justice: Who bears the cost, and why

Resilience

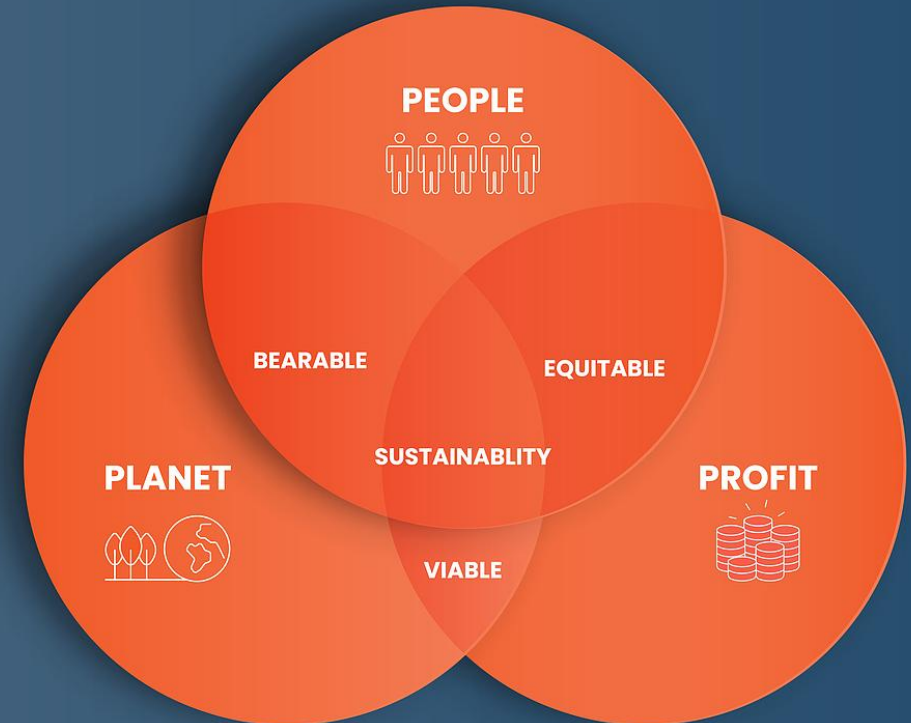
What enables some systems to withstand shocks better than others

The Planet's Feverish Response

Strategy

What design principles emerge for decision-makers

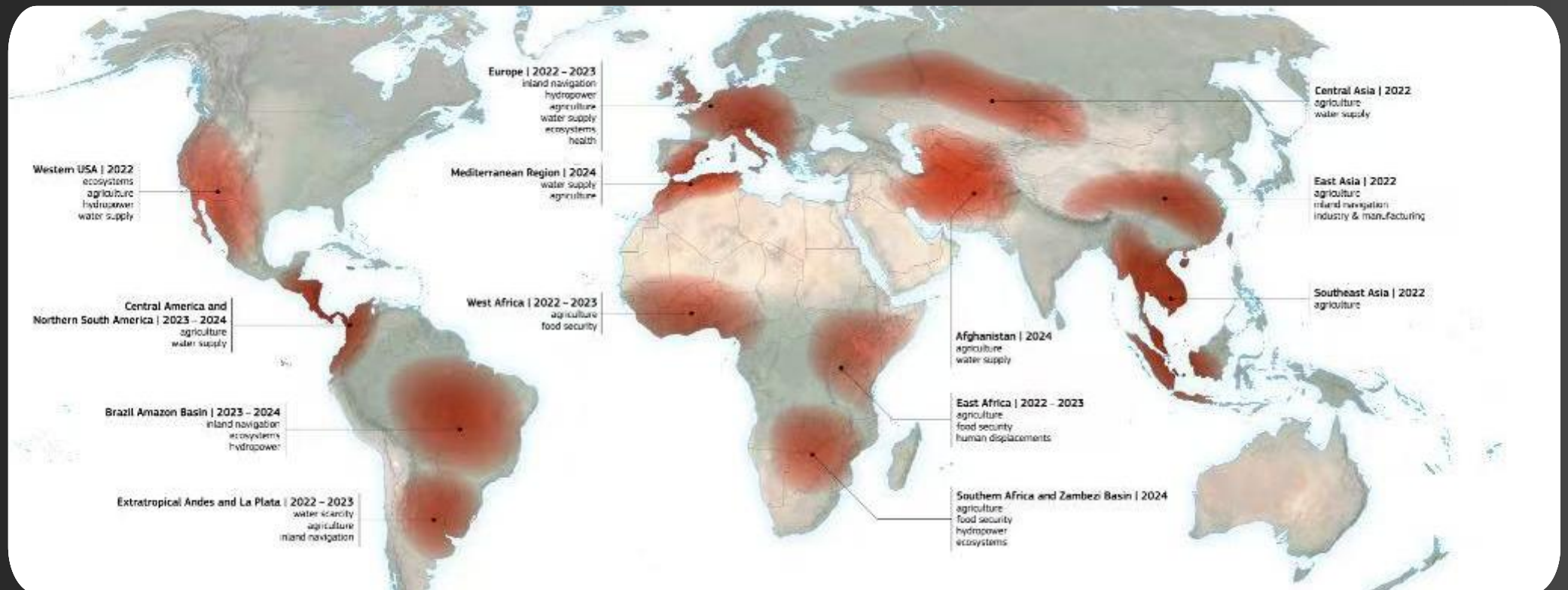
3P DIAGRAM
SUSTAINABLE DEVELOPMENT



03

Manifestations of a Warming World

Drought: The Silent Creep of Scarcity



Drought: The Silent Creep of Scarcity: Global Hotspots, 2023–2025

Africa

Eastern and Southern Africa faced devastating crop failures; Zimbabwe's 2024 corn harvest collapsed by 70%, while Zambia's hydroelectric output from Kariba Dam dropped to 7%, triggering 21-hour blackouts



Drought: The Silent Creep of Scarcity: Global Hotspots, 2023–2025

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Drought: The Silent Creep of Scarcity: Global Hotspots, 2023–2025

Europe

Spain' s olive oil yields halved in 2023; Türkiye' s over-pumped aquifers created sinkholes that threaten towns



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Americas

Amazonian rivers dropped to record lows, killing fish and undermining the rainforest's carbon sink role; the Panama Canal cut throughput by one-third, creating global shipping delays



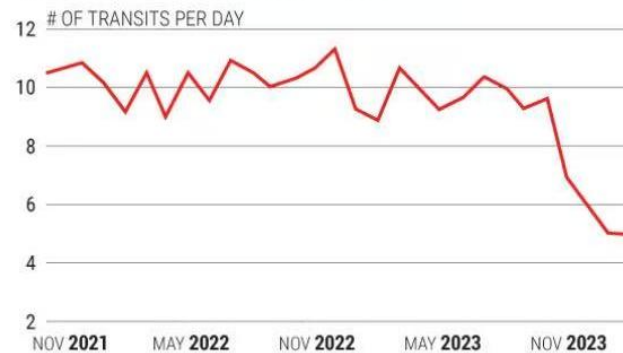
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DAILY TRANSITS NEO-PANAMAX LOCKS



AUCTION PRICE FOR NEO-PANAMAX SLOT



Drought: The Silent Creep of Scarcity: Global Hotspots, 2023–2025

Global Drought Impact

Drought is no longer local — it cascades across food systems, energy grids, and trade networks



Drought: The Silent Creep of Scarcity

Drought and Climate Justice

it means the world's poorest and most marginalized communities, who've contributed the least to the problem, are paying the highest price.

Drought: The Silent Creep of Scarcity: Justice Dimension: Food, Survival, Sovereignty

Drought's Impact on Marginalized Communities

For Indigenous and marginalized communities, drought is existential. It erodes food sovereignty, undermines cultural practices, and forces migration

Amazon River Drying Out

In the Amazon, river drying forced communities off ancestral lands

Warming Hits Ash Trees in North America

In North America, warming weakened ash trees essential for basket-making traditions

Diabetes rates soar with processed food shift

Health impacts rise as communities shift from subsistence to processed foods, increasing rates of diabetes

Drought: The Silent Creep of Scarcity: Strategic Takeaways

Drought Risk Cascades

Drought risk is systemic: water scarcity cascades into food, energy, health, and trade

Justice and Scarcity

Justice is embedded: scarcity often lands hardest on those least responsible for emissions

Integrate TEK in Drought Policy

Strategic opportunity: integrate TEK into formal drought policy to avoid erasing solutions with the communities who hold them

Flooding: The Violent Deluge



Flooding: The Violent Deluge: Valencia, Spain (2024): Fragmentation Costs Lives

Hazard

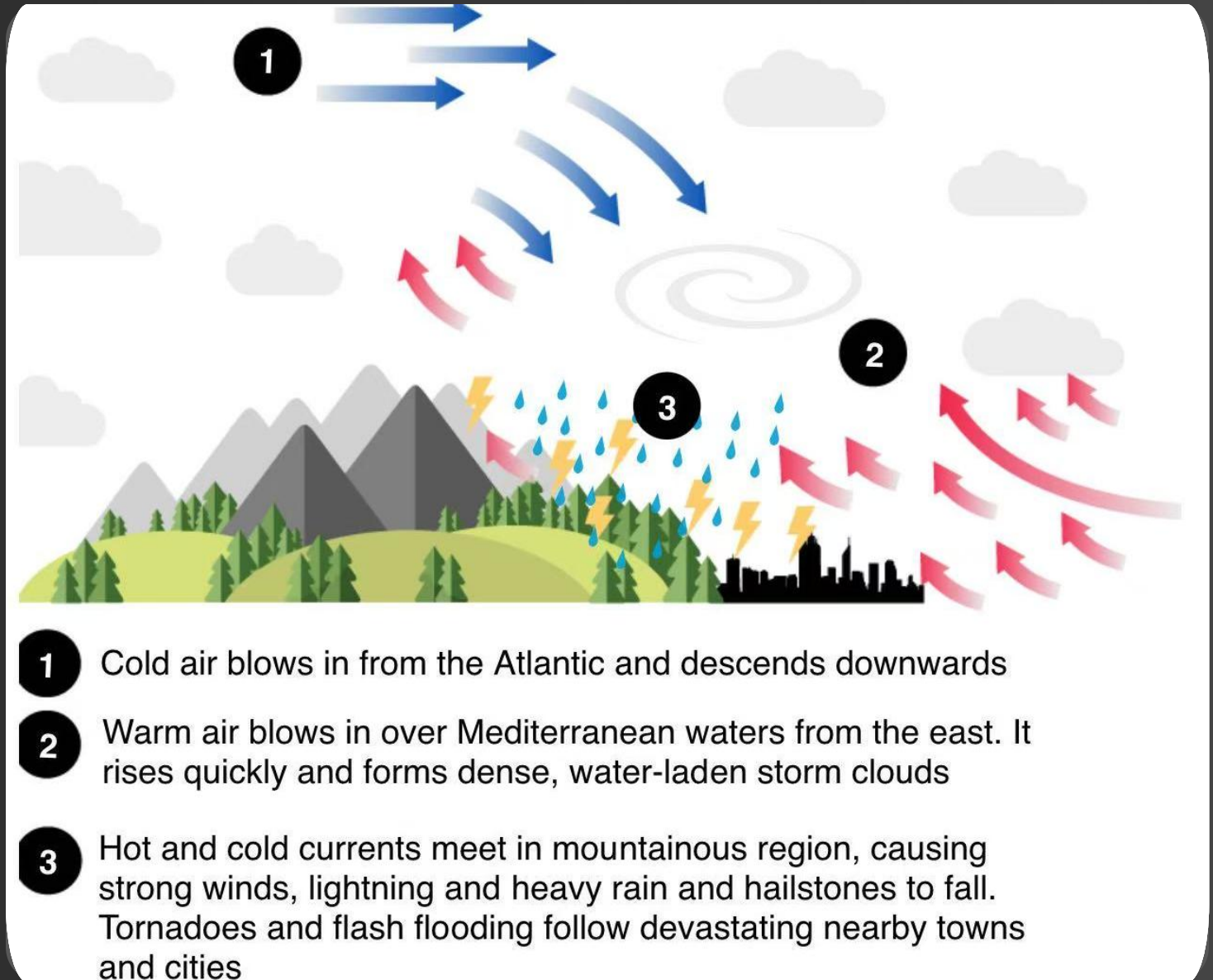
A “cold drop” storm delivered a year’s rainfall in 24 hours

Failures

forecasts were accurate, but political leaders downplayed risk, emergency alerts came too late, and sprawl into floodplains magnified exposure. A dismantled emergency unit reduced response capacity

Consequence: >224 deaths, billions in damage

Flooding: The Violent Deluge: Valencia, Spain (2024): Fragmentation Costs Lives



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Hub/AFP via Getty Image

Flooding: The Violent Deluge: Southern France (2024–25): Integration Saves Lives

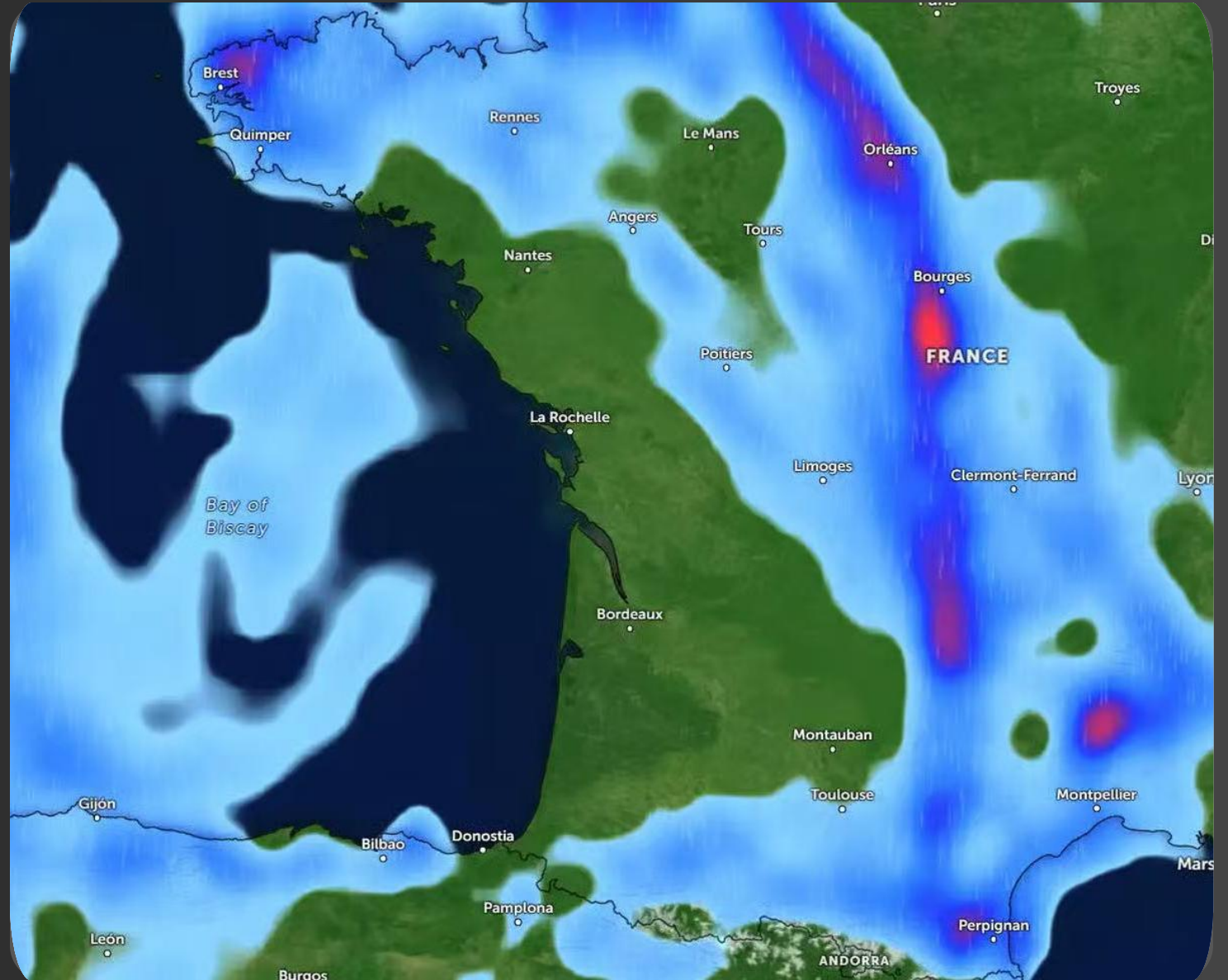
Hazard: Comparable Mediterranean storms

Flood Resilience Measures

Resilience factors: legally binding PPRI restrictions on floodplain construction; Vigicrues Flash radar system issuing timely warnings; coherent alignment of national and local flood strategies

Consequence: <10 deaths

Flooding: The Violent Deluge: Southern France (2024–25): Integration Saves Lives



Flooding: The Violent Deluge: Southern France (2024–25): Integration Saves Lives



Flooding: The Violent Deluge

Floods and Resilience

Floods demonstrate how resilience depends less on rainfall totals and more on system integration

Flooding: The Violent Deluge: Strategic Analysis

Using the risk
governance cycle

Assessment :
strong in both
countries

Management
Differences Spain
France

Communication
Strategies in Spain
and France

Lesson

Flooding: The Violent Deluge: Justice Dimension

Land-use Planning and Equity in Spain and France

Deaths in Spain concentrated in peri-urban settlements built cheaply on floodplains. Land-use planning thus became a mechanism of injustice. France' s restrictions on construction acted as a preventive equity tool

Flooding: The Violent Deluge: Strategic Takeaways

Resilience and Institutional Integration

Resilience = institutional integration, not isolated technical fixes

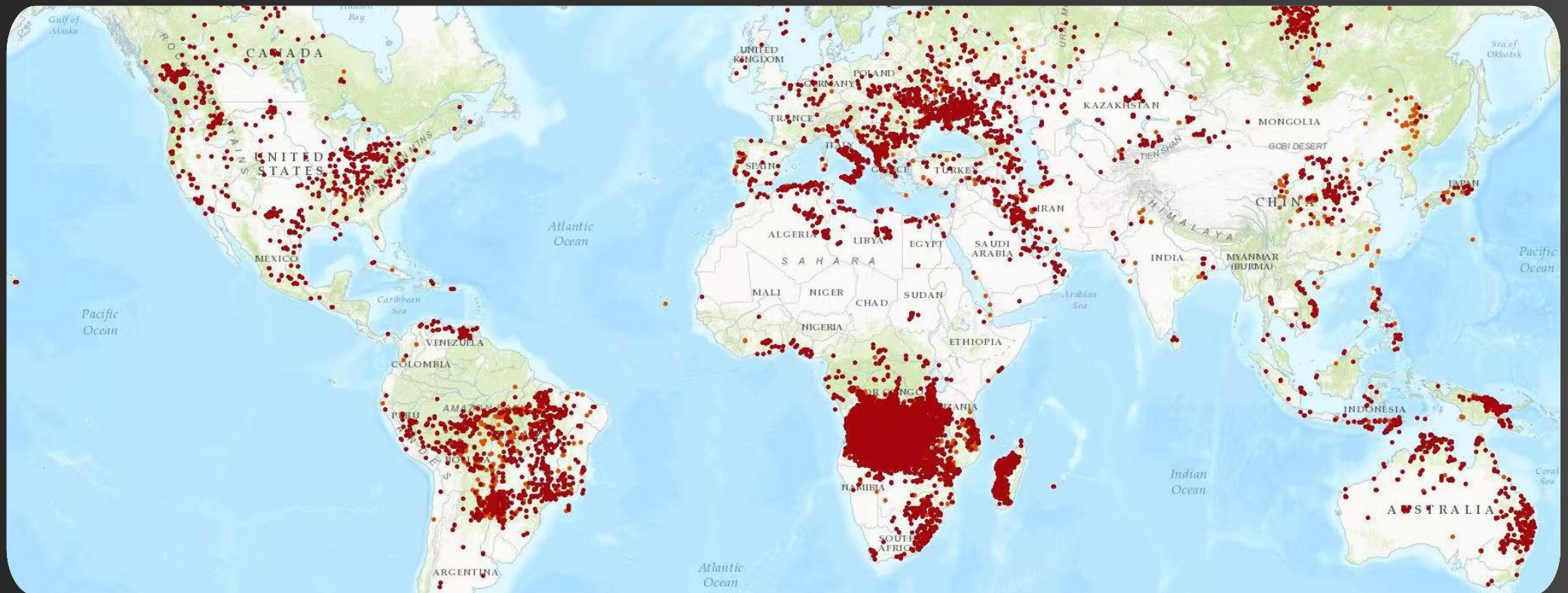
Justice in Prevention

Justice must be embedded in prevention, not left for recovery

Leadership Credibility

Leadership credibility determines whether forecasts translate into action

Fire: The Conflagration



Fire: The Conflagration: Case 1: Hawaii (2024) — Biodiversity Breakdown

Drought Sparks Grass Fires

Drought and hurricane winds ignited invasive grasses (guinea, buffel, fountain grass)

Grass-fire Cycle

These monocultures burn hot, kill natives, and regrow faster — a “grass-fire cycle.”

Lesson

biodiversity is not optional; it is infrastructure for resilience

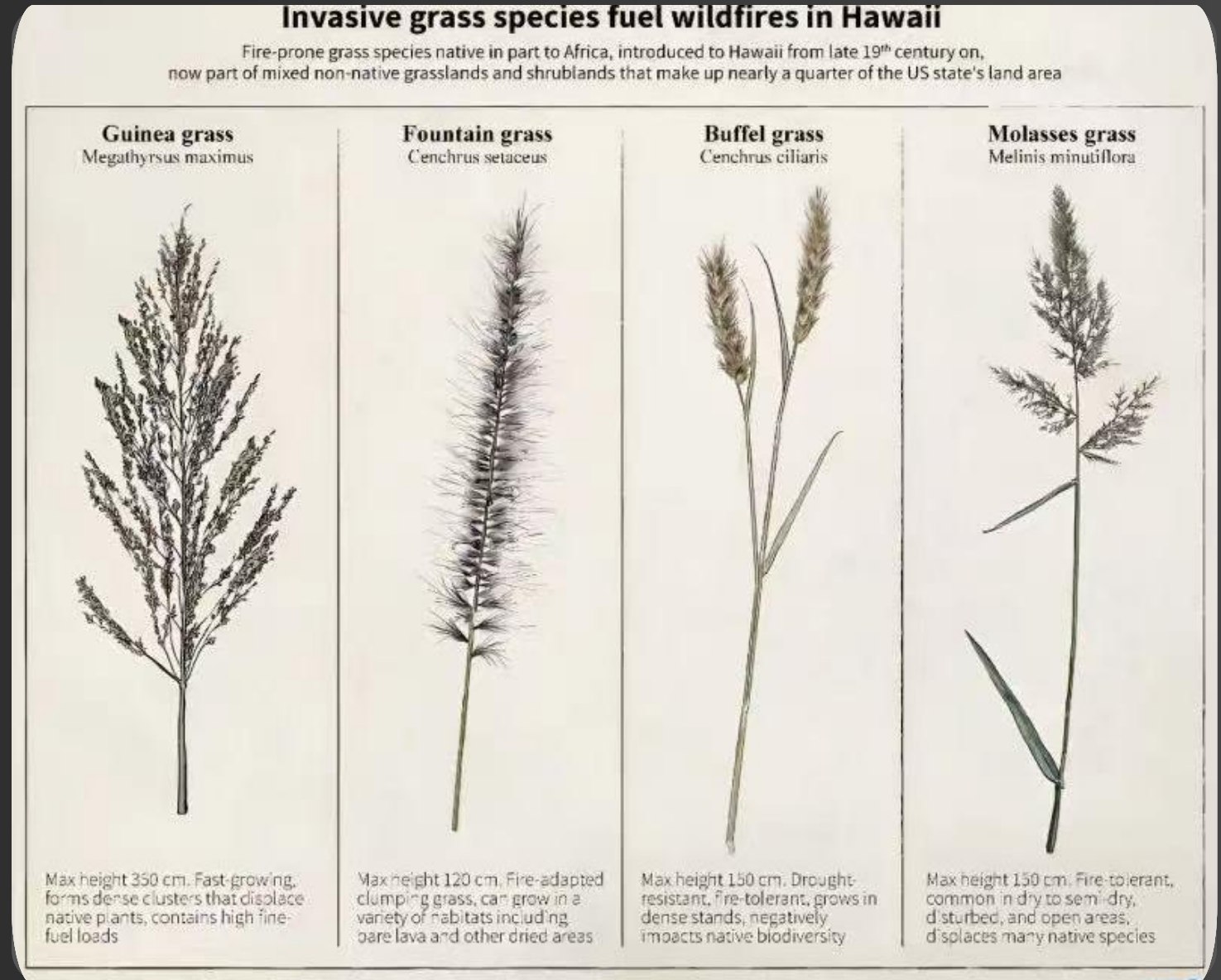
Fire: The Conflagration: Case 1: Hawaii (2024) — Biodiversity Breakdown



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Fire: The Conflagration: Case 1: Hawaii (2024) — Biodiversity Breakdown



Fire: The Conflagration: Case 2: Los Angeles (2025) — Infrastructure Collapse

California Fire Cycle

Wet winter → high fuel growth → dried in heat → ignited under Santa Ana winds

Electrical Grid Fires

Electrical grid sparked fires; lacked shut-off systems

Water System Failure

Water system failed, hydrants ran dry; one main reservoir was empty for repairs

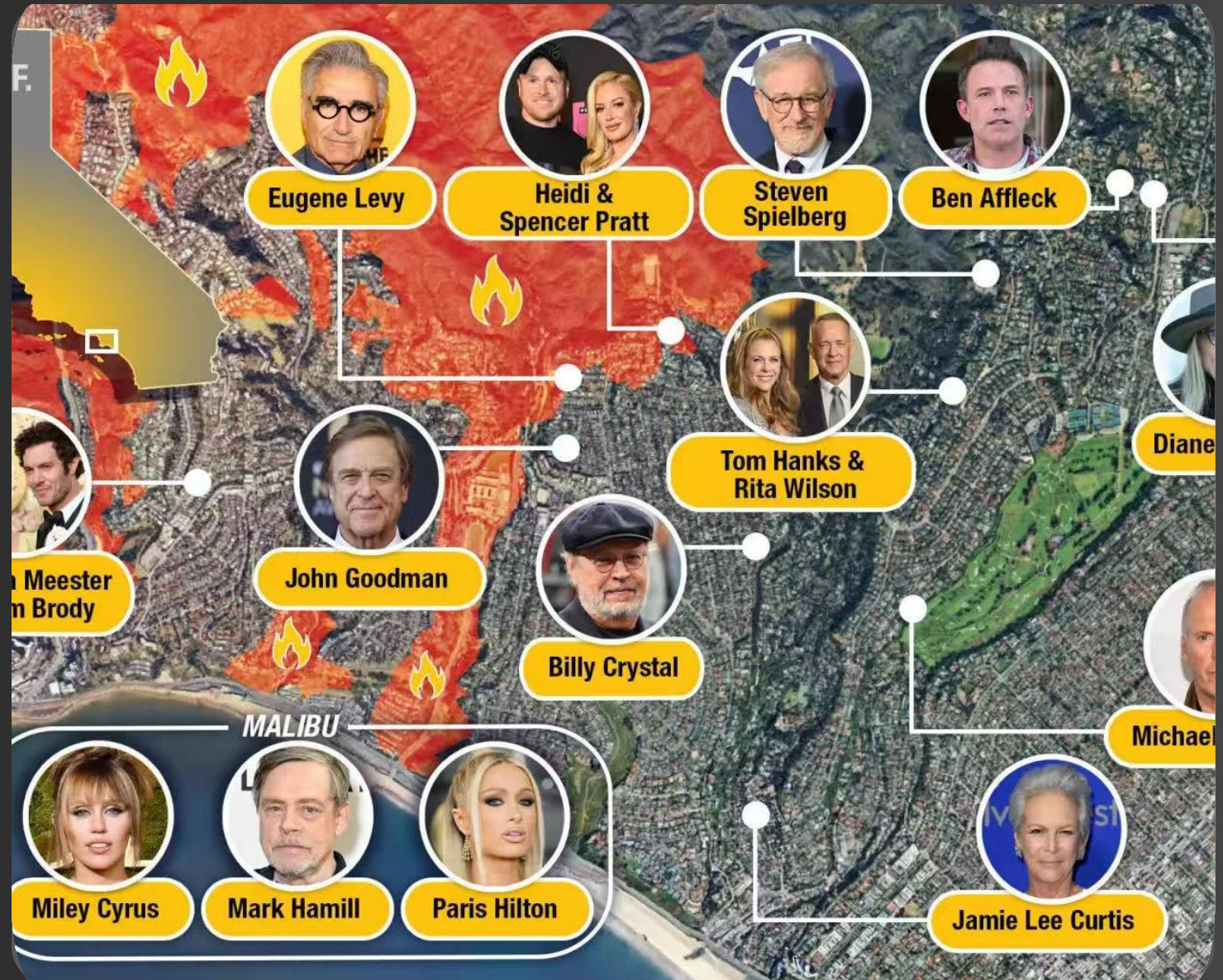
Old Housing Fire Risks

Older housing stock ignited easily due to pre-code construction

Lesson

deferred maintenance + legacy infrastructure = systemic collapse

Fire: The Conflagration: Case 2: Los Angeles (2025) — Infrastructure Collapse



Fire: The
Conflagration:
Case 2: Los
Angeles (2025) —
Infrastructure
Collapse



Fire: The Conflagration

Cascading Fragility in Wildfires

Wildfires illustrate cascading fragility in both ecological and infrastructural systems

Fire: The Conflagration: Justice Dimension

Fire Resilience and Social Equity

In both Hawaii and LA, impacts fell hardest on marginalized groups: rural communities with limited evacuation resources in Maui, and low-income LA neighborhoods with weaker infrastructure and fewer protections. Fire resilience is thus deeply linked to who lives where and with what protections

Fire: The Conflagration: Strategic Takeaways



Invasive Species Management Prevents Wildfires

Ecosystem health = safety: invasive species management is wildfire prevention



Modernizing Infrastructure to Reduce Climate Risk

Infrastructure modernization is non-negotiable: legacy systems magnify climate risk



Justice Lens on Flammability Risks

Justice lens reveals hidden risks: poorer, older neighborhoods are systematically more flammable

04

Weaving the Threads of Resilience

Conclusion — Weaving the Threads of Resilience

01

Consistent Patterns in Disasters

Across drought, flood, and fire, a consistent pattern emerges

02

Climate Change and Our Systems

Climate change loads the dice. But outcomes depend on our systems

03

Integration is Key

Fragmentation kills. Integration of policy, infrastructure, and culture is decisive

04

Justice and Systemic Vulnerabilities

Justice is systemic. Where vulnerabilities cluster is not accidental; it reflects planning, policy, and power

05

Resilience Strategy Essentials

Resilience must be both ecological and infrastructural. Lose biodiversity, defer maintenance, or neglect marginalized groups — and resilience collapses

Weaving the Threads of Resilience

Systemic Failures in Design

These are not “natural” disasters; they are systemic failures of human design

05

Group Discussion

Drought: The Silent Creep of Scarcity

Group Discussion

Zambia's 2023 Priorities

If you were advising Zambia in 2023, would you prioritize emergency food aid, power diversification, or groundwater governance? What trade-offs would each choice involve

Flooding: The Violent Deluge

Group Discussion

Valencia's 2023 Advisory Focus

Student Reflection Prompt: If you were advising Valencia's leaders in 2023, would you have focused on land-use regulation, institutional strengthening, or communication reform? Which would face the fiercest political resistance

Fire: The Conflagration

Group Discussion

Los Angeles Mayor's Priority

If you were Los Angeles' mayor in 2024 with limited funds, would you prioritize grid upgrades, water redundancy, or retrofitting older housing stock? Which yields the best resilience per dollar — and who might oppose it

06

From Local Crises to Global Compacts

Transition — From Local Crises to Global Compacts

Global Hazards, Local Strategies

Crises do not respect borders. EU civil protection units rushed to Spain; Canadian crews supported California. These reactive solidarities raise the question: if hazards are global, why are our strategies still so local and reactive

Global Governance and Proactive Prevention

Our next lecture will examine international frameworks — from the Paris Agreement to emerging loss-and-damage funds — asking whether our global governance systems are capable of proactive prevention rather than reactive aid

Transition — From Local Crises to Global Compacts

Features of a Global Climate Compact

What features would a truly “systemic” global climate compact need to include to avoid the failures we have seen at local and national scales

