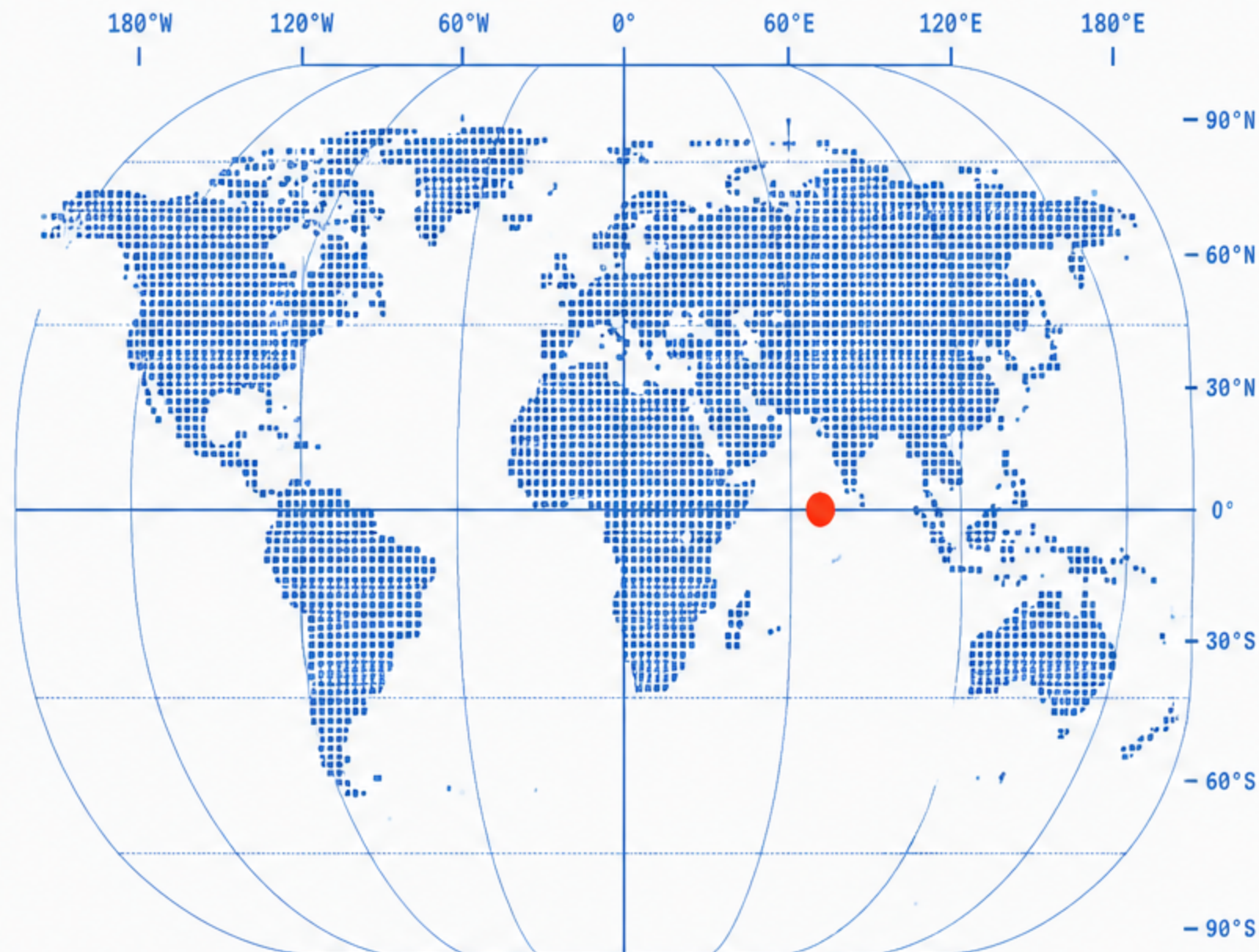


Climate Tipping Points

What the Science Tells Us

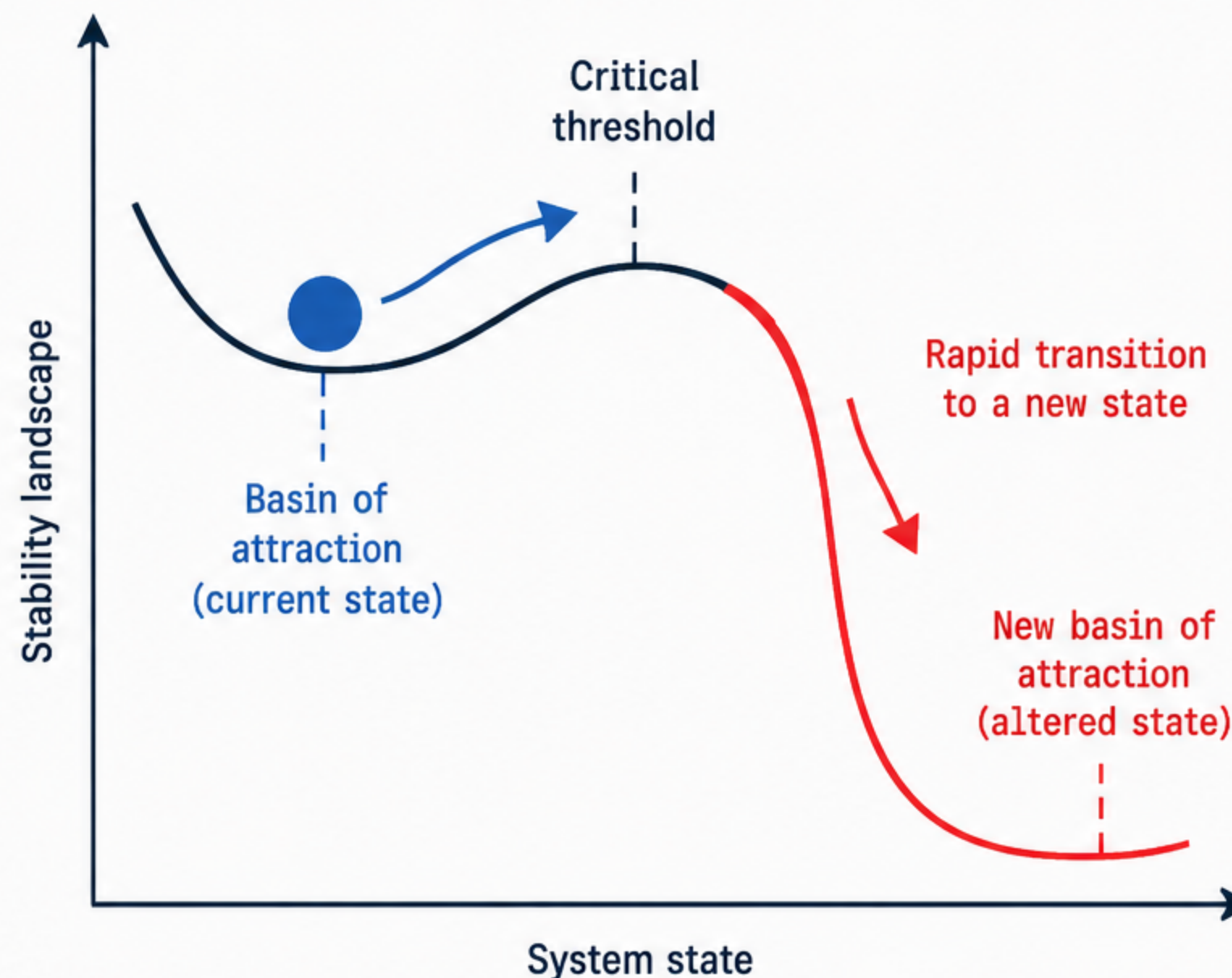
- Synthesizing the Global Tipping Points Report
- Thresholds, cascading risks, and policy mandates



Defining a Tipping Point

Critical thresholds in the Earth system

- A critical threshold that leads to large, accelerating changes.
- Transformations are often irreversible on human timescales.
- Reduces Earth's capacity to cope with human interference.



The First Breached Point

October 2025 Consensus

1

2

3

■ Widespread warm-water coral reef mortality is underway.

■ Confirmed by 160 scientists as the first climate tipping point.

■ Triggered by consecutive bleaching, melting, and slowing events.

SEA SURFACE
TEMPERATURE ANOMALY
(°C above 1991–2020)

+1.6°C
30°N

+1.8°C
0°

+1.7°C
30°S

+1.5°C
60°N

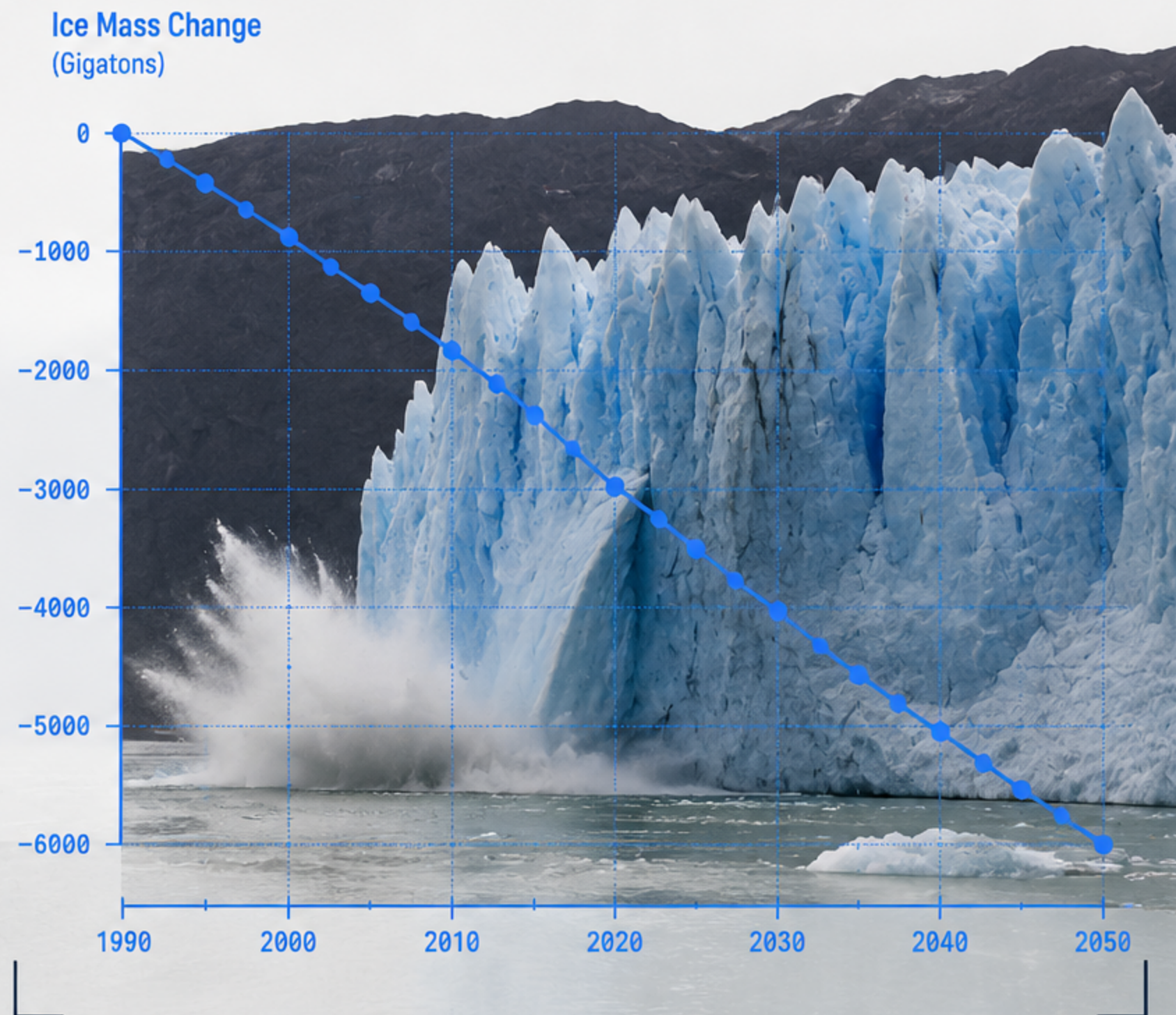
+2.0°C
0°

+1.6°C
60°S

Ice Sheets: Locked-in Loss

Greenland and West Antarctic Candidates

- Approaching thresholds for total collapse.
- Irreversible contribution to multi-meter sea-level rise.
- Alters global ocean salinity and regional albedo.



The Amazon Biome

From Rainforest to Savanna

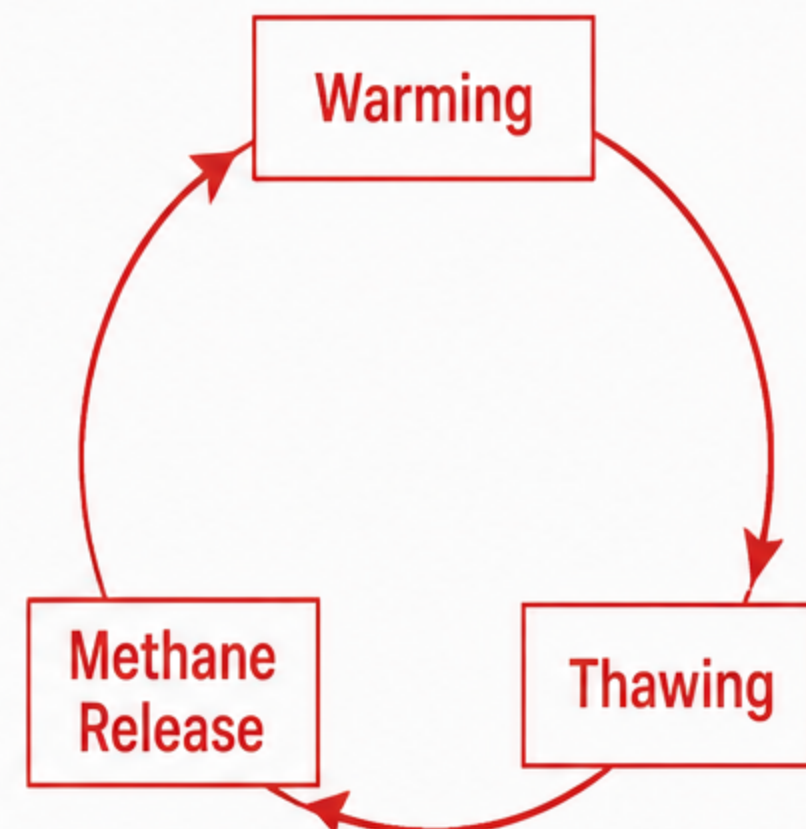
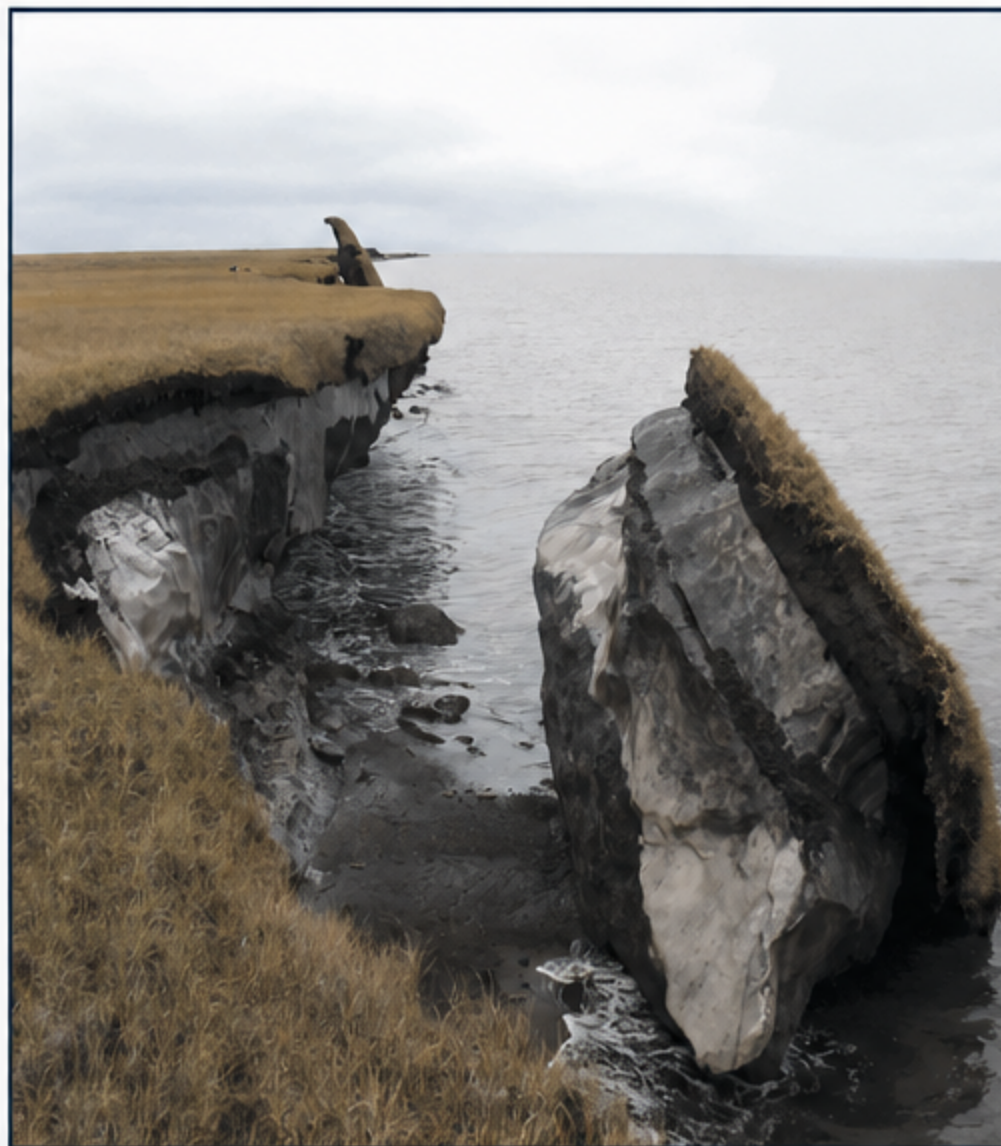
- Combined stress of regional warming and aggressive deforestation.
- Disruption of the self-sustaining moisture recycling system.
- Transitioning from a carbon sink to a carbon source.



Permafrost Thaw

The Carbon Feedback Loop

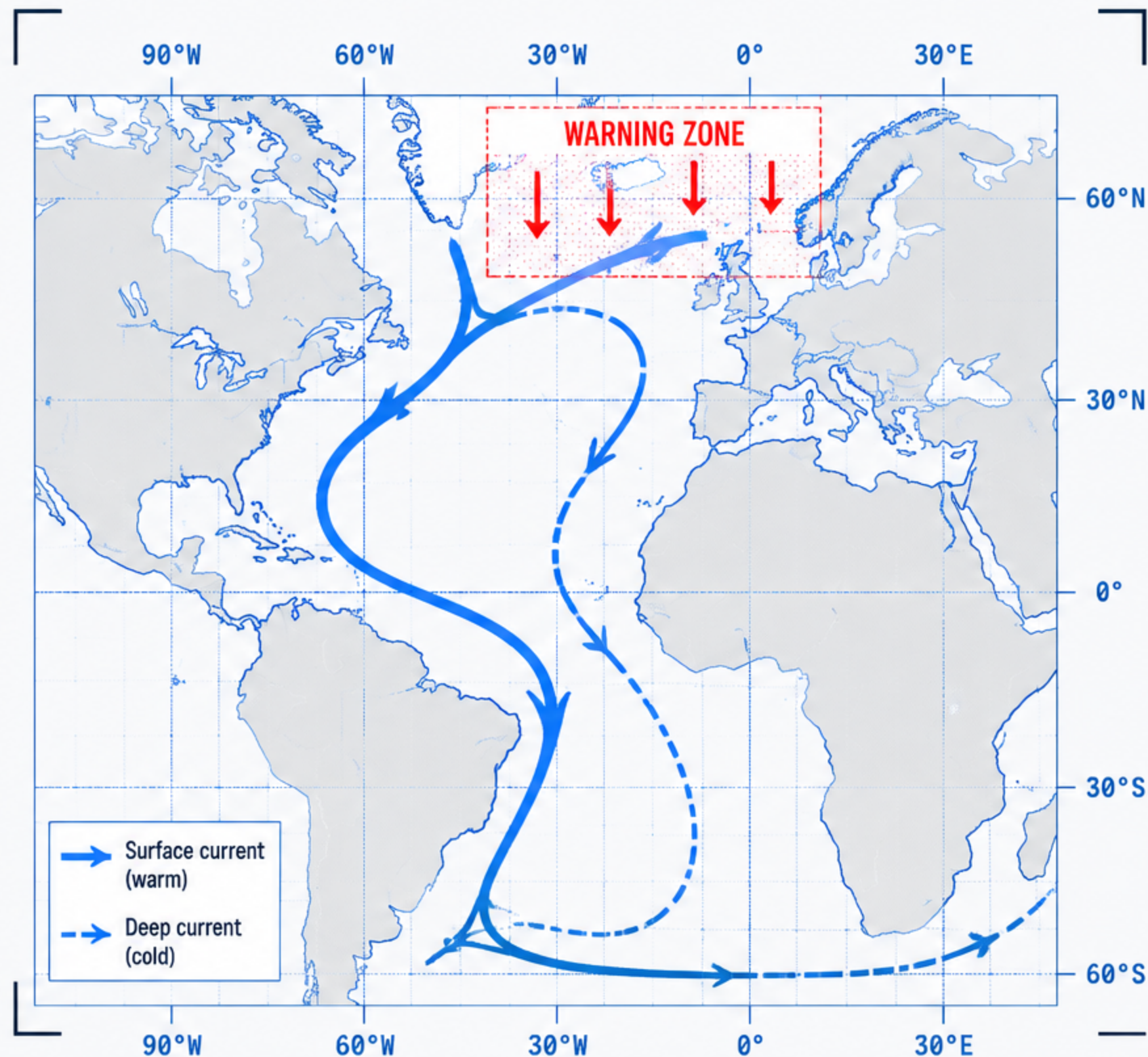
- Abrupt thawing causes ground collapse and infrastructure damage.
- Releases massive stores of ancient methane and CO₂.
- Creates a self-amplifying warming loop independent of emissions.



AMOC Slowdown

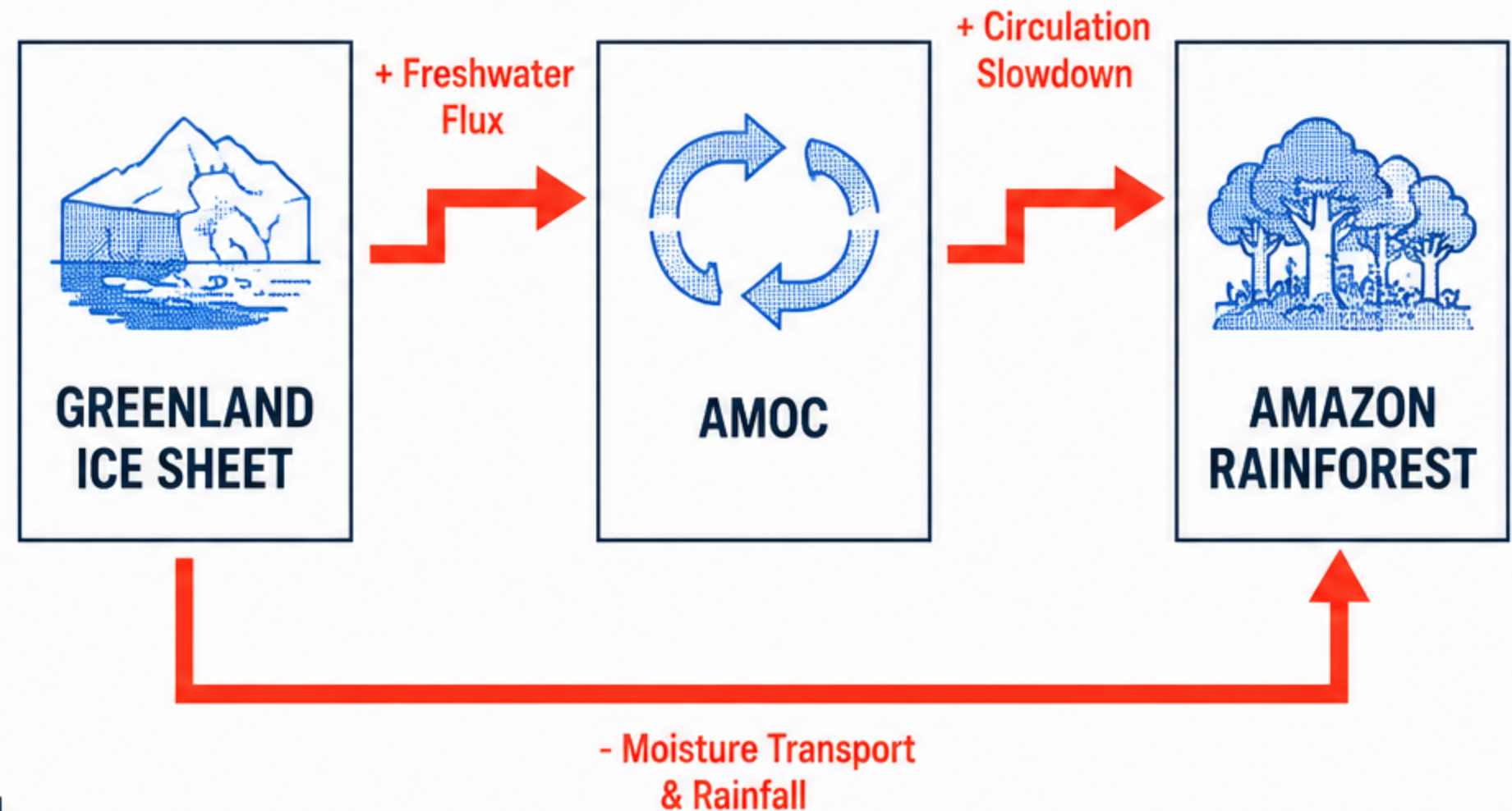
Ocean Circulation Disruption

- Atlantic Meridional Overturning Circulation is weakening.
- Could trigger abrupt regional cooling in Northern Europe.
- Shifts tropical monsoon systems, threatening global agriculture.



Cascading Domino Effects

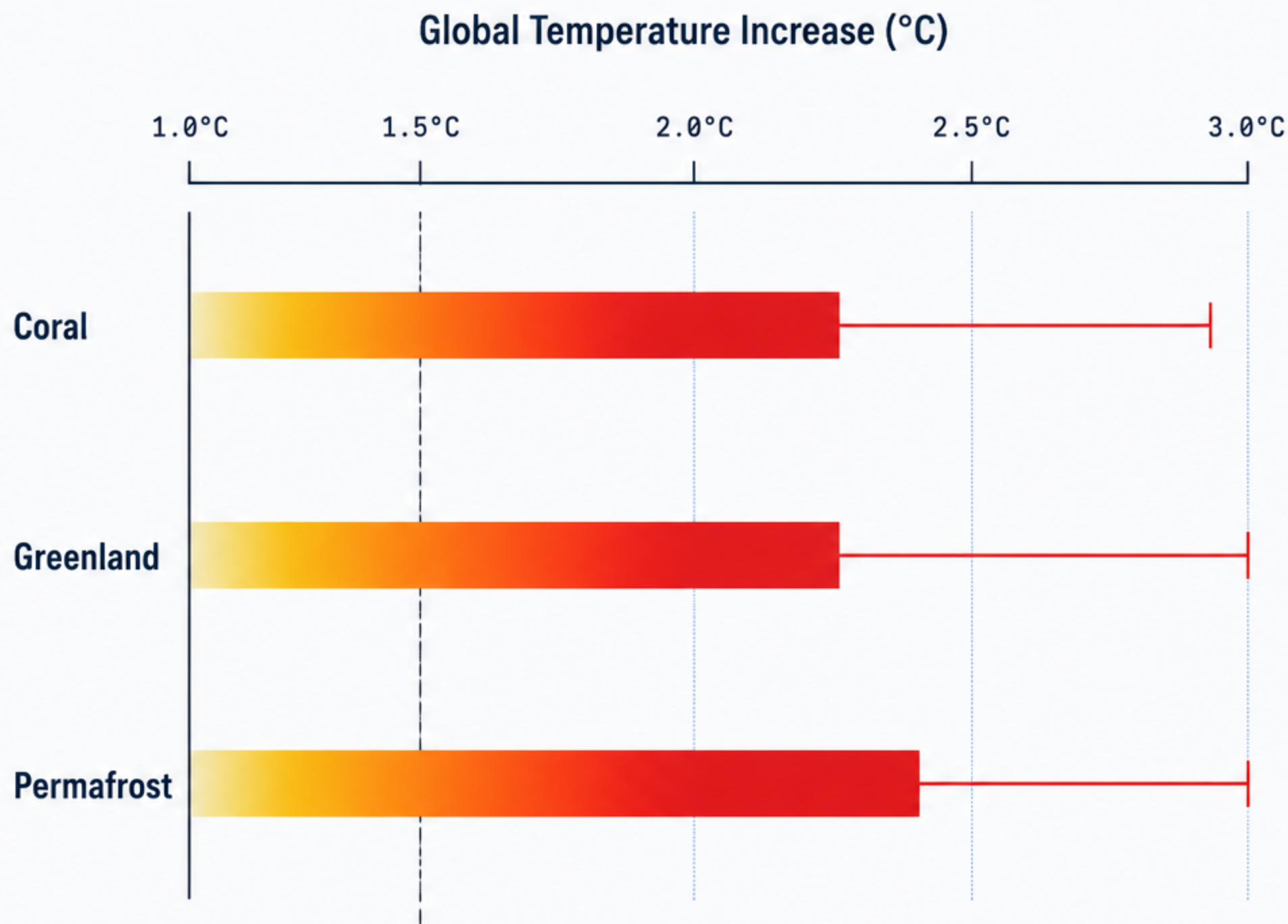
- Tipping elements do not exist in isolation.
- Greenland ice melt injects freshwater, slowing the AMOC.
- AMOC slowdown shifts rainfall away from the Amazon.



Uncertainty Ranges

Risk scales with every tenth of a degree

- Exact thresholds remain deeply uncertain.
- Many tipping points cluster between 1.5°C and 2.0°C warming.
- Crossing 1.5°C drastically elevates the probability of triggers.



Note: Bars indicate plausible uncertainty ranges for transition thresholds.

Policy Implications

Activating Positive Tipping Points

- Demands an immediate, managed phase-out of fossil fuels.
- Requires building resilience against locked-in human security impacts.
- We must trigger 'positive tipping points' in energy and society.

Renewable Energy Adoption

Global Share of Primary Energy (%)

