SIXTH ASSESSMENT REPORT
Working Group I – The Physical Science Basis

ipcc
INTERGOVERNMENTAL PANEL ON climate change
WMO UNEP

IPCC Sixth Assessment Report (AR6): The Physical Science Basis

Paola A. Arias
Escuela Ambiental – Facultad de Ingeniería – Universidad de Antioquia - Colombia

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La Havana - Cuba

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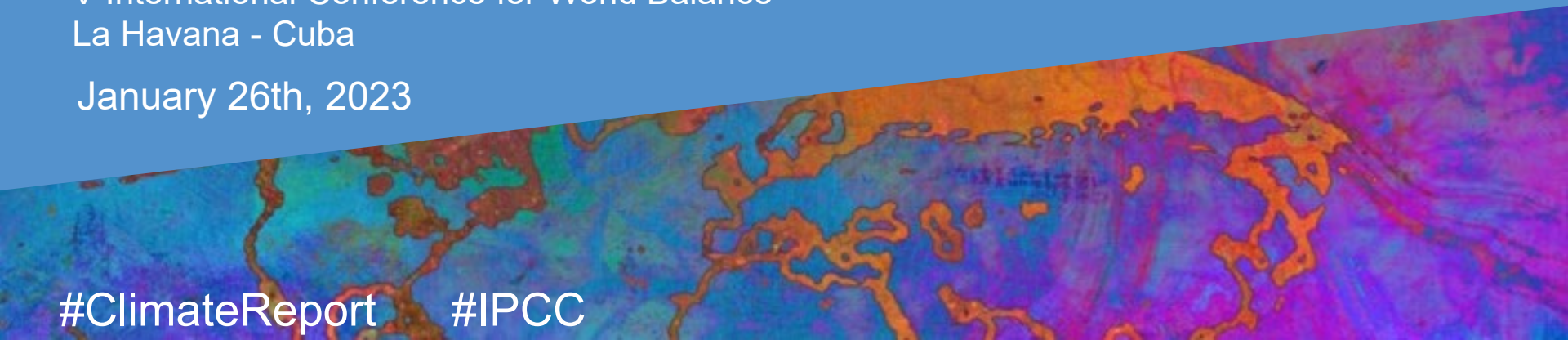


#ClimateReport #IPCC

BY THE NUMBERS

Author Team

234 authors from **65** countries

28% women, **72%** men

30% new to the **IPCC**

Review Process

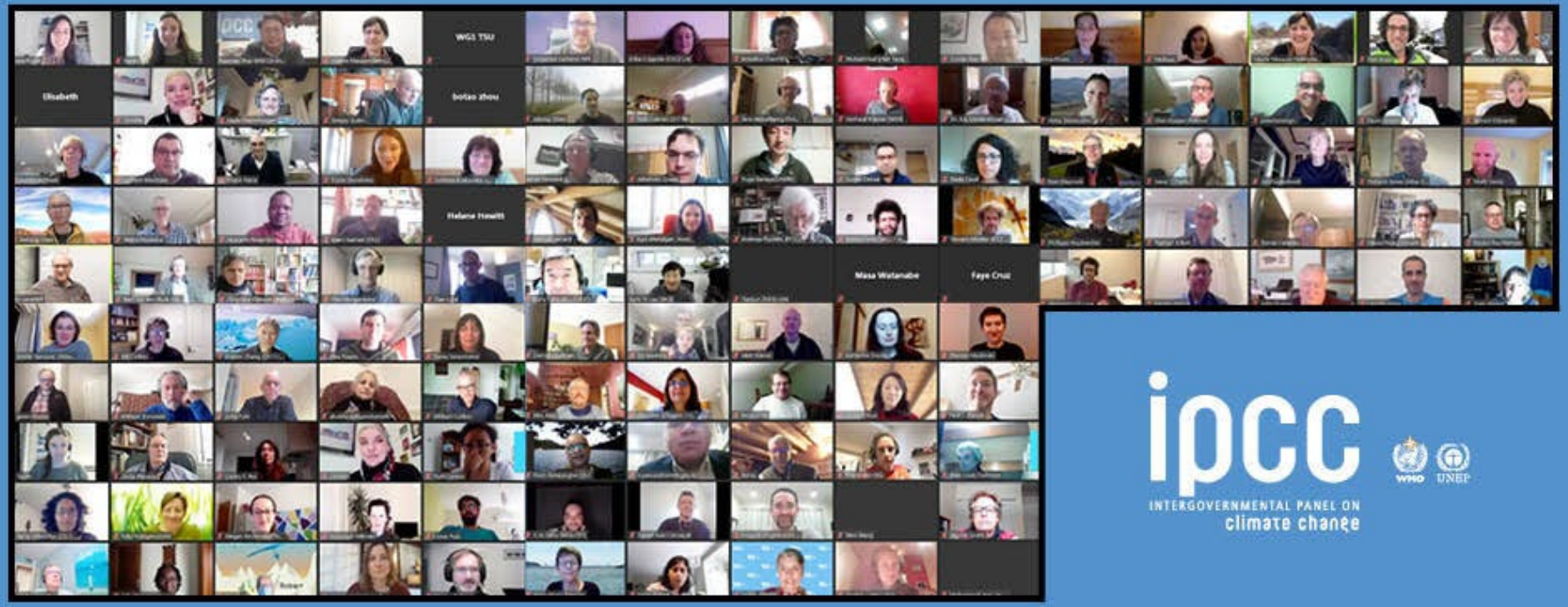
14,000 scientific publications assessed

78,000+ review comments

46 countries commented on Final Government Distribution

Working Group I eLAM | 15 –19 February 2021

The Sixth Assessment Report #AR6



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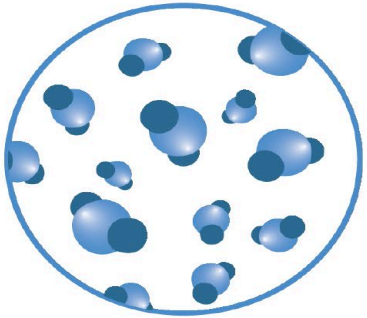
[Credit: NASA]

“Recent changes in the climate are widespread, rapid, and intensifying, and unprecedented in thousands of years.

CO_2 concentration

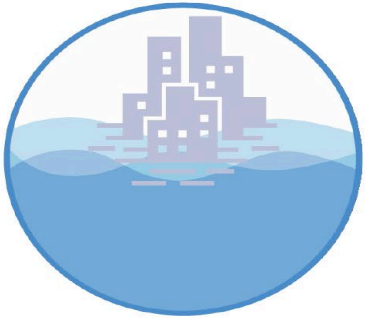


Highest

in at least

2 million years

Sea level rise

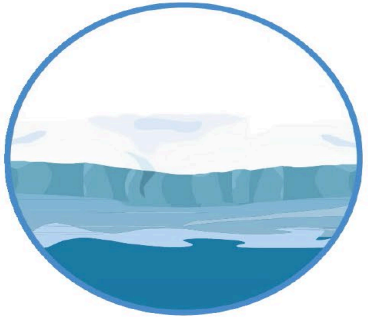


Fastest rates

in at least

3000 years

Arctic sea ice area



Lowest level

in at least

1000 years

Glaciers retreat

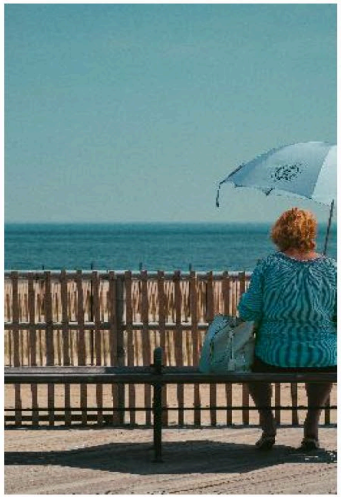
Unprecedented

in at least

2000 years

[Credit: Yoda Adaman | Unsplash]

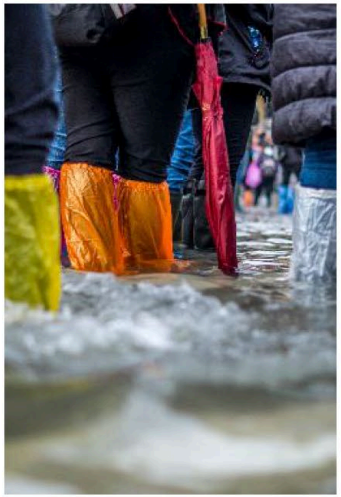
> It is indisputable that human activities are causing climate change, making extreme climate events, including heat waves, heavy rainfall, and droughts, more frequent and severe.



Extreme heat

More frequent

More intense



Heavy rainfall

More frequent

More intense

Drought

Increase in some regions

Fire weather

More frequent

Ocean

Warming
Acidifying
Losing oxygen

Photo Credits from left: 1. Luiz Guimaraes 2. Jonathan Ford 3. Peter Burdon 4. Ben Kuo 5. NOAA

Human influence, main driver of…

- **…Hot extremes,** which have become more **frequent** and more **intense**
- …**ocean warming** since the 1970s, and **ocean acidification**.
- …changes we see in the **frozen areas** of the planet:
  - ⇨ global retreat of glaciers since the 1990s
  - ⇨ 40% decrease in Arctic sea ice since 1979
  - ⇨ decrease in spring snow cover since the 1950s.

[Credit: Hong Nguyen | Unsplash]

"Climate change is already affecting every region on Earth, in multiple ways.

The changes we experience will increase with further warming.

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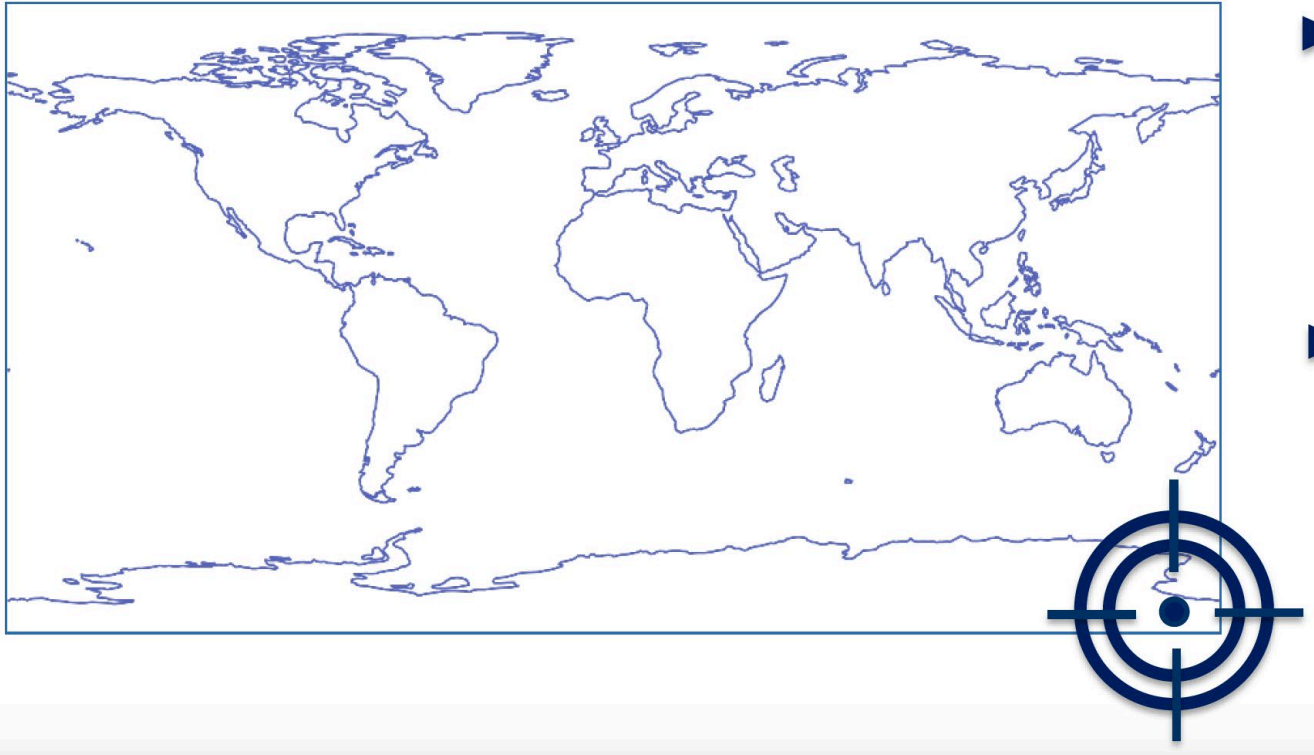
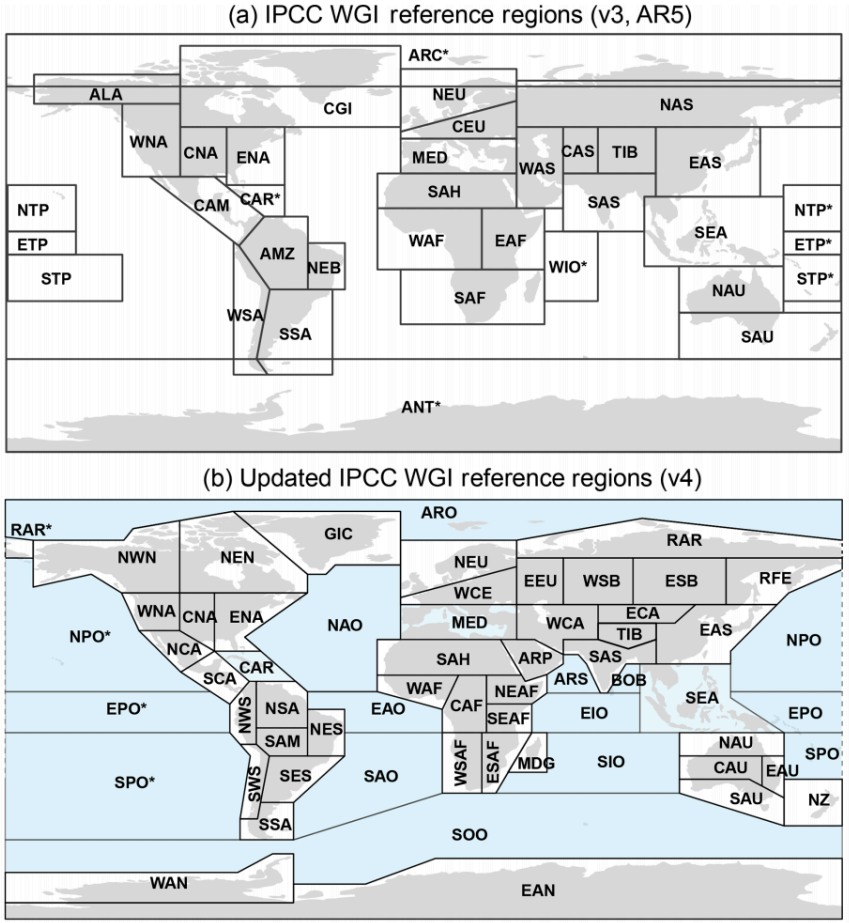
New regional information



- Inform decisions related to **risk management** and **adaptation**
- **A third** of our report is dedicated to **regional climate information**

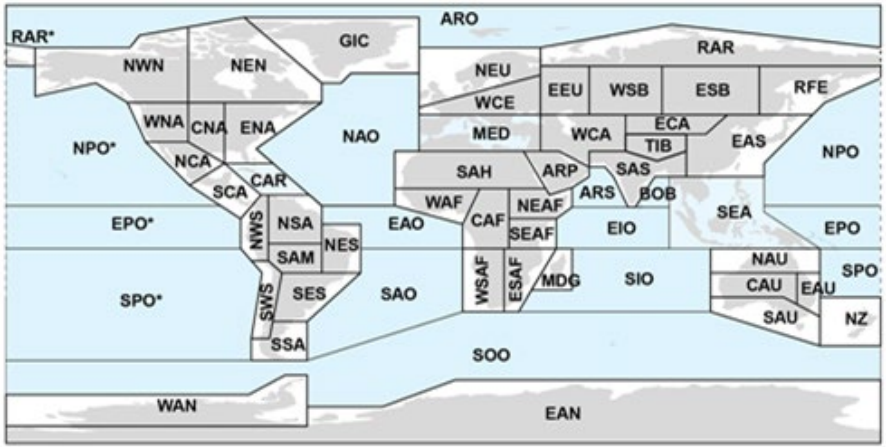
Regions: AR6 vs. AR5

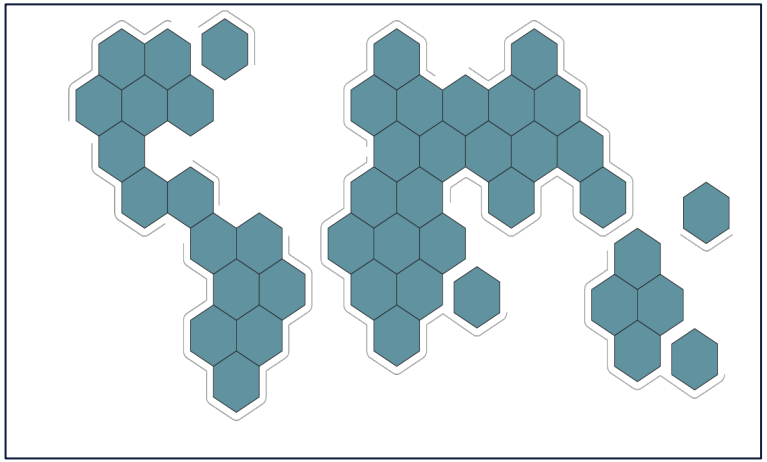


Iturbide et al. (2020)

45 new land regions

(and their representation as hexagons)





Climate change is already affecting every inhabited region across the globe, with human influence contributing to many observed changes in weather and climate extremes

Figure WGI SPM.3

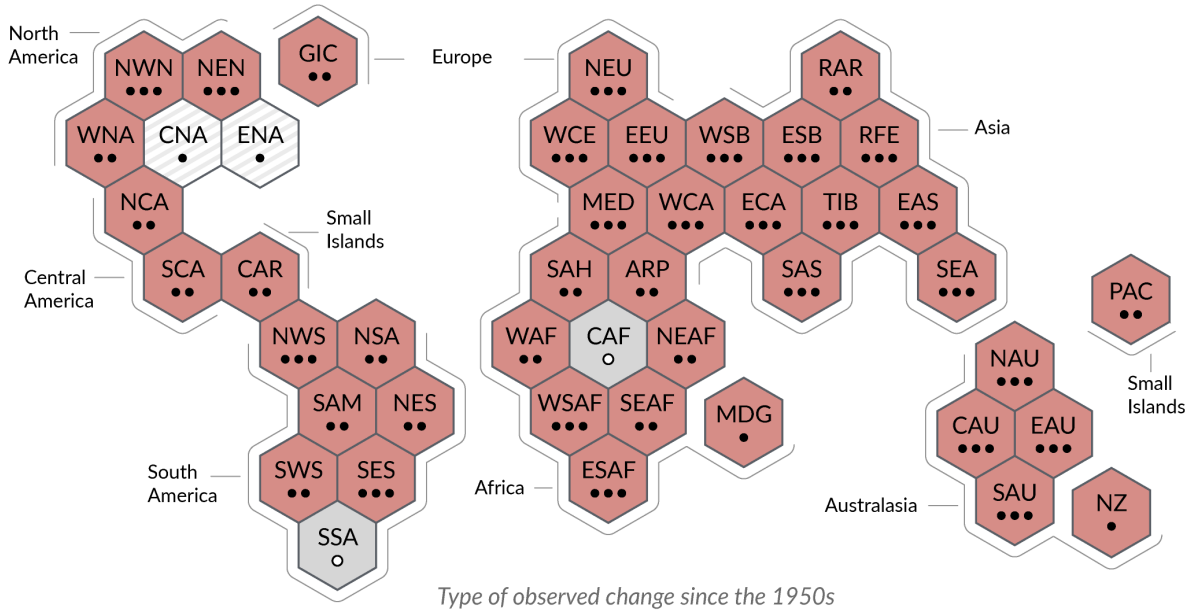
a) Synthesis of assessment of observed change in **hot extremes** and confidence in human contribution to the observed changes in the world's regions

Type of observed change
in hot extremes

- Increase (41)
- Decrease (0)
- Low agreement in the type of change (2)
- Limited data and/or literature (2)

Confidence in human contribution
to the observed change

- ●●● High
- ●● Medium
- ● Low due to limited agreement
- ○ Low due to limited evidence



Type of observed change since the 1950s

Climate change is already affecting every inhabited region across the globe, with human influence contributing to many observed changes in weather and climate extremes

Figure WGI SPM.3

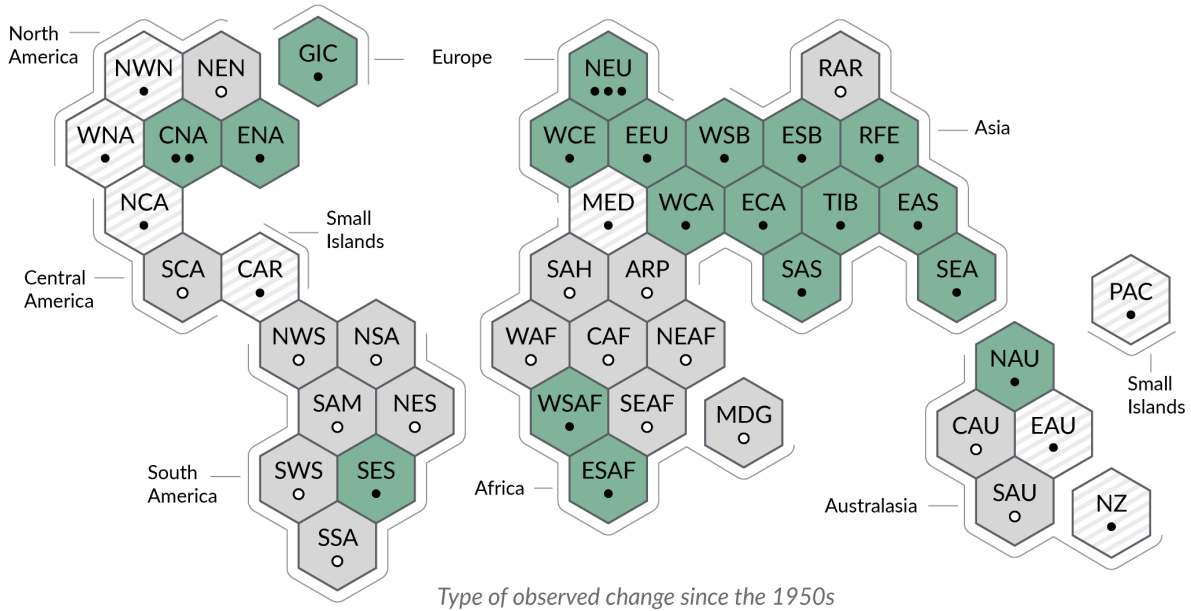
b) Synthesis of assessment of observed change in **heavy precipitation** and confidence in human contribution to the observed changes in the world's regions

Type of observed change
in heavy precipitation

- Increase (19)
- Decrease (0)
- Low agreement in the type of change (8)
- Limited data and/or literature (18)

Confidence in human contribution
to the observed change

- ●●● High
- ●● Medium
- ● Low due to limited agreement
- ○ Low due to limited evidence



Type of observed change since the 1950s

Climate change is already affecting every inhabited region across the globe, with human influence contributing to many observed changes in weather and climate extremes

Figure WGI SPM.3

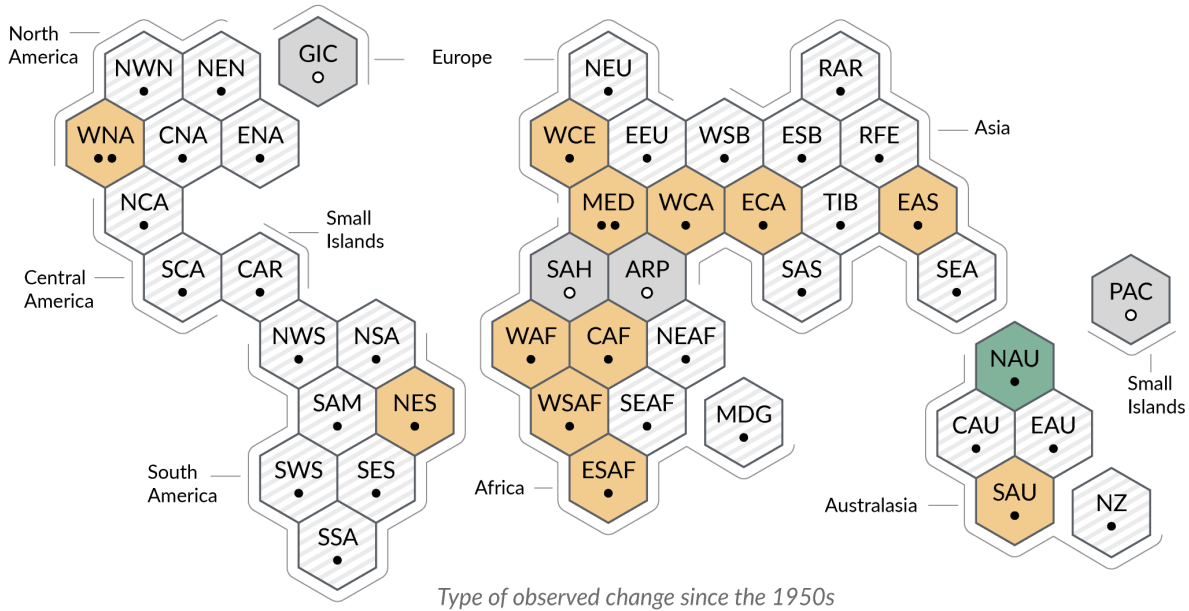
c) Synthesis of assessment of observed change in **agricultural and ecological drought** and confidence in human contribution to the observed changes in the world's regions

Type of observed change
in agricultural and ecological drought

- Increase (12)
- Decrease (1)
- Low agreement in the type of change (28)
- Limited data and/or literature (4)

Confidence in human contribution
to the observed change

- ●●● High
- ●● Medium
- ● Low due to limited agreement
- ○ Low due to limited evidence



Type of observed change since the 1950s

Climatic impact-drivers


Heat & cold


Rain & drought


Snow & ice


Wind


Coastal & oceanic


Other


Open ocean

A **climatic impact-driver** could go over **thresholds** known to lead to **severe consequences** for people, agriculture, or

Multiple climatic impact-drivers are projected to change in all regions of the world

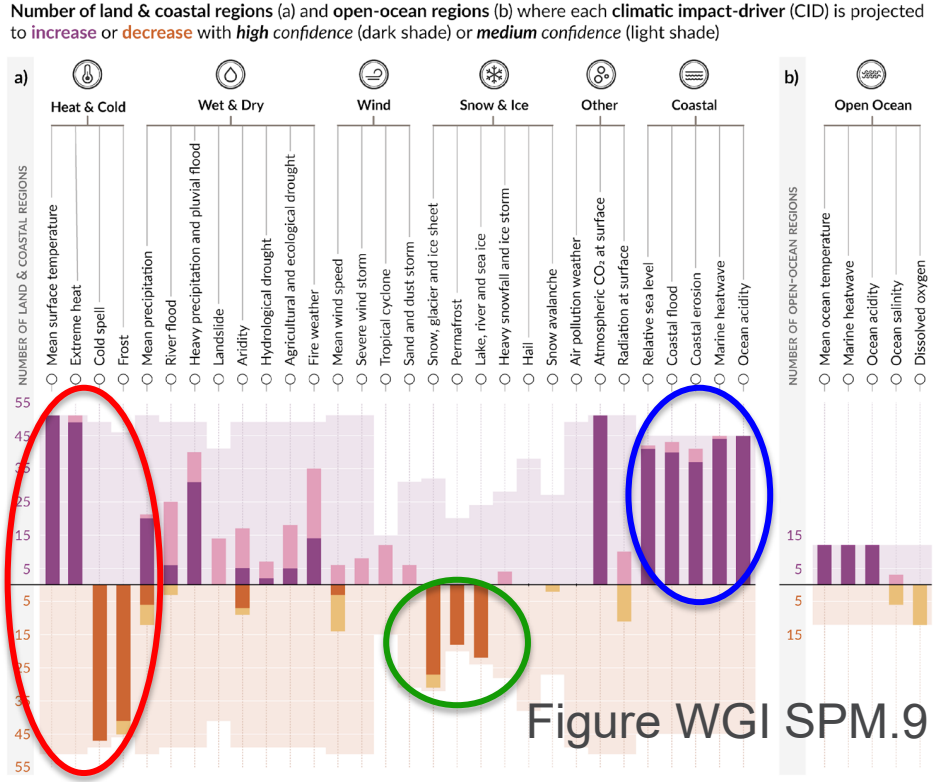
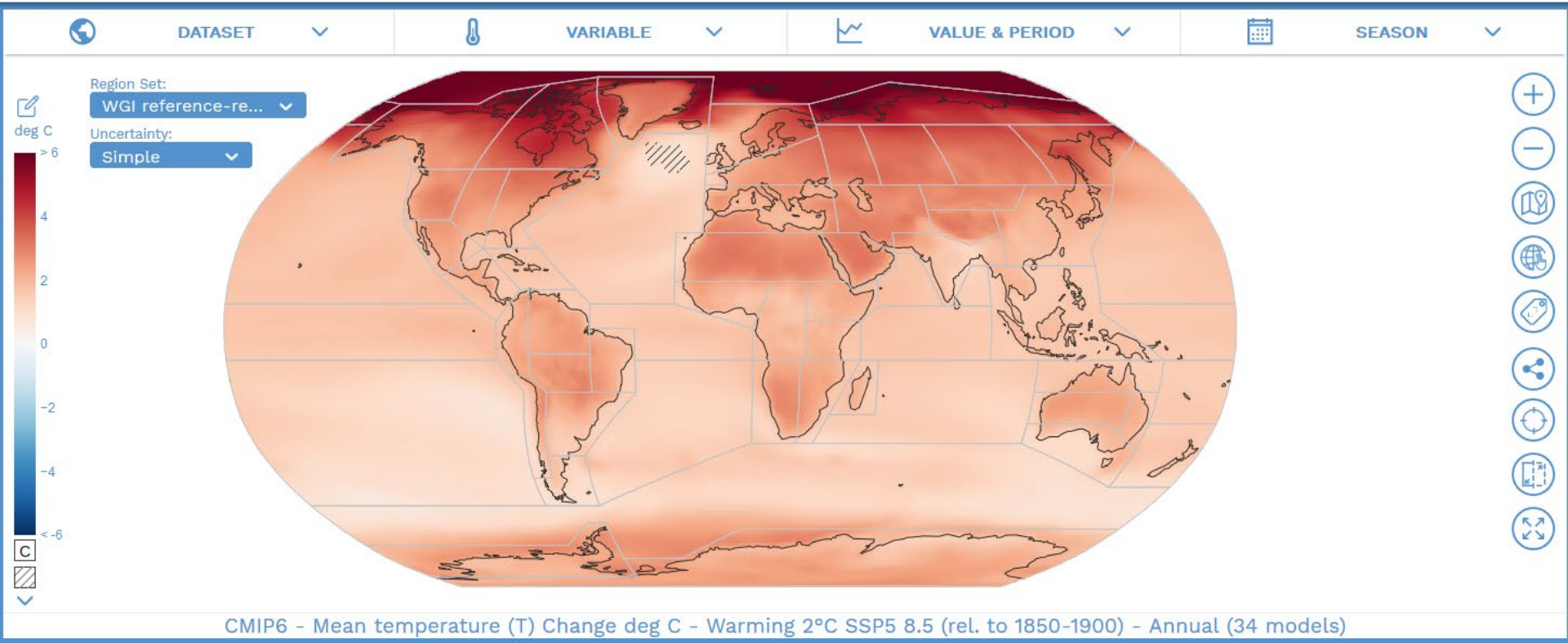


Figure WGI SPM.9

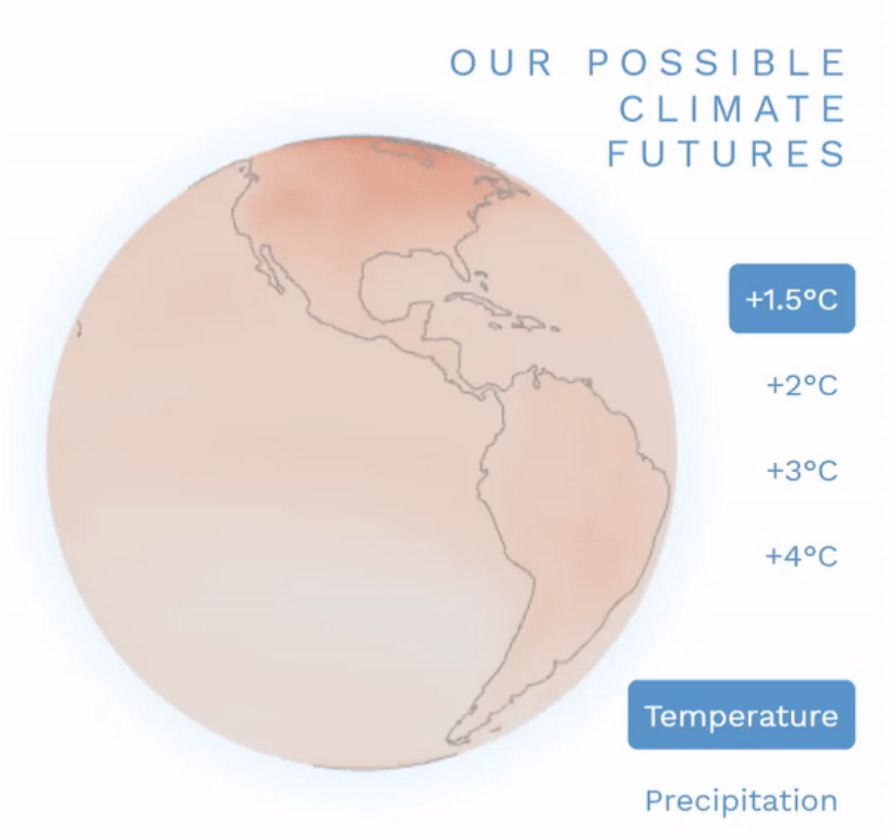
- Heat and cold CIDs change in almost all the regions.
- Coastal CIDs increase in almost all the regions where they are relevant.
- Snow and ice CIDs decrease in almost all regions where they are relevant.

Interactive Atlas

interactive-atlas.ipcc.ch



Interactive atlas



https://interactive-atlas.ipcc.ch/

#IPCCData #IPCCAtlas

[Credit: Jenn Caselle | UCSB]

“There’s no going back from some changes in the climate system…

Ocean and ice sheets

Ocean temperature

Increasing

Greenland Ice Sheet

Melting

Sea level

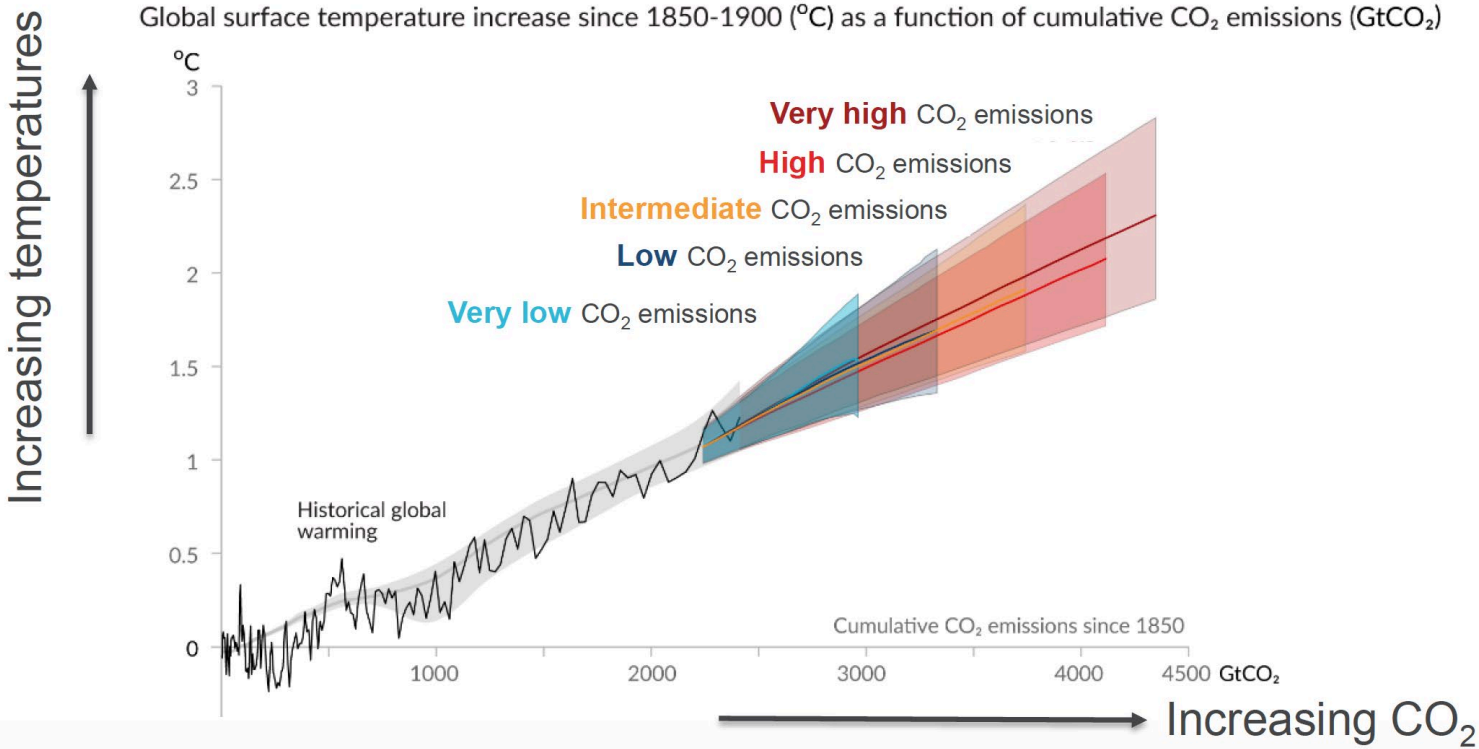
Rising

[Credit: Andy Mahoney | NSIDC]

"…However, some changes could be slowed and others could be stopped by limiting warming.

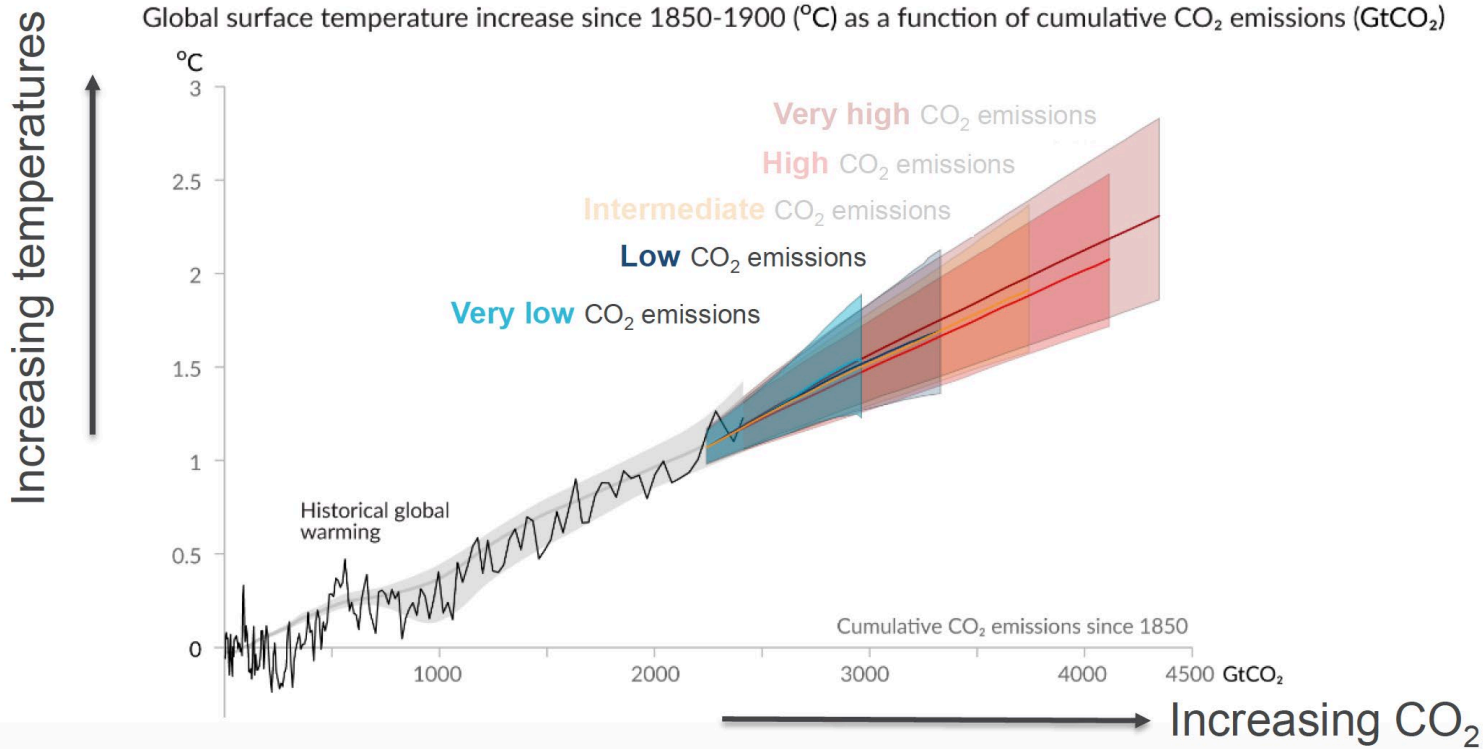
Every tonne of CO_2 emissions adds to global warming

Figure WGI SPM.10



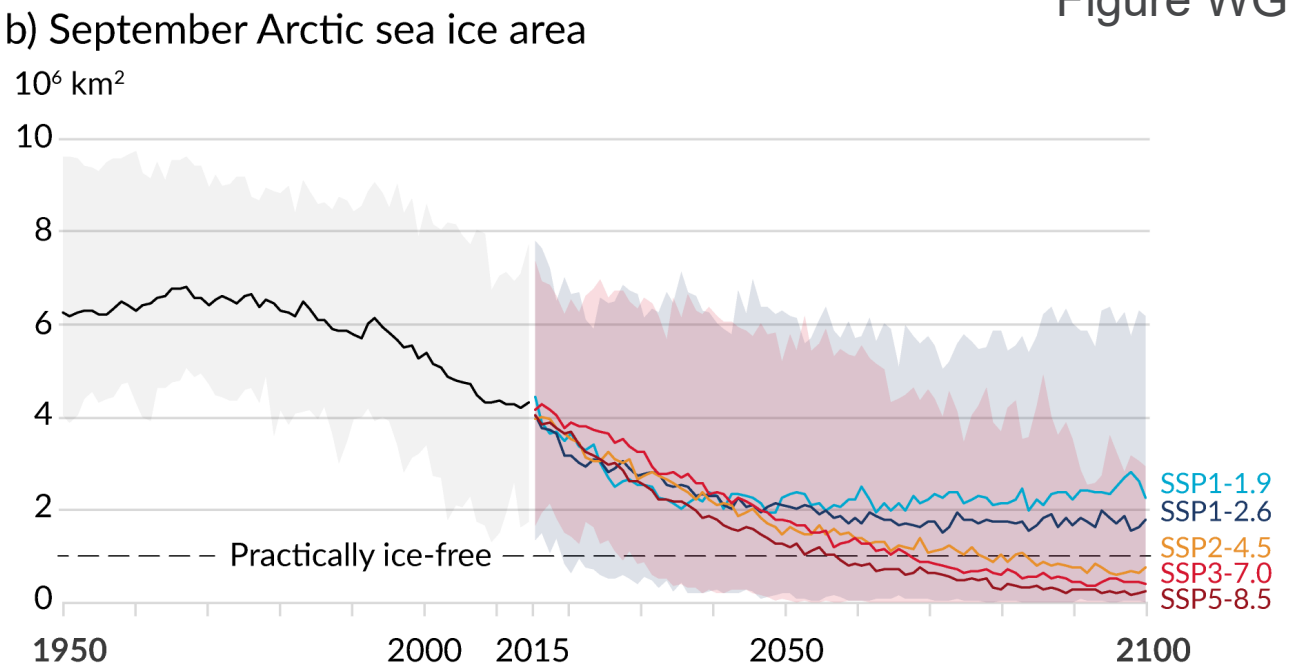
Every tonne of CO_2 emissions adds to global warming

Figure WGI SPM.10



Human activities affect all the major climate system components, with some responding over decades and others over centuries

Figure WGI SPM.8



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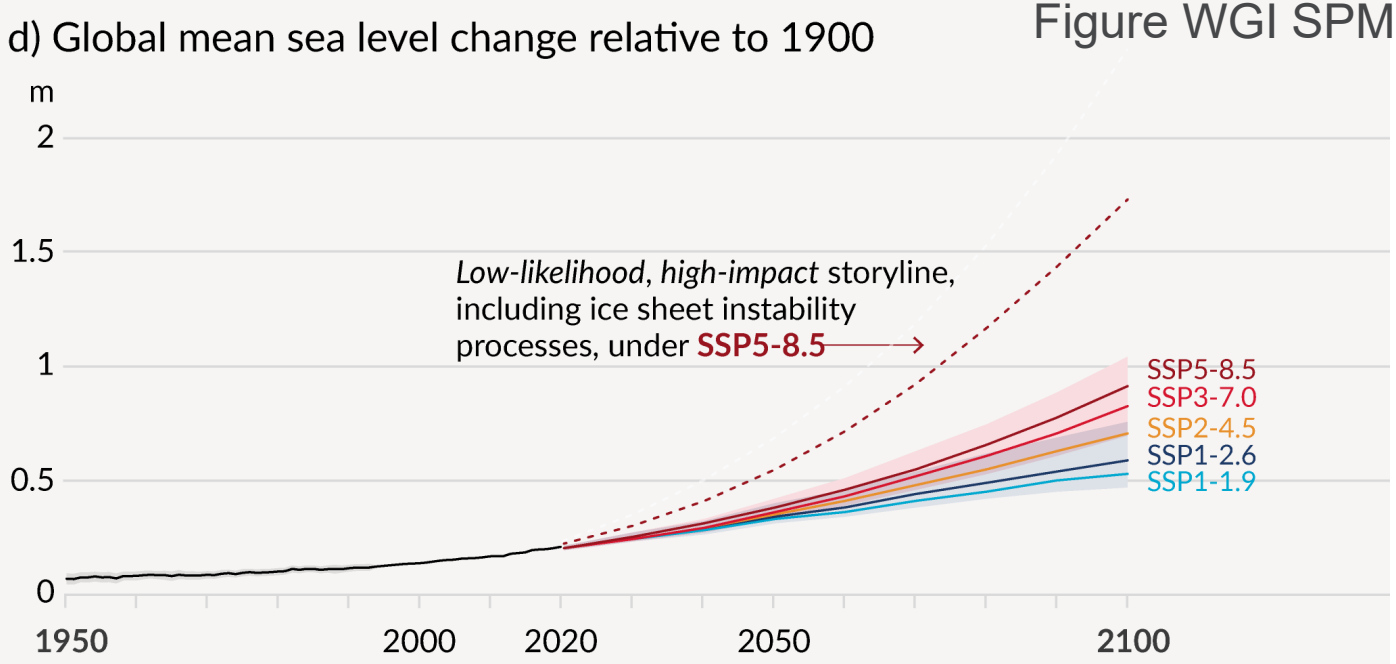

[Credit: Evgeny Nelmin | Unsplash]

To limit global warming, strong, rapid, and sustained reductions in CO_2, methane, and other greenhouse gases are necessary.

This would not only reduce the consequences of climate change but also improve air quality.

Thank you.

More Information:

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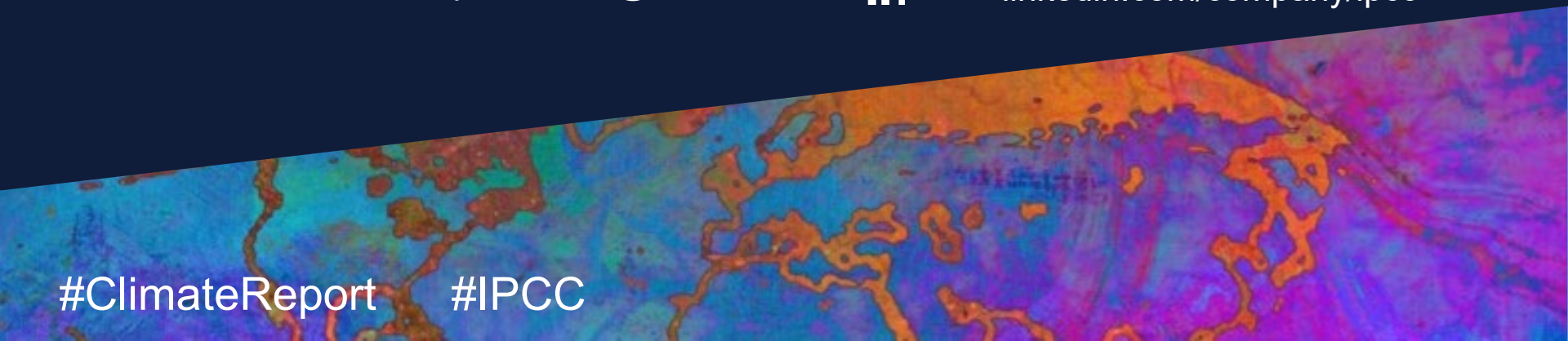

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