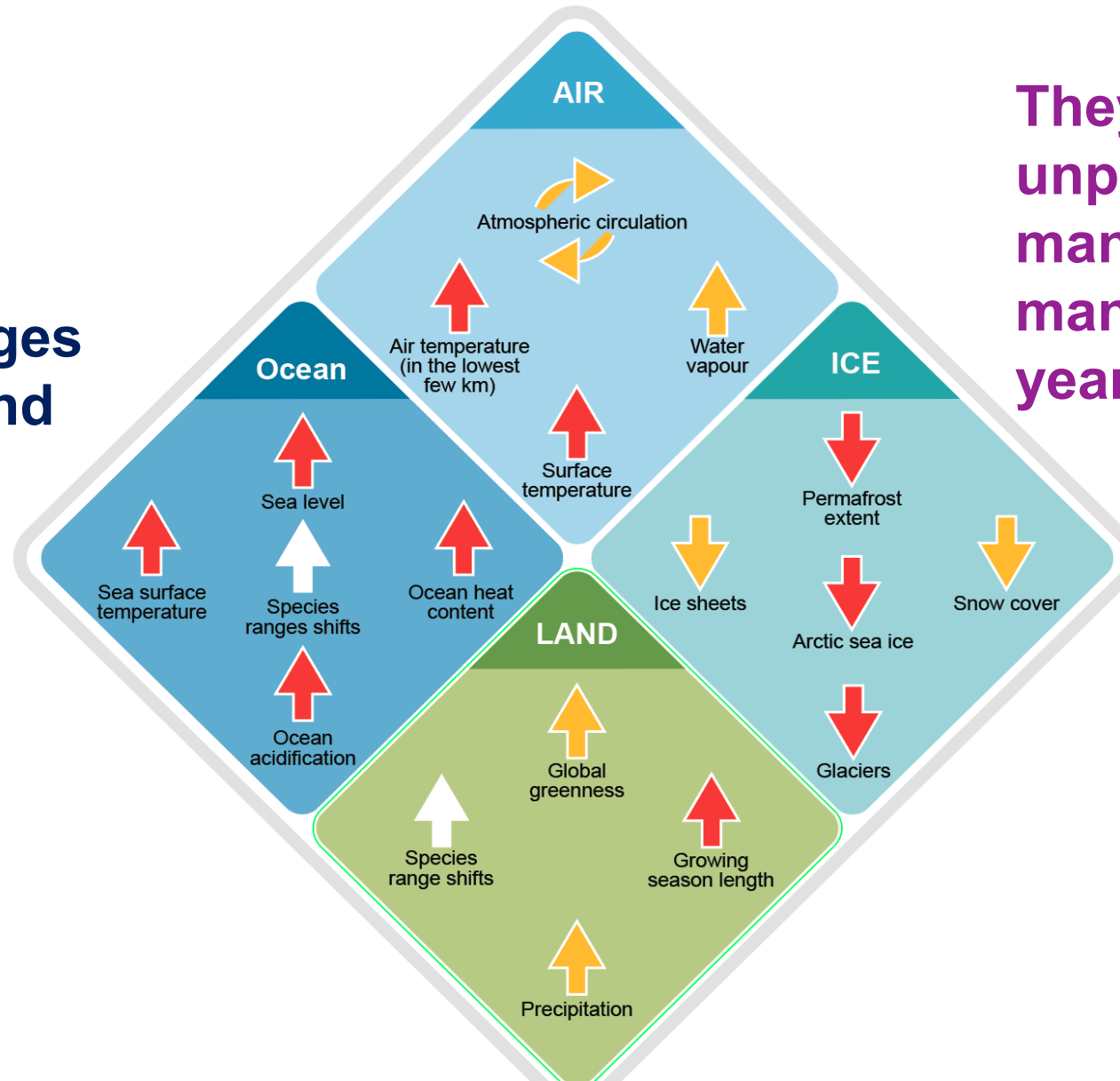


# **Climate Change : Physical Science Basis**

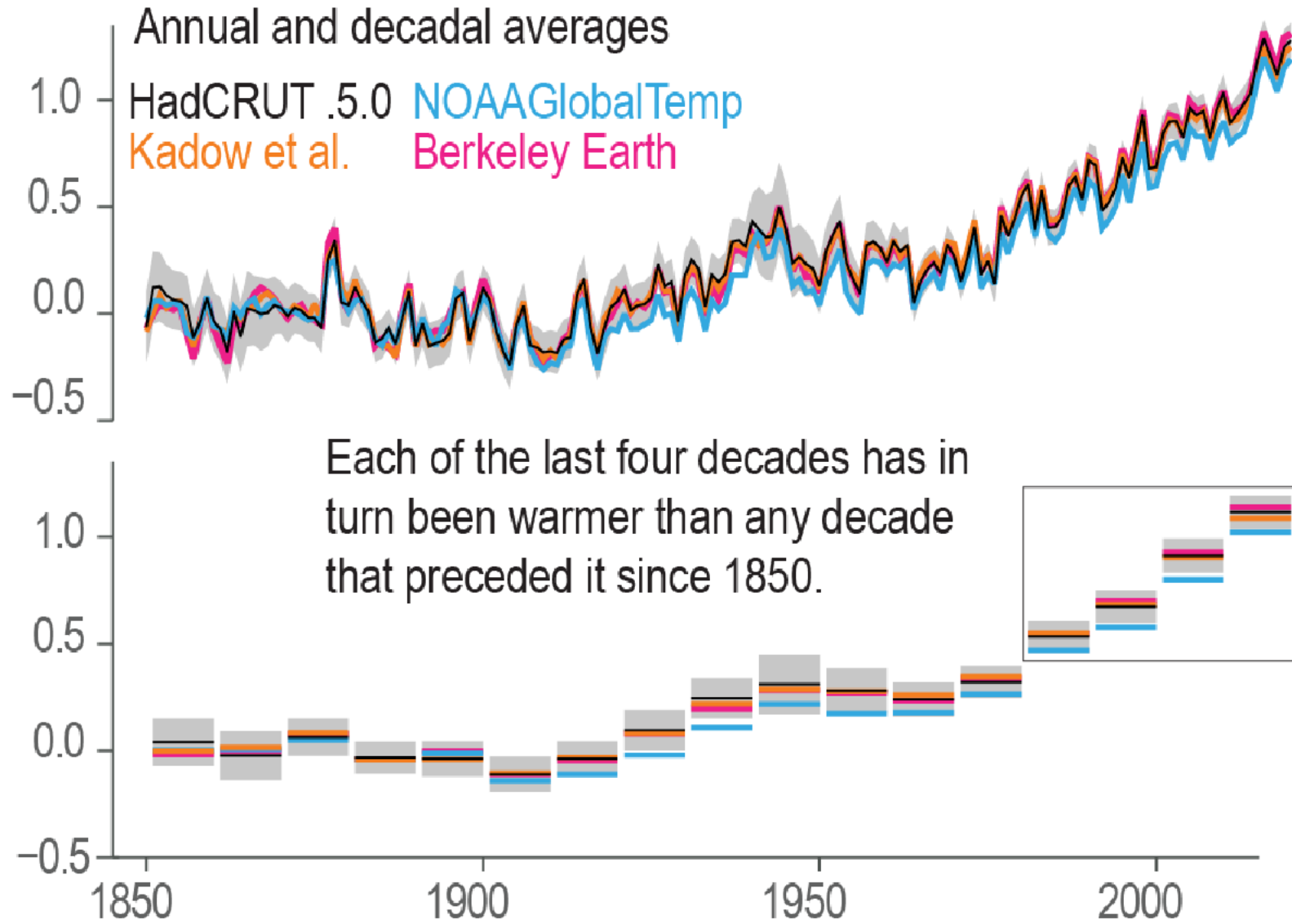
## **Key findings from IPCC-AR6-WGI**

Fatima Driouech  
IPCC-WGI Vice-Chair  
UM6P, Morocco

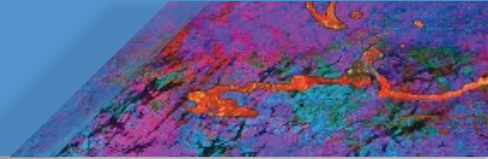
**The recent climate changes are widespread, rapid, and intensifying**



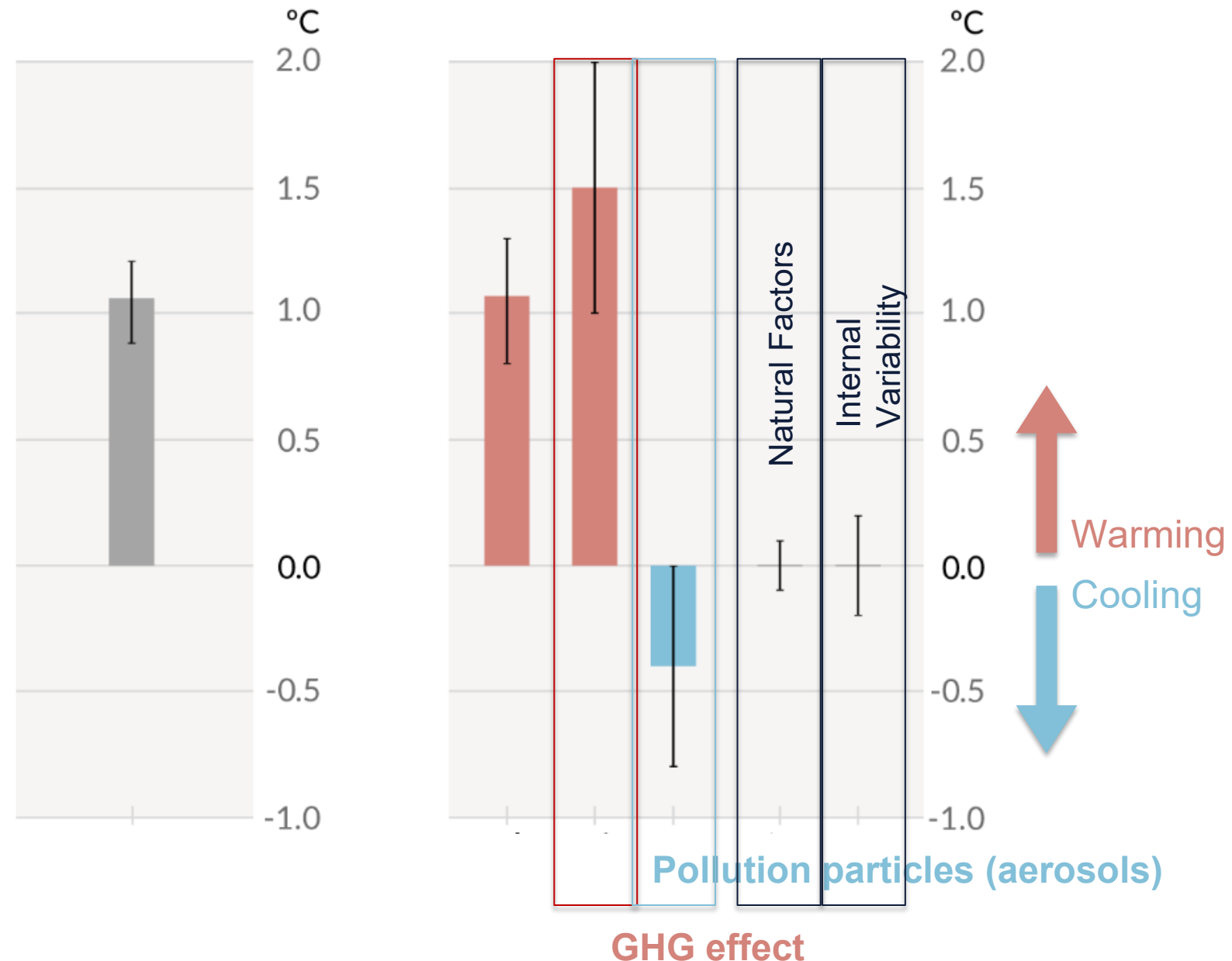
**They are unprecedented over many centuries to many thousands of years.**

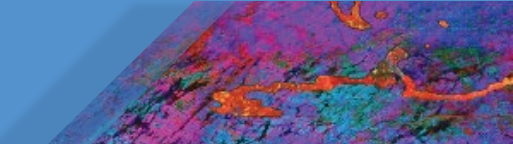


**Global surface temperature relative to 1850-1900 °C**



It is unequivocal that human influence has warmed the atmosphere, ocean and land.





## Heat and Cold

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

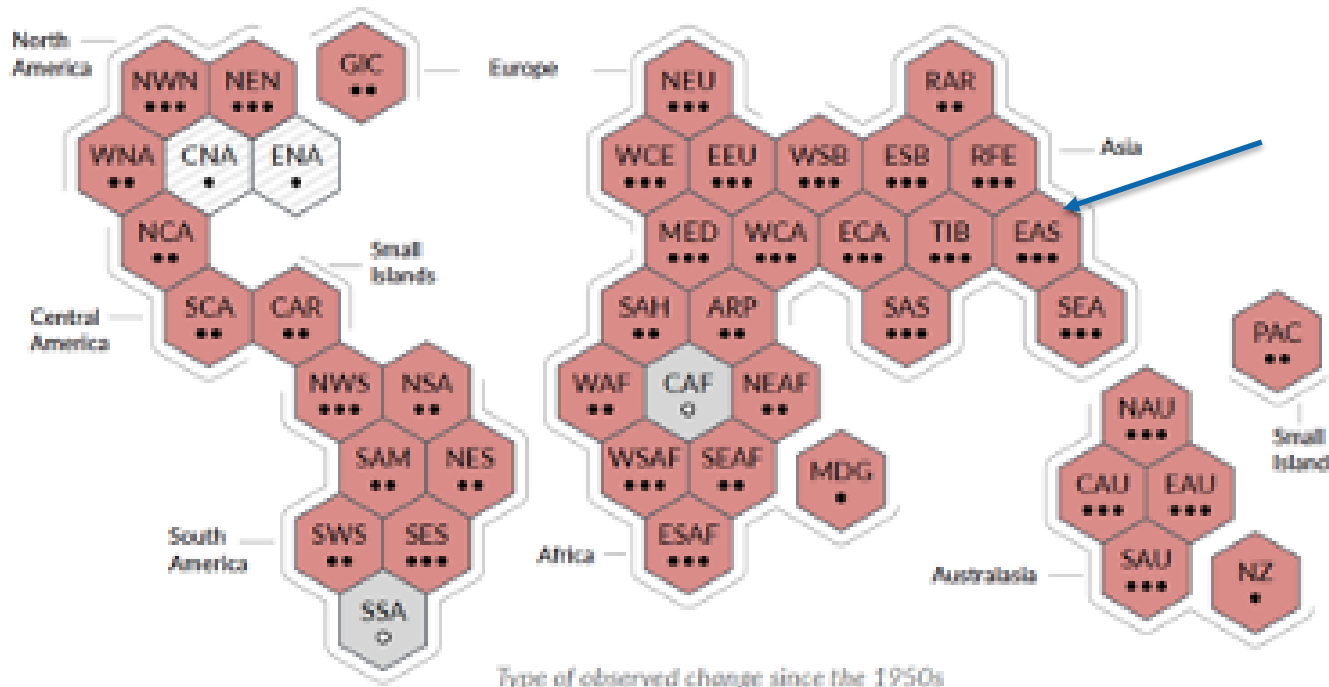
a) Synthesis of assessment of observed change in hot extremes and confidence in human contribution to the observed changes in the world's regions

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



Some recent hot extremes observed over the past decade would have been extremely *unlikely* to occur without human influence on the climate system

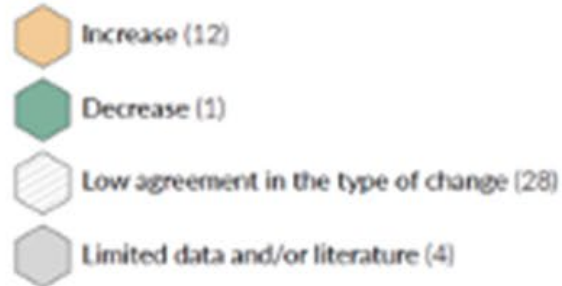


## Droughts

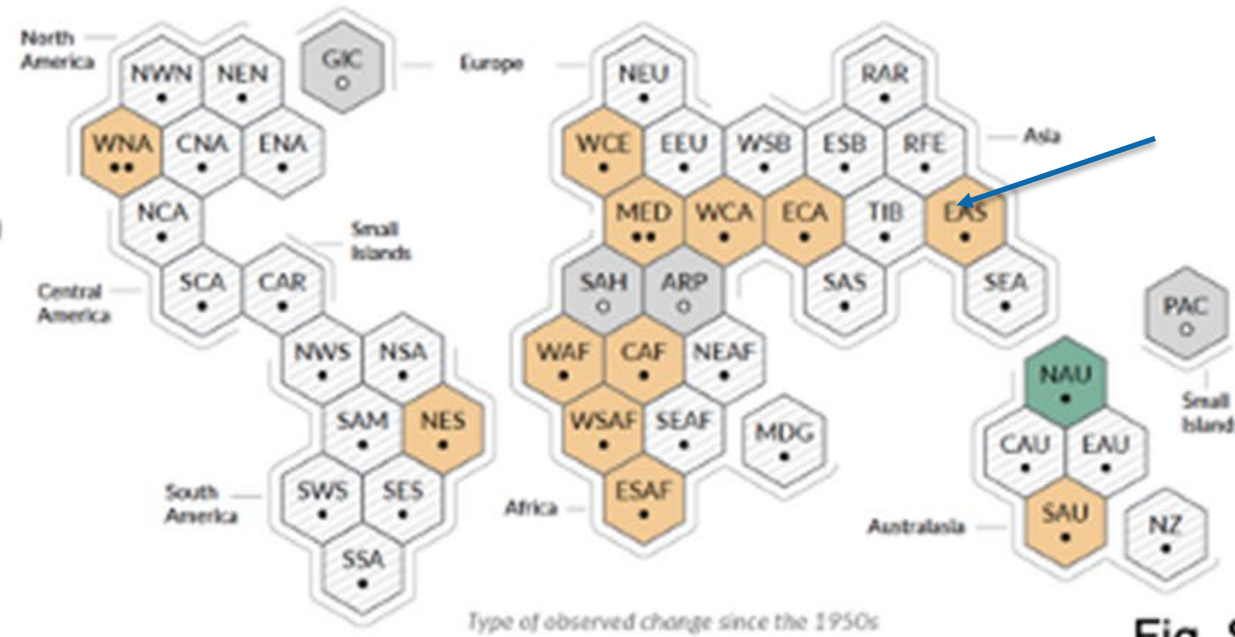
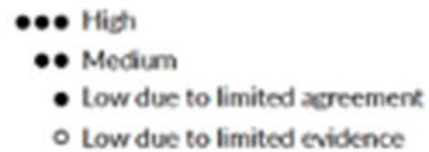
Climate change is already affecting every inhabited region across the globe with human influence contributing to many observed changes in weather and climate extremes

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



Confidence in human contribution to the observed change



Type of observed change since the 1950s

Fig. SPM.3



Human induced climate change has contributed to increase in drought in some regions



[Credit: Yoda Adaman | Unsplash]

“

**Every fraction of additional warming matters: many changes in the climate system, including extreme events, are directly related to the level of global warming.**

ipcc

INTERGOVERNMENTAL PANEL ON climate change





With every increment of global warming, changes get larger in regional mean temperature, precipitation and soil moisture

Annual mean temperature change ( $^{\circ}\text{C}$ ) relative to 1850-1900

1.5 $^{\circ}\text{C}$

2 $^{\circ}\text{C}$

at 4 $^{\circ}\text{C}$

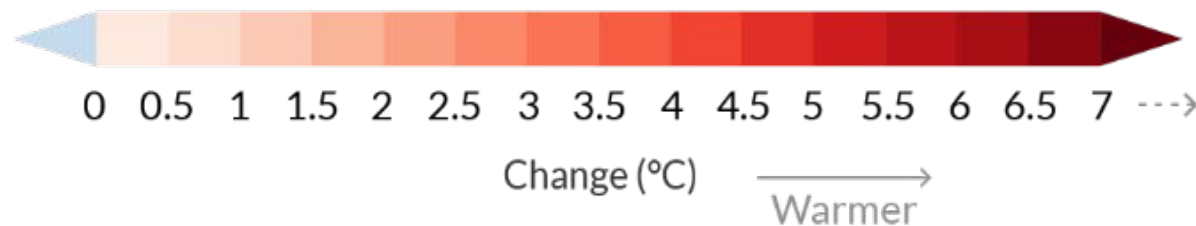
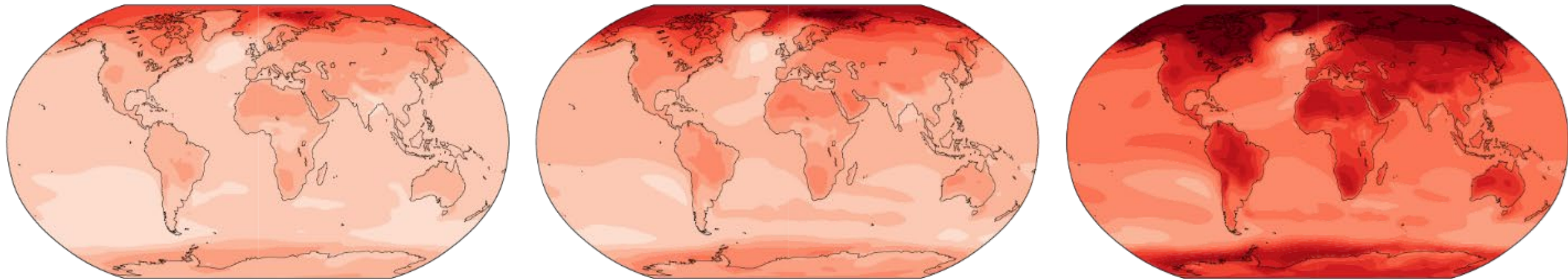
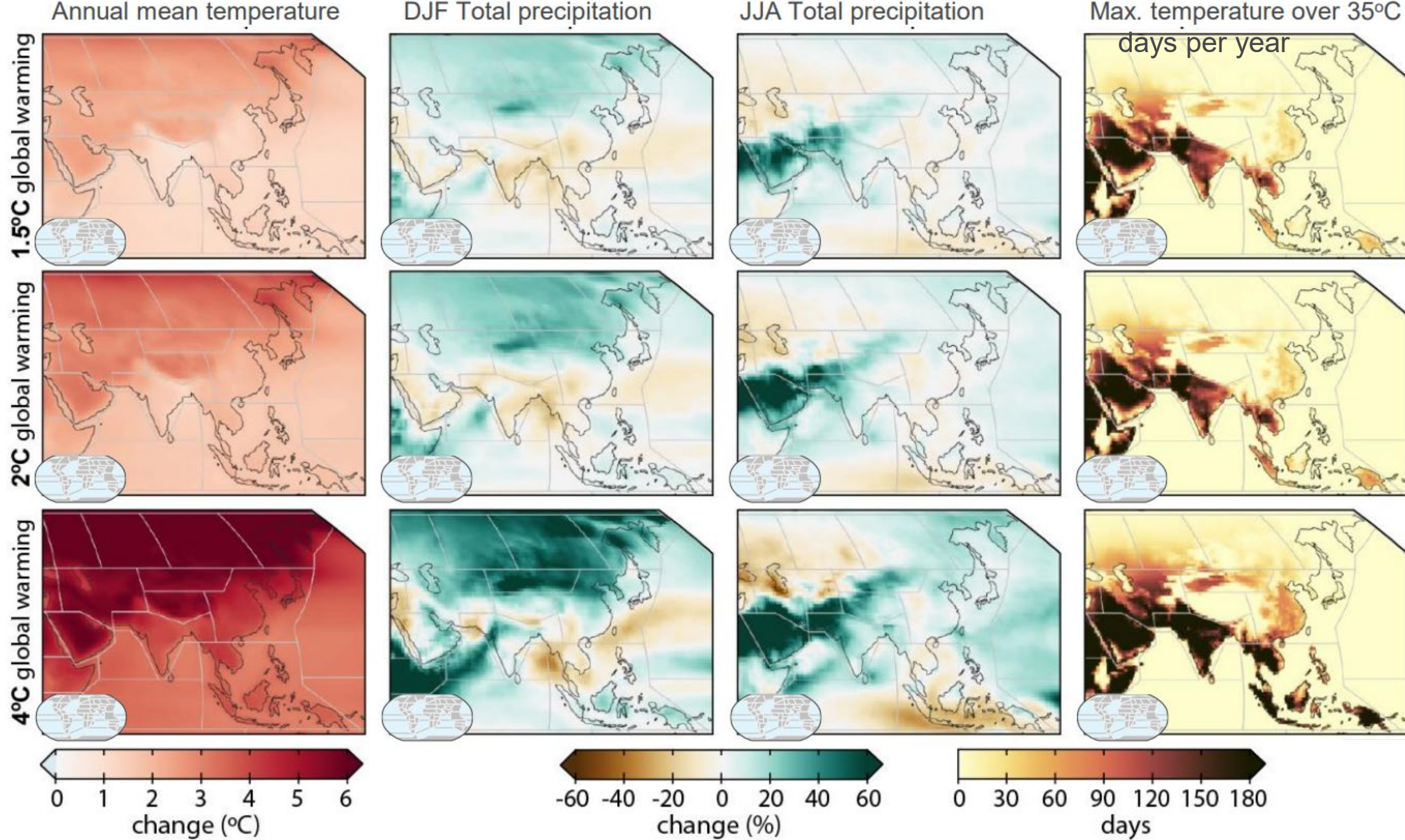


Figure SPM.5





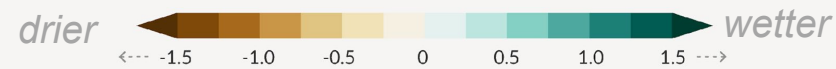
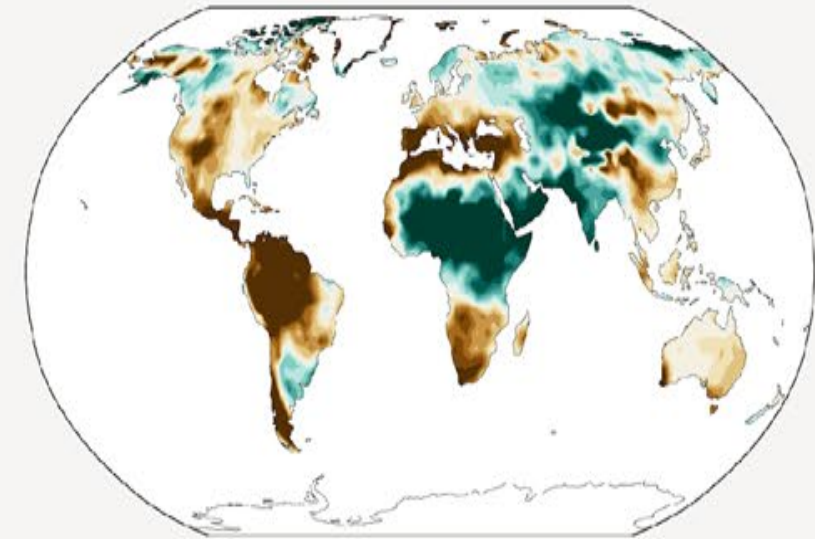
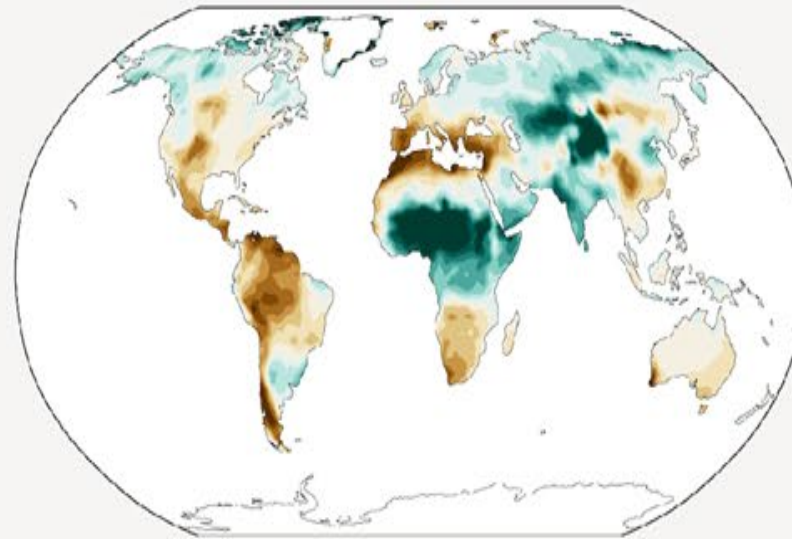
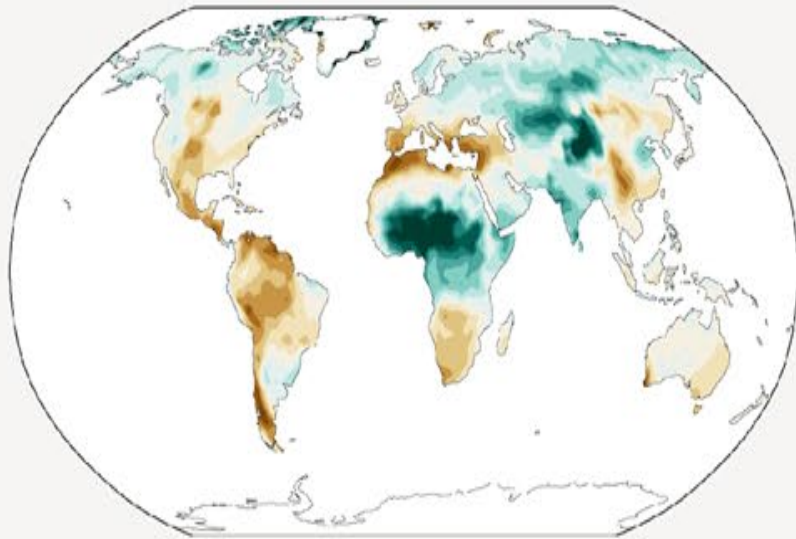


With every increment of global warming, changes get larger in regional mean temperature, precipitation and soil moisture

1.5°C

2°C

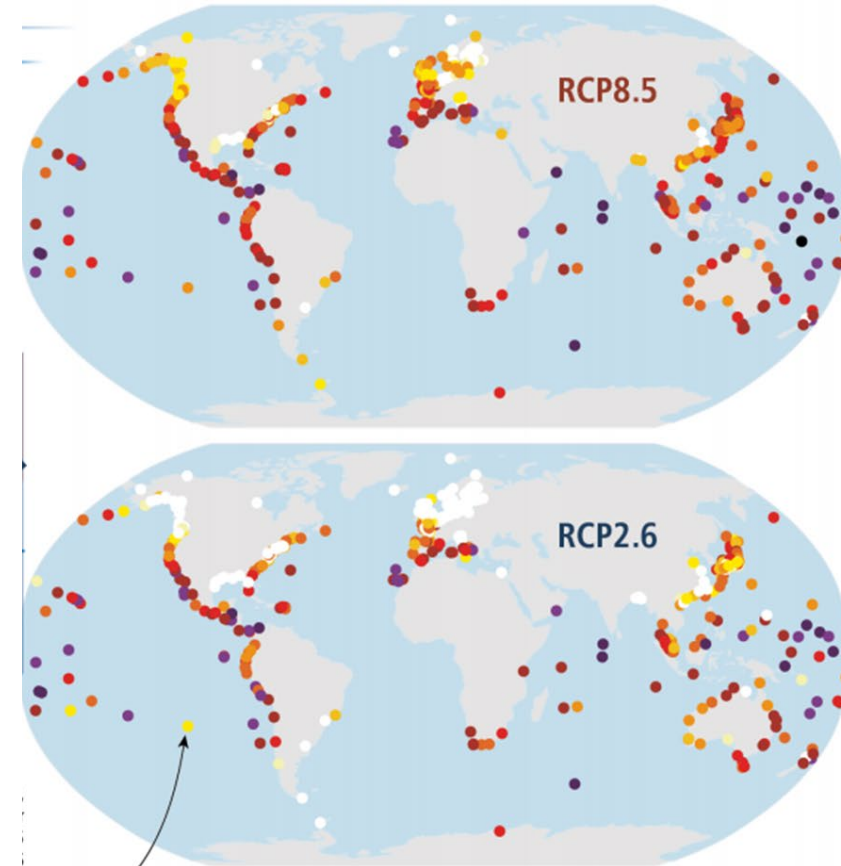
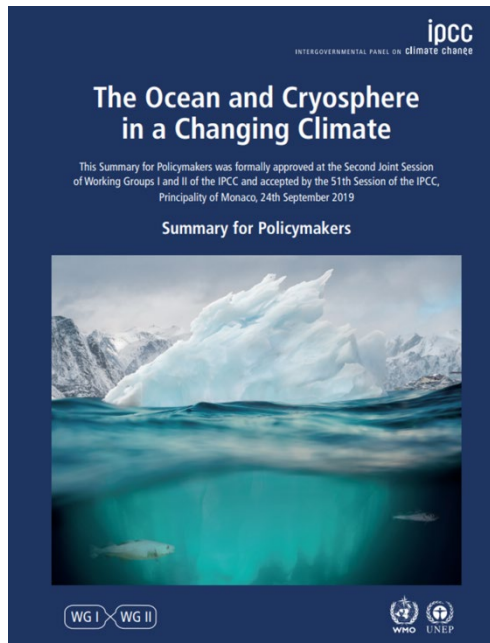
4°C



Change in soil moisture (sd)

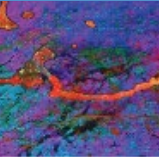
Figure SPM.5

Extreme sea level events, currently recorded once per 100 years, will occur each year in several regions from 2030



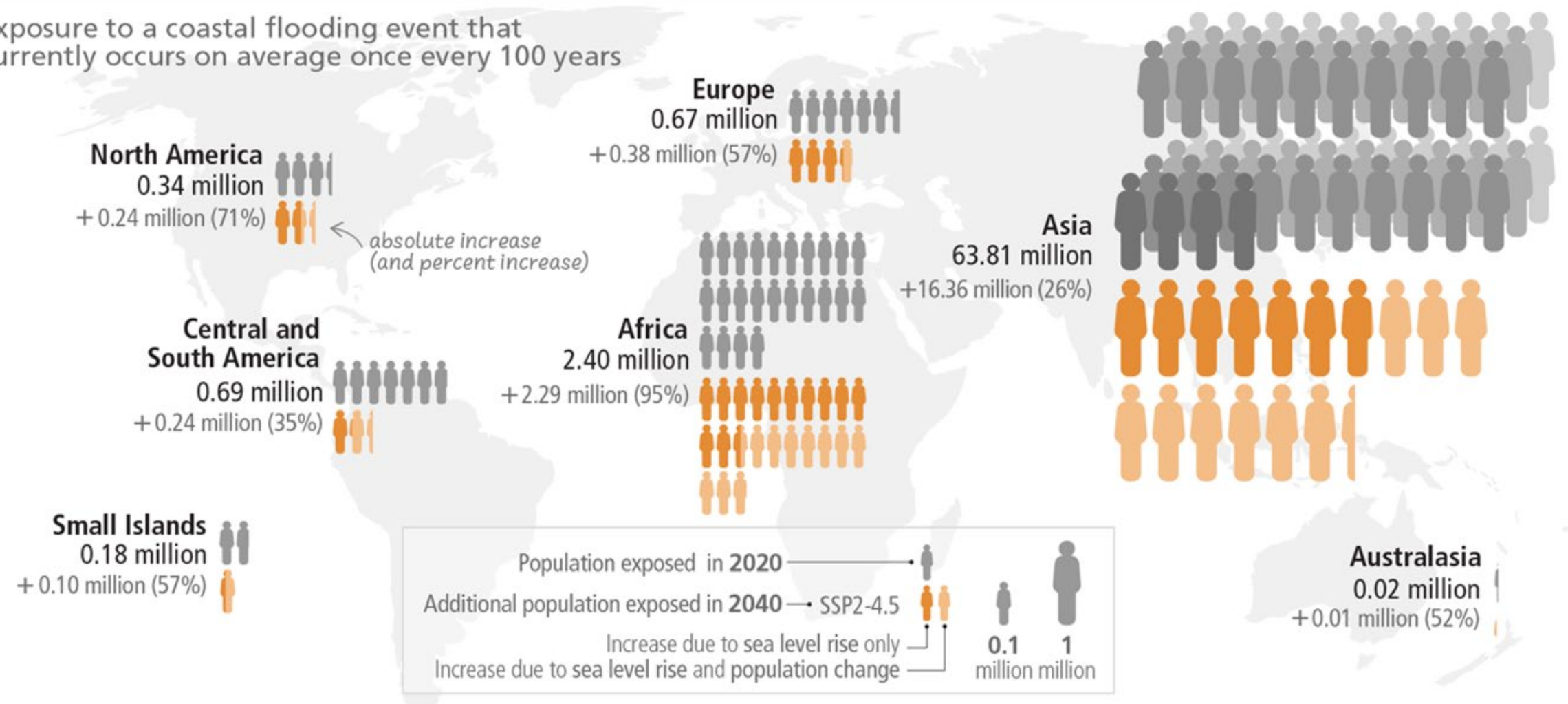
## Future changes in extreme sea levels

# Every region faces more severe and/or frequent compound and cascading climate risks



## a) Increase in the population exposed to sea level rise from 2020 to 2040

Exposure to a coastal flooding event that currently occurs on average once every 100 years

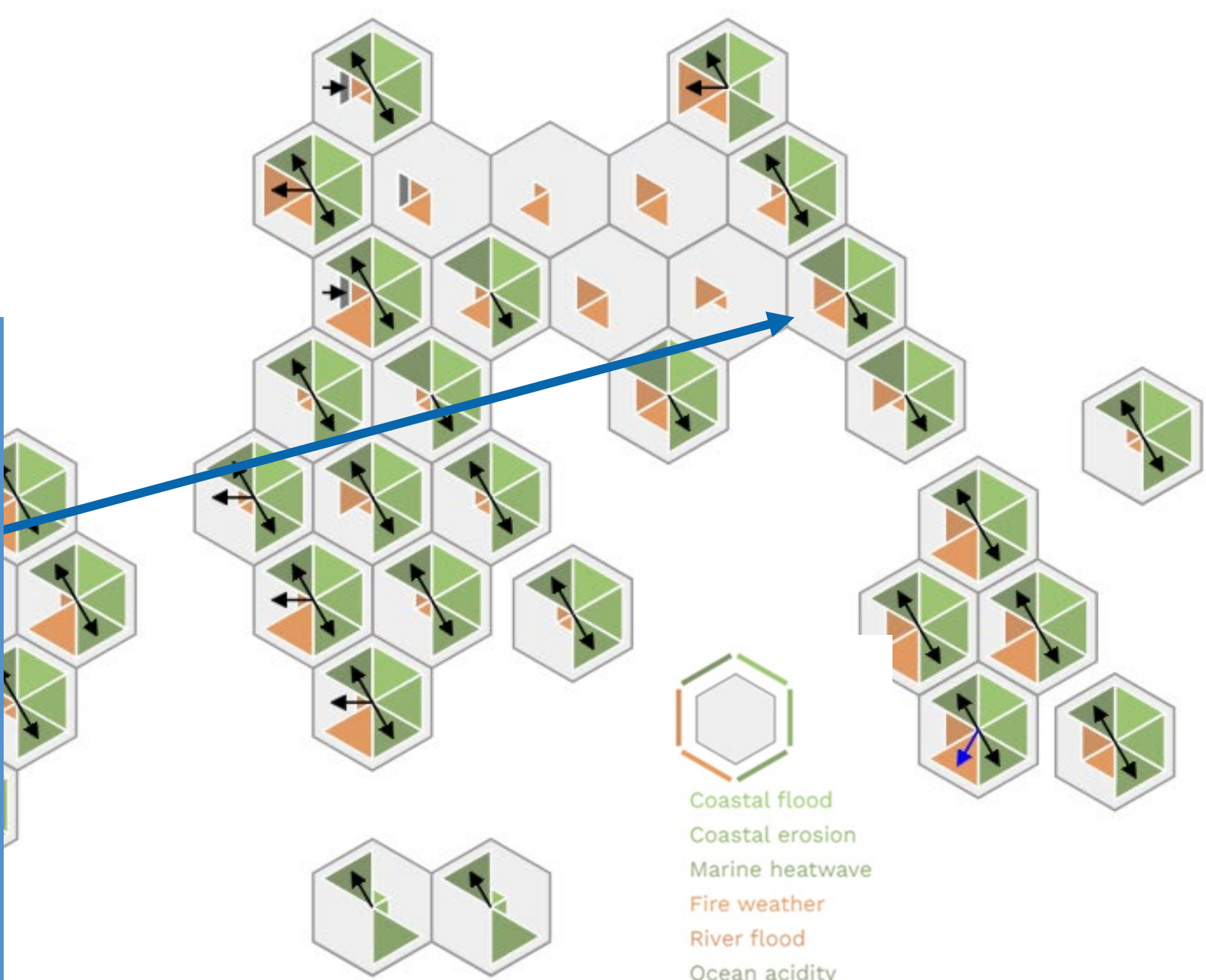
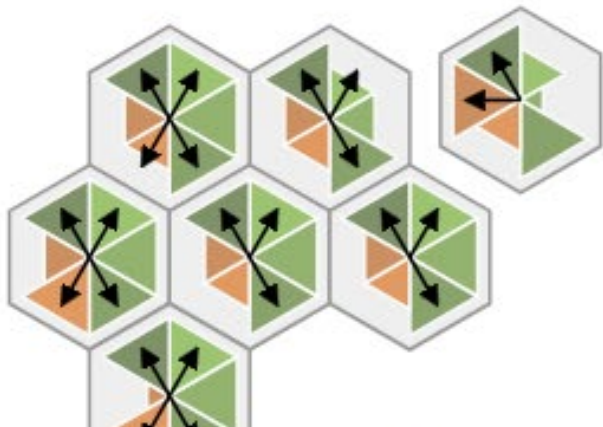


IPCC-AR6 Synthesis Report, Figure 4.3



# East Asia

- Coastal flood**  
Projections: High confidence of increase
- Coastal erosion**  
Projections: High confidence of increase
- Marine heatwave**  
Projections: High confidence of increase  
Past trends: Upward trend without attribution
- Fire weather**  
Projections: Medium confidence of increase
- River flood**  
Projections: Medium confidence of increase
- Ocean acidity**  
Projections: High confidence of increase



- Coastal flood
- Coastal erosion
- Marine heatwave
- Fire weather
- River flood
- Ocean acidity

**Climate change is a threat for humans and all the planet. But it is not a fatality: the solutions exist, and our future depends on our decisions today.**

**Thank you for your attention**

# AR6 WG1 EN CHIFFRES



## Auteurs

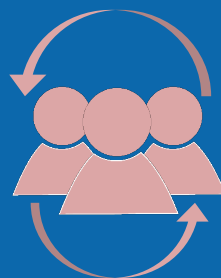
**234** auteurs de **65** pays

**28%** femmes, **72%** hommes

**63%** nouveaux auteurs



**14 000** publications scientifiques évaluées

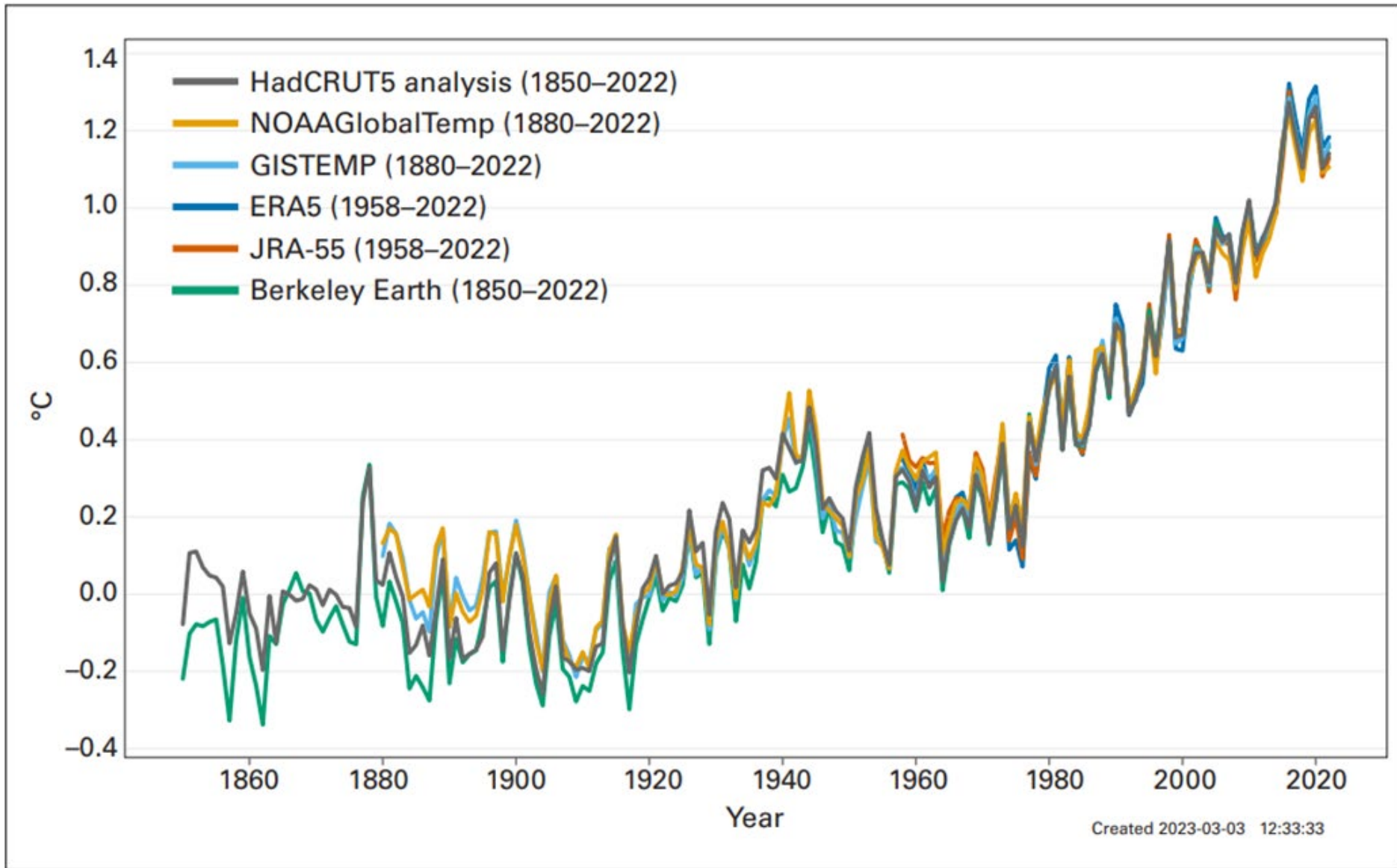


## Processus de relecture

**78,000+** commentaires

**3,200** commentaires des  
gouvernements pour le SPM





The global mean temperature in 2022 was 1.15 [1.02–1.28] °C above the 1850–1900 average

Global annual mean temperature anomalies with respect to pre-industrial conditions (1850–1900) for six global temperature data sets (1850–2022)  
(WMO State of Climate, 2022)