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CAS

Climate Data and Catastrophe Modelling in Asia

March 24th, 2026

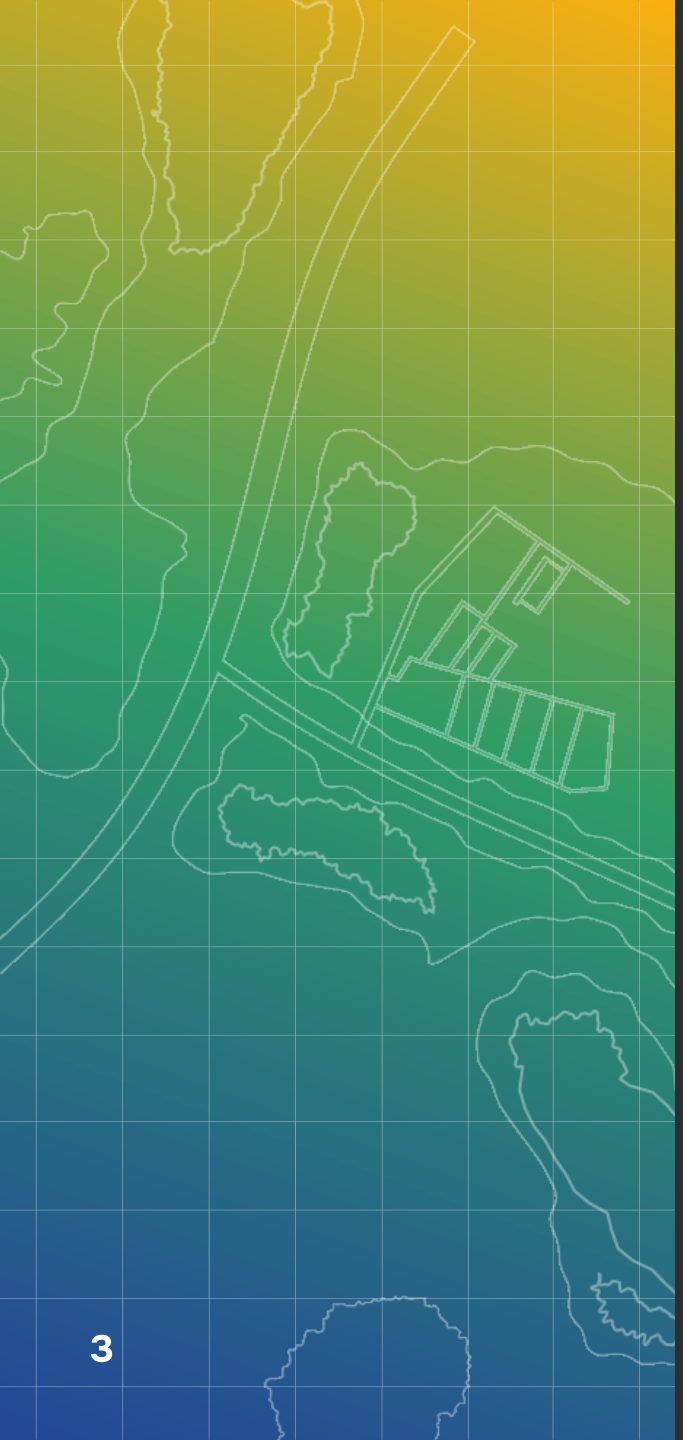
Agenda

01 Introduction

02 Reliable Data Sources

03 Climate Change in Cat Models

04 What we do and don't know



Introduction

The Climate Change Reporting Landscape

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The Climate Change Reporting Landscape

International Panel on Climate Change (IPCC)

- Established by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) in 1988.
- **Six total assessments with six total Assessment Reports (AR)s delivered to date.**
  - Plus countless additional technical and methodology reports.
- IPCC ARs are an assemblage and analysis of the vast majority of past and present peer reviewed and published scientific articles about climate change.
  - **The purpose is to inform governments about the state of knowledge of climate change.**
  - **Subjects include the natural, economic and societal risks for to climate change.**

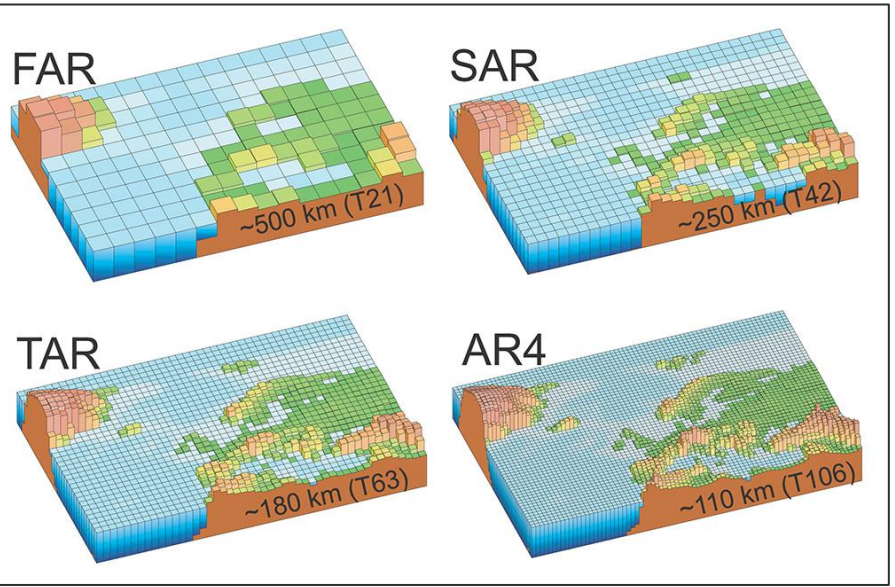
https://www.ipcc.ch/about/history/

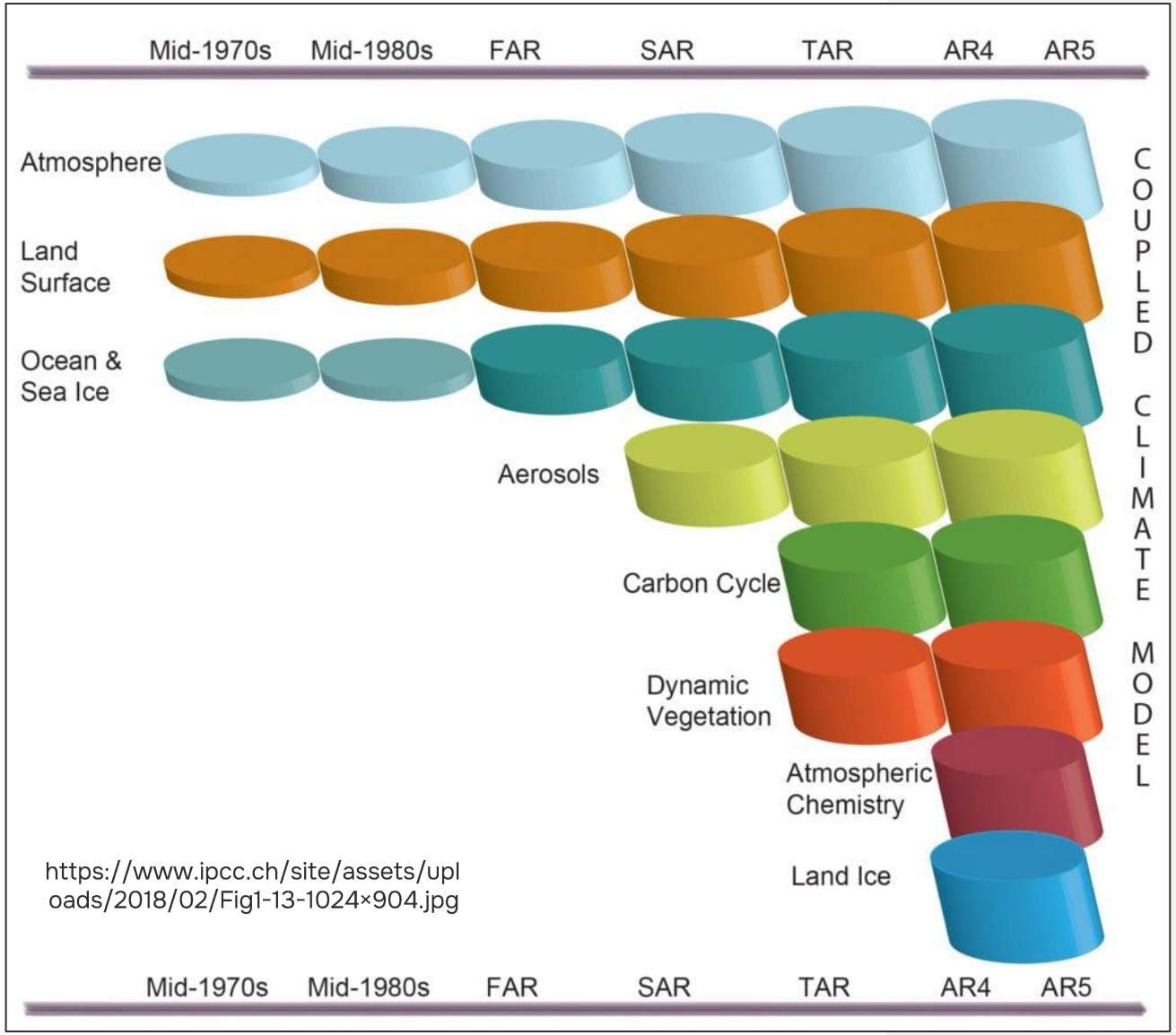
The Climate Modles

Increasing Complexity

AR 5 (2014) -
Representative Concentration Pathway (**RCP**) Scenarios

AR 6 (2023) –
Shared Socioeconomic Pathway (**SSP**) Scenarios





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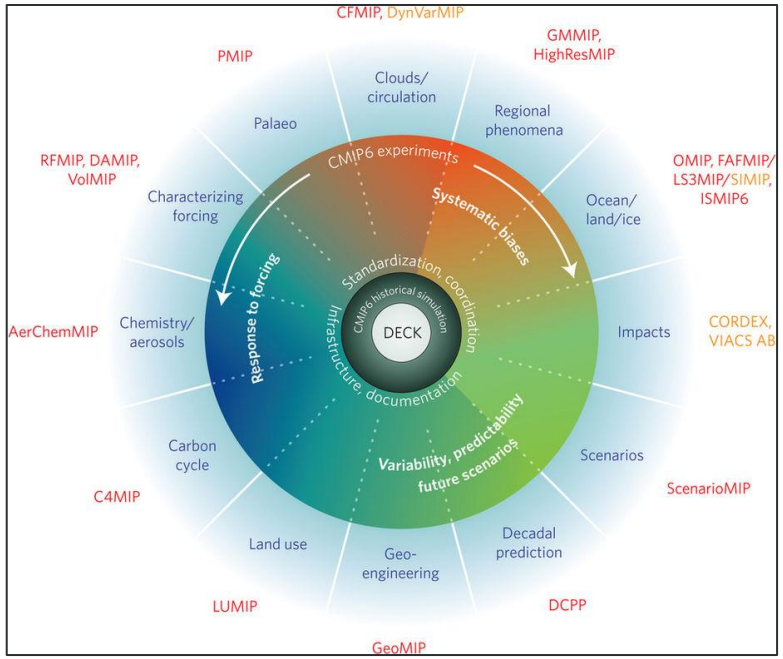
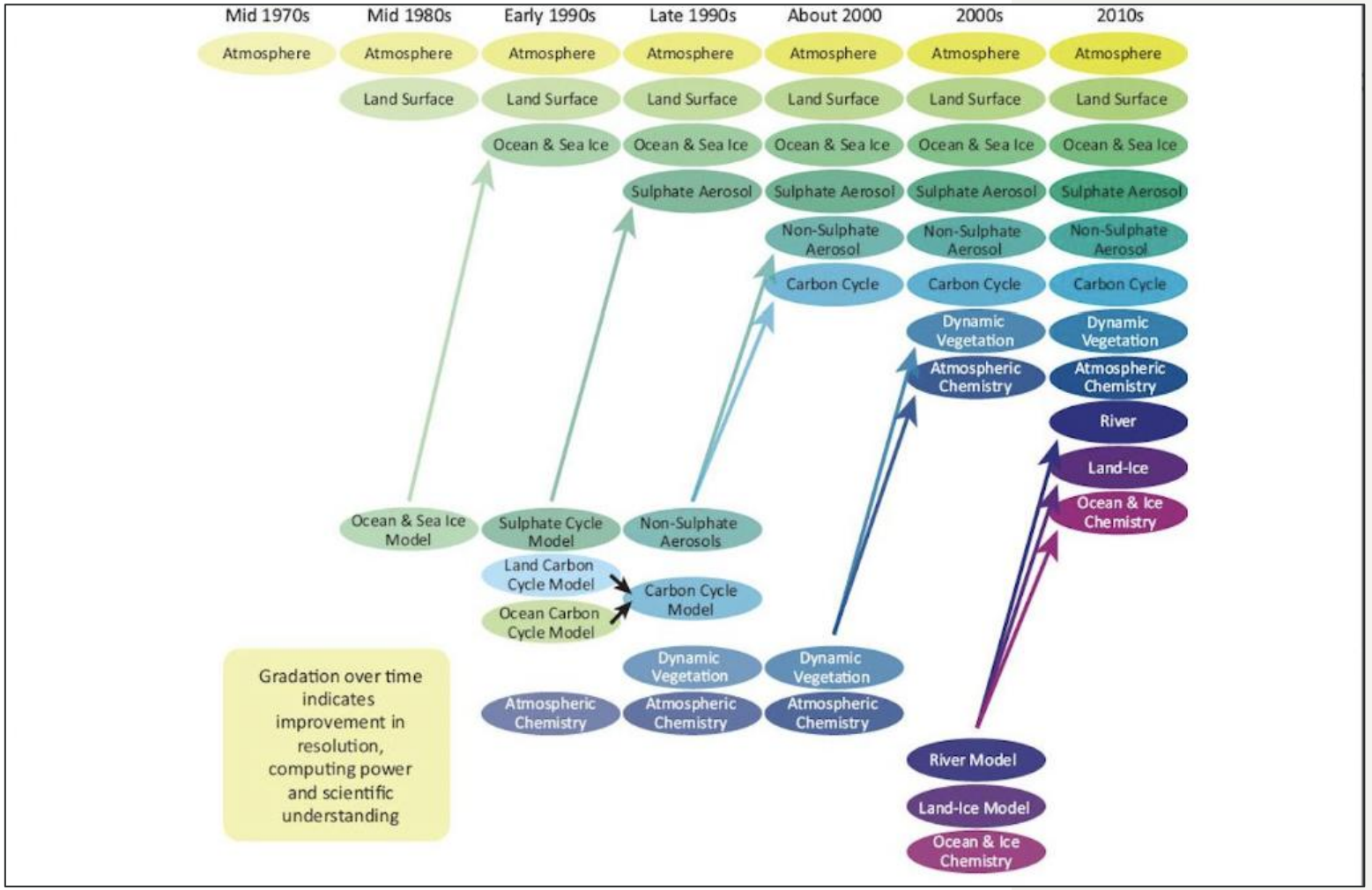
The Climate Modles

Increasing Complexity

Coupled Model Intercomparison Project (CMIP6)





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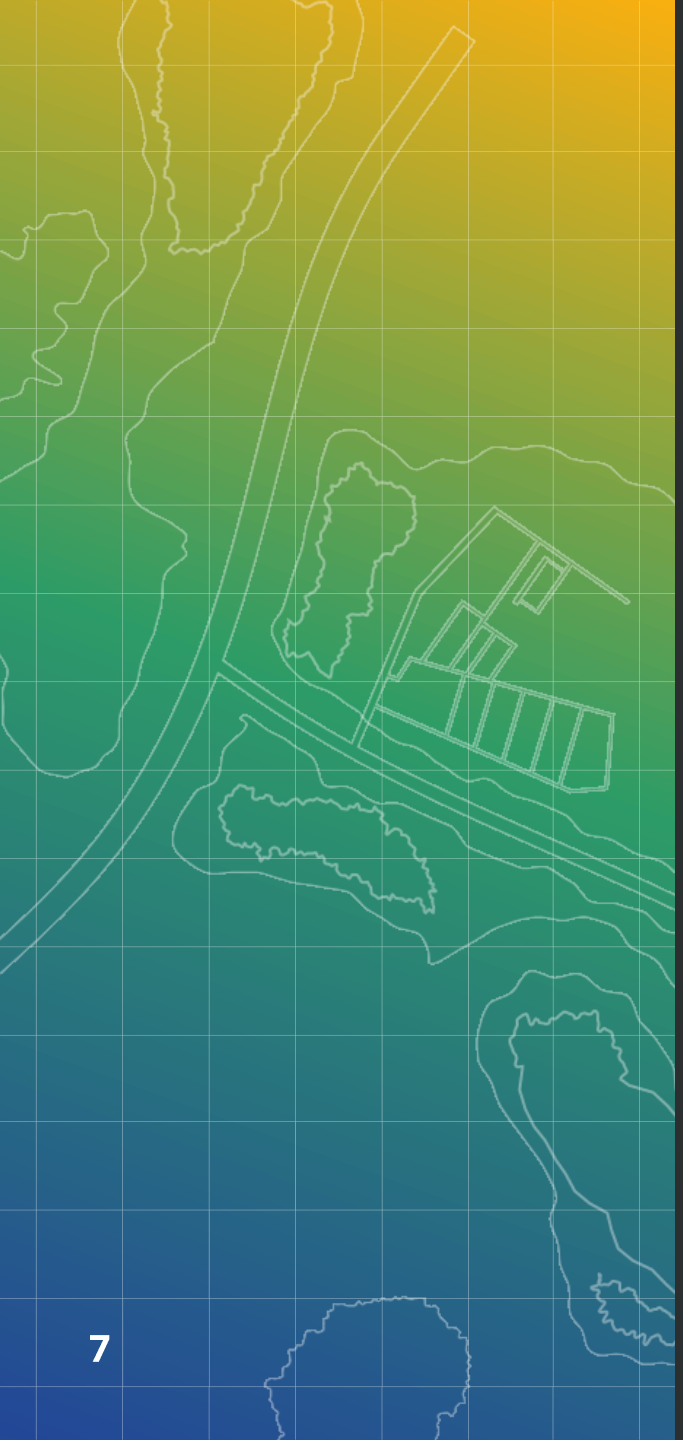

02 Reliable Data Sources

Where cat modelers get their information

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Where Cat Modelers Get Their Information

IPCC

The Intergovernmental Panel on Climate Change has been the preeminent reference for international governments since the 1980s

Scientific Journals

Peer reviewed scientific journals, such as those from the American Meteorological Society, are the building blocks on which the IPCC and climate science is built.

Government Entities

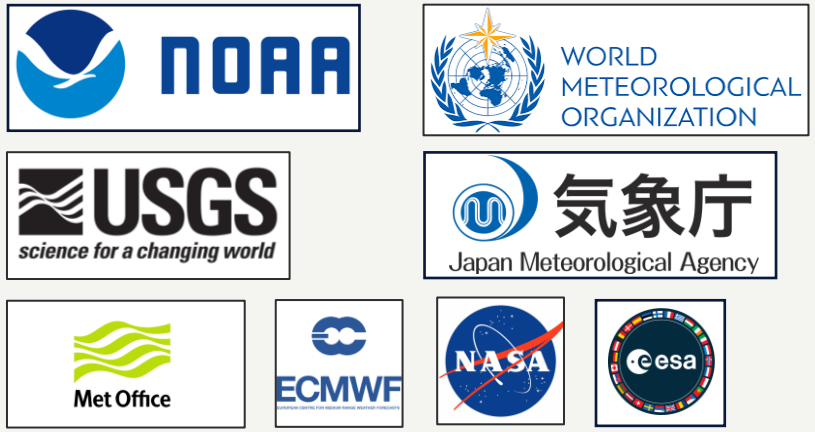
Governments play an important role, funding and working with scientists to generate reports for free use by the scientific community

Where Cat Modelers Get Their Information

Scientific Journals

Etc.

Government Entities



Etc.

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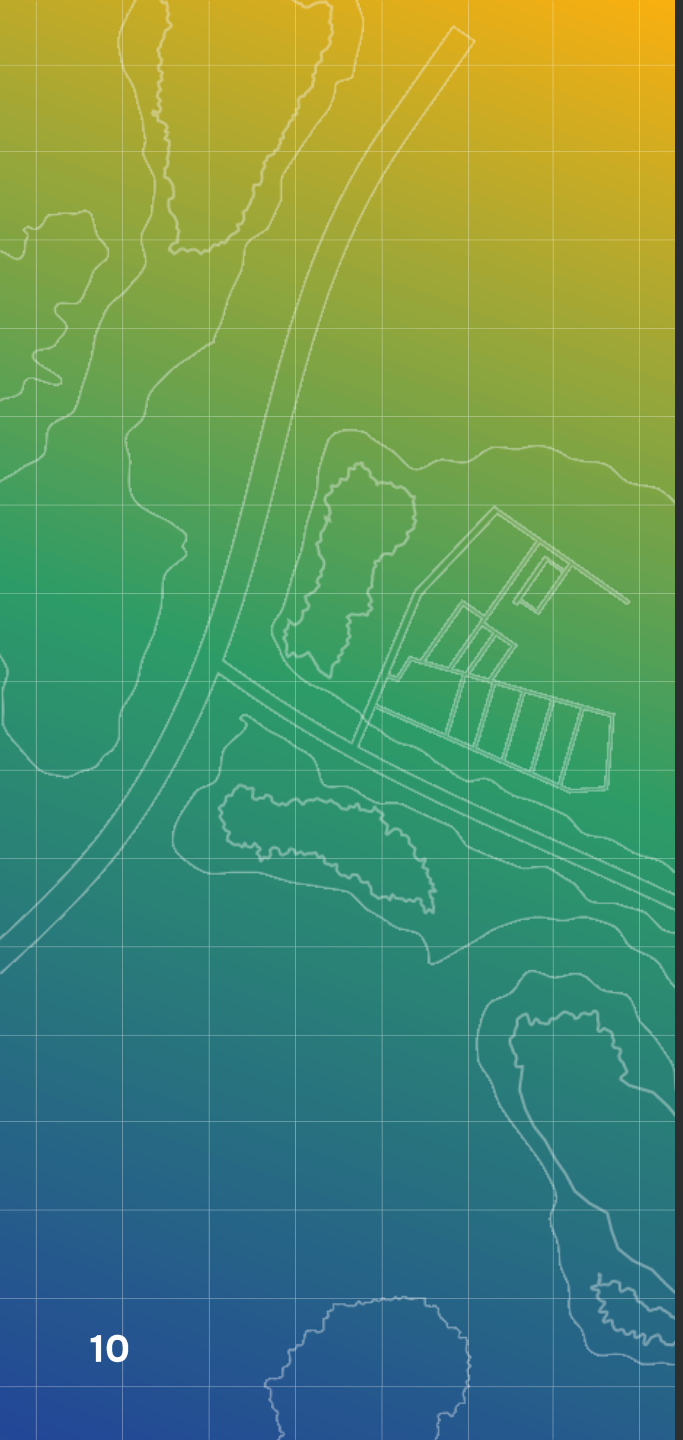

03 Climate Change in Cat Models

What Data is used and how can it be used?

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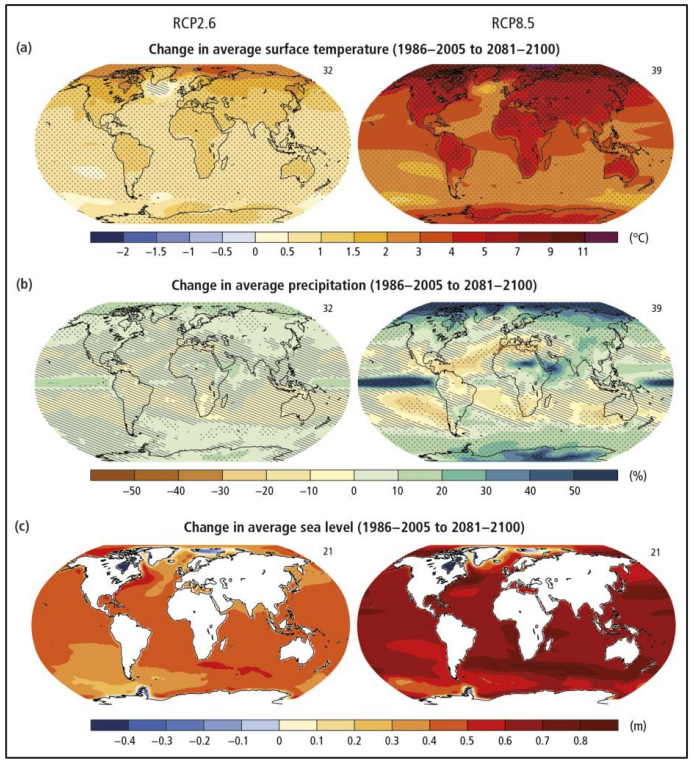
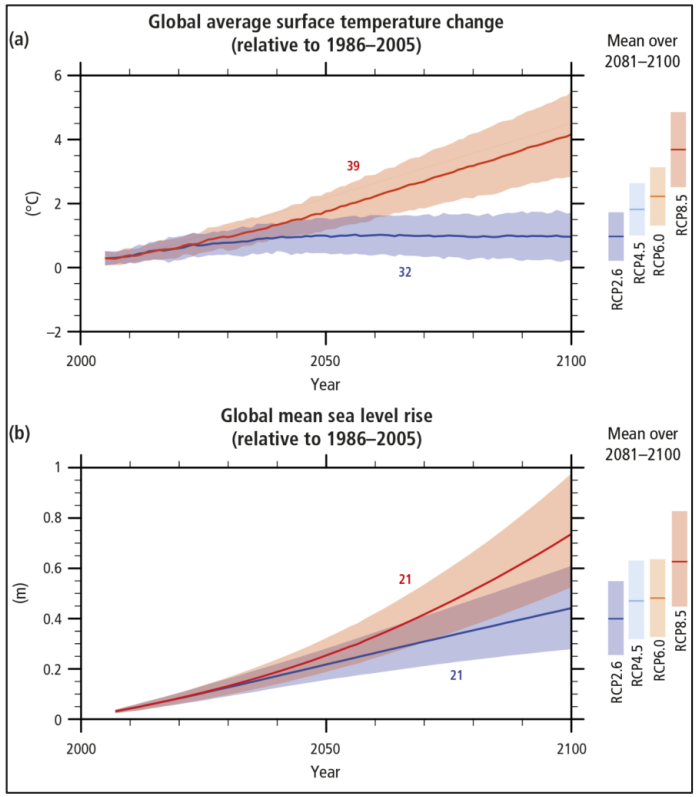
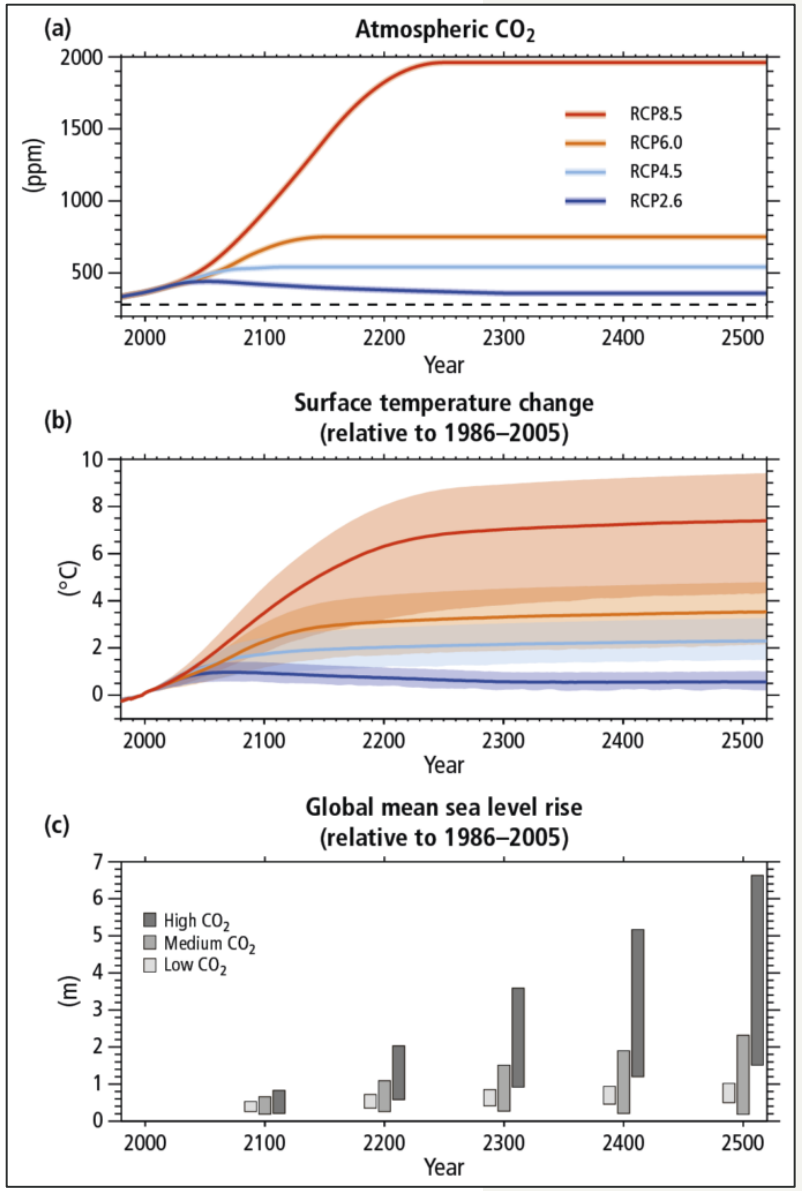
What Data is used and how can it be used?

Assessment Report 5
RCP Scenarios

https://www.ipcc.ch/report/ar5/syr/synthesis-report/







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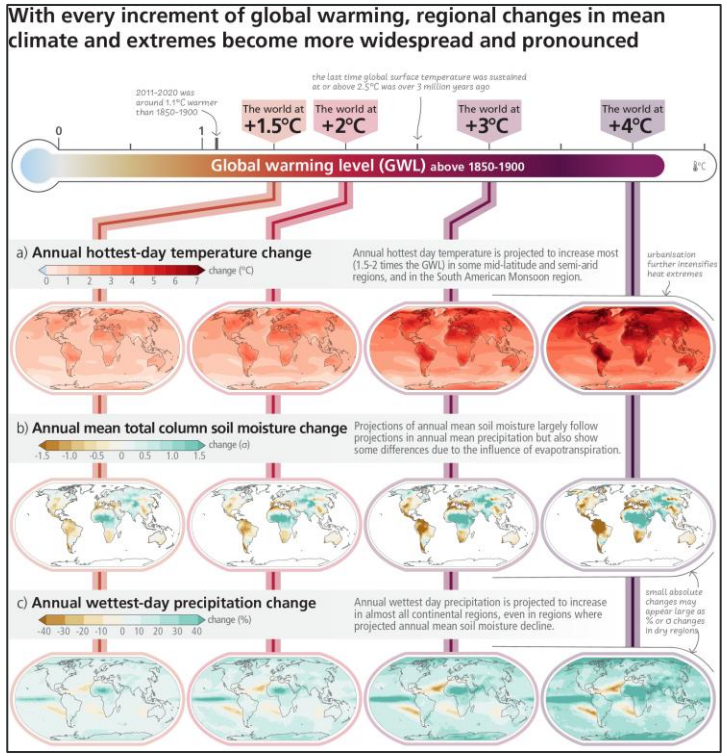
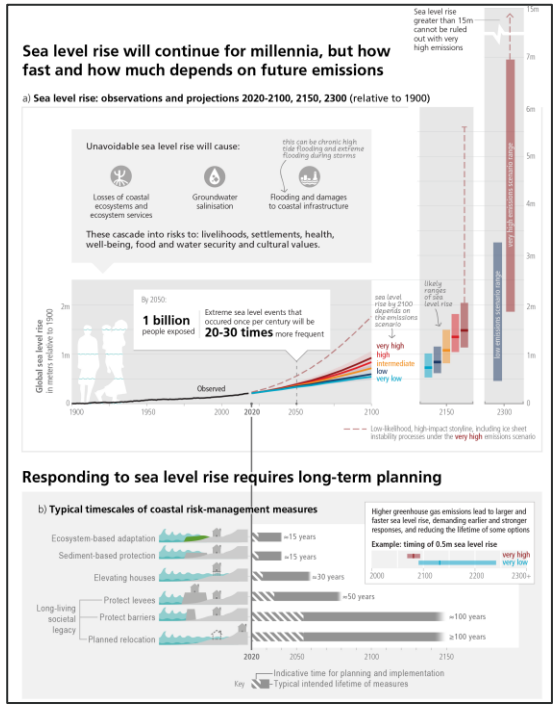
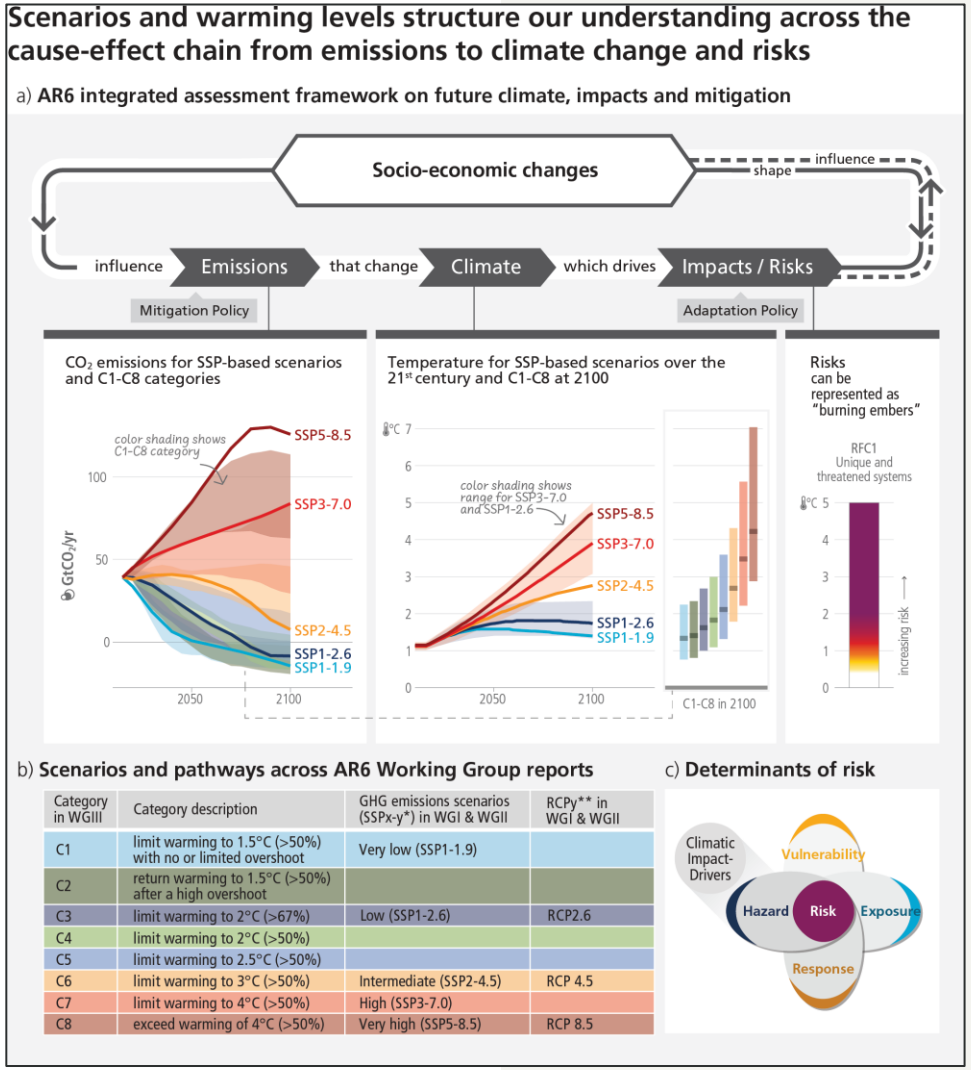
What Data is used and how can it be used?

Assessment Report 6
SSP Scenarios

https://www.ipcc.ch/report/ar6/syr/figures/







Category in WGIII	Category description	GHG emissions scenarios (SSPx-y*) in WGI & WGII	RCPy** in WGI & WGII
C1	limit warming to 1.5°C (>50%) with no or limited overshoot	Very low (SSP1-1.9)	
C2	return warming to 1.5°C (>50%) after a high overshoot		
C3	limit warming to 2°C (>67%)	Low (SSP1-2.6)	RCP2.6
C4	limit warming to 2°C (>50%)		
C5	limit warming to 2.5°C (>50%)		
C6	limit warming to 3°C (>50%)	Intermediate (SSP2-4.5)	RCP 4.5
C7	limit warming to 4°C (>50%)	High (SSP3-7.0)	
C8	exceed warming of 4°C (>50%)	Very high (SSP5-8.5)	RCP 8.5

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Climate Change and Nat-Cat Perils

Inland Flood

Precipitation changes are directly modeled within the climate models and inferred using canonical temperature to moisture equations.

TC Wind

Changes in TC wind can be inferred from changes in temperature, wind patterns, and sea level rise.

TC Surge

Sea level rise is directly modeled in climate change models.

SCS

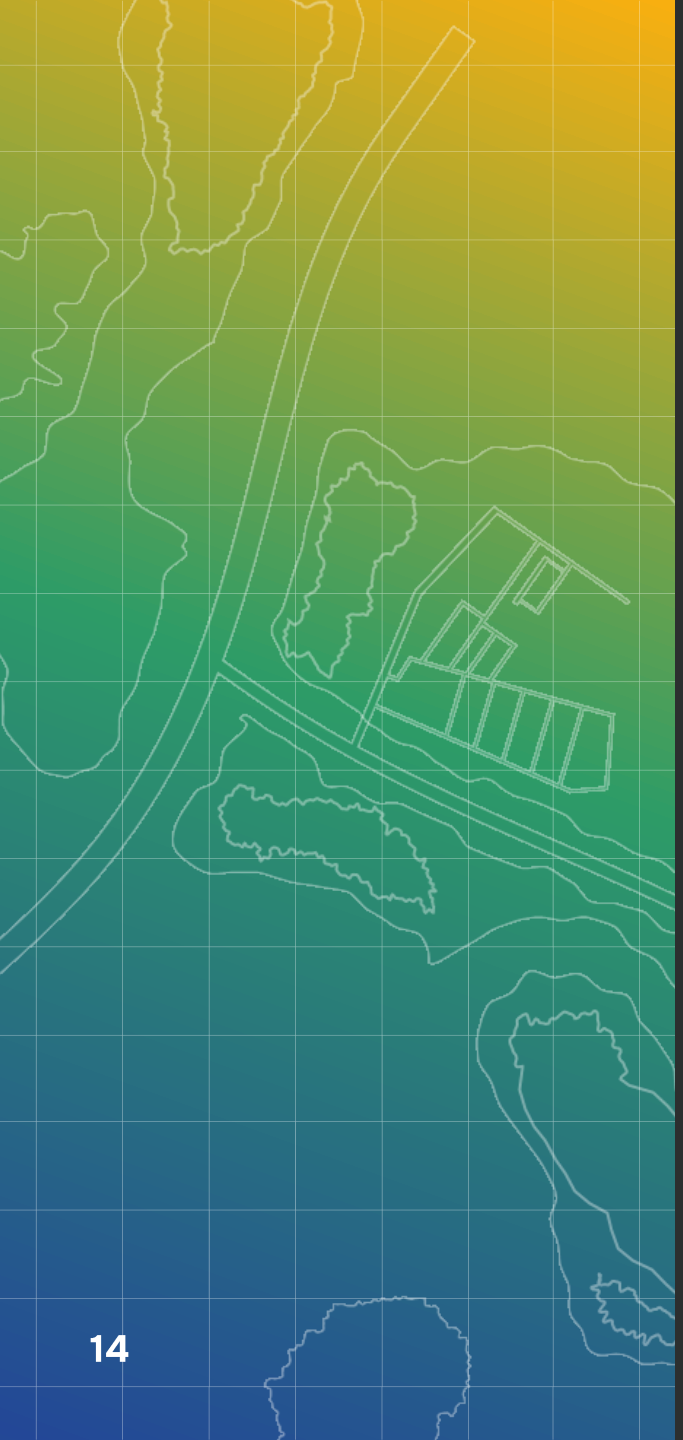
There is low certainty in SCS and climate change relationships with a few exceptions for Straight Line Winds

Wildfire

Wildfire is tied to changes in precipitation and increases in temperature, both of which are directly attainable from climate model output

Winter Storm

There is low certainty in winter storm and climate change relationships.



04 What we do and don’t know

What is the scientific consensus on climate change impacts?

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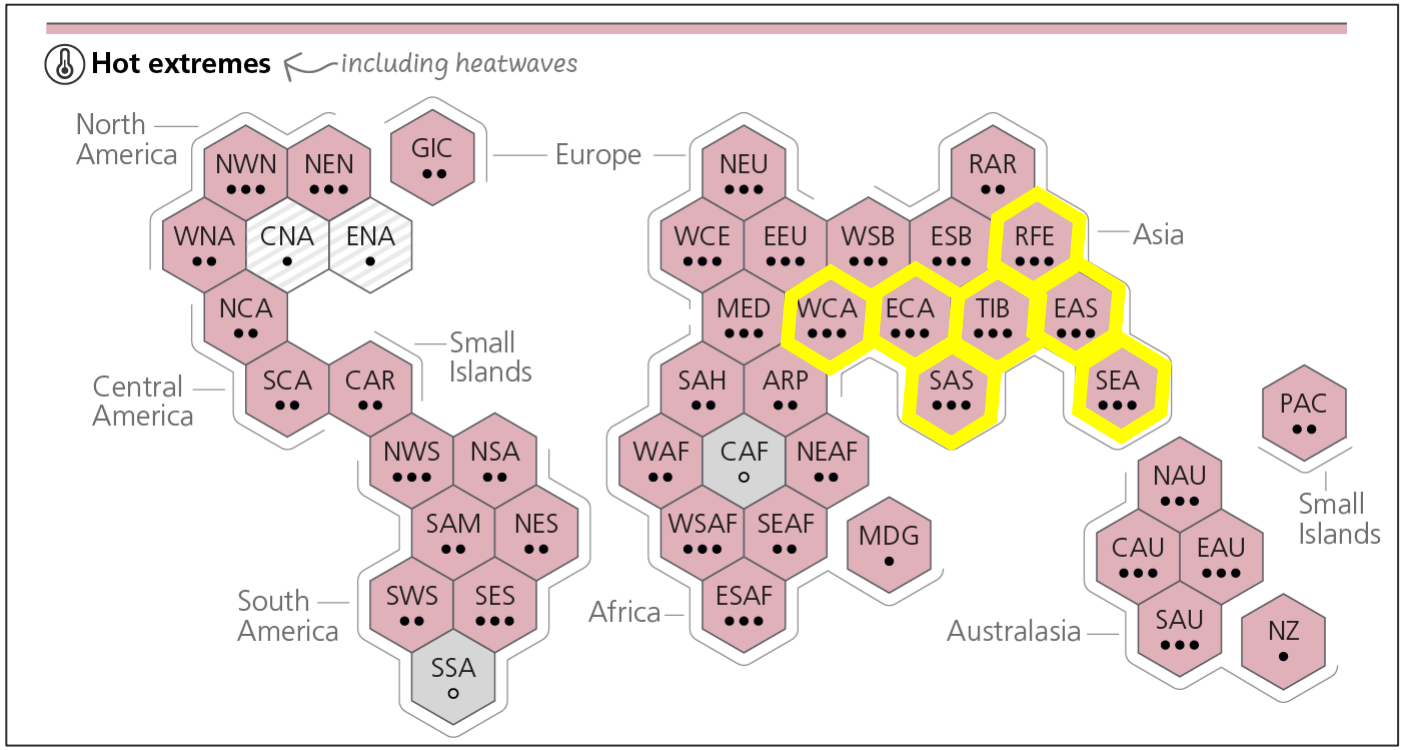

https://www.ipcc.ch/report/ar6/syr/figures/figure-2-3

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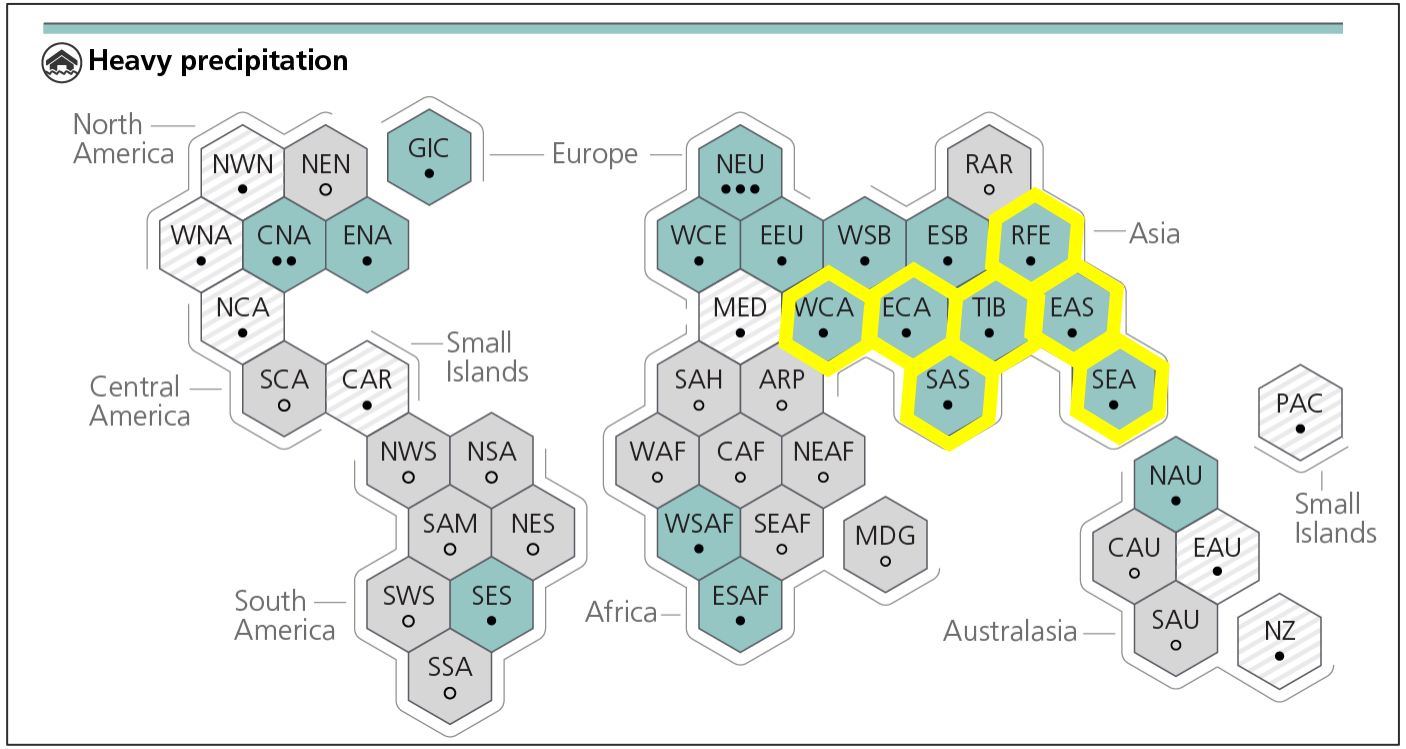
What is the scientific consensus on climate change impacts?



https://www.ipcc.ch/report/ar6/syr/figures/figure-2-3

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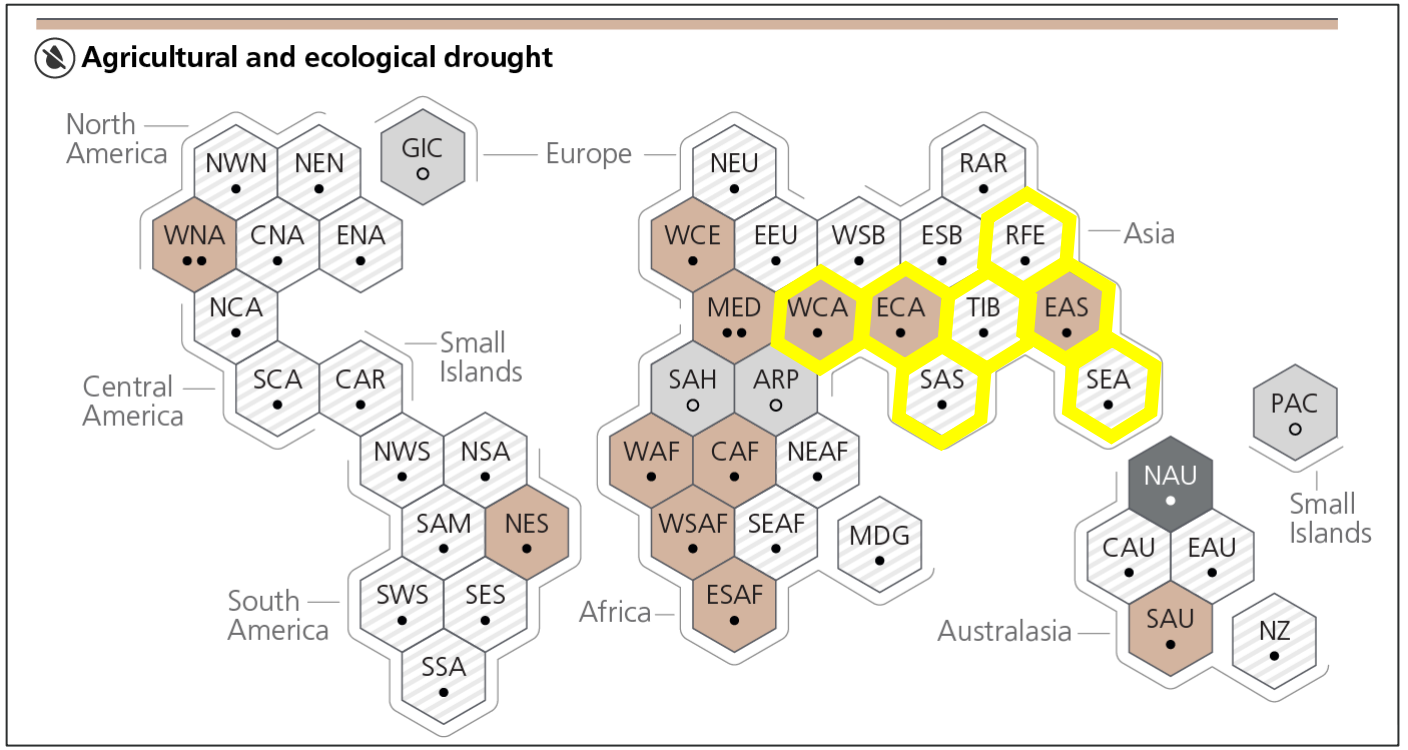

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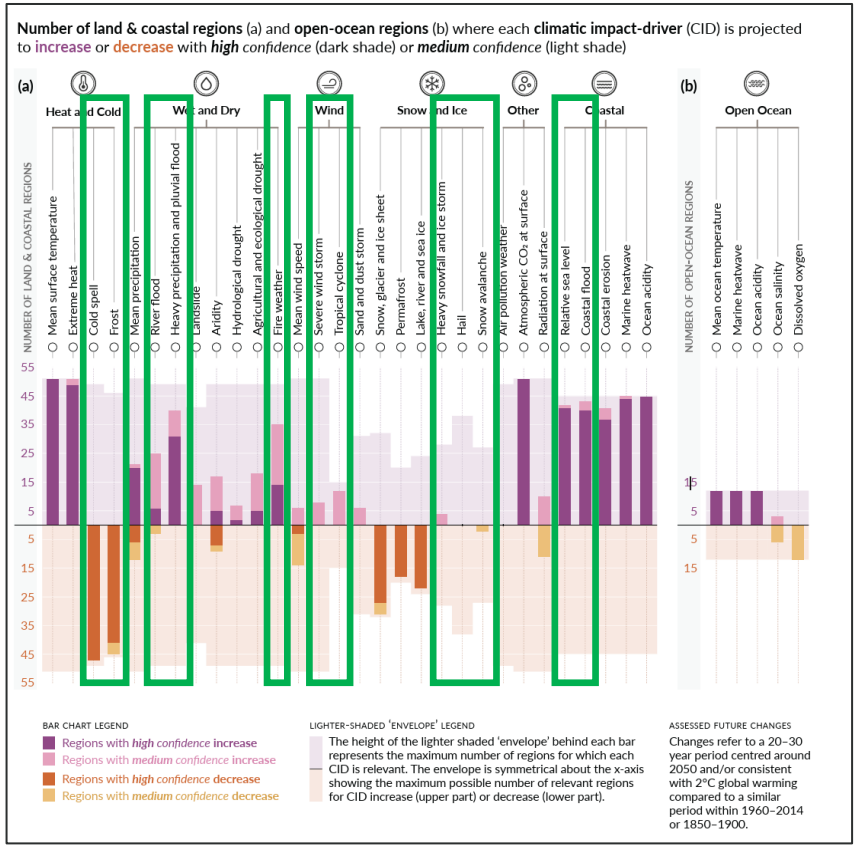

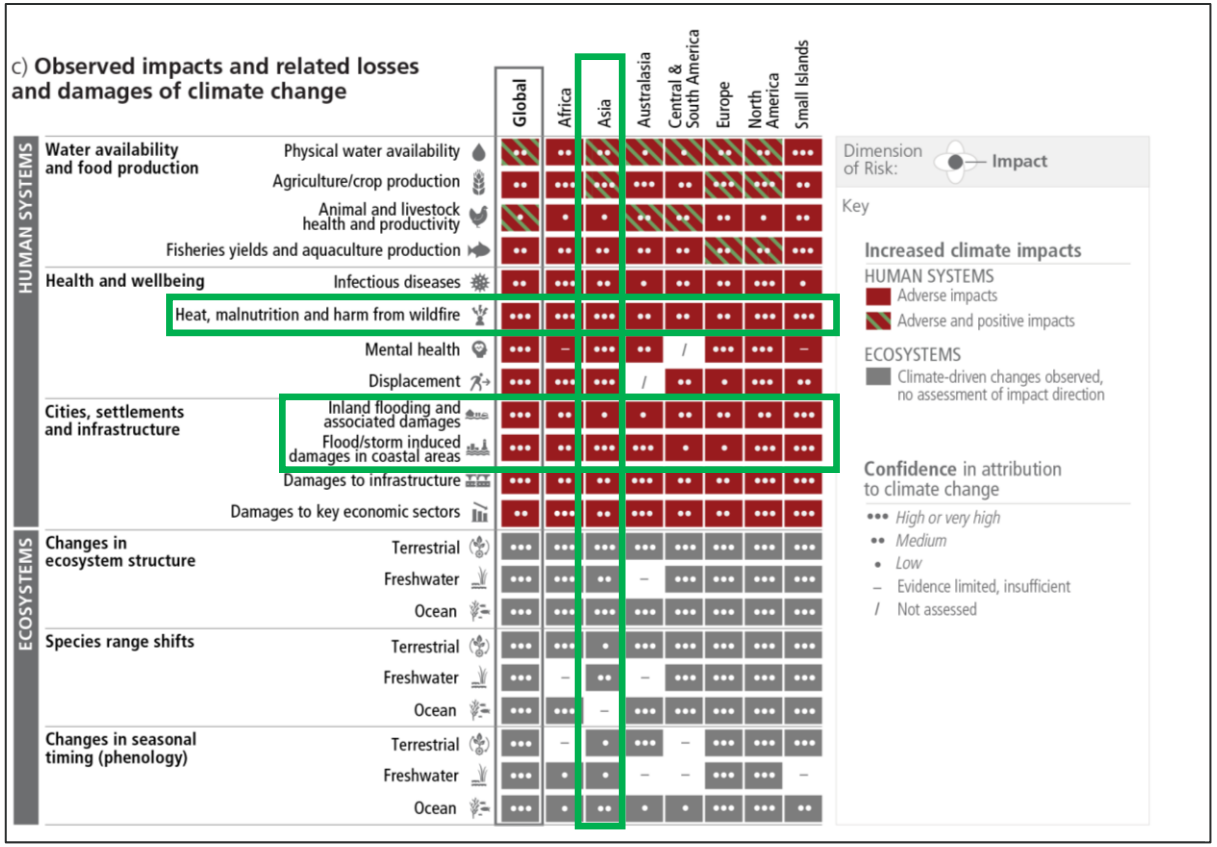

https://www.ipcc.ch/report/ar6/syr/figures/figure-2-3
https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM.pdf

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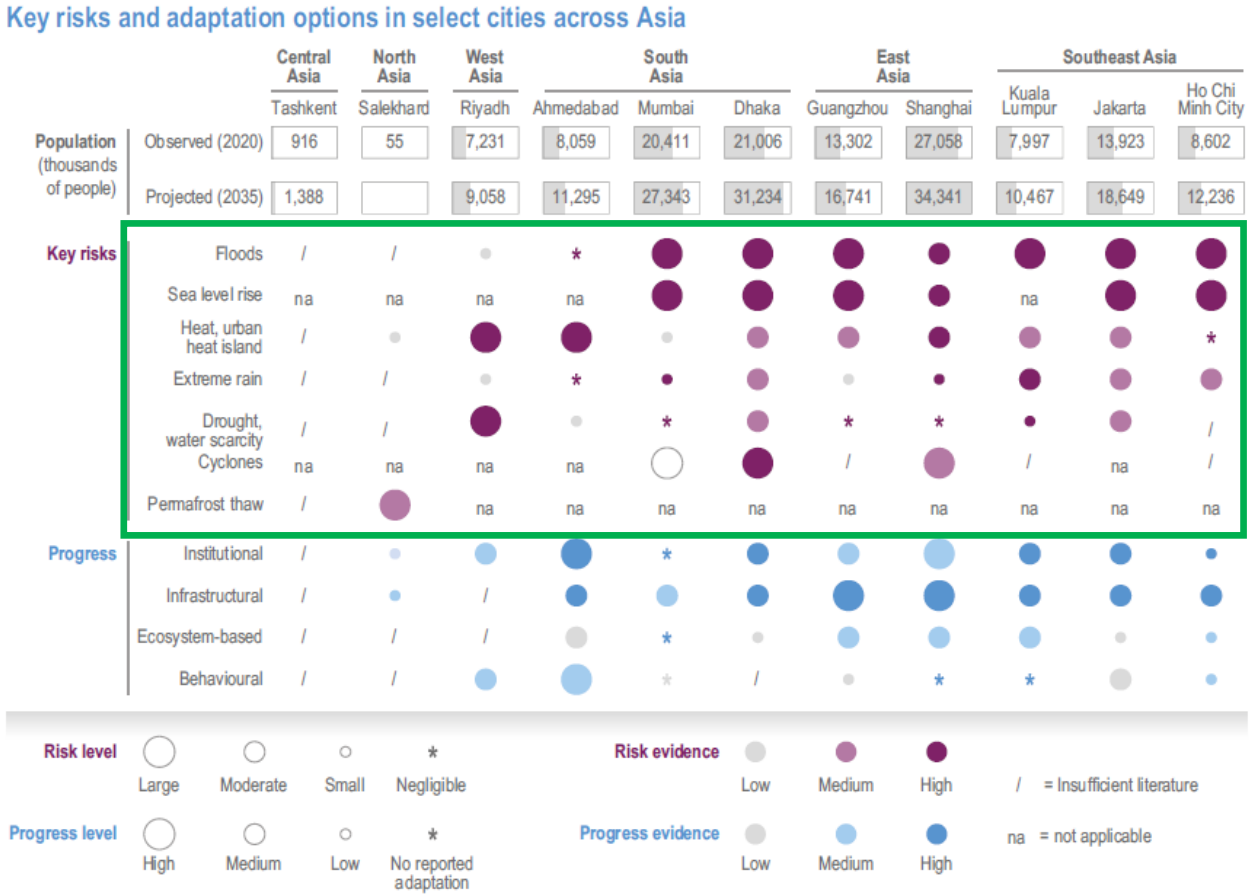

https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_FullReport.pdf
[Pg 1501]

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What is the scientific consensus on climate change impacts?

Climate Change Certainty in Asia

Observations show a decreasing trend of the South Asian summer monsoon precipitation during the second half of the 20th century (high confidence

Globally, China and India have the highest AALs associated with riverine floods, with a magnitude of 13 and 6 billion USD, respectively.

There is an increased flood risk for habitations on the deltas ..., globally exposing 9.3% more people annually to riverine flooding... .
[pg. 1465, 1500]

Global assessments identify Asia as the most exposed region to SLR.

Globally, there is high confidence that the proportion of intense tropical cyclones is expected to increase despite the total number of tropical cyclones being expected to decrease or remain unchanged (Arias et al., 2021), especially in Southeast and East Asia ... .
[pg. 1499, 1500]

Annual surface wind speeds have been decreasing in Asia since the 1950s (high confidence).

The observed changes in the frequency of sand and dust storms vary from region to region in Asia (medium confidence).

West Asia has witnessed more frequent and intensified dust storms affecting Iran and Persian Gulf countries in recent decades (medium confidence)
[pg. 1465]

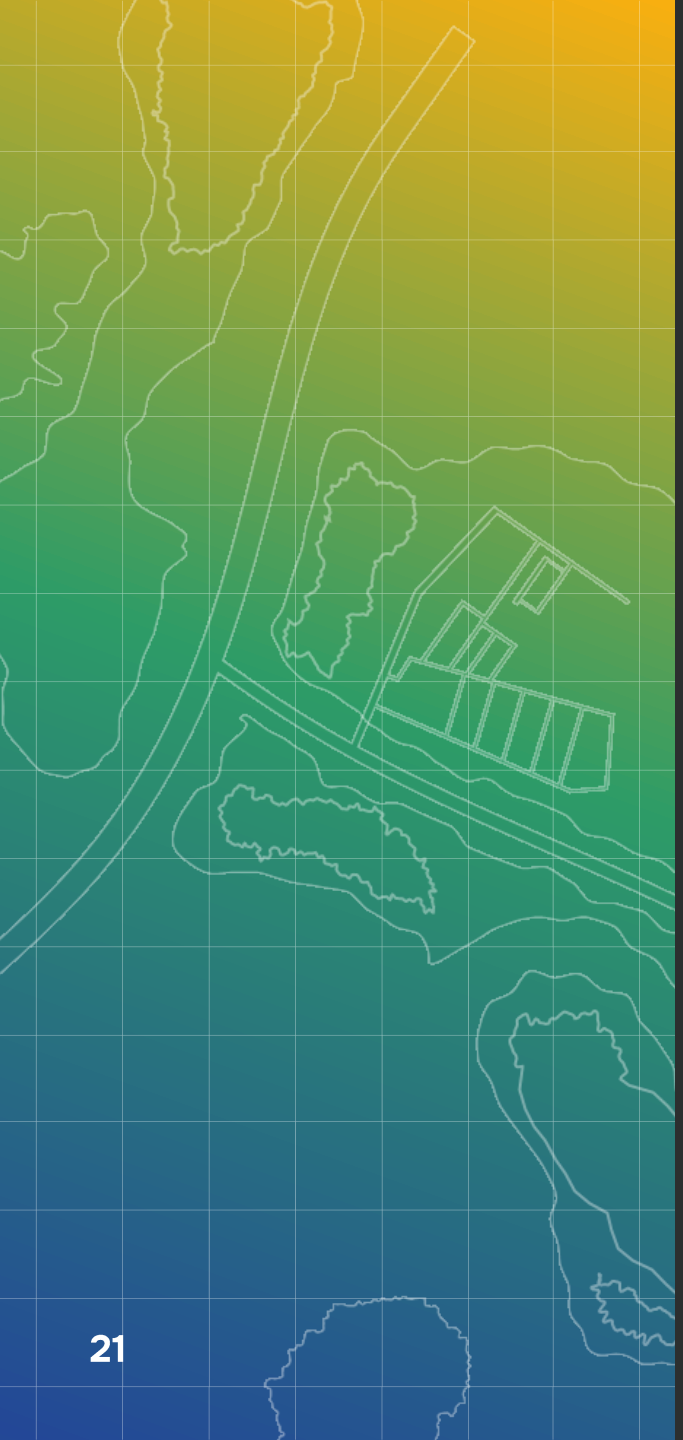
Rising temperatures increase the likelihood of the threat of heatwaves across Asia, droughts in arid and semiarid areas of West, Central and South Asia, delays and weakening of the monsoon circulation in South Asia, ... (medium confidence).

In East Asia wet snow accretion enhanced by global warming often causes damage to electric power lines
[pg. 1459, 1470]

Under regional projections for North Asia, warmer climate will increase forest fire severity by the late 21st century (medium confidence)

Climate change, human activity, lightning and quality of forest governance and management have increased wildfire severity and area burned in North Asia in recent decades.
[pg. 1477, 1532]

https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_FullReport.pdf



07 Questions?

Go on, ask one!

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Send me an Email!

Brandon Katz

Brandon.Katz@KatRisk.com

https://www.katrisk.com/