Ecosystems and Technology:
Innovative Approaches to Strengthening Coastal and Ocean Adaptation

Monday 6 September 2021

In parallel with the IUCN World Conservation Congress
And part of the UNFCCC TEC "Technology Day" series of events

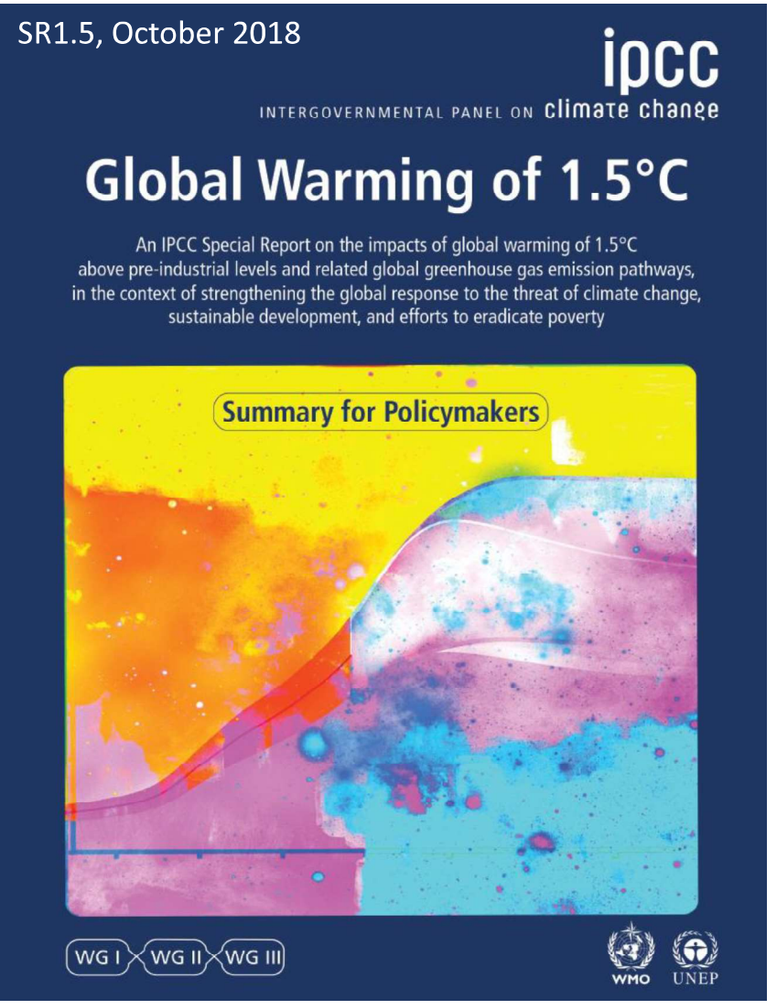
IUCN

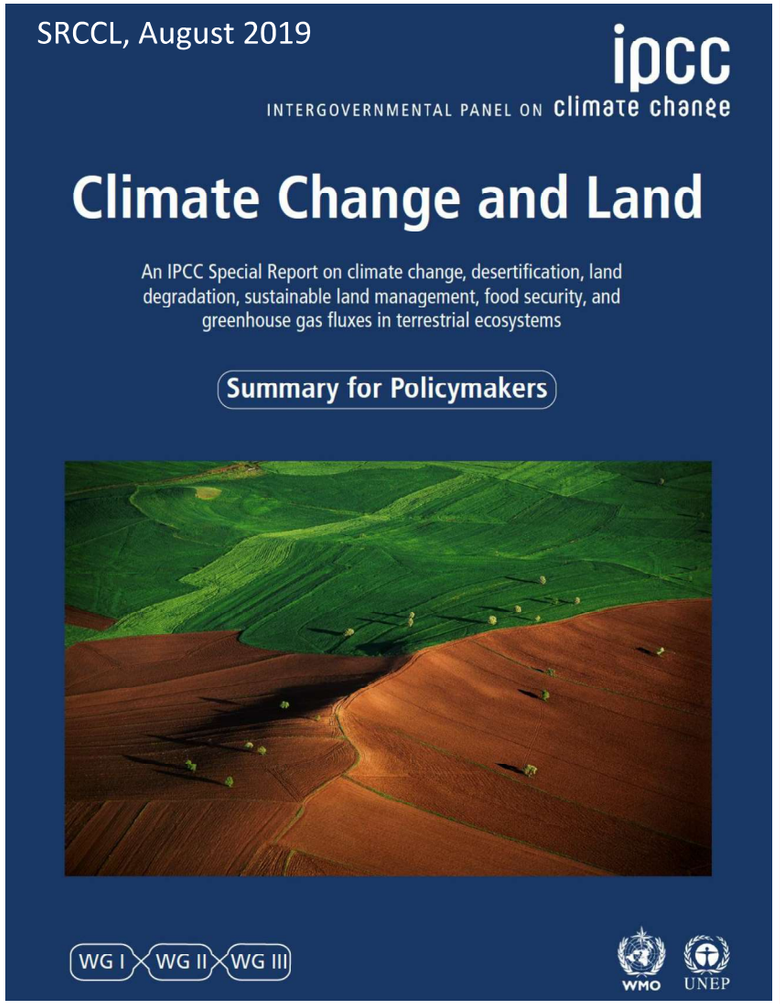
FEBA
Friends of Ecosystem-based Adaptation

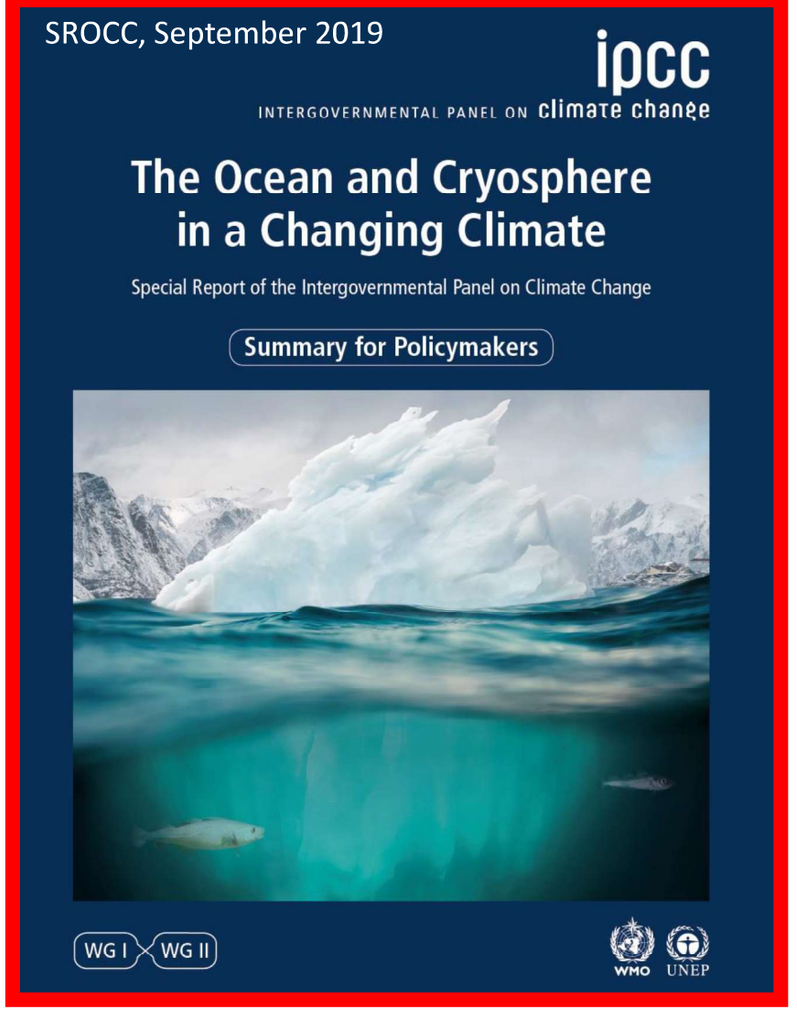
United Nations
Climate Change

NAIROBI WORK PROGRAMME

TEC







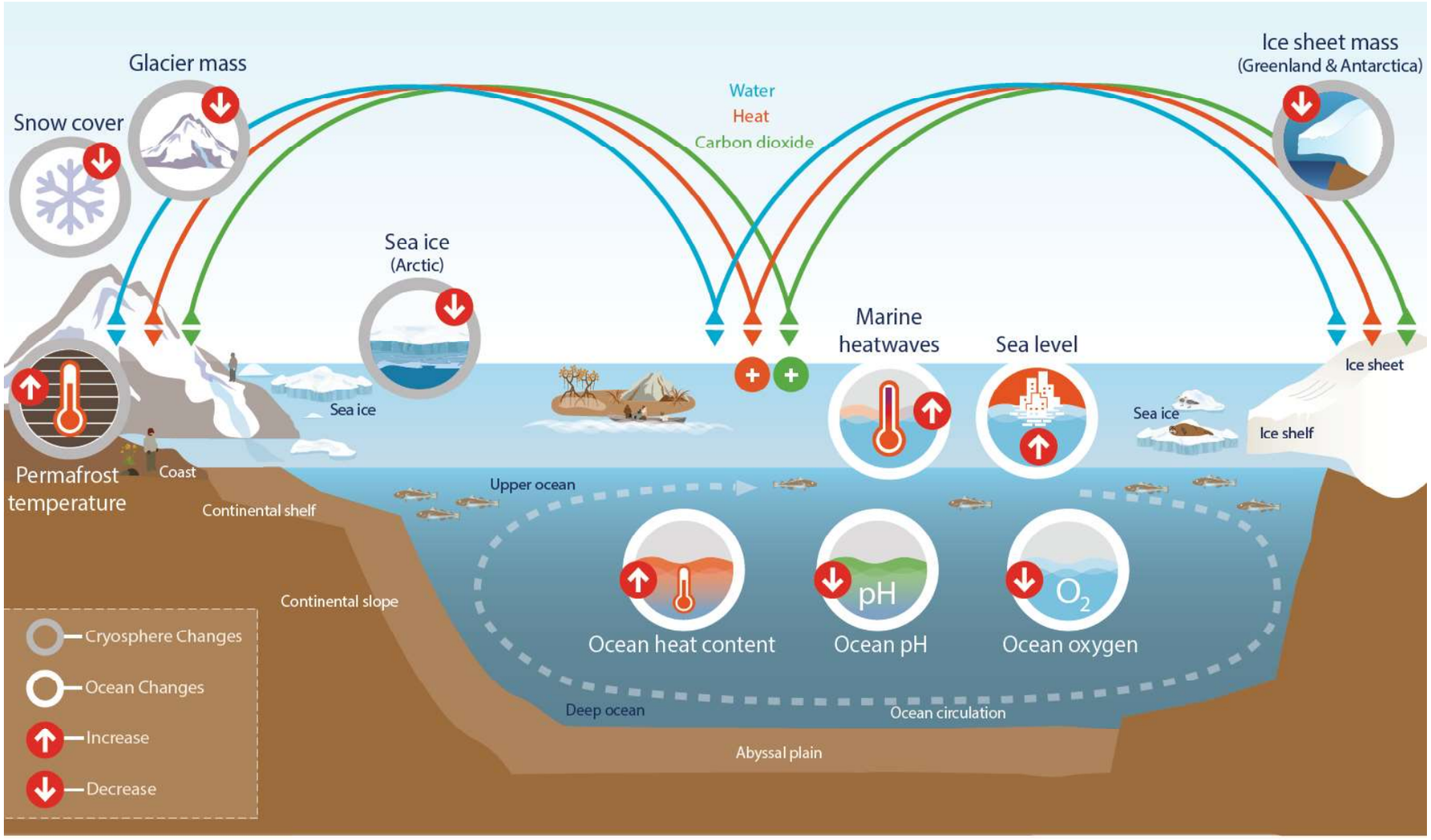
WGII: Reducing Impact (Severity), guiding AMBITION in Mitigation and Adaptation

Hans-O. Pörtner, AR6: Co-Chair IPCC Working Group II

IPCC 6th Assessment Cycle: 3 Special Reports and main reports

SROCC in a nutshell

…on 80 % of the earth surface climate change affects the life sustaining systems - from the top of the mountains to the depth of oceans. These changes will continue for generations to come.



TS.2

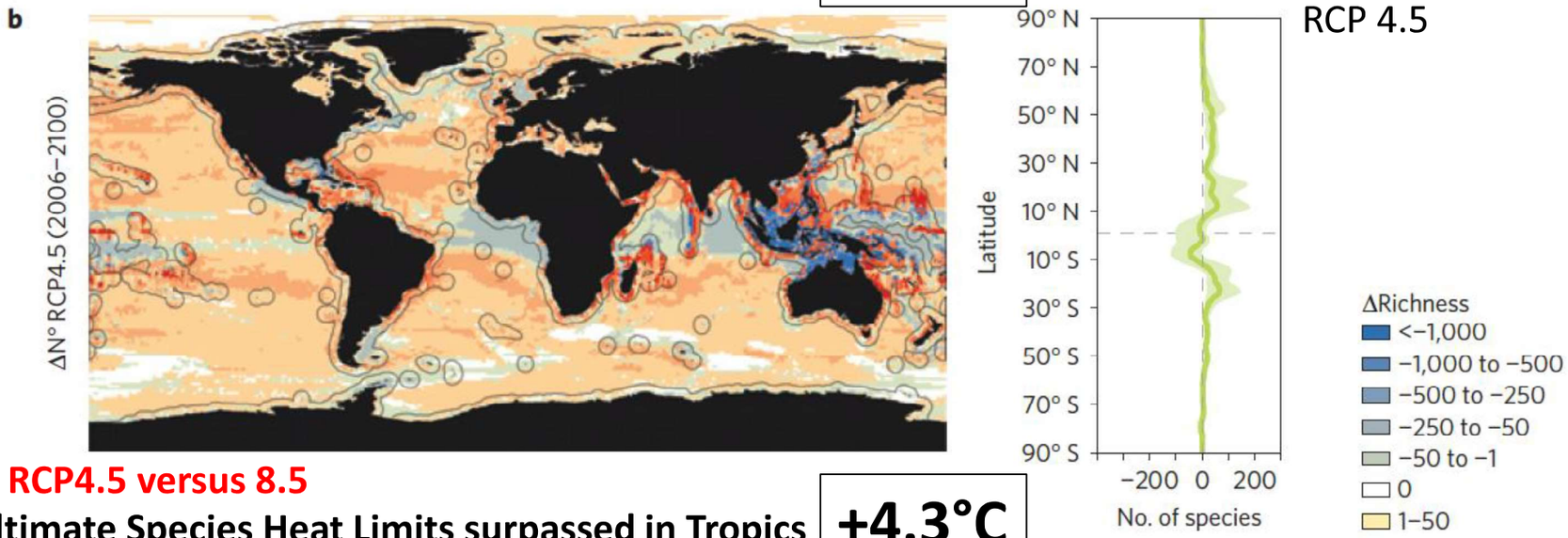
Current background: unsustainable ocean uses (fisheries, pollution)

ipcc INTERGOVERNMENTAL PANEL ON Climate change

WMO UNEP

Marine biodiversity

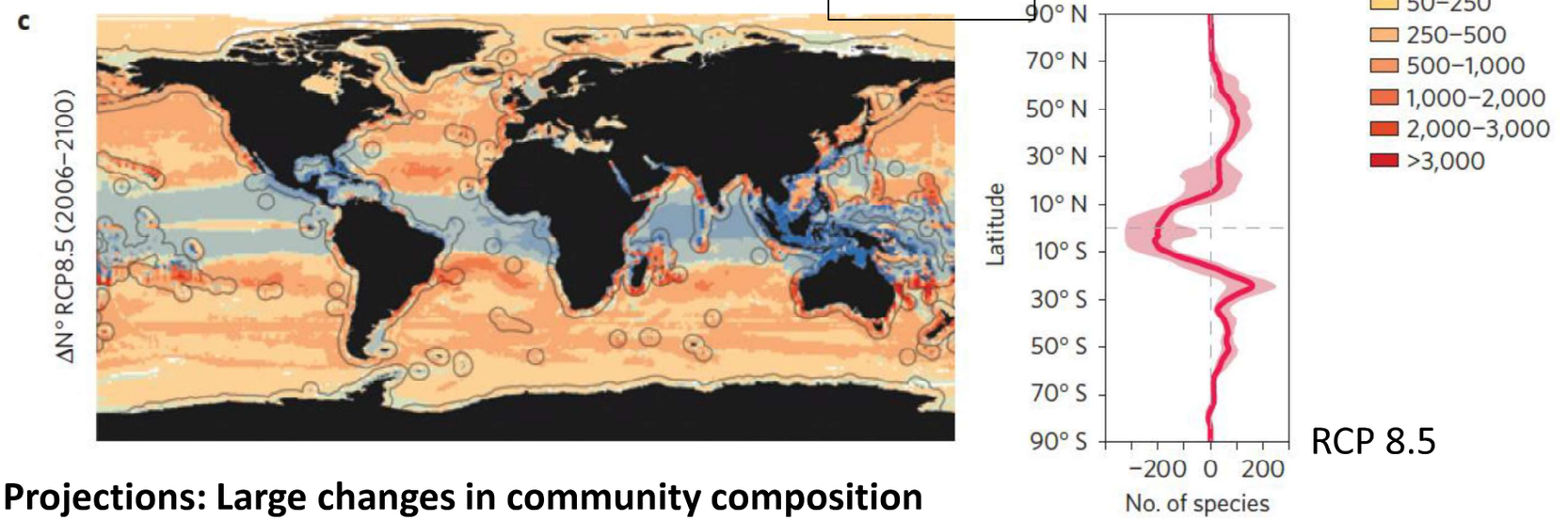
+2.4°C



RCP4.5 versus 8.5

Ultimate Species Heat Limits surpassed in Tropics

+4.3°C



Projections: Large changes in community composition expected driven by local invasions and losses

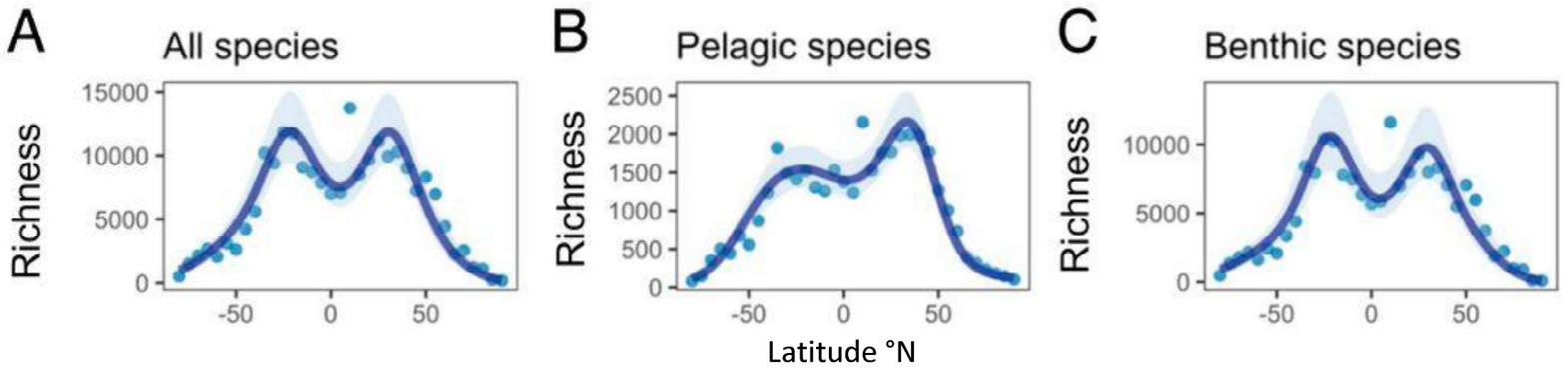
Drivers of change:
Warming and velocity....

Garcia-Molinos et al. 2016 NCC

ipcc INTERGOVERNMENTAL PANEL ON climate change

WMO UNEP

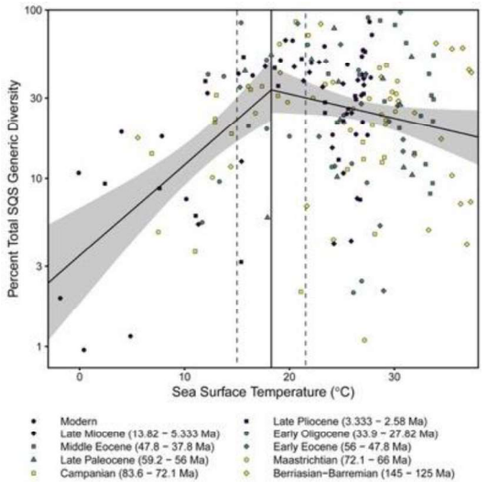
Modern marine findings resembling palaeo patterns



The latitudinal distribution of species richness in marine taxa at the scale of 5° latitudinal bands (the effect of latitude adjusting for shelf area)

Loss of coral reef systems

Present and palaeo
Topt ≈ ≤ 20°C

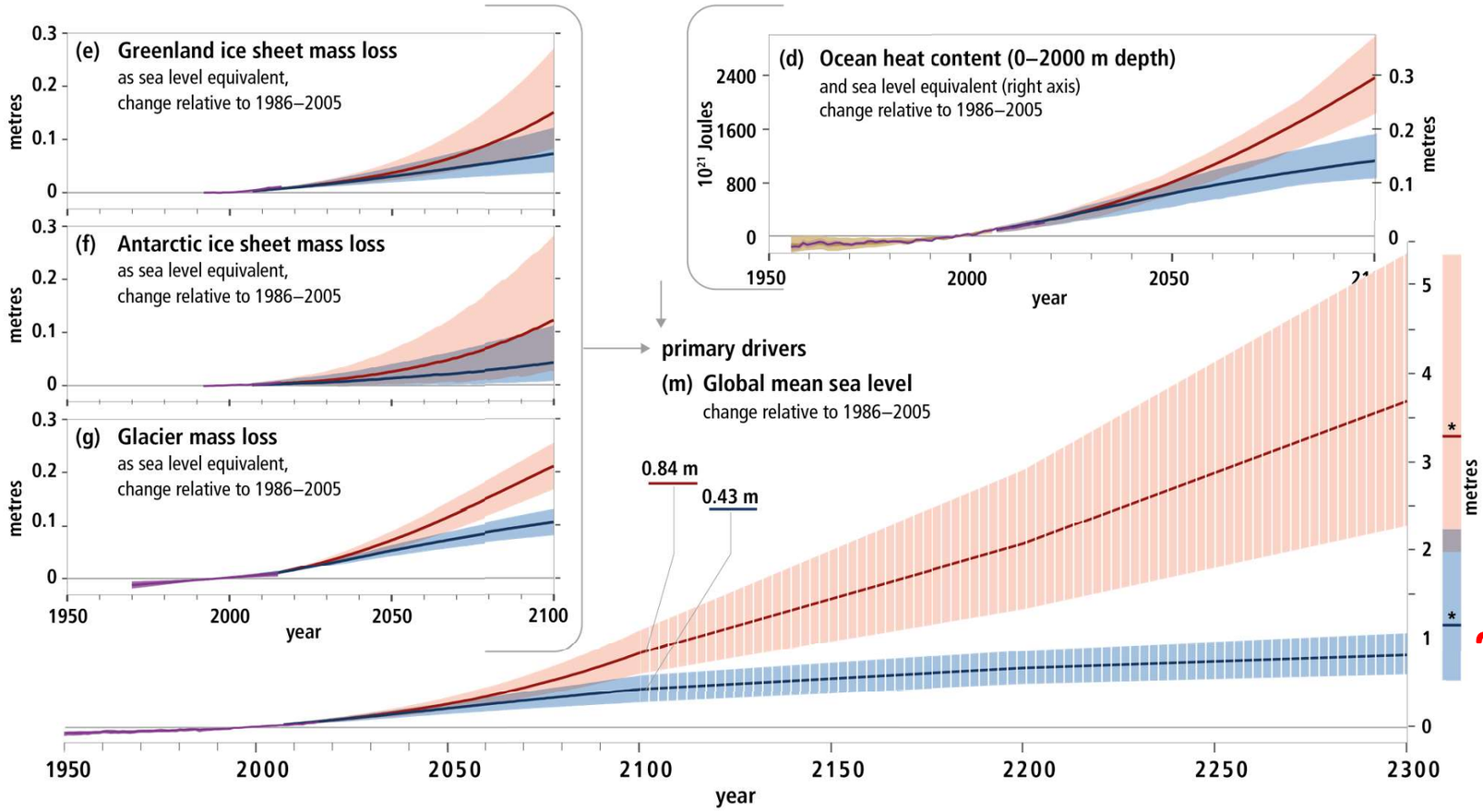


Chaudhary et al. PNAS 2021, Boag et al., Current Biol. 2021

ipcc
INTERGOVERNMENTAL PANEL ON climate change

WMO UNEP

Contributions to sea level rise (metres)



… according to present knowledge... we have **choices between below 1 metre or several metres by 2300** due to

~1.5°C

- Thermal expansion
- Glacier melt
- Ice sheet melt

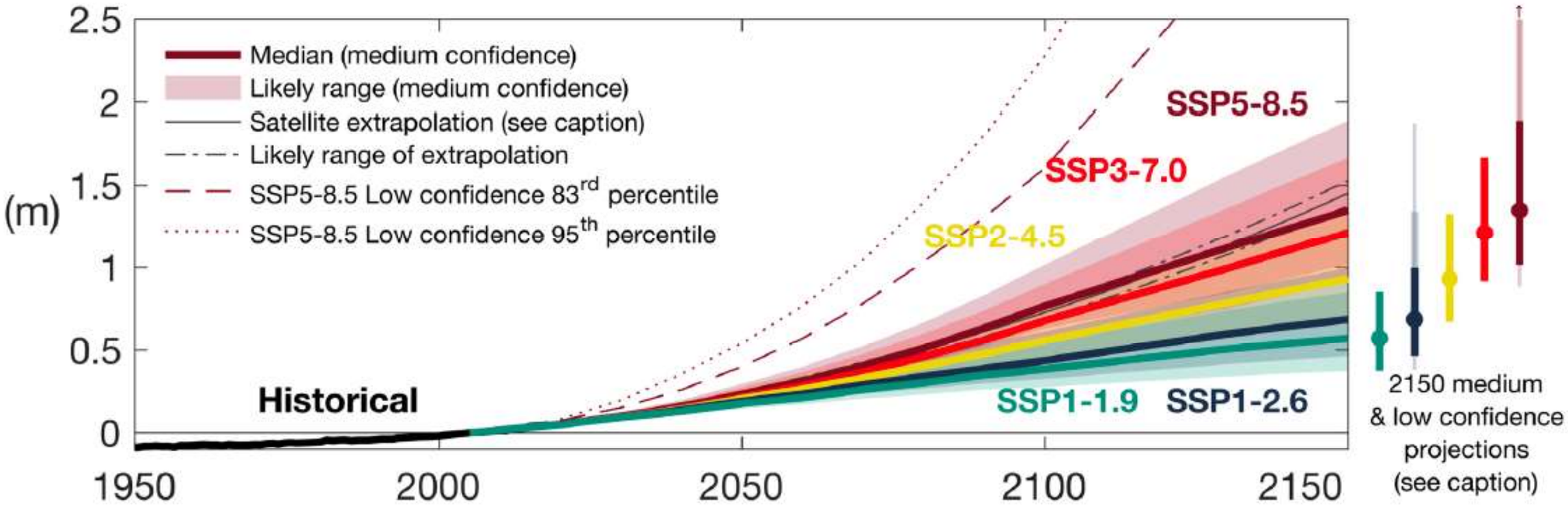
Historical changes (observed and modelled) and projections under RCP2.6 and RCP8.5 for key indicators

Historical (observed) | Historical (modelled) | Projected (RCP2.6) | Projected (RCP8.5)

ipcc INTERGOVERNMENTAL PANEL ON climate change

WMO UNEP

Projected global mean sea level rise under different SSP scenarios



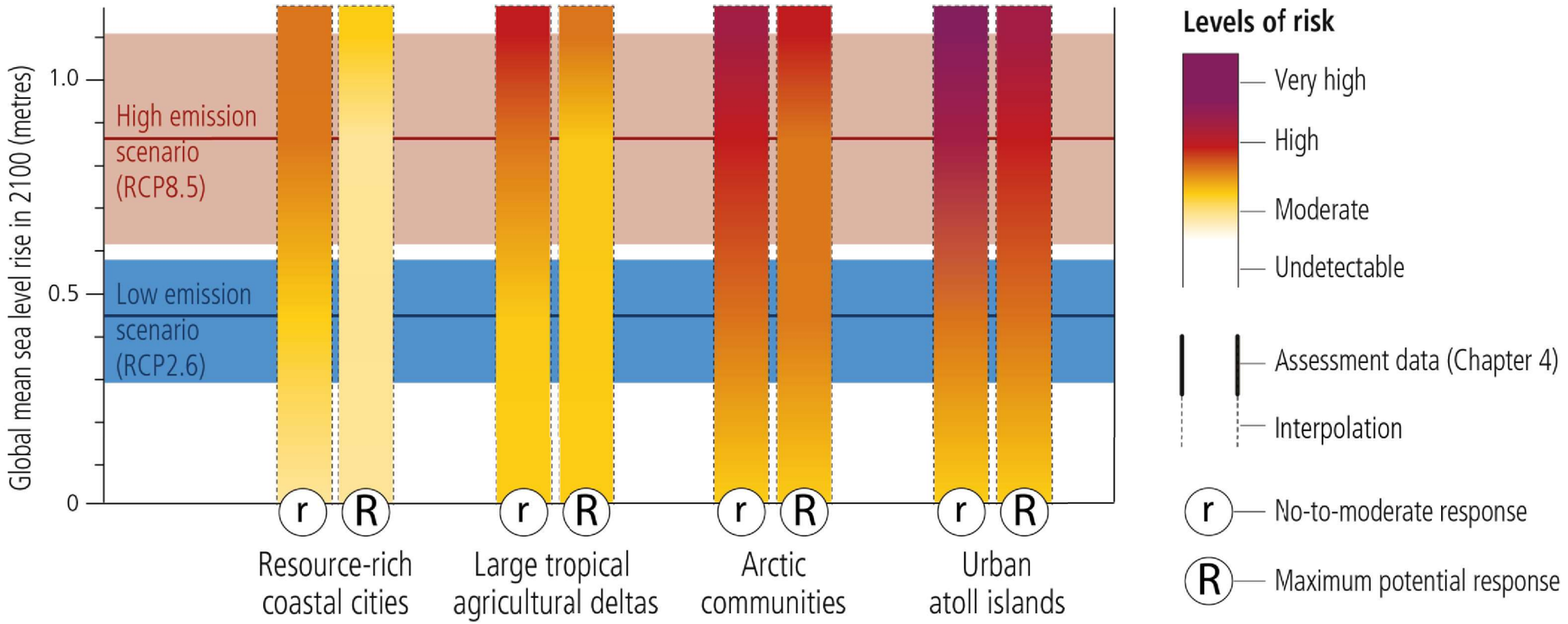
AR6 WGI Chapter 9

ipcc INTERGOVERNMENTAL PANEL ON climate change

WMO UNEP

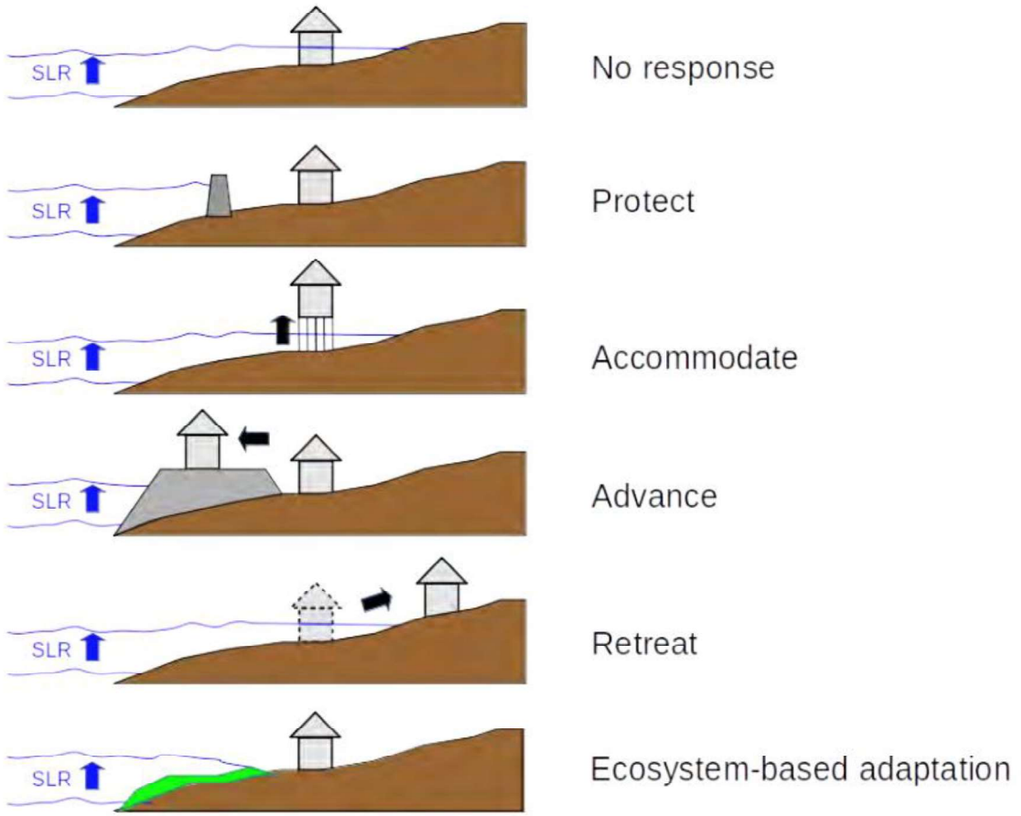
Risk in 2100 under different sea level rise and response scenarios

- Risk for illustrative geographies based on mean sea level changes (*medium confidence*)



SPM Figure 5a

Sea level rise and coastal extremes



Box 4.3, Figure 1: Different types of responses to coastal risk and SLR

- Various adaptation approaches are already being implemented, including:
  - protection
  - accommodation
  - ecosystem-based adaptation (restoring protective marine habitat)
  - coastal advance
  - managed relocation

ipcc INTERGOVERNMENTAL PANEL ON climate change WMO UNEP

Finding solutions (SROCC, 2019, IPBES-IPCC, 2021)

Networks of protected areas help maintain ecosystem services, including **carbon uptake and storage**, and enable future ecosystem-based adaptation options by facilitating the poleward movements of species, populations, and ecosystems (*medium confidence*) (C2.1).

… **reducing marine sediment disturbance** (bottom trawls) protects huge carbon stores

… marine habitat restoration, and ecosystem management tools such as **assisted species relocation and coral gardening**, **can be locally effective** in enhancing ecosystem-based adaptation (*high confidence*). …coral reef restoration options may be **ineffective if global warming exceeds 1.5°C**, because corals are already at high risk (*very high confidence*). (C2.2)

Strengthening **precautionary approaches**, such as **rebuilding overexploited or depleted fisheries**, and responsiveness of existing fisheries management strategies reduces negative climate change impacts on fisheries, with benefits for regional economies and livelihoods (*medium confidence*) (C2.3).

ipcc
INTERGOVERNMENTAL PANEL ON climate change
WMO UNEP

More Information:

Website: http://ipcc.ch

microsites: SR1.5, SRCCL, SROCC

IPCC Secretariat: ipcc-sec@wmo.int

IPCC Press Office: ipcc-media@wmo.int

Find us on:

@IPCC_CH

@IPCCNews

@IPCC_Climate_Change

www.vimeo.com/ipcc

www.youtube.com/c/ipccgeneva