

Roundtable on Macroeconomics and Climate-related Risks and Opportunities

Climate Primer

Session 3: Climate Primer

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Climate change:

A world that is out of time



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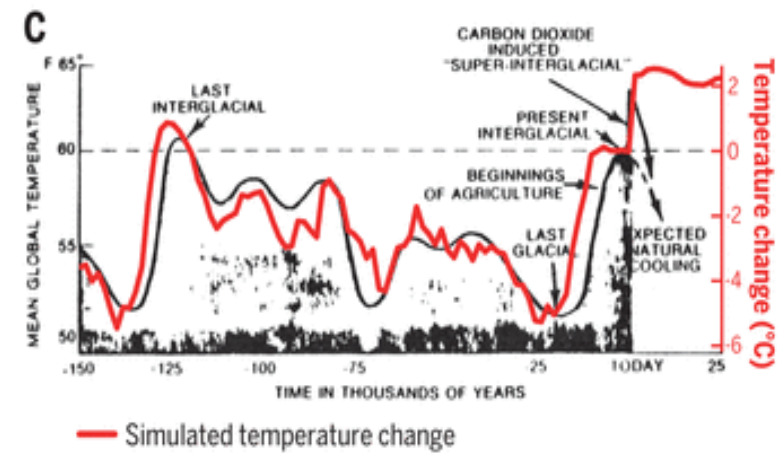
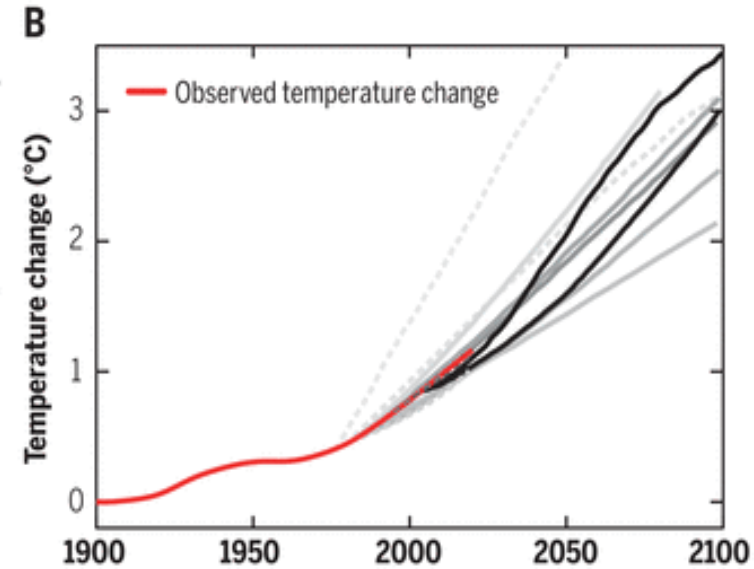
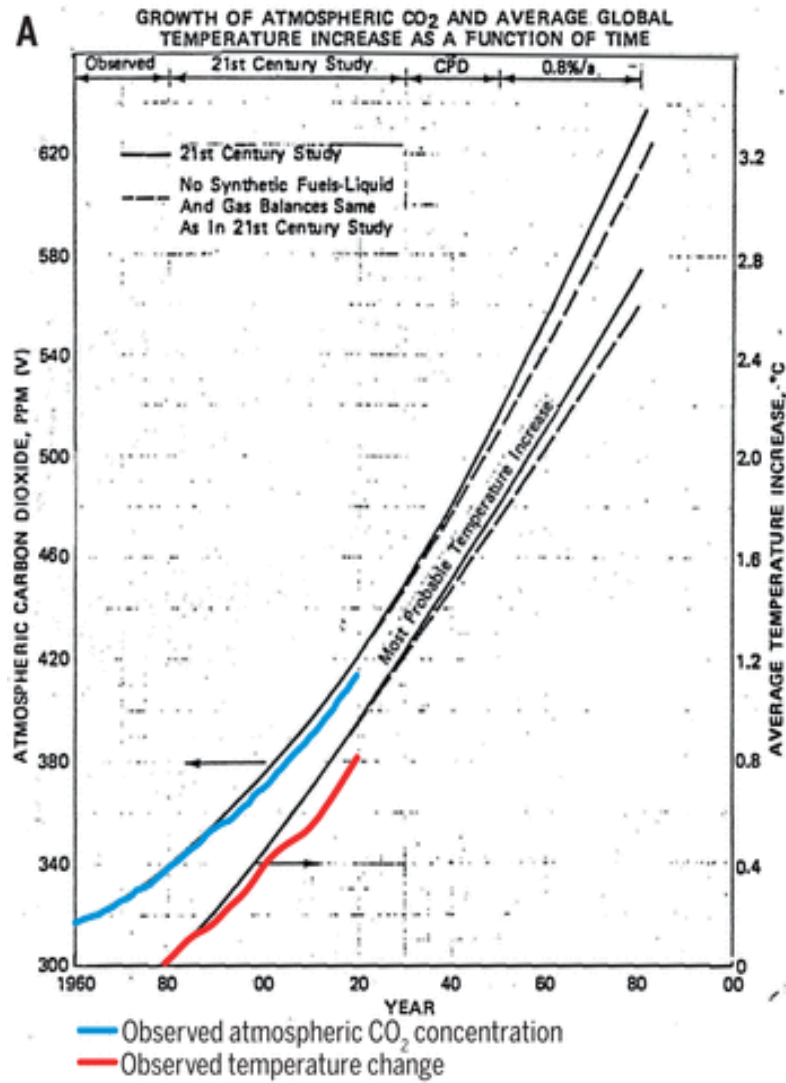
Dixie Fire, August 12, 2021. Photo: Noah Berger, AP

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

Widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred.

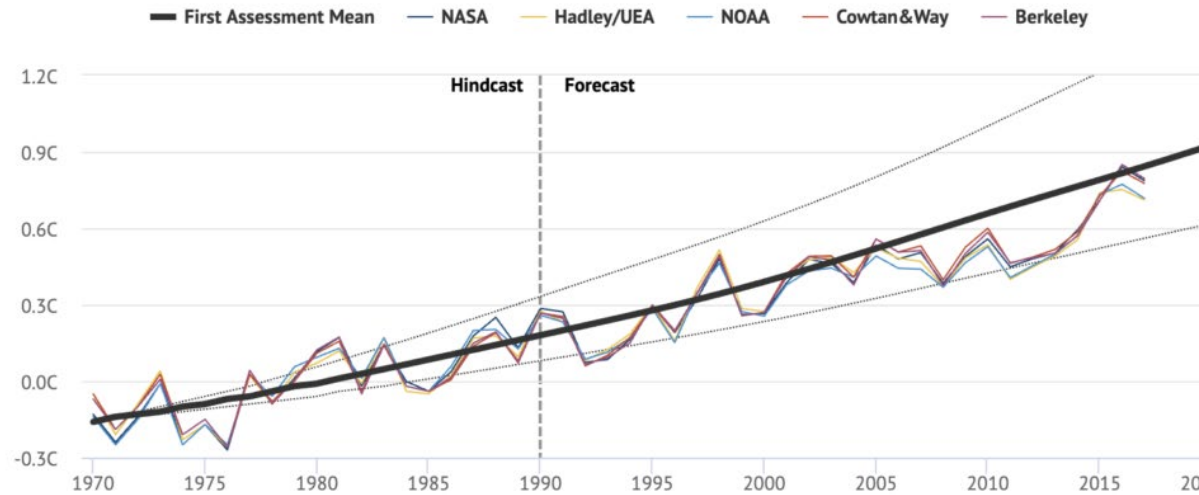
For today

- Historical context
- Remaining time

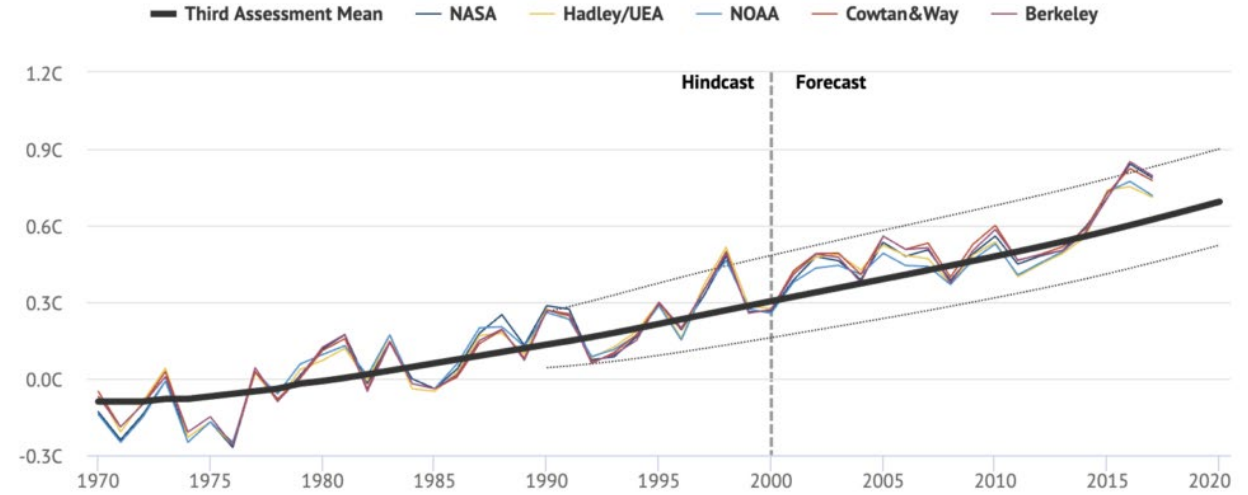


Historical context: How well have climate models projected global warming?

1990: IPCC First Assessment Report

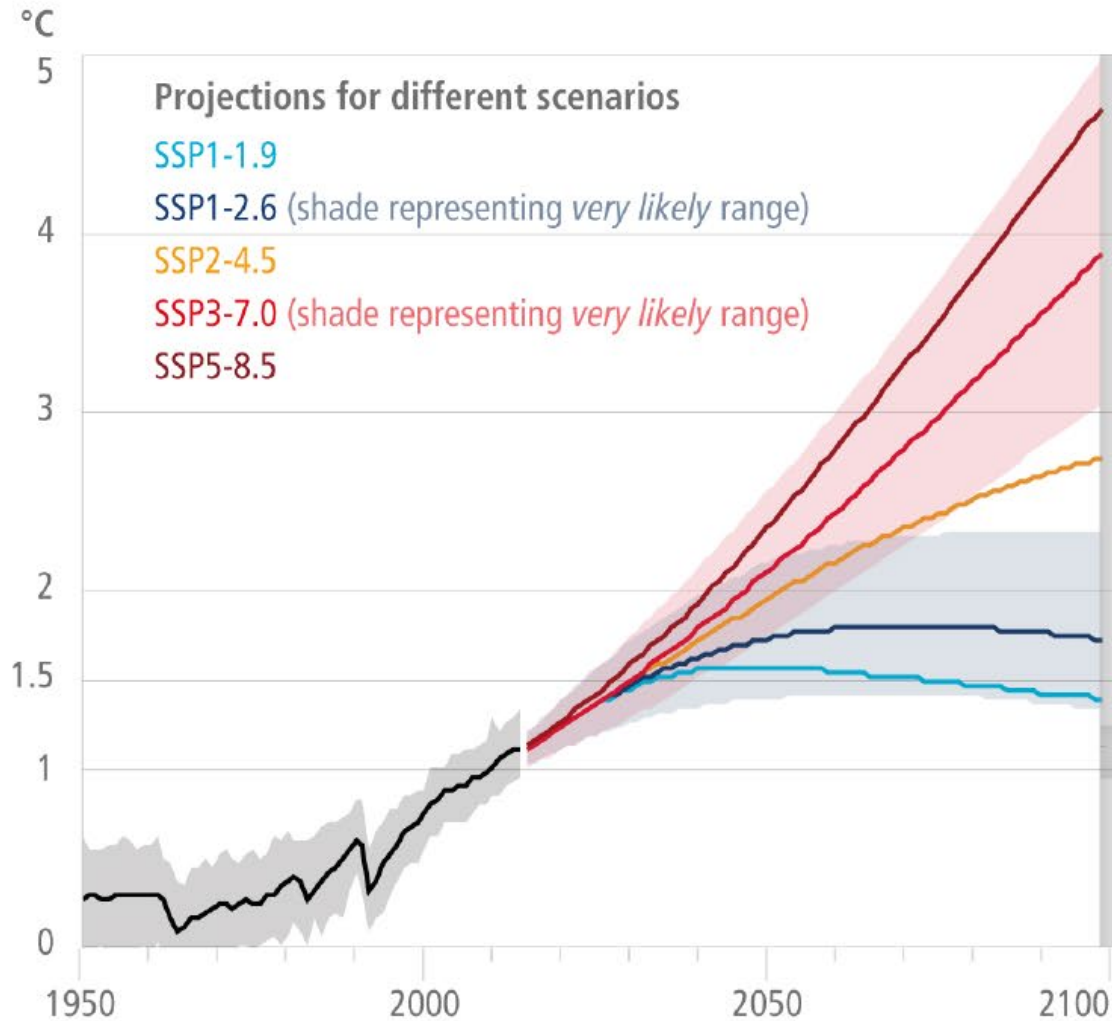


2001: IPCC Third Assessment Report

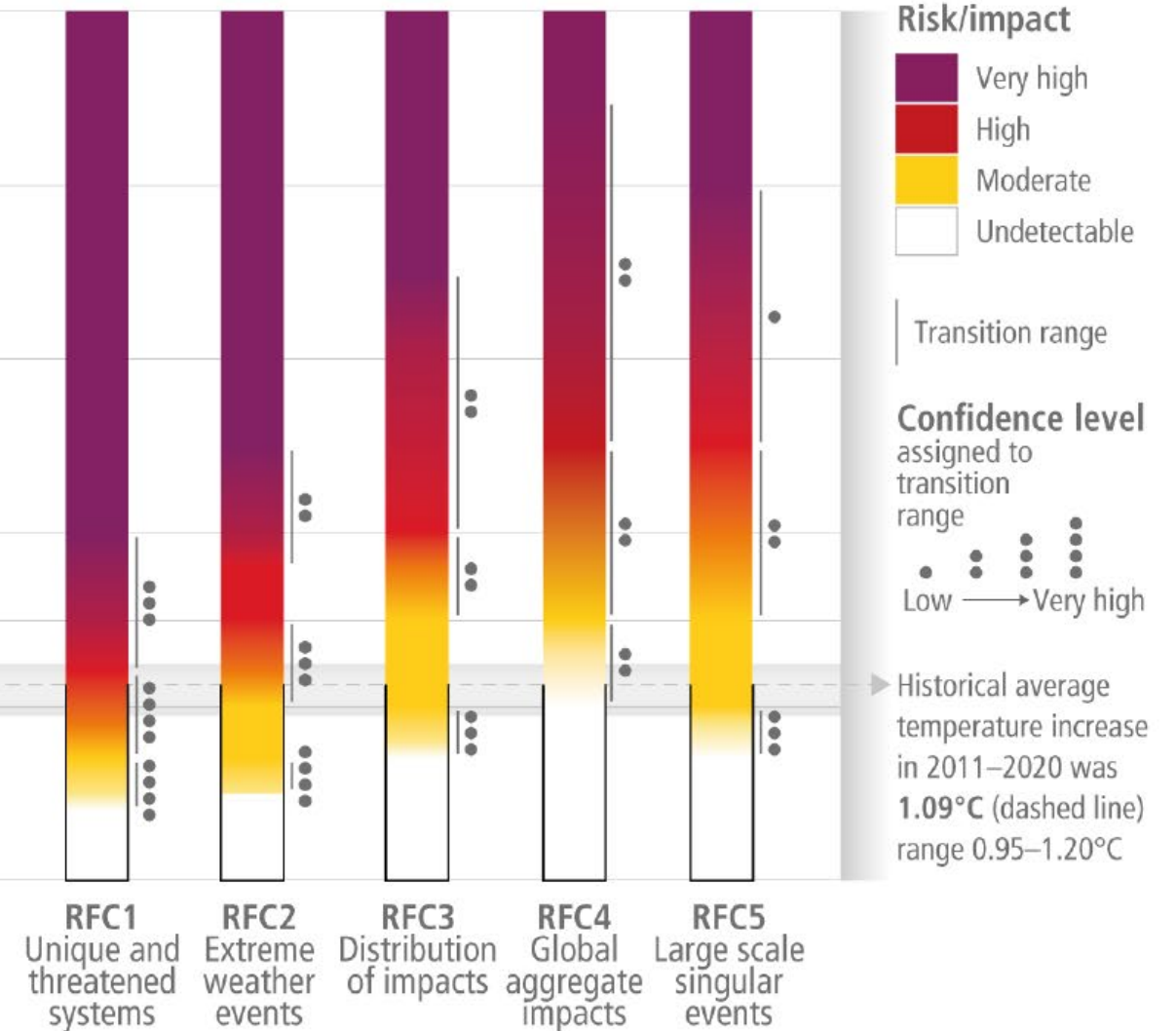


Global and regional risks for increasing levels of global warming

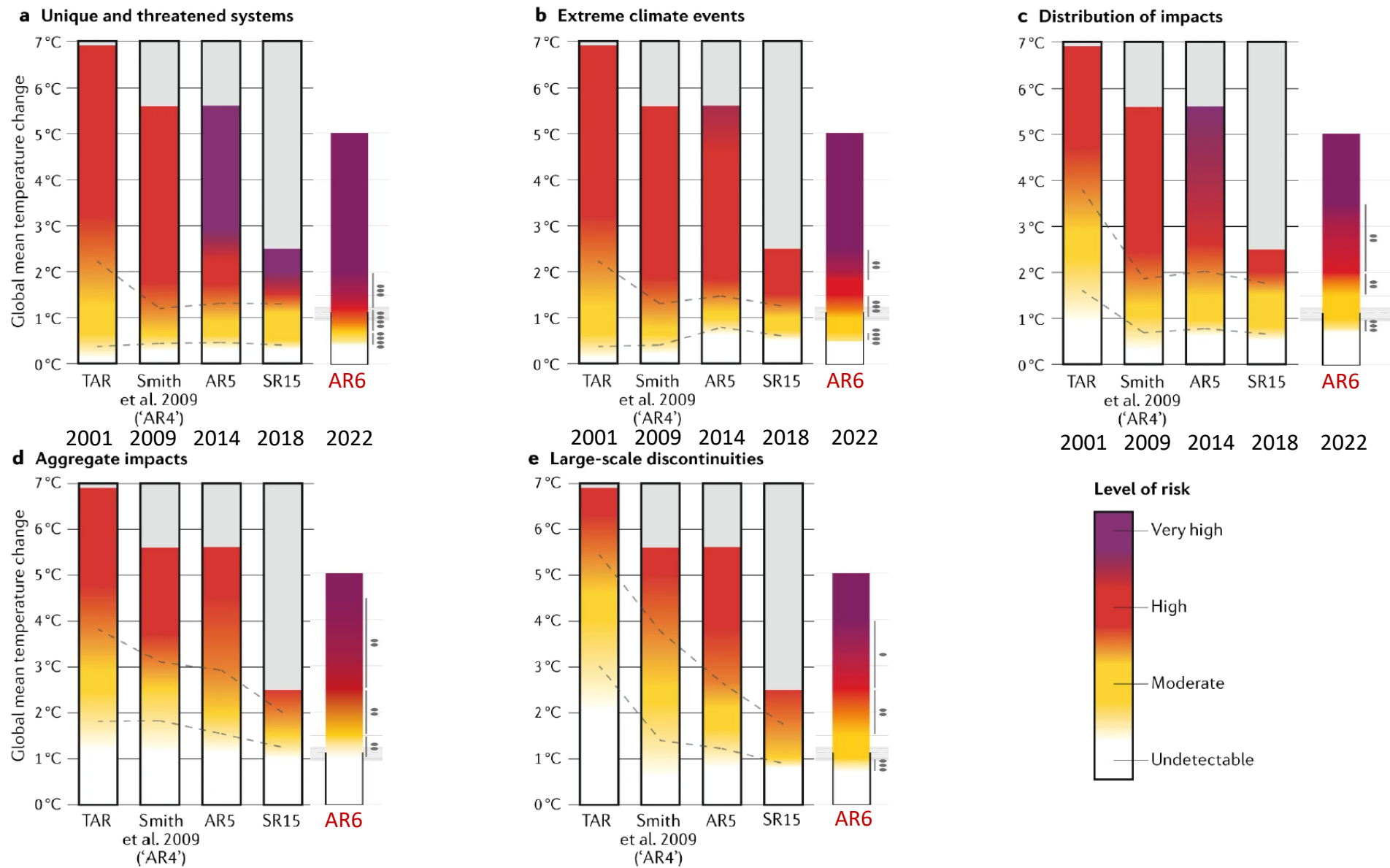
(a) Global surface temperature change
Increase relative to the period 1850–1900



(b) Reasons for Concern (RFC)
Impact and risk assessments assuming low to no adaptation

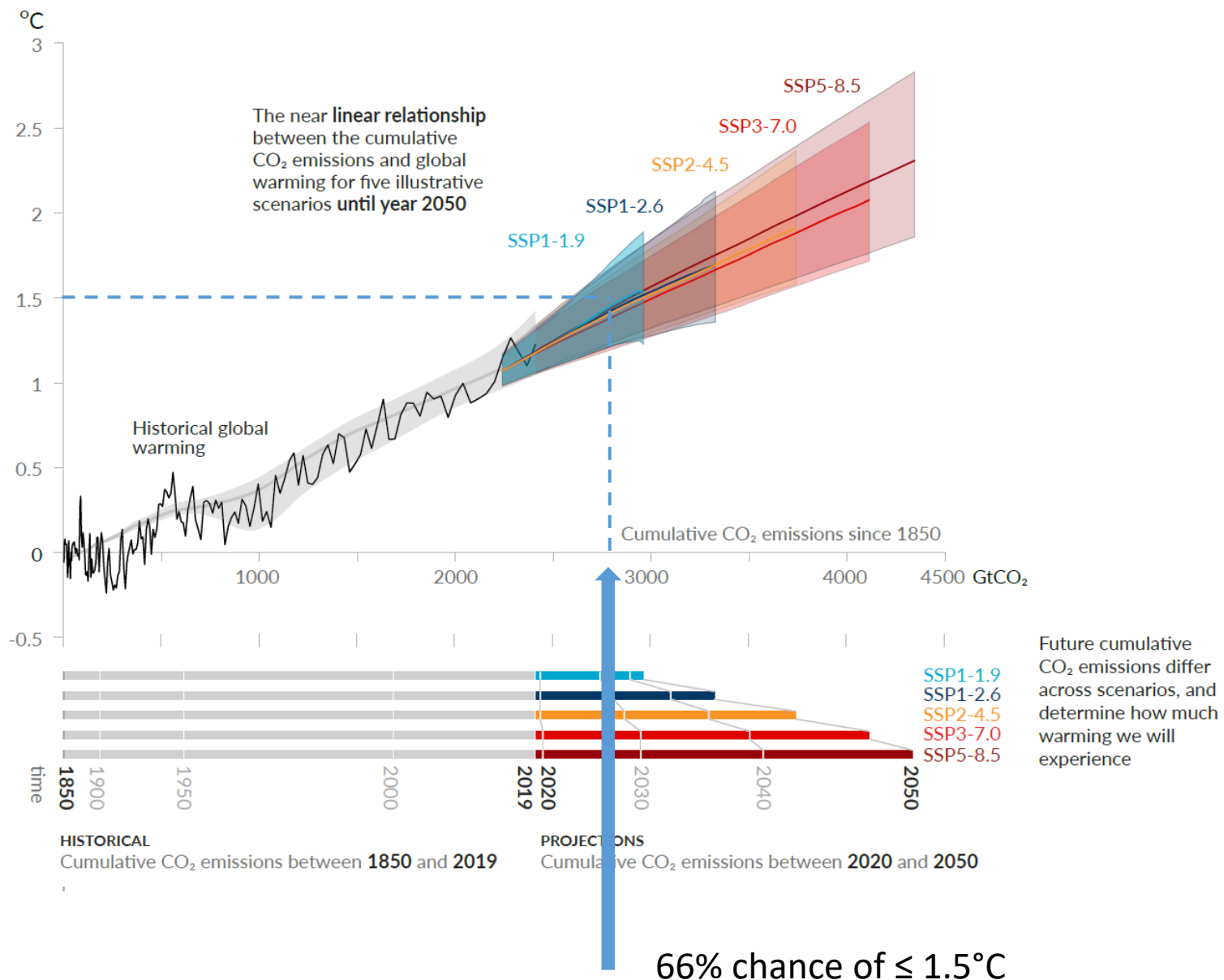


Do risks rise more rapidly with warming than anticipated?



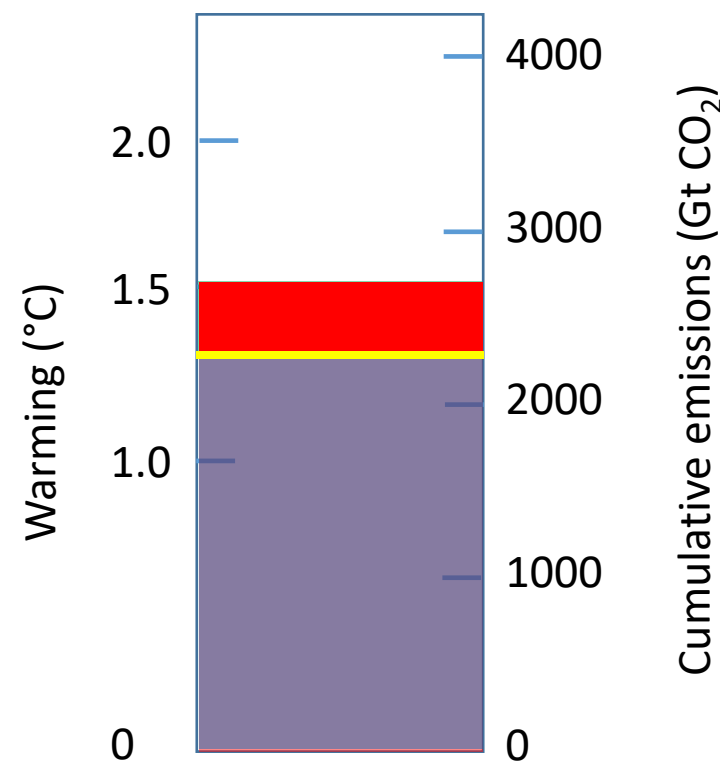
Remaining time

Global surface temperature increase since 1850-1900 ($^{\circ}\text{C}$) as a function of cumulative CO_2 emissions (GtCO_2)



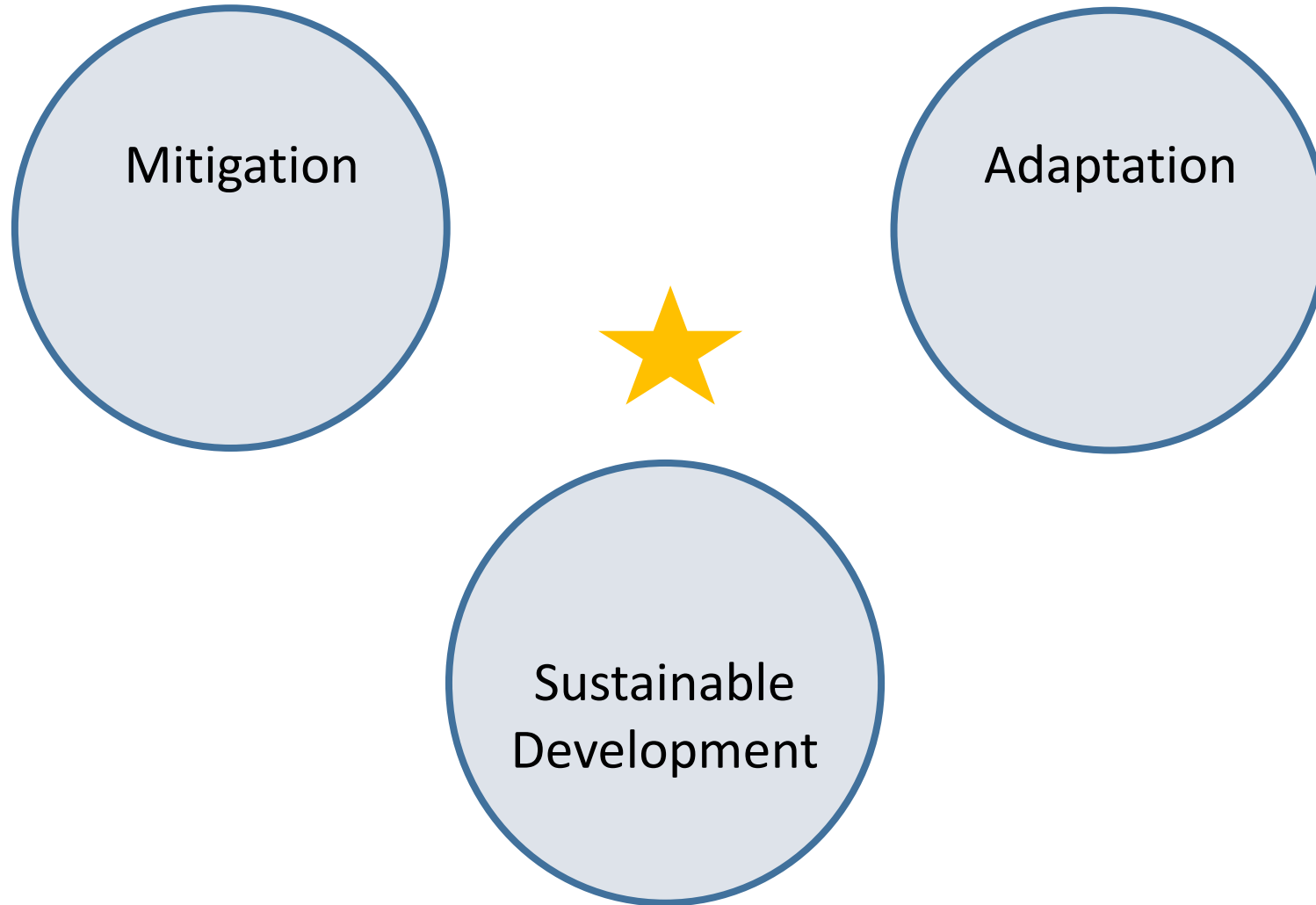
Why are we out of time?

Emissions rate in 2021: 41 Gt CO₂
Remaining time at 2021 rate = 7 yr 2 mo (February, 2029)!



Remaining budget: 320 Gt CO₂ for 66%
Forever budget: 2790 Gt CO₂ for 66% ≤
Emitted through 2021: 2470 Gt CO₂

Accelerating progress





Climate change:

Accelerating progress in a world that is out of time



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