

# Insights from the IPCC AR6 Climate Report

Earth observations,  
the current state of the climate,  
constraints on possible climate futures

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[www.ipcc.ch/report/ar6/wg1](http://www.ipcc.ch/report/ar6/wg1)



**14,000** scientific publications assessed  
**234** authors from **65** countries  
**78,000+** review comments

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

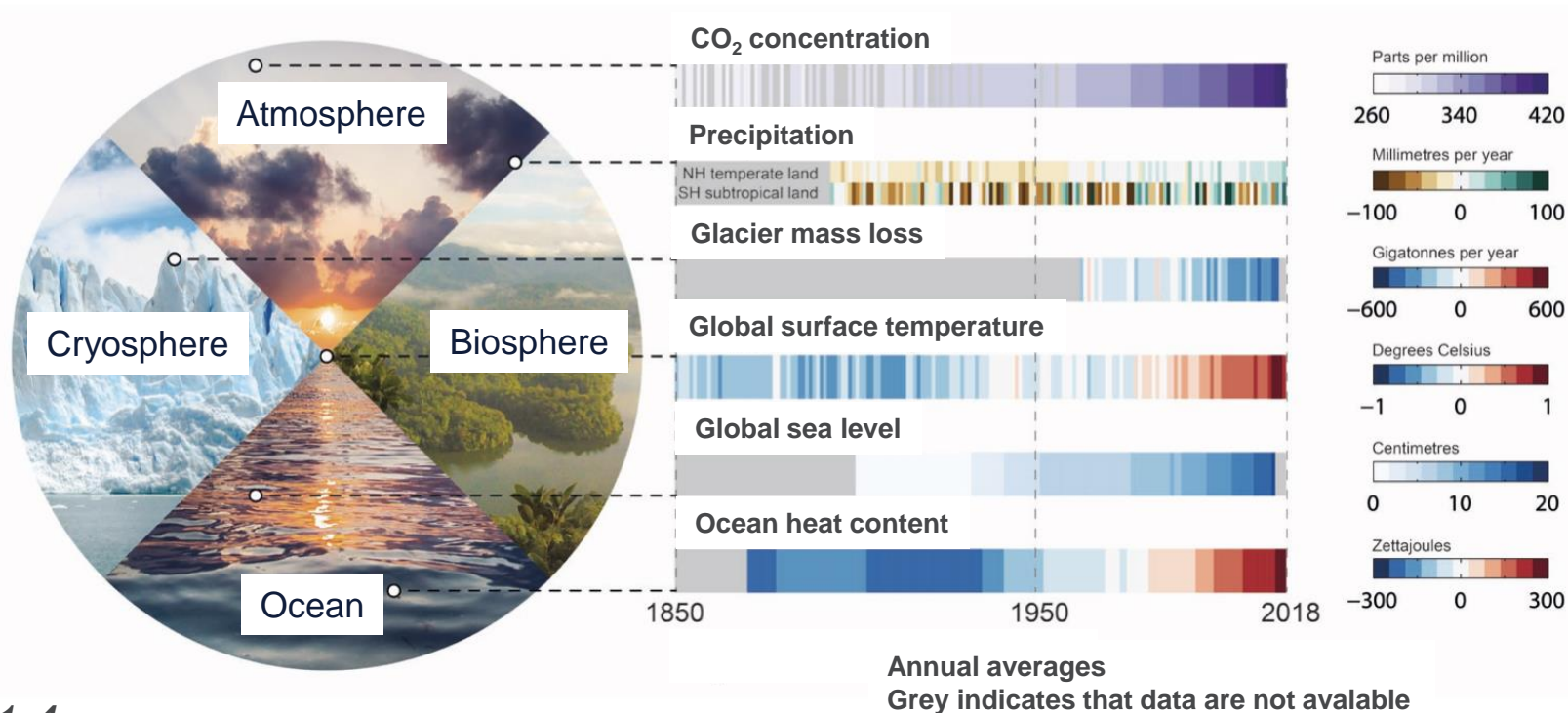
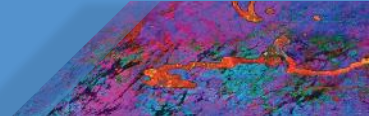


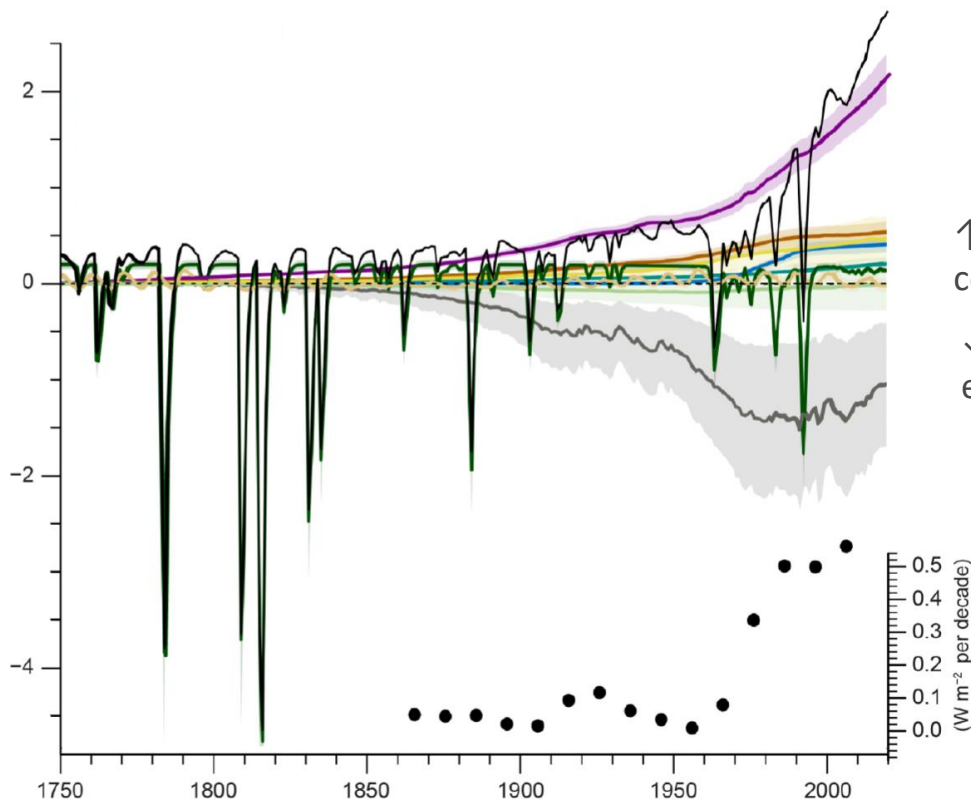
Figure 1.4



## Human-caused radiative forcing is increasing

- Carbon dioxide (CO<sub>2</sub>)
- Methane (CH<sub>4</sub>)
- Nitrous oxide (N<sub>2</sub>O)
- Ozone (O<sub>3</sub>)
- Halogenated gases
- Tropospheric Aerosol
- Other anthropogenic
- Volcanic
- Solar
- Total

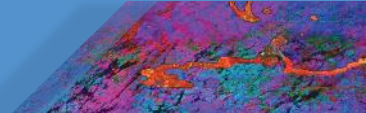
Change in effective radiative forcings (W/m<sup>2</sup>)



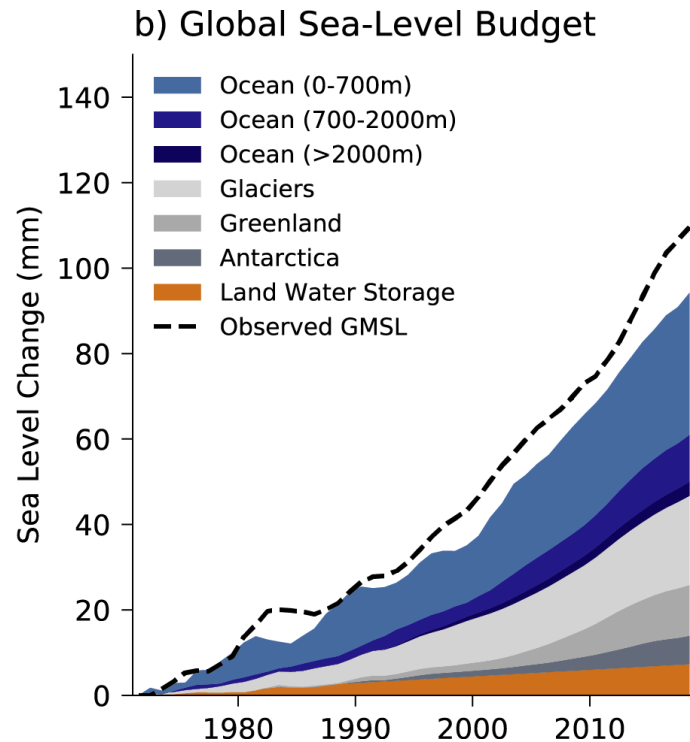
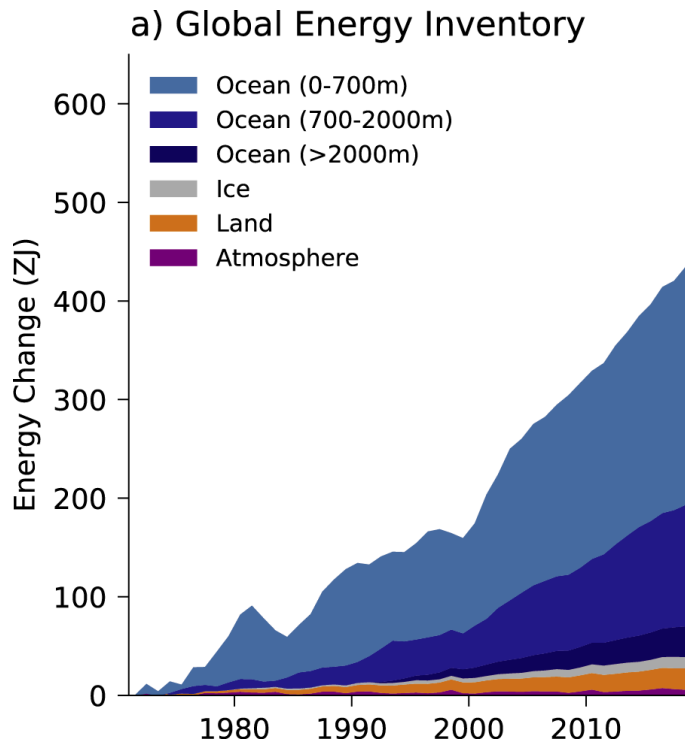
↑ greenhouse gas concentrations  
↓ global cooling effect of aerosols

Rate  
(W/m<sup>2</sup> per decade)

Figure 2.10



## The Earth's energy imbalance causes increased heating of the climate system



A key advance is the broad agreement across multiple lines of evidence, supporting a best estimate of equilibrium climate sensitivity of 3°C, with a *likely* range of 2.5°C to 4°C

Equilibrium climate sensitivity (°C)

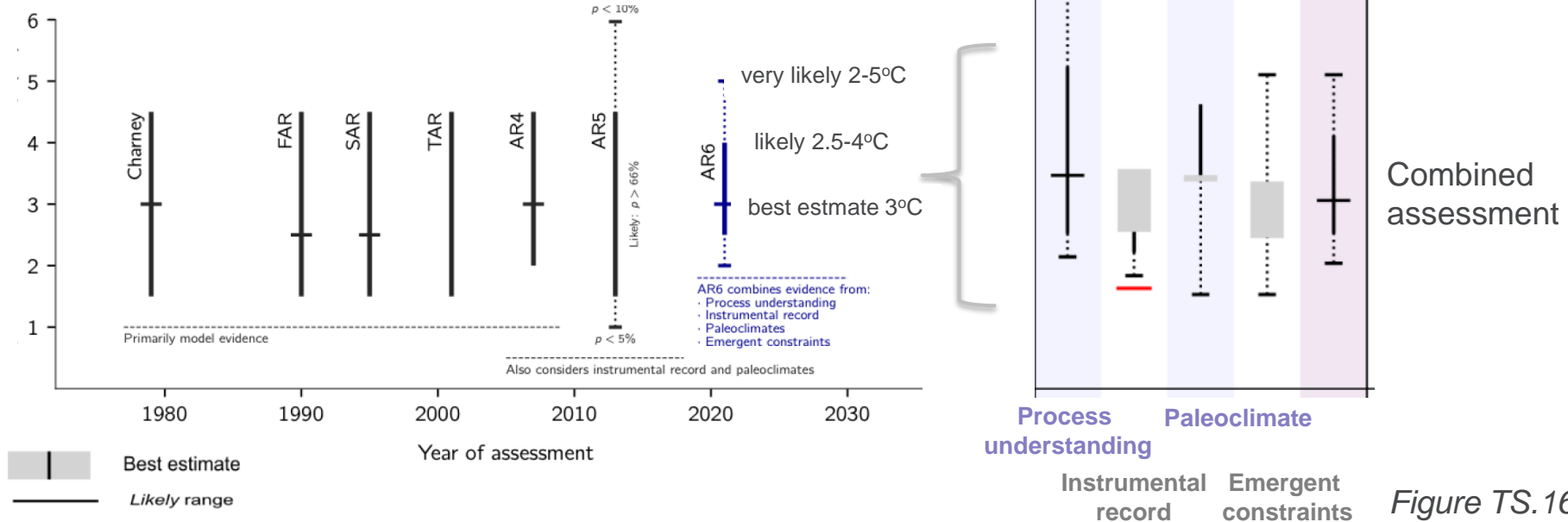
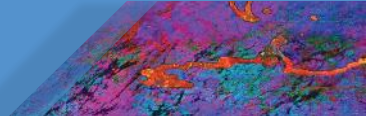


Figure TS.16



## Global warming of 1.5°C and 2°C will be exceeded unless deep reductions in CO<sub>2</sub> and other greenhouse gas emissions occur in the coming decades

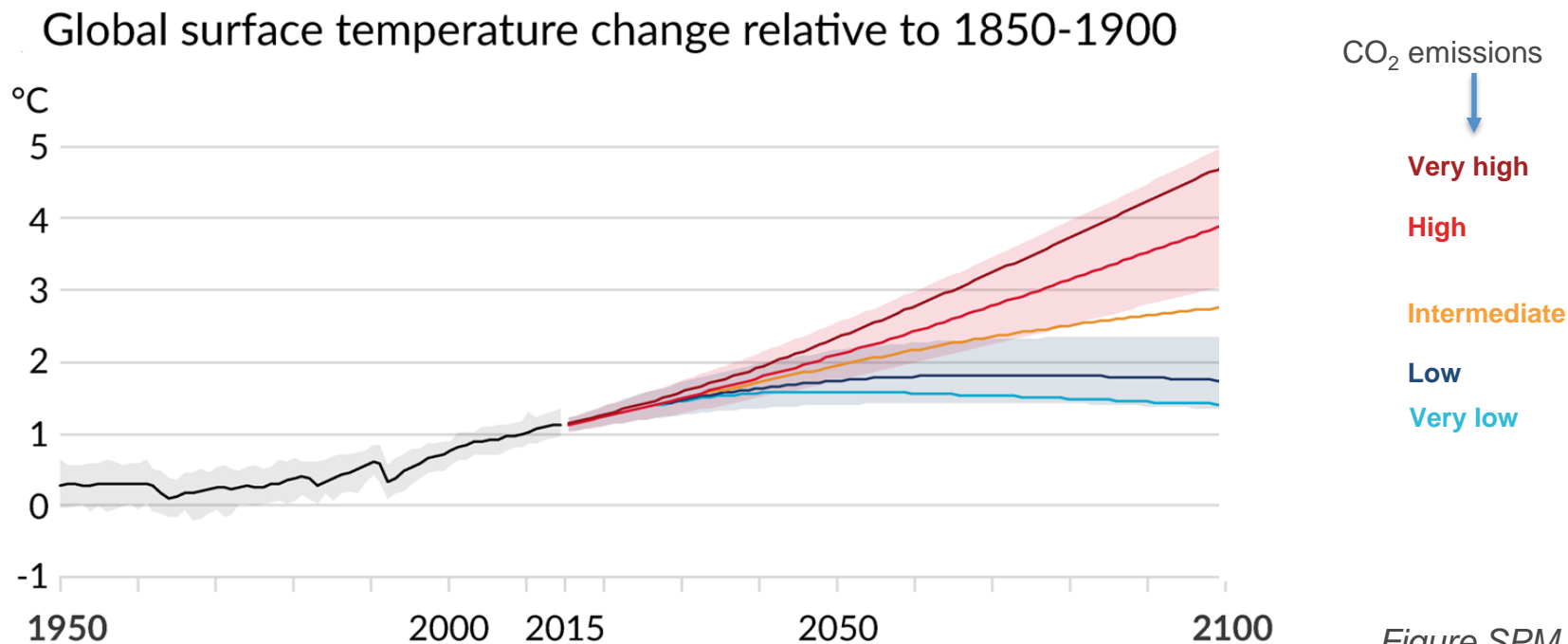
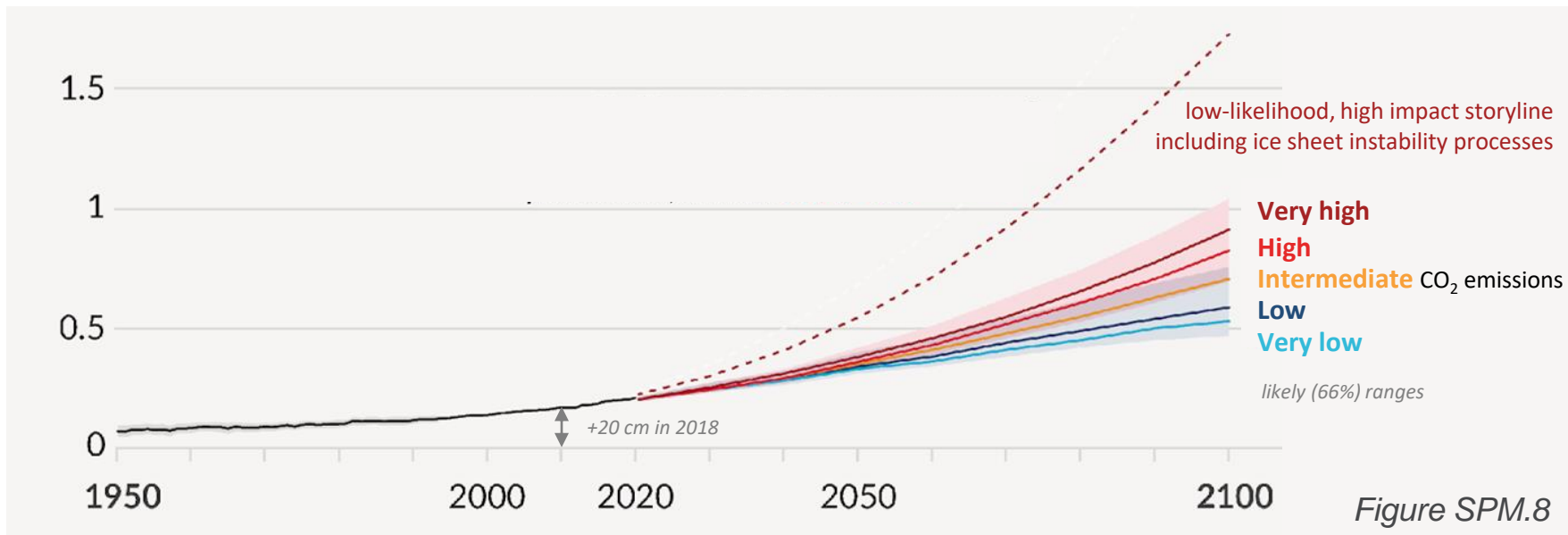


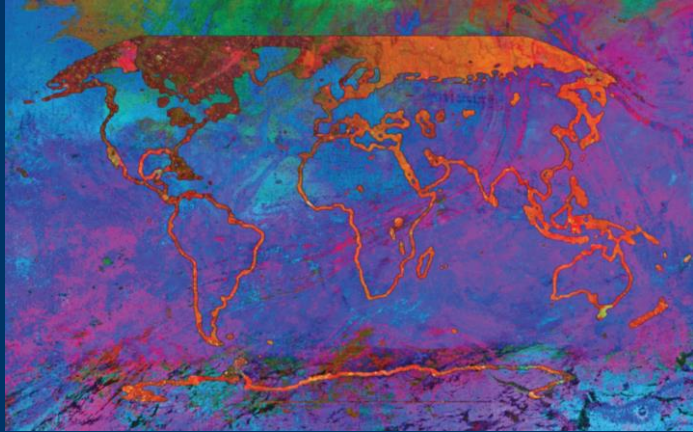
Figure SPM.8

# Global mean sea level will continue to rise over thousands of years with a rate and magnitude depending on global greenhouse gas emissions

Global mean sea level rise relative to 1900 (m)







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Earth system observations are an essential driver of progress in our understanding of climate change