



Glaciers in Climate Futures

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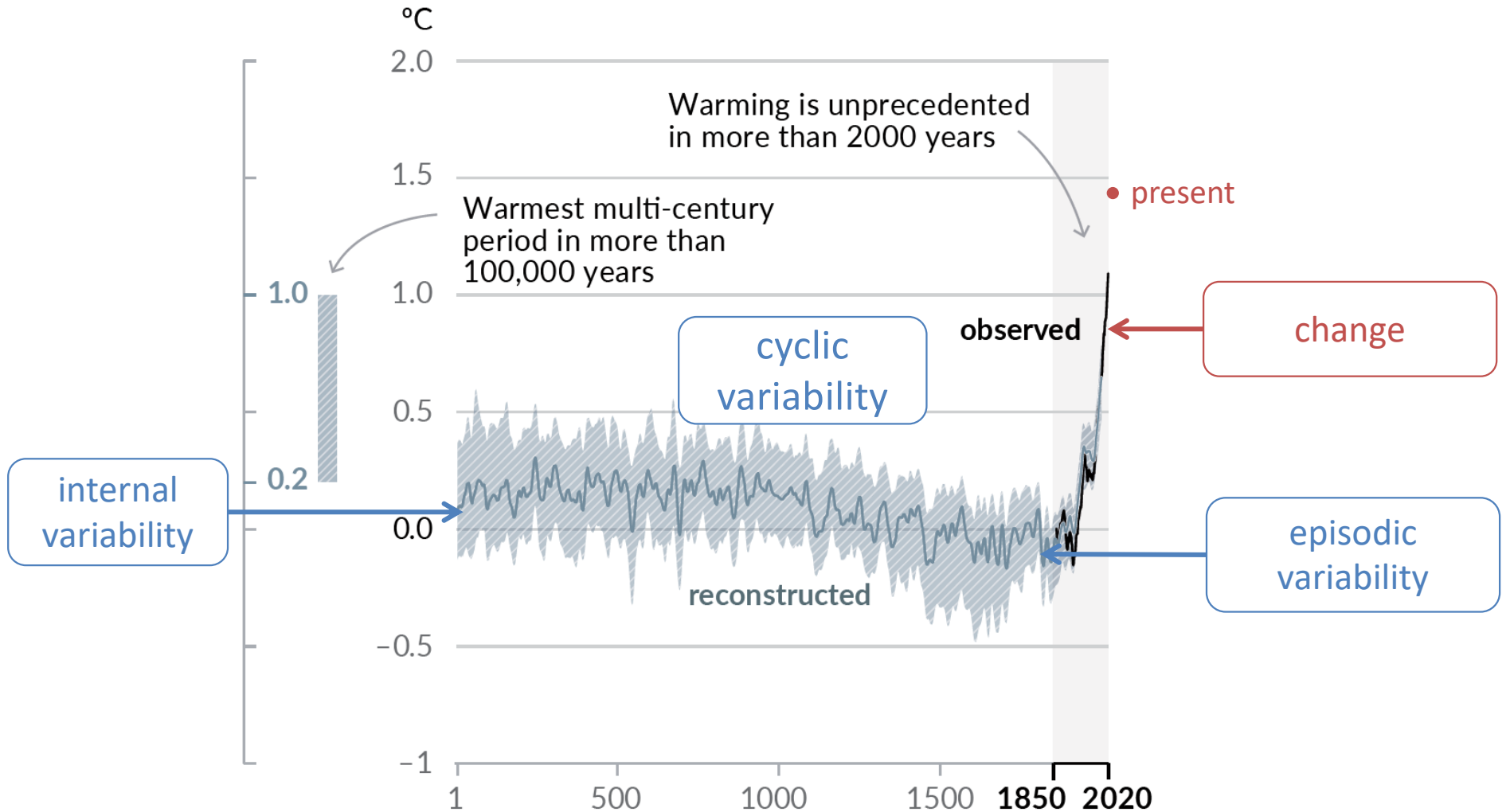
IPCC WGII AR6 Review Editor

IPCC WGI AR4 and AR5 Lead Author



240925*AlpWeek*Alps without Snow*Nova Gorica

Daniela Brugger Fotografie
<https://daniela-brugger.it>

Changes in global surface temperature relative to 1850–1900



EARTH HEAT INVENTORY :

 <  0.76 ± 0.18 (0.48 ± 0.08) W/m²



TOTAL HEAT GAIN
 380 ± 62 ZJ

ATMOSPHERE
 2% (1%)

= 380 000 000 000 000 000 000 000 000 J
 = 106 000 000 000 000 000 000 kWh

CRYOSPHERE
 4% (4%)

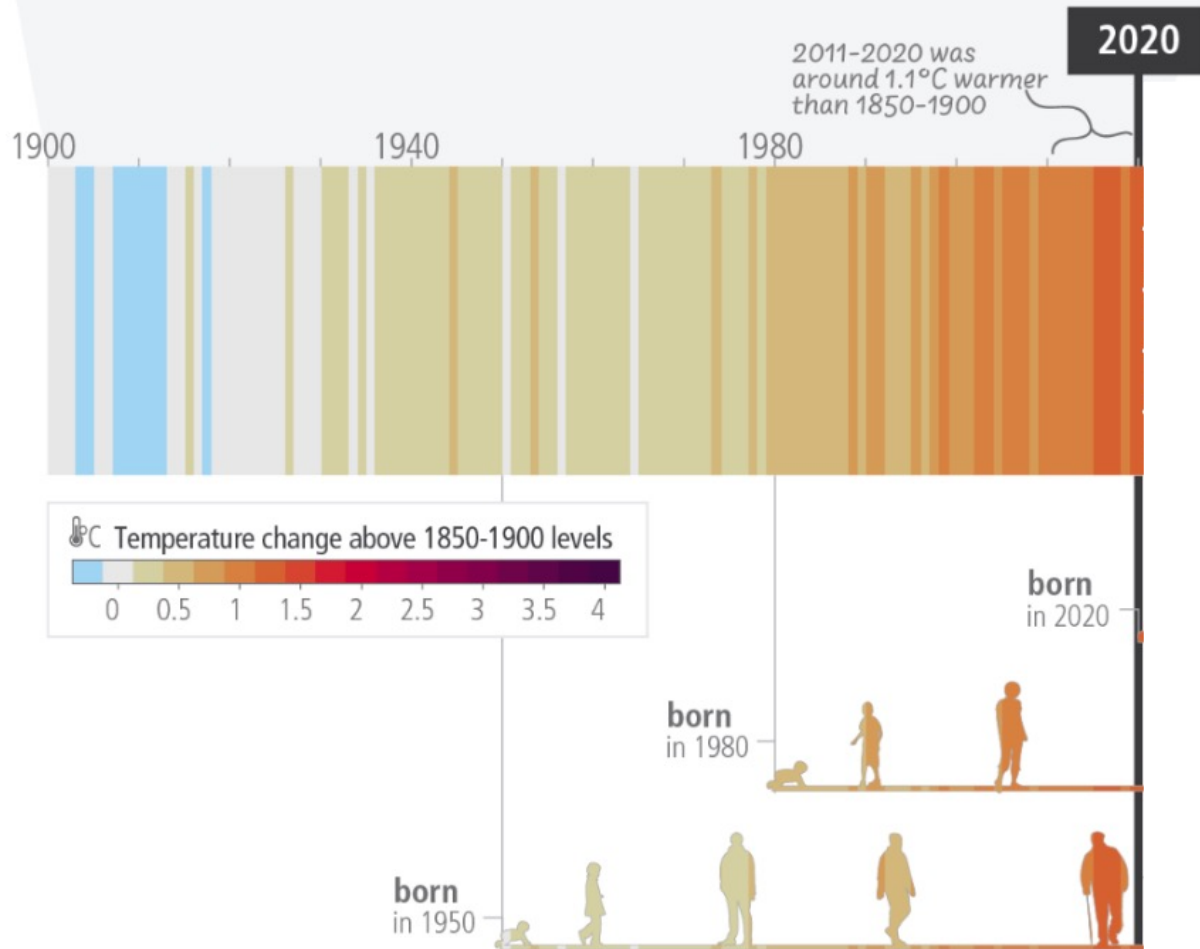
LAND
 5% (6%)

OCEAN
 89% (89%)
 0 - 700 m: 52% (55%);
 700-2000m: 30% (27%);
 > 2000m: 8% (7%);

2006-2020 (1971-2020)

von Schuckmann et al (2022)

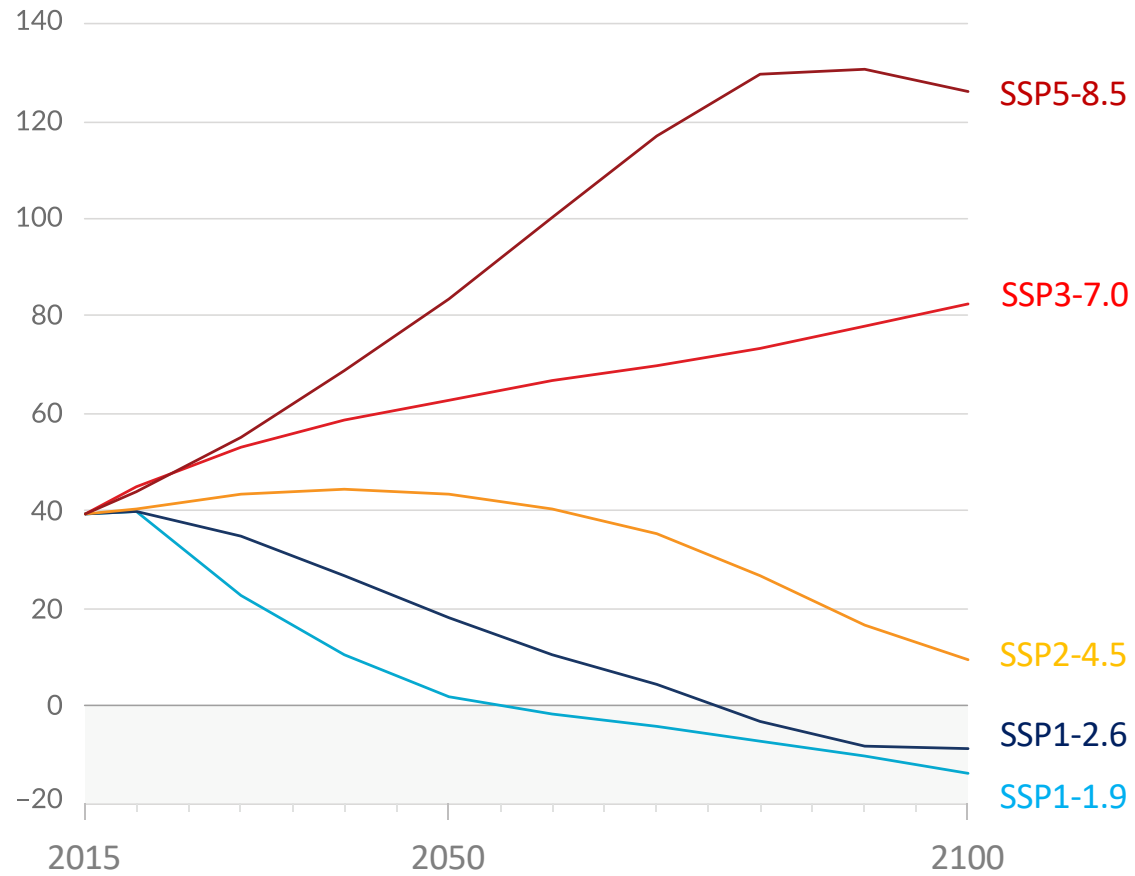
c) The extent to which current and future generations will experience a hotter and different world depends on choices now and in the near-term



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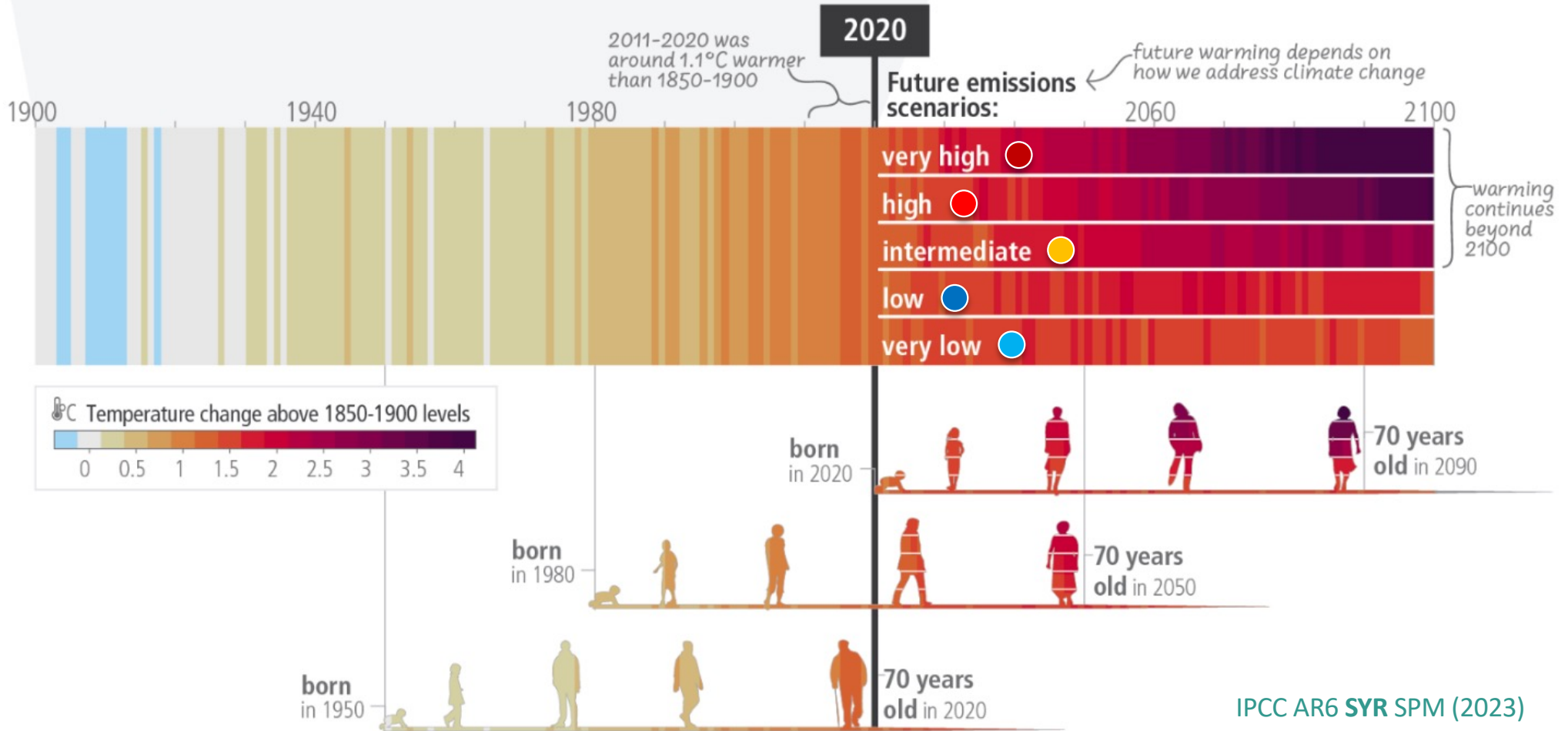
Emission Scenarios Resulting from Shared Socio-Economic Pathways (SSP)

CO₂ (Gigatons/Year)

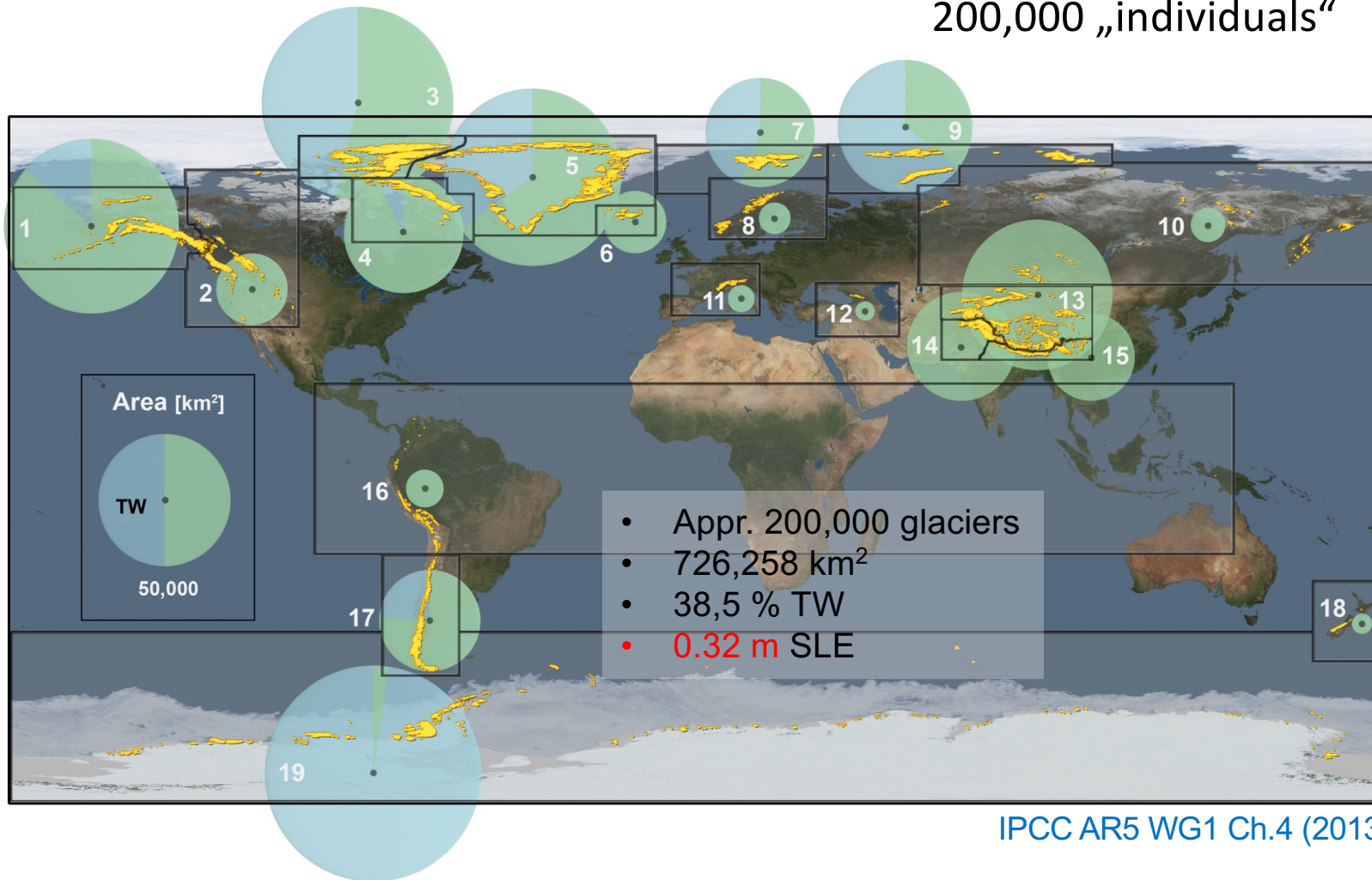


IPCC AR6 WG1 SPM (2021)

c) The extent to which current and future generations will experience a hotter and different world depends on choices now and in the near-term

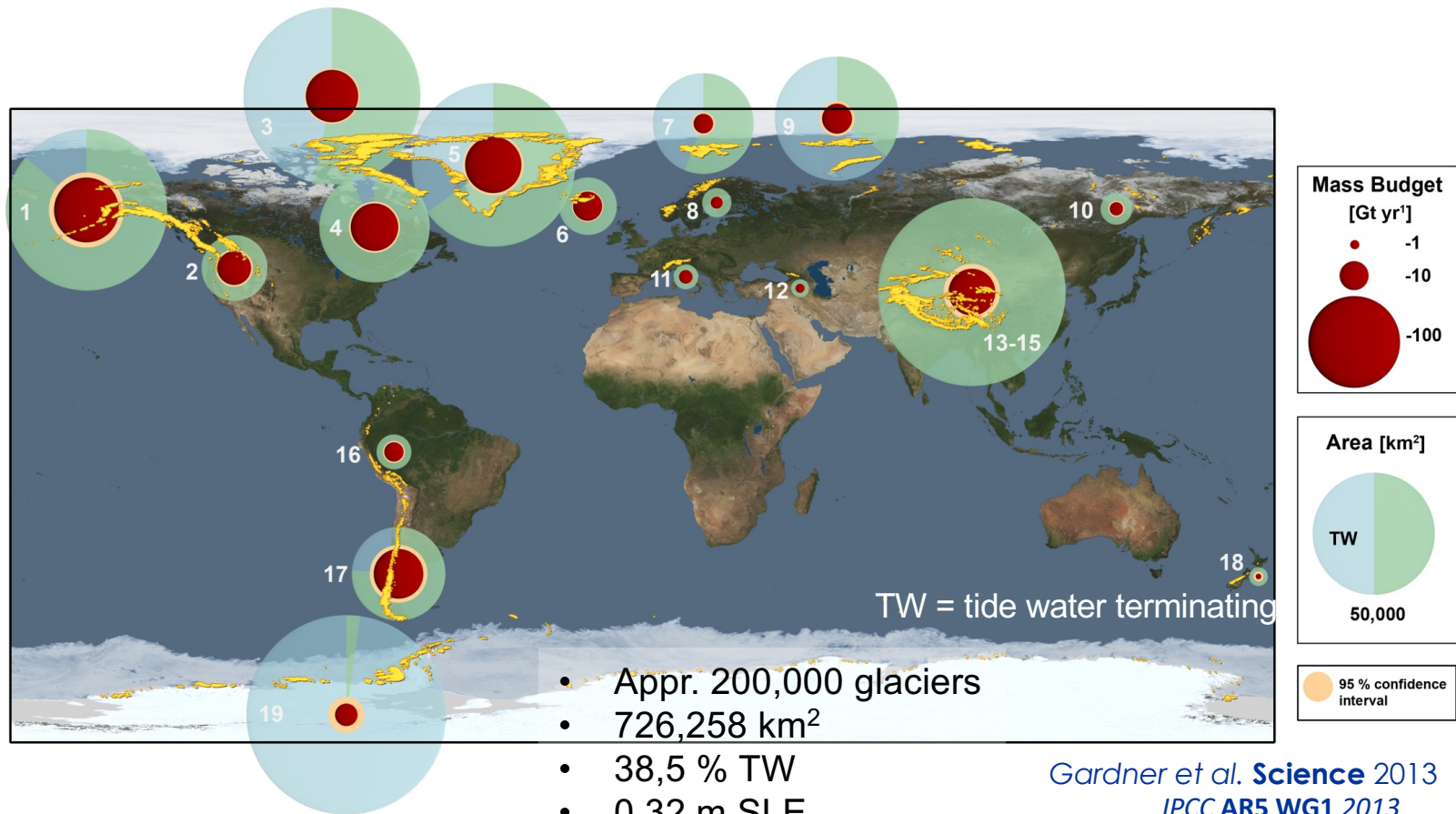


200,000 „individuals“



- Appr. 200,000 glaciers
- 726,258 km²
- 38,5 % TW
- **0.32 m SLE**

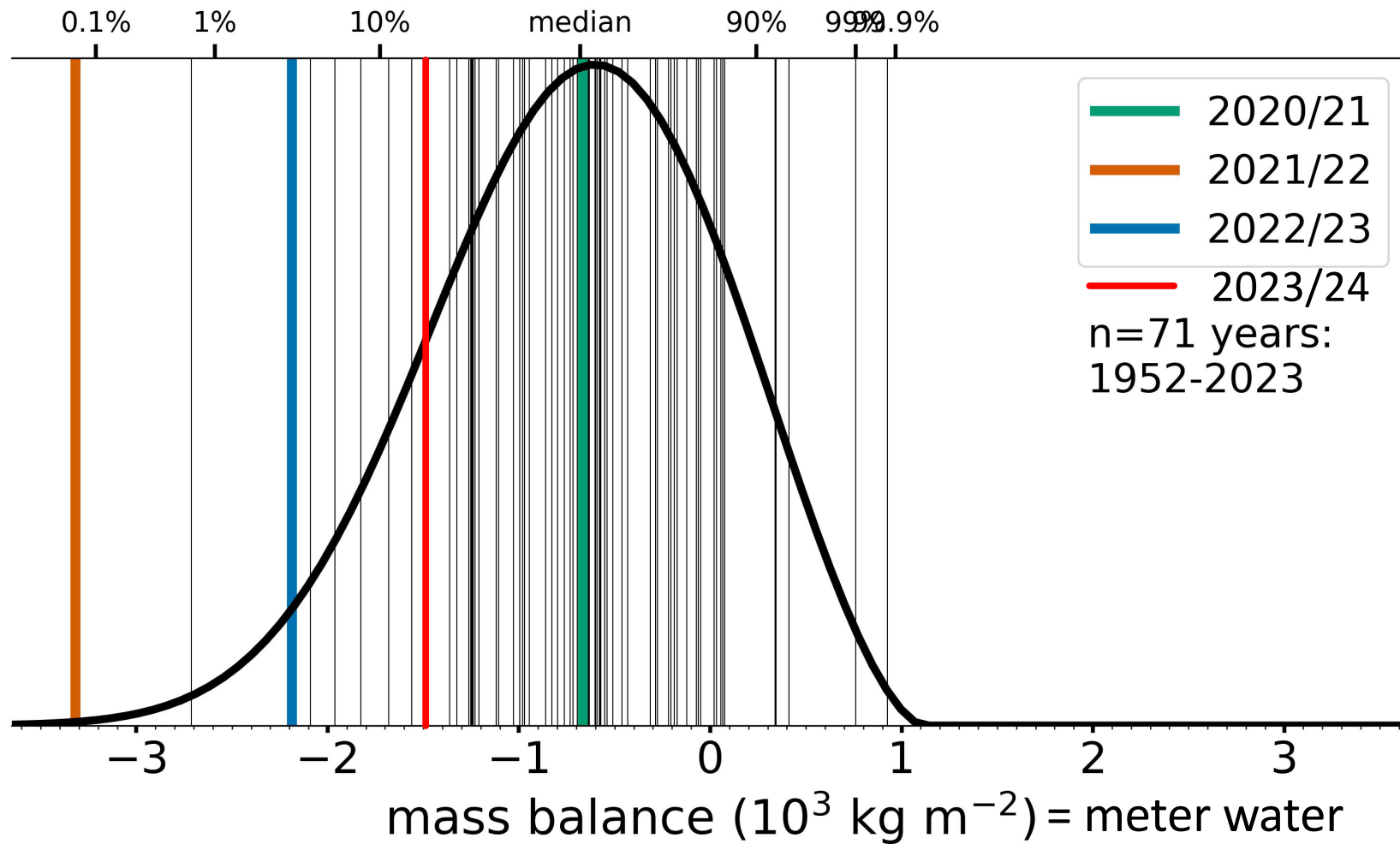
Glaciers worldwide and their mass losses 2003 - 2009



Hintereisferner - Blick Richtung Weißkugel und Langtauferspitze
14.10.23 09:30 2.1°C



71 years (1952/53 – 2023/24) mass balance at Hintereisferner (Ötztaler Alpen)



Voordendag, Prinz, Schuster & Kaser (2023) *The Cryosphere*

Thank you for your attention



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