TEDEN SREDOZEMSKE OBALE IN MAKROREGIONALNIH STRATEGIJ
Izola, Slovenija
16. – 20. september 2024

MEDITERRANEAN COAST AND MACRO-REGIONAL STRATEGIES WEEK
Izola, Slovenia
16 – 20 September 2024

Mean Sea Level Rise and Coastal Flooding in the Northern Adriatic

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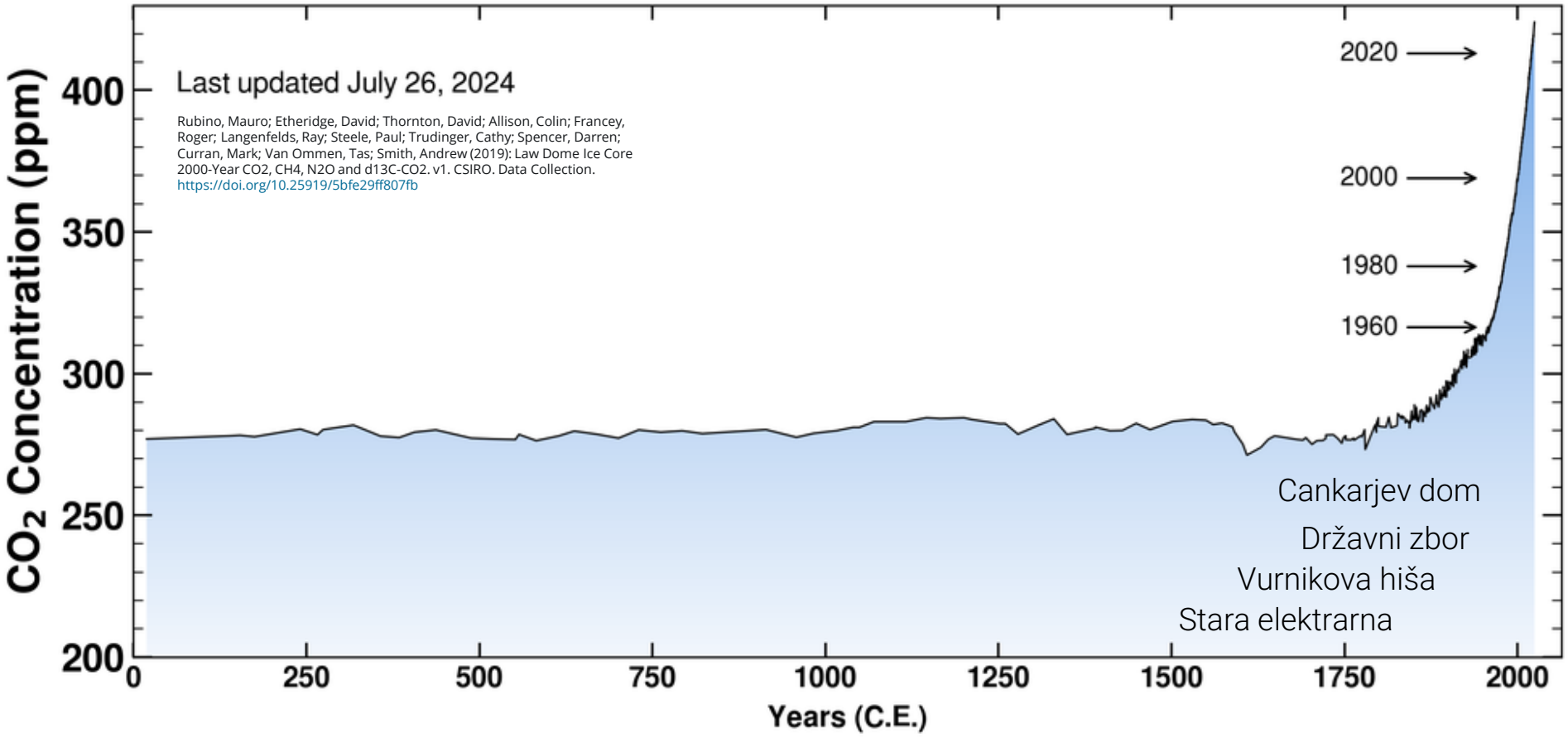
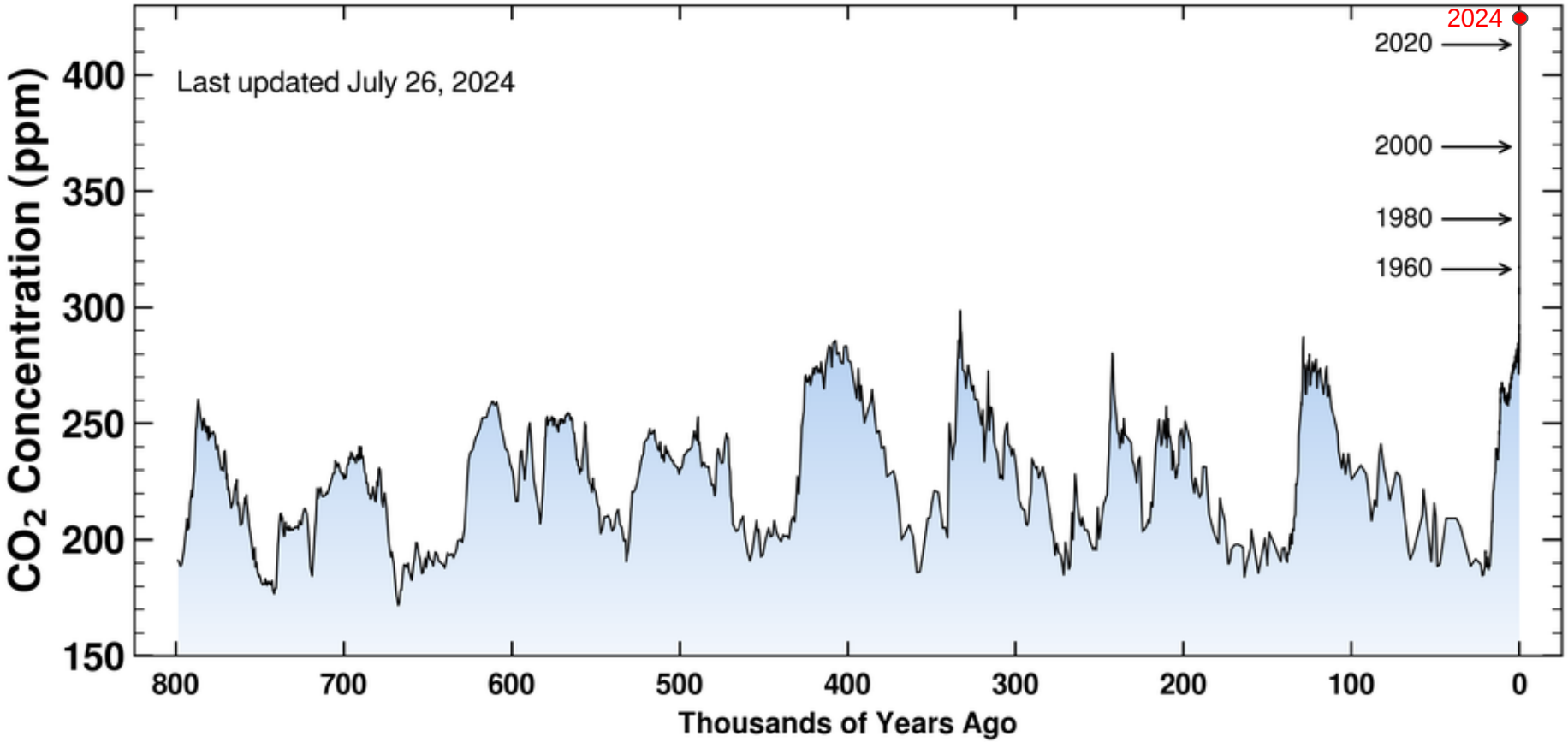
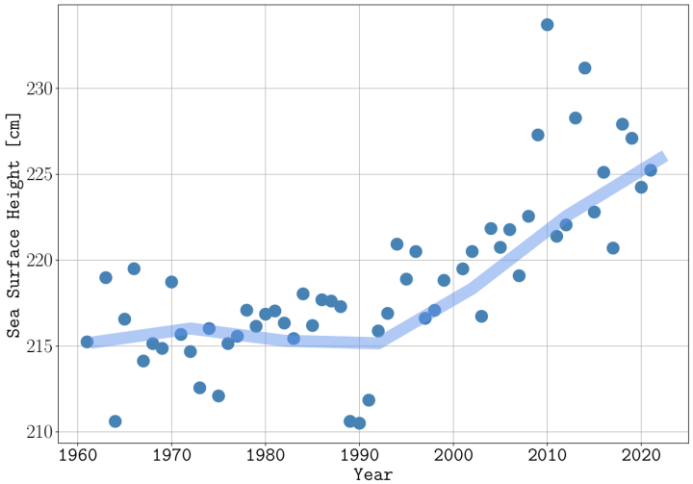
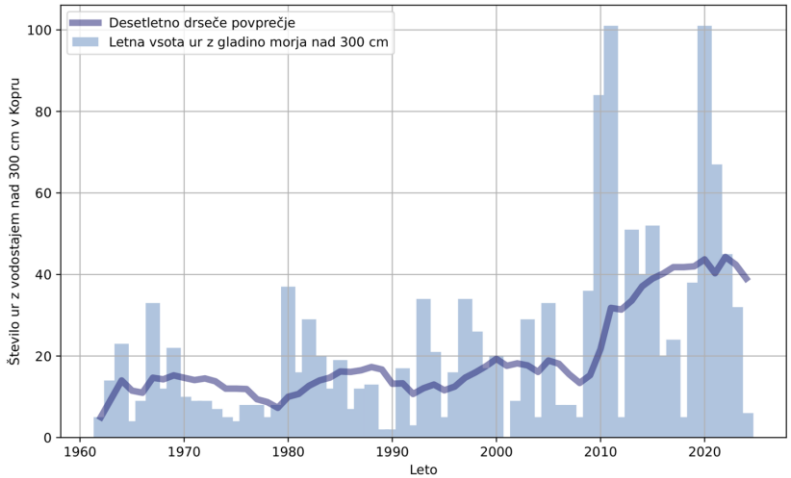

Last updated July 26, 2024
Rubino, Mauro; Etheridge, David; Thornton, David; Allison, Colin; Francey, Roger; Langenfelds, Ray; Steele, Paul; Trudinger, Cathy; Spencer, Darren; Curran, Mark; Van Ommen, Tas; Smith, Andrew (2019): Law Dome Ice Core 2000-Year CO2, CH4, N2O and d13C-CO2. v1. CSIRO. Data Collection. https://doi.org/10.25919/5bfe29ff807fb
2020
2000
1980
1960
Cankarjev dom
Državni zbor
Vurnikova hiša
Stara elektrarna
CO2 Concentration (ppm)
400
350
300
250
200
0
250
500
750
1000
1250
1500
1750
2000
Years (C.E.)


Last updated July 26, 2024
2024
2020
2000
1980
1960
CO_2 Concentration (ppm)
400
350
300
250
200
150
800
700
600
500
400
300
200
100
0
Thousands of Years Ago

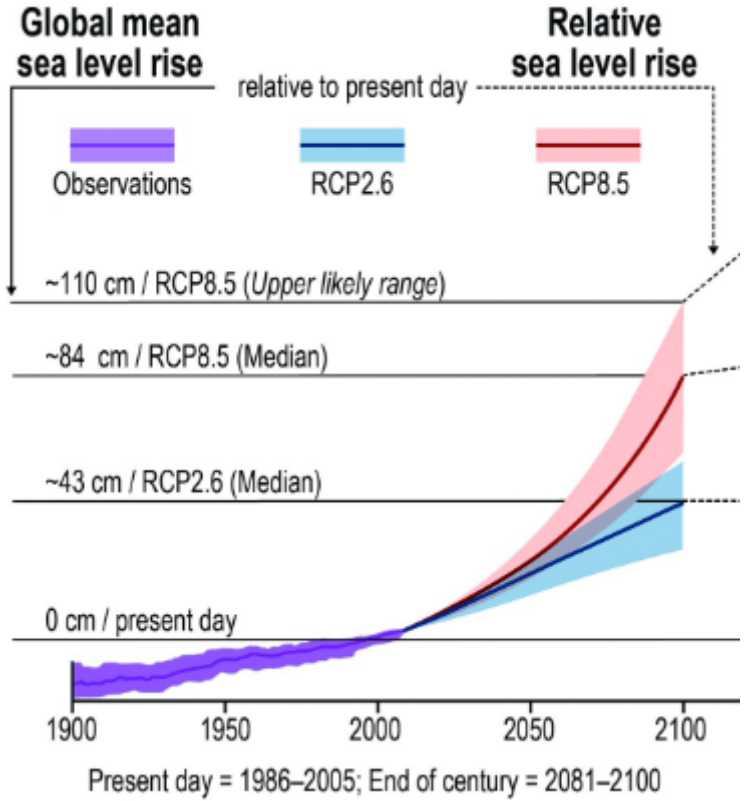
The context: Climate Change and Sea Level Rise

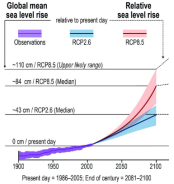
Mean Sea Level in Koper 1960-2021:





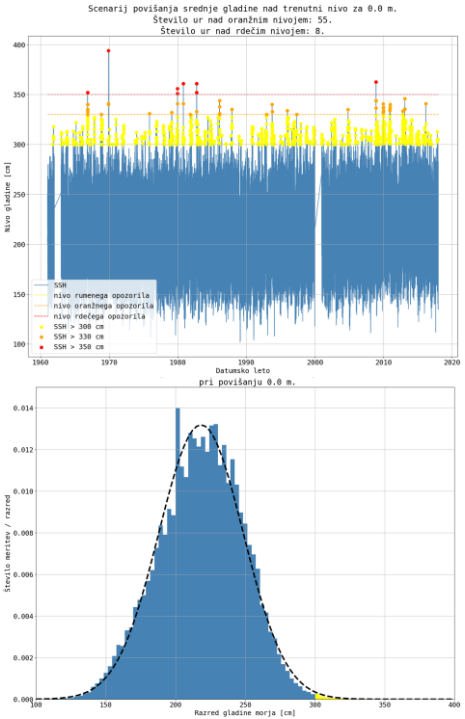
$$\frac{\mathrm{d}\bar{\eta}}{\mathrm{d}t} \approx 4\,\mathrm{mm\,/\,yr}$$


Global mean sea level rise
relative to present day
Relative sea level rise
Observations
RCP2.6
RCP8.5
~110 cm / RCP8.5 (Upper likely range)
~84 cm / RCP8.5 (Median)
~43 cm / RCP2.6 (Median)
0 cm / present day
1900
1950
2000
2050
2100
Present day = 1986–2005; End of century = 2081–2100

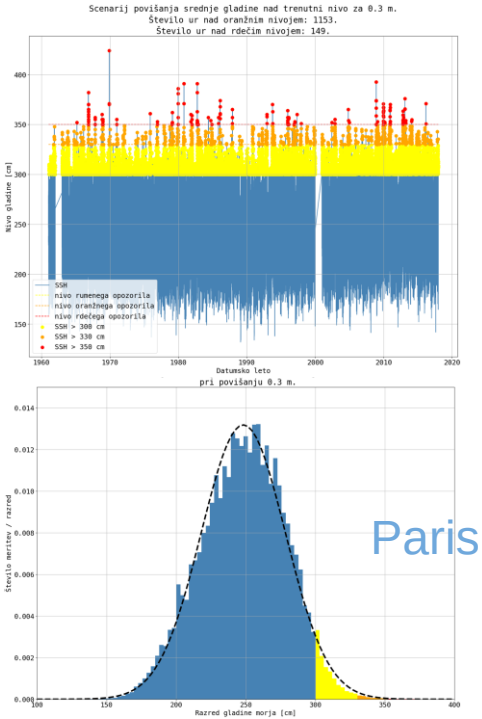


The context: Climate Change and Sea Level Rise

1960-2018:

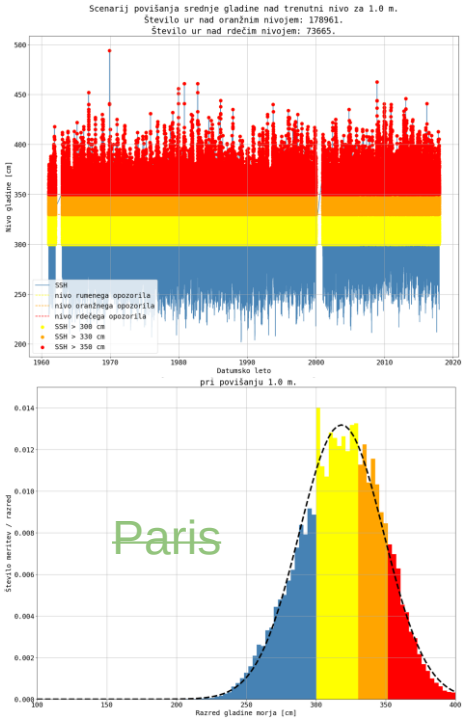


1960-2018 **+ 0.3 m**:

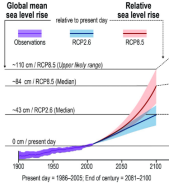


Paris

1960-2018 **+ 1 m**:

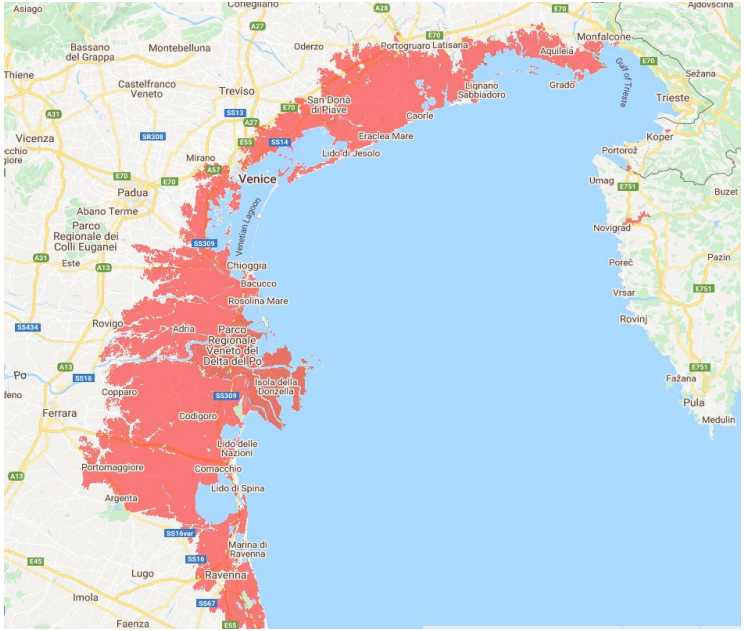


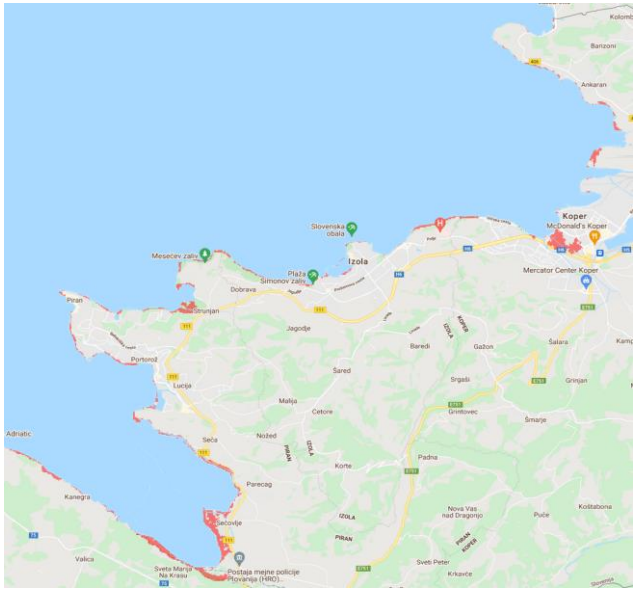
~~Paris~~



The context: Climate Change and Sea Level Rise

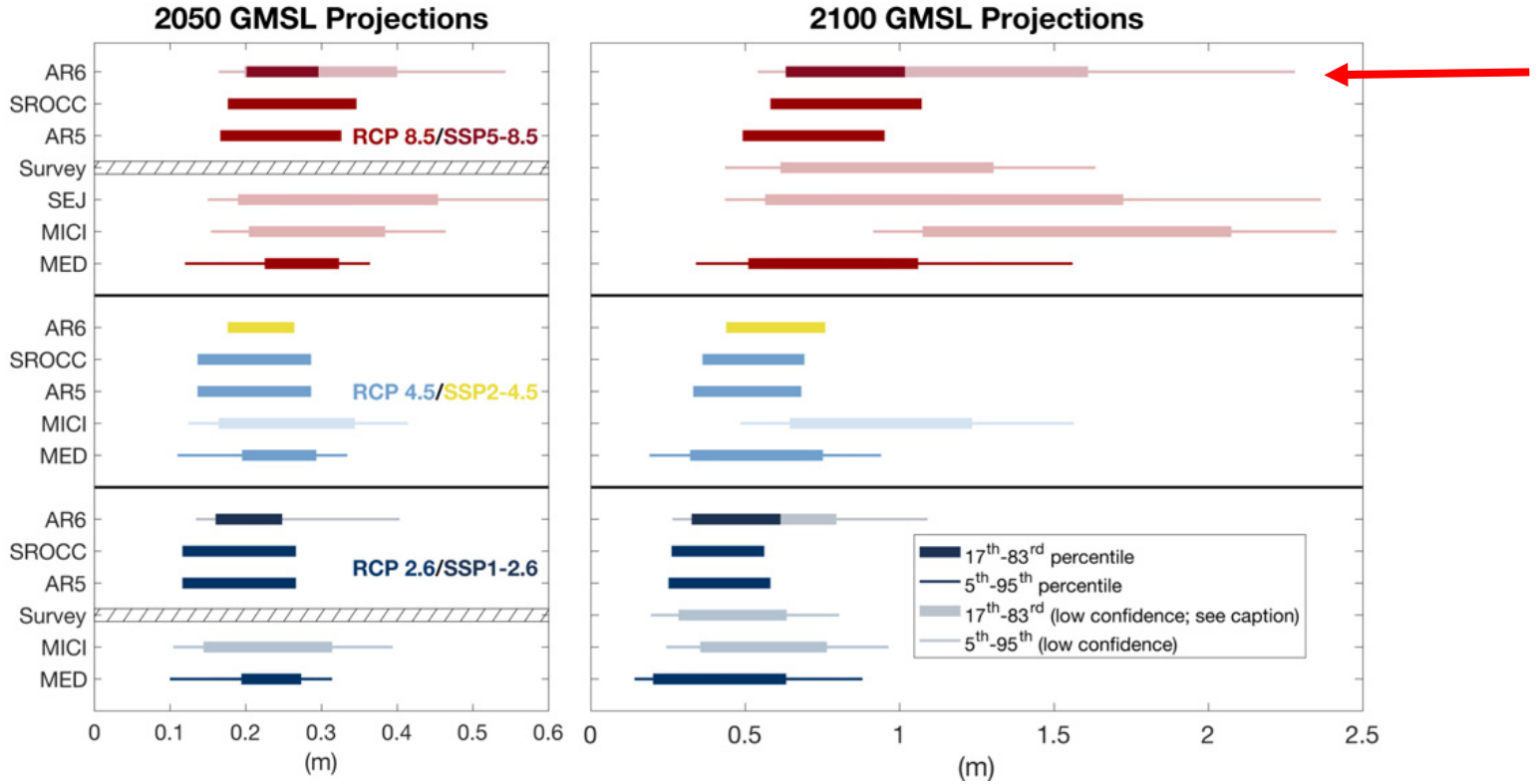
1993-2012 **+ 1 m**:





Vir: https://coastal.climatecentral.org/

Worst case scenarios in Slovenia? **2.3 m of SLR**.



As noted by SROCC, stakeholders with a low risk tolerance (e.g., those planning for coastal safety in cities and long-term investment in critical infrastructure) may wish to consider global-mean sea level rise above the assessed *likely* range by the year 2100, because '*likely*' implies an assessed likelihood of up to 16% that sea level rise by 2100 will be higher (see also Siegert et al., 2020). Because of our limited understanding of the rate at which some of the governing processes contribute to long-term sea level rise, we cannot currently robustly quantify the likelihood with which they can cause higher sea level rise before 2100 (Stammer et al., 2019).

In light of such *deep uncertainty*, we employ a storyline approach in examining the potential for, and early warning signals of a high-end sea level scenario unfolding within this century. In doing so, we note upfront that the main uncertainty related to high-end sea level rise is 'when' rather than 'if' it arises: the upper limit of 1.01 m of *likely* sea level range by 2100 for the SSP5-8.5 scenario will be exceeded in any future warming scenario on time scales of centuries to millennia (*high confidence*), but it is uncertain how quickly the long-term committed sea level will be reached (Section 9.6.3.5). Hence, global mean sea level might rise well above the *likely* range before 2100, which is reflected by assessments of ice-sheet contributions based on structured expert judgement (Bamber et al., 2019) leading to a 95th percentile of projected future sea level rise as high as 2.3 m in 2100 (Section 9.6.3.3).

IPCC AR6 Chapter 9

Do not forget that the rise of **2.3 m is the rise of the mean sea level**:

- the tide adds another nearly one meter
- south wind (jugo) adds another nearly one meter
- According to this scenario, during a storm, the water level along the Slovenian coast will be 3-4 meters higher than today's mean sea level, or **2.5 meters above the current level of Tartini Square.**

- Risk = probability of an event * damage from the event.
- What probability is enough for this scenario to start worrying us? The IPCC estimates it at < 5%, i.e., less than **1 in 20**. Probability of an airplane crash: **1 in 11 million**.

Conclusion:

- The probabilities for extreme scenarios (SLR > 2 m) are not zero = they are too high.
- The damage would be immense. Low reliability ≠ low probability.
- In strategic documents, we must not ignore these scenarios, but rather develop a strategy to prepare for them if they occur. Risk assessments must begin to take them into account.