

# **The Tom Nelson Podcast**

**21 August 2023**

**On the Reliability of CO<sub>2</sub> Climatology**

**By**

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# Part 1: Air Temperature Projections: are they reliable?

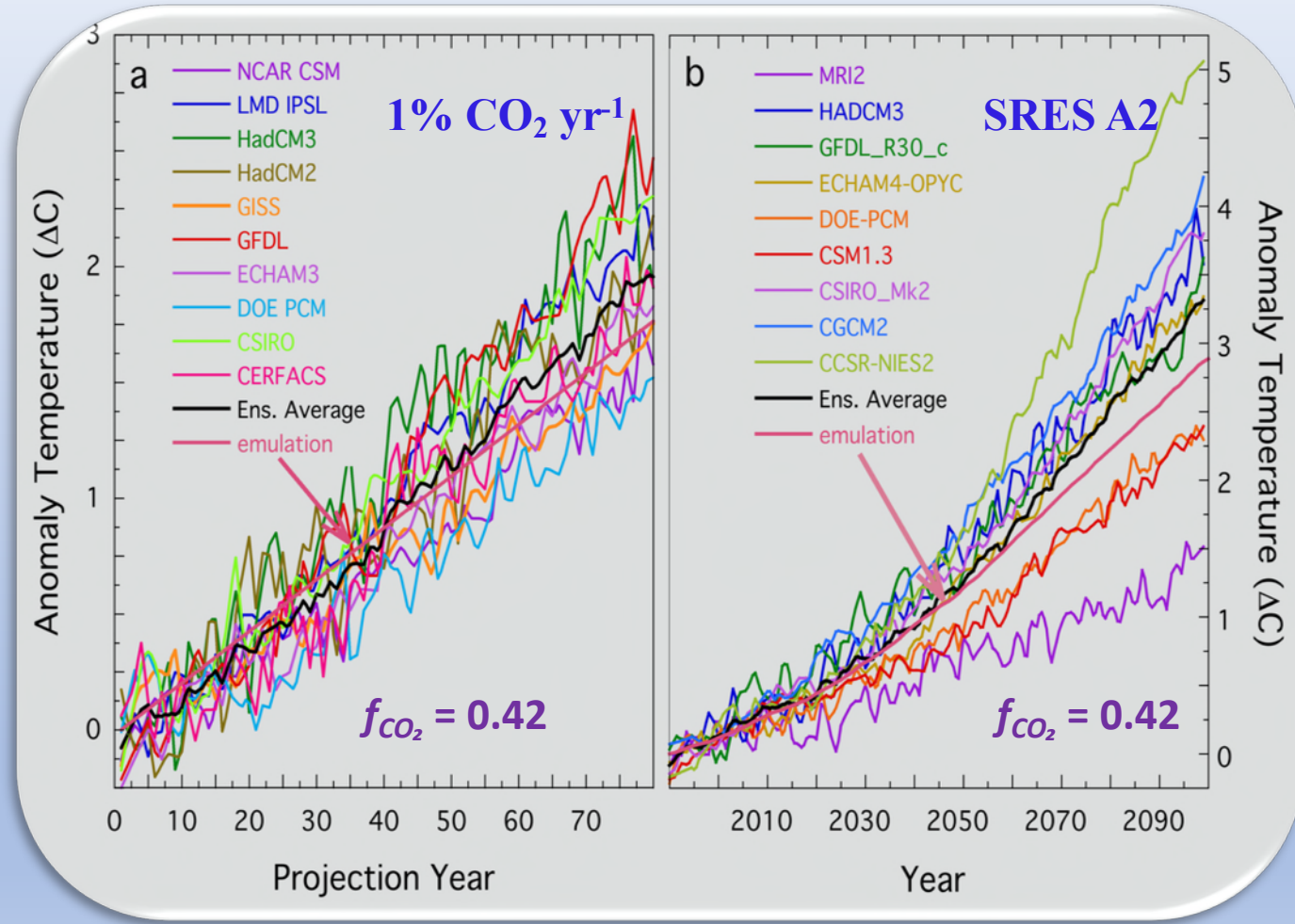
This simple linear equation successfully emulates the air temperature projections of advanced climate models running on super computers

$$\Delta T_t(C) = f_{CO_2} \times 33C \times [(F_0 + \sum_i \Delta F_i) / F_0]$$

- In words: temperature change =
- sensitivity
- $\times$  basic greenhouse temperature
- $\times$  the fractional change in forcing

$f_{CO_2} = 0.42$ ; derived from S. Manabe & R.T. Wetherald (1967) J. Atmos. Sci. 24(3), 241-259

doi: 10.1175/1520-0469(1967)024<0241:TEOTAW>2.0.CO;2

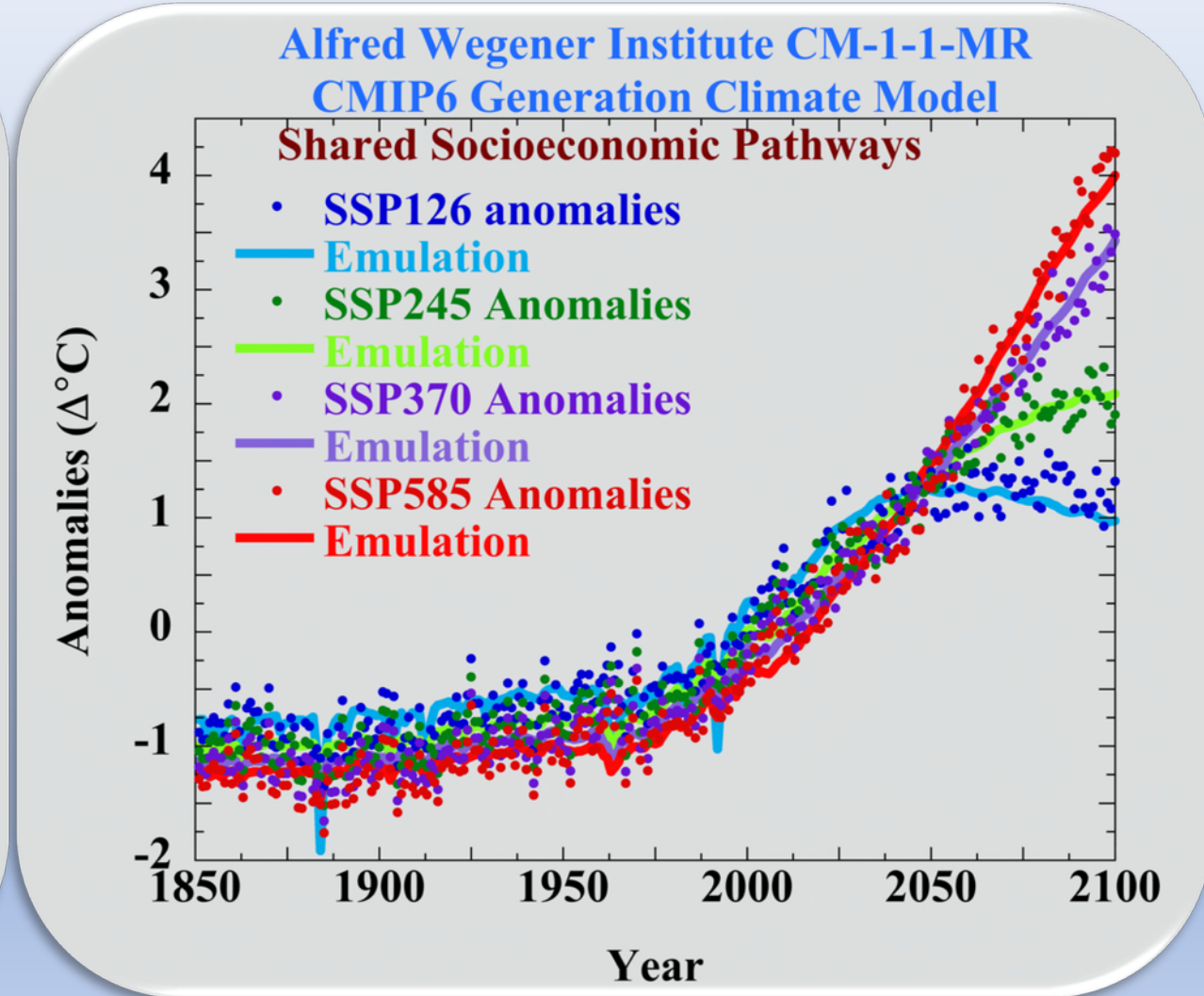
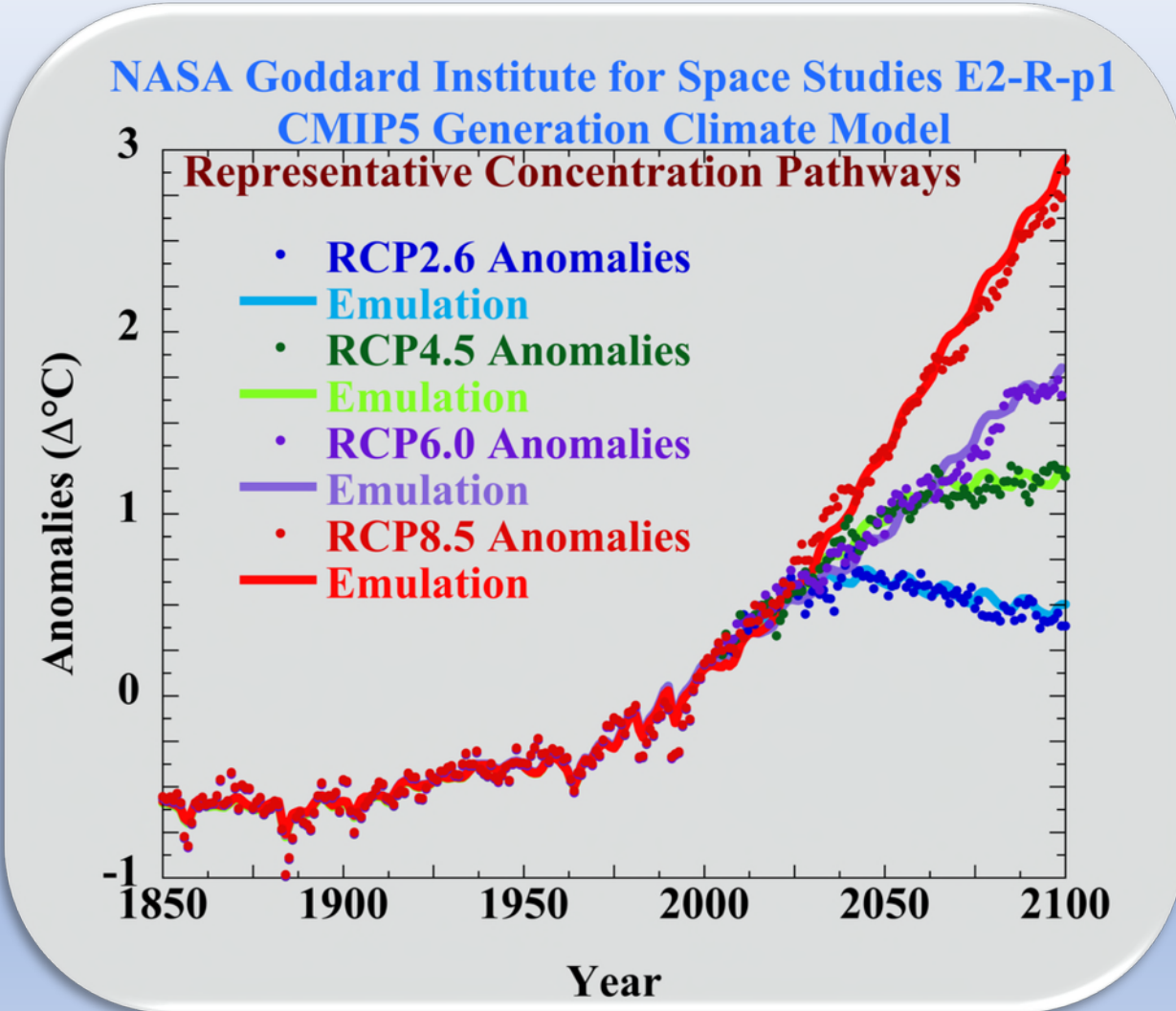


SRES = special report emissions scenarios  
speculating on growth of GHGs

# Emulating Air Temperature Projections of Advanced Climate Models

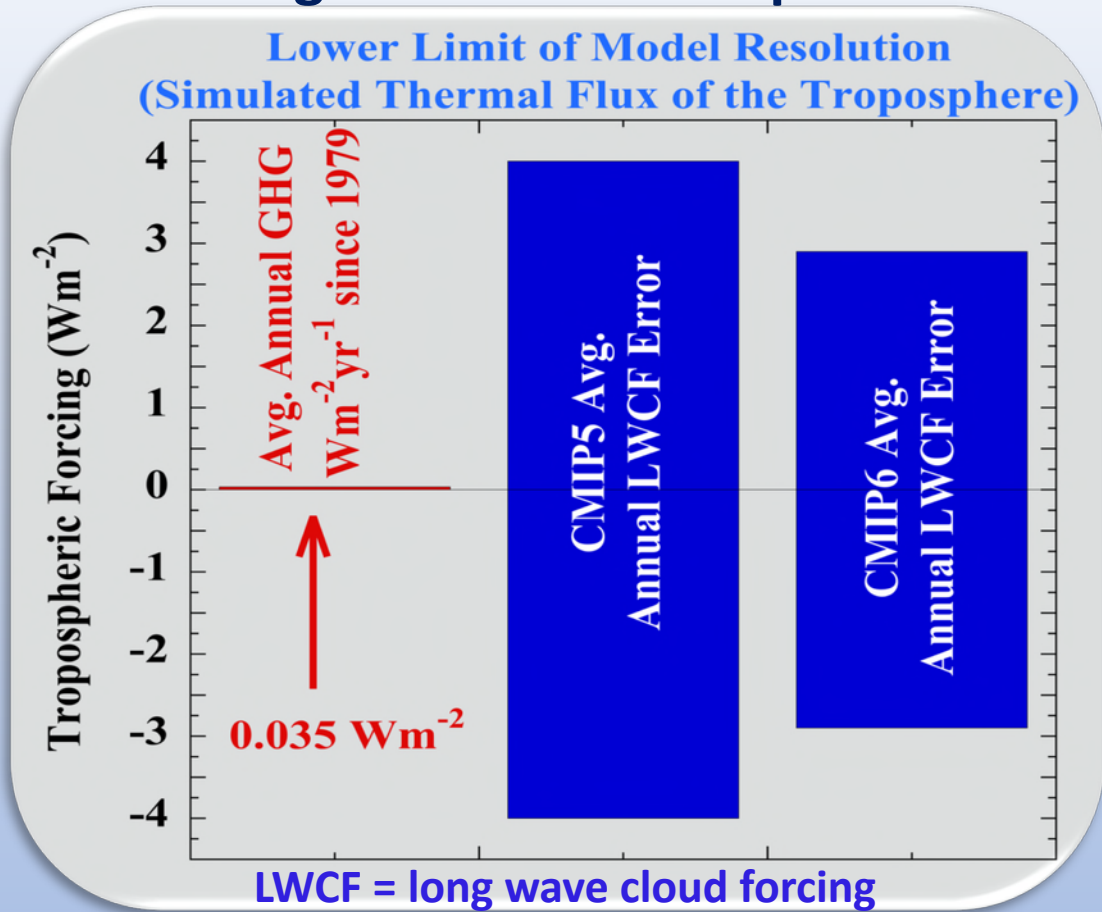
$$\Delta T_t(C) = f_{CO_2} \times 33C \times [(F_0 + \sum_i \Delta F_i) / F_0]$$

emulates the air temperature projections of advanced climate models



**Air Temperature projections are just linear extrapolations of forcing**

# Minimum of Model Thermal Error: ~100× larger than the GHG perturbation

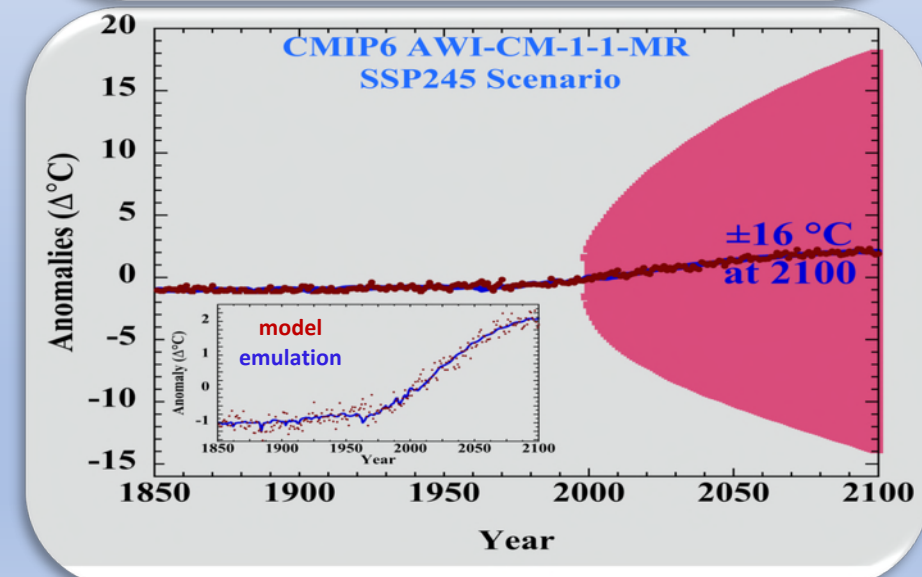
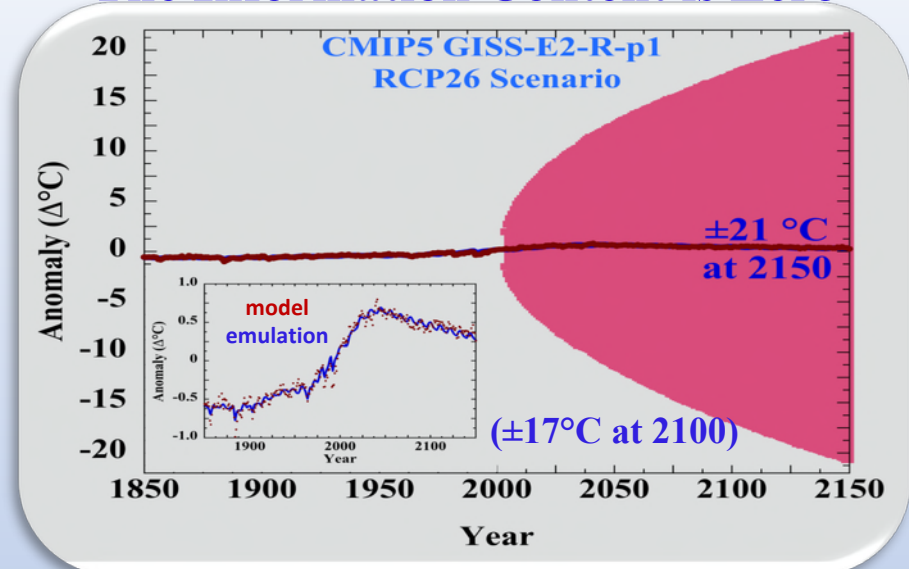


$$\Delta T_t(C) = f_{CO_2} \times 33C \times [(F_0 + \sum_i \Delta F_i \pm u) / F_0]$$

Propagation of Model Error

$$\sigma_{X_N}^2 = \sum_{i=1}^N \sigma_i^2 \left(\frac{\partial X_N}{\partial x_i}\right)^2 \longrightarrow \pm \sigma_{T_n} = \sqrt{\sum_{i=1}^n [\pm u_i(T)]^2}$$

# The Projections are Physically Meaningless The Information Content is Zero



**Climate Models Reveal Nothing  
About Future Air Temperature**

# Part 2: The Global Average Surface Air Temperature Record: Is it reliable?

Cotton Region Shelter (USA)  
Stevenson Screen (UK)

Naturally Ventilated Thermometers  
Maximum Temperature Mercury  
Minimum Temperature Alcohol

Naturally Ventilated Thermistor  
Min-Max Temperature System (MMTS)



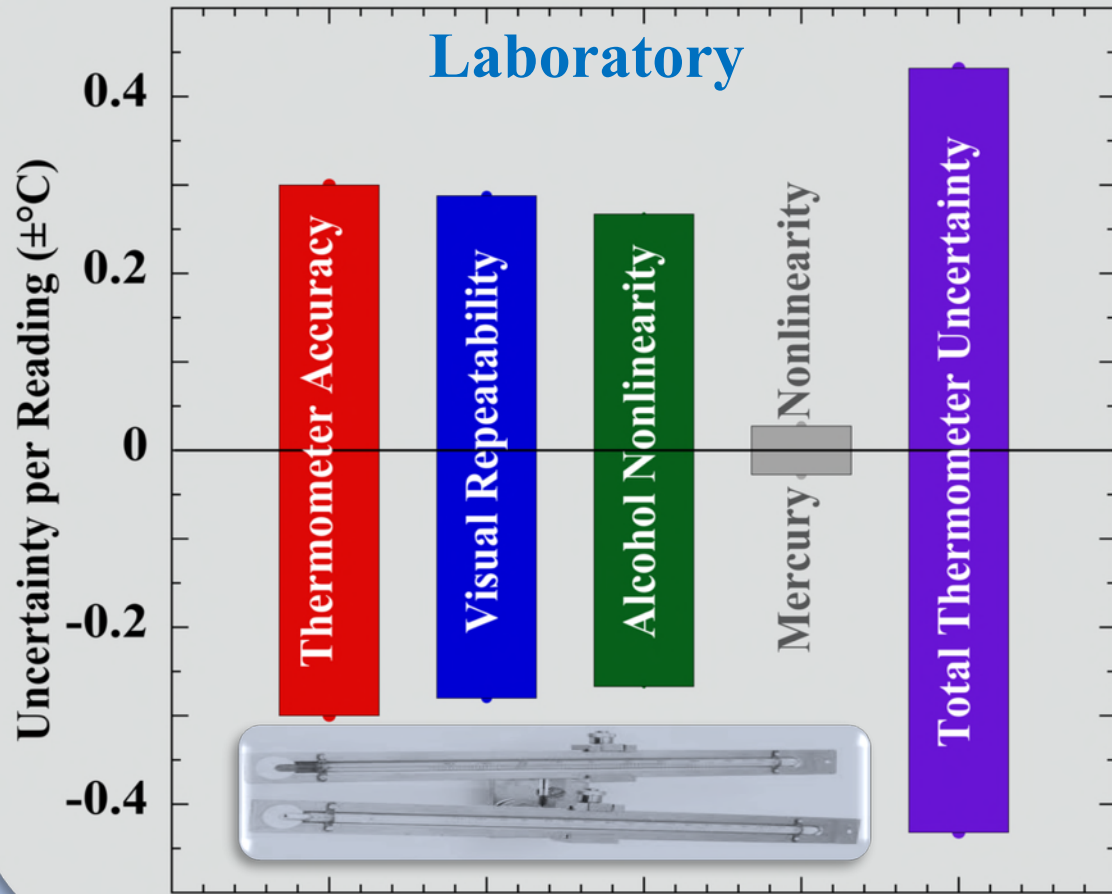
Phased out after 1980

Phased in through 1990

Minimum  $10 \text{ ms}^{-1}$  (22.5 mph) wind speed at 10 m height to measure ambient air temperature

# 95% Confidence Intervals for Temperature Measurement

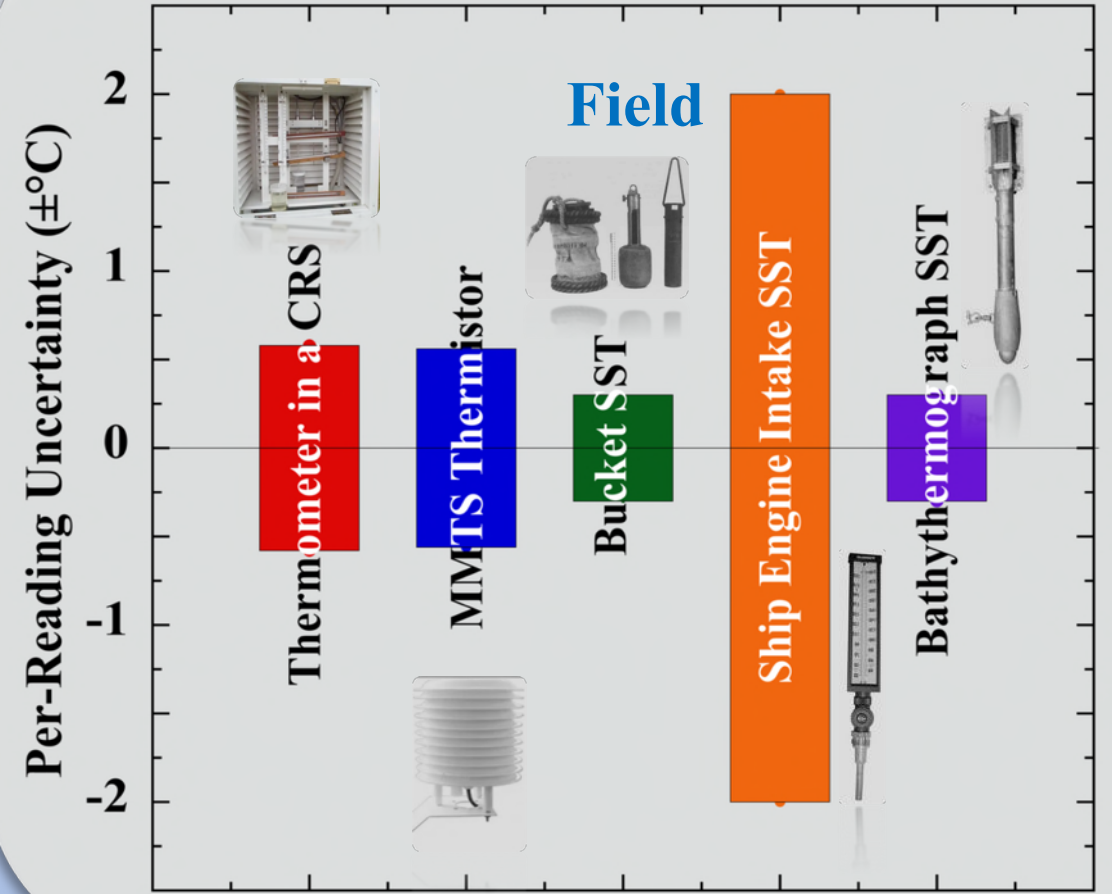
## Intrinsic Thermometer Accuracy



Limits of accuracy are intrinsic to thermometers

Laboratory ideal thermometer uncertainty  
(95% CI) =  $\pm 0.432$  °C.

## Calibration Experiments: Estimated Field Accuracy



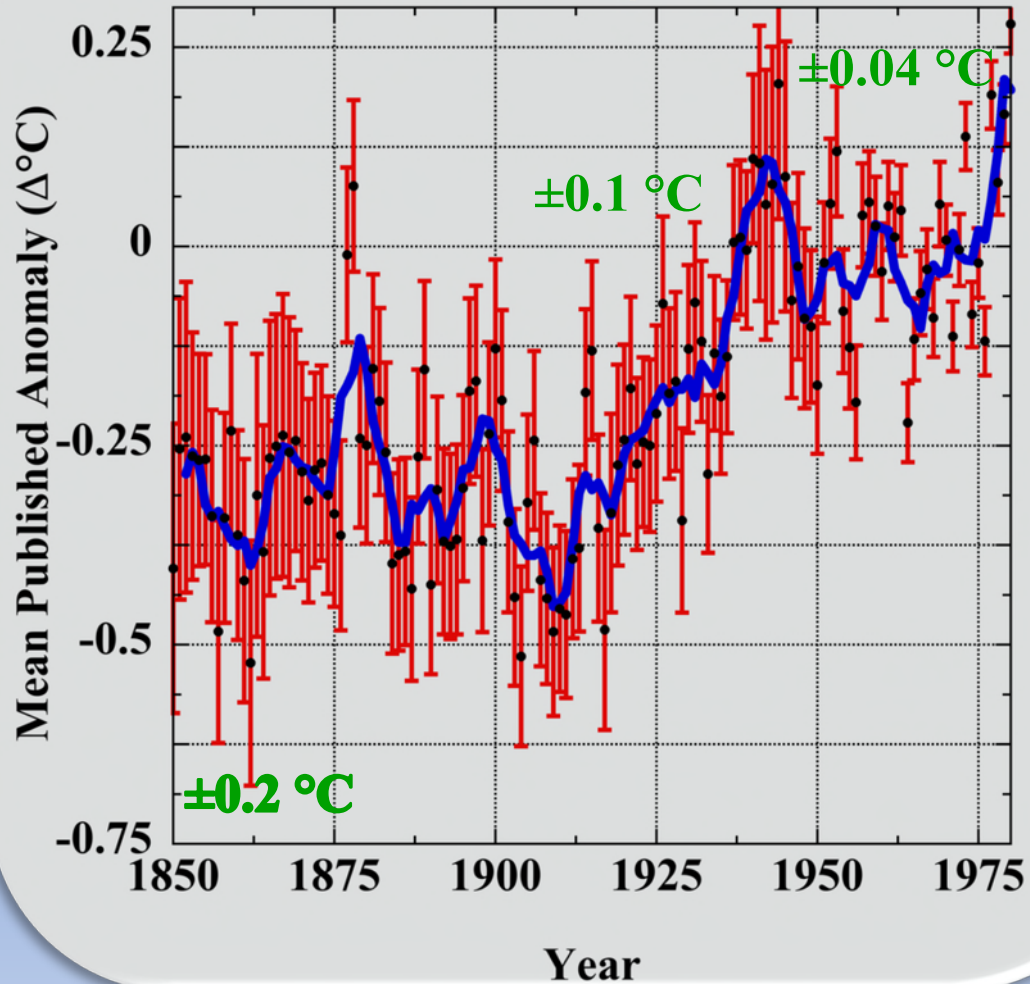
Uncontrolled environmental variables limit field measurement accuracy

Global average field uncertainty in temperature  
(95% CI) =  $\pm(0.6-1.6)$  °C, depending on year.

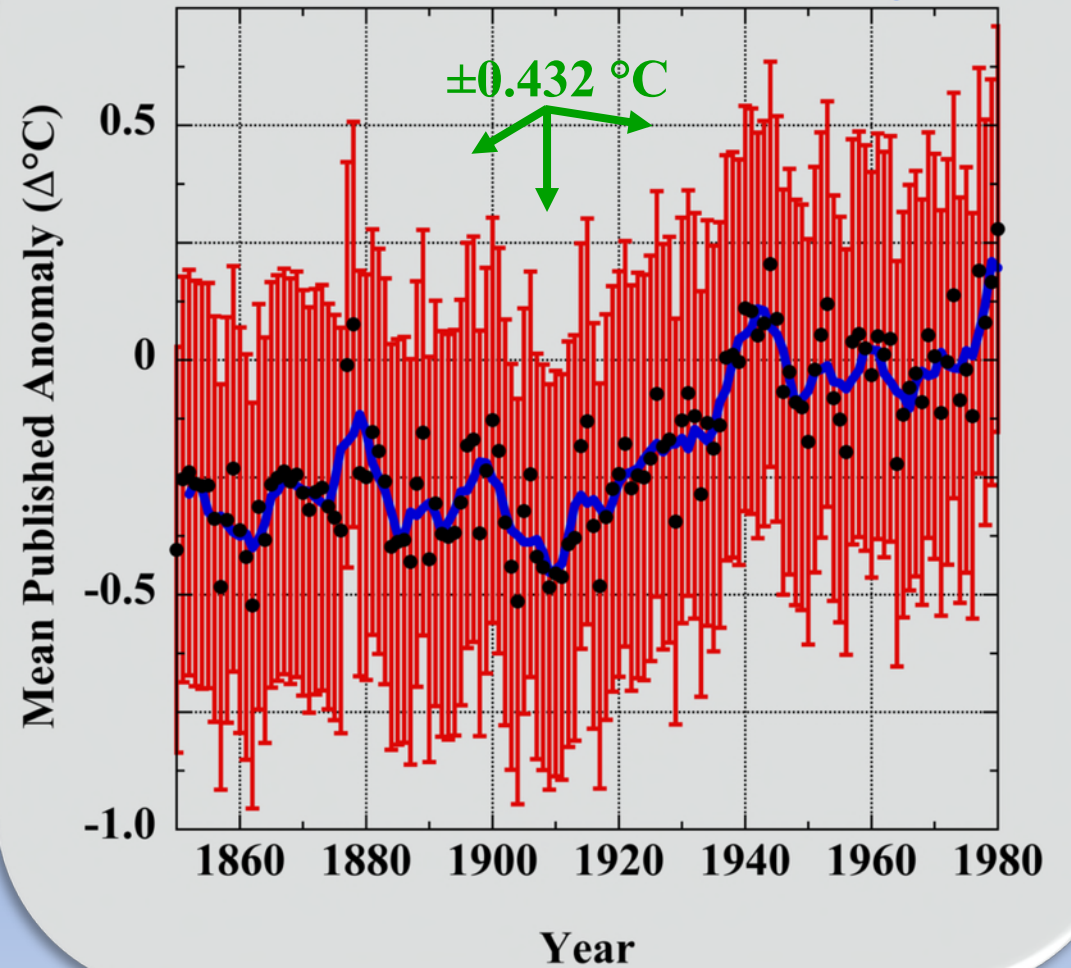
# The Global Average Surface Air Temperature Anomaly I

(1951-1980 normal)

## Global Average Surface Air Temperature Anomaly and its Uncertainty as Published



## Global Average Surface Air Temperature Anomaly and its Thermometer Uncertainty

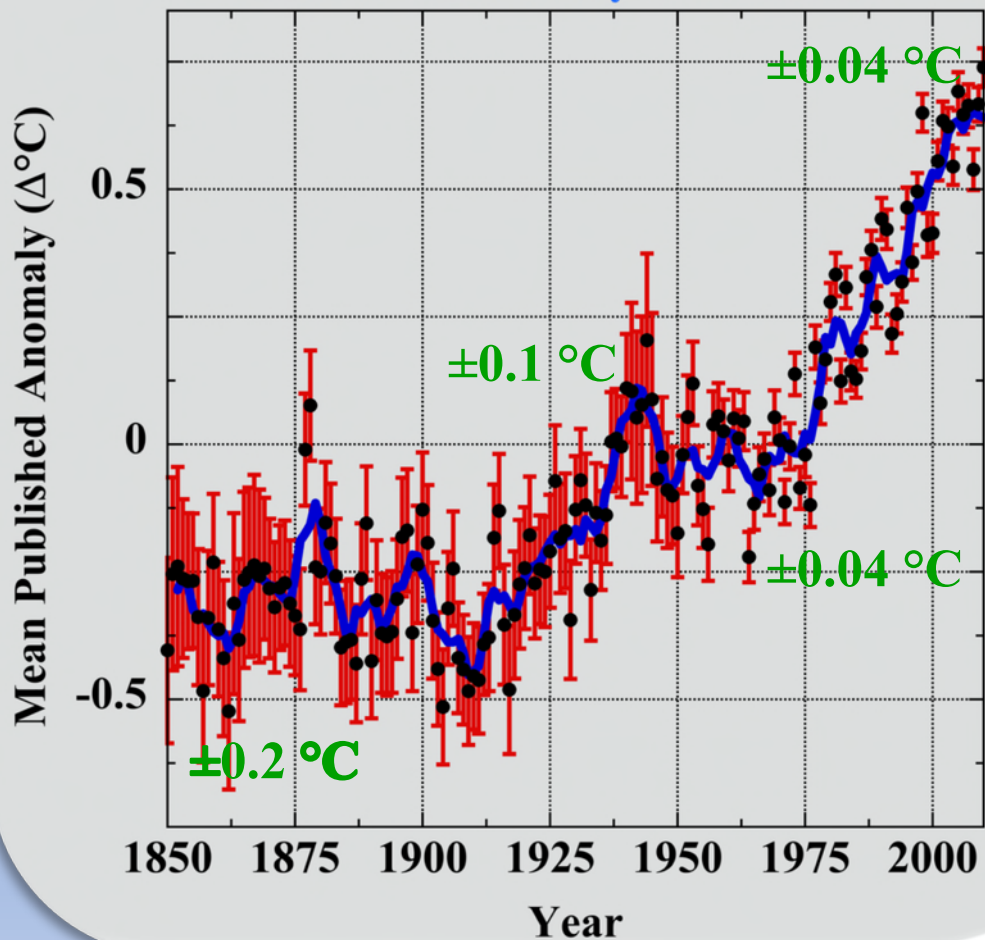


The published uncertainty (95% CI) is 2-10 $\times$  smaller than the laboratory ideal.

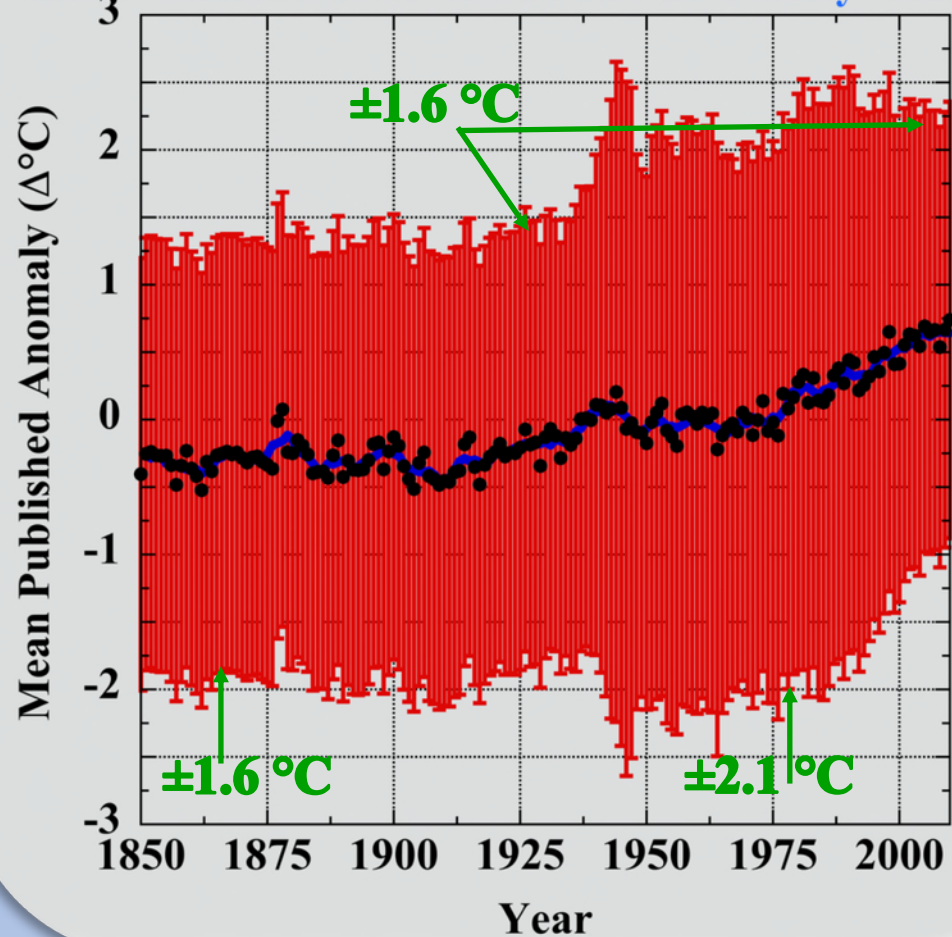
# The Global Average Surface Air Temperature Anomaly II

(1951-1980 normal)

### Global Average Surface Air Temperature Anomaly and its Uncertainty as Published



### Global Average Surface Air Temperature Anomaly and its Thermometer and Field Uncertainty Combined



The published uncertainty (95% CI) is 8-53× *smaller* than the total measurement uncertainty



# What We Know About Future and Measured Global Average Surface Air Temperature

- About future global surface air temperature: Nothing.
  - About Climate models:
    - cannot simulate present air temperature.
    - cannot predict future air temperature.
    - cannot resolve the effect of GHG emissions.
    - cannot detect, attribute or project the impact, if any, of human fossil fuel emissions.
- About measured global surface air temperature: A little.
  - The climate has probably warmed since 1900.
  - The rate of warming is unknown.
  - The magnitude of warming is unknown.
  - No evidence of any unprecedented change.
  - **Not discussed: prior to 1900, the entire surface air temperature record is unreliable.**

**CO<sub>2</sub> climatology lives on false precision.**

**CO<sub>2</sub> climatologists are not trained to evaluate the reliability of their own models and data**

**The UN IPCC claim of human-caused climate change has no basis in science.**

**Colloquially: The UN IPCC and the CO<sub>2</sub> climatologists don't know what they're talking about.**

**There is no climate crisis in evidence.**

# On the Reliability of CO<sub>2</sub> Climatology

## Sources and Further Reading

### On Climate Models

- P. Frank (2019) *Propagation of Error and the Reliability of Global Air Temperature Projections*. **Frontiers in Earth Science: Atmospheric Sciences** 7, 233; <https://doi.org/10.3389/feart.2019.00223>
- P. Frank (2016) *No Certain Doom: On the Accuracy of Projected Global Average Surface Air Temperatures* (video) <https://www.youtube.com/watch?v=THg6vGGRpvA>
- P. Frank (2008) *A Climate of Belief*. **Skeptic** 14(1), 22-30 [https://www.skeptic.com/reading\\_room/a-climate-of-belief/](https://www.skeptic.com/reading_room/a-climate-of-belief/)

### On Surface Air Temperature

- P. Frank (2010) *Uncertainty in the Global Average Surface Air Temperature Index: A Representative Lower Limit*. **Energy & Environment** 21(8), 969-989; <https://doi.org/10.1260/0958-305X.21.8.969>
- P. Frank (2016) *Systematic Error in Climate Measurements: the global air temperature record*, in **The Role of Science in the Third Millennium**, R. Ragaini, Ed., World Scientific: Singapore. pp. 337-351; [https://doi.org/10.1142/9789813148994\\_0026](https://doi.org/10.1142/9789813148994_0026)
- P. Frank (2023) *LiG Metrology, Correlated Error, and the Integrity of the Global Surface Air-Temperature Record*. **Sensors** 23(13), 5976 <https://www.mdpi.com/1424-8220/23/13/5976>

### On CO<sub>2</sub> Climatology

- P. Frank (2023) *Are Climate Modelers Scientists?* **ResearchGate** <https://doi.org/10.13140/RG.2.2.34218.70083>
- P. Frank (2015) *Negligence, Non-Science, and Consensus Climatology*. **Energy & Environment** 26(3), 391-416 <https://doi.org/10.1260/0958-305X.26.3.391>