

Climate at a Glance: Climate Models vs. Measured Temperature Data

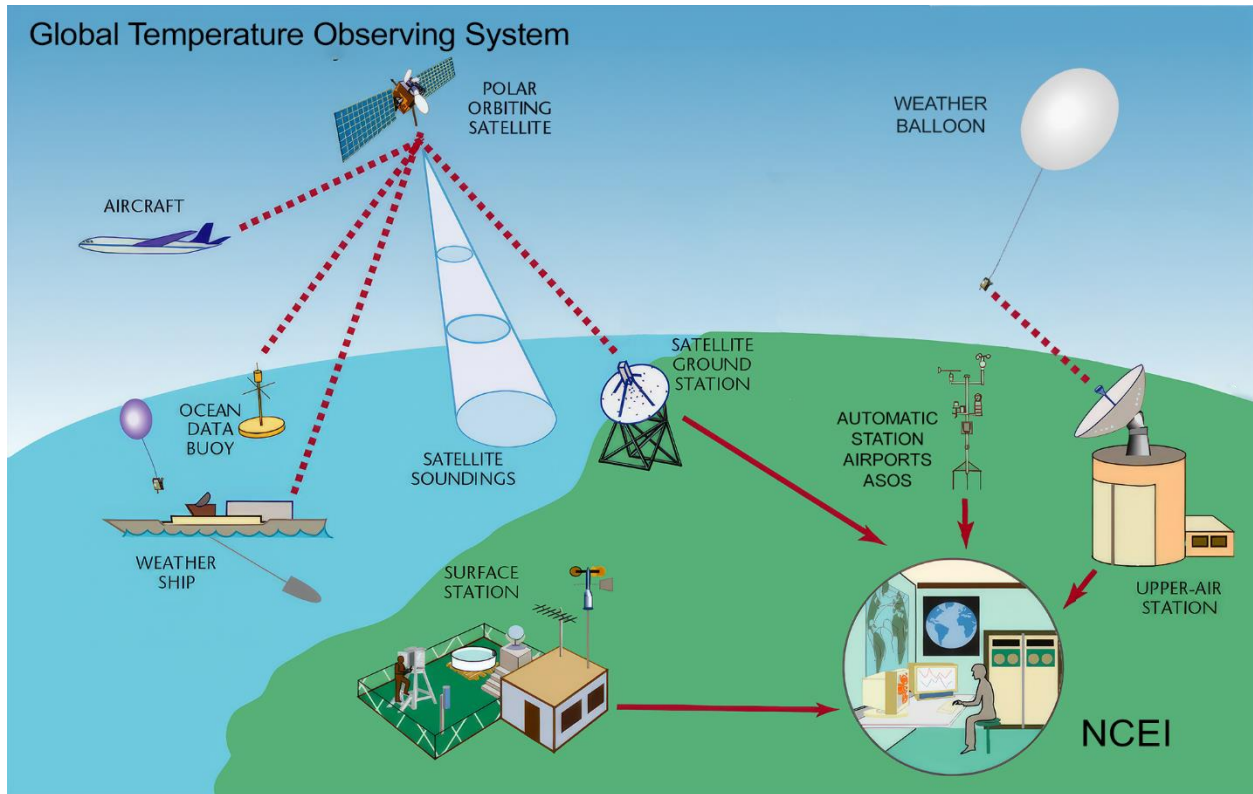


Image: pictorial of all temperature observing systems used by government weather agencies. Based on an image originally from the World Meteorological Organization, with updates for clarity by A. Watts and C. Rotter.

Key Takeaways:

- Climate activists and the mainstream media often claim global temperatures have dramatically increased due to climate change, citing climate model temperature projections to support their claims.
- Actual data from satellites, radiosonde weather balloons, and surface temperature measurements show a warming rate of less than half that predicted by climate models.
- Not a single climate model's projections match real-world observations made today.

Short Summary:

Climate models projecting strong future global warming rates are often cited as demonstrating the need for immediate action to fight rapid climate change.^{1,2} However, multiple lines of real-world data show the actual measured rate of warming is relatively mild and less than half the rates displayed by climate models.

A [peer-reviewed scientific study](#) by Alabama State Climatologist, John Christy Ph.D., confirms this. Christy's research shows the climate model projections far outpace actual measurements, as seen in Figure 1.³ Christy also presented his findings in congressional testimony.⁴

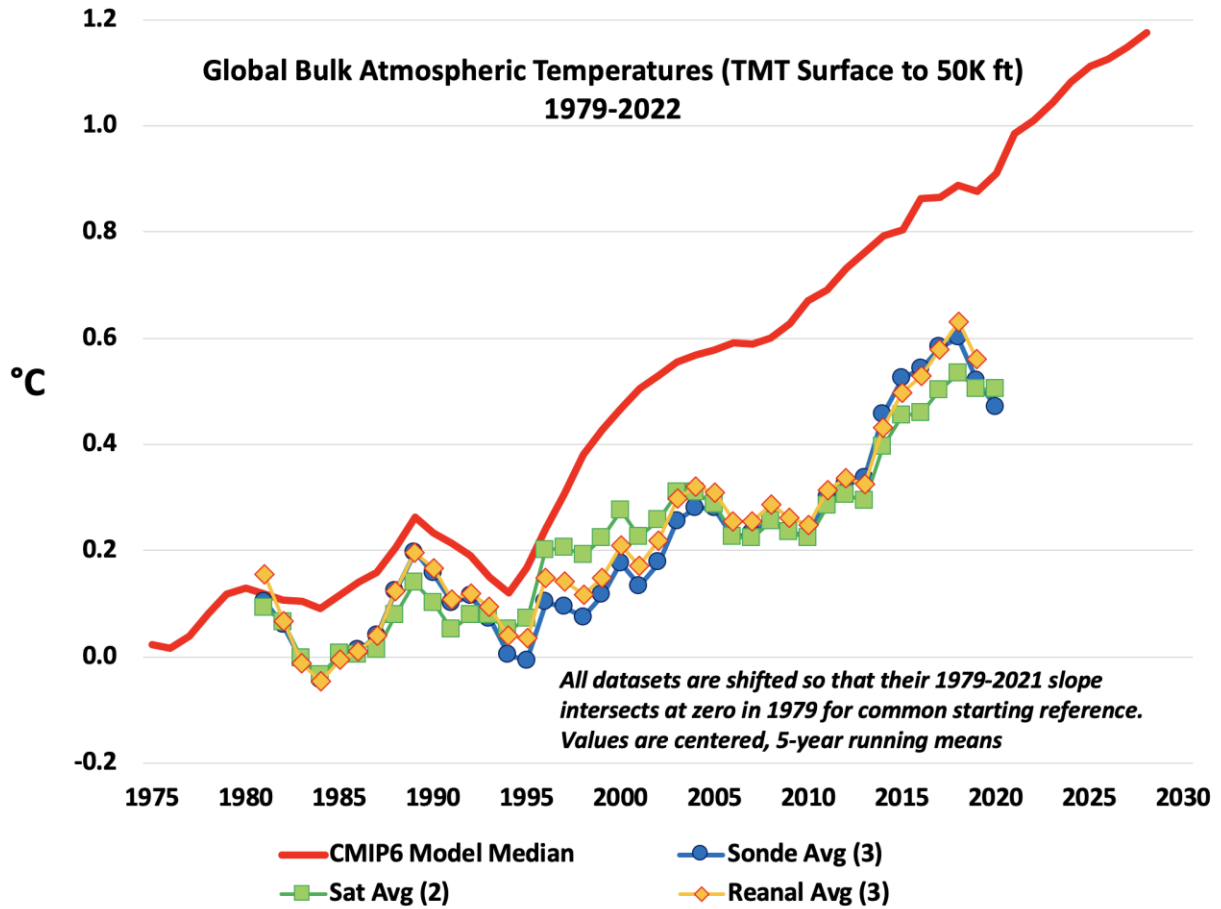


Figure 1: Comparison of global warming trends from 1979 to 2022 between CMIP6 climate models (median of all models in red) compared to average of satellite derived temperature measurements (green), average of weather radiosonde balloons (blue), and reanalysis of average surface temperature measurements (orange). Note the red line indicating climate model temperatures has rates of warming that are nearly double that of actual measurements in 2022. Graph by John Christy, PhD.

Figure 1 illustrates that actual measurements using satellites, weather balloons, and surface temperatures are in reasonably close agreement while climate models have strongly diverged from actual temperature measurements.

Figure 2 shows that every one of the climate models overstate measured warming. This suggests a fundamental failure with the scientific assumptions going into and the programming of the CMIP6 climate models.

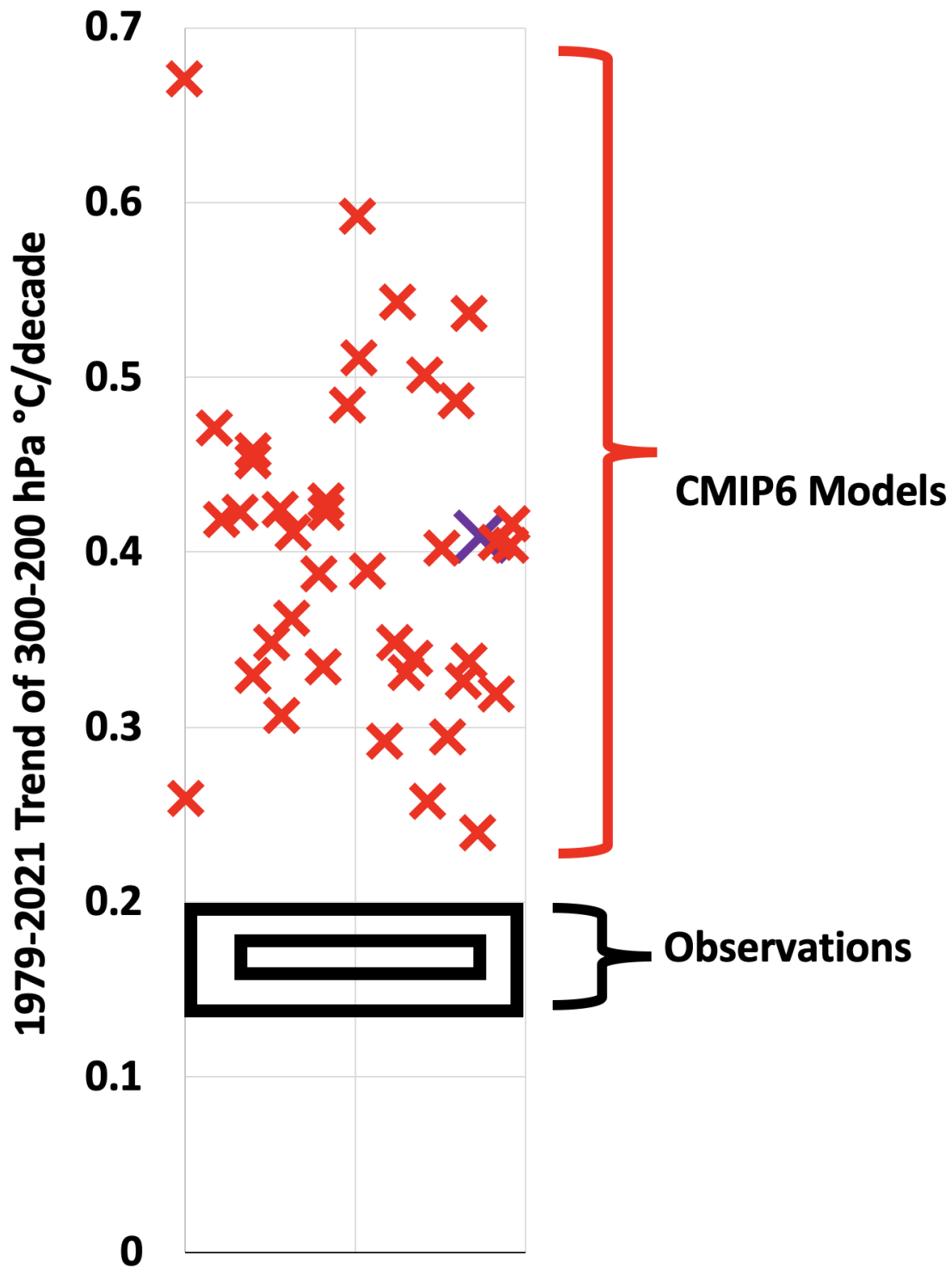


Figure 2: comparison of thirty-five CMIP6 climate model rates of warming from 1979-2021 (each indicated by a red X, with the mean value of all models indicated by a purple X) versus the average value of all real-world observations in the black box. Not a single CMIP6 climate model hits the target matching real-world observations made today. Chart by John Christy, PhD.

A [recent peer-reviewed study](#) confirms what is shown in Figures 1 and 2, saying science recognizes a “hot model problem.”⁵

To sum up, contrary to commonly made claims that climate models accurately predict climate change, measured data shows the climate models run way too hot, producing [implausibly high warming outputs](#).⁶ Climate models that have run too hot in the past are highly likely to be predicting too much warming in the future, also.

References:

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