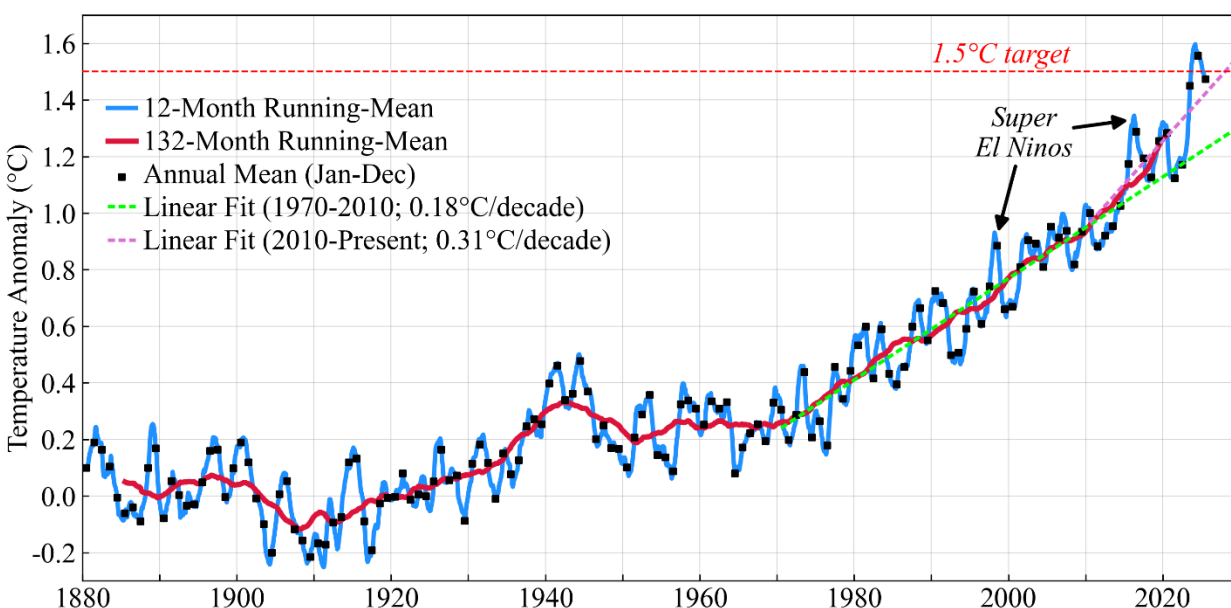**Fig. 1. Global surface temperature (relative to 1880-1920 base period).[1]**

# Global Temperature in 2025, 2026, 2027

18 December 2025

James Hansen, Pushker Kharecha, Dylan Morgan and Jasen Vest

Abstract. Global temperature in 2025 declined 0.1°C from its El Nino-spurred maximum in 2024, making 2025 the second warmest year. The 2023-2025 mean is +1.5°C relative to 1880-1920. The 12-month running-mean temperature should decline for the next few months, reaching a minimum about +1.4°C. Later in 2026, we expect the 12-month running-mean temperature to begin to rise, as dynamical models show development of an El Nino. We project a global temperature record of +1.7°C in 2027, which will provide further confirmation of the recent global warming acceleration.

Global temperature of +1.47°C in 2025 relative to 1880-1920 is the 2nd highest in the period of instrumental data, about 0.1°C cooler than the 2024 record high (Fig. 1) in the GISS (Goddard Institute for Space Studies) analysis.[1] (We assume the remainder of this month will be about 0.1°C cooler than the same period in 2024; this uncertainty in the exact December temperature has imperceptible effect on the 2025 temperature in Fig. 1). The 3-year (2023-2025) temperature is +1.5°C relative to 1880-1920. We will provide details on the geographical and temporal temperature change in a communication in early 2026.

Two years ago (29 March 2024) we projected[2] that global warming in the then-ongoing El Nino would rise much more than in prior El Ninos, raising global temperature to at least +1.6°C, and that temperature after the El Nino would fall only to +1.4°C (see Fig. 2). (Expectation of unusual warming was based on realization that a long-term global cooling effect of aerosols had recently shifted to warming, as we will discuss further in an upcoming post.) Consistent with this prior projection, we expect a minimum 12-month running-mean temperature of about +1.4°C to be reached in the first half of 2026, after which global temperature should begin a rise that will continue into 2027, reaching a new record high, as discussed below.

1

Fig. 2. Copy of Fig. 10 of "Global Warming Acceleration: Hope vs Hopium"[2]
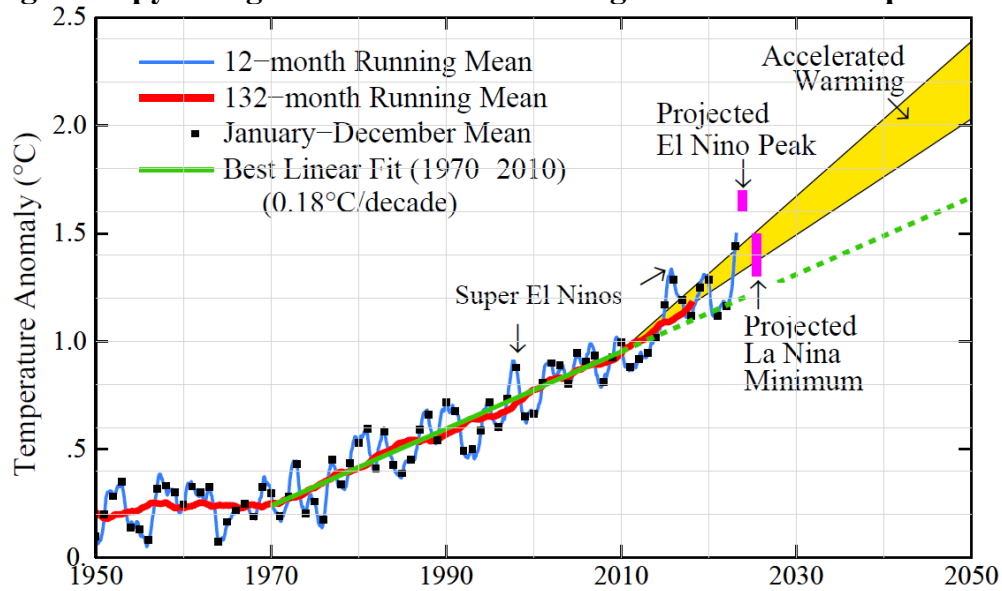
El Nino status. The tropical Pacific Ocean is presently in its cool La Nina phase, but there is evidence in numerous models that it will shift into the El Nino phase in 2026. Fig. 3 is the sea surface temperature (SST) anomaly (relative to the base period 1991-2020) in the Nino3.4 region in the tropical Pacific Ocean. This Nino3.4 index characterizes the El Nino Southern Oscillation (ENSO) status, which is the largest natural source of global interannual temperature variability. Warm or cold anomalies need to exceed 0.5°C for several consecutive months to qualify as El Nino or La Nina. Beware that rapid global warming of the past half century is perturbing the quantitative significance of Nino3.4.[3] The strongest El Nino relative to its surroundings was the 1997-98 El Nino; the 2015-16 and 2023 El Nino strengths are exaggerated by the effect of global warming on the Nino3.4 index, which also diminishes apparent strength of recent La Ninas.

NOAA's ENSO projections are very conservative, the 15 December ENSO Alert concluding "La Nina is favored to continue for the next month or two, with a transition to ENSO-neutral most likely in January-March 2026 (68% chance)." This is more a statement of current conditions, rather than a prediction. Numerous models and evidence point toward an El Nino beginning in the second half of 2026. For example, Fig. 4 is an ensemble of projections of the current NOAA NCEP (National Center for Environmental Prediction) model.[4] We can use the well-founded expectation of this upcoming El Nino for a further test of global warming acceleration.

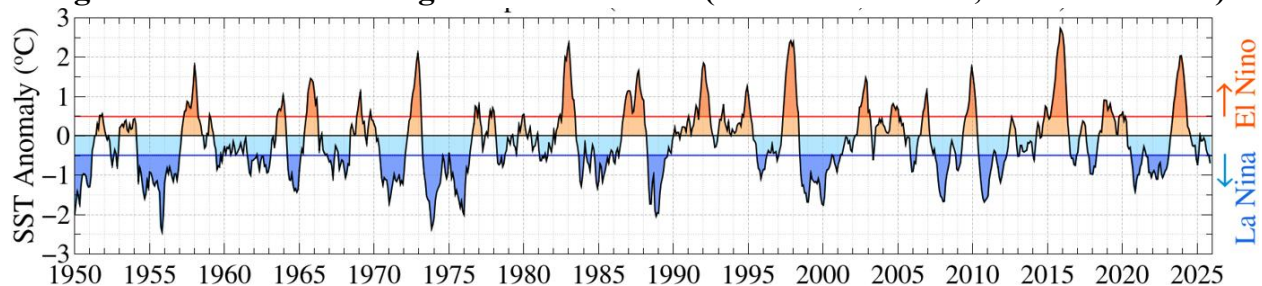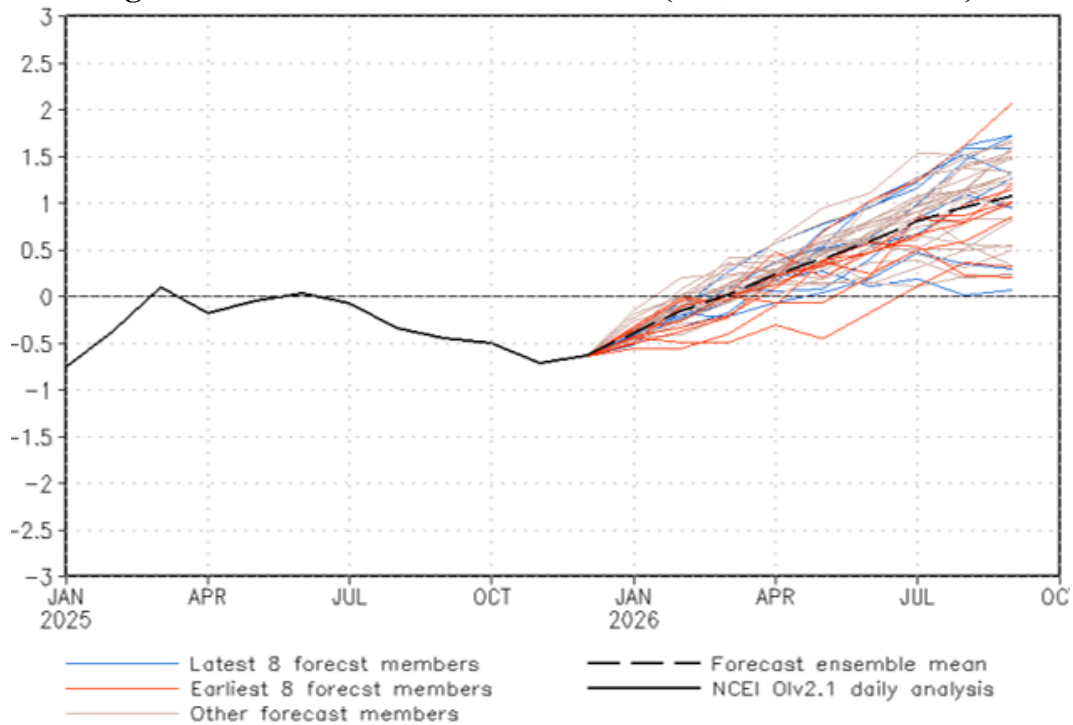**Fig. 3. Nino3.4 SST through November 2025 (ERSSTv5 dataset, base 1991-2020)**

2

**Fig. 4. NCEP CFS.v2 Nino3.4 forecast (issued 15 December)[4]**

Global warming projection. Assumption of at least a moderate El Nino beginning in 2026 leads us to the projection in Fig. 5, with global temperature reaching a minimum at or above +1.4°C within several months and then rising to a record global temperature of about +1.7°C in 2027. This new record will occur only four years after the 2023 El Nino, so additional, underlying, global warming at the accelerated rate of 0.31°C per decade is only about 0.1°C.

Why play this "prediction" game? The purpose is to test and advance understanding, as described in *Sophie's Planet* (expected completion in the Spring of 2026) with reference to the late Wally Broecker "…the quality of Wally that I admire most was his courage to speculate. Progress in science depends on people who have the knowledge and the courage to attempt an interpretation of available data, which are always incomplete and contain measurement flaws. This quality is the antithesis of scientific reticence.[1] Sometimes Wally's proposed interpretations were criticized as a "house of cards," and, indeed, they often came tumbling down, but, even in such cases, he stimulated research. Other scientists criticized his proposal, flaws were exposed, and improvements were made – that is how scientific progress is made rapidly."

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[1] The great scientist Richard Feynman famously ridiculed scientific reticence, as we will discuss in due course.

Fig. 5. Projected global temperature in 2026 and 2027
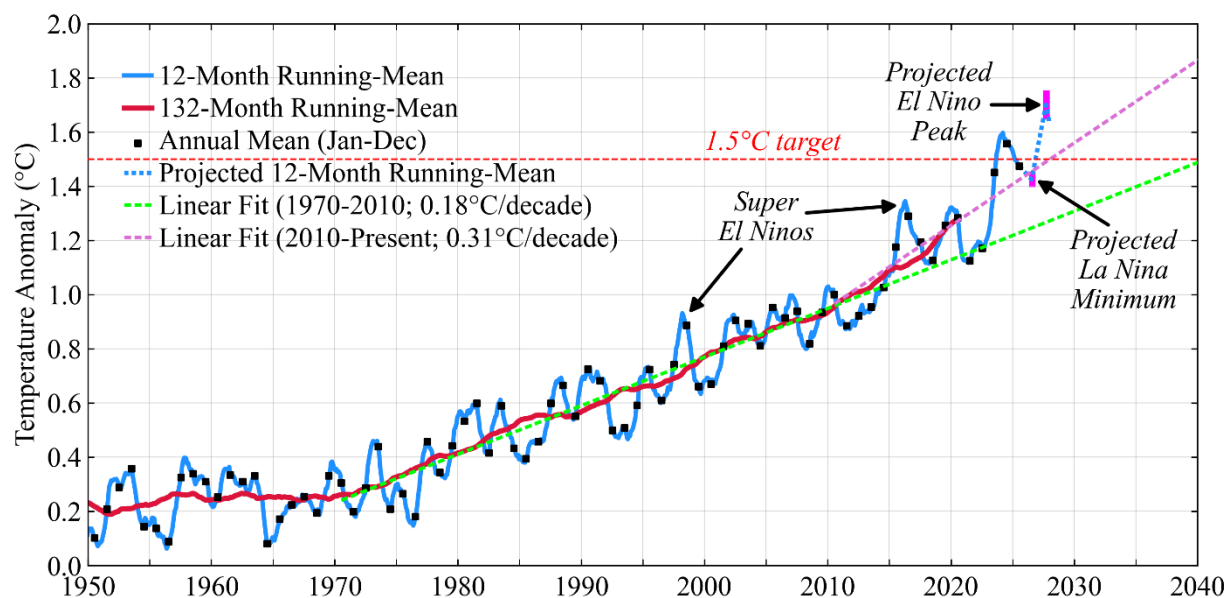
Appeal for financial support. In these times of divisive politics, we need more than ever to clarify the role of humans in climate change. We are grateful for the support (as delineated in section 2.6 of our communication "A miracle will occur" is not sensible climate policy, which allowed us to complete our two main papers of the last three years (Global warming in the pipeline,[5] and Global warming has accelerated).[6]

Contributions are equally useful to CSAS at Columbia University or CSAS.inc; both are 501(C3) non-profits. CSAS at Columbia supports people with Columbia University appointments, while CSAS.inc supports all other costs without overhead (including work with our longtime attorney, Dan Galpern, which contributed to the International Court of Justice recognizing the need for it to address climate change and current efforts to prevent reversal of successful policies in the United States for addressing climate change).

Instructions for donations are at:

CSAS-Columbia University: https://csas.earth.columbia.edu/giving

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[1] Temperature is from Goddard Institute for Space Studies analysis described by Hansen J, Ruedy R, Sato M *et al.* Global surface temperature change, *Rev Geophys* **48**, RG4004, 2010; Lenssen NJL, Schmidt G, Hendrickson M *et al.* A NASA GISTEMPv4 Observational Uncertainty Ensemble, *J Geophys Res Atmos* **129**, e2023JD040179, 2024

[2] Hansen J, Sato M, Kharecha P. Global warming acceleration: hope versus hopium, 29 March 2024

[3] Hansen J, Sato M, Ruedy R. Global warming acceleration: El Nino measuring stick looks good, 14 December 2023

[4] NOAA National Center for Environmental Prediction forecasts are available and updated weekly. A new ensemble of climate model runs is made each week. Chart 24 in their Weekly ENSO Evolution, Status and Prediction shows the average of other global atmosphere-ocean models as "DYN AVG."

[5] Hansen JE, Sato M, Simons L *et al*., "Global warming in the pipeline," *Oxford Open Clim. Chan.* **3 (1),** 2023

[6] Hansen JE, Kharecha P, Sato M *et al.* Global warming has accelerated: are the United Nations and the public well-informed? *Environ.: Sci. Pol. Sustain. Devel.* **67(1)**, 6–44, 2025