

Fig. 1. Monthly global temperature anomaly.

August Temperature Update, a “Thank You” & Biden’s Report Card

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The past three months were remarkably warm on global average – remarkable because this is a La Nina year, when the cool phase of the El Nino Southern Oscillation keeps the low latitude Pacific Ocean relatively cool. These three months – Northern Hemisphere summer – were each at or near records for the month (Fig. 1), despite the La Nina. Every month this year has been warmer than the same month last year (Fig. 1), even though the present La Nina is as deep as last year (Fig. 2).

Our interpretation is that the current warmth is spurred by the record Earth energy imbalance, which in turn is spurred by rapid growth of greenhouse gases,¹ reduction of human-caused aerosols,² and the rising phase of the solar irradiance cycle. NOAA and the relevant scientific community predict that the La Nina will continue at least through this coming winter, for a third consecutive year.³

El Nino/La Nina are the largest cause of global temperature variability on the time scale of a few years and they are notoriously difficult to predict more than a few months ahead. Nevertheless, we have some inside information, which encourages us to hazard a prediction for the next three annual

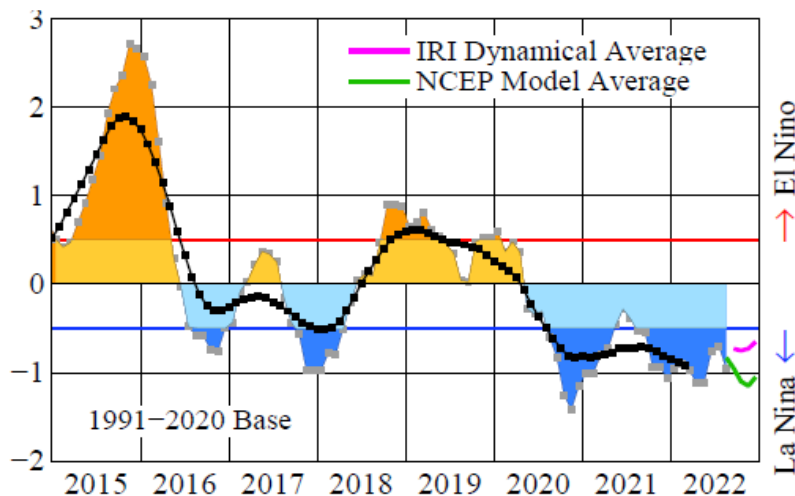


Fig. 2. Nino3.4 temperature anomaly (°C).

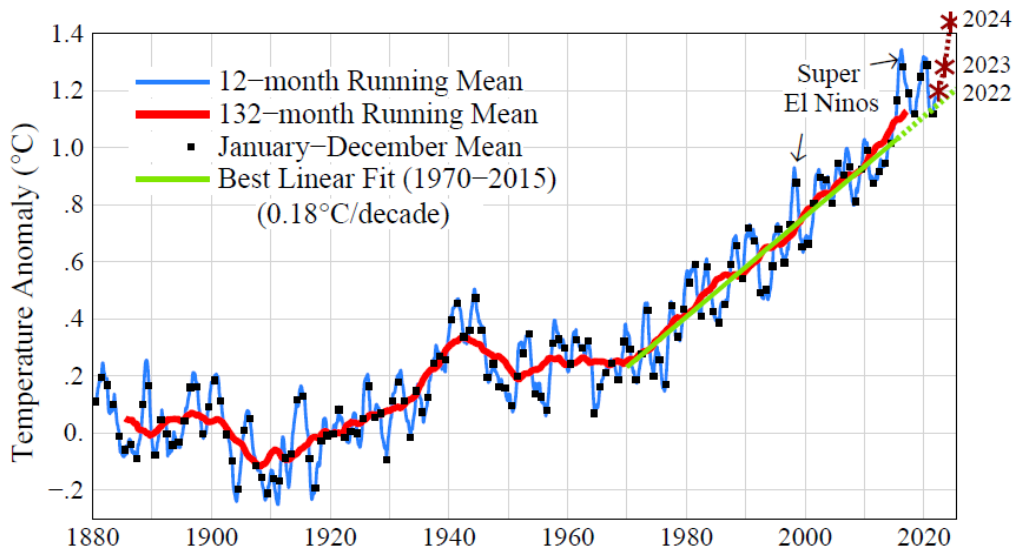


Fig. 3. Global surface temperature relative to 1880-1920 mean.

mean global temperatures – we might then learn something from comparison with future reality. Prediction of the annual 2022 global temperature is child’s play at this point: the final four months this year should average higher than the same months last year, so the 12-month running mean at the end of this year will have ticked up to about the level in 2017. That will put 2022 in approximately a dead heat with 2017 for 4th warmest year in the record.

The next year, 2023, will be warmer because of the present strong planetary energy imbalance, which is driven by the factors noted above – mainly increasing greenhouse gases. Perhaps an El Nino will begin in the second half of the year, but the El Nino effect on global temperature lags by 3-4 months. So, the 2023 temperature should be higher than in 2022, rivaling the warmest years.

Finally, we suggest that 2024 is likely to be off the chart as the warmest year on record. Without inside information, that would be a dangerous prediction, but we proffer it because it is unlikely that the current La Nina will continue a fourth year. Even a little futz of an El Nino – like the tropical warming in 2018-19, which barely qualified as an El Nino – should be sufficient for record global temperature. A classical, strong El Nino in 2023-24 could push global temperature to about +1.5°C relative to the 1880-1920 mean, which is our estimate of preindustrial temperature.

Petition to EPA to regulate CO₂ emissions. Thanks very much to all the people (more than 1000) who endorsed our petition to EPA to regulate CO₂ emissions using the Toxic Substances Control Act (TSCA).⁴ We made a second trip to Washington to encourage EPA to use its existing authority under that law (TSCA), which was strengthened by Congress in recent years with bipartisan support. CO₂ fits the law’s definition of a toxic substance to a T.

Lise Van Susteren was the star in our presentation to EPA. She put an hourglass on the table to emphasize that time was running out. She is a psychiatrist and psychologist, who, in describing the effect on young people of governments’ ineffectual action on climate change, nearly brought tears to the eyes of her co-petitioners. Still, although the EPA officials listened politely, we got few questions. On the way home, I marveled at the stark contrast with my first presentation to EPA, in 1982. John Hoffman took me to see Joe Cannon (Head of EPA’s “Air” office) and John Topping. Busy, high-level officials, but we spent an hour with Cannon. Their enthusiasm for EPA to do something was overflowing. I soon had \$200K+ from EPA and a couple of then-modern computer workstations to run our coarse-resolution climate model on. We provided data for Hoffman to write his infamous EPA report: “Can We Delay a Greenhouse Effect?” Hoffman was promptly slapped down by an anti-environmental U.S. administration and our EPA funding was soon down to zero.

Today we have a favorable administration in Washington, but do they understand what is needed to deal with climate change? EPA rejected our petition,⁵ but there have been cases in the past when EPA rejected such petitions and then took up the work to see that the proposed actions actually happened. There are people in the administration who seem to understand what is needed and are supportive of our petition, so we can't put a grade on Biden's report card quite yet.

EPA has already used TSCA to phase down greenhouse gases (GHGs) that have no effect on ozone – they are simply GHGs that affect climate. This use of TSCA was upheld by the courts – the DC Circuit Court of Appeals in a ruling filed, notably, by Circuit Judge Brett Kavanaugh, now a Supreme Court Justice. The presumption that all conservatives are climate deniers determined to go down with the ship may not be well-founded. Sometimes the biggest chest-thumpers, those proclaiming to be heroes of the revolution, are actually its enemies. A good candidate for the Colonel Nicholson award is the New York Times and their description of the misnamed “Inflation Reduction Act” as if it were a climate savior. They had the gall to publish an article on 9 August that began “Did the Democrats Just Save Civilization?” They really did it. The Inflation Reduction Act...about to become law...

The “Inflation Reduction Act” (quotation marks required) will add a bit to the downward trend in U.S. emissions and have of the order of 1% effect on global emissions, with the help of a huge loan that our children and grandchildren will need to repay. A rising carbon fee initiated under TSCA, in contrast, could be the beginning of the fundamental approach that is needed, an approach that most economists agree could be made near-global via border tax adjustments. We have been fighting this battle with the Times for decades, but with their millions of readers and our meager thousands, it's a tough fight (these chapters,⁶ written some time ago, are being revised – criticisms welcome).

¹ Hansen, J., [November Temperature Update and the Big Climate Short](#). 23 December 2021.

² Hansen, J., [July Temperature Update: Faustian Bargain Comes Due](#). 13 August 2021.

³ [NOAA website](#).

⁴ Hansen, J., M. Sato and R. Ruedy, [Carbon Dioxide is a Pollutant](#), 17 June 2022.

⁵ Mindock, Clark. “[Greenhouse gases can't be regulated as toxic substances, says U.S. environmental agency](#).” Reuters. September 22, 2022.

⁶ [Draft Chapters 44&45](#), *Sophie's Planet*.