The Forward Eagle

News, Reviews & Elisions
Of Mutual Interest
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Current events

EVIDENCE TO THE CONTRARY WANES

Summer started barely a week ago, and already the United States has been smothered in a record breaking "heat dome." Alaska saw its first ever heat advisory this month. This all comes on the heels of 2024, the hottest calendar year in recorded history.

The world is getting hotter, faster. A report published last week found that global warming is now increasing by 0.27 degrees Celsius per decade. That rate was recorded at 0.2 degrees in the 1970s and has been growing ever since.

The increase doesn't surprise scientists who have been crunching the numbers. For years, measurements have followed predictions that the rate of warming in the atmosphere would speed up. Now, actual weather patterns evident in researchers' charts and graphs are starting to become a part of people's daily lives.

"Each additional fractional degree of warming brings about a relatively larger increase in atmospheric extremes, such as extreme downpours, severe droughts and wildfires," says Daniel Swain a climate scientist at the University of California.

While incremental warming aligns with scientific predictions of how climate change intensifies, the increase in severity of climate change events may feel sudden to people who experience them for the first time.

"When we had lower levels of warming, that impact was less dramatic," Dr. Swain said. "There is growing evidence that these extreme extremes will increase faster and to a greater extent than we used to think was the case," he added.

"Take rainfall, for example. Generally, extreme rainfall is intensifying at a rate of 7% with each degree Celsius of atmospheric warming. But recent studies indicate that so-called record shattering events are increasing at double that rate," Dr. Swain said.

"There is no weather happening outside of climate," said Kate Marvel, a climate scientist and author of the book "Human Nature."

"This is manifesting itself in the real world," she said, citing catastrophes like Hurricane Helene and Vermont's historic 2023 floods.

According to Dr. Swain, scientists have yet to come to a universal understanding of these events. The infrequent nature and severity of climate events makes them difficult to predict and study.

As warming has intensified, so have the impacts on vulnerable regions of the planet like the Arctic and the Antarctic, making previously rare or hidden consequences more apparent. Scientists are fine-tuning their models to understand the behavior of the vast ice sheets in such places to match the rapid changes they are observing.

In March, NASA analysis found that sea levels had risen faster than expected in

Small picture of the big picture

2024. The increase in melting glaciers and heat penetrating deeper into oceans cause sea water to expand thermodynamically. Sea surface temperatures are rising faster than previously expected, too, according to a study published by researchers at the National Center for Earth Observation in Britain.

Cecilia Bitz, a professor of climate science at the University of Washington, said that modeling the Earth is complex and that there are innumerable amount factors that could be taken into account. But even with these uncertainties, scientist are constructing models to identify trends. These are largely accurate. "Nothing is contradicting the big picture that includes the physics of the climate system," said Dr. Bitz.

> Global warming is a symptom of Earth's energy imbalance: a measure of the difference between the amount of heat reaching the Earth from the Sun and the amount radiating back into Space.

Overall atmospheric warming has consistently followed modeling predictions for decades. But recently, the fundamental imbalance responsible for the heat has been "tilting"– catching researchers off guard.

Global warming is a symptom of Earth's energy imbalance, which is a measure of the difference between the total amount of heat reaching the Earth from the Sun and the amount radiating back into Space.

In May, a paper analyzing data from a NASA satellite found that this imbalance had grown faster than expected, more than double in the past two decades, nearly twice as large as it was previously predicted to be. Jake Hausfather, a climate scientist at Berkeley Earth, said that researchers were still working to understand these recent findings.

There are a number of various sea rise theories. One theory looks at the emissions of aerosols, a type of air pollution that is harmful to human health. Chlorofluorocarbons (CFCs) were previously used as aerosol can propellants but were phased out due to their damaging effects on the ozone layer. It was found that CFCs increase the reflectivity of clouds which reflect the Sun's heat back into Space.

Historically, these aerosol emissions have masked the warming effect of greenhouse gases, just as does carbon dioxide. Over the past half-century of so, as nations reduced certain kinds of air pollution, aerosol emissions fell significantly. According to Dr. Hausfather, this change is thought to be the primary reason atmospheric warming has accelerated in recent decades.

"The most worrying possibility behind Earth's energy imbalance," he said, "is how the general nature of clouds may be changing in response to climbing temperature." This feedback loop could exacerbate warming and is "one of the single biggest uncertainties in predicting future climate," according to Hausfather..

As the world continues to emit planet warming greenhouse gases and temperatures climb past what the human world was built to handle, more populations will experience climate change in damaging and unexpected ways.

Word of the week

phenomenon

/fəˈnämə ˌnän,fəˈnämənən/

noun: phenomenon
plural noun: phenomena

1. A fact or situation that is observed to exist or happen, especially one whose cause or explanation is in question.
"glaciers are unique and interesting natural phenomena"

2. A remarkable person, thing, or event.
"the band was a pop phenomenon just for their sales figures alone"

3. Philosophy: the object of a person's perception; what the senses or the mind notice.

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This paper is offered as a review of recent topics taken up by the current events discussion group at Riverdale Senior Services Center.

Please join us at the Center for Ageless Living, 2600 Netherland Avenue, Bronx, NY each Monday at 1:00 o'clock in the afternoon for Current Events with Tim.

This week's article was excerpted and edited from *The New York Times.*