Our Ocean Backyard

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Article No. 397

Heat is Breaking Records

The Earth continues to get hotter and there is agreement between different climate agencies across the world that July 3-6 were the hottest four days globally ever recorded. Record temperatures are predicted to persist for a while longer, however, breaking records that nobody is going to be happy about. One extreme record, the hottest temperature ever recorded on Earth was 134°F and is usually credited to Death Valley’s Furnace Creek Ranch in July of 1913. The present heat dome spreading across the western and southern US is likely to produce all-time records in Phoenix, Las Vegas, California’s Central Valley, and possibly surpass 130 degrees in Death Valley, known as the heat capital of the world. Nightime low temperatures in Death Valley are forecast to exceed 100 degrees.

But it’s not just hot in the US. Comments from climate scientists and agency leaders range from the U.N. Secretary General Antonio Guterres, “climate change is out of control”, to Carlo Buontempo, Director of Europe’s Copernicus Climate Change Service, “We have never seen anything like this before”. He said any number of charts and graphs on Earth’s climate are showing, quite literally, that “we are in uncharted territory.”

These temperatures and these statements should concern every person on the planet. Excessive heat watches and warnings are affecting over 100 million people across 15 states stretching from Washington state to New Mexico, including California, and from Texas to Florida. Unprecedented ocean water temperatures in Florida between 94 and 98 degrees are threatening temperature sensitive corals and other marine life. For comparison, our ocean temperature on Thursday in Santa Cruz was 64 degrees.

The entire planet, atmosphere and oceans, are getting warmer. The southern US has been sweltering under an intense heat dome for weeks, and Texas was spared rolling blackouts from their independent but aging power grid by their solar arrays and wind farms. I wonder how those bay area companies that relocated to Texas for lower taxes are now thinking about the wisdom of that decision.

After experiencing their warmest May on record, Canada (not generally known as a hot spot) just had their warmest June ever with record heat covering half of the country for this two-month period.

Heat isn’t just a number on a thermometer and an inconvenience – excess heat can kill you. Heat stress, when the body can’t cool itself, is the leading cause of weather-related deaths in Europe. The New York Times reported on a study just published on July 10 in the journal Nature Medicine that heat waves in the summer of 2022 killed 61,000 people in Europe.

Most of those fatalities were women, especially those older than 80. Among younger people, men died at higher rates. Mediterranean countries, where temperatures were the highest, had the greatest number of fatalities; Italy, Spain and Portugal led in those statistics. The results of this investigation showed that 20 years of efforts in Europe to adapt to a hotter climate have not kept up with the rate of global warming.

Extreme heat is the number-one weather-related cause of death in the United States, taking more lives each year than hurricanes, tornadoes and floods combined. Heat was a contributing factor in 1,577 U.S. deaths in 2021. That's a jump from 1,012 in 2018. Perhaps not surprising, heat-related deaths are highest in Nevada and Arizona. Maricopa County, Arizona alone (home to Phoenix and Scottsdale), identified 425 heat-associated deaths in 2022, 25% greater than the prior year. By last Wednesday, July 13, Phoenix had already suffered through 13 straight days with temperatures of 110 degrees or higher. In the greater Las Vegas area, 250 people died of heat-related illnesses in 2022, and this area continues to see longer and hotter heat waves. Texas in 2022 recorded 279 deaths from heat.

Temperature extremes can damage the central nervous system, the brain and other vital organs, and the impacts of heat can occur very quickly leading to heat exhaustion, heat stroke and heat cramps. Heat can also exacerbate existing medical conditions such as hypertension and heart disease. Older people are at a higher risk as are children, who often may not be able to regulate their body temperatures as well as adults under extreme conditions. Heat is particularly hard on those who work outside, regardless of age, such as farm workers, who make up a significant portion of our central coast population.

We are fortunate here in Santa Cruz and around Monterey Bay as we all benefit from the moderating effects of the adjacent offshore ocean. While it can occasionally get into the 90s and even over 100 degrees for a few days in some years, we don’t experience the weather and heat of Arizona, Nevada, Texas or even the Central and Santa Clara Valleys. The highest official temperature ever recorded in Santa Cruz was on September 3, 2017, when the thermometer climbed to 110 degrees. There were also two days in August of 2020 when it reached 107.

It is becoming increasingly likely with a major El Niño on the way that this year will be the Earth’s warmest on record. A diverse array of observations and measurements are pointing strongly in this direction. North Atlantic temperatures are already close to their annual peak; the sea ice off Antarctica and in the Arctic is reaching record low levels.

The frightening thing is that these heat records are being broken and measurements are being exceeded before the arrival of what is projected to be a major El Niño, which doesn’t usually peak until December or January. “We have been seeing unprecedented extremes in the recent past, even without being in this phase,” said Claudia Tebaldi, an Earth scientist at the Department of Energy’s Pacific Northwest National Laboratory. With El Niño’s influence, “the likelihood of seeing something unprecedented is even higher,” she said.

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Ocean heat is to be expected during an El Niño — it is marked by unusually warm sea surface temperatures across the equatorial Pacific. But [shocking warmth has already developed far beyond that zone](https://www.washingtonpost.com/weather/2023/06/14/record-warm-ocean-temperatures/?itid=lk_inline_manual_20), including in the North Pacific, around New Zealand and across most of the Atlantic. NOAA reported that marine heat wave conditions covered about 40 percent of the world’s oceans in June, the largest area on record.

The science has been clear for decades and the fossil fuel industry was well aware of the impacts of burning coal, oil and gas on climate. Yet their denials persisted while their profits soared. And some politicians continue to support junk science and resist the efforts to rein in the fossil fuel industries and deny support for enhanced development of the renewable energy that can, over time, reverse global climate change.

We only have one planet, however, and just one atmosphere and one big ocean, which we all share. We are running a huge chemistry experiment and there is no shut off switch or reverse gear. We are all going to feel the effects of a warmer world, some more than others, and for some, longer than others. We also all have the power to vote; and the only thing that is going to slow down the path we are on is to vote people into decision-making positions, whether at the local, state or national level, who accept the dire reality of the situation we are all in and make it clear that this is a priority that they will do everything in their power to resolve and repair.

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