

El Niño: Historic Comparisons

“Super El Niño” is simply a colloquial term used to refer to “very strong” El Niño events—i.e., those which are among the top 3 or 4 events in the reliable satellite record dating back to the late 1970s and characterized by an ONI/RONI value of +2°C or above.

In addition to boosting odds of a robust summer monsoon across the mountain and desert interior, there will likely also be an increased chance of abnormal convective activity across California.

Much like a snowflake, **no two El Niño, La Niña, or Neutral ENSO years are alike**. Some news outlets may attempt to draw correlations where there are none and may miss key connections to international impact.

- **2015**: Key events included historic Texas/Oklahoma floods, severe West Coast drought and wildfires, and a record-warm year for western states.
- **2016**: Key events included significant flooding in Louisiana and Texas, the destructive Gatlinburg wildfire, and severe drought.

El Niño - 28				La Niña - 25		
Weak - 12	Moderate - 7	Strong - 6	Very Strong - 3	Weak - 12	Moderate - 6	Strong - 7
1952-53	1951-52	1957-58	1982-83	1954-55	1955-56	1973-74
1953-54	1963-64	1965-66	1997-98	1964-65	1970-71	1975-76
1958-59	1968-69	1972-73	2015-16	1971-72	1995-96	1988-89
1969-70	1986-87	1987-88		1974-75	2011-12	1998-99
1976-77	1994-95	1991-92		1983-84	2020-21	1999-00
1977-78	2002-03	2023-24		1984-85	2021-22	2007-08
1979-80	2009-10			2000-01		2010-11
2004-05				2005-06		
2006-07				2008-09		
2014-15				2016-17		
2018-19				2017-18		
2019-20				2022-23		

Smoke particles can reduce the size of water droplets in cumulus clouds, increasing cloud reflectivity and potentially suppressing rainfall.

A recent study found that over the past 40 years, average yield losses due to ozone were 6.1% for soybean and 3.5% for maize, with soybean being more sensitive.

Wildfire smoke exposure lowers dairy cow milk production, reduces feed efficiency, and increases systemic inflammation.

Wildfire smoke significantly reduces egg production in chickens due to environmental stress, reduced lighting, and respiratory irritation.

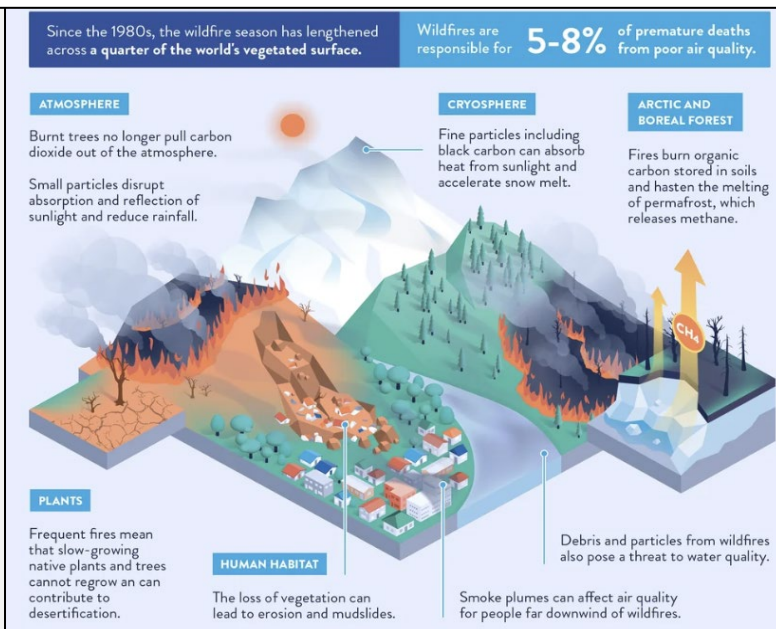
Smoke plumes actively scoop up, transport, and spread living fungal spores across long distances

Wildfire Smoke Crop Risks

A study across several agricultural areas in the U.S. found that wildfire smoke events have increased over time, affecting approximately 20% of growing season days, especially in July and August.

Dense wildfire smoke can reduce light intensity, limiting the energy available for photosynthesis and potentially slowing plant growth.

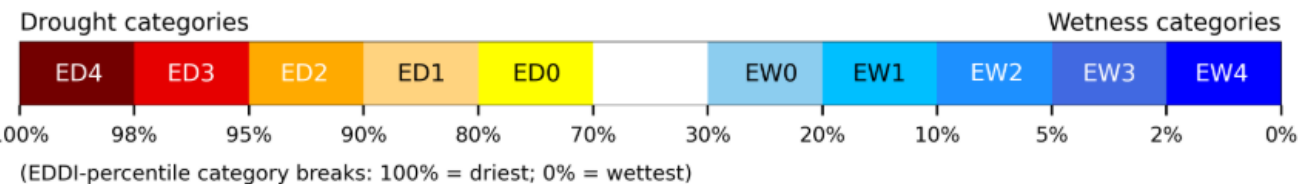
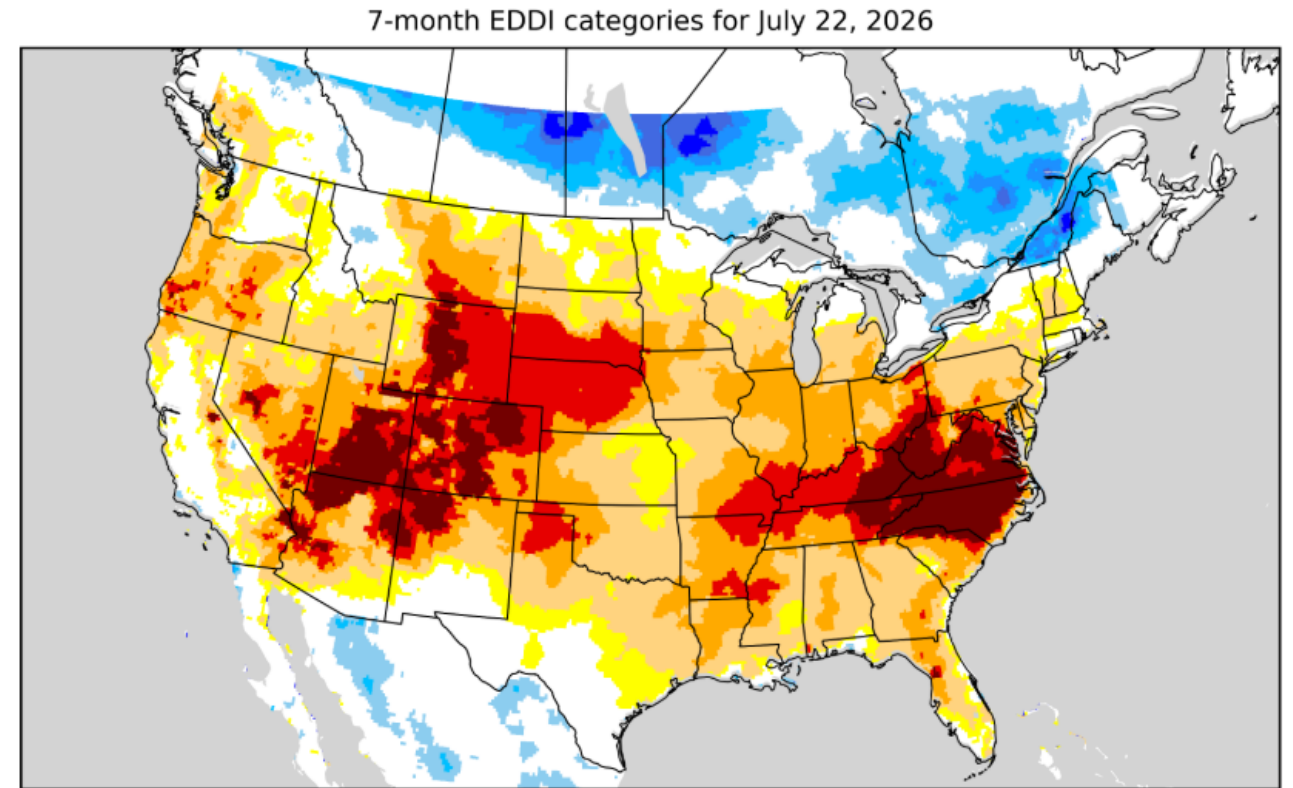
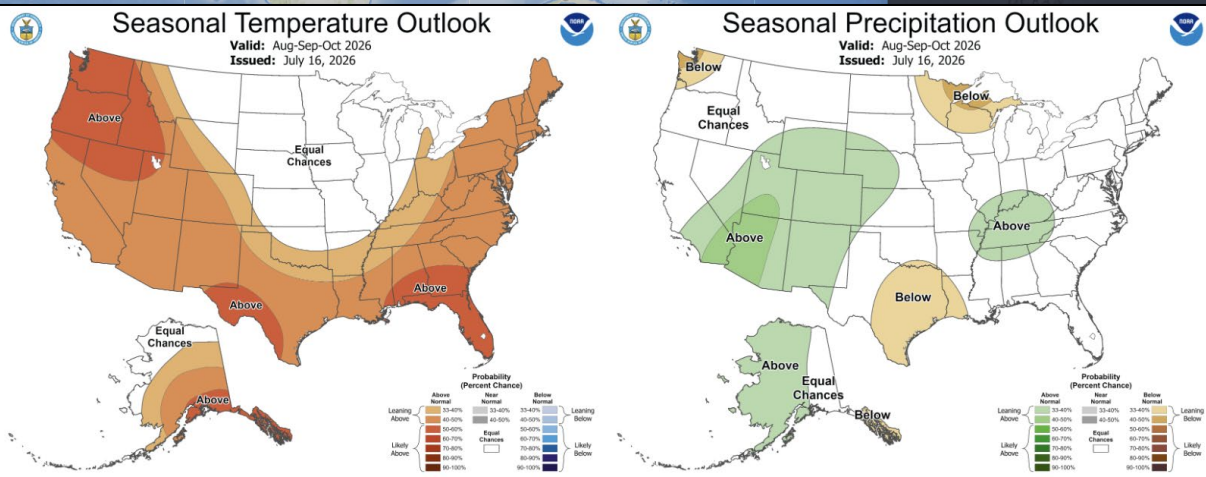
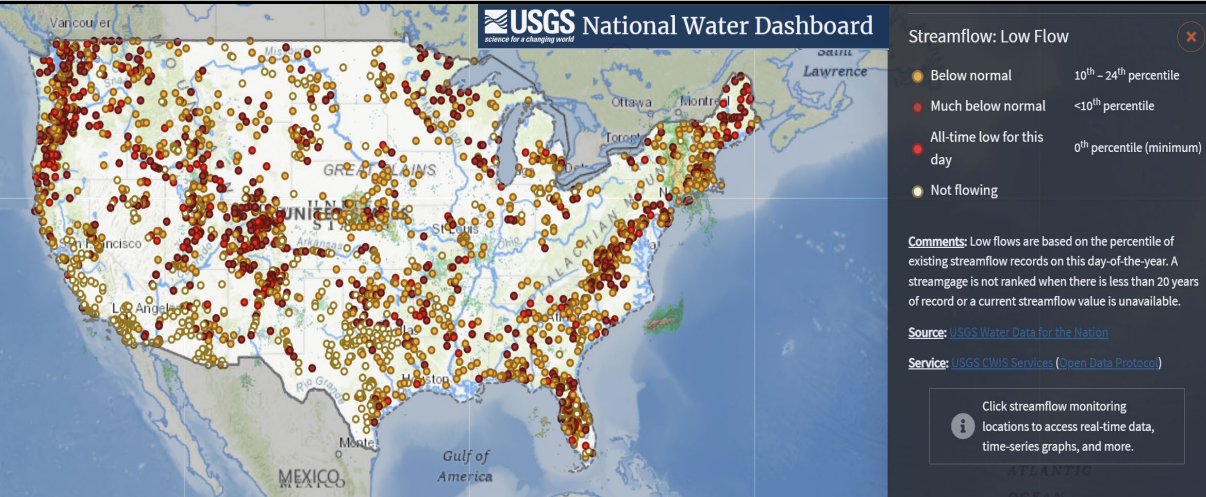
- Accumulation of particulate matter on leaves can interfere with normal plant function by promoting stomatal closure, reducing gas exchange, and limiting photosynthetic activity.
- Prolonged periods of haze may slow the accumulation of growing degree days (GDD), potentially delaying crop development and maturity.
- In northern production regions with shorter growing seasons, such delays could increase the risk of frost damage to crops before physiological maturity



Evaporative Demand Amplifies Appalachian Wildfire Risk

High evaporative demand drives up wildfire risk by drying out trees, brush, and grass. Evaporative demand—driven by high temperatures, low humidity, and wind—accelerates tree decay and mortality by intensifying water stress, causing hydraulic failure, and increasing vulnerability to wood-boring pests and fungi.

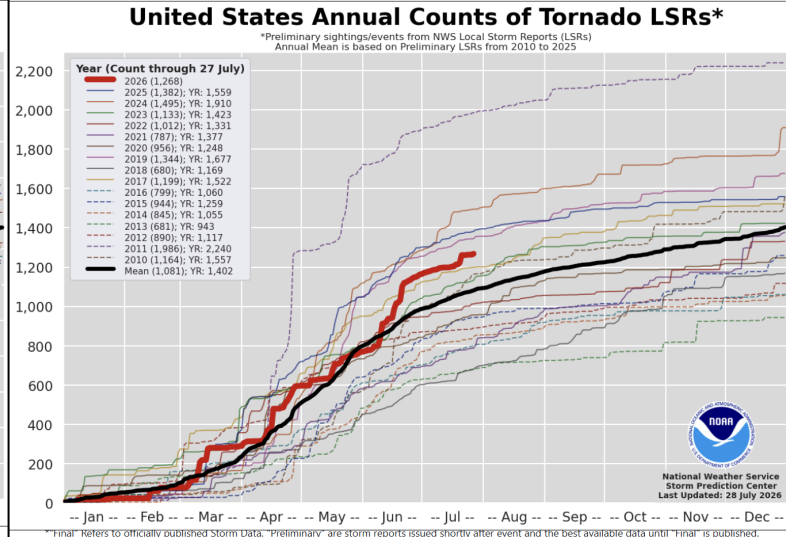
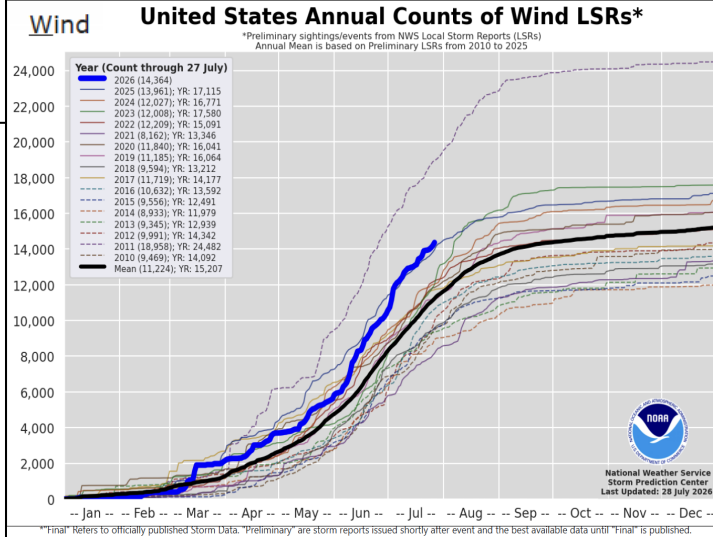
Areas like the Appalachians are facing abnormally high evaporative demand in 2026, weakening trees across the region to withstanding the stronger that usual thunderstorms and straight-line winds resulting in more frequent downed trees and subsequent damages to homes, transportation infrastructure, and energy systems.



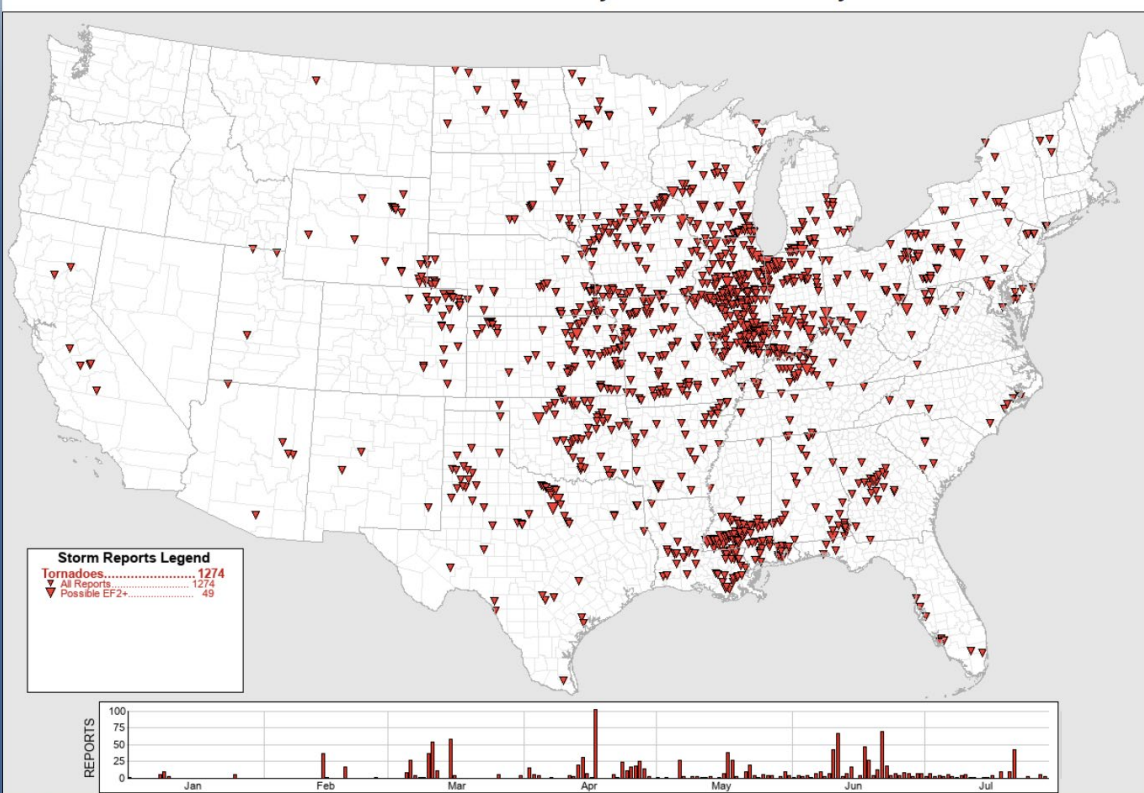
- Evaporative demand and "corn sweat" (evapotranspiration) increase local atmospheric moisture and humidity, which can fuel heavier localized or pop-up summer rainstorms, raise dew points by 5°F to 10°F, and prevent nighttime air from cooling down.
- Vast crop fields release 3,000 to 4,000 gallons of water per acre daily, raising the volume of precipitable water available in the lower atmosphere.
- Heatwaves change fog patterns by suppressing its formation, shrinking the coastal marine layer, and causing fog to burn off much faster under intense land heating*

Severe Weather Counts

New record sized hail was reported in Illinois this past March at 6.6 inches in diameter, however the weight of the hailstone exceeded 1.2lbs (0.68lbs from the national record weight). 12 states reported a significant rise in severe thunderstorm watches and warnings issued by the NWS against recent decades as heat-fueled events intensify. Storms, drought, and extreme heat are reshaping U.S. crop conditions as USDA warns of mounting risks for yields, livestock, and harvest progress.



2026 Annual Preliminary Tornado Summary

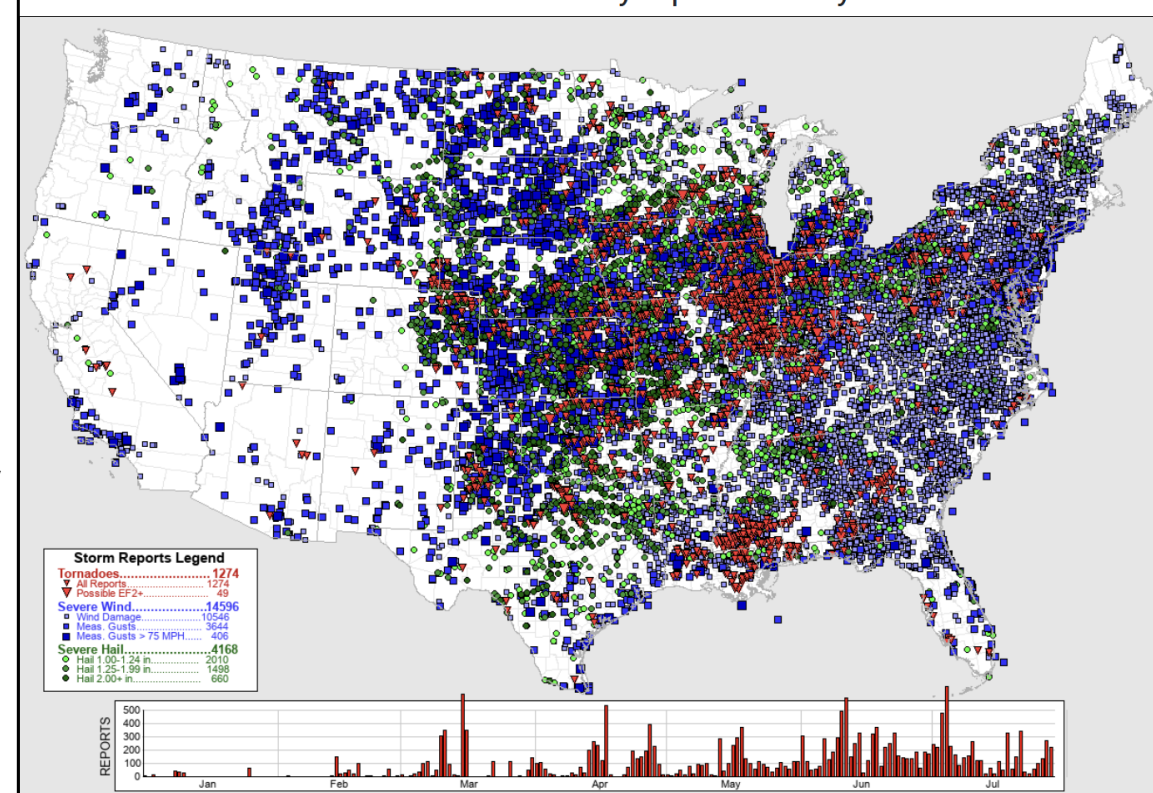


Preliminary tornado counts for the first 7 months of the year have exceeded our annual average for tornadic activity by 74 events.

Multiple states have reported new records for wind events.

More derecho events, larger areas for microbursts, and stronger straight-line winds have been reported.

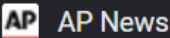
2026 Annual Preliminary Report Summary



South America hit by drought and wildfires

In Venezuela, more than 8,000 hotspots have been reported by Hidromet-UCV across the country, with the Venezuelan Andes being the most affected area. In...

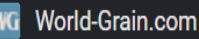
1 week ago



Latin American governments prepare for El Nino as drought, floods and heat loom

Previous strong El Nino events have caused billions of dollars in damage across Latin America, contributing to severe drought in some regions...

1 week ago



India trending drier, and it's not all due to El Niño

Big grain-producing country may see first drought since 2016.

1 month ago

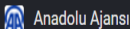


Europe Wildfires Live
Updates: Spain and France
Fight to Contain Blazes as...

LIVE 1 hour ago



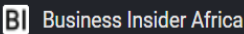
Live updates: France
wildfires may not be out for
months, authorities warn, a...



Wheat prices hit 2-year high amid Russia-Ukraine tensions, drought concerns

Wheat climbs to its highest since May 2024, led by escalating Black Sea conflict, El Nino weather impacting global producers | Anadolu.

4 days ago



Africa's growth outlook faces fresh climate threat as AfDB warns powerful El Niño could wipe out \$20bn, shrink GDP and trigger migration

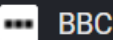
The African Development Bank warns a powerful El Niño could cost African economies up to \$20 billion, reduce GDP by as much as 2% in the...

1 day ago

Fall colors spotted in Colorado: How drought could impact trees

Colorado's high country is witnessing early autumn hues, attributed to severe drought conditions. This early color change could impact the typically vibrant leaves.

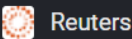
Author: Alexander Kirk
Published: 7:50 AM MDT July 27, 2026
Updated: 7:50 AM MDT July 27, 2026



Somerset heat leaves farmers battle 'worst drought in 50 years'

Crops are struggling after multiple heatwaves and tiny amounts of rainfall in July.

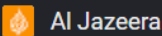
10 hours ago



Heavy rain and flooding kills 82 across India, Pakistan and Afghanistan

July 23 (Reuters) - At least 82 people have died after heavy rains across northeastern India, Pakistan and Afghanistan this week...

4 days ago



Deadly monsoon floods kill at least 40 in India

At least 40 people have died and up to 80 remain missing after heavy monsoon rains triggered severe flooding in northeast India.

4 days ago

Datacenter Waste Heat

Data Center Waste Heat as an Emerging Urban Thermal Hazard: First Field Measurements of Neighborhood-Scale Air Temperature Impacts

Five traverses at four facilities in the Phoenix, Arizona metropolitan area, ranging from a 36 MW single-building data center in Mesa to a 169 MW colocation campus in Chandler, reveal downwind air temperature warming as high as 2.2 °C, with average downwind air temperatures 0.7–0.9 °C warmer than corresponding upwind areas.

- Thermal signatures were detectable at distances up to 500m from facility perimeters.
- The 36 MW Mesa facility rejects waste heat equivalent to the electricity consumption of approximately 40,000 households, while the 169 MW Chandler campus is equivalent to over 180,000 households, both concentrated into footprints smaller than a single residential subdivision.

Roughly two-thirds of the data centers built since 2022 have been located in water-stressed regions including hot, dry climates like Arizona.

- **Google reported using more than 5 billion gallons of water across all its data centers in 2023, with 31 percent of its freshwater withdrawals coming from watersheds with medium or high water scarcity.**
- A [study](#) by the Houston Advanced Research Center (HARC) and University of Houston found that data centers in Texas will use 49 billion gallons of water in 2025, and as much as 399 billion gallons in 2030. That would be equivalent to drawing down the largest reservoir in the US—157,000-acre Lake Mead—by [more than 16 feet](#) in a year.
- In Newton County, Georgia, a Meta data center that opened in 2018 [uses 500,000 gallons of water](#) per day—10 percent of the entire county's water consumption.

Indirect Water Footprint (Energy): The massive amount of electricity powering these facilities also impacts drinking water. Producing electricity (via coal, natural gas, or nuclear power) requires highly water-intensive thermoelectric generation, which often dwarfs the data center's direct water use

Contaminant and Wastewater Stress: To prevent microbial growth and equipment corrosion, facilities use biocides and anti-corrosion chemicals. The wastewater discharged from these systems or the high salt concentrations left behind by evaporation can impact nearby aquatic ecosystems and drinking water reservoirs.

THE DATA HEAT ISLAND EFFECT

How AI Data Centers Are Quietly Raising Temperatures
THE INVISIBLE IMPACT. THE LOCAL CONSEQUENCES.



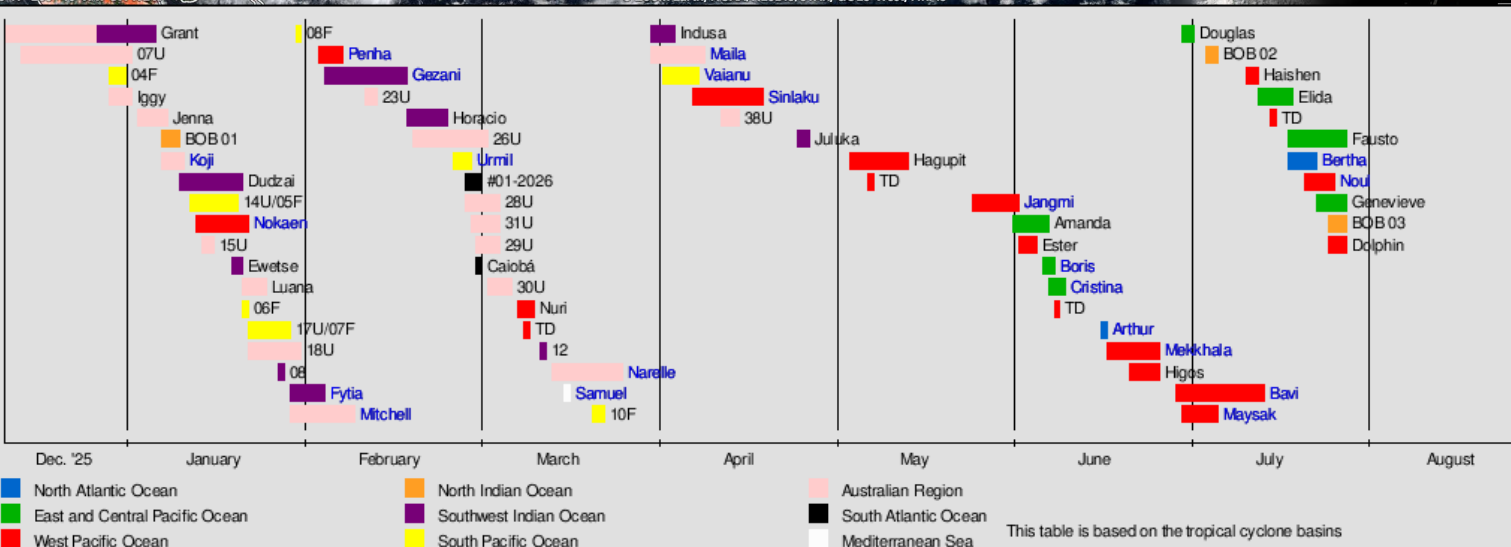
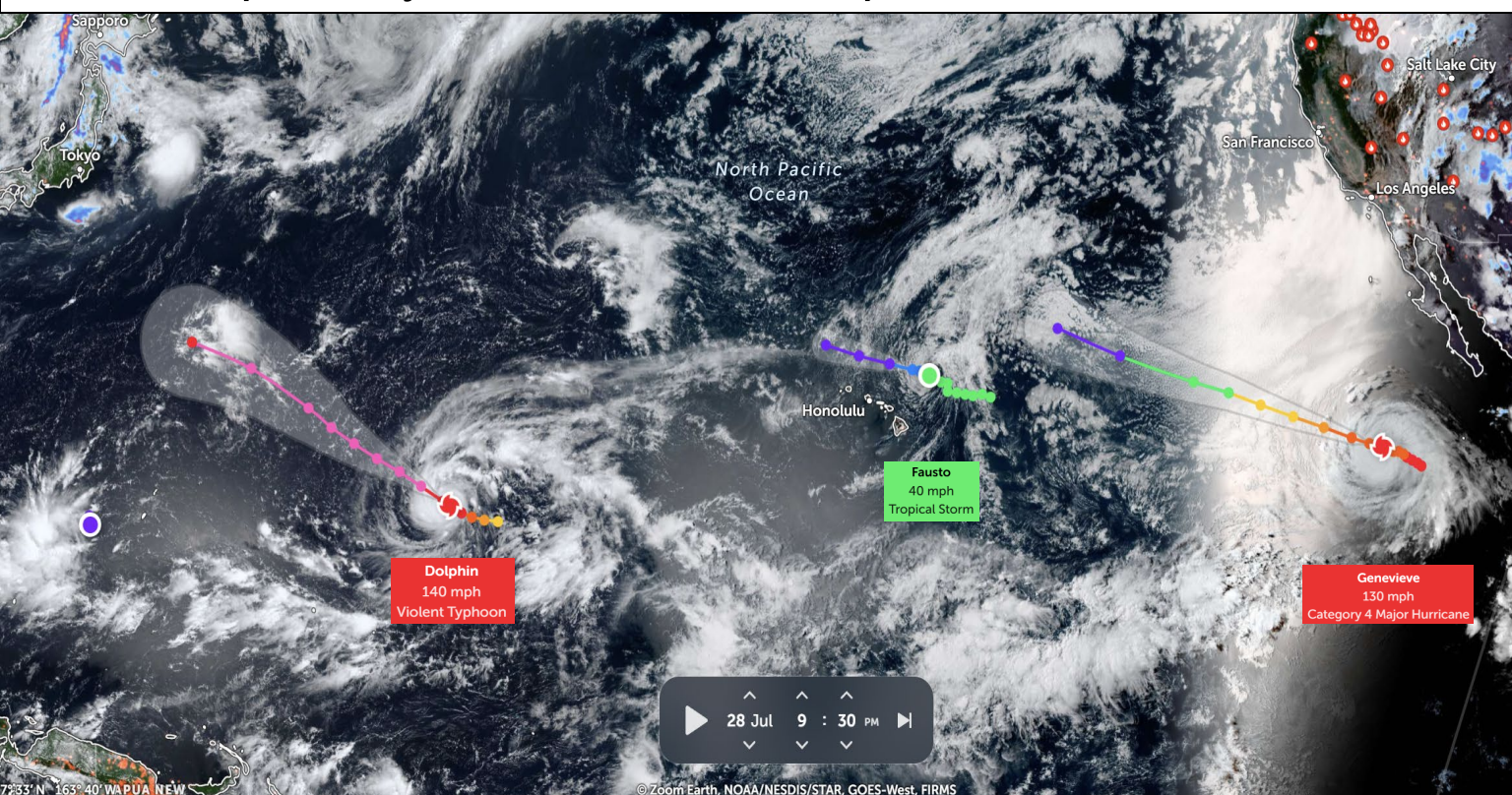
A new preprint [study](#) out of the University of Cambridge has put a number on AI data centers physically warming the land around them. **Land surface temperatures rise by an average of 2°C after a hyperscale AI data center starts operations, creating what the researchers call the “data heat island effect”.**

- In extreme cases, nearby temperatures climbed as high as 16.4 degrees Fahrenheit. The heat doesn't stay put, either: temperature increases were recorded up to 6.2 miles from the facilities.
- The study focused on more than 6,000 hyperscale data centers globally, deliberately filtering out dense urban cores where manufacturing and residential heat would muddy the picture.

The researchers estimated that more than 340 million people worldwide could be affected by the data heat island effect.

It takes about 1.5 gallons of tap water to produce a gallon of ultrapure water, and the typical chip factory uses about 10 million gallons of ultrapure water each day, [according to the World Economic Forum](#)—as much as 33,000 US households.

2026 Tropical Cyclones – Global Implications for Atlantic Basin



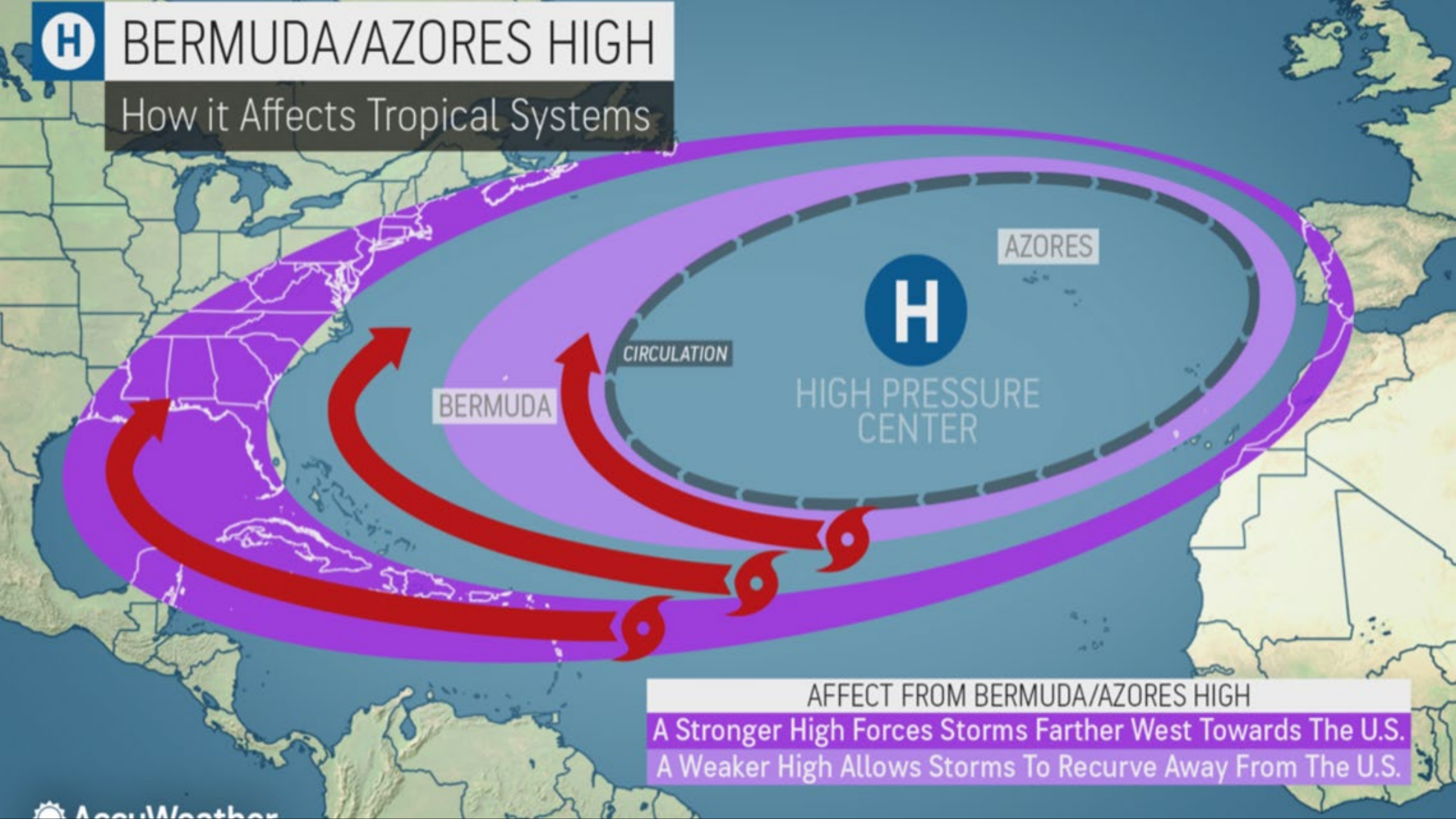
Season name	Areas affected	Systems formed	Named storms	Hurricane-force tropical cyclones	Damage (2026 USD)	Deaths	Ref(s)
Northern Hemisphere							
North Atlantic Ocean ^[a]	Veracruz, Northern Mexico, Gulf Coast of the United States	2	2	—	>\$1 billion	4	
Eastern and Central Pacific Ocean ^[a]	Southern Mexico, Central America	7	7	2	\$100.15 million	11	
Western Pacific Ocean ^[b]	Palau, Philippines, Federated States of Micronesia, Northern Mariana Islands, Guam	18	13	5	\$5.1 billion	117	
North Indian Ocean ^[c]	Sri Lanka, India, Bangladesh, Myanmar	3	—	—	Unknown	Unknown	
Mediterranean Sea ^[a]	Spain, Italy, Libya, Egypt	1	1	—	Unknown	1	
Southern Hemisphere							
South-West Indian Ocean	January – June ^{[d][e]}	9	7	5	\$2.475 billion	75	
	July – December ^[b]	—	—	—	Unknown	Unknown	
Australian region	January – June ^[d]	17	6	4	>\$168.23 million	25	
	July – December ^[b]	—	—	—	Unknown	Unknown	
South Pacific Ocean	January – June ^[d]	5	2	2	\$1.5 million	11	
	July – December ^[b]	—	—	—	Unknown	Unknown	
South Atlantic Ocean ^[a]	Brazil	2	1	—	Unknown	Unknown	
Worldwide	(See above)	64 ^[f]	39	18	\$8.85 billion	244	

a. ^a ^b ^c ^d ^e ^f The wind speeds for this tropical cyclone/basin are based on the Saffir Simpson Scale which uses 1-minute sustained winds.



BERMUDA/AZORES HIGH

How it Affects Tropical Systems



AFFECT FROM BERMUDA/AZORES HIGH

A Stronger High Forces Storms Farther West Towards The U.S.

A Weaker High Allows Storms To Recurve Away From The U.S.

Life cycle of a North Atlantic hurricane

