Migrating Danger Zones

By John Benson

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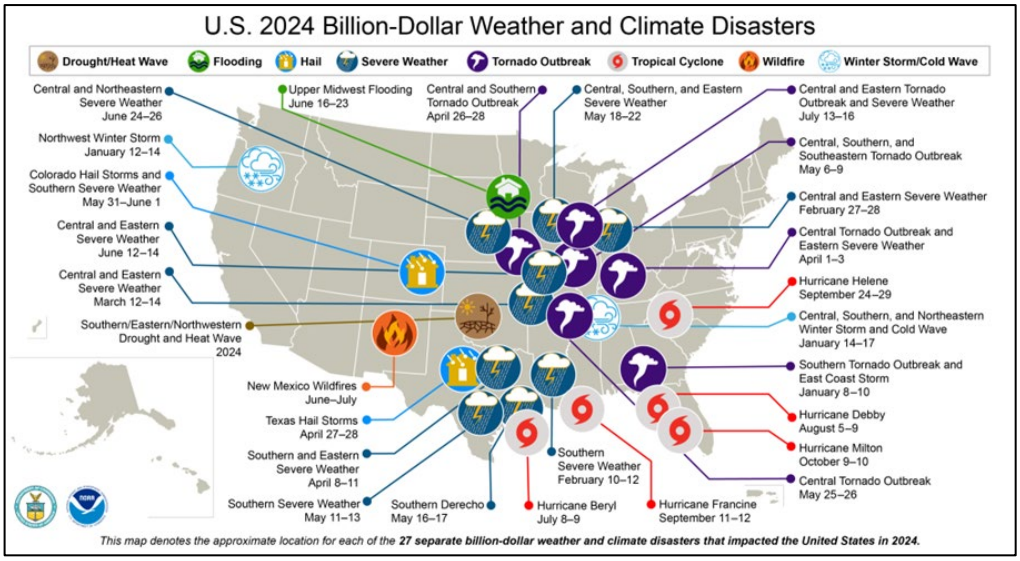
1. Introduction

Human-caused climate change means climate everywhere will change. Although some changes will be positive (for instance, longer growing seasons for agriculture), many more will be negative. The main problematic issue is that most regions have not adapted to new and future conditions.

I saw a few of these examples in recent years, and just encountered another one. I will start this post, in section 2, with the new example, and then define more. This task wasn't difficult as I had many major disasters to choose from. See the image below.[1] Also, this paper in a bit short on words, but with many images ("a picture is worth…").



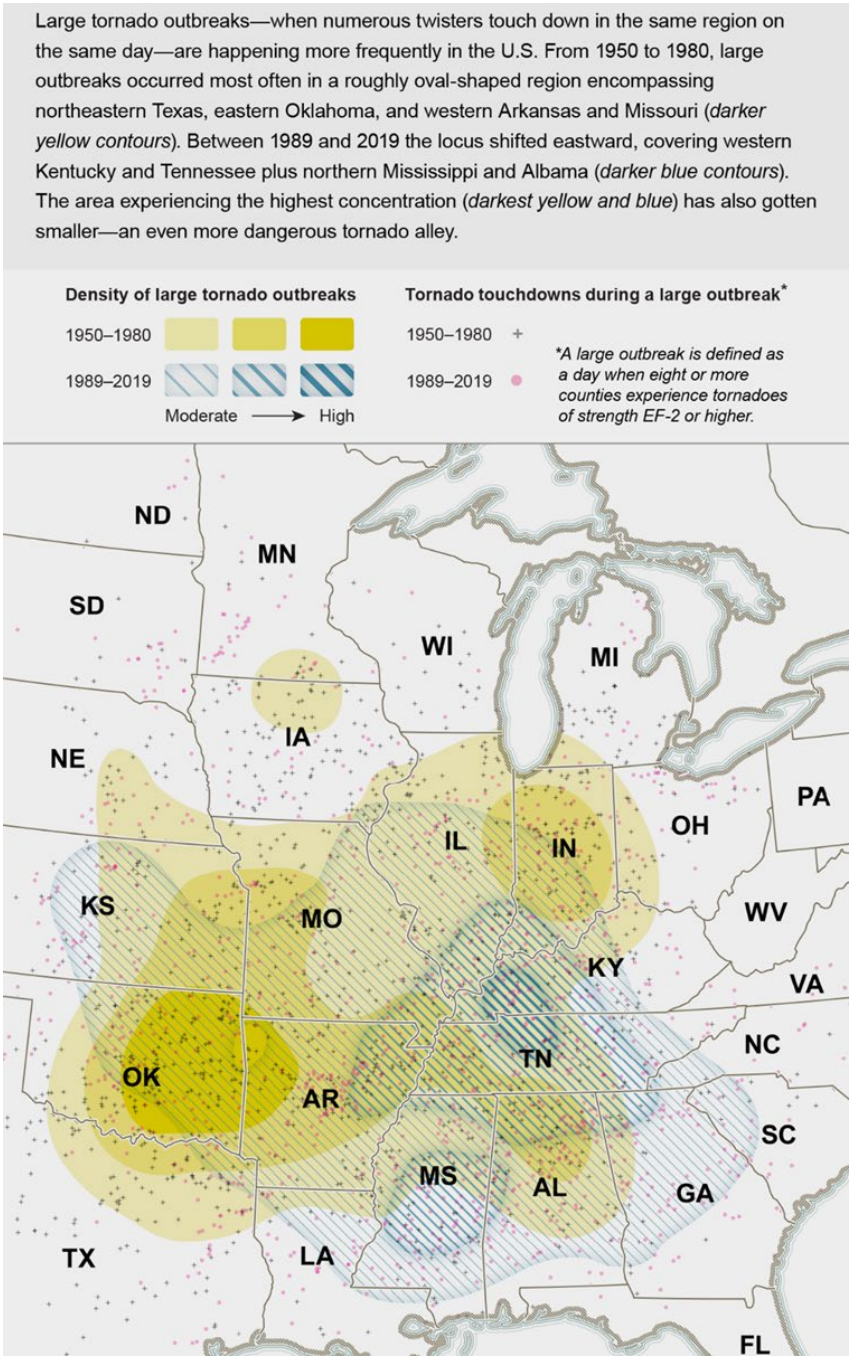
2. Tornado Alley Migrates East

Roughly 1,200 tornadoes strike the U.S. during an average year. They're prevalent in the U.S.—far more so than anywhere else in the world—because its geography sets up the perfect conditions, especially in spring and summer. Westerly winds from the Pacific Ocean drop their moisture when they push up over the Rocky Mountains, becoming high, dry and cool as they move farther east. Similar winds may descend from Canada. Meanwhile low, warm, humid air streams northward from the Gulf of Mexico. Flat terrain along these paths allows the winds to move relatively uninterrupted, at contrasting altitudes, until they run into one another. The angles at which they collide tend to create unstable air and wind shear, two big factors that favor tornado formation. Although somewhat similar air masses do clash in other places, such as Uruguay and Bangladesh, the forces are much more powerful over the U.S. Canada ranks second worldwide with 100 twisters a year.[2]

[1] https://www.ncei.noaa.gov/monitoring-content/billions/images/2024-billion-dollar-disaster-map.png

[2] Mark Fischetti, Matt Twombly & Dan Huffman, Scientific American, "Watch Out: Tornado Alley Is Migrating Eastward," 5/11/23, https://www.scientificamerican.com/article/watch-out-tornado-alley-is-migrating-eastward/

Tornado Ally Shifts Eastward:



Although tornadoes touch down in many places across the eastern half of the country, from the 1950s through the 1990s they struck most often in Tornado Alley, an oval area centered on northeastern Texas and south-central Oklahoma. More recently, that focus has shifted eastward by 400 to 500 miles. In the past decade or so tornadoes have become prevalent in eastern Missouri and Arkansas, western Tennessee and Kentucky, and northern Mississippi and Alabama—a new region of concentrated storms.

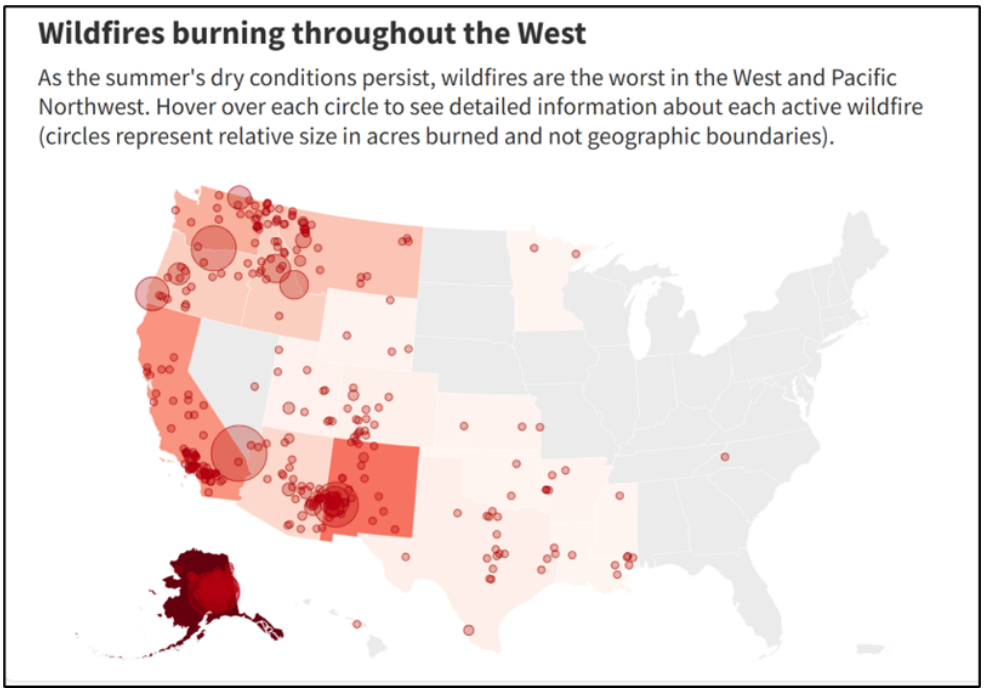
Note that this excerpt is from 2023, I included a graphic from this reference on page 2, and I also found a new reference (3) from March 4, 2025 below.

Powerful storms killed two people in Mississippi, tore the roofs off an apartment building and a nursing home in a small town in Oklahoma and threatened more communities across the nation Tuesday with wide-ranging weather.[3]

There were six billion-dollar tornado outbreaks over the summer and fall last year, primarily concentrated in the Midwest. Illinois, Iowa, and Missouri each experienced over 100 tornados in 2024. Across the country, there were over 1700 tornadoes total, more than any other year except 2011.

3. Wildfires in the Pacific Northwest

Wildfires are not unknown in the Pacific Northwest. When your author worked for Siemens / Landis & Gyr, many of our customers were in this area, so I know that the lush green coastal areas morph into relatively dry plains as you go over the Cascade Mountains to the east side of Washington and Oregon. The latter area has always had a few wildfires, but these have become more common and have migrated to the western side of the Cascades.



The above map is from the reference below.[4] If you go through the link to the reference, The map is interactive, so as you hover over each fire, the name and size are shown.

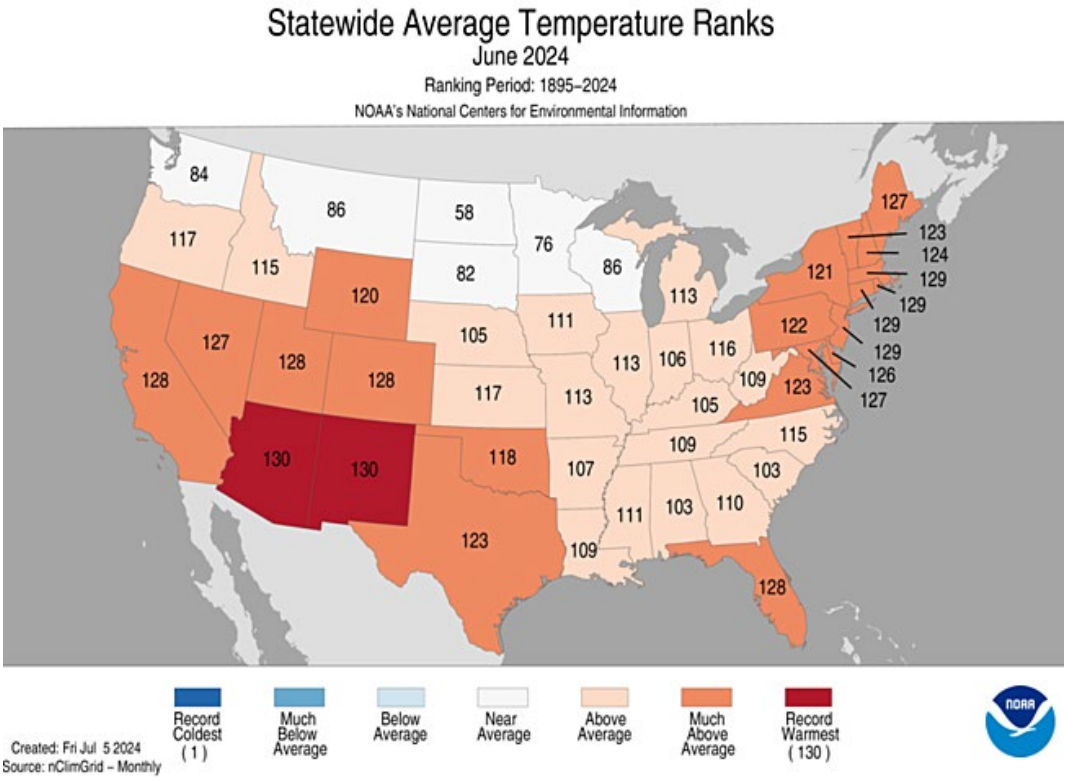
[3] Jeff Martin and Jack Brook, Associated Press, "Powerful US storms kill 2 and bring threats from critical fire weather to blizzard conditions," March 4, 2025, https://apnews.com/article/tornadoes-storms-mardi-gras-rescheduled-579b9ec79b2c5f08e977e018a73aab81

[4] Anna Skinner, "Newsweek, "How Bad Are the 2023 Wildfires? Chart Shows Dramatic Shift from Last Year," Aug 10, 2023, https://www.newsweek.com/how-bad-2023-wildfires-chart-dramatic-shift-last-year-1818899

4. New Mexico Wildfires

For the month of June, 2024, Arizona and New Mexico each ranked warmest on record. Eighteen additional states ranked among their top-10 warmest June on record.[5] See the map below.

Two wildland fires—the South Fork and Salt fires—ignited in south-central New Mexico on June 17, 2024. The destructive blazes burned on Mescalero Tribal and U.S. Forest Service land around Ruidoso, a village sandwiched between the two fires.[6]



Your author believes that the number in each state is the ranking of June 2024 average temperature in the last 130 years. Arizona and New Mexico (red) had the warmest June-average for this period.

By 3:00 am on June 18, the South Fork fire, north of Ruidoso, had burned nearly 14,000 acres (5,700 hectares). The Salt fire, south of Ruidoso, had burned almost 5,000 acres (2,000 hectares). Both fires were uncontained as firefighters dealt with extreme fire behavior amid windy, dry conditions. Officials ordered mandatory evacuations for the village, the city of Ruidoso Downs, and nearby communities.

Storms on June 19 further challenged the region as heavy rain sent floodwater pouring down mountain slopes. Soils in areas charred by fire can repel water and make flash flooding more likely. More thunderstorms followed, and the additional rain helped slow the spread of fire, according to news reports. Still, as of June 21, the blazes remained uncontained and had charred more than 23,000 acres. The fires have been linked to several deaths and the damage of about 1,400 structures.

[5] https://www.ncei.noaa.gov/access/monitoring/monthly-report/national/202406
[6] https://earthobservatory.nasa.gov/images/152967/fires-char-south-central-new-mexico

5. Southern California Wildfires

The post from Jan 2025 summarized and linked below covered these disasters.

Climate Change, Disasters & Politics: *As I start to write this, we are in the middle of a disaster that is playing out in Southern California. I have lived in Northern California (SF Bay Area) for most of my adult life, but lived in SoCal for a couple of years right after I graduated in 1975 (BSEE, Texas Tech).*

The above disaster was caused by an unfortunate (and freaky) series of major weather anomalies, which automatically forces me to list human-caused climate change as a primary cause This situation is summarized below.

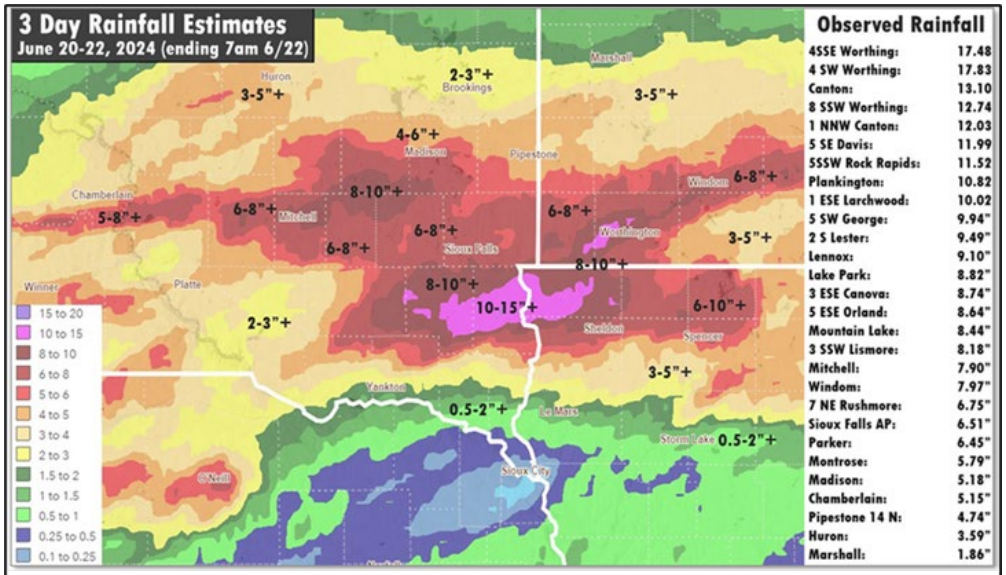
Ten wildfires -- the Palisades, Eaton, Hurst, Woodley, Archer, Lidia, Auto, Clay, Sepulveda, and Hughes fires – have burned through Ventura and Los Angeles counties with a combined area of >50,000 acres. Five fires were still active on Saturday (1/25), the Eaton, Palisades, Laguna and Hughes fires. At least 28 people have been killed by the disaster and over 10,000 structures were confirmed to have been destroyed, according to Cal Fire. Estimated damages are $250-275 billion per news reports. The good news as of Saturday is that Southern California is expecting rain later today.

https://energycentral.com/c/ec/climate-change-disasters-politics

6. Upper Midwest Flooding, June 16 - 23, 2024

Late June 2024: Heavy rainfall across NW Iowa, SW Minnesota, and SE South Dakota from June 20-22 resulted in rainfall totals exceeding 2 inches in most areas with widespread totals ranging from 5-10 inches.[7]

Some locations in SE South Dakota and NW Iowa reported 10-20 inches of rainfall.



Report and Image Source: National Weather Service, NOAA , Heavy Rain and Historic Flooding of Northwest Iowa, Southwest Minnesota, and Southeast South Dakota - June 20-22, 2024 (weather.gov)

[7] https://www.nass.usda.gov/Research_and_Science/Disaster-Analysis/2024/Midwest-Floods/Midwest_Floods_2024_Disaster%20Assessment.pdf

The event resulted in flash flooding, with record flooding observed at several river points and widespread, devastating floods in towns adjacent to rivers. See image on the prior page.

7. Widespread Effects in the U.S. and Causes

I covered the title subject with a post in January of this year, summarized and linked below.

Future Effects of Climate Change in the US: *I write occasionally about the title subject, but a highly respected body just released (in December, 2024) a publication. This is rich in information on the likely pain that our economy is likely to feel as a result of this human-caused modification to the world's environment, it is likely to strongly impacts future laws that the federal government are likely to implement.*

The Congressional Budget Office provides non-partisan analysis and reporting for the U.S. Congress. "The Risks of Climate Change to the United States in the 21st Century" was prepared at the request of the Chairman of the Senate Budget Committee. In keeping with the Congressional Budget Office's mandate to provide objective, impartial analysis, the report makes no recommendations.

https://energycentral.com/c/ec/future-effects-climate-change-us