

TEXAS²⁰₃₆

2024 UPDATE

Assessment of Historic & Future Trends of

EXTREME WEATHER IN TEXAS

1900-2036



Texas A&M University

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Office of the Texas State Climatologist

Assessment of Historic & Future Trends of **EXTREME WEATHER IN TEXAS**



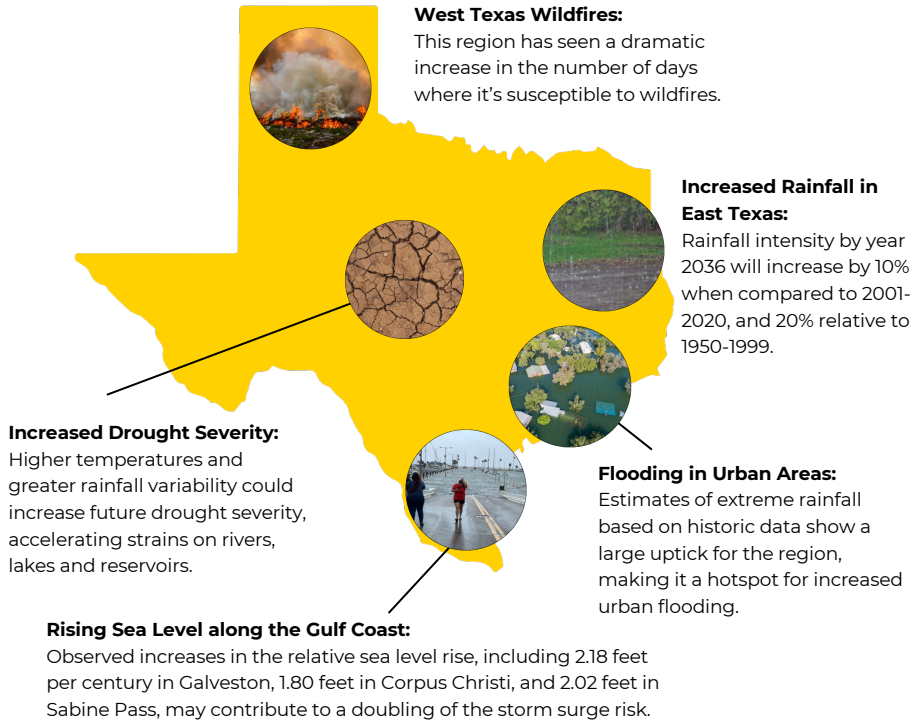
What changed in the 2024 report?

The latest edition of “*Future Trends of Extreme Weather in Texas*,” reveals a concerning acceleration in extreme weather conditions across the state. Produced by the Texas State Climatologist at Texas A&M University, **Dr. John Nielsen-Gammon**, in collaboration with Texas 2036, this updated study details significant increases in 100-degree days, intensifying droughts and heightened urban flooding events.

In response to the record-breaking number of wildfires across Texas last year and the recent **Smokehouse Creek Fire**, a new section provides historic wildfire data and indicates that Texas should prepare for an increased frequency of wildfires, particularly in the western and southern regions of Texas, if trends continue.

This third edition builds on past data and expands on the potential impacts and risks facing the state through the state’s bicentennial in 2036 and beyond.

Regional Impacts:



Why is this report important?

First launched in 2020 and previously updated in 2021, this pivotal report continues to serve as an essential resource for Texans and policymakers to understand and mitigate the impact of future extreme weather events.

Top Takeaways

Updated data and analysis indicate a continued acceleration of extreme weather trends in Texas, such as:

Hotter Temperatures

A dramatic rise in extreme heat, with 100-degree days close to four times as common by 2036 as in the 1970s and 1980s.

Accelerating Wildfire Risks

Especially pronounced in western and southern Texas, with significant implications for property insurance rates.

Intensified Drought Conditions

A 7% increase in summertime evaporative losses by 2036 will exacerbate drought conditions as surface water supplies dry up faster.

Increasing Urban Flooding

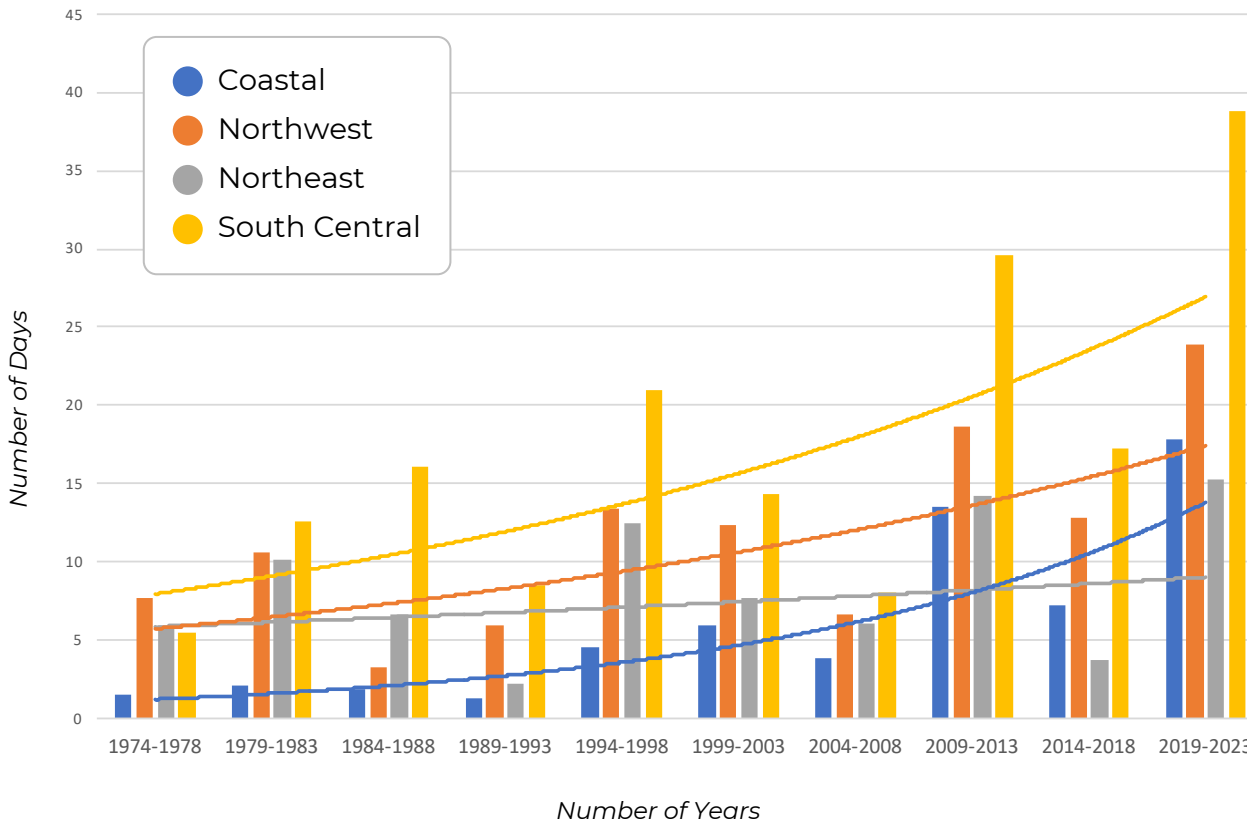
A 15% increase in extreme one-day precipitation events since the late 20th century suggests an intensified rainfall pattern that will contribute to greater urban flooding by 2036.

Growing Season Changing

Over the past five decades, the agricultural growing season in Texas has become longer, now starting a half-month earlier and ending a half-month later.

AVERAGE ANNUAL NUMBER OF 100°F DAYS

Did you know? 78% of voters think that the state's weather pattern has changed over the past ten years. (Aug. 2023, Texas Voter Poll)

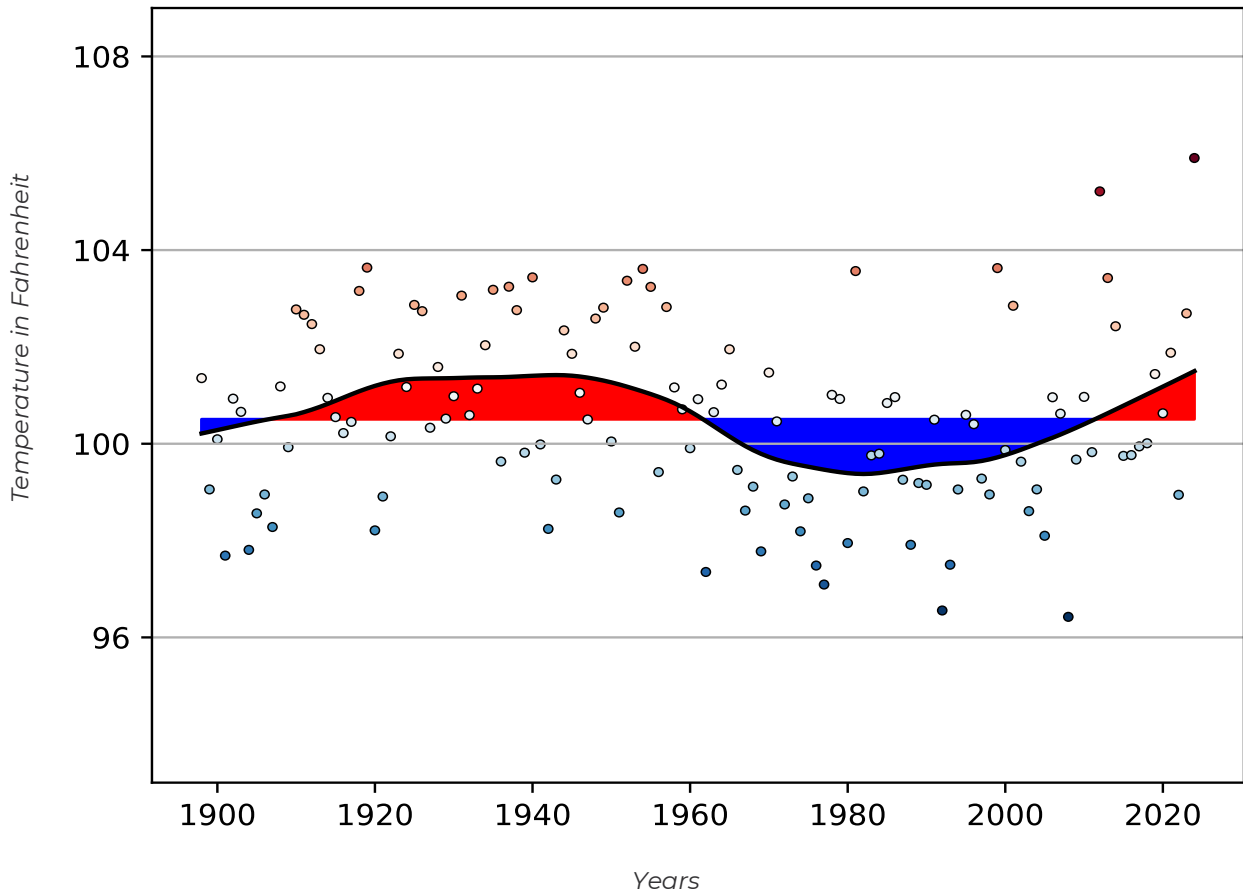


2022 saw a significant number of triple-digit days. 2023 was worse.

The long-term trend in the number of triple-digit days marches upward. 2023 witnessed record-high temperatures across the state continuing the trend described in the 2021 report. The 2021 report noted that the number and frequency of triple-digit days doubled since the 1970s. As of now, the average number of triple-digit days has tripled.

AVERAGE HOTTEST MONTHLY TEMPERATURE

Jun-Sep TX

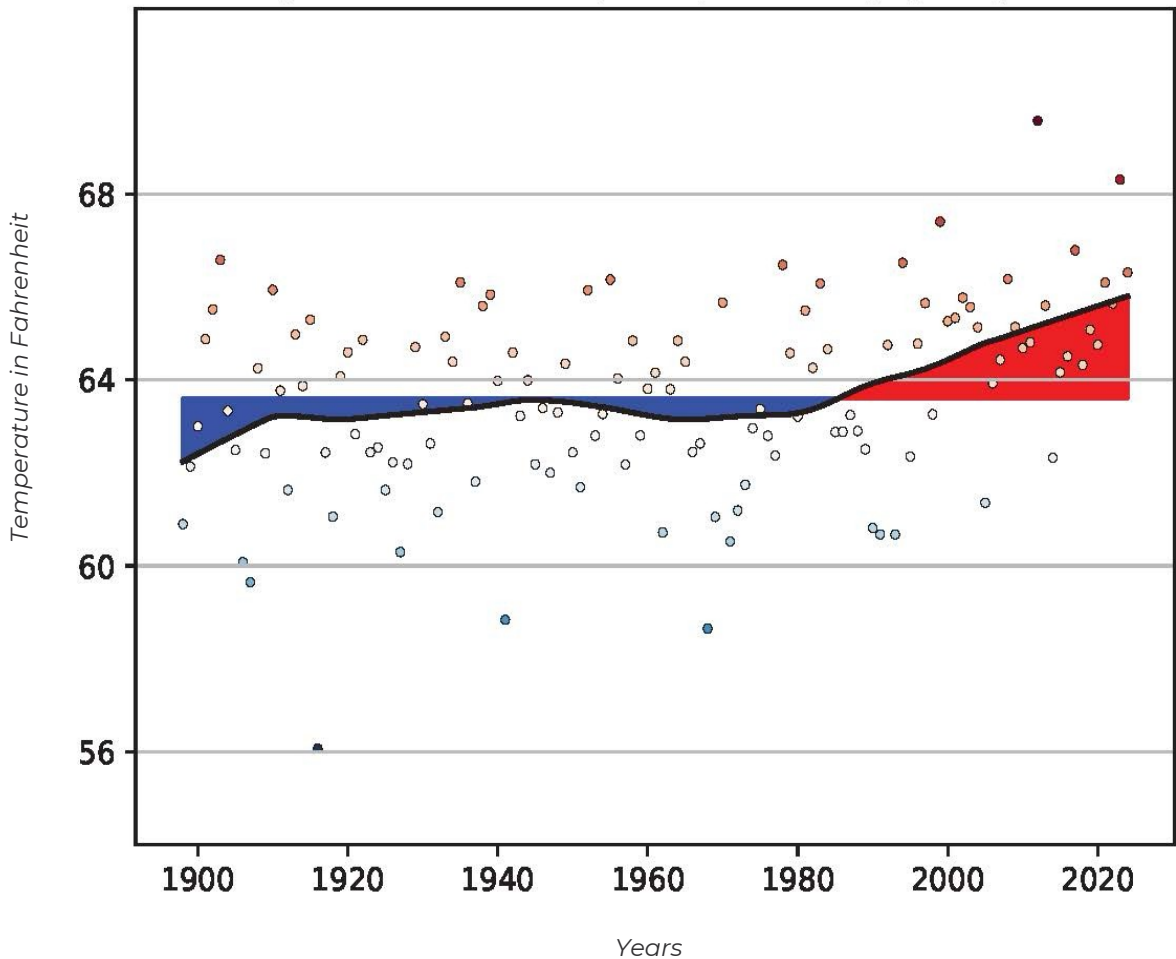


In 2023 we set the record of the average hottest temperature in the four hottest months of the year.

In 2023, the average hottest temperature was 106°F, surpassing the previous record set in 2011. The primary difference from 2011 was that 2023's heat persisted through most of September, while 2011 had already turned somewhat milder by then. The summer of 2022 also had some high extremes.

AVERAGE COOLEST MONTHLY TEMPERATURE

July-Aug TX

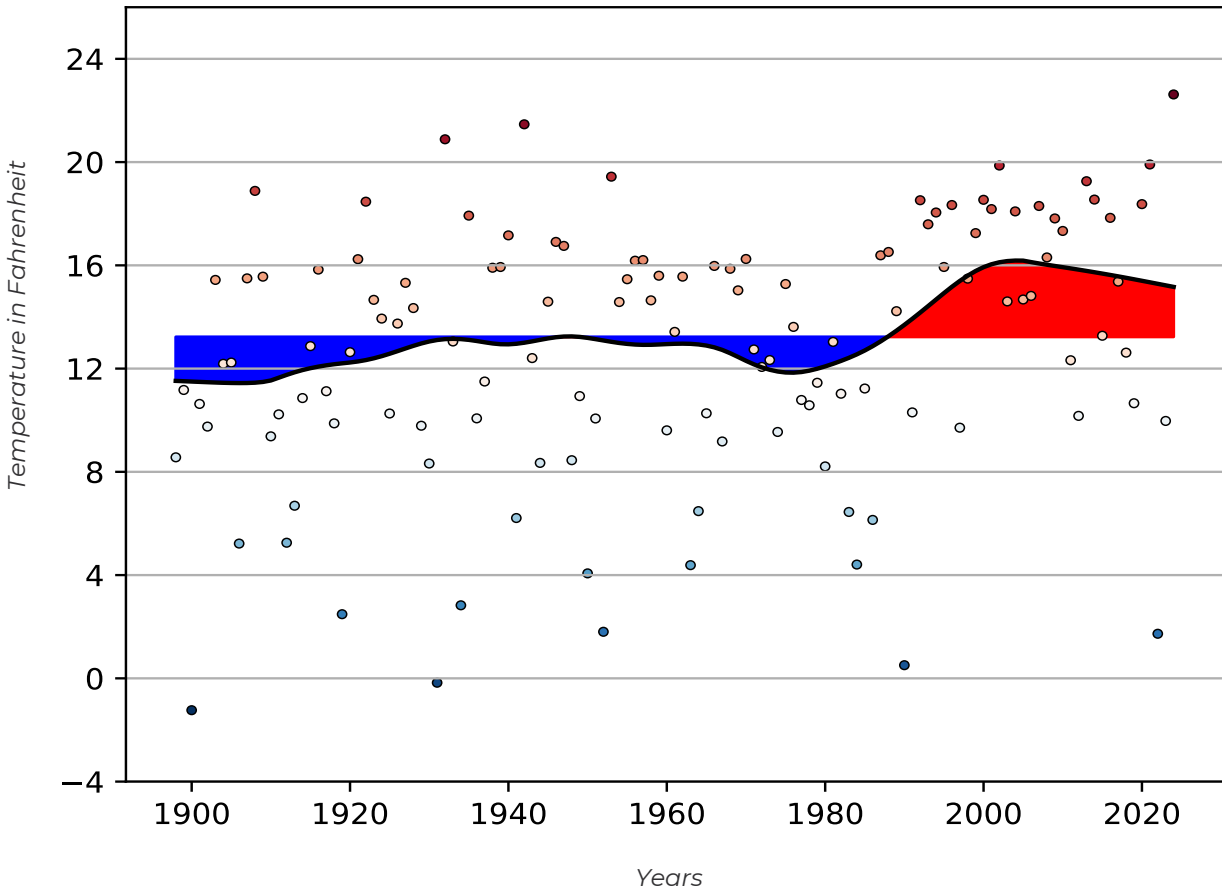


In a unique twist, Texas experienced the warmest coolest temperatures this summer.

Texans know the only break from summer heat happens at night. This summer cooler summer nights were harder to come by. In 2023, the coldest days in July and August got down to 64°F on average, which is the warmest on record, and 2022 ranked fifth warmest.

COLDEST TEMPERATURE

TX

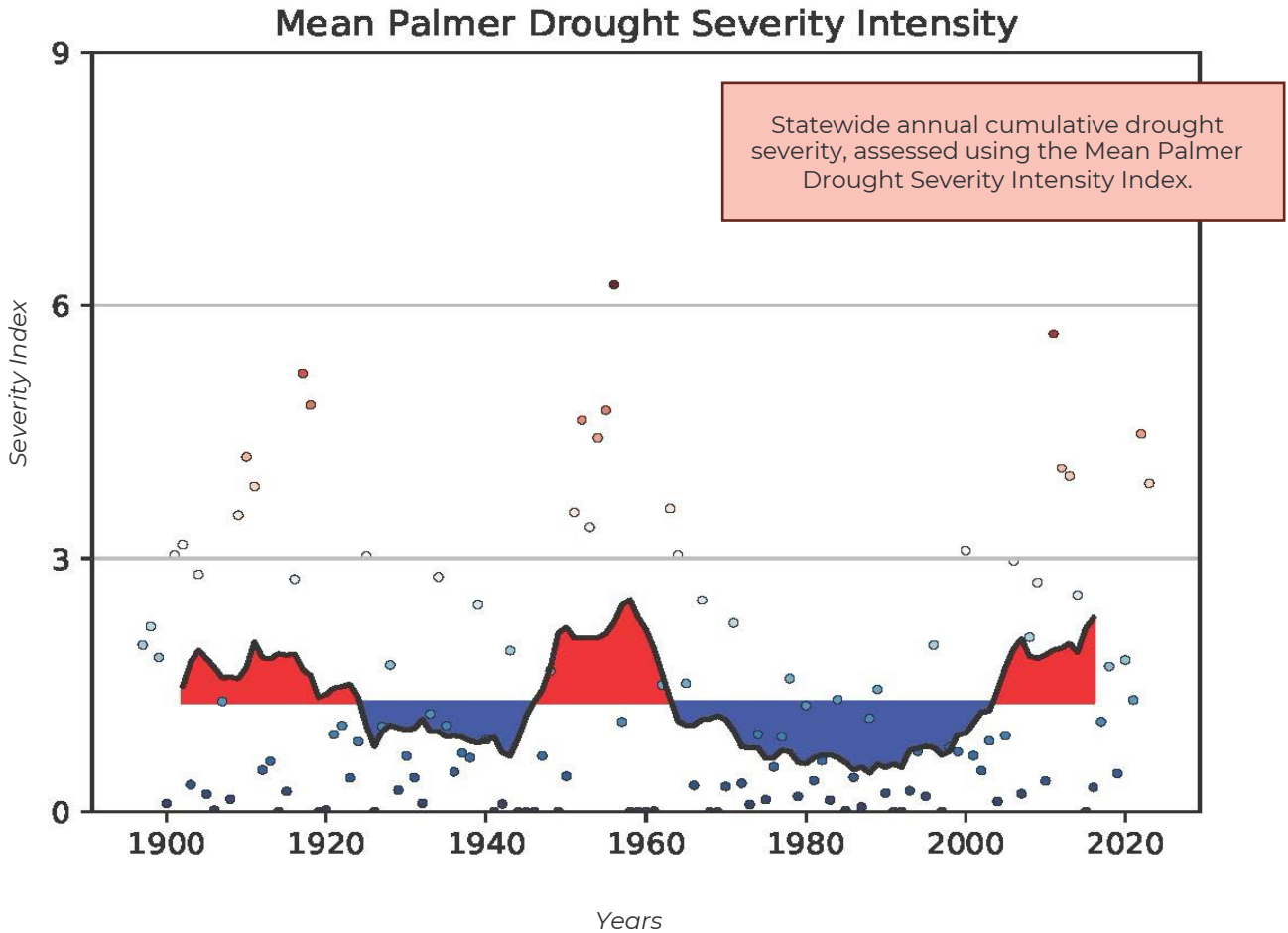


Following the extreme cold of 2021, 2022 was relatively mild, although temperatures did drop to their second coldest value of the 2000s so far.

Notably, 2023 was the mildest winter on record, as measured by the coldest minimum temperature observed on average in Texas. This is consistent with the warming trend that shows up in all seasons in Texas.

DROUGHT SEVERITY RISES

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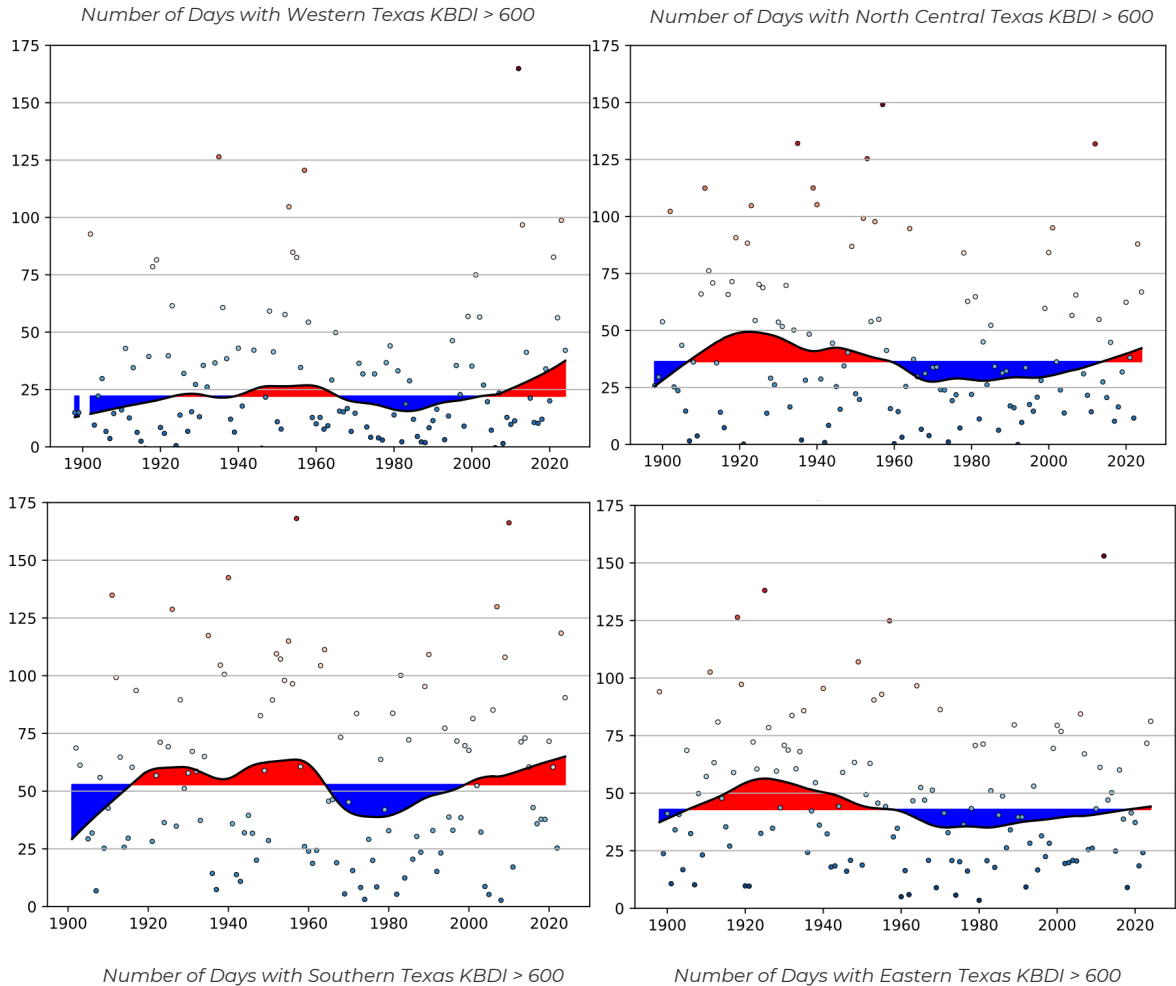


Texas may anticipate increased drought severity due to greater rainfall variability combined with warmer temperatures.

By 2036, warmer conditions will contribute to a roughly 7% increase in summertime evaporation losses compared to 2000-2018. This rate of evaporation loss will exceed historic increases in precipitation.

WILDFIRE RISK RISES

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Texas faces the threat of growing, extended wildfire seasons due to warmer temperatures and greater rainfall variability.

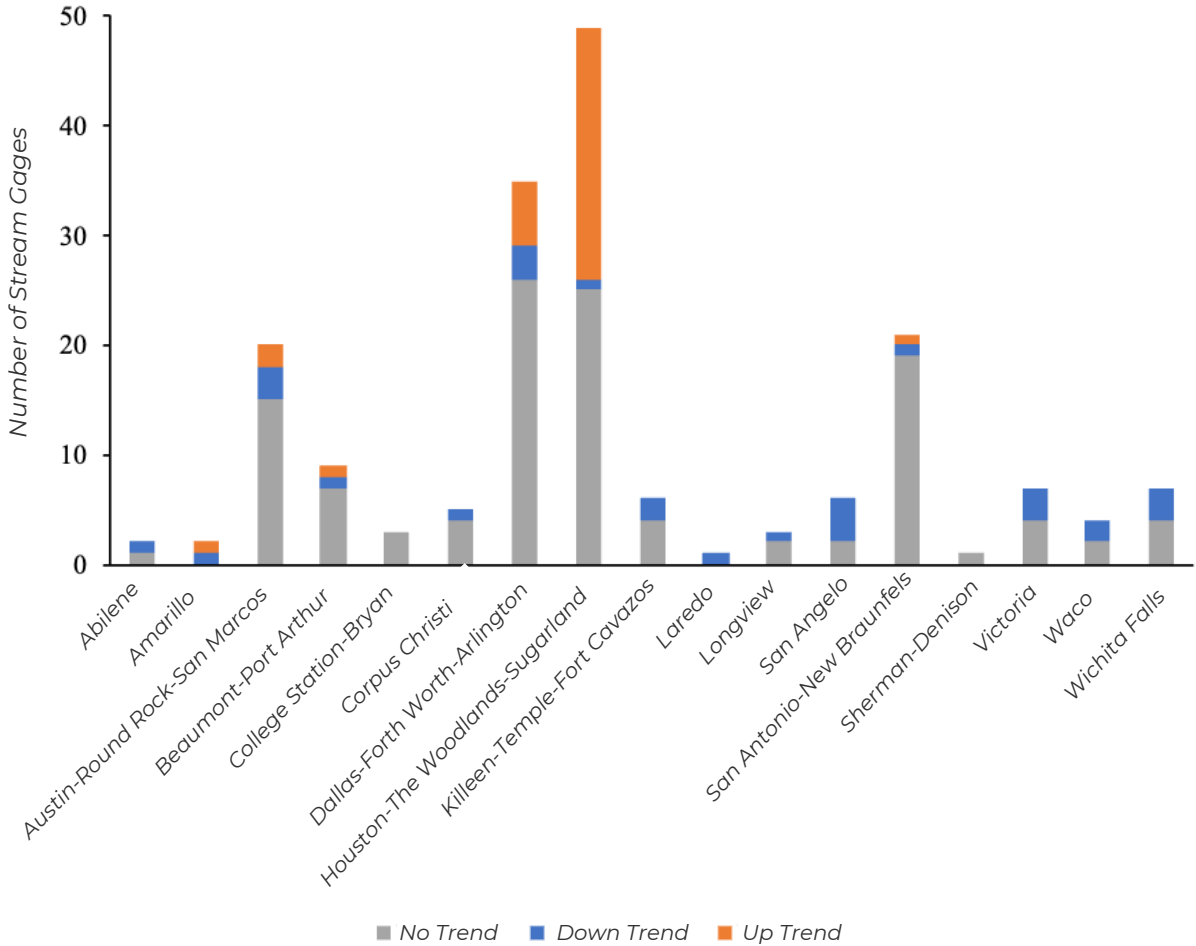
New data in the report concludes that each region of the state is seeing an increase in the number of days with elevated wildfire risks. This increase has been most dramatic in western Texas, where steady or declining precipitation has failed to mitigate the drying effect on increasing temperatures.

In February 2024, more than one million acres in the Texas Panhandle were burned after a series of wildfires, setting a record for the largest wildfire in state history.

URBAN FLOODING

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Did you know? 87% of state voters are concerned about the impact that extreme weather events, including wildfires, floods, and drought, may have on what they pay for property insurance. (Aug. 2023, Texas Voter Poll)



Urban floods will be 100% more likely than the last half of the 20th Century, and 50% more frequent compared to 2000-2018.

Rainfall intensity by 2036 will increase by 10% when compared to 2001-2020, and 20% relative to 1950-1999. With rainfall intensifying, so will the increase of urban flooding by 2036. This is a higher level of risk frequency than what was reported in the 2021 report.



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