

DATA POINTS

Research, Data, and Analysis Focused on Central Texas

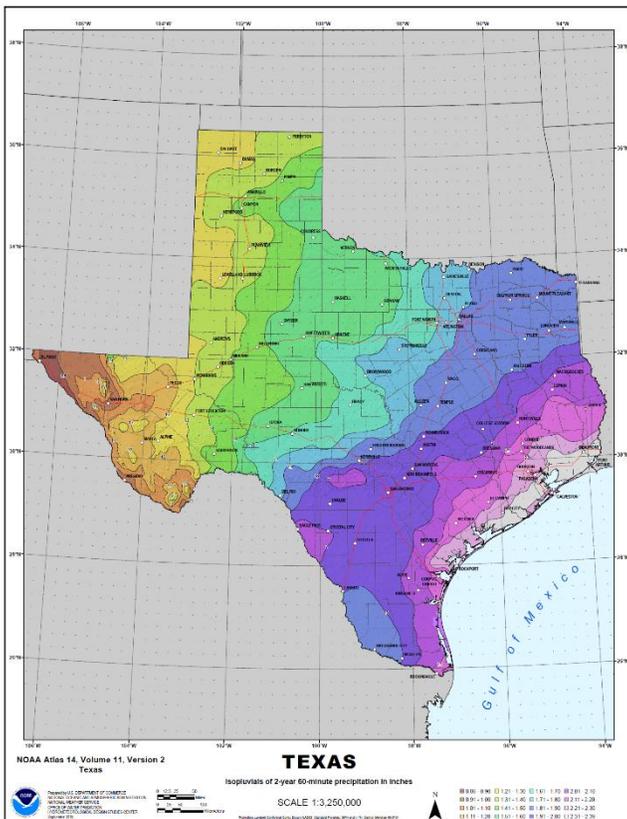
Friday, October 5, 2018

This is a printer-friendly version of a post from CAPCOG's Data Points blog. You can find this post and others online at www.datapoints.org.

NOAA Expects Lots More Rain for the Capital Area

Author: Rachel Steele

In September the National Oceanic Atmospheric Administration (NOAA) released updated rainfall frequency values for Texas. The announcement redefines rainfall totals for the 100-year and 1,000-year events and confirmed what practitioners have known; storms are producing greater rainfall amounts. The findings, published as NOAA Atlas 14, Volume 11, target Texas and have an enormous potential impact for the built environment in terms of defining flood prone areas, updating specifications to existing infrastructure and reducing flood risks in development. The last update on rainfall frequencies from NOAA happened in the early 1960's. While other agencies and districts collect rainfall data, NOAA's release is significant because it's a standard in data collection.



Source: National Oceanic Atmospheric Association

NOAA's release had us at CAPCOG discussing the differences between flood terms central to the data set. This Data Points is a re-cap of how storm and flood interplay and how the NOAA announcement will impact the region. First, defining some terms:

Precipitation Frequency

Central to NOAA's Atlas 14, Volume 11 findings is the Precipitation Frequency data set. The data indexes decades of rainfall data from over 12,000 weather stations and is critical to remapping regional and local flood plains. The definition is based on the quantity of rain falling within a storm of a specific duration distributed uniformly across a watershed area. Precipitation frequencies vary and need to be modeled in order to be interpreted easily. For example, the frequencies for Austin and San Marcos vary while their geographic proximity is pretty close. Modeling smooths out this variation.

100-Year Storm

A 100-year storm is defined as an event that on average occurs once every 100 years or has a 1% chance of occurring annually. NOAA's new standard updates Austin's 100-year storm frequency to 13 inches, an increase of 3 inches. Under revised NOAA data a 13-inch rain event now has a 1% probability of happening in a given year. In many ways, NOAA's update shifts the probability tables so that the previous 100-year event, which was 10-inch rain event, now becomes a 25 to 50-year rain

DATAPOINTS

Research, Data, and Analysis Focused on Central Texas

event and the probability increases from 1 % to 3-4% annually. In other words, it is increasingly likely that in any given year, our region will experience a trouncing rain storm that results in flash flooding, road closures, and curtailed school and work schedules to maintain public safety. It also means that more homeowners will be required to have flood insurance or that more uninsured flood claims will be filed during an extreme storm event. It's hard to say yet, if these new updates will limit or revise standards for emergency declarations. States of Emergency are usually declared by either the Governor or President, and each uses separate qualifying criteria.

100-Year Flood

A 100-year flood is an established water flow rate in a watershed with a 1% probability of occurring in a given year. Flooding in Central Texas is riverine based, and there's more that goes into a 100-year flood than just precipitation. Factors like watershed size, length of storm, and soil saturation levels all play a role as well.

What does it mean?

NOAA's release confirms that rainfall from storm systems is growing more intense. The release also guarantees that flood plains will be adjusted, because there's now a greater probability of out-of-bank flows with larger storms. For example, if a city's new 100-year rainfall amount increased from 10 to 13 inches, the modeling will indicate that existing infrastructure will take longer to manage this rainfall. Severe rain events for a community will mean they'll be more vulnerable to flash floods, and out of bank scenarios will be more common for communities near a watershed. In the long term, significant investments in infrastructure improvements and storm water management systems will need to be undertaken. Potential investments could include resizing detention basins, installation of new storm drain systems, upsizing drainage pipes, dredging and re-defining ditches, greater planning for regional detention and increased build elevations.

What can we do?

CAPCOG is investing in resiliency planning to help our counties and communities prepare for disaster scenarios, such as these. Being resilient is a proactive way to address the new standards set forward by NOAA. We know that significant rain events are likely to continue to affect communities in our region. CAPCOG staff will continue to look for ways to partner with local communities to support resiliency planning, to pursue funding for resiliency projects, and to otherwise pitch in to make our region as ready as possible for the next major flood event.

As communities evaluate infrastructure upgrades in particular, CAPCOG can help connect communities with funding opportunities. The Economic Development Administration, TxCDBG and Texas Capital Fund also have financial resources to update infrastructure. Potential projects facilitated as part of these initiatives can include:

- Increase funding for stream gauges in local watersheds;
- Ensure low water crossings are marked and can be activated for storms;
- New maps are created and circulated to promote flood awareness;
- First responders are equipped and trained for high water rescue;
- Ensuring that storm water plans are complaint with codes;
- Re-evaluating infrastructure and ensuring compliance new rainfall standards

More information on Atlas 14, Volume 11 and several reference resources can be found below.

SOURCES

DATA POINTS

Research, Data, and Analysis Focused on Central Texas

1. https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_maps.html
2. <https://www.noaa.gov/media-release/noaa-updates-texas-rainfall-frequency-values>
3. <https://water.usgs.gov/edu/100yearflood.html>
4. https://www.wcc.nrcs.usda.gov/ftpref/wntsc/H&H/NEHydrology/ch4_Sept2015draft.pdf