

CW3E Post Event Summary: 22–26 Sep 2019

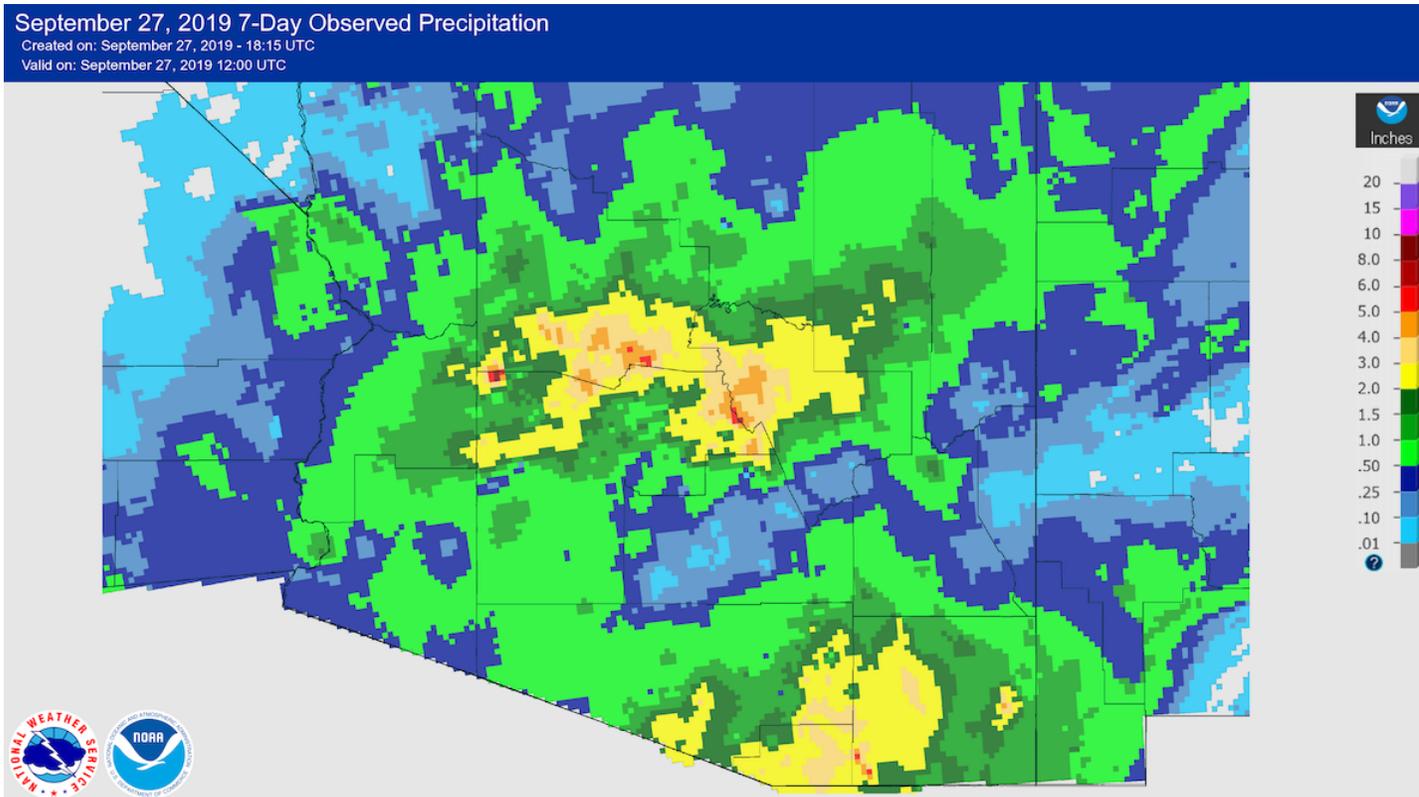


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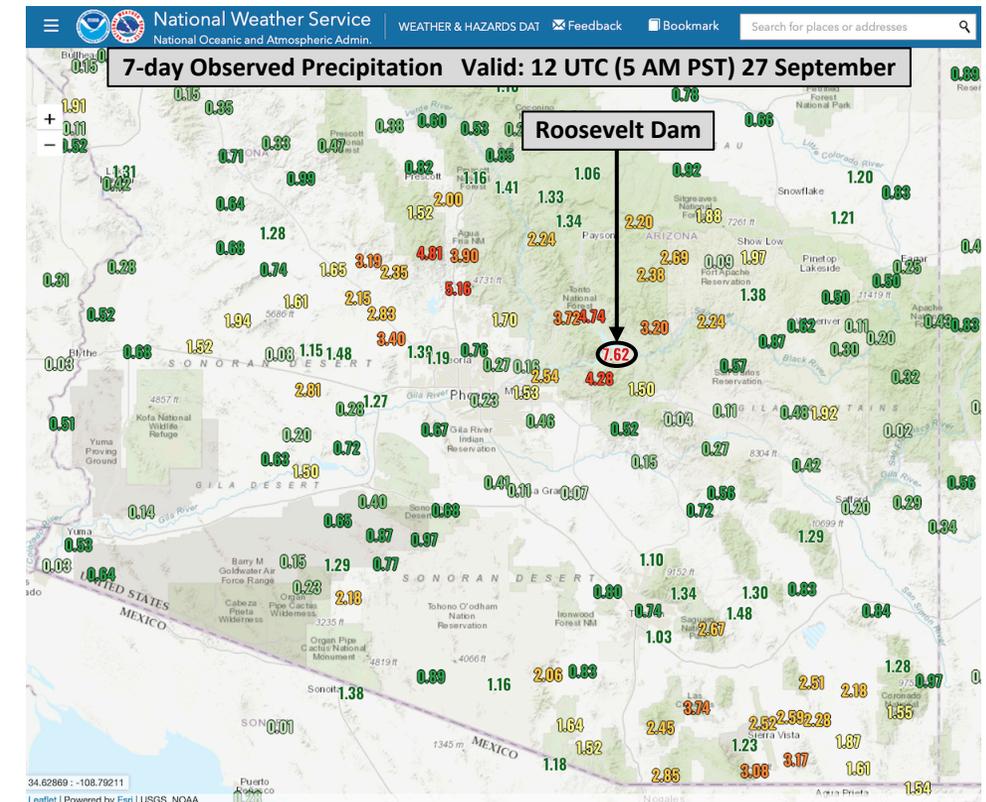
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AT UC SAN DIEGO

Active synoptic pattern brings heavy rainfall and severe weather to central and southeastern Arizona

- Portions of central and southeastern AZ received > 2 inches of rainfall during the 7-day period ending 12 UTC (5 AM PST) 27 September
- The highest rainfall amounts (> 3 inches) occurred over the elevated terrain in Maricopa, Gila, Yavapai, Pima, Santa Cruz, and Cochise Counties
- Roosevelt Dam (Gila County) recorded a 7-day total of 7.62 inches, with more than 6 inches falling during the 12-hour period ending 00 UTC 24 September (5 PM PST 23 September)
- Flash flooding and severe thunderstorms were reported during the morning and afternoon of 23 September
- Strong synoptic-dynamic forcing and moisture from the remnants of Tropical Storm Mario both played important roles in this event



Source: NOAA | NWS | Advanced Hydrologic Prediction Service, <https://water.weather.gov/>

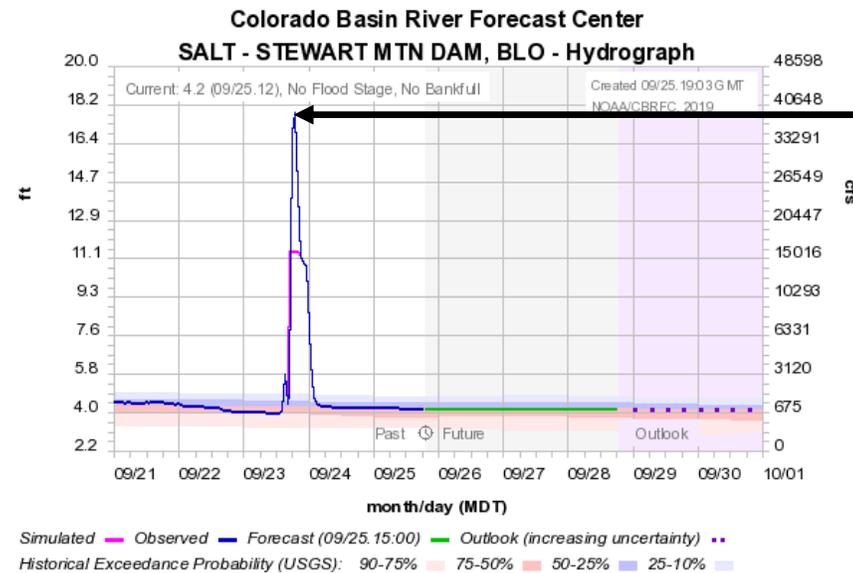
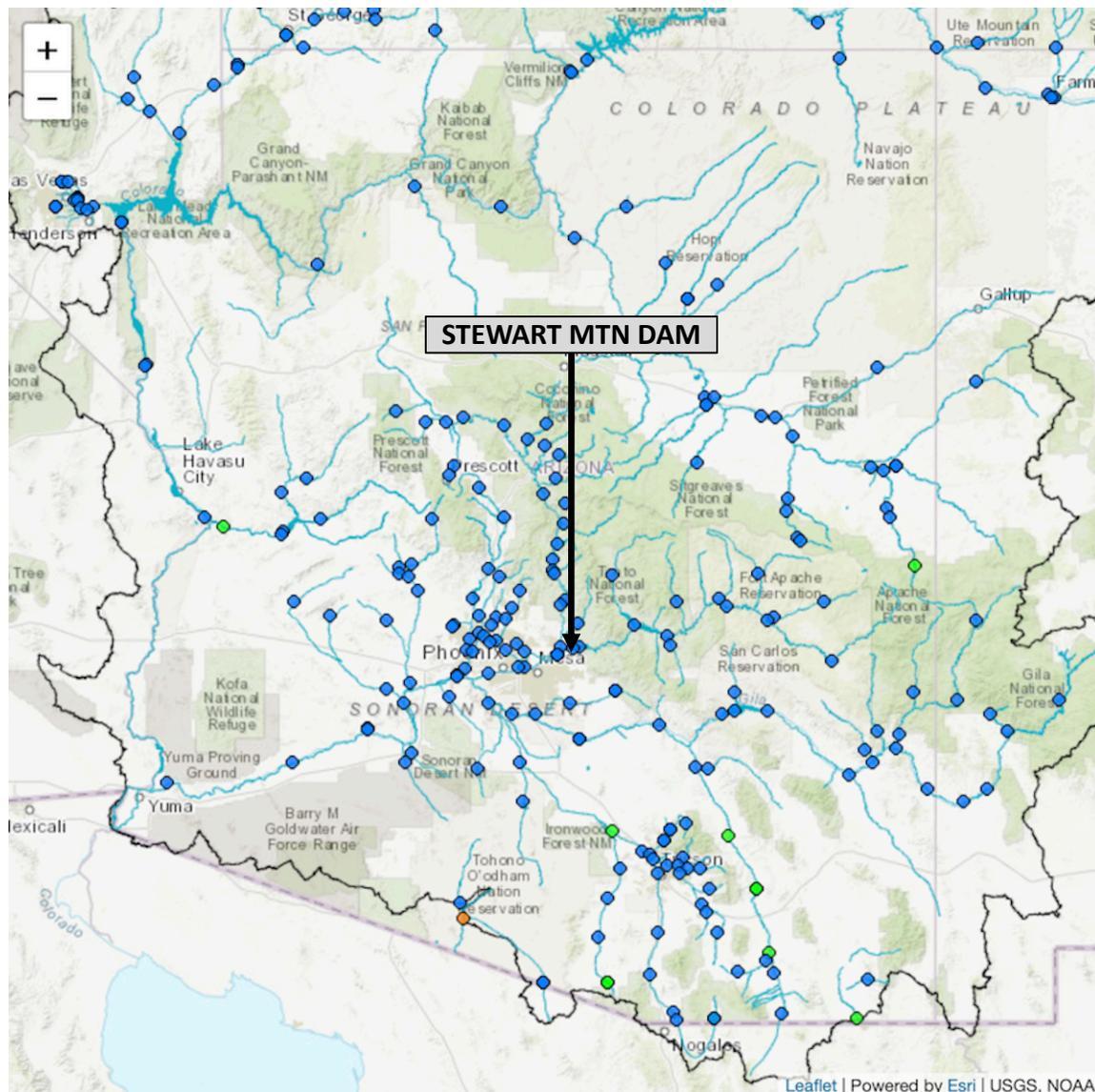


Source: NOAA | NWS Western Regional Headquarters, <https://www.weather.gov/wrh>

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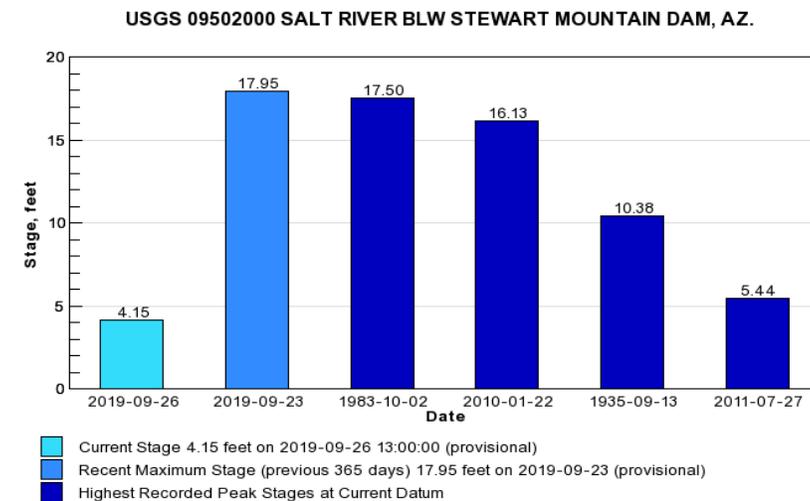


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Peak Discharge: 37,000 ft³ s⁻¹
 Peak Gage Height: 17.95 ft

Intense rainfall on 23 September led to a rapid increase in streamflow on the Salt River east of Phoenix, AZ. Stage height at Stewart Mountain Dam increased more than 13 ft in less than 90 minutes. The 17.95 ft peak stage on 23 September is the highest peak stage ever recorded at this station. The previous record was 17.50 ft (2 October 1983).



USGS WaterWatch

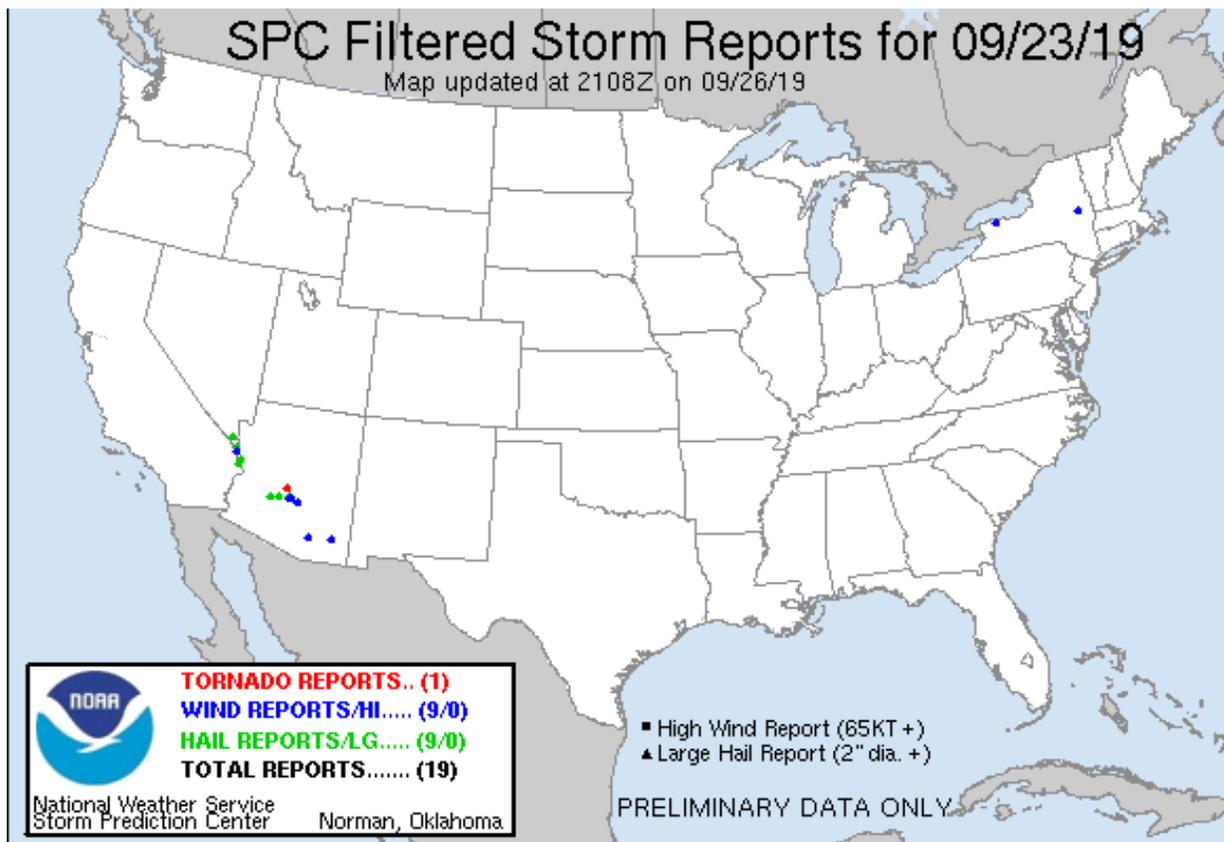
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NWS Phoenix received numerous reports of street flooding on 23 September, primarily in Maricopa County. Flash flooding caused road closures and damaged several homes in Gila County. In addition, there were several reports of large hail and severe winds, and one confirmed EF0 tornado near New River, AZ.



Source: NOAA | NWS | Storm Prediction Center, <https://www.spc.noaa.gov>

Filtered Tornado Reports (CSV) (Raw Tornado CSV)(?)

Time	Location	County	State	Lat	Lon	Comments
1908	5 ESE NEW RIVER	MARICOPA	AZ	3389	11204	***DELAYED REPORT*** TORNADO ON GROUND FOR 2 MINUTES ... ESTIMATED PATH LENGTH 1 MILE ... WIDTH 100 YARDS. TREES UPROOTED ... ROOF DAMAGE NOTED. WITNESSES REPORTED UP TO 3 (PSR)

Filtered Hail Reports (CSV) (Raw Hail CSV)(?)

Time	Size	Location	County	State	Lat	Lon	Comments
1943	100	1 NNE DESERT HILLS	MOHAVE	AZ	3456	11436	TRAINED SPOTTER REPORTED QUARTER-SIZED HAIL. ON THE NORTH SIDE OF LAKE HAVASU CITY NEAR THE AIRPORT. (VEF)
2030	100	1 SE FORT MOHAVE	MOHAVE	AZ	3500	11458	QUARTER SIZED HAIL REPORTED BY MOHAVE COUNTY EMERGENCY MANAGER IN THE MESQUITE CREEK SUBDIVISION NEAR JACK RABBIT AND WAGON WHEEL ROADS. (VEF)
2100	175	3 E BULLHEAD CITY	MOHAVE	AZ	3511	11455	SOCIAL MEDIA REPORT OF GOLF BALL SIZED HAIL REPORTED JUST TO THE EAST OF BULLHEAD CITY AT SILVER CREEK RD. AND BULLHEAD PKWY. REPORT WAS COMPLIMENTED BY A VIDEO AND PHO (VEF)
0004	100	10 NW BUCKEYE	MARICOPA	AZ	3349	11270	***DELAYED REPORT*** ... QUARTER SIZE HAIL REPORTED BY TRAINED SPOTTER IN TARTESSO WEST; TIME ESTIMATED BY RADAR. (PSR)
0025	100	10 NNE DESERT HILLS	MOHAVE	AZ	3469	11430	NICKEL TO QUARTER SIZE HAIL REPORTED. DELAYED TRANSMISSION. (VEF)
0032	100	2 SSW WADDELL	MARICOPA	AZ	3359	11241	PICTURE FROM SOCIAL MEDIA. TIME ESTIMATED FROM RADAR. (PSR)
0043	100	1 SE NORTH SCOTTSDALE	MARICOPA	AZ	3361	11188	CORRECTS PREVIOUS HAIL REPORT FROM 1 SE NORTH SCOTTSDALE. CORRECTS PREVIOUS HAIL REPORT FROM 1 SE NORTH SCOTTSDALE. (PSR)
0044	100	9 NNE DESERT HILLS	MOHAVE	AZ	3466	11429	HAVASU HEIGHTS FIRE DEPARTMENT REPORTED QUARTER SIZED HAIL FALLING. (VEF)

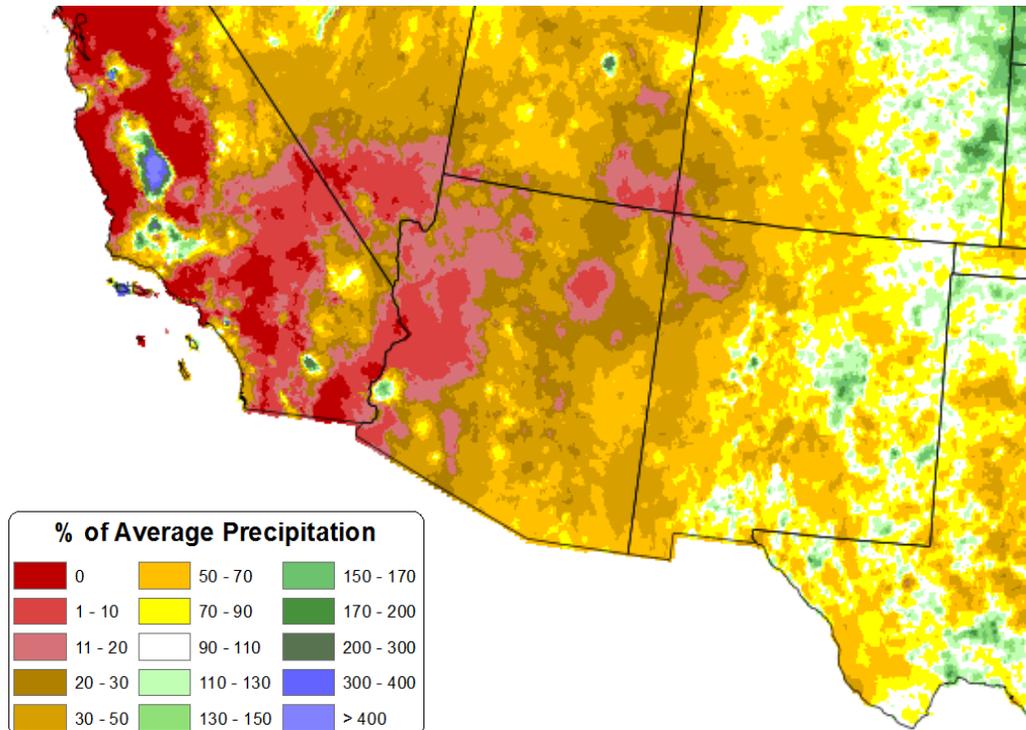
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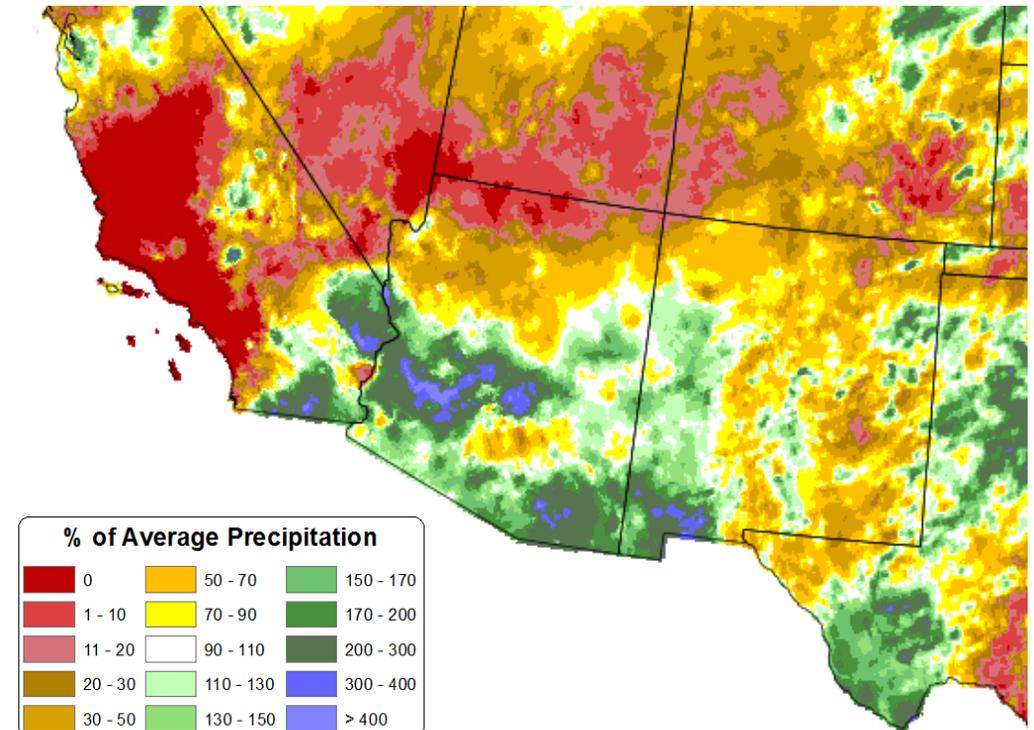
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Between June and August, anomalously dry conditions persisted throughout the Desert Southwest. Much of the region received less than 50% of normal precipitation, and portions of southern California, western Arizona, and southern Nevada received less than 20% of normal precipitation. A more active synoptic weather pattern in recent weeks (especially over the past 5 days) has resulted in significantly wetter-than-normal conditions over much of the Sonoran Desert, as well as extreme southeastern Arizona and southwestern New Mexico. Some areas have received more than 300% of normal precipitation for the month of September.

Total Precipitation Anomaly: Jun 2019 - Aug 2019
Period ending 7 AM EST 31 Aug 2019
Base period: 1981-2010
(Map created 20 Sep 2019)



Total Precipitation Anomaly: 01 Sep 2019 - 26 Sep 2019
Period ending 7 AM EST 26 Sep 2019
Base period: 1981-2010
(Map created 27 Sep 2019)



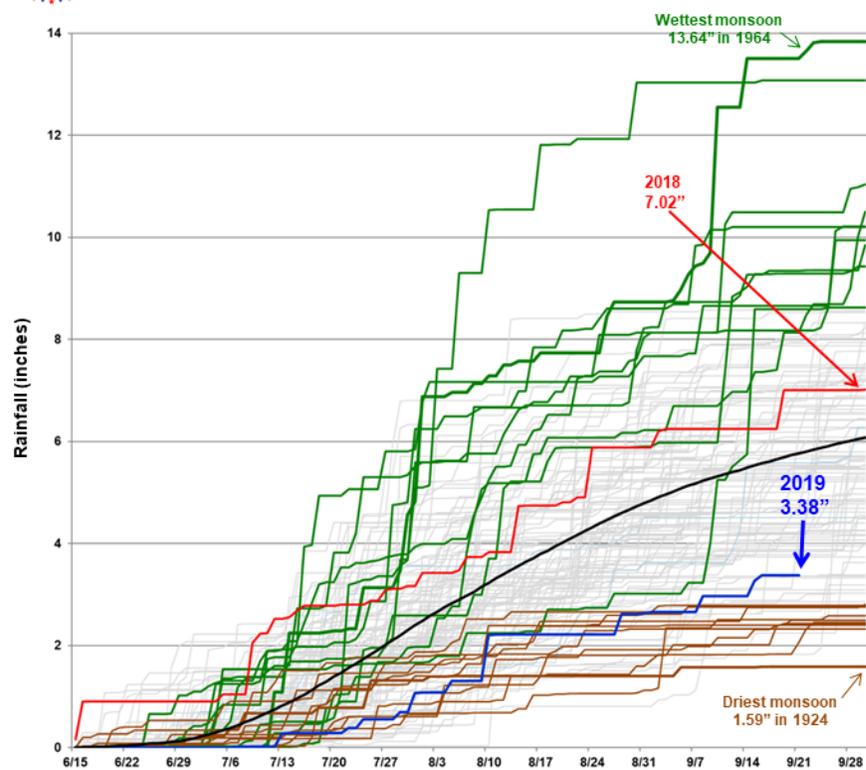
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A wet September has helped erase monsoon season (June–September) rainfall deficits in southeastern Arizona. Prior to September, 2019 was on pace for one of the 10 driest monsoon seasons in Tucson since 1895. Unsettled weather during the 22–26 September period increased the total monsoon season-to-date rainfall from 3.38 inches to 5.05 inches. For reference, the 30-year normal (1981–2010) total monsoon rainfall is 6.08 inches, and the 2018 total monsoon rainfall was 7.02 inches.

Monsoon rainfall for Tucson (1895-2019)



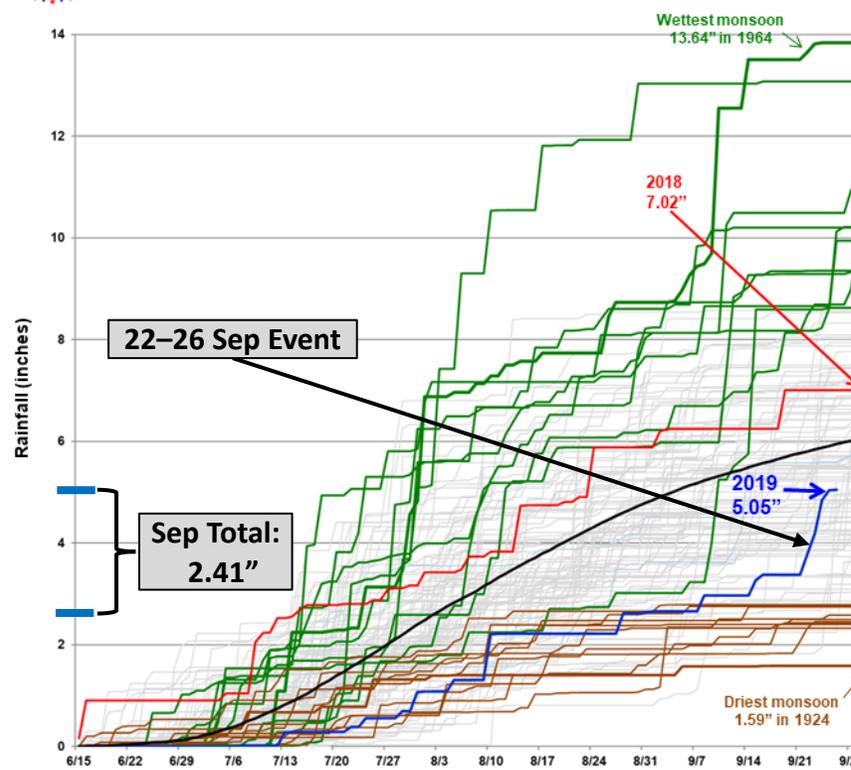
The “Haywood plot” on the left shows the accumulated rainfall totals for each monsoon year recorded at the official site in Tucson.

Haywood plots are useful in tracking current season rainfall compared to the seasonal results from the past.

Top 10 wettest Monsoon in Green
Top 10 driest Monsoon in Brown
1981-2010 normal in Black
2019 in Blue
2018 in Red
Remaining years in Gray

2019 total through September 21st – 3.38”

Monsoon rainfall for Tucson (1895-2019)



The “Haywood plot” on the left shows the accumulated rainfall totals for each monsoon year recorded at the official site in Tucson.

Haywood plots are useful in tracking current season rainfall compared to the seasonal results from the past.

Top 10 wettest Monsoon in Green
Top 10 driest Monsoon in Brown
1981-2010 normal in Black
2019 in Blue
2018 in Red
Remaining years in Gray

2019 total through September 26th – 5.05”