MAY 2019 FLOODS

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Daily rainfall accumulation

APRIL 29 – MAY 14
Widespread 5"-8" of rain April 29-May 14
10"-15" in south central Kansas

May 15: Arkansas River near Flood Stage from Muskogee, OK to Van Buren, AR
At this point, the release from Keystone is increased to 100,000 cfs, which is a pre-defined trigger for the TAEMA. However, this release isn’t resulting in flooding.

Further downstream, from Muskogee through west central AR, the Arkansas River is hovering right around flood stage.

During this time, there are no NWS Tulsa initiated conference calls since the heavy rain has been in Kansas and north central OK, and there isn’t any significant flooding forecast. Information is going out via Flood Warnings + other routine hazard products/webpages.

City of Tulsa requests NWS briefings May 14-17 as part of hazard mitigation plan being activated.

NWS Tulsa begins increased services May 18, and a conference call is held on May 19 to address severe weather + heavy rain potential on May 20-21.
THE BIG RAIN – MAY 20-21

• Video: 44-hour radar reflectivity loop from 1am May 20 - 9pm May 21
• 3 Rounds of Heavy Rainfall + Severe Weather
THE BIG RAIN – MAY 20-21

24-hour Rainfall ending at 7 am May 21, 2019

- Widespread 4”-10” of rain by 7 am 5/21
- Widespread Flash Flooding, River Flooding
- 4 Tornadoes in Tulsa Co. + 1 Tornado in Creek Co. 6-7 am 5/21
- NWS Tulsa issued:
  - 12 Tornado Warnings
  - 26 Severe Thunderstorm Warnings
  - 14 Flash Flood Warnings
24-hour Rainfall ending at 7 am May 23, 2019

- Video: 20-hour radar reflectivity loop from 1:30 pm May 22 - 9 am May 23
- Widespread 1.5"-6" of rain by 7 am 5/23
- More Tornado Warnings for Tulsa Co.
4-day total: 5"-12" of rain by 5/23 morning

Major River Flooding occurring or forecast along most of Arkansas River from south central KS through central AR
24-hour Rainfall ending at 7 am May 25, 2019

- Video: 30-hour radar reflectivity loop from 1:30 am May 24 - 7 am May 25
- Widespread 1.5"-4" of rain by 7 am 5/25

MAY 24

April 6 13 20 27 May 4 11 18 25 June 1 8 15
24-hour Rainfall ending at 7 am May 26, 2019

MAY 25

- Widespread 1"-4" of rain by 7 am 5/26 upstream of Keystone
- 3 Tornadoes in Tulsa Co. midnight – 1 am 5/26

NWS Tulsa issued:
- 10 Tornado Warnings
- 18 Severe Thunderstorm Warnings
- 1 Flash Flood Warning
Widespread 8"-16" of rain by 10 am 5/26 upstream of Muskogee, OK

Actual River Flood Categories 4 pm May 27
NWS Tulsa is issuing hazardous weather warnings via normal emergency communication systems 24/7.

NWS Arkansas-Red River Forecast Center in near constant contact with USACE Tulsa + Little Rock Districts water control managers.

Phone calls to EMs to notify of Major flood forecast/updates.

NWSChat + Briefings

Coordination with EMs for Civil Emergency Messages to communicate evacuation requests

NWS + USGS communication on flood measurements and rapidly deployed gage for Muskogee
MAY 29

24-hour Rainfall ending at 7 am May 30, 2019

- Video: 18-hour radar reflectivity loop from 7 am May 29 - 1 am May 30
- Widespread 1.5"-4" of rain by 7 am 5/30
- Rapid onset flash flooding

April 6 13 20 27 May 4 11 18 25 June 1 8 15
• Widespread 10”-16” fell in the southern KS + northern OK area bounded by Kingfisher, OK - Tulsa, OK - Miami, OK - Emporia, KS - Wichita, KS in 15 days

• PLUS: a record number of tornadoes (48) occurred in the NWS Tulsa area May 18-26, 2019 (most tornadoes for May and most tornadoes in any month).
• Rainfall frequency of 1/200 to 1/1000 for parts of northern OK

• In other words: 0.5% to 0.1% annual chance of occurrence

• Locations along and northwest of I-44 had at least a 1/50 annual exceedance probability (2% annual chance of occurrence).

• A portion of south central Kansas had <1/1000 annual exceedance probability (<0.1%, or greater than a 1000-year rainfall event)