Subcommittee on Disaster Reduction

John D. Murphy
Chief Operating Officer
National Weather Service
Hurricane Arthur
July 3–4, 2014

HWRF Forecast Track & Forecast
Radar Reflectivity (18z 01 JUL ‘14)

Hurricane Arthur
Potential Storm Surge Mapping
‘Best Guess, Worst Case Scenario’
Errors cut in half over past 15 yrs
10-yr improvement – As accurate at 48 hrs as we were at 24 hrs in 2000

• 24–48h intensity forecast historically off by 1 category (2 categories perhaps 5–10% of time)
El Nino Status

Average Sea Surface Temperature (SST) anomalies (°C) for week of 6 May 2015
Anomalies computed with respect to 1981–2010 base period weekly means

Sea Surface Temperature (SST) forecast anomalies
Niño 3.4 region (5°N–5°S, 120°W–170°W)
2015 Atlantic Hurricane Season Outlook

Named storms: 6 – 11
Hurricanes: 3 – 6
Major hurricanes: 0 – 2

Outlook probability

Above-normal 10%
Near-normal 20%
Below-normal season 70%

Be prepared: Visit hurricanes.gov
and follow @NWS and @NHC_Atlantic on Twitter
TX/OK Flooding

Monthly Rainfall
The Good (1)

Severe drought down to 14.2%.
- 18% - 2 weeks ago
- 20% - 4 weeks ago

Approximately 5 million less people impacted by severe drought.
- National Drought Mitigation Center
The Good (2)

TX/OK drought comparison from peak October 2011 to May 2015.

October 11, 2011

99% of TX in severe drought
100% of OK in severe drought.

May 26, 2015

None of TX or OK in severe drought.

Severe Drought Erased
The Bad (1)

- **Austin/San Antonio**: A large flash flood event (10+ inches) occurred over portions of the Texas Hill Country on May 23–24, 2015 which caused massive runoff into the Blanco River.
- The Blanco River at Wimberley in Hays County, Texas (southwest of Austin) reached an all-time record height of 40.21 feet before the gauge was lost.
- The Blanco River rose 31 feet in 2 1/2 hours which resulted in several fatalities, a massive search and rescue effort, and approximately 300 homes damaged or destroyed in Wimberley.
- Interstate 35 was closed at San Marcos early on May 24th as water overtopped the Blanco River bridge.
- **Houston**: 10+ inches of rain fell in less than 6 hours in the Houston metro area in the late hours of May 24, 2015 into the early morning of May 25th. Massive urban flooding occurred with at least six fatalities reported. Numerous roads, including major interstates, were closed at the height of the flooding. Early reports estimated that perhaps 1,000s of homes near bayous have flood damage.
The Bad (2)

● **Dallas/Fort Worth:** The Trinity River (a major Dallas–Fort Worth river system) was at or near major flood stage several times due to repeated rounds of heavy rainfall. This impacted, and continues to impact, major interstates in and around Dallas as well as industrial areas within the city.

● **Oklahoma City and Tulsa:** Several days of excessive rain have caused major flooding along the Red and Arkansas Rivers from the Texas border northeast across Oklahoma. Lake Texoma, along the Texas/Oklahoma border, continues to reach record levels with water flowing over its spillway for only the fourth time in its history. WFO Norman issued three Flash Flood Emergencies, the first they have ever issued within their County Warning Area. Numerous water rescues, closed roads, homes flooding and record rainfall reports occurred throughout the state during this period.

● **Wichita Falls, TX:** A near flood of record occurred at Wichita River in Wichita Falls, TX the weekend of the 23rd and 24th.

● **Arkansas:** Multiple days of heavy rain caused moderate to major flooding on the Arkansas River and other tributaries in western and central parts of the state. Numerous road closures were reported and farmland flooded.
Decision Support

- All offices in and around these impacted areas have been sending email briefings, conducting routine and special webinars, handling countless verbal (phone) briefings with emergency management and first responders, and also doing countless media interviews and inquiries. They have all been very active on social media and our NWSChat accounts throughout the event.

- Involved in daily conference calls with the USGS, USACE and River Authorities to coordinate water releases from dams and lakes, as well as provide the State of Texas with a complete water picture.
Questions
Example of Decision Support Graphic

5 to 7 inches of rainfall overnight on Monday May 25th

San Marcos River at Luling
Crested 37 ft Sunday. 2nd Crest near 32 ft Monday Night.

Guadalupe River at Gonzales
Crest ~42-43 ft overnight tonight

Guadalupe River at Cuero
~1.5 Days
To reach MAJOR Flood Tuesday Night
Crest near 40 ft. Wednesday evening

Guadalupe River at Victoria
~1 Day
~To reach MAJOR Flood Thursday

Guadalupe River at Bloomington
~To reach MAJOR Flood Thursday Evening

The 1st flood wave has passed Gonzales. The wave is moving faster than originally forecasted due to the magnitude, but is attenuating slightly. The 2nd flood wave will follow, with a lower crest. There is forecasted rainfall for today that is incorporated into the forecast.

Approx. flood wave crest location @8:30am 5/26

www.srh.noaa.gov/wgrfc
NWSWestGulf
@NWSWGRFC

Issued: 5/25/15 @ 11:30am
### May 2015 for Arkansas, Oklahoma and Texas

<table>
<thead>
<tr>
<th>State</th>
<th>Tornado Warnings</th>
<th>Severe Thunderstorm Warnings</th>
<th>Flash Flood Warnings</th>
<th>Flood Warnings</th>
<th>Total Warnings</th>
</tr>
</thead>
<tbody>
<tr>
<td>TX</td>
<td>273</td>
<td>1015</td>
<td>1130</td>
<td>192</td>
<td>2610</td>
</tr>
<tr>
<td>OK</td>
<td>154</td>
<td>334</td>
<td>663</td>
<td>77</td>
<td>1228</td>
</tr>
<tr>
<td>AR</td>
<td>32</td>
<td>129</td>
<td>287</td>
<td>35</td>
<td>483</td>
</tr>
<tr>
<td>Totals</td>
<td>459</td>
<td>1478</td>
<td>2080</td>
<td>304</td>
<td>4321</td>
</tr>
</tbody>
</table>