The April 12, 2020
Quasi-Linear Convective System
Weather Event Simulation Student's Guide

Warning Operations Course: Severe Curriculum

NWS/OCLO/Warning Decision Training Division

March 2021

Overview:

This simulation focuses on threat assessment and warning methodologies for a quasi-linear convective system (QLCS) that traversed the Shreveport, LA, Forecast Office (SHV) County Warning Area (CWA) between 1300 and 1700 UTC. The simulation is intended for students who are enrolled in the FY21 WOC Severe course but also can stand alone for anyone who wishes to take the simulation.

Performance Objectives:

The performance objectives of the simulation training are based on applying knowledge learned from instruction in RAC and WOC, specifically:

1. Assess the mesoscale and near-storm environment using observational and model-based tools to determine the relative probability of tornadoes, severe hail and damaging wind gusts.
2. Correctly assess the potential of mesovortex generation and tornadogenesis utilizing the three ingredients methodology.
3. Issue accurate and effective warnings (TOR or SVR) and follow-up statements (SVS), with the appropriate type, duration, size, shape, intensity, source and update frequency.

WES-2 Bridge Setup and Case Installation Instructions:

1. Log into the WES with the warning forecaster's AWIPS username and password.
   a. If only one screen is available on the WES, use these instructions to resolve the issue:
      i. Under Applications - select System Tools, then Settings
      ii. In the Settings pop-up window, click on Devices
      iii. Select Displays
      iv. Make sure "Join Displays" is selected and that the two displays are set in the order 2 on the left and 1 on the right.
      v. Hit Apply
2. Under the "Applications" menu, click on the "WDTD" and then "WES-2 Bridge" options.
3. Once the large GUI opens, go to the "EDEX Instances" section near the bottom. Ensure that EDEX_00 is listed as "Active". If not, right-click on it and "Start EDEX".
4. If "2020Apr12SHV" is loaded, right-click on the case and select "Simulation". If it is not loaded, then do one of the following:
   a. In the EDEX Instance manager, see if a case is in EDEX_01 (you can hover the mouse over the EDEX_01 label). If it is empty, then right-click on "Simulation" to load the case and launch the simulation in one step.

b. If any EDEX_02, EDEX_03, or EDEX_04 are empty, then ensure one of these is active and then right-click on the case and select "Load Case". Once it finishes loading, then right-click on the case and select "Simulation"

5. Click the box labeled "Remove warnings for the WFO"
6. Click the "Load Macro" button, then select "2020Apr12-SHV-1330Z" and click "OK". (Note: There also is an option "2020Apr12-SHV-1545Z" for those who want to come back and take the bonus simulation time later.)
7. Click "Simulate".
8. After a minute or two, a CAVE session, WESSL window and Simulation Controls should all launch. If not, close everything out and go back to step #2.
9. In the CAVE session, launch the Text Workstation.
10. Click on the "Play" button on the simulation controls and let it play for about 20 seconds. Then "Pause". Two Mozilla windows should have opened (SPC meso data and Outlooks). If you get an error with one of the windows, try and restart the WESSL. Worst case scenario is to restart the case. You need both windows for the hazards assessment portion of the case!
11. To open a second CAVE session, right-click on the EDEX that has the case and then select "Start CAVE". Then drag the CAVE to the right monitor.
12. If the time/date box is not red and matches the time in the other CAVE window, you might want to play the simulation for 15 seconds and then pause, or use the SYNC button.

COBRAS PC/Warning Assistant Instructions (optional)

1. Use the [WOC Severe COBRAS Guide](#) to prepare the COBRAS interface.
2. Download the [SPC Mesoanalysis](#) and [SPC Products](#) zip files. Proceed to follow [these instructions](#) to display these data sets on a PC.
3. Launch the following links into separate tabs in Google Chrome
    a. SPC Mesoanalysis data
    b. SPC/WFO products
    c. [HREF page](#)
    d. [TWIP Mesovortex Warning System Reference Sheets](#)
4. GR2 Settings
    a. Turn off LSR Icons.
    b. Turn off Warnings.

Note: If pausing throughout the simulation, please remember to pause and unpause both the WES box and COBRAS!

Part 1: Hazard Assessment, Radar & Warning Strategies

● Watch this [introduction module](#), which provides an overview of the case.

- Spend 15 minutes loading and examining synoptic and mesoscale data for this case to assess the near storm environment for the SHV CWA. Focus your attention from the current time through 16 UTC. The SPC Mesoanalysis data for 13 UTC is located here.
- Either provide an oral briefing to your facilitator or write a convective area forecast discussion update (AFD UPDATE) outlining your convective expectations and hazard assessment based on the data you have examined. What storm type and hazards do you expect?
- Discuss radar scanning strategies that you will employ during this event with your facilitator.
- Based on your threat assessment and convective expectations, discuss your warning strategy with your facilitator.

Part 2: Simulation

Pre-Warning Simulation Period: Half hour - 1330 UTC (Pause Simulation)

Warning Forecaster
Take this time to load your warning procedures, further assess the environment, and get ready to take over warning responsibility for SHV. Start asking yourself these questions:

1. Are the three ingredients being met near and north of each bow apex?
2. Can you identify rear-inflow jets? Reflectivity dropouts? Surges?
3. Are there any other nudgers visible?

Warning Assistant (Optional)
Log into a PC and launch the following links into separate tabs in Google Chrome:
      a. SPC Products and case aids
      b. SPC Mesoscale Analysis data
      c. HREF page
      d. TWIP Mesovortex Warning System Reference Sheets
      e. COBRAS - COBRAS guide

Discuss the radar features and near storm environment with the warning forecaster leading up to 1345 UTC.

Warning Simulation Period (Required) : 1330 to 1545 UTC

The warning forecaster will issue TOR, SVR, and SVS products for this period of time, with the proper use of IBW tags, size, and duration.

The optional warning assistant will utilize GR2 (COBRAS) and SPC mesoanalysis data to help perform warning support duties.
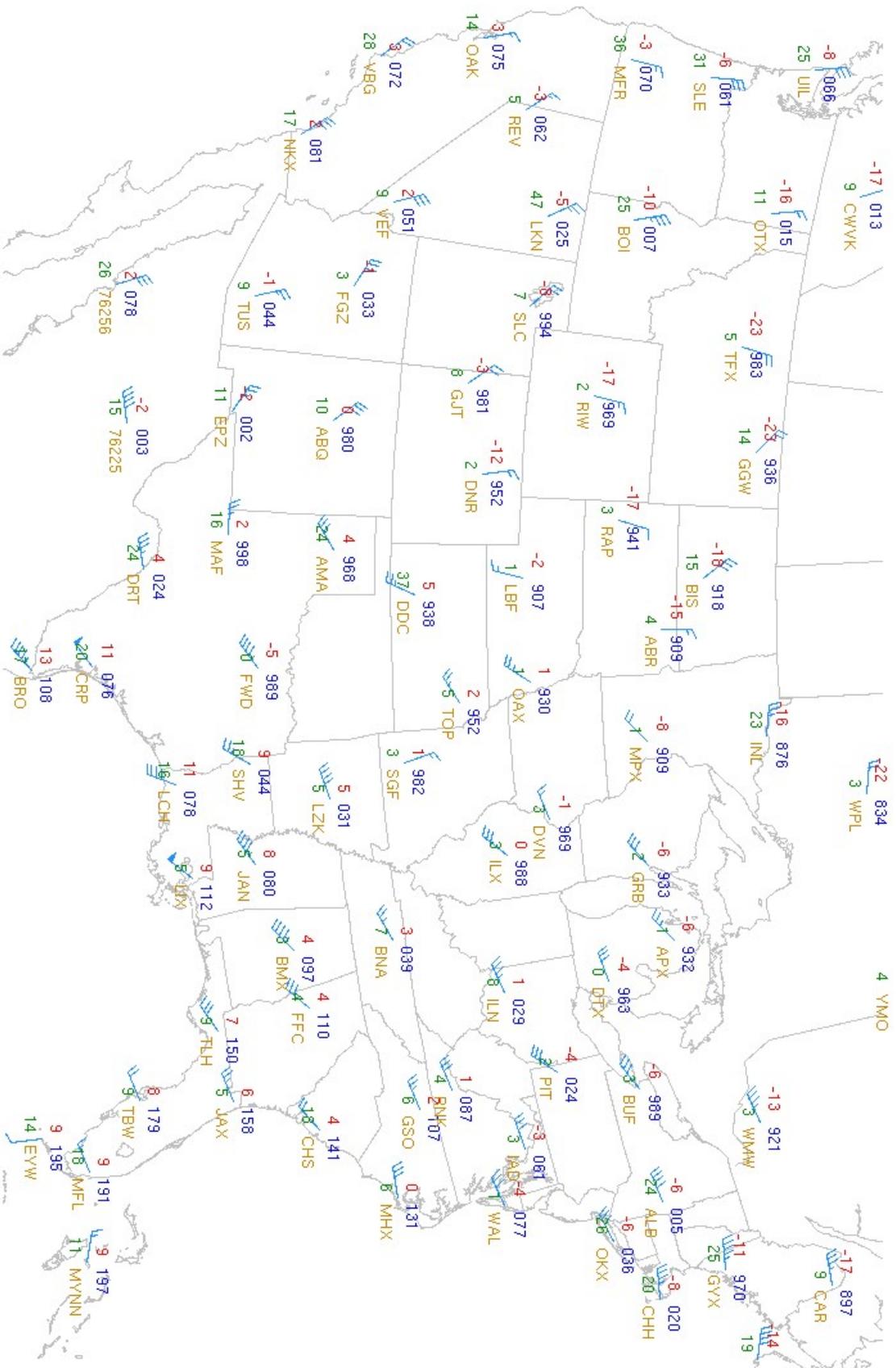
Warning Simulation Period (BONUS) : 1545 - 1645 UTC

If you dare to go further into time, be forewarned that the warning decisions become more challenging as the QLCS ventures east away from the primary radar. The reward is in some interesting storms! Use your skills to issue convective warnings downstream.
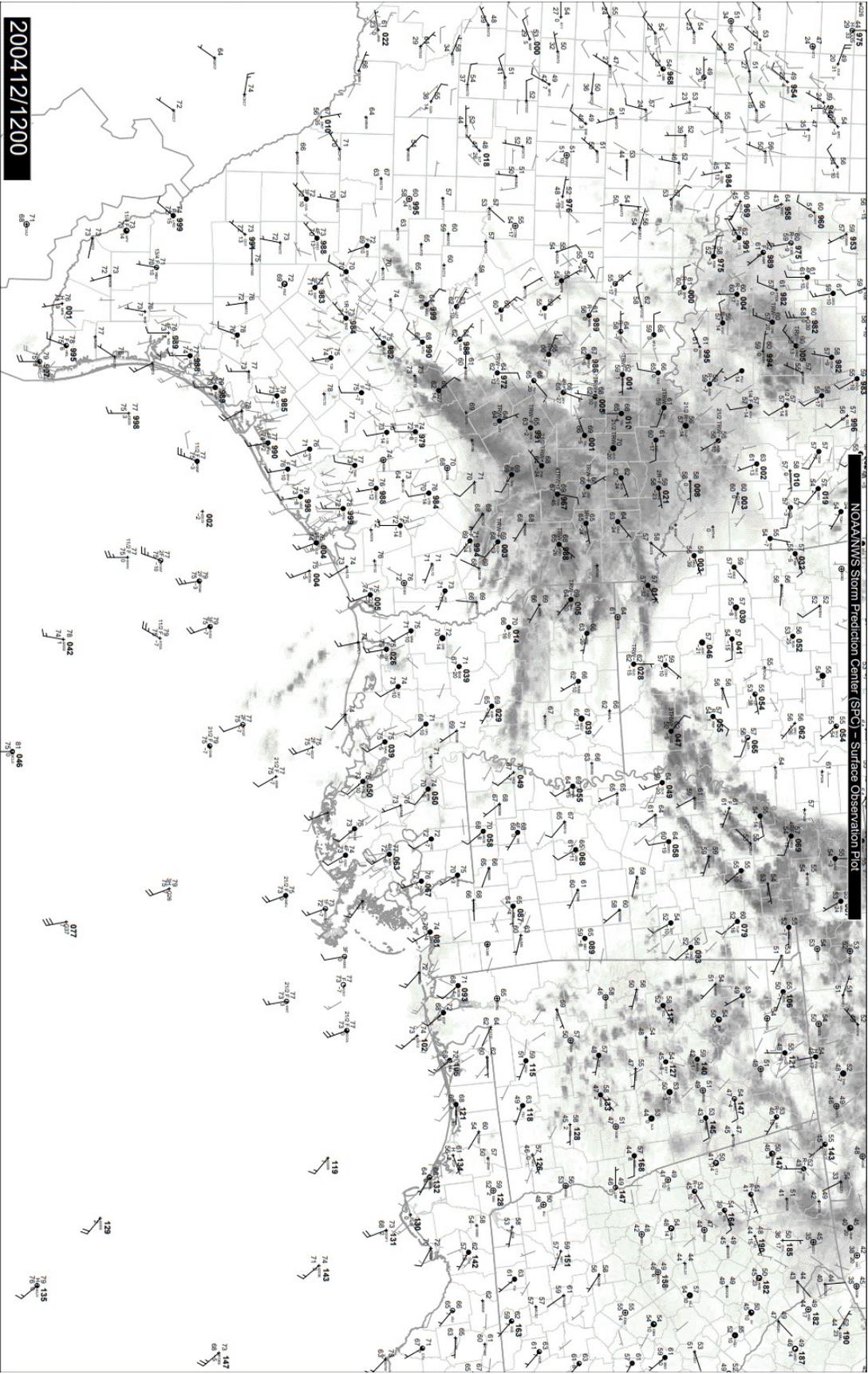
Part 3: Debrief

Watch the provided debriefing module and take the quiz in the CLC module for course completion credit (mandatory for those in WOC Severe). If proctored, your SOO or facilitator will review the case, focusing on how you performed regarding the stated objectives.
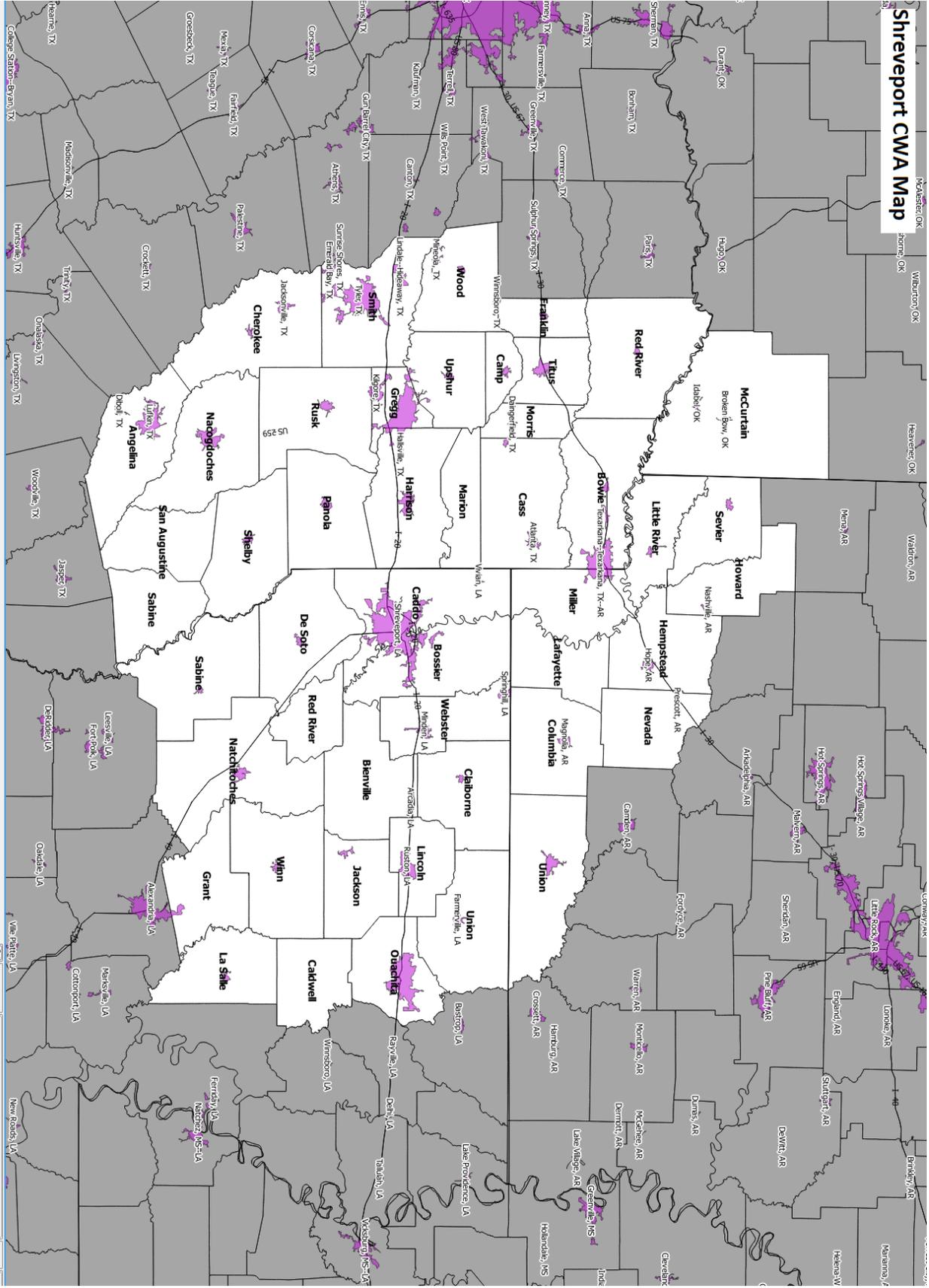
See the following pages for analyzable surface and upper-air maps, a CWA map, and a radar map.

12Z 12 Apr 2020 850 hPa

NOAA/NWS Storm Prediction Center (SPC) - Surface Observation Plot

Shreveport CWA Radars

KFWS
KTLX
KSRX
KSHV
KPOE
KLZK