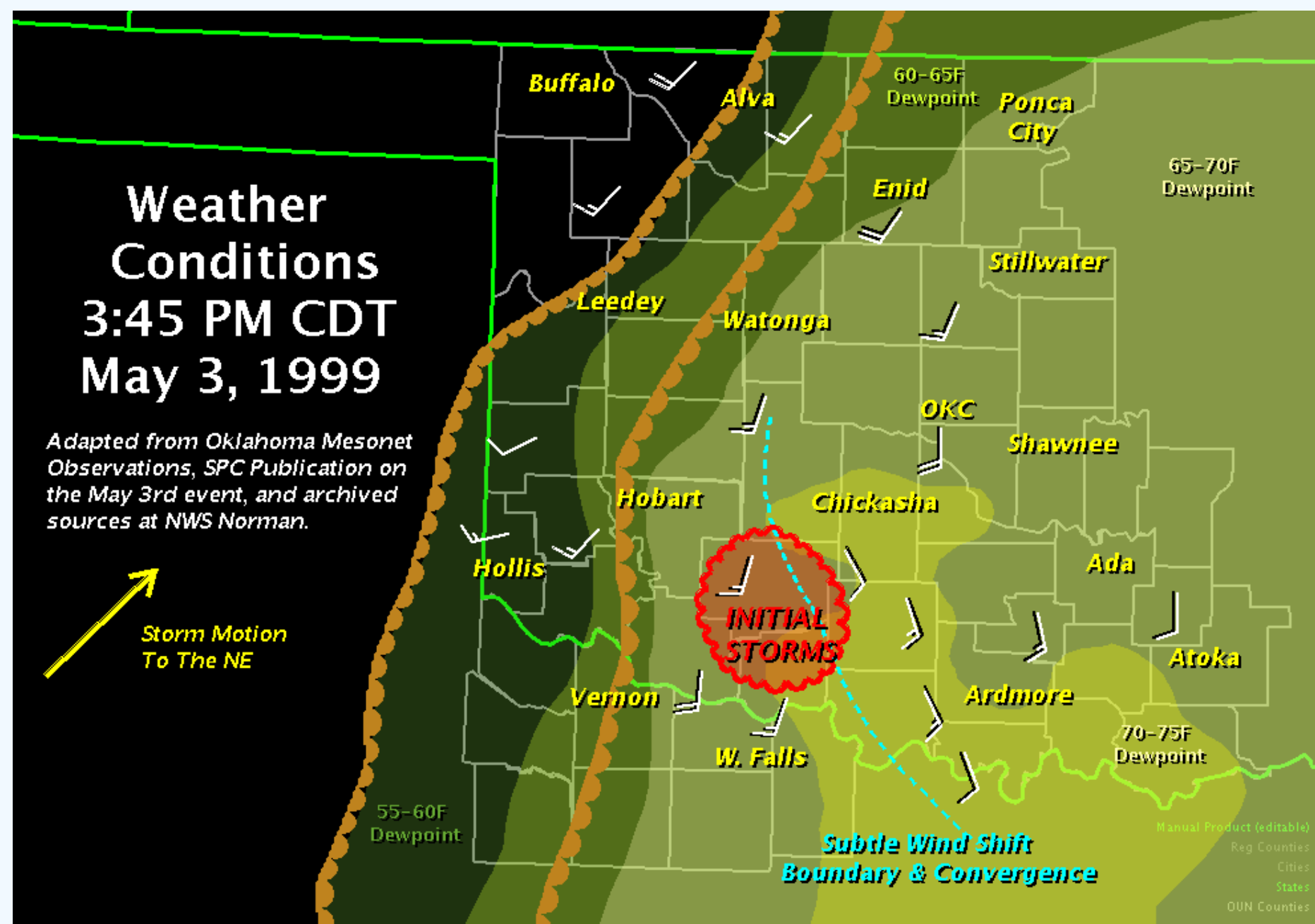


Southern Plains Tornado Outbreak

May 3, 1999

Overview

On May 3, 1999 a system with multiple supercell thunderstorms produced a large amount of tornadoes, many of which caused significant damage and injuries to people within the area. The majority of the events were in central Oklahoma, with additional tornadoes in south central Kansas, eastern Oklahoma, and northern Texas. In total, over 70 tornadoes were observed.



Storm Events

The first Severe Thunderstorm Warning was issued at 4:15 PM CDT for Comanche County, and within 5 minutes quarter sized hail fell nearby. At 4:47 PM CDT, the first Tornado Warning was issued for Comanche, Caddo, and Grady counties. Within 4 minutes, the first tornado report was received from a spotter. Just beyond 5 PM, it became clear that significant storm outbreaks with the potential for many tornadoes were going to occur. By 6:30 PM, tornadic supercells were expected to threaten the Oklahoma City metropolitan area.

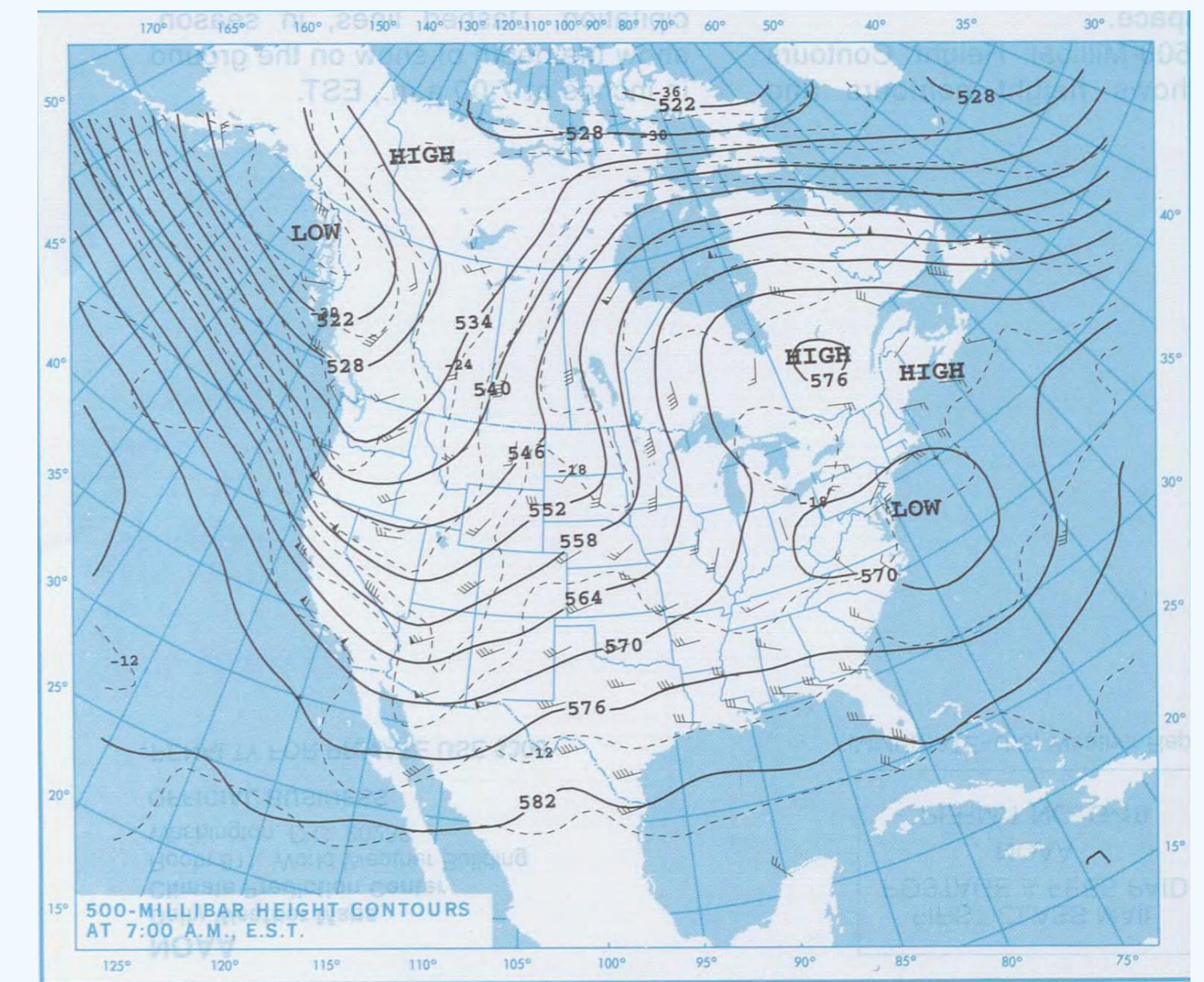
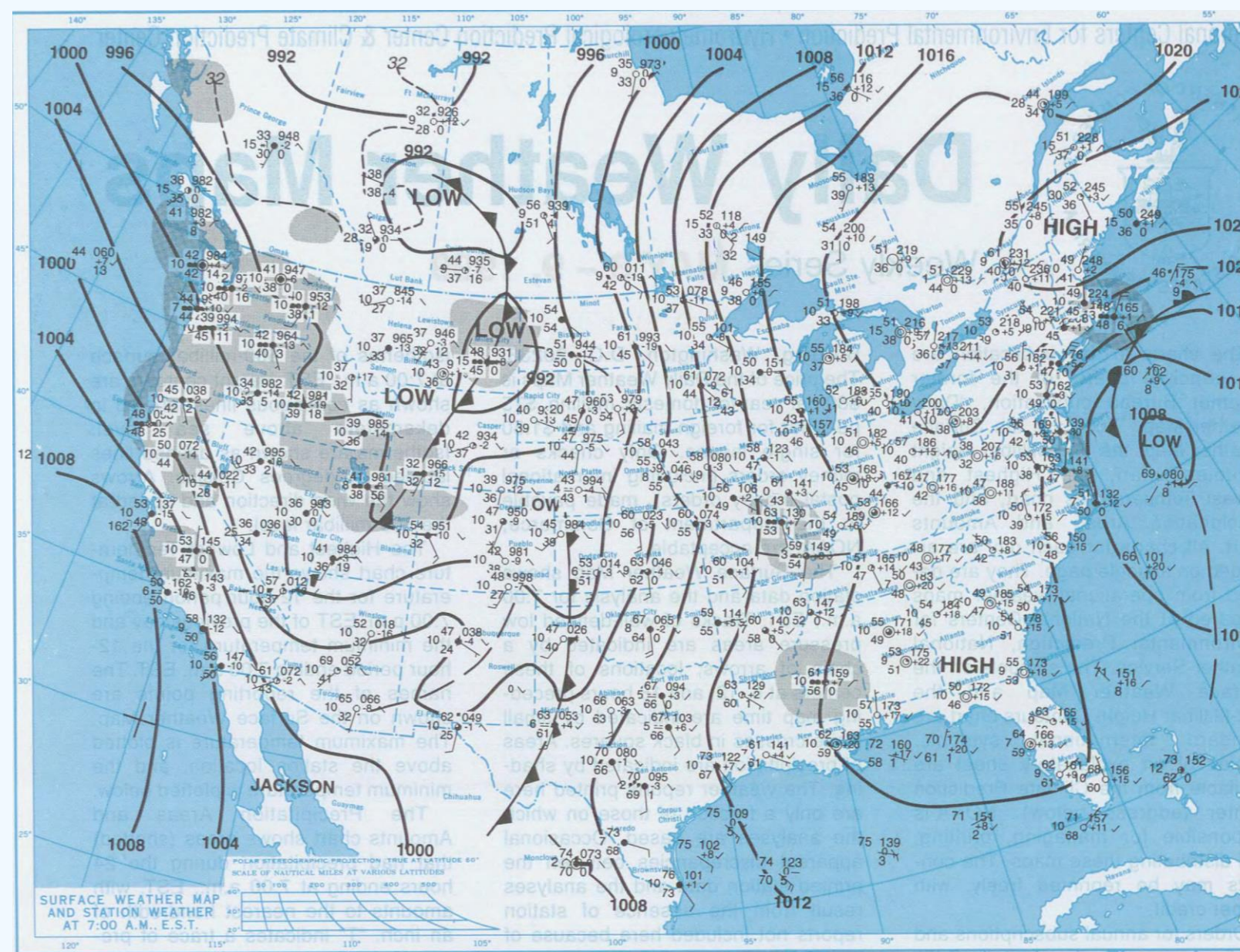
Impacts/Damage

The tornado outbreak produced approximately 15 square miles of damage, and is one of the most expensive episodes ever recorded with damage estimates around \$1 billion (in 1999 dollars). Wind estimates captured by the Doppler on Wheels (DOW) put top wind speeds at around 300 mph.

Much of the impact from this event came from an F5 tornado which devastated parts of southern and eastern Oklahoma City and nearby suburbs, destroying entire neighborhoods and lives. Across the area, there was one F5, two F4s, seven F3s, and sixty-two F0-F2 tornadoes.

Tornado Emergency

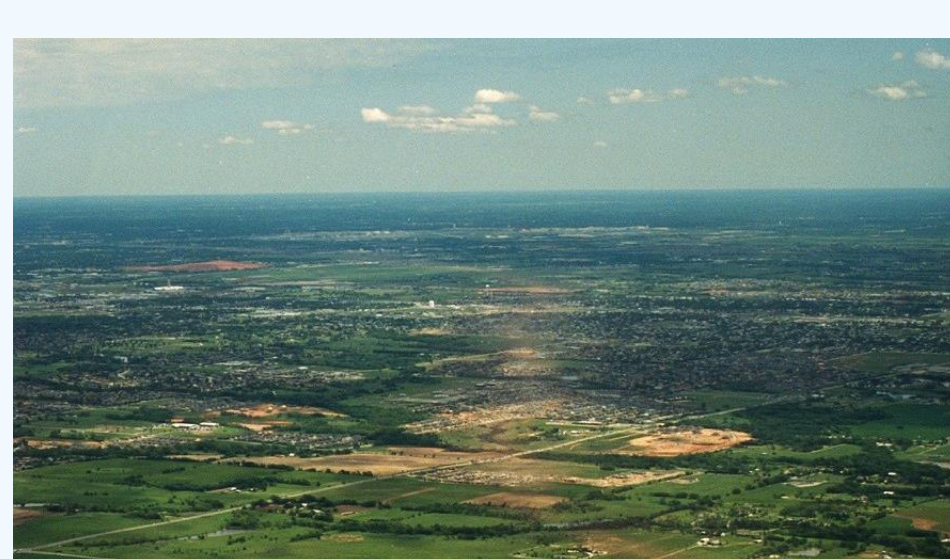
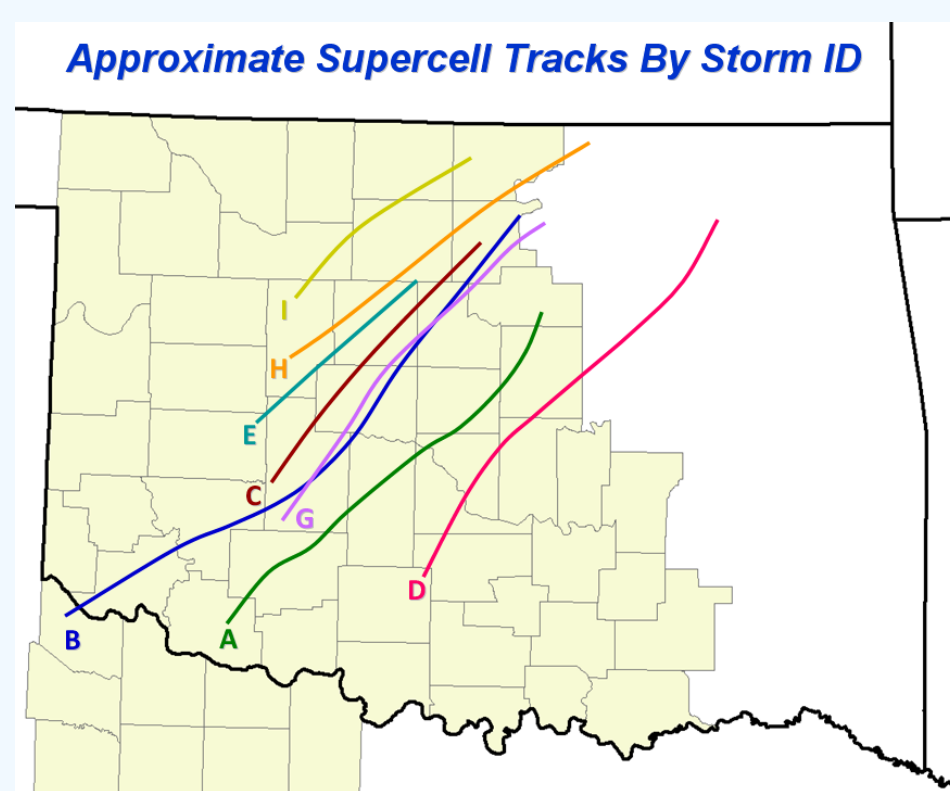
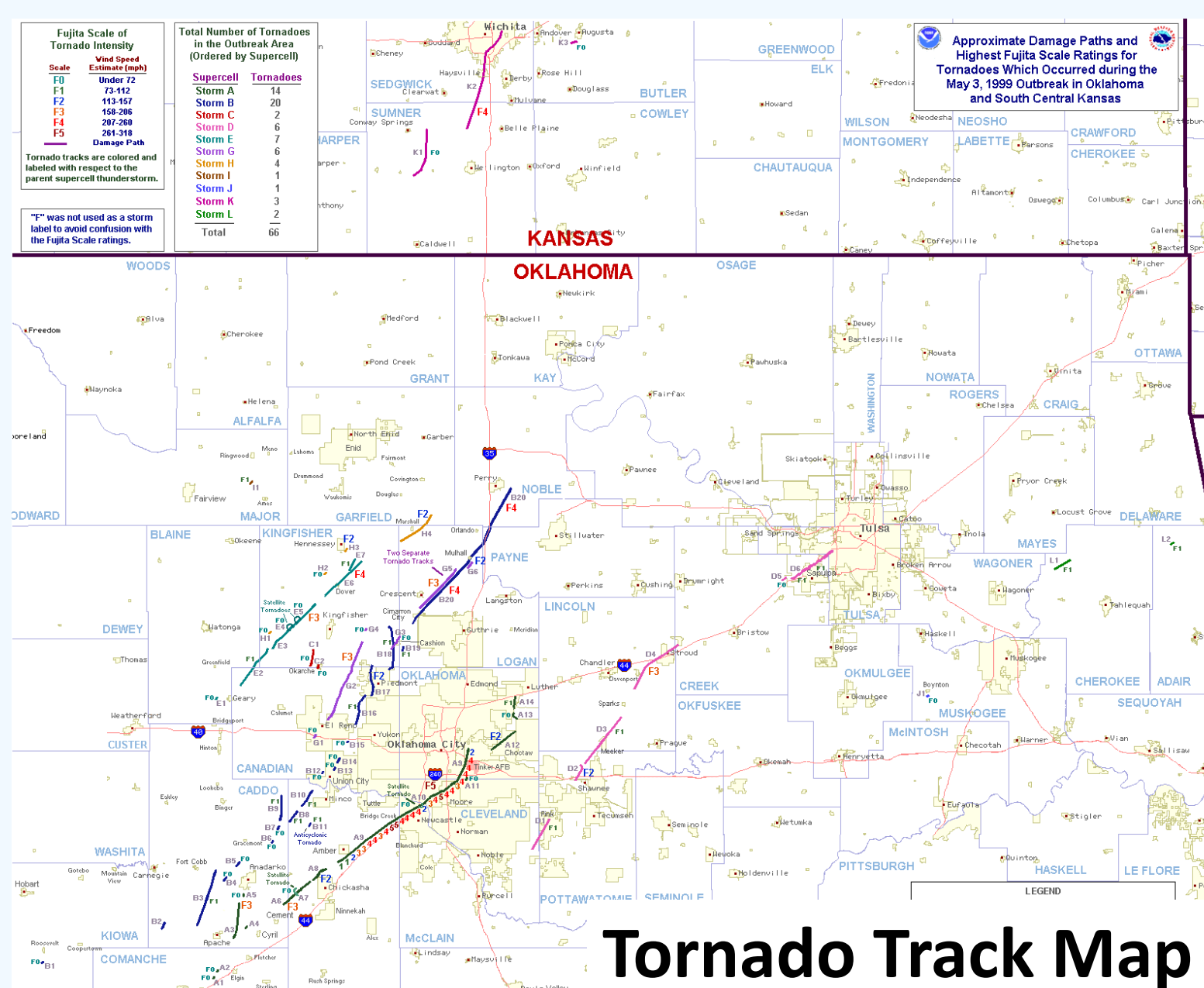
During the event, the National Weather Service in Norman, OK released a Tornado Emergency, which was the first of its kind. NWS Norman set the stage for warnings like this in the future for confirmed, large, and potentially deadly tornadoes affecting a population center.



Meteorological Overview

Maps of weather conditions at 7 am are shown above. During the morning, temperatures were in the mid to upper 60s and dewpoints in low to mid 60s over the region. Low stratus clouds covered much of the area as a result of significant moisture return from the previous night. Warm, moist air was in place ahead of a cold front to the west in addition to a 500 mb trough over the southwest U.S., helping to produce lift over the southern plains. Both of these contributed to severe storm initiation later in the day.

The threat for severe weather was monitored by the Storm Prediction Center (SPC), however the precise location for the threat was uncertain in the early morning. As the morning progressed, forecasters became increasingly certain of a significant weather episode. Conditions in the area such as significant vertical wind shear and a very unstable air mass with CAPE (Convective Available Potential Energy) values potentially exceeding 4000 J/kg were favorable to severe supercells and tornadoes. The risk of storms was upgraded to high at 3:49 PM CDT, and the SPC graphic shown to the left was published.



Damage photos from the outbreak. Photos courtesy of NWS Norman, OK



This photo of Tornado A9 was taken near Bridge Creek, OK. A9 was an violent, long-tracked F5 tornado produced by Parent Supercell Storm A, and became the most famous tornado of the outbreak and one of the most famous tornadoes in U.S. history.



"I could barely comprehend the magnitude of what was transpiring. To the south, I noticed a new storm had violently erupted skyward, almost as if a nuclear weapon had detonated. To this day, I cannot recall seeing more explosive storms."

-Gabriel Garfield, research meteorologist from Norman, OK