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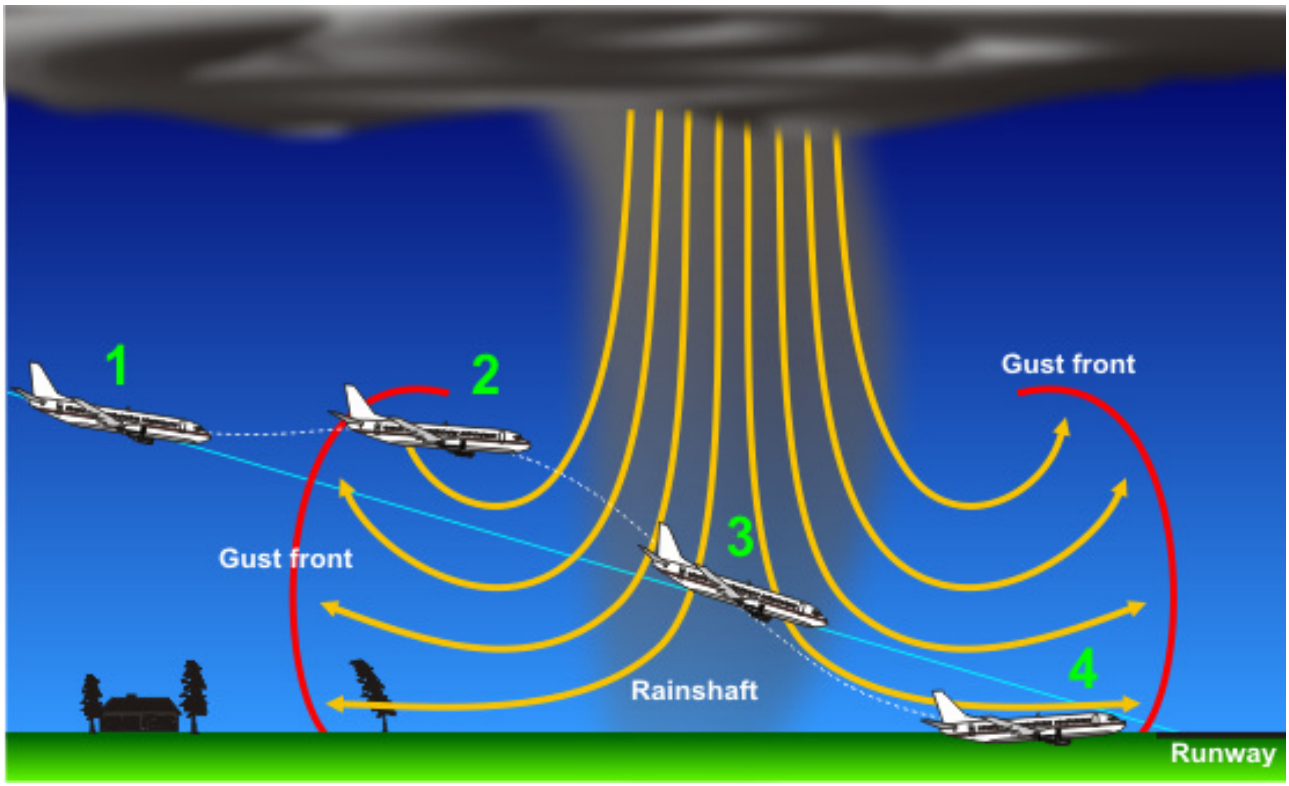
The National Weather Service in Lubbock continues to receive a number of inquiries following the damaging thunderstorm that impacted Childress on the evening of Sunday, 15 June 2008. The destructive winds and hail that accompanied the Father's Day storm, which caused six minor injuries and at least $20 million dollars in damages, resulted from a weather phenomenon known as a wet microburst. Meteorologists at the National Weather Service in Lubbock would like to take this opportunity to present a few facts concerning the event in a public forum.

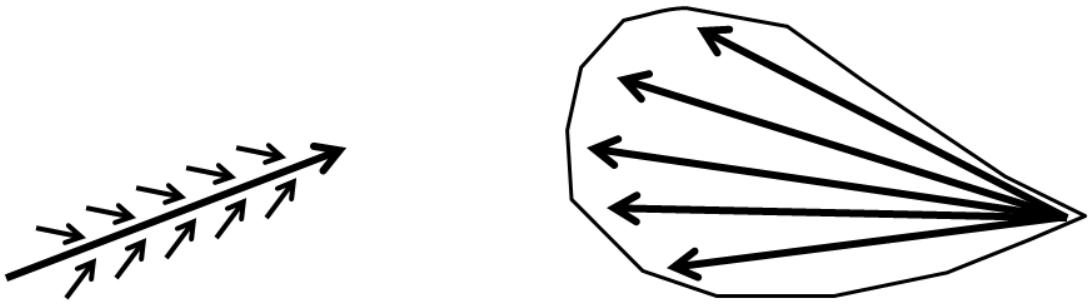
A team of meteorologists from the National Weather Service in Lubbock and the Texas Tech University West Texas Mesonet visited Childress on Monday, 16 June to survey the storm damage firsthand. In addition, meteorologists performed extensive reviews of Doppler radar data, and local surface observations obtained during the storm. All of the meteorological data examined corroborated eyewitness accounts and photographs and video of the storm which conclusively showed that a classic wet microburst, or likely a series of microbursts, had in fact occurred.

A wet microburst is an intense downburst of precipitation-laden air that descends from a thunderstorm when a dense core of rain and hail suspended within the storm becomes too heavy for the storm's updraft to hold aloft. The core then violently collapses toward the ground and results in damaging winds that spread out away from the descending core.



Microbursts, in addition to causing property damage, have historically proven to be a significant threat to aviation. This schematic shows a model of a microburst and the wind flow around it as depicted by arrows. The potential impacts on an aircraft are additionally shown. Notice the v-shaped rain shaft depicted in the graphic.

After a destructive storm like the one that impacted Childress in June, the best way to determine the exact nature of the damaging winds is to survey the damage pattern left in its wake. Downbursts result in damage over a relatively broad area that diverges from where the precipitation core impacted the ground. This is in contrast to a tornado, which produces a notably straight and narrow damage path where winds converge towards the center.



Damage patterns associated with tornadoes (left) are relatively straight, narrow, and converge towards the center of the path. This is contrasted to damage patterns from microbursts (right) which tend to cover a broader area, are more unidirectional, and diverge from a central location.

The distinct differences in these damage patterns are best illustrated by comparing the damage path of the 9 May 2006 F-2 tornado which struck portions of Childress to damage from the Father's Day storm. The tornado in 2006 resulted in a narrow, but significant, 175 yard-wide path of damage along the north side of the city. The 15 June 2008 storm, however, resulted in widespread damage across the city and reportedly impacted 1,821 homes and over 200 businesses. In addition, an estimated $3 million dollars in crop related damages occurred in the immediate outlying rural areas.

The above maps compare damage patterns that resulted from the 9 May 2006 F-2 Childress tornado (left) to the damage that resulted from the 15 June 2008 downbursts (right). While the tornado left an identifiable "path" through the north side of the city, the Father's Day storm caused damage over a broad area that diverged from a location east-northeast of the city.

The damages that occurred in and around Childress during the 15 June 2008 storm resulted from intense easterly winds, which were at times accompanied by hail up to the size of golfballs. These winds were initially detected at 8:35 pm per a measured 80 mph wind gust at the Texas Tech University West Texas Mesonet station located two miles north-northeast of the city. Damaging wind gusts and intermittent hail, as described by Childress residents, officials, and measured by meteorological equipment in and near the city, persisted through 9:00 pm. The duration and magnitude of these winds can additionally be compared to measured wind speeds from the 9 May 2006 tornado, which were sampled by the KVII-TV Schoolnet at Childress High School. The sudden increase in winds observed at the high school in 2006, characterized by a peak gust of 109 mph, was consistent with the passage of a tornado. Wind speeds observed by the Texas Tech University West Texas Mesonet during the 15 June 2008 downbursts instead suggest that extreme gusts accompanied two collapsing precipitation cores, with a prolonged period of strong winds, hail and rain accompanying each. This sequence of events is indicative of microburst activity and is not associated with a tornado. Based on all of this information and the magnitude of structural damage, it was determined that at least two surges of microburst winds, estimated to approach 100 mph, spread westward from collapsing precipitation cores that impacted the ground just east-northeast of the city.

Although much can be determined by detailed post-storm analysis of damage and meteorological data, obviously, photographic evidence of a damaging wind event can be conclusive. Fortunately, the National Weather Service in Lubbock has reviewed numerous photographic images of the Childress 15 June 2008 storm obtained through witnesses and media outlets. All of the photographic evidence presented depicts a classic wet microburst. In some of the images, the descending precipitation core is initially v-shaped. The descending core then appeared to take on a bulbous shape as it approached the ground, and the intense outflow winds turbulently raised wind-blown dust and debris.

A photograph of a descending wet microburst core taken in Childress on 15 June 2008 (left) is compared to a classic photograph of a similar wet microburst (right) that has been used to train National Weather Service Skywarn storm spotters for more than a decade. The Childress photo above was provided to the National Weather Service in Lubbock by KVII-TV in Amarillo and KAMC-TV in Lubbock.

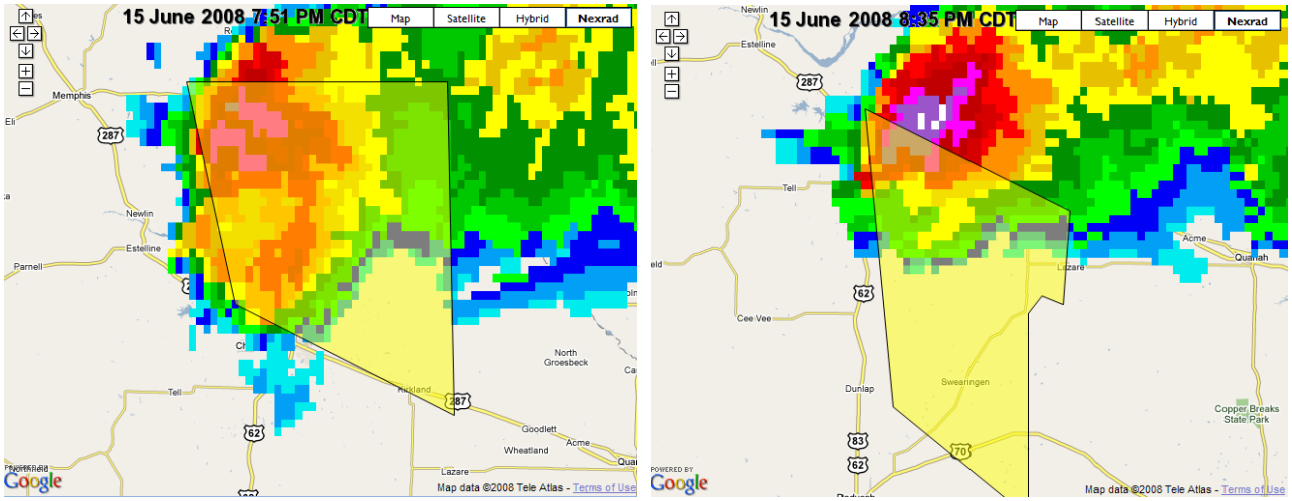
A series of photographs taken by an observer six miles south of Childress recorded the life-cycle of the 15 June 2008 downbursts. The dense rain and hail core can be seen descending as the opaque v-shaped area in the right-center of the left image. Large amounts of dust reveal areas of damaging winds near the ground in both images, as the downburst subsides in the right photograph.

Other photographs, such as the below image, have appeared in various media forums. The photo depicts the early stages of a wet microburst and captures the collapsing precipitation core shortly before it impacted the ground. Although the relatively laminar and v-shaped descending core may appear tornado-like to the untrained eye, several characteristics visible in the photo distinguish this feature from a tornado. For instance, the vertically “streaked” look of the core is consistent with falling precipitation and appears in contrast to the darker and more opaque cloud base – which would be significantly lowered if the feature was tornadic in nature.

This photo depicts the early stages of the 15 June 2008 wet microburst.

Timeline of Events

Before the Father's Day storm impacted the Childress vicinity, Doppler radar indicated the potential of a tornado over portions of Donley, Collingsworth, and northwestern Childress Counties. This prompted the issuance of Tornado Warnings from both the National Weather Service offices in Amarillo and Lubbock, which included Childress County by 6:50 pm. Skywarn spotters reported that the storm produced a number of funnel clouds around that time. As the storm persisted and moved southeastward, however, the potential for tornadic activity decreased, and the warnings for Childress County, including the areas near the city of Childress, were extended as a Severe Thunderstorm Warning. This warning, issued thirty-nine minutes before the damaging winds and hail struck the city, stated *"THIS STORM…MAY CAUSE DAMAGE TO PROPERTY OR PERSONAL INJURY"*. A follow-up warning issued at the time that the storm began to impact Childress, at 8:35 pm, additionally stated *"LARGE HAIL BLOWN BY VIOLENT WINDS CAN CAUSE EXTENSIVE DAMAGE"*.



National Weather Service Doppler radar images of the 15 June 2008 Childress storm. The images include the geographic areas covered by Severe Thunderstorm Warnings (yellow shading).

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For more information, please visit the National Weather Service – Lubbock, Texas, online at:

www.weather.gov/lubbock