April 21st, 2014 – Hill Country Storms

Austin - San Antonio Weather Forecast Office

Updated – 8:56 am, April 24th, 2014
The 3 main ingredients needed for thunderstorm development are instability, lift, and moisture.

**Instability:** Convective Available Potential Energy (CAPE) was over 2,500 J/kg on the afternoon of April 21\textsuperscript{st} with almost no Convective Inhibition (CIN). The atmosphere was primed with enough energy to support strong to severe storms.

**Lift:** The combination of daytime heating, the west Texas dryline, and a weak cold front were enough to spark the development of thunderstorms over north Texas and the Hill country.

**Moisture:** Gulf moisture was in place over South Central Texas with dew points in the 60s. This is plenty of moisture to fuel shower and thunderstorm development.
Pre-watch MCD #376 issued at 2:25 pm. The others followed to update the watch: MCD #377 at 5:09 pm, MCD #378 at 7:13 pm, and MCD #379 at 9:10 pm.

All 4 focused on the thunderstorm development along the dry line and weak front in the Texas Hill Country. Supercells or multi-cell clusters capable of producing large hail and damaging winds were mentioned.
Severe Thunderstorm Watch #85

Issued by Storm Prediction Center in Norman, OK

Initially issued for Travis, Williamson, Hays, Blanco, Burnet, Llano, and Gillespie counties

...Kerr, Kendall, and Comal counties were added at 6:34 pm

Primary Threats Included:
- Scattered Large Hail and Isolated Very Large Hail (up to 2 inches)
- Isolated Damaging Winds (gusts up to 70 mph)
Severe Thunderstorm Warning #39
West Central Burnet and Eastern Llano Counties
4:17 pm– 5:00 pm

Reports:
4:25 pm...1.25” Hail...2 S Llano
4:26 pm...0.75” Hail...1 SSE Llano

* Indicates report took place in multiple warnings
Severe Thunderstorm Warning #40
Northwestern Blanco, Southwestern Burnet, and Southeastern Llano Counties
5:01 pm – 6:00 pm

Reports:
5:13 pm...1.00” Hail...9 S Llano*
5:31 pm...0.50” Hail...10 S Llano*
Severe Thunderstorm Warning #41

Southern Llano County

5:11 pm– 6:00 pm

Reports:
5:13 pm...1.00” Hail...9 S Llano*
5:31 pm...0.50” Hail...10 S Llano*
5:50 pm...1.50” Hail...10 NE Enchanted Rock Station*
Severe Thunderstorm Warning #42

Southwestern Llano County

5:31 pm– 6:00 pm

Reports:
5:50 pm...1.50” Hail...10 NE Enchanted Rock Station
Severe Thunderstorm Warning #43

Northeastern Gillespie and Southwestern Llano Counties

6:00 pm – 7:00 pm

Reports:
6:02 pm...2.00” Hail...6 NNW Enchanted Rock Station
6:09 pm...1.75” Hail...13 S Llano
AT 600 PM CDT...NATIONAL WEATHER SERVICE METEOROLOGISTS HAVE DETECTED THUNDERSTORMS WITH HEAVY RAINFALL ACROSS CENTRAL LLANO COUNTY WITH RAINFALL RATES OF 1 TO 2 INCHES PER HOUR. DOPPLER RADAR ESTIMATED NEAR 2 INCHES OF RAINFALL IN THE PAST 2 HOURS WITH ADDITIONAL ONE QUARTER TO HALF AN INCH POSSIBLE BEFORE THESE STORMS DISSIPATE OR MOVE OUT FROM THE AREA.
Severe Thunderstorm Warning #44
Gillespie County and Southwestern Llano County
6:29 pm– 7:30 pm

Reports:
6:38 pm...1.75" Hail...5 W Willow City
6:43 pm...1.00" Hail...Willow City
6:46 pm...2.00" Hail...2 WSW Willow City
7:03 pm...1.00" Hail...12 N Fredericksburg
7:10 pm...1.00" Hail...12 E Fredericksburg*
Severe Thunderstorm Warning #45

Southern Blanco, Southeastern Gillespie, Northeastern Kendall Counties

7:08 pm– 8:00 pm

Reports:
7:10 pm...0.70” Hail...6 E LBJ State Park
7:10 pm...1.00” Hail...12 E Fredericksburg*
Severe Thunderstorm Warning #46

Gillespie, Northwestern Kendall, and Northeastern Kerr Counties

7:31 pm – 8:30 pm

Reports:
8:00 pm...0.25” Hail...7 NNW Harper
8:22 pm...1.00” Hail...1 SE Harper
Severe Thunderstorm Warning #47

Southern Gillespie, Kendall, and Northeastern Kerr Counties

8:30 pm– 9:30 pm

Reports:
8:38 pm…1.00” Hail…2 SE Bankersmith
8:39 pm…0.50” Hail…14 SSE Fredericksburg
Severe Thunderstorm Warning #48

North Central Kerr County

9:26 pm – 10:00 pm

Reports:
9:40 pm...1.00” Hail...6 WSW Harper
Severe Thunderstorm Warning #49
Central Kendall county
9:28 pm– 10:00 pm
Reports:
Severe Thunderstorm Warning #50

North Central Kerr County

9:56 pm–11:00 pm

Reports:
Severe Thunderstorm Warning #51
Northwestern Kerr County
10:36 pm – 11:15 pm

Reports:
All Hail Reports / Pictures

0341 PM  HAIL  2 N LLANO  30.78N  98.67W
04/21/2014  M0.25 INCH  LLANO  TX PUBLIC

PEA SIZED HAIL AT LLANO AIRPORT

0400 PM  HAIL  1 ESE LLANO  30.75N  98.67W
04/21/2014  M1.00 INCH  LLANO  TX COCORAHS

0405 PM  HAIL  1 WSW LLANO  30.75N  98.68W
04/21/2014  E0.88 INCH  LLANO  TX TRAINED SPOTTER

0407 PM  HAIL  1 N LLANO  30.77N  98.67W
04/21/2014  M1.00 INCH  LLANO  TX PUBLIC

0425 PM  HAIL  2 S LLANO  30.72N  98.67W
04/21/2014  E1.25 INCH  LLANO  TX PUBLIC

0426 PM  HAIL  1 SSE LLANO  30.74N  98.67W
04/21/2014  E0.75 INCH  LLANO  TX TRAINED SPOTTER

0513 PM  HAIL  9 S LLANO  30.62N  98.67W
04/21/2014  M1.00 INCH  LLANO  TX PUBLIC

TIME ESTIMATED FROM RADAR

0531 PM  HAIL  10 S LLANO  30.61N  98.67W
04/21/2014  M0.50 INCH  LLANO  TX PUBLIC

LOCATION IS APPROX 1 MILE NNE OF OXFORD

0550 PM  HAIL  10 NE ENCHANTED ROCK ST 30.61N  98.73W
04/21/2014  M1.50 INCH  LLANO  TX STORM CHASER

HAIL SIZES RANGED FROM HALF INCH TO 1.50 INCHES

Hail in Llano // Photo Credit: Phillip (via twitter)

Looking North from Tow/Lake Buchanan area between 3-4 pm at the first storm of the day // Photo Credit: Susan K. (via Facebook)
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<th>Location</th>
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PEA TO QUARTER SIZED HAIL COVERING THE GROUND IN WILLOW CITY

LOCATION IS 3.5 MILES NORTH OF STONEWALL

Mammatus Clouds over Pflugerville // Photo Credit: James G. (via Facebook)

Hail 12 miles north of Fredericksburg // Photo Credit: Kelly O. (via twitter)
All Hail Reports / Pictures

0822 PM  HAIL   1 SE HARPER  30.29N  99.23W  
04/21/2014  E1.00 INCH  GILLESPIE  TX  COCORAHS

SOME QUARTER SIZE HAIL MIXED WITH MOSTLY SMALLER PIECES.

0838 PM  HAIL   2 SE BANKERSMITH  30.11N  98.79W  
04/21/2014  M1.00 INCH  KENDALL  TX  PUBLIC

0839 PM  HAIL   14 SSE FREDERICKSBURG  30.08N  98.78W  
04/21/2014  E0.50 INCH  KENDALL  TX  COCORAHS

0940 PM  HAIL   6 WSW HARPER  30.26N  99.34W  
04/21/2014  E1.00 INCH  KERR  TX  TRAINED SPOTTER

1220 AM  HAIL   ROCKSPRINGS  30.02N  100.21W  
04/22/2014  M0.25 INCH  EDWARDS  TX  TRAINED SPOTTER

We are still collecting storm reports! If you received hail/wind on April 21st you can submit the report through our website: weather.gov/Austin

Storm Approaching Harper in Gillespie County around 7:30 pm (top) and 8:17 pm (bottom) // Photo Credit: Kim F. (via twitter)
Various Radar/Satellite Images

Above: Visible Satellite Image from 5:45 pm showing storms over North Texas, the Hill Country, and the Mountains of Mexico

Right: Cross Section of a storm showing the hail/heavy rain at the surface (purples) and how the storm is tilted to the right.

Above: Dual-Pol Radar Three-Body Scatter Spike (circled areas) indicating hail in the storms.
GIS Hail Map

Legend

Hail Size

Magnitude

- Pea
- Dime
- Penny to Nickel
- Quarter to Half Dollar
- Ping Pong Ball to Hen Egg
KEWX Radome with cumulus and stratocumulus at different levels around sunset on April 21st.