



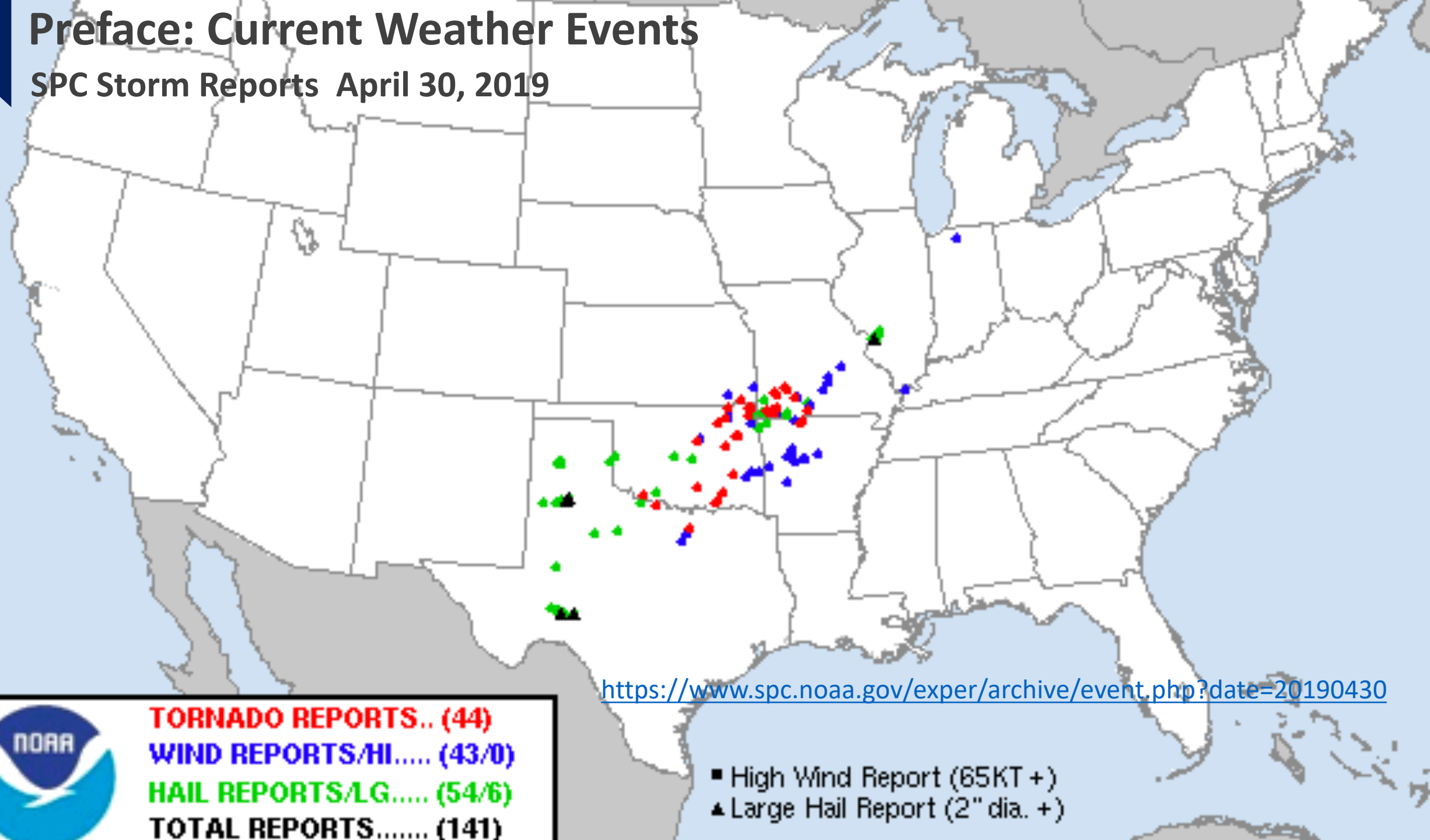
The 2011 Super Outbreak

Storm of the Week
ATMS 103 Hurricanes And Thunderstorms:
Their Science And Impact

May, 3 2019

Preface: Current Weather Events

SPC Storm Reports April 30, 2019



<https://www.spc.noaa.gov/exper/archive/event.php?date=20190430>



TORNADO REPORTS.. (44)
WIND REPORTS/HI..... (43/0)
HAIL REPORTS/LG..... (54/6)
TOTAL REPORTS..... (141)

- High Wind Report (65KT +)
- ▲ Large Hail Report (2" dia. +)

Supercell in Texas

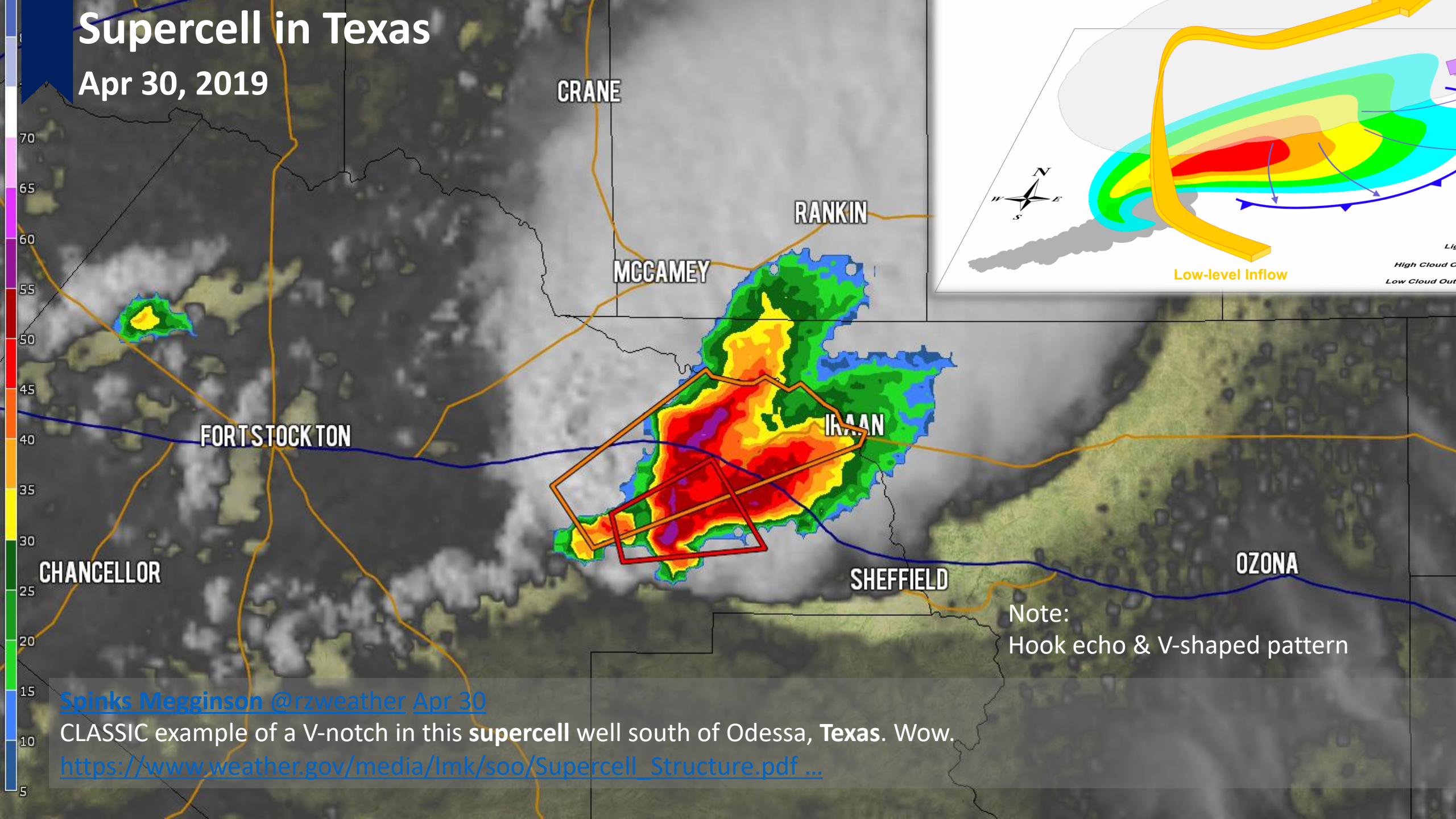
Apr 30, 2019

[Efren Huerta @EfrenHuerta2929](#) Apr 30

Here is an overlay of the current radar image over the current visible satellite view of this mega tornado warned supercell near the Iraan, TX area! [#txwx](#) [#TornadoWarning](#)

Supercell in Texas

Apr 30, 2019



Note:
Hook echo & V-shaped pattern

[Spinks Megginson @rzweather Apr 30](#)

CLASSIC example of a V-notch in this **supercell** well south of Odessa, Texas. Wow.

https://www.weather.gov/media/lmk/soo/Supercell_Structure.pdf ...

Preface: Current Weather Events

SPC Storm Reports May 1, 2019

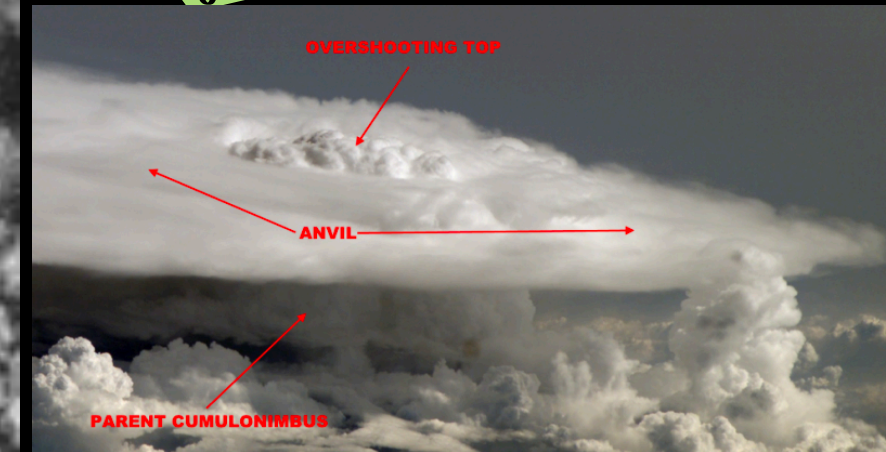
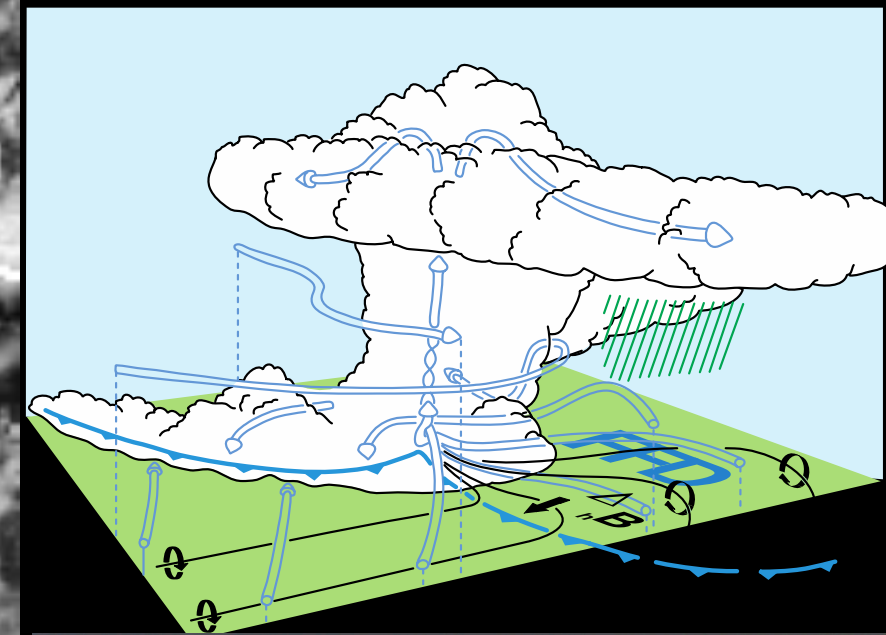
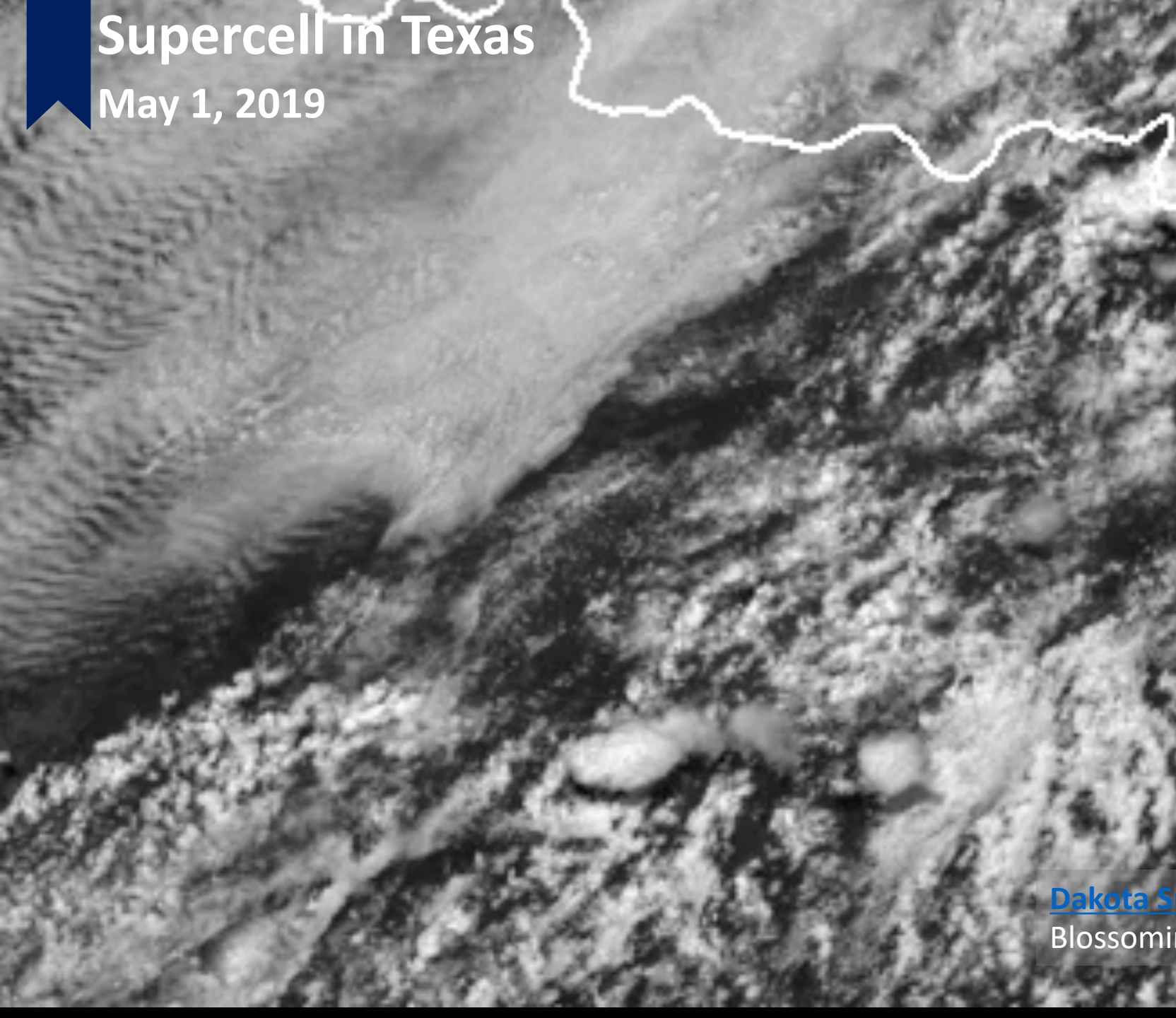


<https://www.spc.noaa.gov/exper/archive/event.php?date=20190501>

- High Wind Report (65KT +)
- ▲ Large Hail Report (2" dia. +)

Supercell in Texas

May 1, 2019



Note:
Overshooting tops.

[Dakota Smith @weatherdak](#)
Blossoming of tornado producing supercell in Texas.

Supercell in Texas

May 1, 2019

Not for media use. Please retweet @DanielShawAU
LIVE Broadcast at www.severestorms.com.au



Daniel Shaw @DanielShawAU

Sometimes you instinctively know when to stop. Tornado producing supercell south of Seymour, Texas. Join us live: <http://www.patreon.com/danielshaw>

Supercell in Texas

May 1, 2019



@DanielShawAU



severestorms.com.au

Supercell in Texas

May 1, 2019

Not for media use. Please retweet @DanielShawAU
LIVE Broadcast at www.severestorms.com.au

Daniel Shaw [Verified account @DanielShawAU](#)

View of the Seymour Texas tornado from the direct west in the edge of the RFD. At this distance you can hear the swirling rain

Supercell in Texas

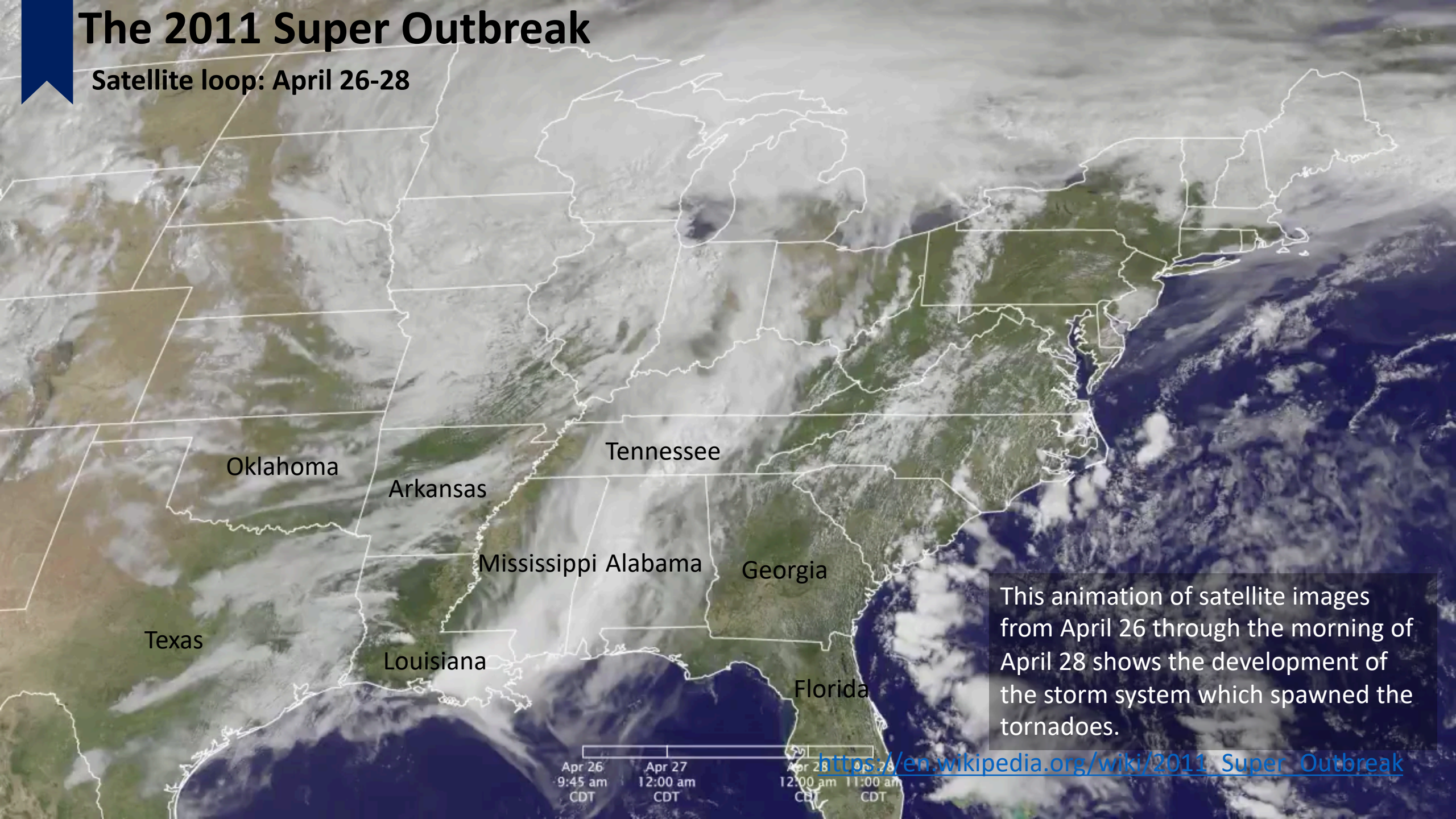
May 1, 2019

Not for media use. Please retweet @DanielShawAU
LIVE Broadcast at www.severestorms.com.au



The 2011 Super Outbreak

Satellite loop: April 26-28



This animation of satellite images from April 26 through the morning of April 28 shows the development of the storm system which spawned the tornadoes.

Apr 26 9:45 am CDT
Apr 27 12:00 am CDT
Apr 28 12:00 am CDT
Apr 28 11:00 am CDT

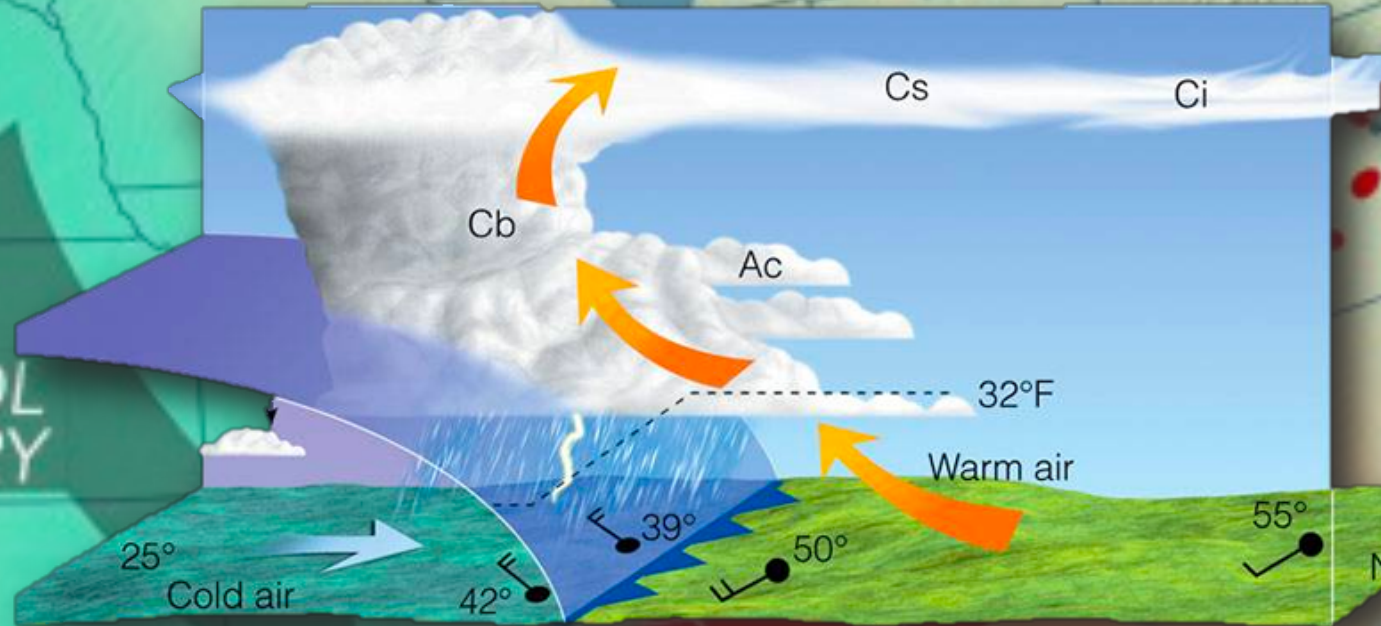
https://en.wikipedia.org/wiki/2011_Super_Outbreak

The 2011 Super Outbreak

OVER 300 TORNADO REPORTS

April 27, 2011

COOL
& DRY



TORNADOES

WARM
MOIST

<https://www.accuweather.com/en/weather-news/photos-devastating-tornado-scars-still-visible-from-aerial-views-years-after-2011-super-outbreak/70004777>

The 2011 Super Outbreak

Radar loop: April 26-28



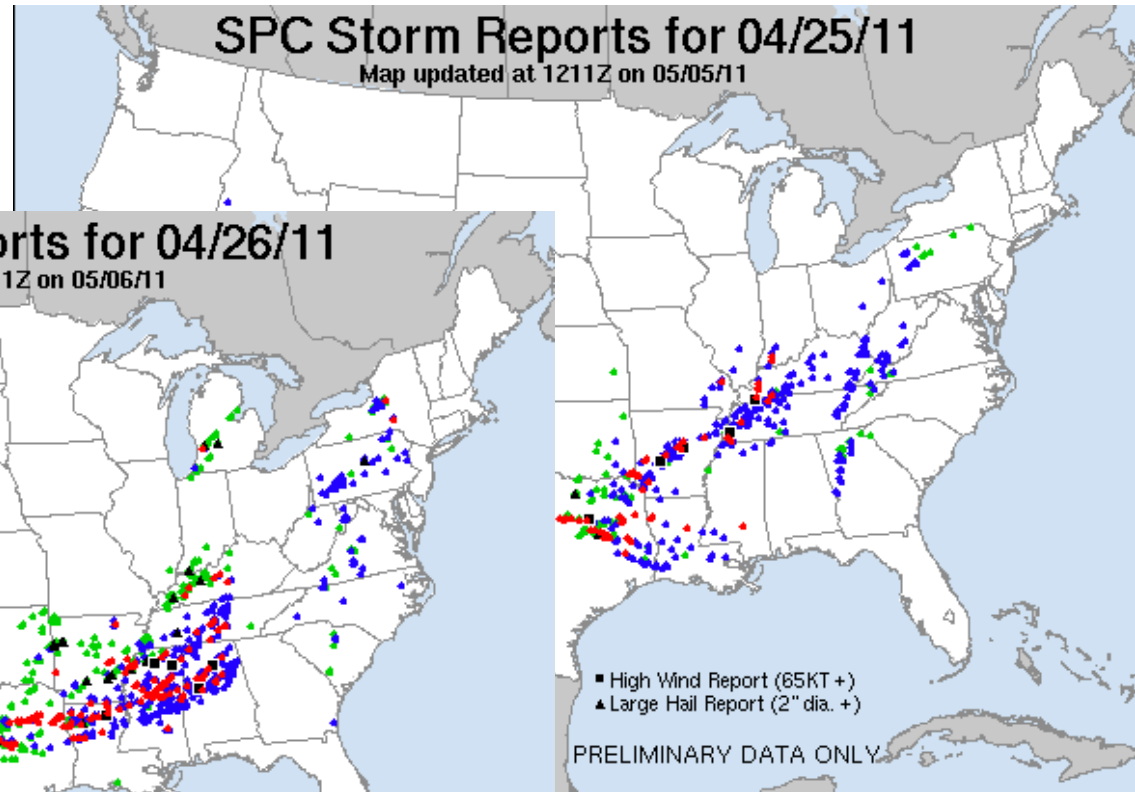
<https://www.youtube.com/watch?v=Udew8vvztxY>

The 2011 Super Outbreak

Storm Reports

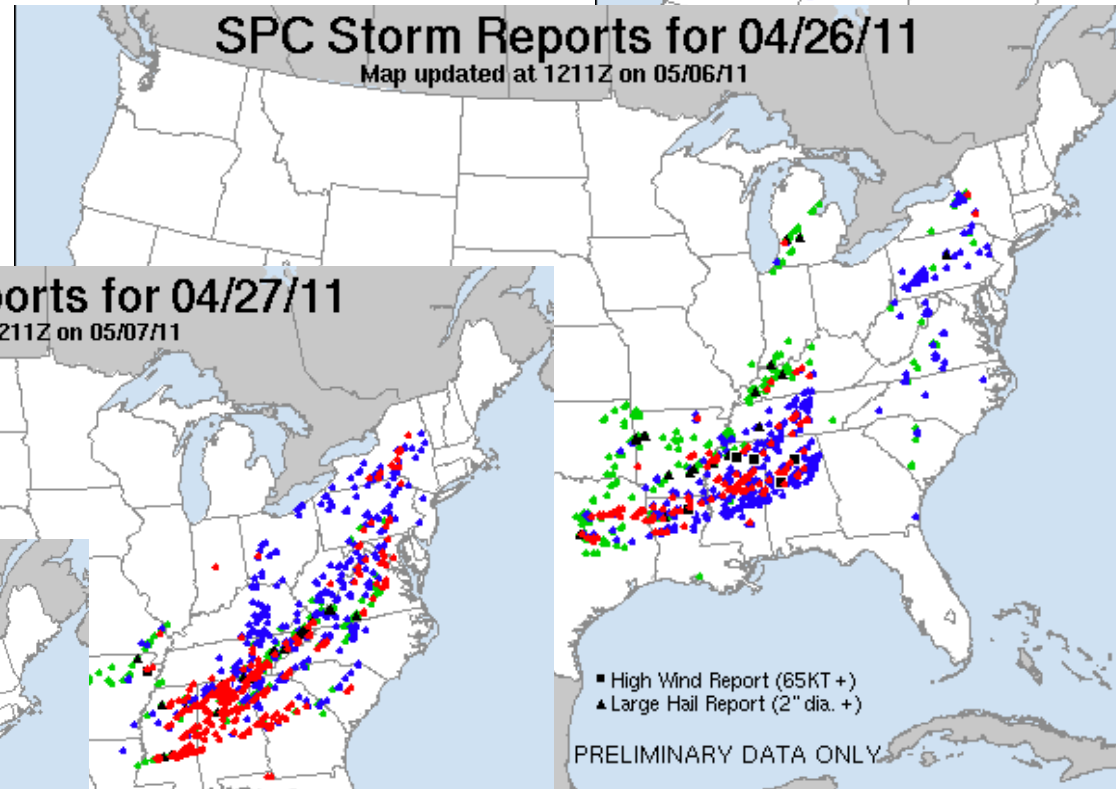
SPC Storm Reports for 04/25/11

Map updated at 1211Z on 05/05/11



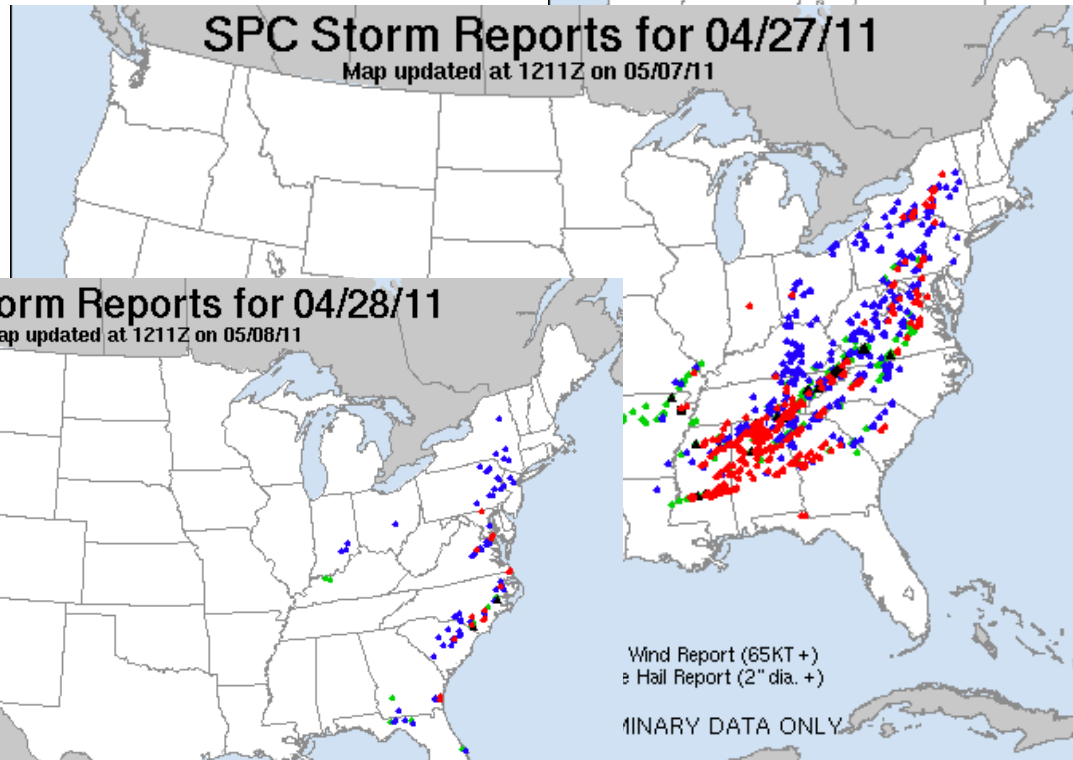
SPC Storm Reports for 04/26/11

Map updated at 1211Z on 05/06/11



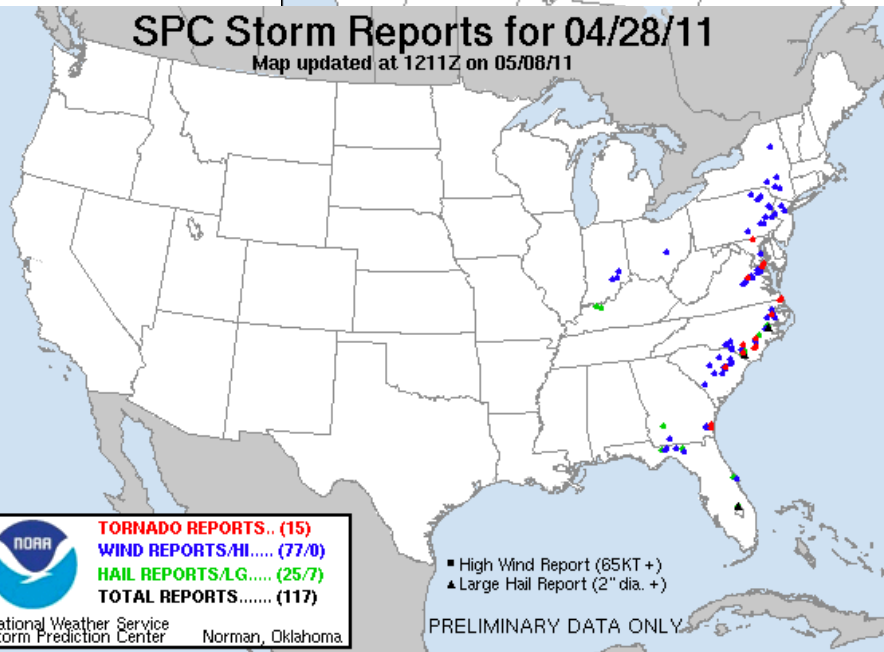
SPC Storm Reports for 04/27/11

Map updated at 1211Z on 05/07/11



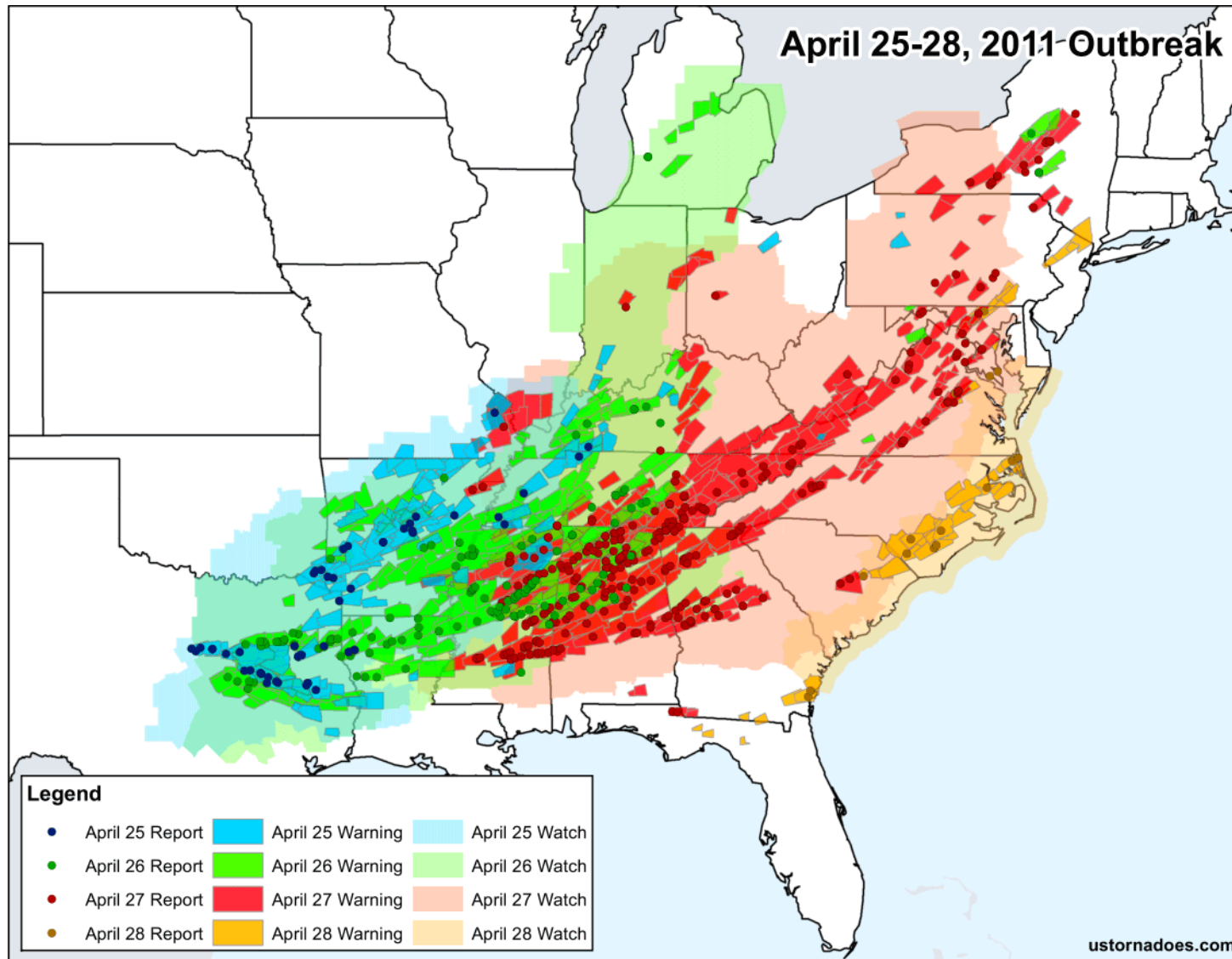
SPC Storm Reports for 04/28/11

Map updated at 1211Z on 05/08/11



The 2011 Super Outbreak

Summary



Duration: April 25–28, 2011

- Most prolific tornado outbreak
 - 360 tornados, 216 on April 27 alone
- **2rd deadliest** US tornado outbreak
- **Costliest** on record for a tornado outbreak
- Hardest hit states were Alabama, Tennessee, Mississippi



360

Tornados
Confirmed



324

Death



+3100

Injuries



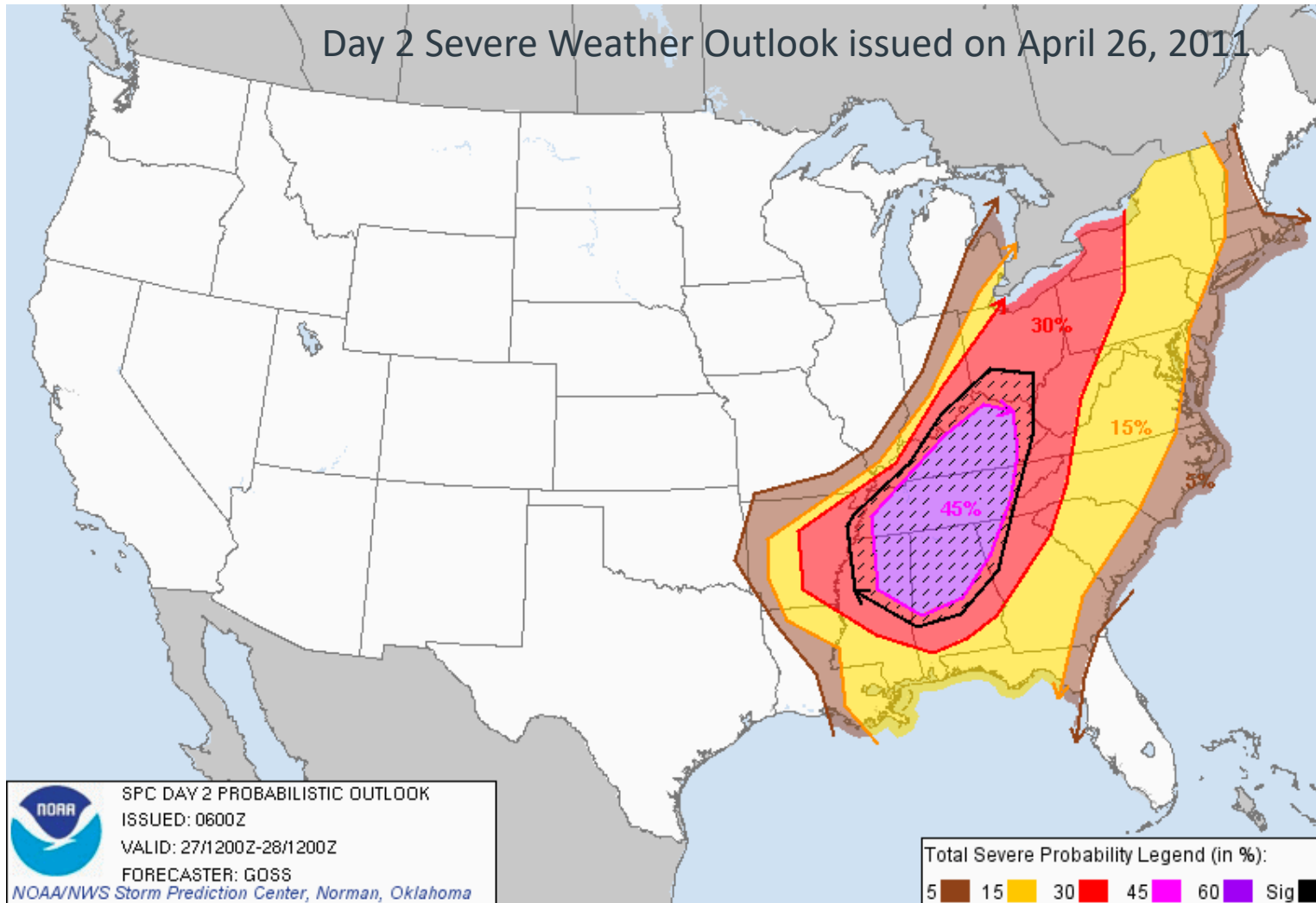
~\$12

billion
Cost

The 2011 Super Outbreak

Storm Reports

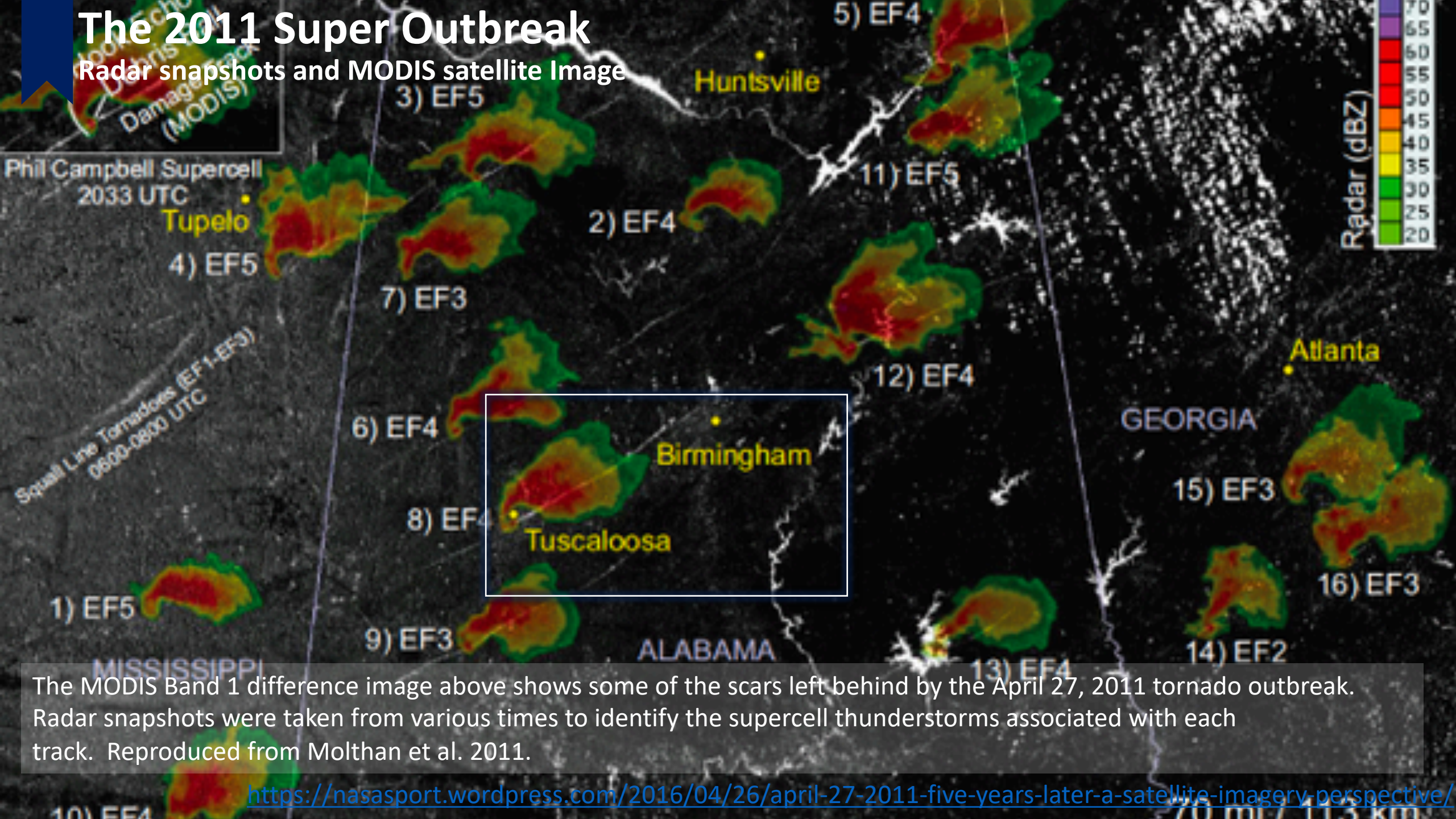
Day 2 Severe Weather Outlook issued on April 26, 2011



Overall, the event was very well predicted

The 2011 Super Outbreak

Radar snapshots and MODIS satellite Image



The MODIS Band 1 difference image above shows some of the scars left behind by the April 27, 2011 tornado outbreak. Radar snapshots were taken from various times to identify the supercell thunderstorms associated with each track. Reproduced from Molthan et al. 2011.

<https://nasasport.wordpress.com/2016/04/26/april-27-2011-five-years-later-a-satellite-imagery-perspective/>

Tears Through Tuscaloosa

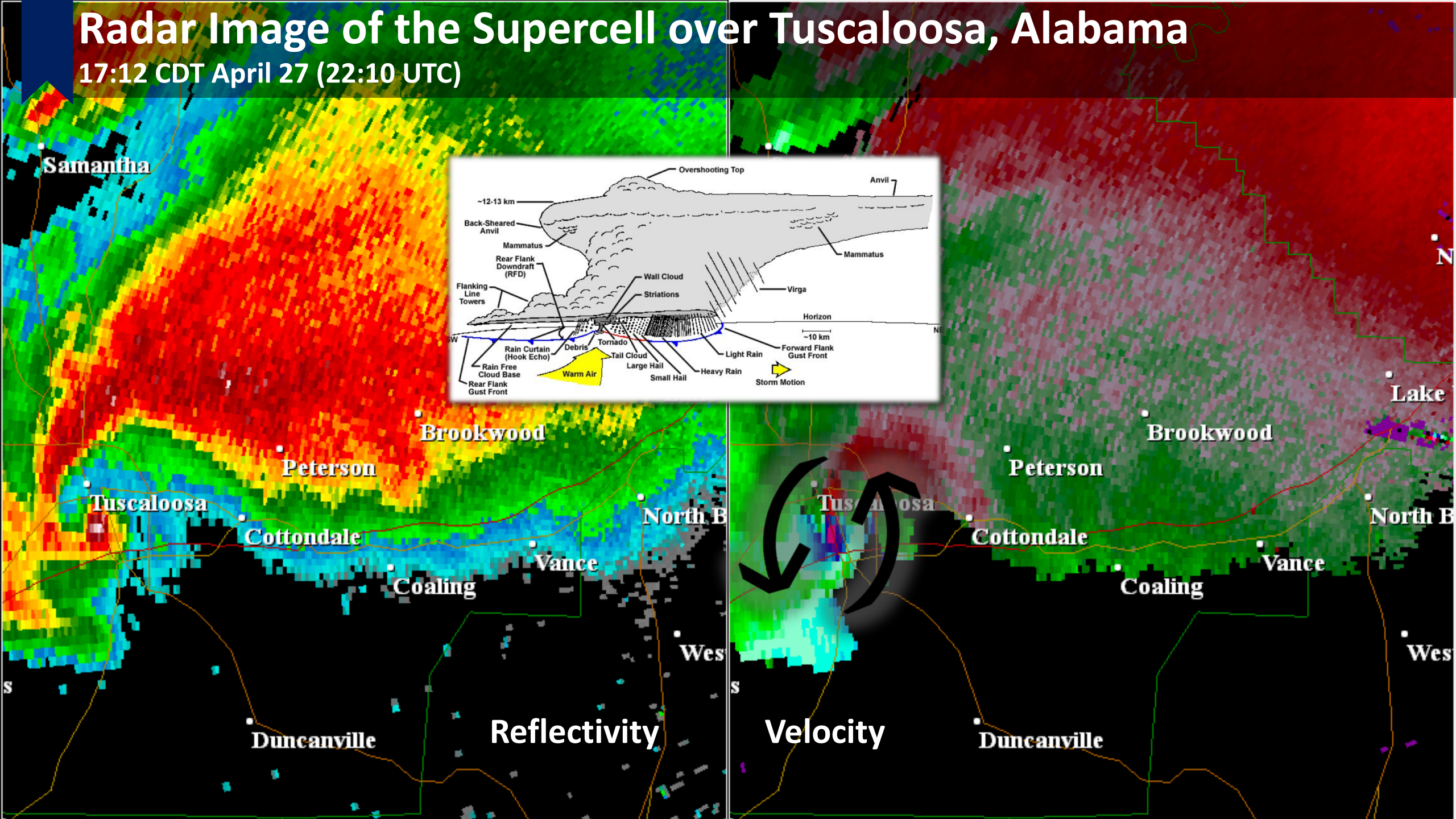
April 27, 2011



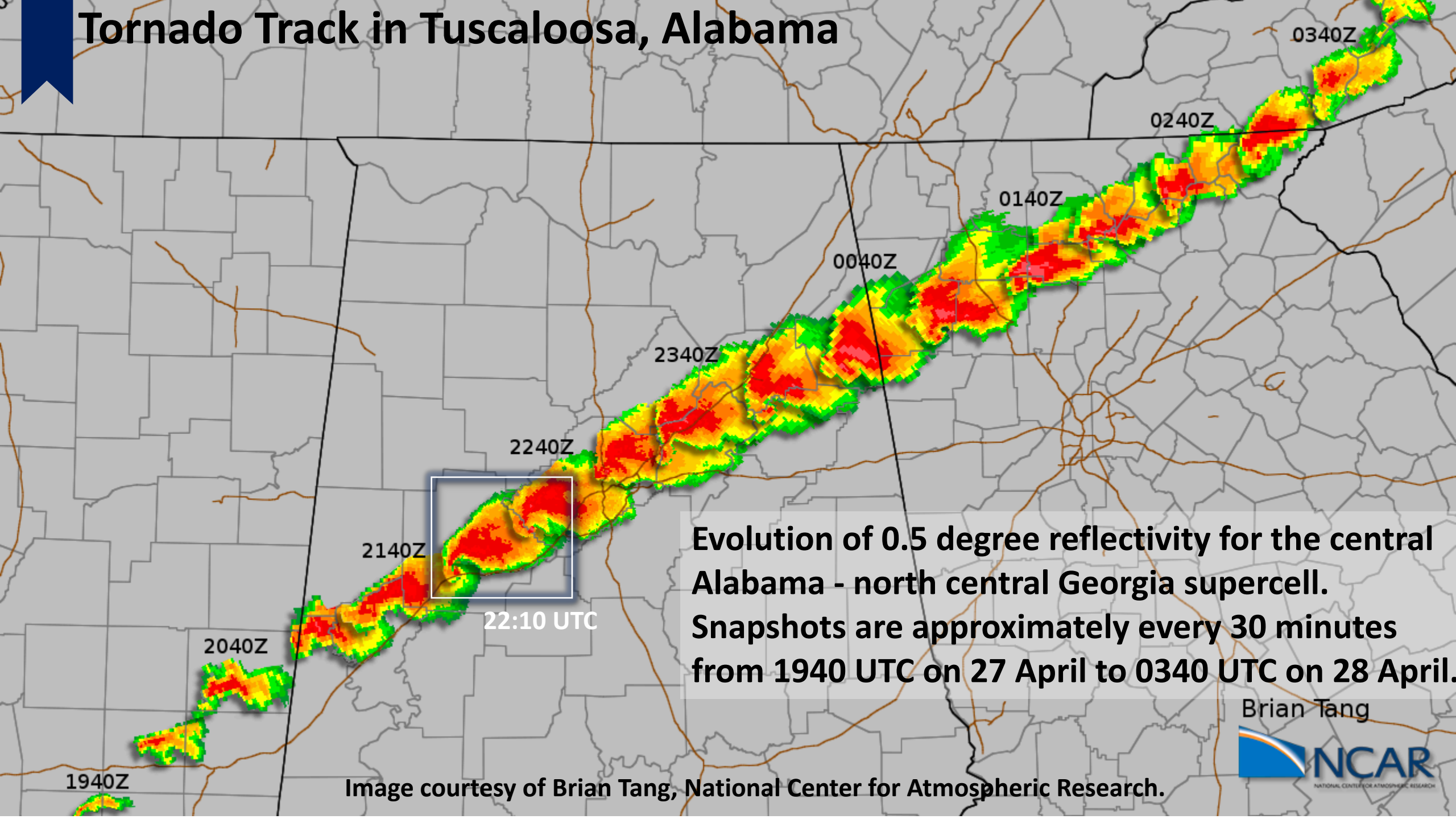
<https://www.youtube.com/watch?v=mPcUDIXX2G4>

Radar Image of the Supercell over Tuscaloosa, Alabama

17:12 CDT April 27 (22:10 UTC)



Tornado Track in Tuscaloosa, Alabama



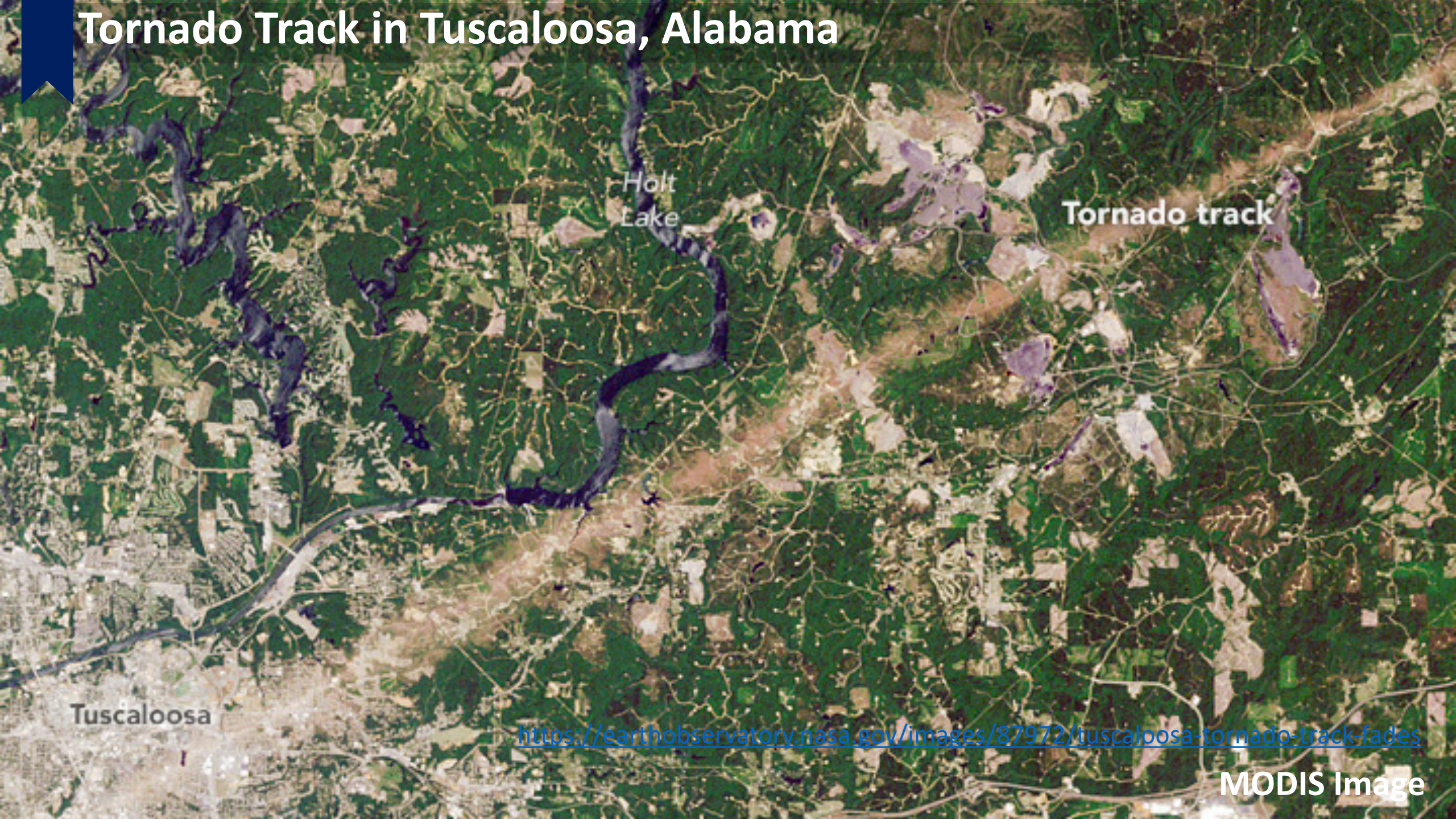
Evolution of 0.5 degree reflectivity for the central Alabama - north central Georgia supercell. Snapshots are approximately every 30 minutes from 1940 UTC on 27 April to 0340 UTC on 28 April.

Brian Tang



Image courtesy of Brian Tang, National Center for Atmospheric Research.

Tornado Track in Tuscaloosa, Alabama



Holt
Lake

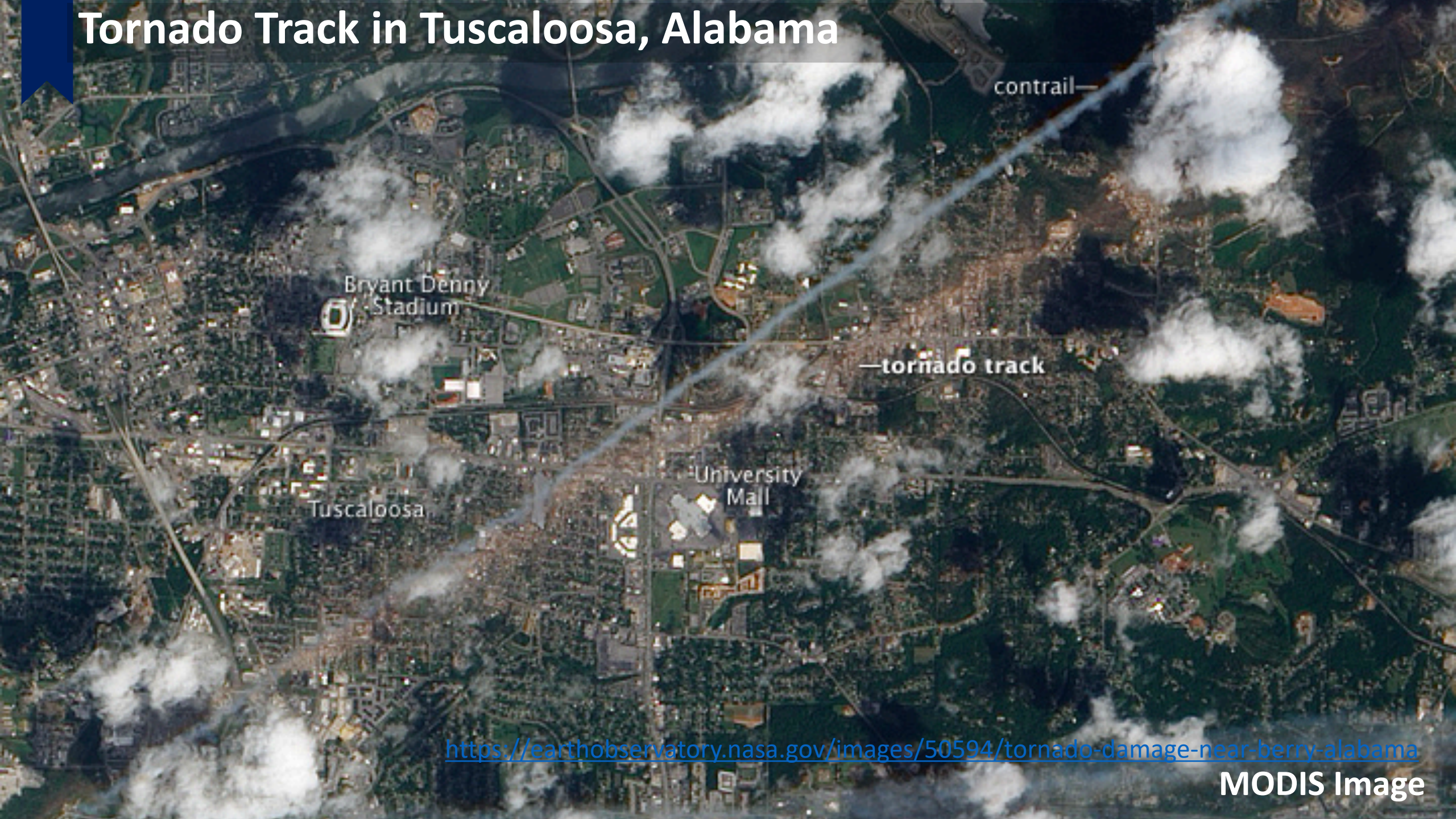
Tornado track

Tuscaloosa

<https://earthobservatory.nasa.gov/images/87972/tuscaloosa-tornado-track-fades>

MODIS Image

Tornado Track in Tuscaloosa, Alabama



<https://earthobservatory.nasa.gov/images/50594/tornado-damage-near-berry-alabama>

MODIS Image

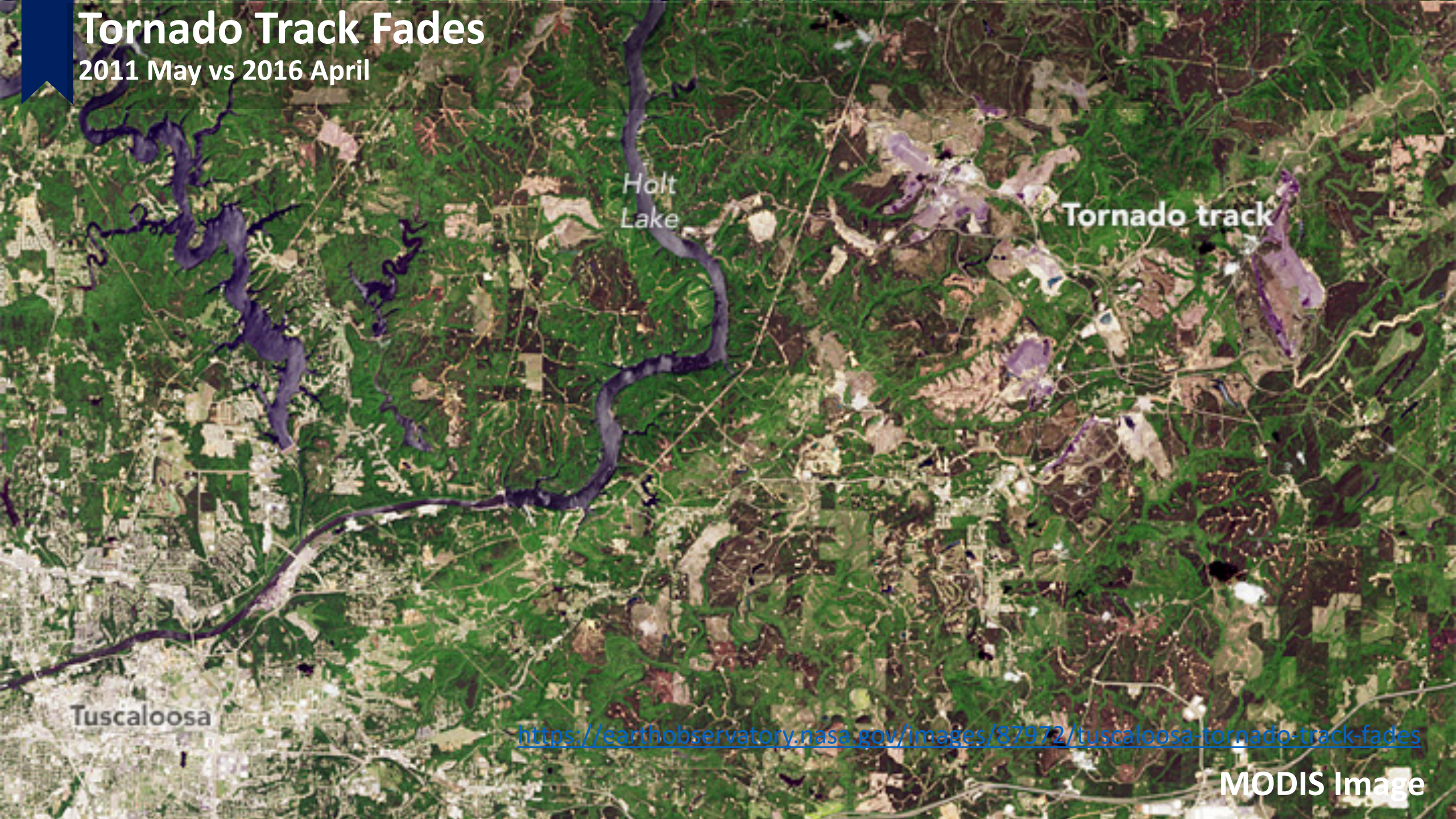
Aerial View of Tuscaloosa, Alabama

April 28, 2011



Tornado Track Fades

2011 May vs 2016 April



Holt
Lake

Tornado track

Tuscaloosa

<https://earthobservatory.nasa.gov/images/87972/tuscaloosa-tornado-track-fades>

MODIS Image

An abstract geometric pattern consisting of thin white lines connecting small blue dots, forming a network of triangles and polygons, centered behind the text.

ATMS 103

Thank You

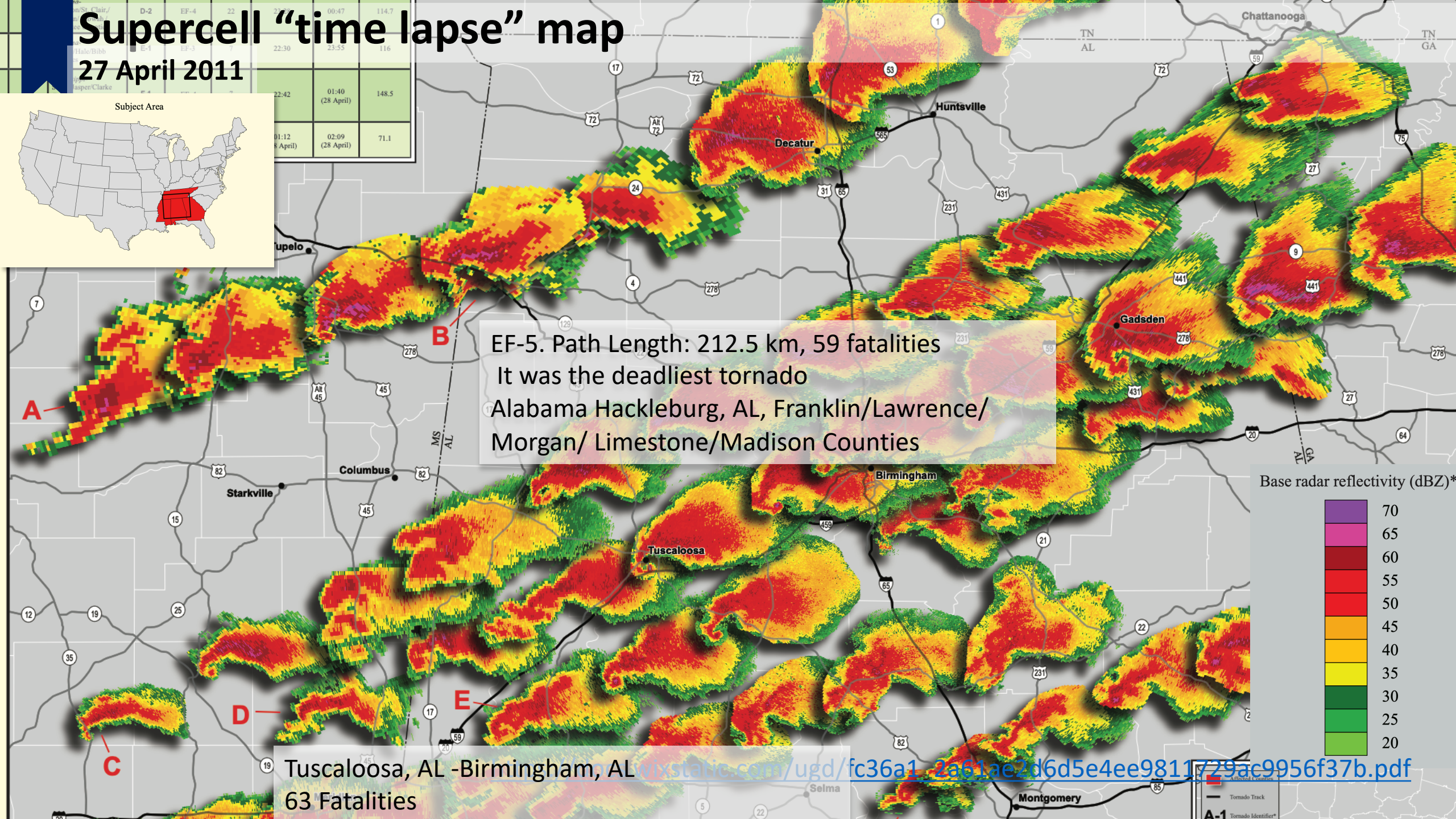
S t o r m o f t h e W e e k

Supercell "time lapse" map

27 April 2011



St. Clair/ Hale/Bibb Casper/Clarke	D-2 E-1 EF-3	EF-4 7	22:30 00:47 114.7
			23:55 116
	22:42	01:40 (28 April)	148.5
	01:12 (8 April)	02:09 (28 April)	71.1



The 2011 Super Outbreak

Storm Reports

Daily statistics^[71]

Date ↕	Total ↕	EF0 ↕	EF1 ↕	EF2 ↕	EF3 ↕	EF4 ↕	EF5 ↕	Deaths ▲	Injuries ↕
April 26	55	31	19	4	1	0	0	0	4
April 28	47	18	23	5	1	0	0	3	51
April 25	42	17	20	4	1	0	0	4	59
April 27	216	68*	78	36	19	11	4	317	2,986+
Total	360	134*	140	49	22	11	4	324	3,100+

https://en.wikipedia.org/wiki/List_of_tornadoes_in_the_2011_Super_Outbreak