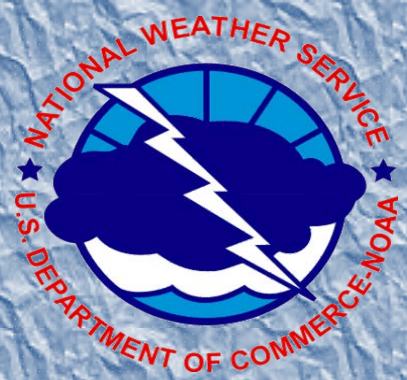


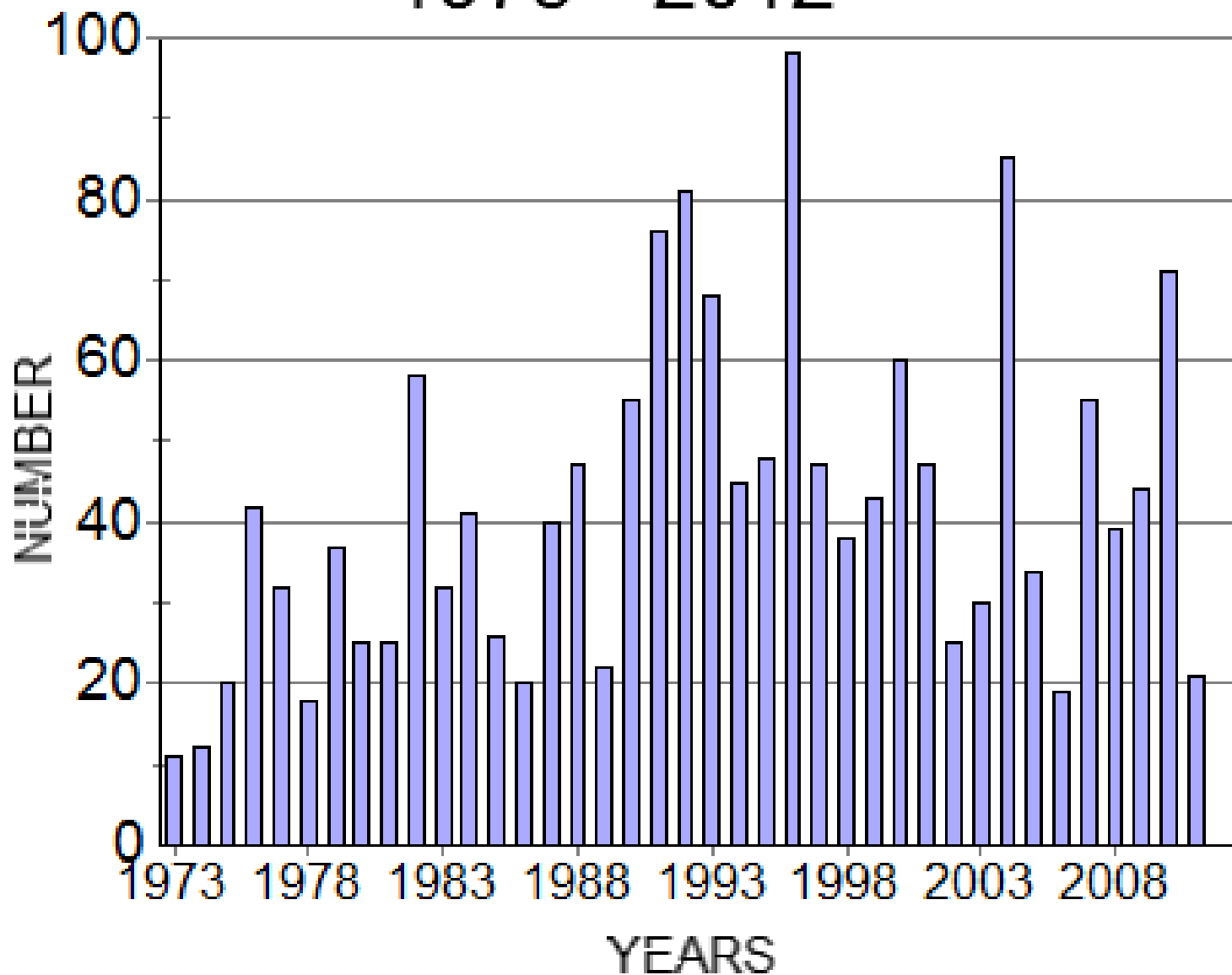


# NWS Tornado Operations DIA Control Tower Discussion August 21, 2014



Mt Evans Tornado 7/28/12 Courtesy Tyler Demi-Breuer

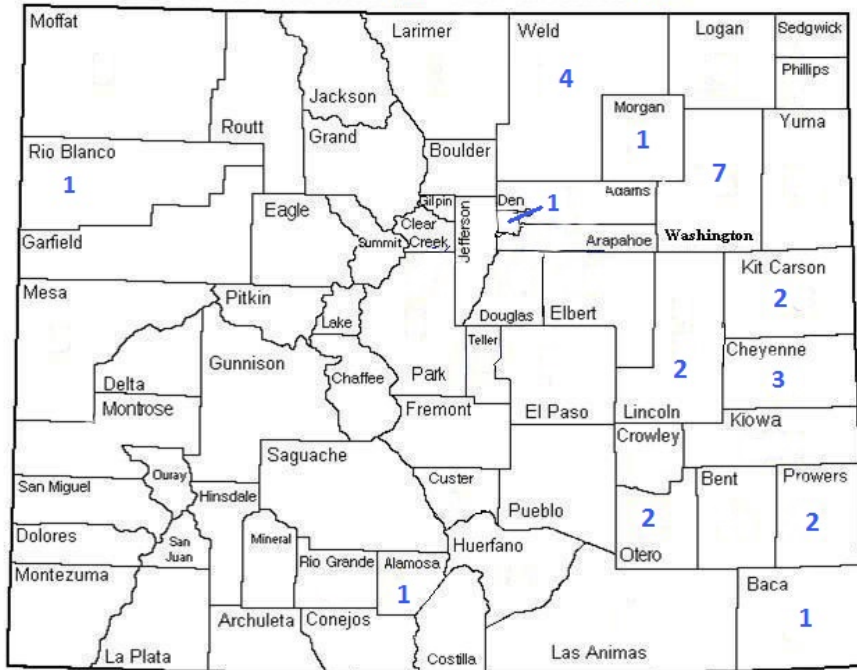
# COLORADO TORNADOES 1973 - 2012



# Tornadoes in Colorado

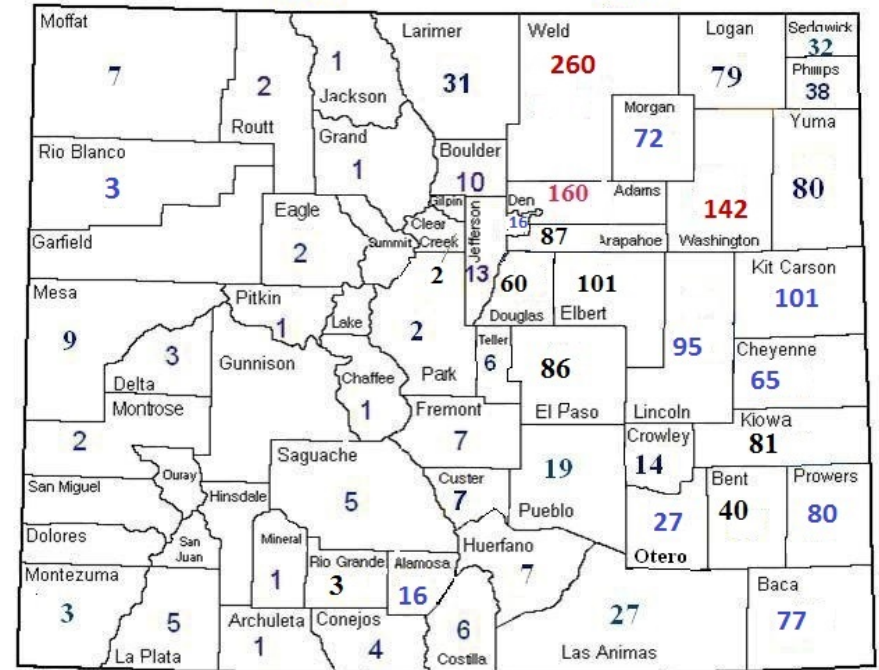
**TORNADOES REPORTED IN COLORADO COUNTIES IN 2013**

Tornadoes in counties **27** Total tornadoes **27**



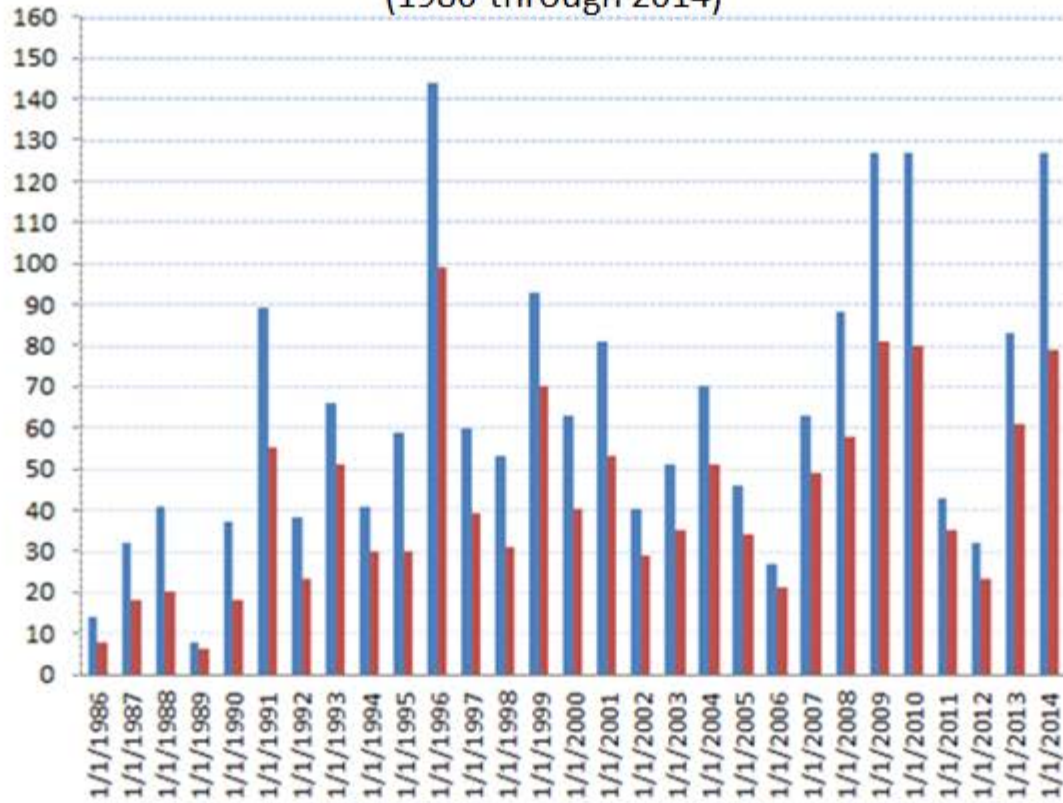
**TORNADOES REPORTED IN COLORADO COUNTIES 1950- 2013**

Total tornadoes: **1974** Number in counties: **2010**





**Total Number of Tornado Warnings for all Counties**  
**Total Number of Tornado Warnings by Polygon**  
 (1986 through 2014)





# Impact Based Warning Experimental Product



On April 1, 2013 – Expands to include all offices in NWS Central Region





# Impact Based Warning Experimental Product



THE NATIONAL WEATHER SERVICE IN SPRINGFIELD HAS ISSUED A  
 \* TORNADO WARNING FOR...  
 NORTHWESTERN NEWTON COUNTY IN SOUTHWEST MISSOURI...  
 SOUTHEASTERN CHEROKEE COUNTY IN SOUTHWEST KANSAS...  
 SOUTHWESTERN JASPER COUNTY IN SOUTHWEST MISSOURI...  
 THIS INCLUDES THE CITY OF JOPLIN...  
 \* UNTIL 600 PM CDT.

\* AT 514 PM CDT...A TORNADO EMERGENCY FOR THE CITY OF JOPLIN  
 A CONFIRMED LARGE AND DESTRUCTIVE TORNADO WAS LOCATED NEAR  
 BAXTER SPRINGS MOVING NORTHEAST AT 40 MPH.

THIS IS A PARTICULARLY DANGEROUS SITUATION.  
 HAZARD...DEADLY TORNADO AND BASEBALL SIZE HAIL  
 SOURCE...SPOTTERS AND LAW ENFORCEMENT CONFIRMED TORNADO.  
 SIGNIFICANT DAMAGE TO HOMES REPORTED IN THE OAK  
 SUBDIVISION.

IMPACT...LIFE THREATENING SITUATION. EXTENSIVE DAMAGE TO  
 AND BUILDINGS...UPROOTED TREES AND DEBRIS WILL  
 RESTRICT ACCESS INTO MANY AREAS.

\* OTHER LOCATIONS IN THE WARNING...JOPLIN.  
 PRECAUTIONARY/PREPAREDNESS ACTIONS...  
 IF YOU ARE IN OR NEAR JOPLIN TAKE COVER IMMEDIATELY!  
 &&  
 LAT...LON 3716 9479 3707 9426 3697 9430 3701 9479  
 TIME...MOT...LOC 2216Z 24ZDEG 36KT 3708 9470

TORNADO...OBSERVED  
 TORNADO DAMAGE THREAT...CATASTROPHIC  
 HAIL...2.75IN

## Tornado Tag

<b>TORNADO...RADAR INDICATED</b>	Evidence on radar and near storm environment is supportive of a tornado. A tornado may be developing or ongoing, but no confirmation has been received.
<b>TORNADO...OBSERVED</b>	Tornado is confirmed by spotters, law enforcement, etc.

## Tornado Damage Threat Tag

<b>TORNADO DAMAGE THREAT...CONSIDERABLE</b>	There is credible evidence that a tornado, capable of producing considerable damage, is imminent or ongoing.
<b>TORNADO DAMAGE THREAT...CATASTROPHIC</b>	A severe threat to human life and catastrophic damage from a tornado is occurring. This will only be used when reliable sources confirm a violent tornado.

## Tornado Tag In Severe Thunderstorm Warnings

<b>TORNADO...POSSIBLE</b>	A severe thunderstorm has some potential for producing a tornado although forecaster confidence is not high.
---------------------------	--





# These are both tornadoes

## *Supercell*

Stormscale rotation

Mesocyclone

Tornado forms in  
mature thunderstorm.

On radar, look for large  
rotating storm.

Good warning verification

Can be violent or weak

## *Non supercell*

no storm rotation

no mesocyclone

tornado forms in early  
stage of development.

On radar, look for a  
boundary.

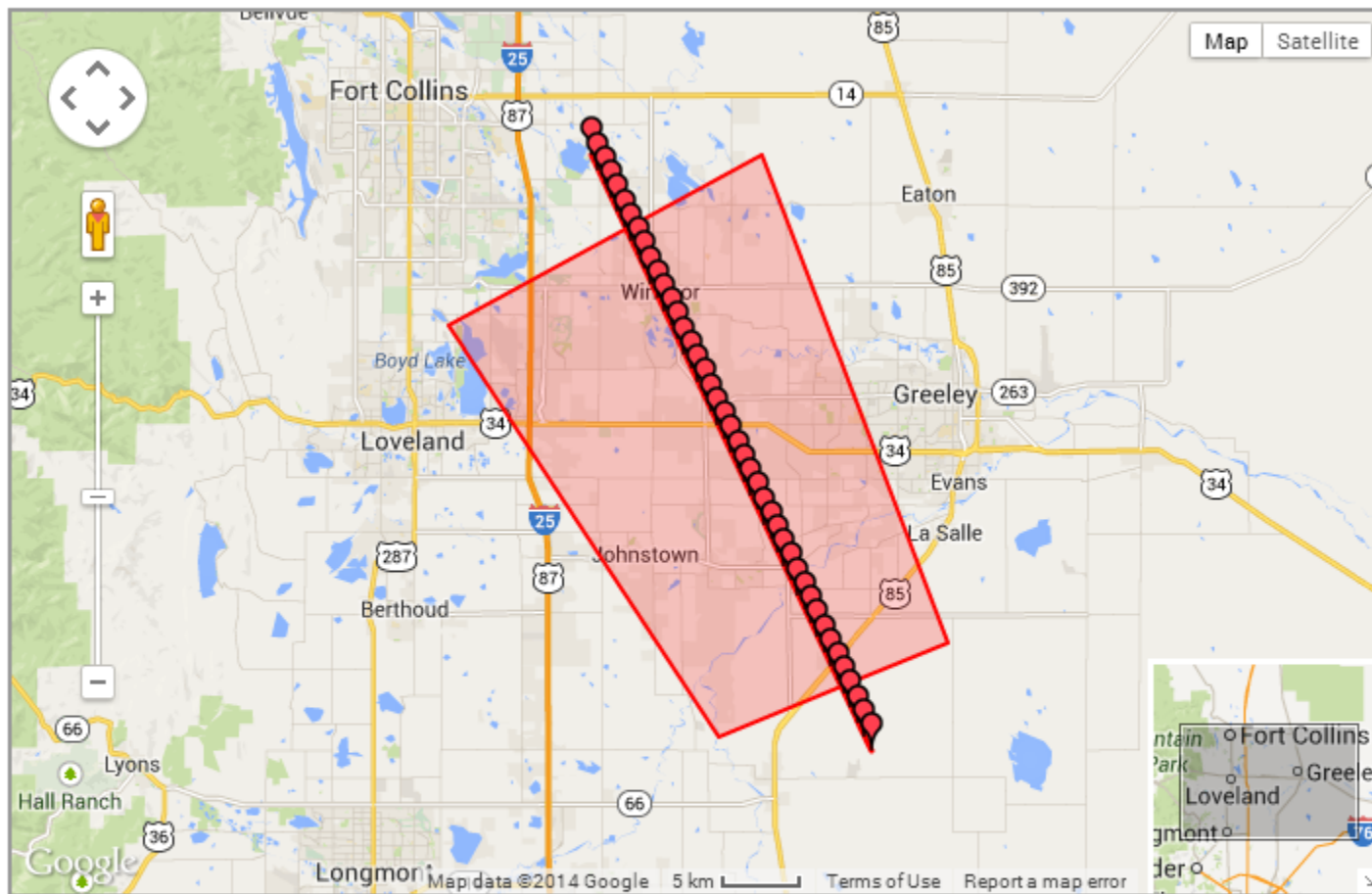
poor warning  
verification

tend to be weak

HORIZONS  
Wild

© Mitch Farrell

## Warning Polygon And Event Mapping



### Legend:

- White Marker - Unwarned Event
- Red Marker - Warned Event
- Red/White Marker - Warned Area
- Red Polygon - Warned Area

Click on any marker or poly

Event And Warning Timeline





000  
WFUS55 KBOU 221735  
TORBOU  
COC069-123-221800-  
/O.NEW.KBOU.TO.W.0005.080522T1735Z-080522T1800Z/

BULLETIN - EAS ACTIVATION REQUESTED  
TORNADO WARNING  
NATIONAL WEATHER SERVICE DENVER CO  
1135 AM MDT THU MAY 22 2008

THE NATIONAL WEATHER SERVICE IN DENVER HAS ISSUED A

\* TORNADO WARNING FOR...

SOUTHEASTERN LARIMER COUNTY IN NORTH CENTRAL COLORADO  
WEST CENTRAL WELD COUNTY IN NORTHEAST COLORADO

\* UNTIL NOON MDT

\* AT 1135 AM MDT...NATIONAL WEATHER SERVICE DOPPLER RADAR WAS  
TRACKING A LARGE AND EXTREMELY DANGEROUS TORNADO NEAR GILCREST...OR  
10 MILES SOUTHWEST OF GREELEY. THIS STORM WAS MOVING NORTHWEST AT  
29 MPH.

\* LOCATIONS IN THE WARNING INCLUDE BUT ARE NOT LIMITED TO WINDSOR...  
SEVERANCE...MILLIKEN...JOHNSTOWN...GILCREST AND WESTERN GREELEY.

THE SAFEST PLACE TO BE DURING A TORNADO IS IN A BASEMENT. GET UNDER A  
WORKBENCH OR OTHER PIECE OF STURDY FURNITURE. IF NO BASEMENT IS  
AVAILABLE...SEEK SHELTER ON THE LOWEST FLOOR OF THE BUILDING IN AN  
INTERIOR HALLWAY OR ROOM SUCH AS A CLOSET. USE BLANKETS OR PILLOWS TO  
COVER YOUR BODY AND ALWAYS STAY AWAY FROM WINDOWS.

IF IN MOBILE HOMES OR VEHICLES...EVACUATE THEM AND GET INSIDE A  
SUBSTANTIAL SHELTER. IF NO SAFE SHELTER IS AVAILABLE...LIE FLAT IN  
THE NEAREST DITCH OR OTHER LOW SPOT AND COVER YOUR HEAD WITH YOUR  
HANDS.

LAT...LON 4046 10505 4055 10483 4029 10470 4024 10486  
TIME...MOT...LOC 1735Z 149DEG 25KT 4030 10483

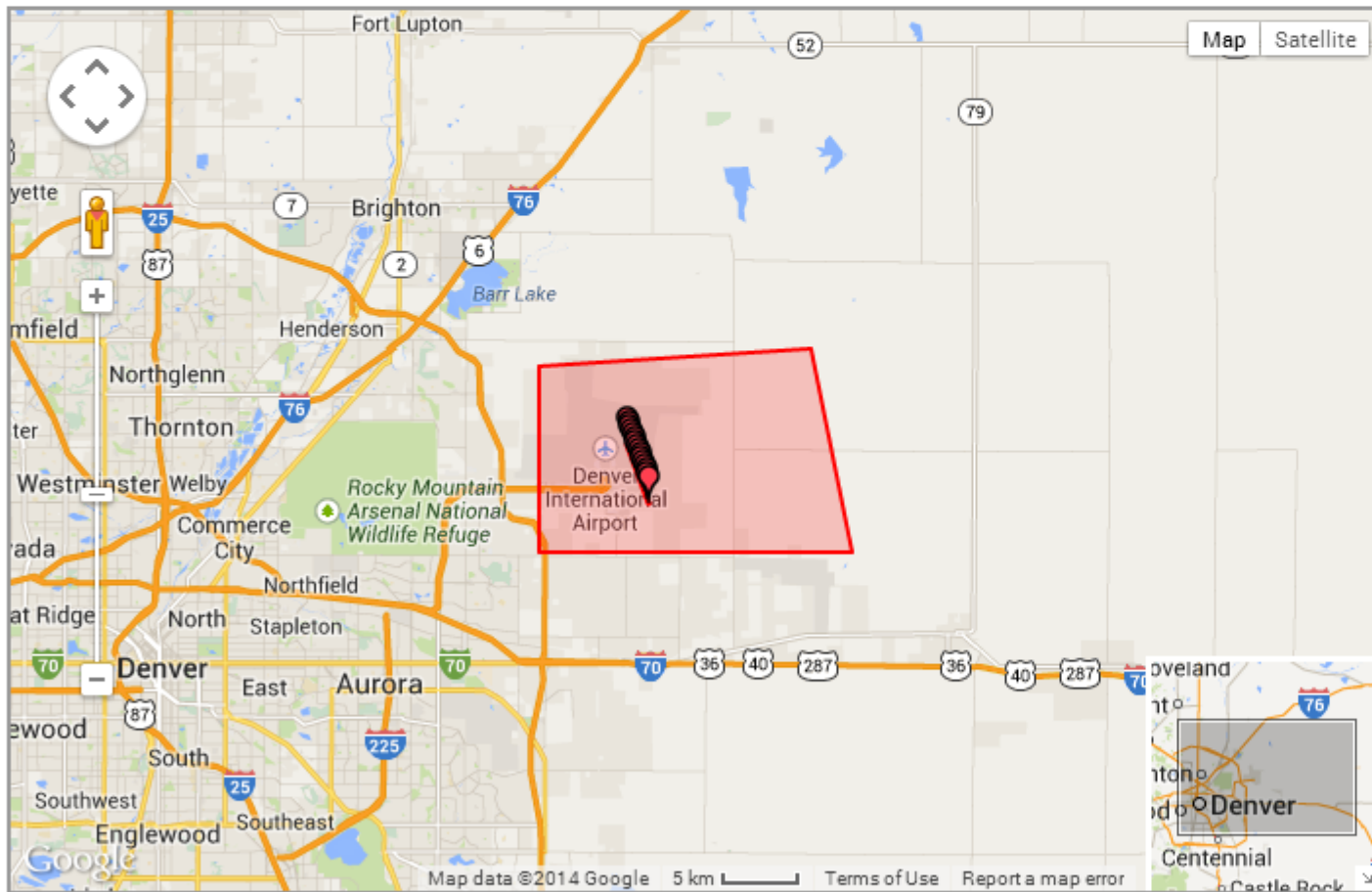
\$\$

Less common, harder to detect



The Wedge Tornado  
5/22/09, Weld County  
Courtesy State Farm

## Warning Polygon And Event Mapping

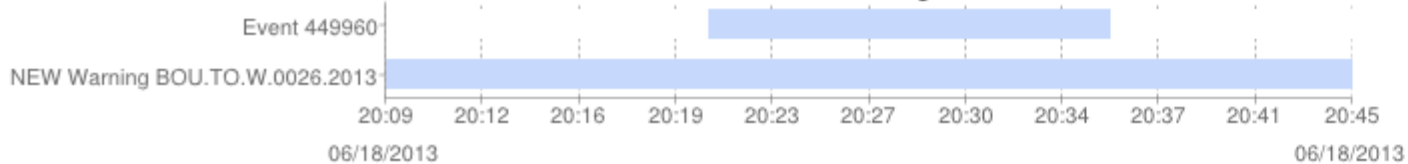


### Legend:

- White Marker - Unwarned Event
- Red Marker - Warned Event
- Red/White Marker - Warned Event
- Red Polygon - Warned Area

Click on any marker or polygon

Event And Warning Timeline





236  
WFUS55 KBOU 182009  
TORBOU  
COC001-031-182045-  
/O.NEW.KBOU.TO.W.0026.130618T2009Z-130618T2045Z/

BULLETIN - EAS ACTIVATION REQUESTED  
TORNADO WARNING  
NATIONAL WEATHER SERVICE DENVER CO  
209 PM MDT TUE JUN 18 2013

THE NATIONAL WEATHER SERVICE IN DENVER HAS ISSUED A

\* TORNADO WARNING FOR...  
NORTHEASTERN DENVER COUNTY IN NORTHEAST COLORADO...  
WESTERN ADAMS COUNTY IN NORTHEAST COLORADO...

\* UNTIL 245 PM MDT

\* AT 209 PM MDT...A SEVERE THUNDERSTORM CAPABLE OF PRODUCING A  
TORNADO WAS LOCATED NEAR D.I.A. TERMINAL AND CONCOURSES...OR 16  
MILES EAST OF DENVER...MOVING NORTHEAST AT 5 MPH.

HAZARD...TORNADO.

SOURCE...RADAR INDICATED ROTATION.

IMPACT...SPORADIC DAMAGE TO MOBILE HOMES...ROOFS AND VEHICLES.

\* LOCATIONS IMPACTED INCLUDE...  
NORTHEASTERN AURORA...DENVER INTERNATIONAL AIRPORT AND D.I.A.  
TERMINAL AND CONCOURSES.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

TAKE COVER NOW! MOVE TO A BASEMENT OR AN INTERIOR ROOM ON THE LOWEST  
FLOOR OF A STURDY BUILDING. AVOID WINDOWS. IF IN A MOBILE HOME...A  
VEHICLE OR OUTDOORS...MOVE TO THE CLOSEST SUBSTANTIAL SHELTER AND

# DIA Tornado-June 18, 2013

## Non-Supercell Tornado



# Hazardous Weather Outlook (HWO)

THIS HAZARDOUS WEATHER OUTLOOK IS FOR NORTHEAST AND NORTH CENTRAL COLORADO.

.DAY ONE...TODAY AND TONIGHT

SCATTERED THUNDERSTORMS WILL DEVELOP AGAIN THIS AFTERNOON AND CONTINUE INTO THE EVENING HOURS. THE BEST MOISTURE AND INSTABILITY WILL BE EAST OF A LINE FROM NEAR GREELEY TO DIA WHERE SEVERE STORMS WILL BE POSSIBLE WITH GOLF BALL SIZE HAIL AND DAMAGING WINDS THE PRIMARY THREAT WITH A TORNADO ALSO POSSIBLE WITH STORMS THAT COULD BECOME MORE ORGANIZED AS THEY MOVE EAST. FARTHER WEST... BRIEF HEAVY RAIN... SMALL HAIL AND WIND GUSTS TO 50 MPH WILL

BE POSSIBLE FROM THE THUNDERSTORMS. IN ADDITION...A WEAK DENVER CYCLONE HAS ALREADY FORMED AND THIS SHOULD STRENGTHEN INTO THE EARLY AFTERNOON WITH THE STRONGEST CONVERGENCE RUNNING SOUTH TO NORTH NEAR DIA. ALONG THIS BOUNDARY STORMS COULD BECOME LOCALLY MORE INTENSE WITH A NON SUPERCCELL TORNADO POSSIBLE. STORMS WILL DEVELOP IN THE FOOTHILLS BY LATE MORNING AND THEN ON THE PLAINS DURING THE AFTERNOON.

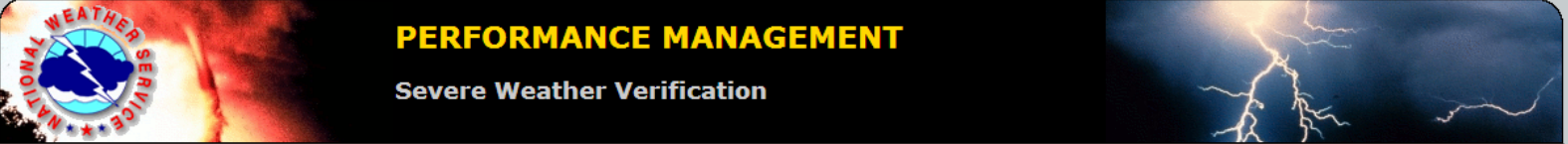
.DAYS TWO THROUGH SEVEN...WEDNESDAY THROUGH MONDAY

DRY CONDITIONS WILL PREVAIL ACROSS THE OUTLOOK AREA THROUGH THE PERIOD WITH TEMPERATURES ABOVE SEASONAL NORMALS. THE DRY AND WARM CONDITIONS WILL HELP INCREASE THE FIRE DANGER.

.SPOTTER INFORMATION STATEMENT...

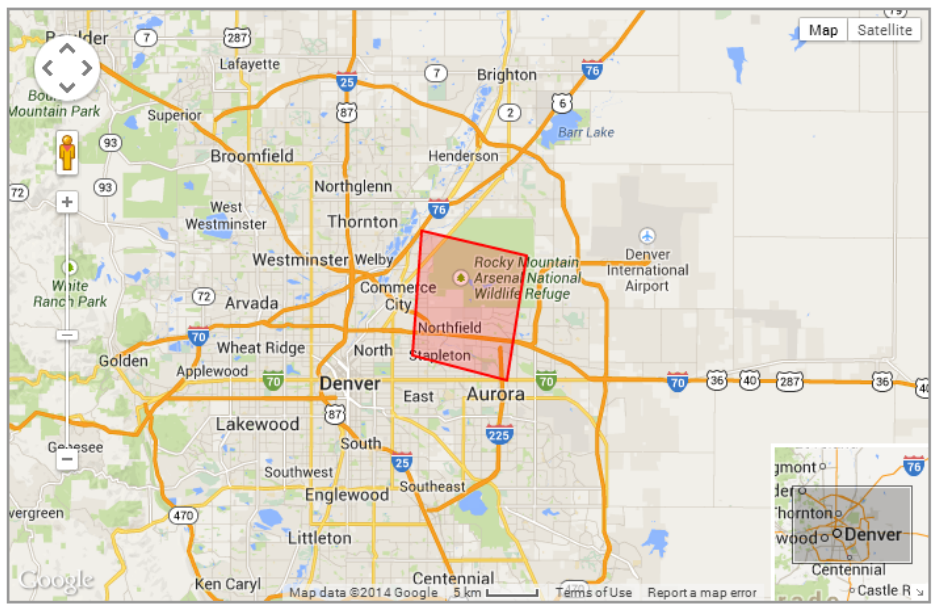
SPOTTER ACTIVATION MAY BE NEEDED OVER THE NORTHEAST PLAINS AFTER 2 PM.





[Home](#) >> [Verification](#) >> [Severe](#) >> [Request](#)

### Warning Polygon And Event Mapping



- Legend:**
- White Marker - Unwarned Event Segment
  - Red Marker - Warned Event Segment
  - Red/White Marker - Warned AND Unwarned Segments
  - Red Polygon - Warned Area

**Click on any marker or polygon to get more info.**



655

WFUS55 KBOU 282202

TORBOU

COC001-031-282230-

/O.NEW.KBOU.TO.W.0081.140728T2202Z-140728T2230Z/

BULLETIN - EAS ACTIVATION REQUESTED

TORNADO WARNING

NATIONAL WEATHER SERVICE DENVER CO

402 PM MDT MON JUL 28 2014

THE NATIONAL WEATHER SERVICE IN DENVER HAS ISSUED A

\* TORNADO WARNING FOR...

CENTRAL DENVER COUNTY IN NORTHEAST COLORADO...

SOUTHWESTERN ADAMS COUNTY IN NORTHEAST COLORADO...

\* UNTIL 430 PM MDT

\* AT 402 PM MDT...A SEVERE THUNDERSTORM CAPABLE OF PRODUCING A  
TORNADO WAS LOCATED OVER NORTHEASTERN DENVER...MOVING NORTH AT 5  
MPH.

HAZARD...TORNADO.

SOURCE...RADAR INDICATED ROTATION.

IMPACT...FLYING DEBRIS WILL BE DANGEROUS TO THOSE CAUGHT WITHOUT  
SHELTER. MOBILE HOMES WILL BE DAMAGED OR DESTROYED.  
DAMAGE TO ROOFS...WINDOWS AND VEHICLES WILL OCCUR. TREE  
DAMAGE IS LIKELY.

\* LOCATIONS IMPACTED INCLUDE...

NORTHERN DENVER...WESTERN AURORA AND SOUTHERN COMMERCE CITY.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

TAKE COVER NOW! MOVE TO A BASEMENT OR AN INTERIOR ROOM ON THE LOWEST  
FLOOR OF A STURDY BUILDING. AVOID WINDOWS. IF YOU ARE IN A MOBILE  
HOME...A VEHICLE OR OUTDOORS...MOVE TO THE CLOSEST SUBSTANTIAL  
SHELTER AND PROTECT YOURSELF FROM FLYING DEBRIS.

&&







Alerts Home

Account Settings

Logout

## iNWS Alert Areas

Add New Alert Area

80015

Boulder County

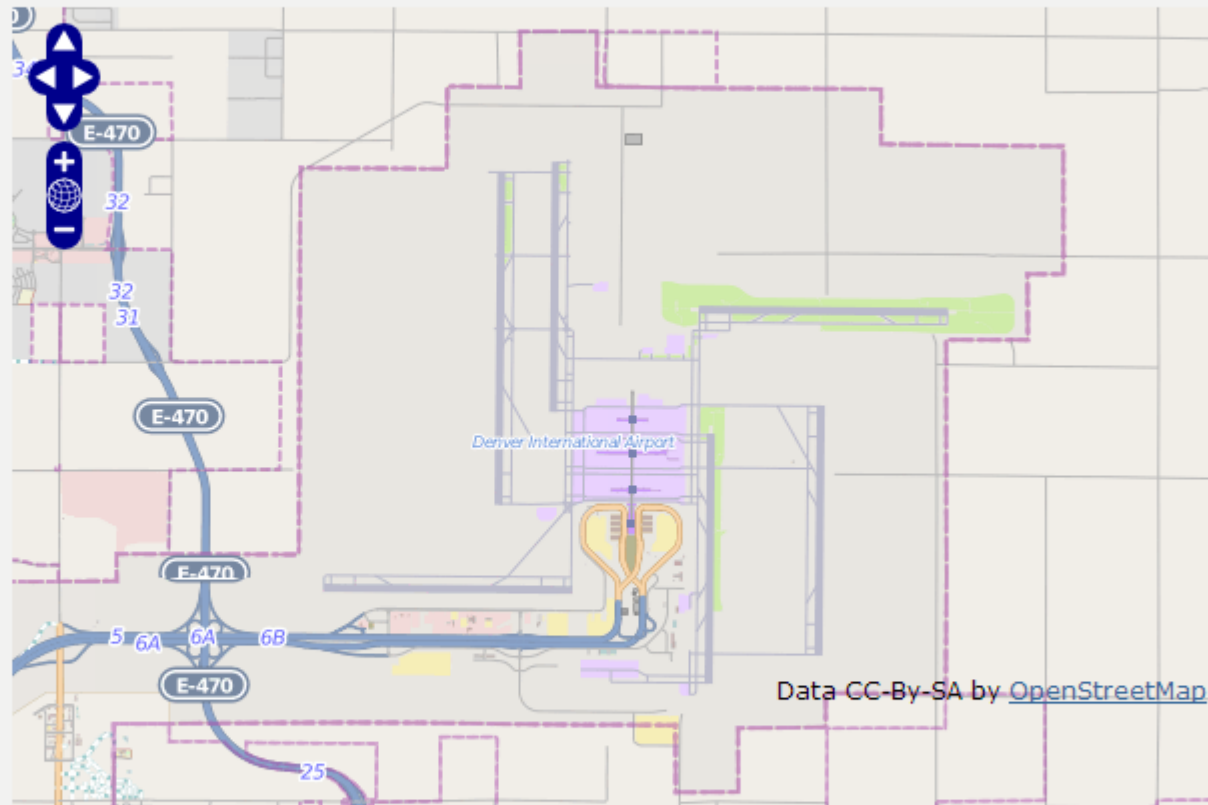
Arapahoe County

## Hydrology Alert Points

Add New Hydro Point

### Create an alert point or alert area by custom drawing.

Using the map, draw a point, line or polygon over the area you wish to receive alerts for.



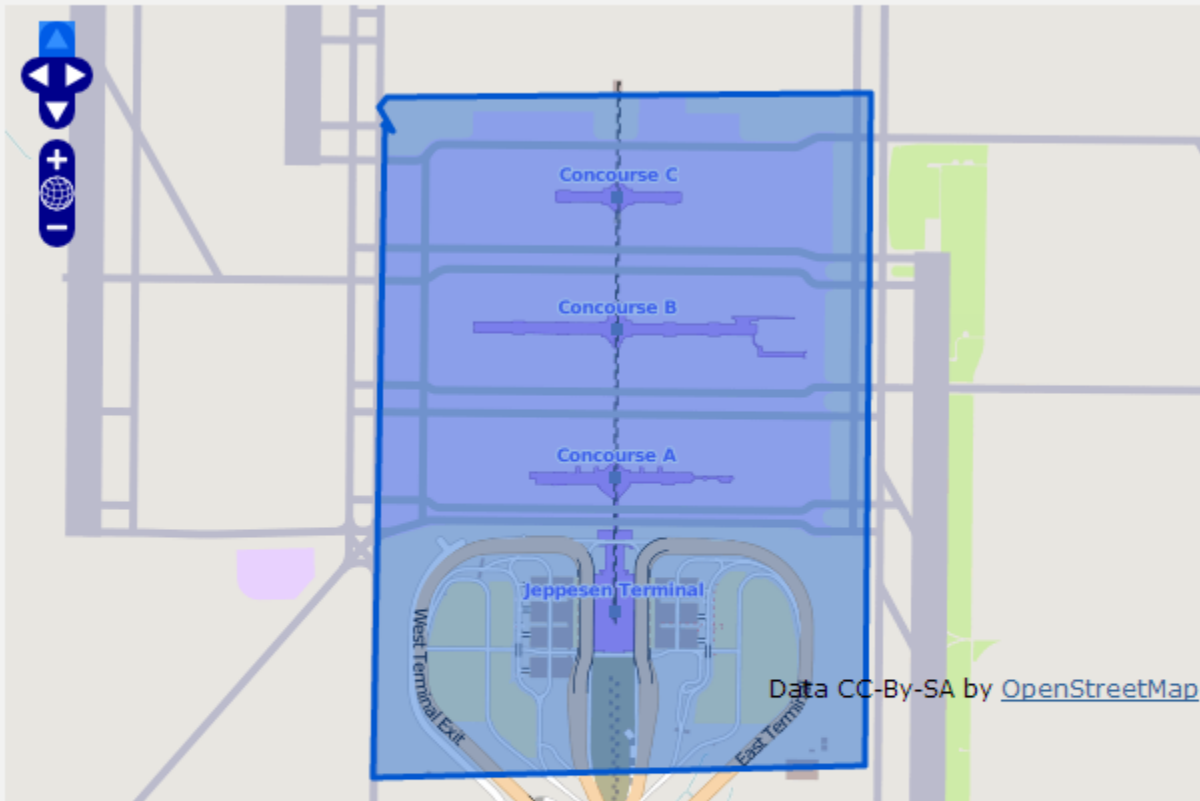
Navigate    Draw Point    Draw Line    Draw Polygon

For 'Draw Point' - Single click to draw a point.  
For 'Draw Line' and 'Draw Polygon' - Single click to add points, double click to end drawing.  
**Note: For polygons, do not end your drawing by double clicking near your first point, the application will automatically close the polygon.**

Next

## Create an alert point or alert area by custom drawing.

Using the map, draw a point, line or polygon over the area you wish to receive alerts for.



- Navigate    Draw Point    Draw Line    Draw Polygon

For 'Draw Point' - Single click to draw a point.

For 'Draw Line' and 'Draw Polygon' - Single click to add points, double click to end drawing.

**Note: For polygons, do not end your drawing by double clicking near your first point, the application will automatically close the polygon.**

Next

Back

# Join our spotter team!

