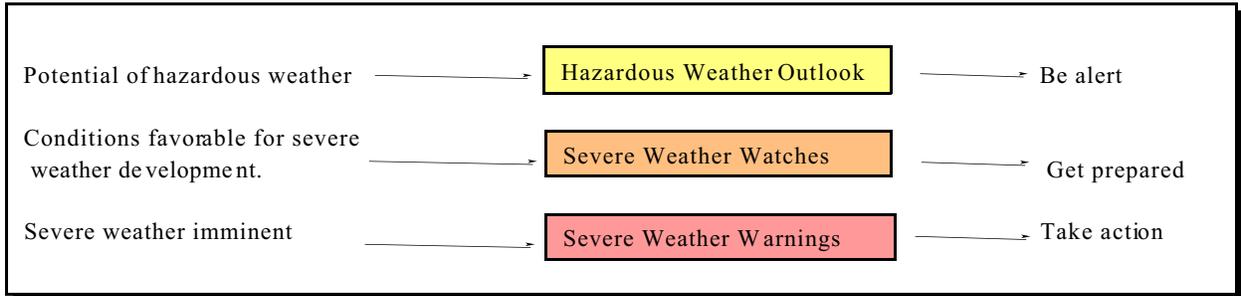


Severe Weather

NWS Springfield issues severe weather watches, warnings and statements for severe thunderstorms, tornadoes and flash floods to alert you of potential or imminent severe weather conditions. NWS Springfield is the sole source of severe weather watches, warnings and advisories across the Missouri Ozarks and southeast Kansas.

Severe weather products follow a multi-tiered concept which communicate the certainty, severity, proximity, and timing of severe weather.



Severe Weather Products		
Product	Description	Awareness & Action Level
Hazardous Weather Outlook	Issued at least twice daily at 6 AM and 1 PM to alert you to potential weather hazards.	Stayed tuned to later statements and be alert for the development of hazardous weather.
Severe Weather Watches	Issued when conditions become favorable for the development of severe weather.	Prepare and take necessary precautions in the event a warning is issued or severe weather is observed.
Severe Thunderstorm Warning	Issued when severe weather (3/4" hail or larger and/or winds in excess of 58 mph) is imminent.	Take immediate action to save lives and property.
Tornado Warning	Issued when a tornado is imminent and has been spotted or indicated by doppler radar.	Take immediate action to save lives and property.
Severe Weather Statement	Issued to update the status of severe weather warnings and give specific details on the location and severity of storms.	
Local Storm Report	Issued to inform you of actual severe weather occurrences.	

Severe Weather

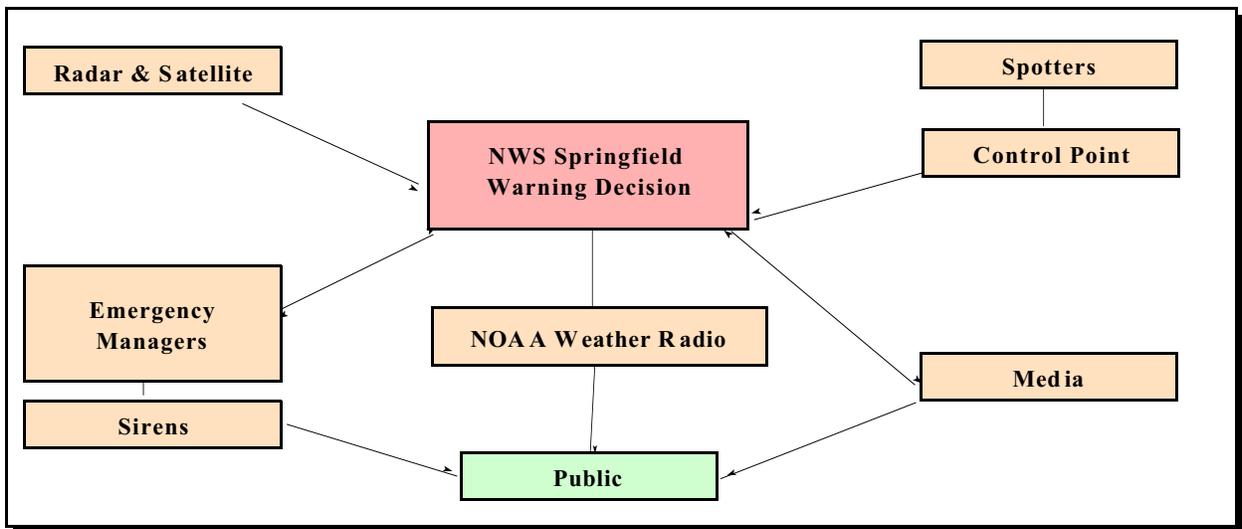
The Warning Process

The warning process is multi-faceted and includes the latest technology, coordination with emergency management, media, and volunteer observers. Although technological advances such as doppler radar have improved severe storm detection, the partnership with these groups is an essential element in severe storm warning detection and response.

During a severe weather event specific reports of severe weather including large hail, damaging winds, flooding and tornadoes are vital to the warning decision making process. Timely and detailed reports provide the warning operator with crucial information in determining storm severity.

The end goal of this cooperation is to provide the public with potentially life saving information.

Below is a schematic of the warning process.



Severe Weather

Hazardous Weather Outlook

The Hazardous Weather Outlook is issued at 6 AM and 1 PM daily both text and graphical format. Updates are issued as needed to address changes in the severity, coverage, or timing of anticipated weather hazards. The text HWO provides an outlook to potential hazardous weather conditions. Detailed hazardous weather threats, areal coverage and timing are included for the first 24 hours. A more general discussion addresses possible threats beyond 24 hours.

The purpose of the HWO is to provide emergency management, media and the general public with an outlook of potential weather hazards so that appropriate preparations can be taken.

Product	Product ID	WMO Header	Issuance
Hazardous Weather Outlook	STLHWOSGF	WUUS35	0600, 1300, As needed

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ZCZC STLHWOSGF
WWUS35 KSGF 281100
KSZ073-097-101-MOZ055>058-066>071-077>083-088>098-101>106-281700-
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HAZARDOUS WEATHER OUTLOOK
NATIONAL WEATHER SERVICE SPRINGFIELD MO
600 AM CDT FRI JUN 28 2002
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.DAY ONE...

WEATHER HAZARDS:

ISOLATED SEVERE THUNDERSTORMS CAPABLE OF PRODUCING DAMAGING WINDS UP TO 60 MPH
...NICKEL SIZE HAIL...FREQUENT LIGHTNING...AND TORRENTIAL RAINFALL.

AREAS AFFECTED AND TIMING:

SOUTH OF A NEVADA...BOLIVAR TO HOUSTON LINE TODAY AND EARLY THIS EVENING.

DISCUSSION:

A SURFACE FRONT WILL REMAIN OVER SOUTHERN MISSOURI TODAY. THIS FRONT WILL INTERACT WITH A MOIST AND UNSTABLE AIRMASS TO PRODUCE ISOLATED THUNDERSTORMS. THE DEGREE OF INSTABILITY WILL SUPPORT A FEW SEVERE THUNDERSTORMS. DUE TO THE SLOW MOVEMENT OF THE STORMS...HEAVY RAIN AND LOCALIZED FLOODING WILL BE POSSIBLE.

.SPOTTER ACTIVATION OUTLOOK...

SPOTTER ACTIVATION IS NOT EXPECTED.

.DAY TWO THROUGH SEVEN...

NO HAZARDS EXPECTED.

\$\$



Severe Weather

The graphical Hazardous Weather Outlook can be found on the NWS Springfield web page. These graphics display the types and probability of severe weather anticipated for the Missouri Ozarks and southeast Kansas.

The graphical HWO displays the potential hazardous weather threats by category. Graphics include severe thunderstorm threats, severe thunderstorm probability, flooding, winter weather, non-precipitation hazards, fire weather, and a general day two outlook.

 http://www.crh.noaa.gov/sgf/HWO/HWO_Graphics.shtml

Probability of severe thunderstorms:

Severe weather threats:

Flooding potential:

Non-Precipitation Hazards:

Graphical HWO example:



Severe Weather

Convective Outlooks

The Storm Prediction Center (SPC) in Norman, Oklahoma issues outlooks for potential severe thunderstorms and tornadoes across the U.S. for day 1, 2 and 3. Probabilistic forecasts may also be found for each day.

Risk areas come in five varieties and are based on the expected number and intensity of severe thunderstorm reports over an area:

- GEN TSTMS (not labeled but listed in the discussion) - General (non-severe) thunderstorms
- SLGT - Slight risk, both graphic and text
- MDT - Moderate risk, both graphic and text
- HIGH - High risk, both graphic and text

A SLGT risk implies well-organized severe thunderstorms are expected but in small numbers and/or low coverage. Within a slight risk area, 5-29 reports of 1 inch of larger hail, and/or 3-5 tornadoes, and/or 5-29 wind events are forecast.

MDT risks imply a greater concentration of severe thunderstorms, and in most situations, greater magnitude of severe weather. Within a moderate risk area, at least 30 reports of hail 1 inch or larger, or 6-19 tornadoes, or numerous wind events (associated with a squall line, bow echo or derecho) are forecast.

The HIGH risk area almost always means a major severe weather outbreak is expected, with great coverage of severe weather and enhanced likelihood of extreme severe (i.e., violent tornadoes or extreme convective wind events over a large area). Within a high risk area, expect at least 20 tornadoes with at least 2 of them rated F3+, or an extreme derecho causing 50+ widespread wind events (50+) with numerous higher end wind (80+ mph) and structural damage reports.

➡ <http://www.spc.noaa.gov/products/>

Product	Product ID	WMO Header	Issuance
Convective Outlook	MKCSWODY1	ACUS01	as needed
	MKCSWODY2	ACUS02	
	MKCSWODY3	ACUS03	

Meso-Scale Discussions

The Storm Prediction Center (SPC) issues meso-scale discussions to describe the development or status of severe weather. The discussions provide a heads up to the potential of severe weather development over specific areas.

When conditions appear favorable for severe storms development, SPC issues a Mesoscale Discussion (MCD), normally 1 to 3 hours before issuing a weather watch. SPC also puts out MCDs for mesoscale aspects of hazardous weather events including heavy snow, blizzards and freezing rain as well as heavy rainfall or convective trends.

The MCD basically describes what is currently happening, what is expected in the next few hours, the meteorological reasoning for the forecast, and when/where SPC plans to issue the watch (if dealing with severe thunderstorm potential). Severe thunderstorm MCDs provide extra lead time on the severe weather development.

➡ <http://www.spc.noaa.gov/products/>

Product	Product ID	WMO Header	Issuance
Meso-scale Discussions	MKCSWOMCD	ACUS11	as needed

Severe Weather

Severe Weather Watches

Severe weather watches are issued when conditions are favorable for the development of severe weather. Watches alert you of the potential of severe weather and allows you to check preparedness plans and prepare for hazardous or life threatening weather conditions well before they occur.

Severe thunderstorm and tornado watches are issued in coordination with the Storm Prediction Center in Norman, Oklahoma. This national center issues severe weather watches for all of the United States.

When atmospheric conditions favor the development of violent or significant number of tornadoes or extreme damaging wind events, the Storm Prediction Center will enhance the watch by including, this is a particularly dangerous situation. When this type of watch is issued

➡ <http://www.spc.noaa.gov/products/watch/>

Product	Product ID	WMO Header	Issuance
Severe Thunderstorm Watch	MKC SEL0-9	WWUS20	as needed

URGENT - IMMEDIATE BROADCAST REQUESTED
SEVERE THUNDERSTORM WATCH NUMBER 505
STORM PREDICTION CENTER NORMAN OK
345 PM CDT MON JUN 1 2000

THE STORM PREDICTION CENTER HAS ISSUED A
SEVERE THUNDERSTORM WATCH FOR PORTIONS OF

SOUTHEAST AND EAST CENTRAL KANSAS
SOUTHWEST AND SOUTH CENTRAL MISSOURI

EFFECTIVE THIS MONDAY AFTERNOON AND EVENING FROM 400 PM UNTIL 10 PM CDT.

HAIL TO 2 INCHES IN DIAMETER...THUNDERSTORM WIND GUSTS TO 80 MPH...AND
DANGEROUS LIGHTNING ARE POSSIBLE IN THESE AREAS.

THE SEVERE THUNDERSTORM WATCH IS ALONG AND 60 STATUE MILES NORTH AND SOUTH OF
A LINE FROM 40 MILES SOUTHWEST OF EMPORIA KANSAS TO 20 MILES SOUTH SOUTHEAST
OF FORT LEONARD WOOD MISSOURI.

REMEMBER..A SEVERE THUNDERSTORM WATCH MEANS CONDITIONS ARE FAVORABLE FOR
SEVERE THUNDERSTORMS IN AND CLOSE TO THE WATCH AREA. PERSONS IN THESE AREAS
SHOULD BE ON THE LOOKOUT FOR THREATENING WEATHER CONDITIONS AND LISTEN FOR
LATER STATEMENTS AND POSSIBLE WARNINGS.

OTHER WATCH INFORMATION..THIS SEVERE THUNDERSTORM WATCH REPLACES SEVERE
THUNDERSTORM WATCH NUMBER 500. WATCH NUMBER 500 WILL NOT BE IN EFFECT AFTER
400 PM CDT.

DISCUSSION...LINE OF SEVERE STORMS CONTINUES TO MOVE SSEWD ACROSS ERN KS AND
WEST CENTRAL MO. AIR MASS AHEAD OF THE LINE IS MOIST WITH DEW POINTS IN THE
LOW 70S AND UNSTABLE WITH CAPE AROUND 3000 J/KG. DAMAGING GUSTS AND HAIL WILL



Severe Weather



Severe Weather

Severe Weather Warnings

Severe weather warnings alert the public of imminent weather hazards so that life saving action can be taken before threatening weather conditions occur.

Warnings are issued as needed to specifically inform the public what the weather hazard is, where it is located, where it is going, and when it will arrive.

Product	Criteria
Severe Thunderstorm	Damaging winds of 60 mph or greater and/or large hail of 3/4" or larger.
Tornado	A tornado has been detected by National Weather Service Doppler radar or has been spotted.
Flash Flood	Flooding is expected in less than six hours due to excessive rainfall estimates as measured by the National Weather Service Radar and/or flooding has been reported.

Product	Product ID	WMO Header	Issuance
Severe Thunderstorm Warning	STLSVRS GF	WUUS53	as needed
Tornado Warning	STLTORS GF		
Flash Flood Warning	STLFFWS GF		

ZCZC STLSVRS GF
WUUS53 KSGF 272307
MOC057-272345-

BULLETIN - EAS ACTIVATION REQUESTED
SEVERE THUNDERSTORM WARNING
NATIONAL WEATHER SERVICE SPRINGFIELD MO
605 PM CDT THU JUN 27 2002

THE NATIONAL WEATHER SERVICE IN SPRINGFIELD HAS ISSUED A

* SEVERE THUNDERSTORM WARNING FOR...
DADE COUNTY IN MISSOURI

* UNTIL 645 PM CDT

* AT 602 PM CDT...NATIONAL WEATHER SERVICE DOPPLER RADAR INDICATED A SEVERE THUNDERSTORM CAPABLE OF PRODUCING DIME SIZE HAIL...AND DAMAGING WINDS IN EXCESS OF 60 MPH. THIS STORM WAS LOCATED 10 MILES NORTH OF GOLDEN CITY...OR 18 MILES SOUTHWEST OF STOCKTON... AND MOVING SOUTHEAST AT 10 MPH.

* THE SEVERE THUNDERSTORM WILL BE NEAR...
LOCKWOOD BY 640 PM CDT.
GREENFIELD BY 645 PM CDT.

THE TOWNS OF SYLVANIA...ARCOLA...NEOLA AND SOUTH GREENFIELD ARE ALSO IN THE PATH OF THIS STORM.

THIS IS A DANGEROUS STORM. IF YOU ARE IN ITS PATH...PREPARE IMMEDIATELY FOR DAMAGING WINDS...DESTRUCTIVE HAIL...AND DEADLY CLOUD TO GROUND LIGHTNING. PEOPLE OUTSIDE SHOULD MOVE TO A SHELTER... PREFERABLY INSIDE A STRONG BUILDING BUT AWAY FROM WINDOWS.

LAT...LON 3755 9407 3730 9403 3732 9366 3754 9367

The latitude and longitude given at the end of each warning specify the coordinates of the warning polygon.

Severe Weather

Severe Weather Statements

Severe weather statements are issued during a warned event to update you of the latest location, movement and intensity of the severe storm. Flash Flood Statements are issued during a warned flood event to update developing flooding situations.

Product	Product ID	WMO Header	Issuance
Severe Weather Statement	STLSVSSGF	WWUS34	as needed
Flash Flood Statement	STLFFSSGF	RWUS32	as needed

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ZCZC STLSVSSGF
WWUS34 KSGF 272320
MOZ089-272330-

SEVERE WEATHER STATEMENT
NATIONAL WEATHER SERVICE SPRINGFIELD MO
619 PM CDT THU JUN 27 2002

..A SEVERE THUNDERSTORM WARNING CONTINUES UNTIL 645 PM CDT FOR DADE COUNTY...

AT 617 PM CDT...STORM SPOTTERS REPORTED A SEVERE THUNDERSTORM WITH BASEBALL SIZE
HAIL NEAR GREENFIELD...OR 20 MILES SOUTH OF STOCKTON...AND MOVING SOUTHEAST AT 10
MPH. THE SEVERE THUNDERSTORM WILL BE NEAR EVERTON BY 630 PM CDT.

THE TOWN OF SOUTH GREENFIELD IS ALSO IN THE PATH OF THIS STORM.

LAT...LON 3735 9406 3730 9369 3753 9365 3757 9393
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Local Storm Reports

Local storm reports are issued during or after a severe weather event. This product contains specific storm reports of severe wind gusts and wind damage, large hail, tornadoes and flooding. Severe weather reports are gathered from local law enforcement agencies, emergency management, media, volunteer spotters and observers and the general public.

Product	Product ID	WMO Header	Issuance
Local Storm Report	STLLSRSGF	WUUS30	as needed

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ZCZC STLLSRSGF
WWUS30 KSGF 250635

PRELIMINARY LOCAL STORM REPORT
NATIONAL WEATHER SERVICE SPRINGFIELD MO
134 AM CDT TUE JUN 25 2002

TIME (CDT)  ....CITY LOCATION.....STATE  ...EVENT/REMARKS...
           ....COUNTY LOCATION....

1110 PM      ALTON                MO      WIND DAMAGE
06/24/02     OREGON

                THREE MOBILE HOMES
                OVERTURNED. REPORTED BY
                LAW ENFORCEMENT OFFICIAL.
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Severe Weather

Storm Reporting

Storm reports received from the media, law enforcement and emergency management are vital to the warning decision making process. Timely and detailed reports enhance the warning process and allow the warning operator to more thoroughly assess a severe weather situation and provide effective warnings. Never assume that a report has already been communicated to the NWS.

When storm reports are relayed to the NWS be sure to state your name, location and time of the event. Always be as specific as possible and do not use vague or general terms.

When relaying hail reports use coins or other descriptions as shown below to communicate the size of the hail. Never use the term marble size hail since marbles come in different sizes.

Hail Diameter Size	Description
1/4"	Pea size
1/2"	Mothball size
3/4" (severe criteria)	Dime or penny size
7/8"	Nickel size
1"	Quarter size
1 1/4"	Half-dollar size
1 1/2"	Walnut or Ping -Pong ball size
1 3/4"	Golf-ball size
2"	Hen-egg size
2 1/2"	Tennis-ball size
2 3/4"	Baseball Size
4"	Grapefruit size

When relaying high wind reports be sure to include specific impacts and damage such as trees down, roof damage, etc.

Wind Speed Estimate	Description
25-31 mph	Large branches in motion; whistling heard in telephone wires
32-38 mph	Whole trees in motion; inconvenience felt walking against wind
39-54 mph	Twigs break off trees; wind generally impedes progress
55-72 (severe criteria: 58 mph)	Damage to chimneys and TV antennas; pushes over shallow-rooted trees
73-112 mph	Peels surfaces off roofs; windows broken; light mobile homes pushed or overturned; moving cars pushed off road

