Stormbuster

NATIONAL WEATHER SERVICE ALBANY, NY

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NWS Albany Staff Update

INSIDE THIS ISSUE

In this edition, we will share an interview with one of our departing NWS Albany Lead Meteorologists. Ingrid Amberger will be retiring in February 2024 with nearly 33 years of Federal Service.

When did you first become interested in Meteorology?
I grew up in Ballston Spa in Upstate New York and love the changing of the seasons. I have always been fascinated by the weather, but it wasn't until I took Earth Science in 9th grade that I imagined going to college for Meteorology.

Where did you go to college and where did you work before the NWS at Albany?
I received my B.S. in Meteorology from the State University of New York College at Oswego in December 1989. After graduation my first job was with the U.S. Census Bureau working on the 1990 Census. I left the Census Bureau to start my National Weather Service career as a Meteorological Intern at the Akron-Canton Weather Service Office in Ohio. I worked there 3 1/2 years, before moving to Long Island New York to take a Meteorologist position at the NWS New York Forecast Office. I worked there for 9 years and was promoted to Lead Meteorologist (Shift Supervisor) in September 2001. I was very fortunate to make my way back to Upstate New York in November of 2003. This Thanksgiving marked 20 years at the Albany Forecast Office.

How many years have your worked in the NWS?
By the time I retire in February, I will have 32 years and 11 1/2 months in the NWS; all as a rotating shift worker. I was the first and only woman meteorologist to work at the Akron-Canton Weather Service Office. I was the first and so far only woman lead meteorologist for the New York Forecast Office and I was the first woman lead meteorologist here at the Albany Forecast Office.

What have you enjoyed the most at the NWS Albany?
My co-workers! I have had the privilege to work with awesome people, incredible meteorologists and dedicated public servants.

What was the biggest challenge you had to overcome in your career?
Finding balance between my roles as a mother, wife, daughter, and rotating shift worker/public servant has been a constant in my life. My children are 24 and 20 years old and I've been married for 28 years.

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What aspect of weather do you enjoy the most? What are top 3 historical weather events you recall you have worked?
I love winter storms, nor'easters in particular. My top 3 events: Blizzard January 7-8, 1996 - I was in the office for 32 straight hours. I worked two 8-hour shifts (4 pm to 8 am), slept on a cot in a manager's office and then worked an 8-hour shift (4 pm to midnight). Ice & Snowstorm December 11-12, 2008 - My town was hit very hard by this storm with ice and parts didn't have power for a week and there was widespread tree damage. My family went 4 days without power. Hurricane Irene August 27-29, 2011 - I delayed vacation plans to work this storm. The final gusts of wind took down trees in my yard.

What are you looking forward to in retirement?
I'm looking forward to developing a routine, exercising regularly, not working holidays and having more time for my family and friends.

What has changed the most since the first day you entered the National Weather Service?
The amount of data that is available now is amazing; not just model guidance but observational data too. When I started in the NWS, forecasts were typed out by hand for a specific geographic area for only 48 hours and an outlook was given for days 3 through 5.

Will you still work part time or participate/volunteer in some sort of weather-related profession in your post NWS Career? I plan to get a part-time job; doing what I'm not sure about yet. I definitely plan on volunteering.

Ingrid Amberger, Lead Meteorologist

Halos, Sun Dogs, Sun Pillars & Ice Bows

Interesting weather optical phenomena can be viewed by people on any given day with the right atmospheric conditions. The rainbow is probably the most common and spectacular optical phenomena that people have seen in our atmosphere. However, three other types of optical phenomena are halos, sun dogs and sun pillars.

Halos occur quite commonly, but are rarely observed by the casual, common observer. When viewed, a halo appears as a narrow white ring having a diameter or circle centered right on the sun. Halos frequently occur on days when the sky is covered with a thin layer of cirrus clouds. This particular phenomenon is best viewed in the early morning (just after sunrise) or late afternoon (dusk) when the sun is near the horizon. People who live in the high latitudes tend to see halos most often, where a low sun angle and cirrus clouds are very common. Sometimes halos can be viewed around the moon.

Two types of halos are the 22º and 46º halos. The 22º halos are the most common. They are called by this name, since the halo radius "subtends" an angle of 22º from the observer. The halo is generated by dispersion of sunlight, just like the rainbow. Dispersion is the separation of colors by refraction (bending of visible light). Ice crystals in the atmosphere refract the light for a halo, rather than water droplets for a rainbow. The clouds frequently associated with halos are cirrus clouds. Cirrus clouds typically occur with frontal lifting and cyclonic storms, therefore halos around the moon or sun folklore states are associated with foul or unsettled weather.

There are 4 basic types of ice crystals that help form halos. The four types are plates, columns, bullets, and capped columns. These crystals are all hexagonal, very similar to snowflakes. The random structural orientation of the ice crystals in the cirrus clouds help the halos to form. The sunlight strikes the surfaces of the crystals at numerous angles. The dispersed light will be scattered at various quantities and intensities. Basically, a large portion of light is scattered in one direction over another direction. For example, for a six-sided ice crystal, the angle of maximum scattering will be 22º to produce the 22º halo. The main difference between the 22º halo and the 46º halo is the core path that the visible light takes through the ice crystals. Halos are usually whitish in color. The white color is produced due to ice crystals being imperfect in size and shape. Rain droplets act as a prism and are purer in size and shape, which produce a rainbow.

Sun dogs are a beautiful part of a halo. They are two bright spots of light that are sometimes called mock suns, which are situated about 22º on either side of the sun. Another name for sun dogs are parhelia. The sun dogs are also produced by the dispersion of sunlight by the ice crystals of cirrus clouds. The formation of the sun dogs relies on the ice crystals being numerous and vertically oriented. The ice crystals fall slowly and a large portion of the striking sun rays will focus on two areas slightly greater than 22º from the sun. The mock "duplicate" suns will appear directly on the 22º halo with the sun positioned between them, due to the sun low on the horizon, so that the impact angle is perpendicular to the vertical crystal faces composed within the clouds.

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Halos, Sun Dogs, Sun Pillars & Ice Bows (cont.)

The sun pillar is yet another optical phenomenon related to the halo. Sun pillars are vertical columns of light seen typically near sunrise or sunset, as they appear to extend upward from the sun. These brilliant pillars of light are produced when sunlight is reflected from falling plates and capped columns. These two ice crystal types are oriented vertically like falling leaves. The pillars are usually red, since direct sunlight is often red when the sun is low in the sky. Sometimes, the pillars can be seen extending below the sun.

The ice bow is an atmospheric phenomenon resembling a rainbow but involves ice crystals. The ice bow forms around artificial lights in very cold weather. The ice crystals are sometimes called diamond dust which are floating in the nearby air. It is optical phenomenon where the ice halo forms by shaped ice crystals in low atmospheric clouds. The ice crystals suspended in the air become small platelets and refract light. They have been seen with temperatures as low as -40°F/-40°C (see picture below).

The first three pictures below are halos, sun dogs and sun pillars. Be on the lookout for these optical phenomena of the atmosphere in the future. They can be seen in the Northeast from time to time. The ice bow is a bit rarer and is seen with colder, arctic climates which is the final picture.

A Halo picture

Source: https://cdn.mos.cms.futurecdn.net/7GKsYustYLsTfs5cWhRQUh-650-80.jpg.webp

A Sun Dog Picture

Source: https://cdn.mos.cms.futurecdn.net/EjoEJpCwUK9V7m2c6rSMZN-650-80.jpg.webp

A Sun Pillar Picture

Source: https://www.google.com/url?sa=i&url=https%3A%2F%

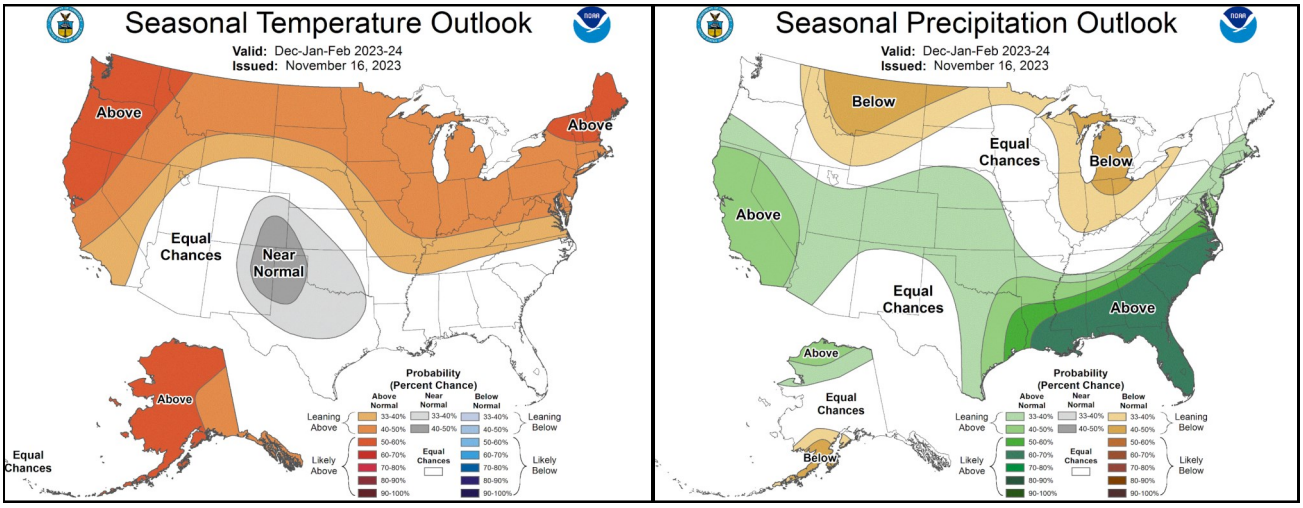
An Ice Bow Picture

Source: Jennie Jiang (https://1x.com/magazine/permalink8908)

-Thomas Wasula, Lead Meteorologist

2023-2024 Winter (Dec-Jan-Feb) Outlook

NOAA's Winter Outlook was released in October 2023 by the Climate Prediction Center - a division of the National Weather Service.



Warmer-than-average temperatures are favored across the northern tier of the United States and much of the Far West.

The greatest odds for warmer-than-average conditions are in Alaska, the Pacific Northwest and northern New England.

The temperature outlooks do not predict how much above or below temperatures will be. They also do not predict individual arctic outbreaks which are still possible.

Wetter-than-average conditions are most likely in northern Alaska, some areas of the West from parts of California to the south-central Rockies, the southern Plains, Gulf Coast, Southeast and lower mid-Atlantic.

The greatest odds for drier-than-average conditions are forecast in portions of the northern Rockies and central Great Lakes region, especially for Michigan and northern Ohio and Indiana.

The precipitation outlooks do not predict how much above or below precipitation will be or the number of storms or their intensity. They do represent rain, snow, sleet and freezing rain events.

There is a focus on El Niño-Southern Oscillation (ENSO) when making seasonal outlooks as it is one of the most important climate phenomena on Earth due to its ability to change the global atmospheric circulation, which in turn, influences temperature and precipitation patterns across the globe. El Niño is a warming of the ocean surface, or above-average sea surface temperatures, in the central and eastern tropical Pacific Ocean while La Niña is a cooling of the ocean surface, or below-average sea surface temperatures across that region.

El Niño conditions are occurring now and are favored through Northern Hemisphere spring 2024, with chances exceeding 95% through January-March 2024. At its peak (November-January), nearly all guidance suggests a moderate-to-strong El Niño.

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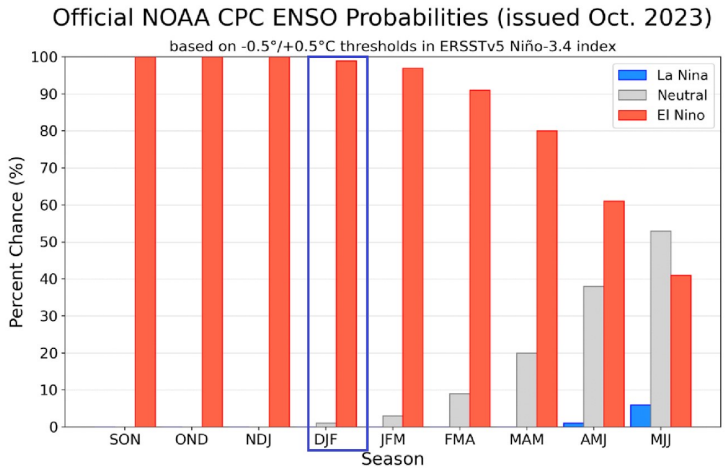
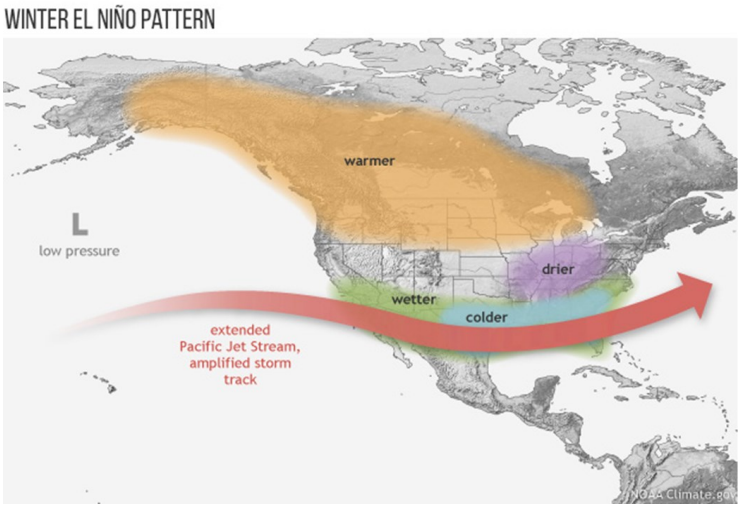
2023-2024 Winter (Dec-Jan-Feb) Outlook (cont'd)



Official ENSO probabilities for the Niño 3.4 sea surface temperature index (5°N-5°S, 120°W-170°W). Figure updated 12 October 2023.



During El Niño winters the jet stream tends to extend eastward and shift southward with wetter-than-average conditions across the southern part of the United States, and less storminess and milder-than-average conditions across the North.

No two El Niño events are the same. Historical composites can tell us what happens on average, and how often certain impacts occur, but a range of outcomes is always possible. These correlations are meant to give an idea of what can happen and what may be most likely in a given area based on past events. However, some correlations and impacts are most likely or more persistent during the stronger and longer lasting El Niños. Others are tilted towards a portion of the winter when the El Niño signal is strongest.

El Niño does not mean the entire winter season will feature weeks of the same weather. El Niño does influence the main storm tracks, but variability can occur at a point or points in the season, and allow for more 'normal' conditions or even the opposite of typical impacts at times. Outlier events can still happen even in a cold season that is otherwise warm, wet or relatively lacking in snow. The February 1983 "Megalopolitan Snowstorm" and late January 2016 Blizzard are excellent examples of crippling I-95 corridor snowstorms in otherwise snow-starved and mild winters.

Impacts are more pronounced in some areas of the Eastern United States than others. In some areas no clear correlation exists, especially in weaker to moderate strength El Niños. Precipitation tends to be above normal closer to the coast and into the Mid-Atlantic. There tends to be a more active southern branch of the jet stream during El Niño, which can favor a more frequent coastal storm track. The more active coastal storm track creates higher probabilities of coastal storms increasing the potential for coastal flooding, beach erosion and high wind events near the coast. Temperatures tend to average above normal in the Northeast.

- Ingrid Amberger, Lead Meteorologist

2023-2024 Winter (Dec-Jan-Feb) Outlook (cont'd)

The more active coastal storm track creates higher probabilities of coastal storms increasing the potential for coastal flooding, beach erosion and high wind events near the coast. Temperatures tend to average above normal in the Northeast.

What about snowfall across the Northeast? Seasonal snowfall varies during El Niño winters. Overall, snowfall tends to be below normal in northern New York and interior southern New England regardless of strength. Elsewhere snowfall tends to be variable with a more pronounced below normal tendency in the Boston to New York City corridor in stronger events.

Albany, New York					
Moderate El Niño	Seasonal Snowfall	Strong El Niño	Seasonal Snowfall	Very Strong El Niño	Seasonal Snowfall
1951-52	69.4 inches	1957-58	74.4 inches	1982-83	75.0 inches
1963-64	77.0 inches	1965-66	67.1 inches	1997-98	52.1 inches
1968-69	63.0 inches	1972-73	70.9 inches	2015-16	16.9 inches
1986-87	80.6 inches	1987-88	76.7 inches		
1994-95	30.9 inches	1991-92	30.7 inches		
2002-03	105.4 inches				
2009-10	45.4 inches				
Normal Seasonal Snowfall 1991-2020 = 59.2 inches / 1981-2010 = 60.3 inches / 1971-2000 = 62.7 inches					

Ingrid Amberger, Lead Meteorologist

Winter Driving Safety

Winter can be a dangerous time of the year for drivers. Most winter weather related deaths occur in motor vehicle accidents. In fact, across the U.S., the average icy road fatality count is nearly 4 times the total number of deaths from **all** other weather hazards **combined**.

Icy road conditions may only be present a handful of times during a winter yet they produce high accident rates in short amounts of time. Also, according to statistics, the fewer road icing events that occur in an area, the greater the rate of fatalities per event.

In winter, roads are sometimes snow or ice covered. Visibility can be reduced to near zero by wintry precipitation and/or fog. Falling snow or freezing rain can make it hard for windshield wipers and defrosters to clear windows, and vehicle lights can be coated with ice, slush or snow which reduces their effectiveness.

When driving, if roads are snow covered or icy, slow down and drive carefully. Vehicle stopping distances are increased 2-6 times on snow and ice. Keep extra distance between you and other vehicles. Turn on your headlights while driving in rain or snow. Allow extra time to get to your destination.

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Winter Driving Safety (cont'd)

In winter, day length is reduced significantly and much more commuting time is done in darkness or near darkness. Clear your car of snow and ice before you drive. Make sure all windows, headlights, tail lights and mirrors are clear.

As a motorist, you are far more likely to have an accident when driving during an icy road condition than an equivalent amount of time driving during rainy or dry weather. If possible, avoid travel during winter storms. If you have the option to telework or work from home, snowy or icy days are good days to do so.

Be alert for rapidly changing road conditions. Blowing snow, lake effect snow bands, snow squalls and black ice can cause rapidly deteriorating road conditions.

Blowing snow is wind driven snow that reduces visibility. Blowing snow may be falling snow and/or snow on the ground picked up by the wind. Blowing snow may produce icy patches on otherwise dry roads.

Lake effect snows often occur in the late autumn and winter downwind of the Great Lakes when cold arctic air sweeps across the relatively warm waters of the lakes. Snow bands will typically form over and along the lee shores of the lakes and move downwind. These bands can result in locally heavy snow with reduced visibilities and icy roads.

Snow squalls are brief intense snow showers accompanied by strong gusty winds. Similar to summertime thunderstorms, snow squalls often happen on mostly fair days. In a matter of minutes, a pleasant winter day with sunny skies can change to whiteout conditions. They often produce instantaneous snow accumulation and blinding visibility. Snow squalls are responsible for many vehicle pile ups on interstate highways.

Black ice is a thin film of ice on roads or sidewalks which is difficult to see or looks wet, but is actually very slip-

Steve DiRienzo, Warning Coordination Meteorologist

Northeast Regional Operations Workshop Recap —14 -15 November 2023

The 24th Northeast Regional Operations Workshop (NROW) took place on 14—15 November 2023 at the ETEC building. NWS Albany and SUNY Albany Department of Atmospheric and Environmental Science co-hosted the conference which featured a total of 43 oral presentations with two posters. This included our Keynote presenter Joseph Trujillo - Falcón, a Ph.D student at the University of Oklahoma and National Severe Storms Laboratory (NSSL), who is an expert in weather risk communication to Limited English Speaking populations and a special presentation by retired Storm Prediction Center (SPC) Meteorologist and the Chief of SPC's Science Support Branch Steve Weiss. In-person attendance ranged between 40 and 60 people with virtual attendance roughly between 40

Christina Speciale, Lead Meteorologist

Northeast Regional Operations Workshop Recap —14-15 November 2023

Presentation topics included both physical and social science and covered topics such as artificial intelligence application to operational meteorology, flood inundation mapping, mesoscale snow bands, risk communication, severe weather, field campaigns, weather related power outages, ensembles and probabilistic messaging, snow squalls and safety messaging, and case studies. This year, we featured a special showcase on the Buffalo Blizzard from December 2022 where forecasters from NWS Buffalo provided a case study overview of the event and then Broadcast Meteorologists from the Buffalo area shared their perspective including forecasting and messaging efforts as well as how they reported from the station when roads were impassable.

A new addition to the conference this year was the inaugural NWA (National Weather Association) RON (Research to Operations) Meet-up at NROW. During this special one hour and 15 minute session, in-person conference attendees split up into four discussion groups led by subject matter experts and engaged in 15 minute small group discussions. Topics included Artificial Intelligence, Probabilistic Forecasting, Risk Communication, and Data Visualization. After 15 minutes, attendees rotated to the next group. This allowed every attendee to participate in each group over the course of one hour before all RON participants gathered for a 15 minute debrief to review what they learned and points that struck them the most.

Conference attendees came from diverse backgrounds and included those who traveled locally and also from out of state which meant our audience featured a wide spectrum of experiences and challenges that promoted fruitful discussions during question and answer sessions as well as opportunities to network during session and lunch breaks. Backgrounds included the NWS Weather Prediction Center, NOAA Drought Early Warning System (DEWS), IBM, Environment Canada, broadcast media, SUNY Albany College of Emergency Preparedness, Homeland Security and Cybersecurity (CEHC) , NYS Office of Emergency Management, SUNY Stony Brook and SUNY Albany professors and students, NWS Meteorologists and others in the private and public weather enterprise.

Next year will park the 25th Anniversary of the NROW conference which began in 1999 and is planned for 13-14 November 2024. Mark your calendar! The conference will offer both in-person and virtual attendance opportunities.

Christina Speciale, Lead Meteorologist

Word Search

Winter Weather

L S S B S F U M K O N V K H K N Q I Y D
S N J V S N O W F L A K E C K R S R Q F
A Y K O Q L V C Z N Z I V I R E L G B I
E M P P C J Q L T B Y C G C B J E R L C
A V P O L A R V O R T E X S S I E A C E
J V M Q I X A F C F K S D J N D T U Z J
F B X C L P K I M P D T G U O Q B P Z A
R S L M L Z B K I S K O T Y W V A E I M
E F Z O G T R S F E F R D C S S J L P W
E M L O W L J D O U F M A B Q C W W S I
Z C T K Y I F F V S A V F N U C B H N N
I Q Q Y E G N N A F U Y C X A K U I O D
N Y F H N Y Z G P L L A Y J L I U T W C
G H D P R R O Z S Q U U I W L T W E S H
R C L I P P E R V N F Y R H E J D O H I
A B X S O J Z R Z B O Q X R M Y V U O L
I K U K A N S Y X K U W M W I D G T W L
N W Q W V E L R W F J P J S E E V O E C
O P A B L I Z Z A R D L P O S W S F R B
T B D N E L V L N P D F D D R Q A U O K

Freezing Rain	Polar Vortex	Blowing Snow
Snow Shower	Snow Squall	Wind Chill
Blizzard	Snow Flake	Flurries
Ice Storm	Whiteout	Clipper
Ice Jam	Graupel	Sleet

- Thomas Wasula, Lead Meteorologist

Word Scramble

Winter Phenomena

SBMEOOSINEBG _____

ALEK ADNBOSNW _____

RDAZBILZ _____

RCTACI ABLST _____

KACLB CEI _____

FALHS EERZEF _____

CIE PLLESET _____

VHAYE WSNO _____

ITYWRN XMI _____

UWNNDHROETS _____

- Thomas Wasula, Lead Meteorologist

Word Search Answer Key

Winter Weather

Freezing Rain	Polar Vortex	Blowing Snow
Snow Shower	Snow Squall	Wind Chill
Blizzard	Snow Flake	Flurries
Ice Storm	Whiteout	Clipper
Ice Jam	Graupel	Sleet

- Thomas Wasula, Lead Meteorologist

Word Scramble Answer Key

Winter Phenomena

SBMEOOSINEBG	BOMBOGENESIS
ALEK ADNBOSNW	LAKE SNOWBAND
RDAZBILZ	BLIZZARD
RCTACI ABLST	ARCTIC BLAST
KACLB CEI	BLACK ICE
FALHS EERZEF	FLASH FREEZE
CIE PLLESET	ICE PELLETS
VHAYE WSNO	HEAVY SNOW
ITYWRN XMI	WINTRY MIX
UWNNDHROETS	THUNDERSNOW

- Thomas Wasula, Lead Meteorologist

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Where we share adverse weather information & historical weather events, and you share storm reports and ask any weather questions you might have!

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