



Tracking Tornadoes: How to Better Protect Your Business

April 2023

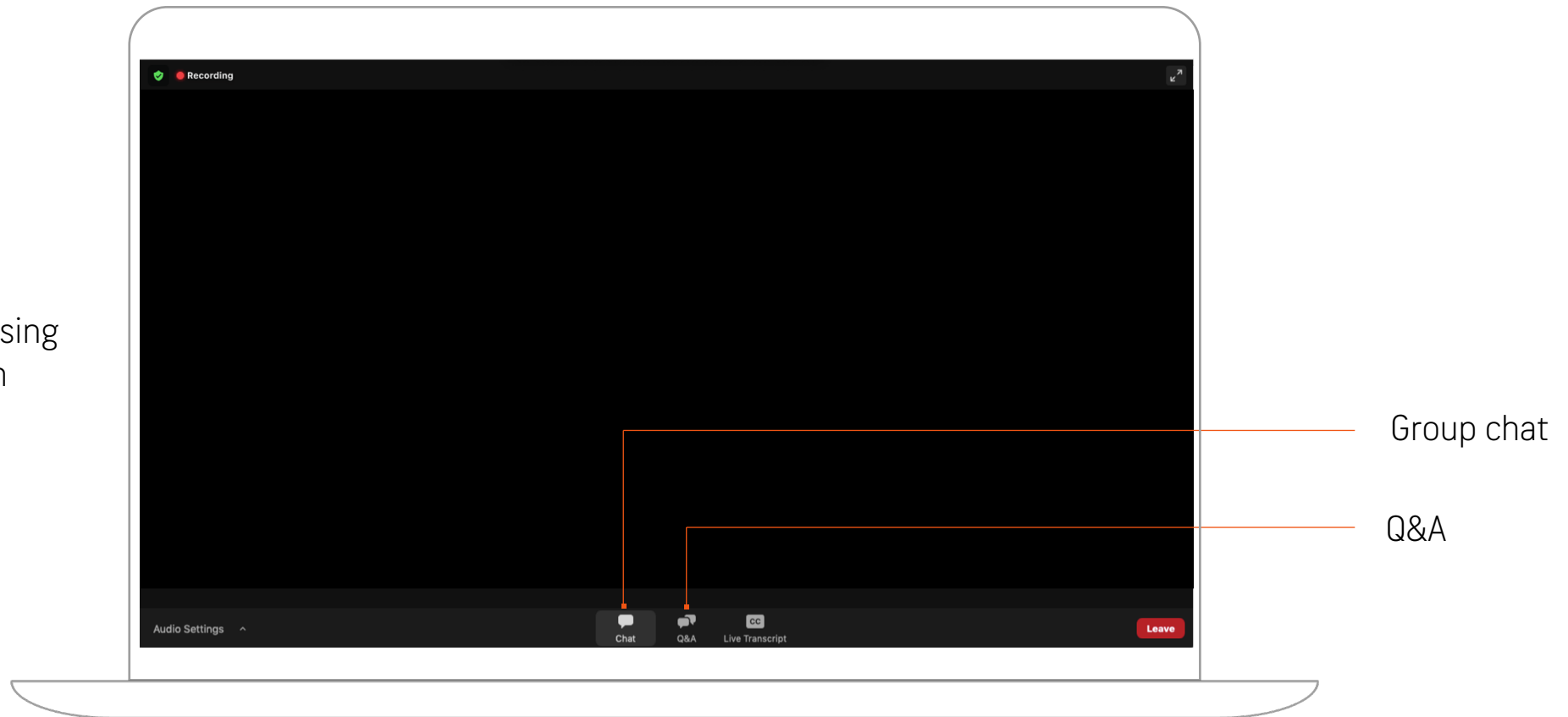
Presented by:

Don Coash, Senior Account Executive and Meteorologist, AccuWeather For Business

Guy Pearson, Director of Weather Warning Services, Senior Meteorologist

How Zoom Webinars Work

Submit a question using
the Q&A function



Meet the Team



Don Coash

Senior Account Executive
Meteorologist
AccuWeather For Business



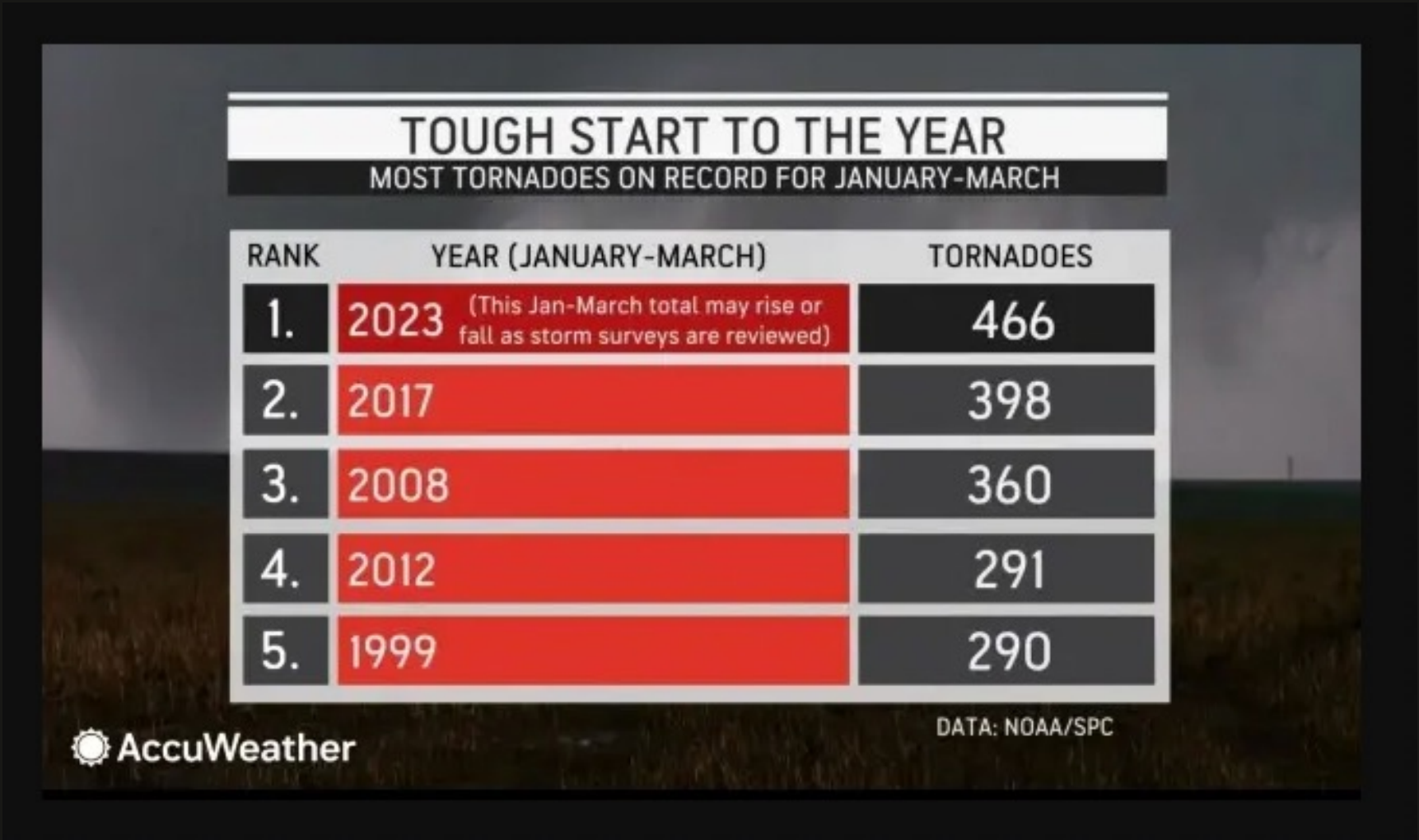
Guy Pearson

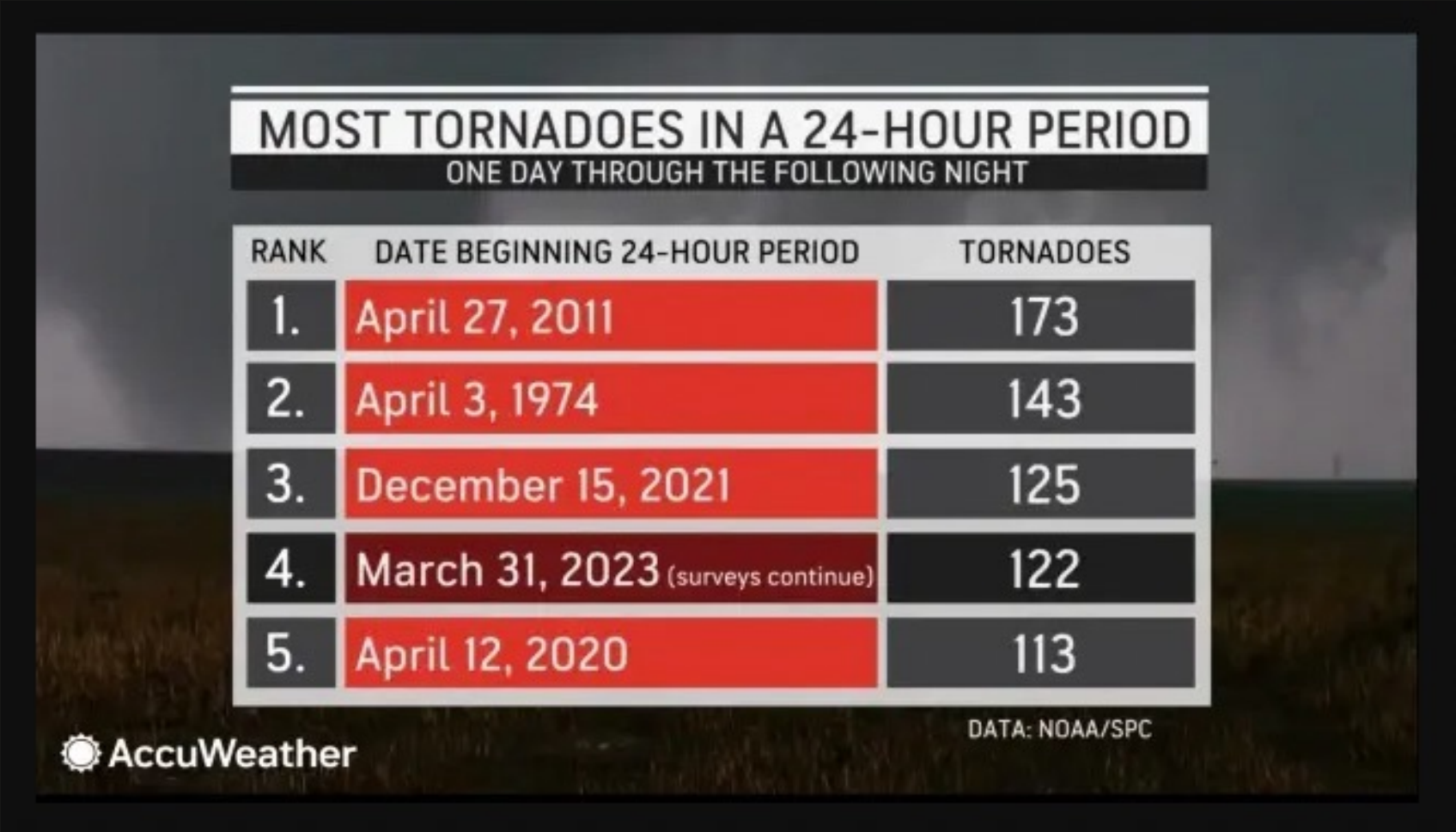
Director, Weather Warning Services
Senior Meteorologist
AccuWeather For Business



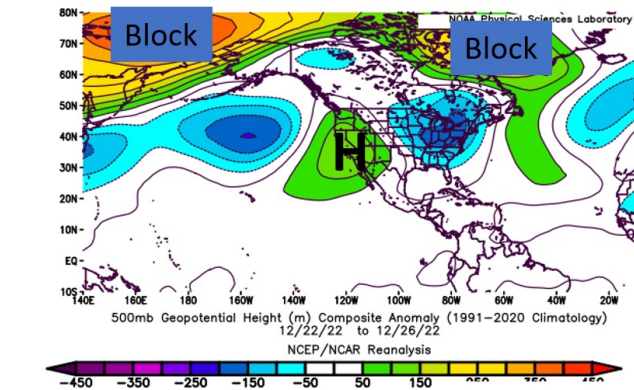
Tornado Outbreaks

Guy Pearson, Director, Weather Warning Services and Senior Meteorologist, AccuWeather
For Business



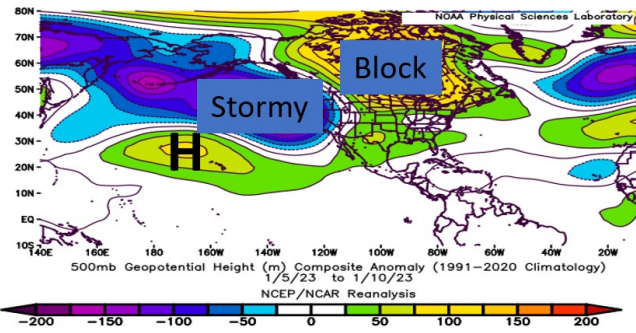
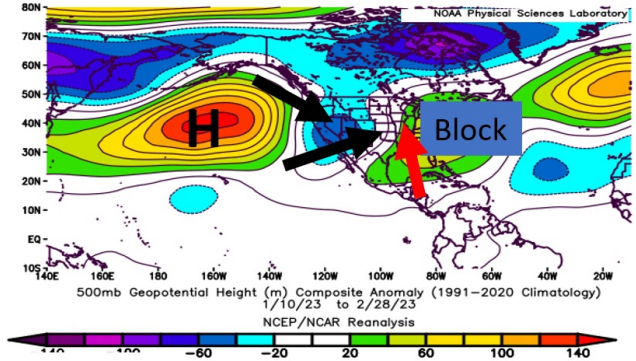


How the Pattern Formed for Atmospheric Rivers and Severe Weather



1. Pattern started with strongest blocking pattern of the winter season in late December

2. Stormy pattern intensifies from Asia to West Coast in early January – “Atmospheric Rivers”



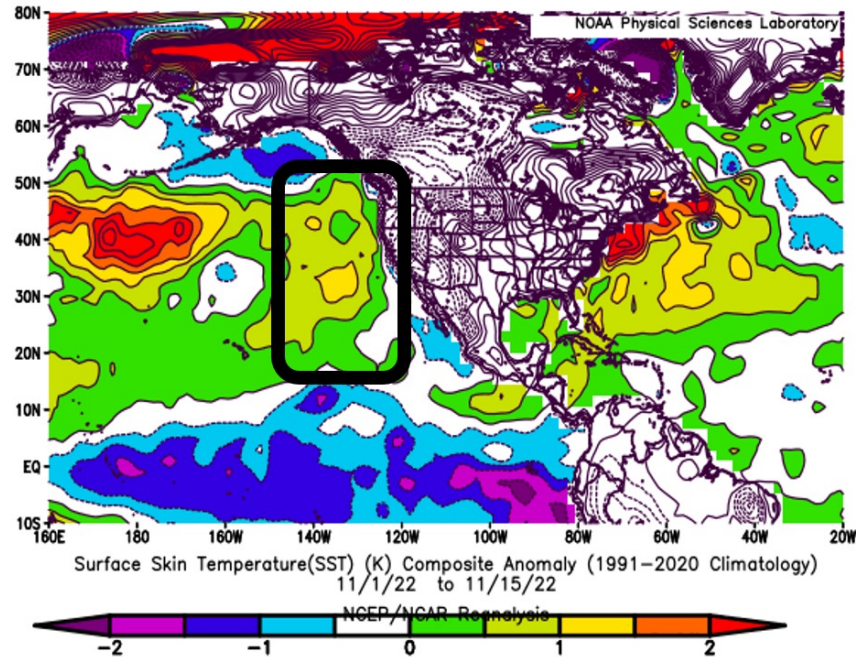
Pattern develops and holds; warm, moist air forced north from Gulf by eastern block (Red Arrow), storm track from West toward Midwest (Black Arrow); mean upper high in north-central Pacific farther west and south from typical La Nina pattern



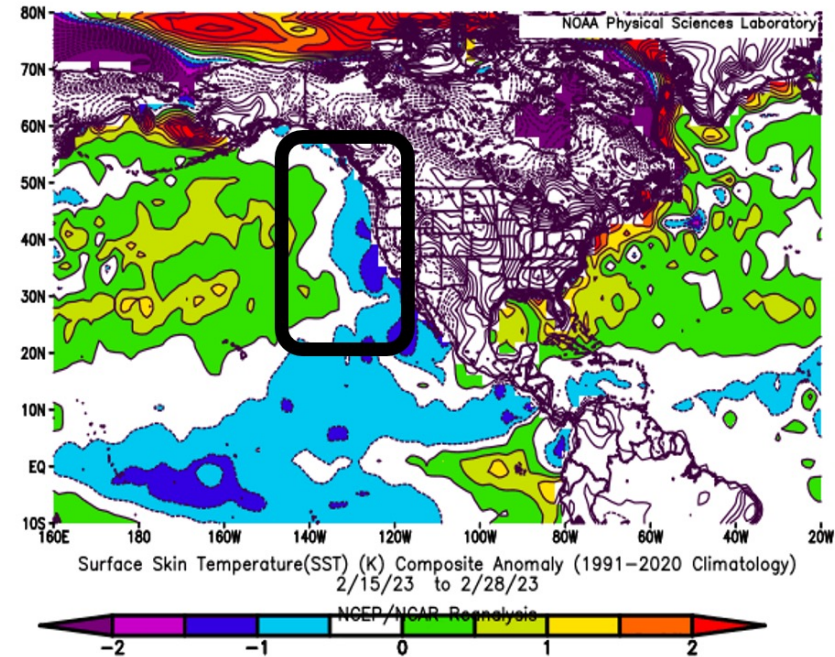
Pattern Enhanced by Change in SST Anomalies Eastern Pacific

Strong Negative PDO – Stronger West Coast Storms/More Warmth East

Sea Surface Temperature Anomalies
November 1-15, 2022



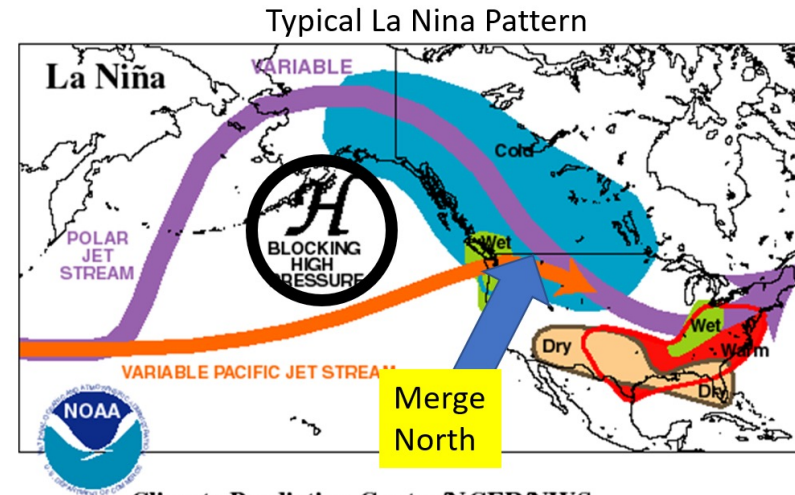
Sea Surface Temperature Anomalies
February 15-28, 2023





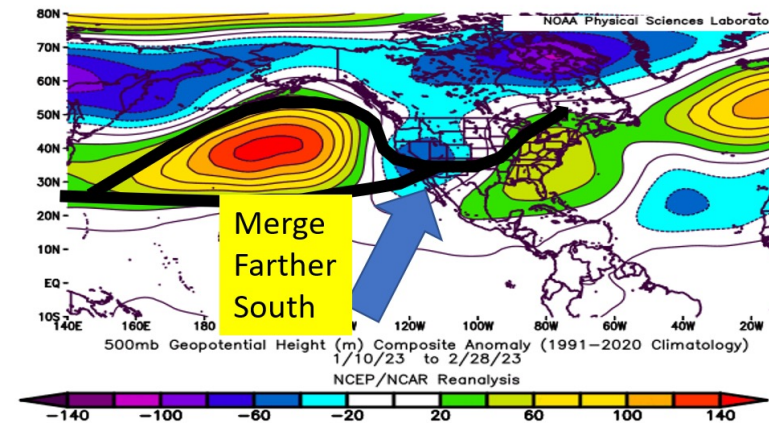
Severe Weather Through May 2023

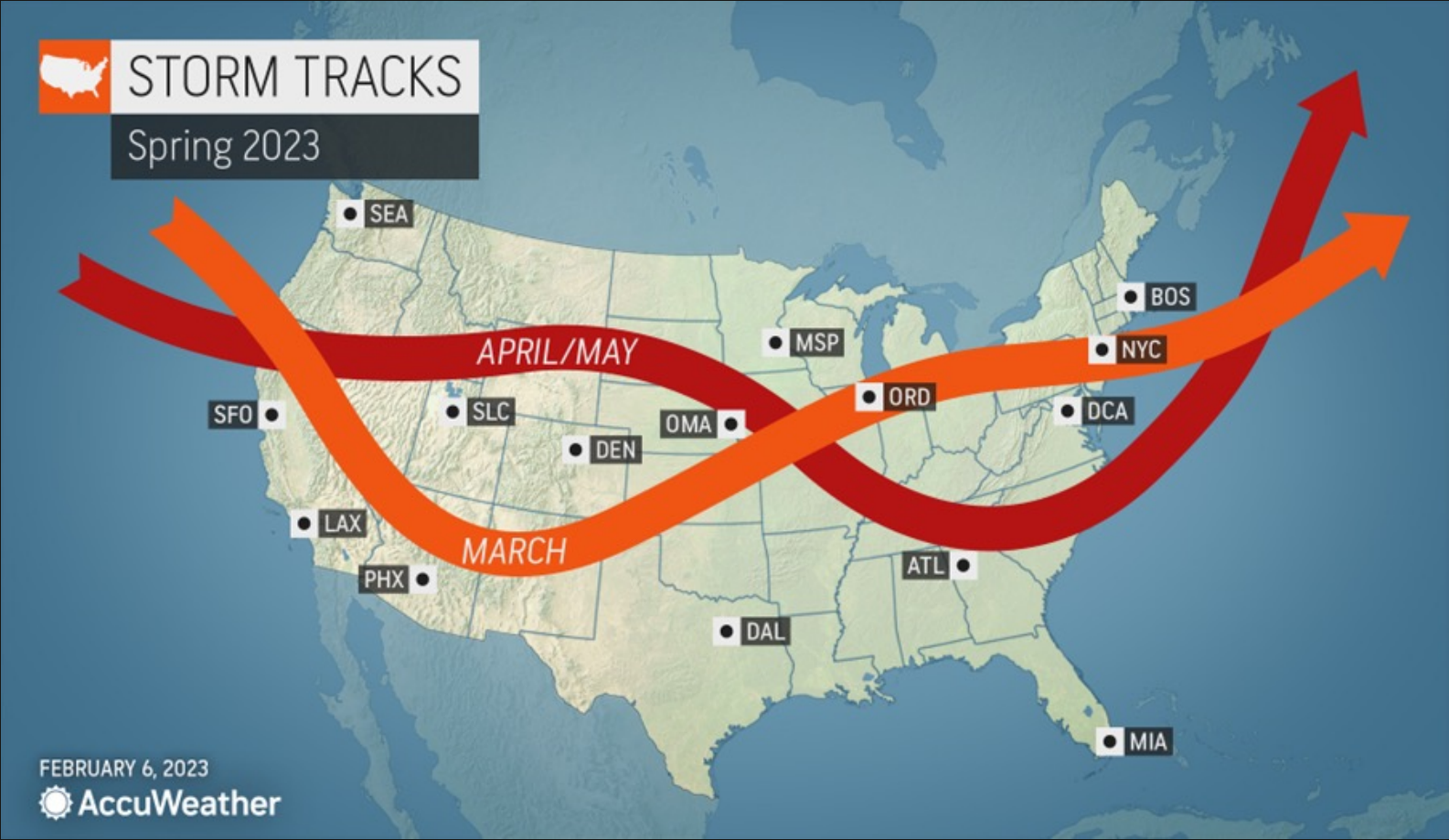
- Atmospheric Rivers intense with shift of upper high pressure in the north-central Pacific (farther south and west compared to 2021-22 season and typical La Nina pattern)
- Stormy West, intensifies high pressure East; large temperature gradient develops.
- Storm track West into Plains, strong low-level flow from warm Gulf of Mexico converge
- Upper-level energy from West Coast storms and warm moist Gulf results in severe storms, big tornado outbreaks in January and February.

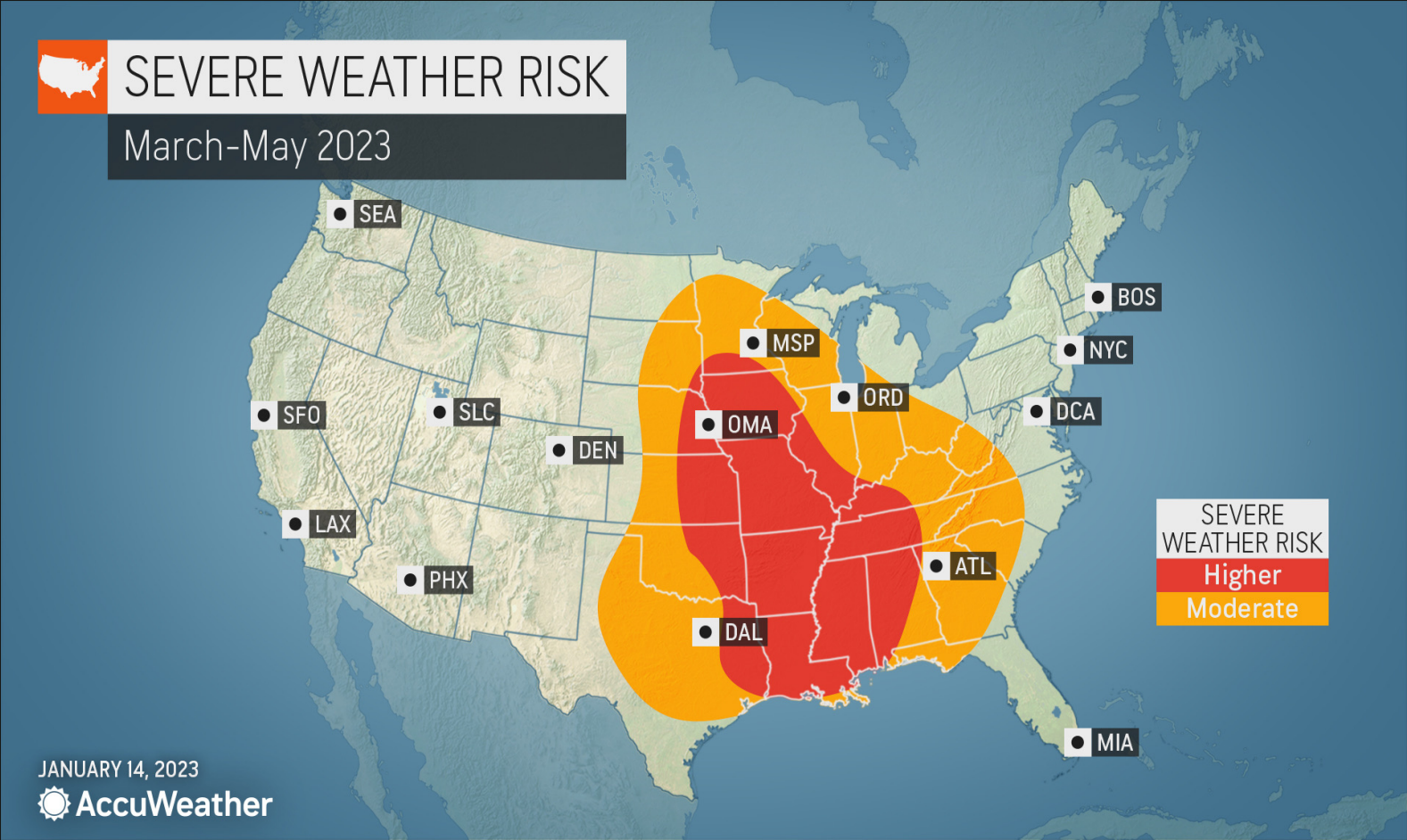


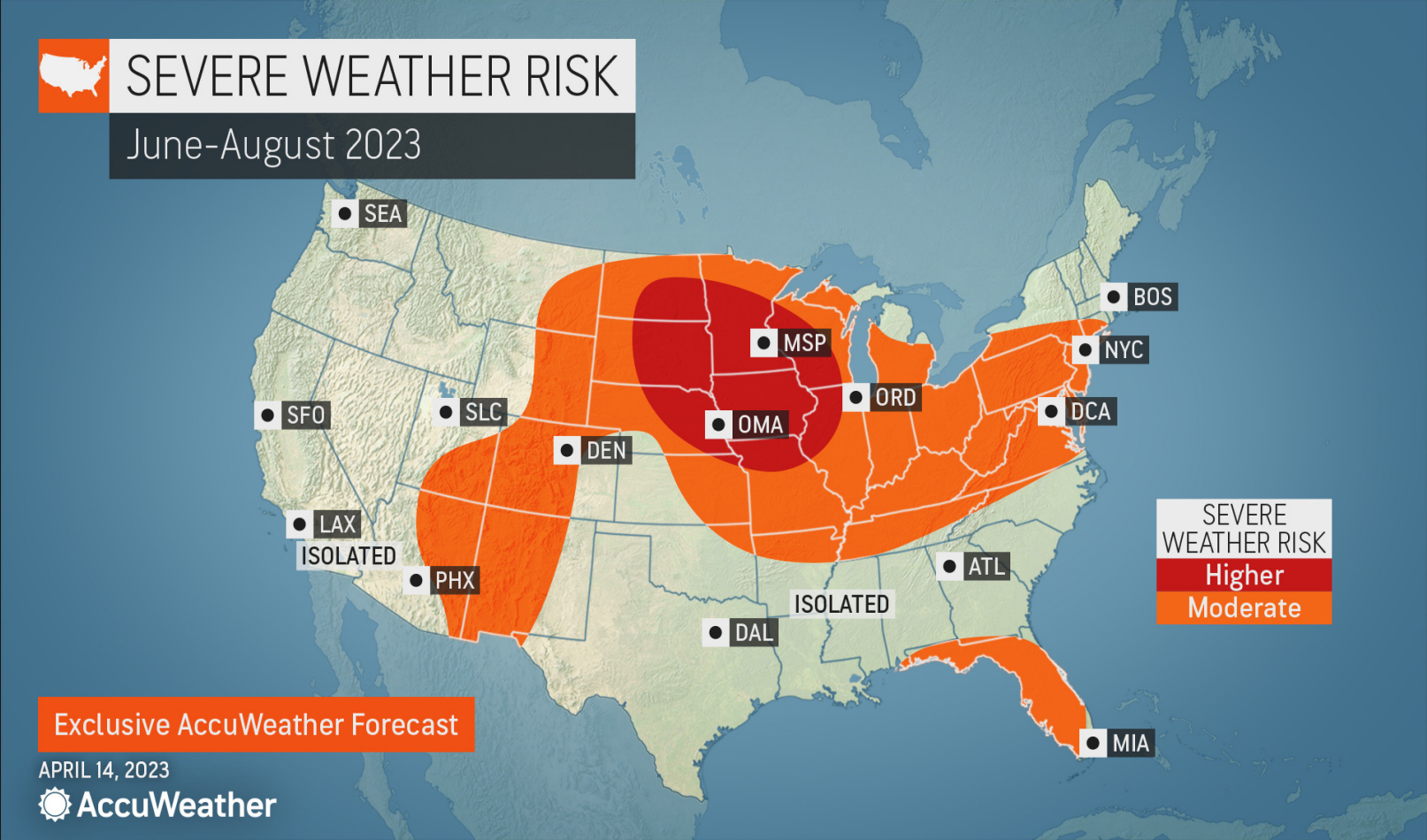
Climate Prediction Center/NCEP/NWS

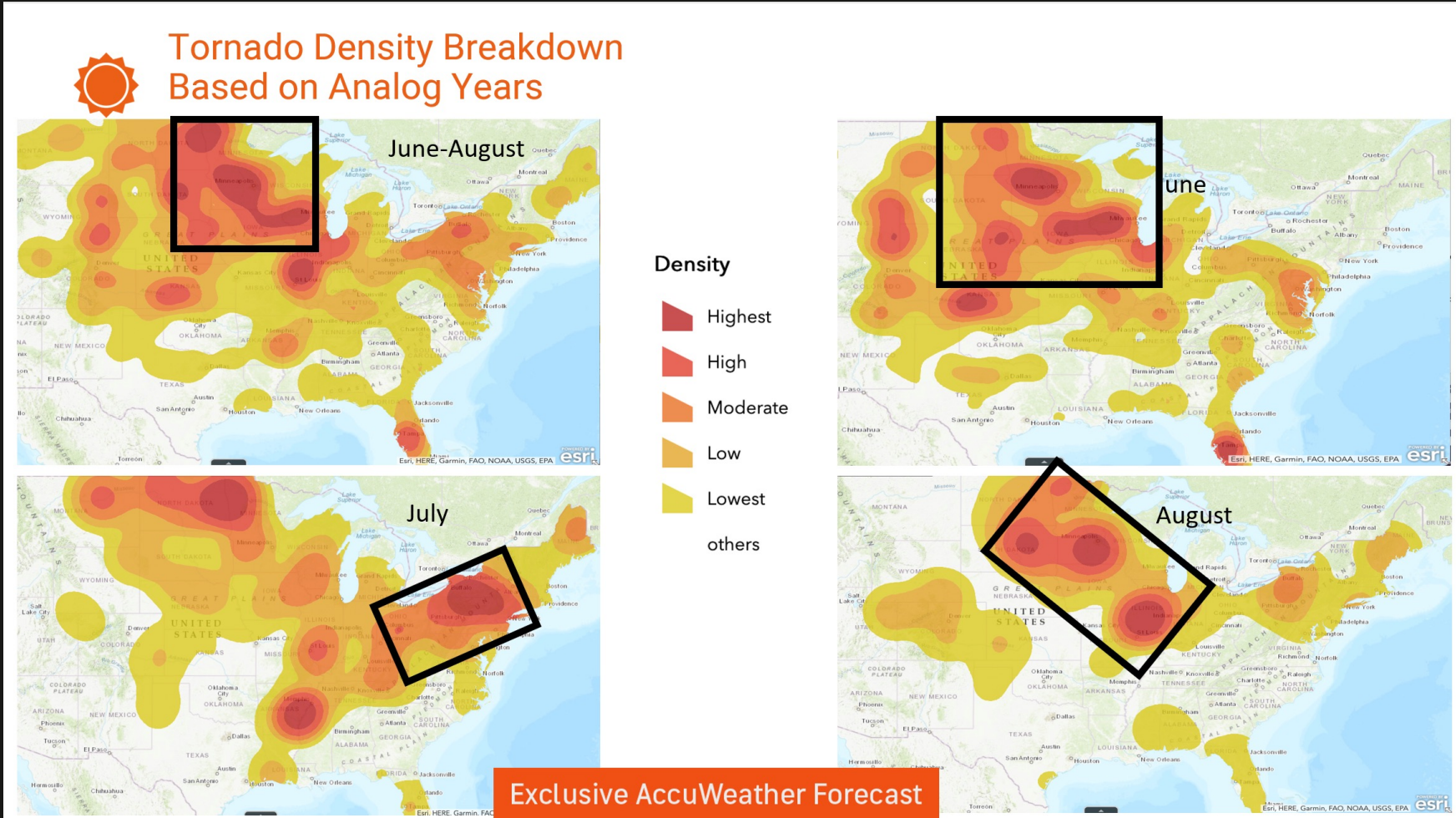
Different La Nina Pattern in 2023













Tornado Outlook Summer 2023

(Data is from the Storm Prediction Center)

Exclusive AccuWeather Forecast

Year	Year Total	May	June	July	August	Notes
2001	1219	239	248	120	69	3 in Conn. In June June 13 Outbreak N. Central Plains; Carolinas July
2002	938	202	97	68	86	Tornadoes June N. Plains, July in New York
2006 (2x)	1117	141	119	71	80	Active June Plains, Tornado lower Hudson Valley July; active N. Plains Aug
2009 (2x)	1156	201	270	118	60	Worst was early 2009, sporadic Summer; Great Plains active June/July
2012 (2x)	939	121	111	37	38	Tropical storm Debby June Florida, very low count July, Hurricane Issacs Aug.
2014	886	130	286	85	33	Slow year, but June outbreak north-central Plains and Midwest
2018 (2x)	1126	170	155	92	81	Tornado outbreak mid July Iowa, Great Lakes Tornadoes August
	1225	268	213	134	83	1991-2020 average
	1054	172	179	82	63	Analog Average Tornadoes
2022	1350-1475	140-190	150-175	50-100	75-125	Forecast from 2022
2022	1143	239	123	64	35	2022 Results - *Preliminary as of 4/18/2023
2023	1055-1200 (545 Preliminary)	225-300 Near to Above	125-175 Below Avg.	50-100 Below Average	40-80 Near to Below	Prediction Red – Update /Green - Verification

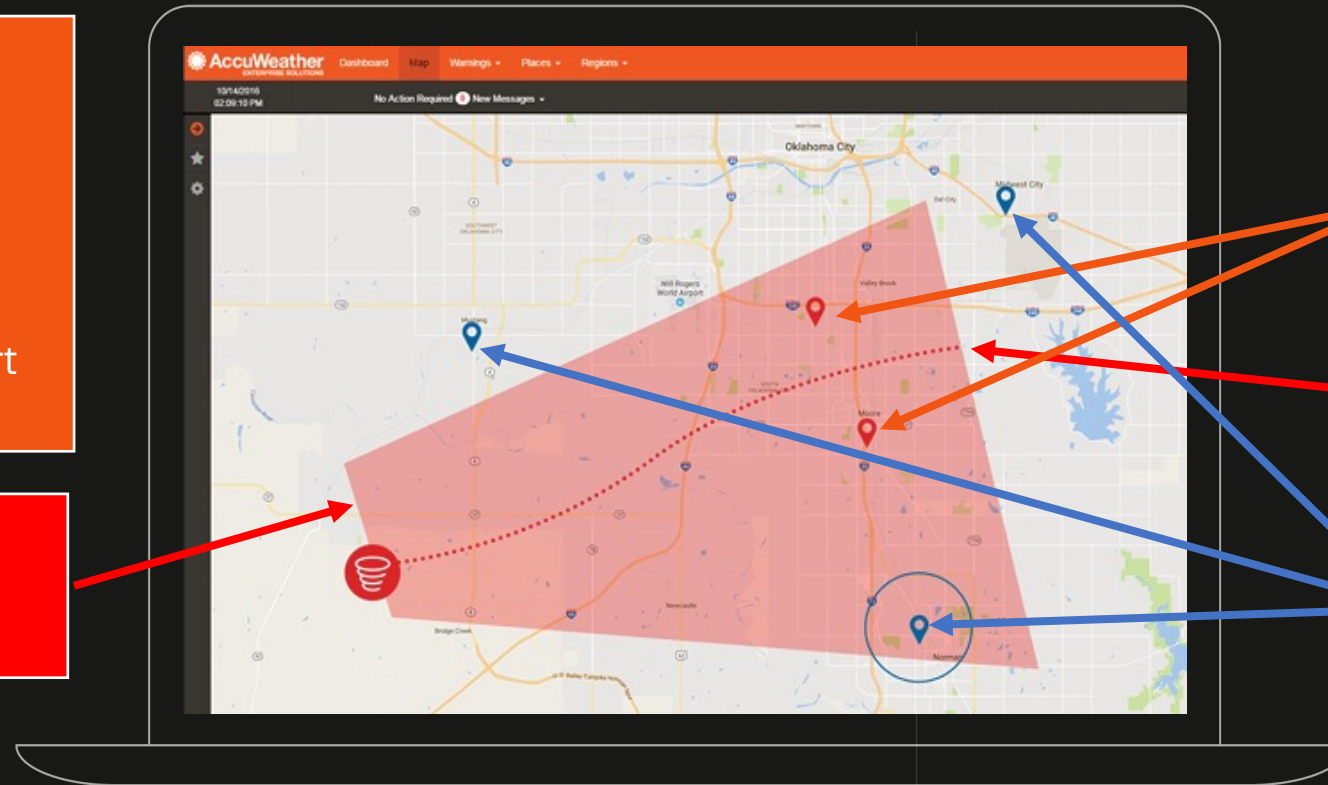
SkyGuard, Outdoor Warning Sirens, and FEMA Wireless Emergency Alerts

SkyGuard & NWS Warnings

All Locations:

- Received FEMA WEA
- Heard Sirens
- Received free app notifications
- Heard weather radio alert

NWS Tornado Warning Polygon



Received SkyGuard Tornado Warning

Tornado's Path

Received SkyGuard Reviewed Notification



Tracking Tornadoes: Better Protect Your Business

Don Coash, Senior Account Executive and Meteorologist, AccuWeather For Business

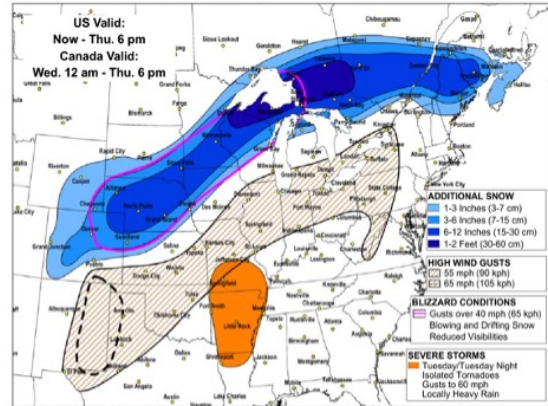
Long & short-term forecasts up to 10 days ahead

- Stay ahead of threats
- Highly visual interpretation

Major Winter Storm to Disrupt Holiday Travel

AccuWeather
For Business

Day: 11/26/2019 Time: 4:30 am CT Forecaster: Masse



HEAVY SNOW AND HIGH WIND TO DISRUPT HOLIDAY TRAVEL FROM PLAINS TO ATLANTIC CANADA!

IMPACTS AND TIMING:

The main adjustment made to this update was reducing the snowfall in the Rockies to account for amounts which have already occurred, and adding a region of severe storms to the Mississippi Valley.

A winter storm will continue to develop over the Central Plains this morning, causing heavy snow to fall across the region. This storm will strengthen and continue to move northeastward today. By this evening, snow will move into more of the Central to Northern Plains and Upper Midwest. Snow will begin Wednesday morning across portions of Northern and Central Ontario, and much of southern Quebec, drifting into New Brunswick, and interior portions of New England Wednesday evening into Thursday morning. The heaviest additional snowfall of 12-24 inches (30-60 cm) will fall from rates up to 27in (5 cm/hr) across far northern Wisconsin and the Upper Peninsula of Michigan through far western Quebec. A large swath of 6-12 inches (15-30 cm) is expected to impact portions of the Central Rockies and the Central Plains, as well as across portions of the Upper Midwest, Central to Northern Ontario, southern Quebec, western New Brunswick, and northern Maine. Snow will come to an end across the Rockies by this evening, the Central and Northern Plains through Wednesday afternoon, the Upper Midwest and Great Lakes by Wednesday night, and across New England and eastern Canada by Thursday night.

Severe storms will develop across southern Missouri, Arkansas and northern Louisiana this evening. Expect isolated tornadoes, wind gusts to 60 mph (100 kph) and locally heavy rain with this activity. Severe storms will drift eastward into the early tonight before diminishing. High wind will also occur across areas from the Central Plains this afternoon, across the Middle Mississippi Valley into the Great Lakes on Wednesday, with gusts up to 55 mph (90 kph) expected. Portions of eastern New Mexico and western portions of the Texas Panhandle will see gusts up to 55 mph (90 kph) occur today. Areas within the heaviest snowfall across the Central Plains through the Midwest will see wind gusts in excess of 40 mph (65 kph). This will lead to blizzard conditions with blowing and drifting snowfall along with reduced visibilities. Heavy snow and high wind will combine with increased amounts of traffic due to the holidays, leading to major disruptions across the hardest-hit areas. Travel delays, road and major interstate closures, and power outages are expected across areas impacted by heavy snow, severe storms, and high wind.

An update to this Storm Potential Notice (SPN) will be sent this afternoon.

Hurricane Irma Impact Timing

AccuWeather
For Business

Day: 9/5/2017 Time: 10 pm CT Forecaster: Putnam / Lavin



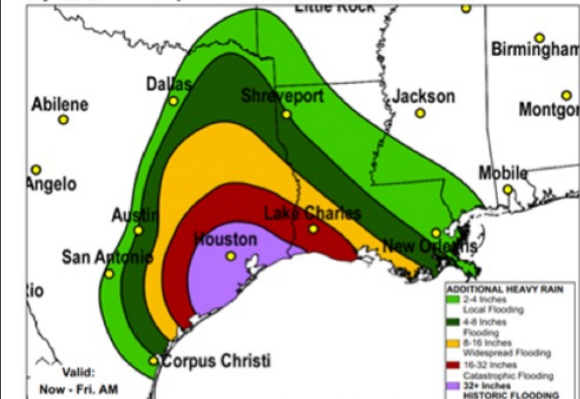
IMPACTS AND TIMING:

Hurricane Irma will continue its path toward the U.S. through the work week, and approach the mainland during the second half of the weekend. While it is too soon to predict an exact landfall, major impacts are expected for a large portion of the Southeast this Sunday (9/10) through Tuesday (9/12). With inconsistent forecast trends beyond Sunday, there remains a large area in the Southeast with a low potential of seeing major impacts. Within that region, a moderate potential of seeing major impacts exists for portions of the Carolinas through Florida. However, current forecasts predict the most likely area, and therefore high potential of major impacts, to be areas of southeastern Georgia through much of the Florida Peninsula, where hurricane force winds, flooding rain, and storm surge will all be concerns. While a shift in forecast track to the east or west may occur as the week continues, this represents our current and most confident prediction.

Harvey Continues to Bring Historic Flooding to Gulf Coast!

AccuWeather
For Business

Day: 08/27/2017 Time: 3 pm CT Forecaster: Glenn



HARVEY WILL BRING UNPRECEDENTED FLOODING TO TEXAS AND SOUTHWESTERN LOUISIANA INTO THIS WEEK!

IMPACTS AND TIMING:

This update reflects additional rainfall totals expected to occur through the end of this week across eastern Texas and Louisiana, as Tropical Storm Harvey continues to plague the region. Although rainfall amounts of 15-25 inches have already fallen across southwestern Texas, including the Houston area, additional amounts above 32 inches will lead to further long-term, devastating flooding. With this update, the eastern extent of the rainfall totals has been reduced, and the highest rainfall bands have been moved northeastward. Additional totals of 16-32 inches have been expanded to include areas as far north as College Station, TX and into Lake Charles, LA. Additional totals of 32 inches are also expected from southwest of Houston towards Beaumont, TX. Rates will exceed 47in in the heaviest, most persistent bands.

Major winter storm

Hurricane Irma

Hurricane Harvey

AssetReport™

WHAT IS ASSETREPORT?

AssetReport provides the most powerful weather insights associated with your specific risk exposure at one or multiple asset locations. Skip the time-consuming task of interpreting maps and data to determine which locations will be affected. Use AssetReport to better understand weather events and make informed decisions regarding expected impact throughout your entire footprint.

BENEFITS

Gain competitive advantage. How will your company benefit from knowing the exact impact and timing of dangerous weather at each of your locations?

- Modify staffing levels to keep employees safe
- Prepare equipment to reduce shutdown time
- Pre-position claims adjusters or other resources
- Determine where to focus site preparations
- Re-route or speed up shipments
- Prepare to meet local supply and demand needs
- Anticipate and better manage retail foot traffic



Quickly obtain actionable intelligence when hurricanes threaten your business

- Intersect the forecast with your assets
- Helps you communicate the impact to your business

Easy-to-read reports consist of start and stop times for tropical storm and hurricane-force winds, custom weather criteria for your asset locations, and business-focused discussions, including economic impact, all created by expert meteorologists

Actionable intelligence, including rainfall amounts, storm surge, maximum wind gusts and more is distributed by email for easy organizational dissemination

Monitor sites and assets on a per-location basis, including key customer locations, suppliers or anywhere that matters to your organization

Quickly reference custom data you can upload in relation to weather impacts including asset locations, employee and store phone numbers, building type, generator power availability, and any other key information you wish to display to help with planning and executing your response

Export the table to Excel or import into your own analytics software to achieve deeper, more

Name	State	Group	Earliest Tropical Force Wind	Latest Tropical Force Wind	Rainfall Min	Rainfall Max
Store 843	MS	Store	11/10/2019 10:00 PM +0000	11/11/2019 07:00 PM +0000	8	16
Store 929	MS	Store	11/10/2019 02:00 PM +0000	11/11/2019 07:00 AM +0000	8	16
Store 1022	LA	Store	11/09/2019 11:00 PM +0000	11/10/2019 09:00 PM +0000	8	16
Store 1045	LA	Store	11/09/2019 07:00 PM +0000	11/10/2019 06:00 PM +0000	8	16
Store 1046	LA	Store	11/11/2019 02:00 AM +0000	11/11/2019 04:00 PM +0000	8	16
Store 222	LA	Store	11/10/2019 05:00 AM +0000	11/11/2019 03:00 AM +0000	8	16
Store 879	LA	Store	11/10/2019 09:00 AM +0000	11/11/2019 07:00 AM +0000	8	16
MS Data Center 1	MS	Data Center	11/11/2019 12:50 AM +0000	11/11/2019 11:00 AM +0000	8	16
LA Data Center 1	LA	Data Center	11/10/2019 03:00 AM +0000	11/11/2019 12:50 AM +0000	8	16
LA Data Center 2	LA	Data Center	11/09/2019 04:00 AM +0000	11/10/2019 18:50 AM +0000	8	16
Rochester Heights	LA	Data Center	11/09/2019 09:00 AM +0000	11/10/2019 10:00 AM +0000	8	16
LA Data Center 4	LA	Data Center	11/09/2019 11:00 PM +0000	11/10/2019 11:00 PM +0000	8	16
South Centre Park	LA	Data Center	11/09/2019 02:00 PM +0000	11/10/2019 07:00 AM +0000	8	16
Tennant Street West	LA	Data Center	11/09/2019 12:00 AM +0000	11/09/2019 11:00 PM +0000	8	16
West Rumballion	LA	Data Center	11/10/2019 12:00 PM +0000	11/11/2019 06:00 AM +0000	8	16
Northwest DC 1	LA	Distribution Center	11/09/2019 03:00 PM +0000	11/09/2019 11:00 PM +0000	8	16
Northwest DC 2	LA	Distribution Center	11/09/2019 10:00 AM +0000	11/10/2019 12:00 PM +0000	8	16
DC 3 Center	LA	Distribution Center	11/10/2019 05:00 AM +0000	11/11/2019 02:00 AM +0000	8	16
Northwest DC 4	LA	Distribution Center	11/09/2019 07:00 PM +0000	11/10/2019 06:00 PM +0000	8	16
West DC 5	LA	Distribution Center	11/09/2019 04:00 PM +0000	11/10/2019 04:00 PM +0000	8	16
South DC 6	LA	Distribution Center	11/10/2019 06:00 AM +0000	11/10/2019 10:00 AM +0000	8	16
South DC 7	LA	Distribution Center	11/09/2019 10:00 PM +0000	11/10/2019 03:00 AM +0000	8	16
West DC 8	LA	Distribution Center	11/10/2019 03:00 AM +0000	11/10/2019 06:00 PM +0000	8	16
North Gray CC						
Viewing Grove C						

IMPACT BY LOCATION

Severe Hazards:

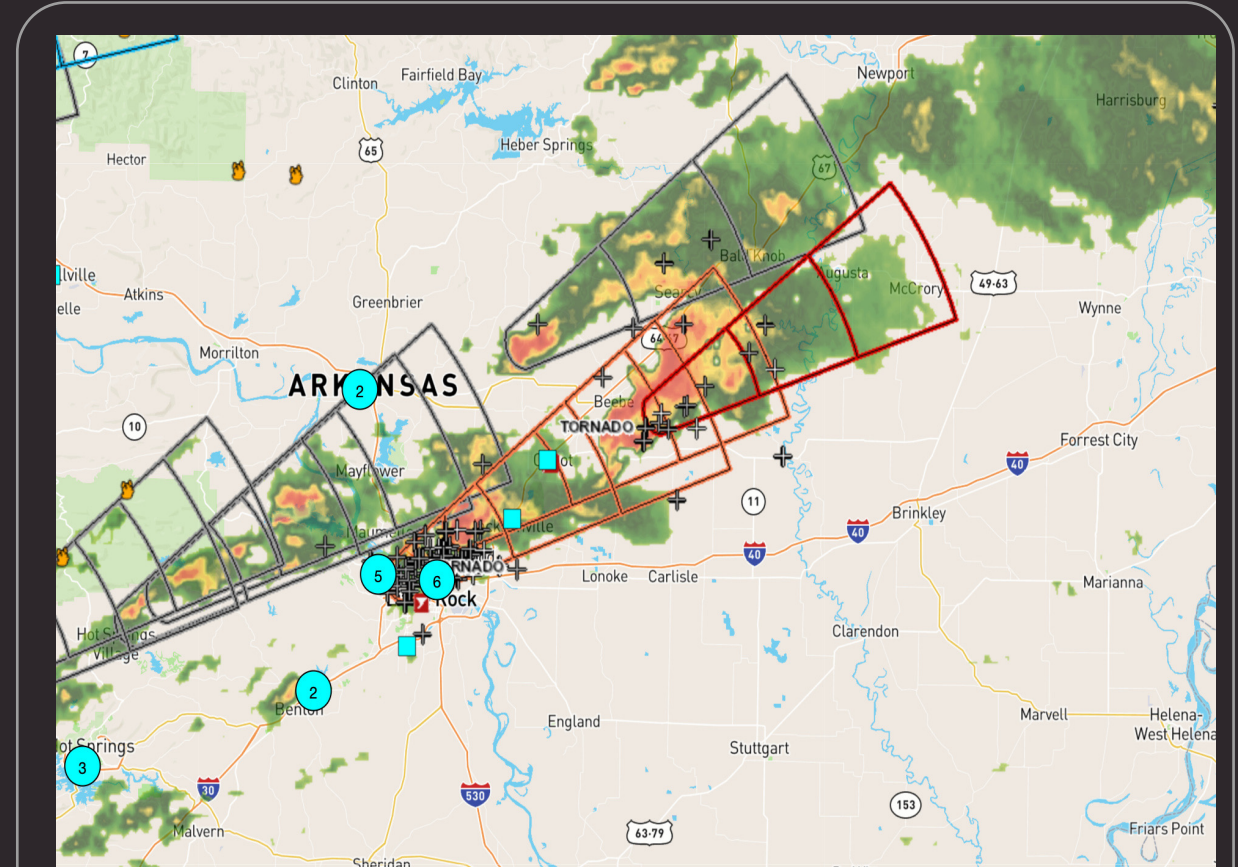
Name	Radius	Locale	Type	State	Earliest Tropical Force Wind	Earliest Hurricane Force Wind	Latest Tropical Force Wind	Latest Hurricane Force Wind
Store #25	2	US/Eastern	Operations	FL	11/21/2019 2:00 PM EST	11/21/2019 4:00 PM EST	11/21/2019 6:00 PM EST	11/21/2019 5:00 PM EST
Store #33	2	US/Eastern	Operations	FL	11/21/2019 3:00 PM EST		11/21/2019 10:00 PM EST	
Store #35	2	US/Eastern	Operations	FL	11/21/2019 4:00 PM EST		11/21/2019 11:00 PM EST	
Store #36	2	US/Eastern	Operations	GA	11/22/2019 3:00 AM EST	11/22/2019 7:00 AM EST	11/22/2019 12:00 PM EST	11/22/2019 8:00 AM EST
Store #47	2	US/Eastern	Operations	GA	11/22/2019 8:00 AM EST	11/22/2019 11:00 AM EST	11/22/2019 4:00 PM EST	11/22/2019 1:00 PM EST

Download CSV

SkyGuard Warning Service

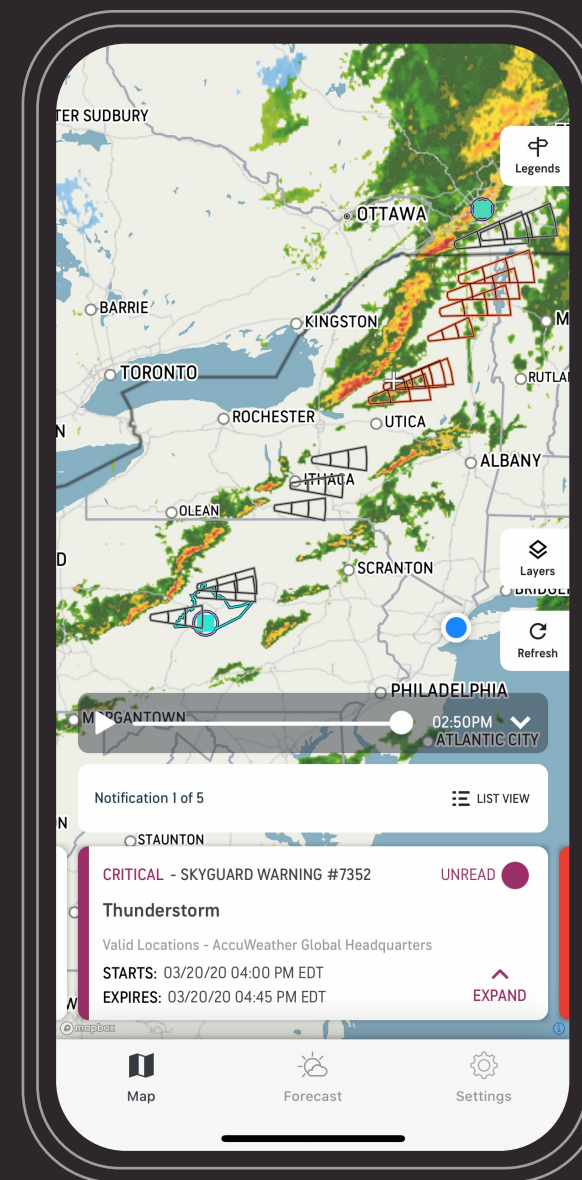
Benefits of SkyGuard Warnings

- Proactive, site-specific alerts offer warnings well before severe weather impacts occur
- Live one-on-one or group consultation is provided by our weather experts anytime, day or night
- Alerts delivered in a format that aligns with your organizational emergency management plan
- Reviewed Tornado Notifications, we monitor your pinpoint location and alert you when a tornado isn't threatening your assets
- All-clear notifications are sent when a threat is over, minimizing weather-related downtime
- All alerts are delivered via push notification from the SkyGuard mobile app, available on Android and iOS



Products and services

- SkyGuard Warnings
- Null Tornado Notifications (now called "Reviewed Warnings")
- Proactive Storm Potential Notices & Daily Hazardous Weather Updates
- AccuWeather Hurricane Impact Service
- Long Range Daily Tropical Update
- AccuWeather For Business Portal
- AccuWeather Long-Range Forecasts



January 24, 2023 – Deer Park, Texas

Multiple Tornadoes in the South, Dangerous EF-1 Tornado in Deer Park

15

MINUTES OF ADVANCE NOTICE
BEFORE AN EF-3 TORNADO
MOVED INTO THE CITY

15

ONLY ACCUWEATHER PROVIDED
ADDITIONAL MINUTES FOR PEOPLE TO
SHELTER

25

MINUTES OF ADDITIONAL TIME
COMPARED TO GOVERNMENT AND
OTHER WEATHER PROVIDERS

1:1

CONSULTATIONS PROVIDED TO
ACCUWEATHER FOR BUSINESS
CLIENTS

February 8, 2023 - Louisiana

Damaging EF-1 & EF-2 Tornadoes

15

MINUTES OF ADVANCE NOTICE
BEFORE AN EF-2 TORNADO
TOUCHED DOWN

16

MINUTES OF ADVANCE NOTICE
BEFORE AN EF-1 TORNADO
TOUCHED DOWN

12

MINUTES OF ADDITIONAL TIME
COMPARED TO GOVERNMENT AND
OTHER WEATHER PROVIDERS

1:1

CONSULTATIONS PROVIDED TO
ACCUWEATHER FOR BUSINESS
CLIENTS

March 16, 2023 – Dallas Metroplex

Destructive EF-1 Tornadoes

4

DAYS ADVANCE NOTICE OF RISK
OF "SIGNIFICANT SEVERE
WEATHER OUTBREAK"

33

MINUTES OF ADVANCE NOTICE OF EF-1
TORNADO IN DALLAS COUNTY

60

MINUTES OF ADVANCE NOTICE
BEFORE DANGEROUS WINDS MOVE
THROUGH DFW AIRPORT

1:1

CONSULTATIONS PROVIDED TO
RAILROADS, CONVENIENCE
STORE CHAINS, FINANCIAL
INSTITUTIONS

March 2023 – Southern U.S.

Destructive, Deadly Tornado Outbreak

5

DAYS IN ADVANCE OF OUTBREAK,
ACCUWEATHER ISSUES STORM
POTENTIAL NOTICE

20

MINUTES OF ADVANCE NOTICE FOR
ACCUWEATHER FOR BUSINESS
CUSTOMERS OF EF-3 TORNADO

53%

MORE ADVANCE NOTICE THAN ALL
WEATHER PROVIDERS OF DESTRUCTIVE
EF-4 ROLLING FOLK, MS TORNADO

1:1

CONSULTATIONS PROVIDED TO
AUTOMOTIVE CLIENTS TO
ENSURE PEOPLE, PROPERTY AND
ASSETS WERE PROTECTED

Q & A

Contact us to learn more about all the ways you can partner with AccuWeather.

www.afb.accuweather.com



Thank you

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www.afb.accuweather.com



WHERE WEATHER MEETS BUSINESS

Convergence Blog

Get the latest on the importance of incorporating site and threshold-specific weather information into your emergency response plans. Case studies, high-impact forecast overviews, storm summaries, client stories, and more.

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Hidden cost of hailstorms: The impact on your business

HAVOC OF HAILSTORMS ON YOUR BUSINESS

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AccuWeather helps businesses better prepare for a tornado outbreak across the central U.S.



Surviving the storm: How retailers can prepare for severe weather

RETAIL WEATHER WORRIES: Severe weather can



Meet the Mets: AccuWeather's Billy Clark

Billy Clark's love for weather goes back to his