



Extreme Weather Preparedness for World Cup Cities (EWP4WCC) Pilot Training

 COLUMBIA CLIMATE SCHOOL
NATIONAL CENTER FOR DISASTER PREPAREDNESS

**HALEY
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Course Goal and Target Audience

- **Course goal:** Plan for extreme weather hazards at 2026 FIFA World Cups
- **Target audience:** Emergency managers, transport managers, facility managers
- **Course focus:** Risk assessment and mitigation using publicly available data sources and risk management tools for multiple large stadium venues/transit

Five Priority Hazards

1. Extreme heat
2. Lightning
3. Tornadoes
4. Extreme Rainfall / Flash Flooding
5. Wildfire/particulate matter

Agenda

Title	Description	Time
Lesson 1	Extreme Weather Events, Risk, and Vulnerability	15 min
Lesson 2	Focus on Extreme Weather, Facilities, and Transportation	20 min
Lesson 3	Mitigation of Extreme Weather	15 min
Lesson 4	Artificial Intelligence for Preparedness Planning	5 min
	Course Conclusion	5 min

FIFA World Cup 2026

- 11 cities across the U.S.
- Available transportation services
- Stadium configuration
- Weather hazards



Location	Arena Name	Arena Type	Capacity	# of Games	Game Days	Countries
Atlanta	Mercedes-Benz Stadium	Retractable	42,500	8	June 15, 18, 21, 24, 27 July 1, 7, 15	9: Spain, Cabo Verde, Czechia, South Africa, Saudi Arabia, Morocco, Haiti, Uzbekistan, Congo DR
Boston	Gillette Stadium	Open	65,000+	7	June 13, 16, 19, 23, 26, 29 July 9	7: Haiti, Scotland, Norway, Morocco, England, Ghana, France
Dallas	AT&T Stadium	Retractable	80,000+	9	June 14, 17, 22, 25, 27, 30 July 3, 6, 14	8: Netherlands, Japan, England, Croatia, Argentina, Austria, Sweden, Jordan
Houston	NRG Stadium	Retractable	80,000	7	June 14, 17, 20, 23, 26, 29 July 4	9: Germany, Curaçao, Portugal, DR Congo, Netherlands, Sweden, Uzbekistan, Cabo Verde, Saudi Arabia
Kansas City	GEHA Field at Arrowhead Stadium	Open	76,416	6	June 16, 20, 25, 27 July 3, 11	7: Argentina, Algeria, Ecuador, Curaçao, Tunisia, Netherlands, Austria
Los Angeles	SoFi Stadium	Covered	70,240+	8	June 12, 15, 18, 21, 25, 28 July 2, 10	8: USA, Paraguay, Iran, New Zealand, Switzerland, Bosnia and Herzegovina, Belgium, Türkiye
Miami	Hard Rock Stadium	Open	64,767+	7	June 15, 21, 24, 27 July 3, 11, 18	7: Uruguay, Saudi Arabia, Cape Verde, Brazil, Scotland, Portugal, Colombia
New York New Jersey	MetLife Stadium	Open	82,500	8	June 13, 16, 22, 25, 27, 30 July 5, 19 (Final)	9: Brazil, Morocco, France, Senegal, Norway, Ecuador, Germany, Panama, England
Philadelphia	Lincoln Financial Field	Open	67,594	6	June 14, 19, 22, 25, 27 July 4	8: Côte d'Ivoire, Ecuador, Brazil, Haiti, France, Curaçao, Croatia, Ghana
SF Bay Area	Levi' Stadium	Open	68,500	6	June 13, 16, 19, 22, 25 July 1	8: Qatar, Switzerland, Austria, Jordan, Türkiye, Paraguay, Algeria, Australia
Seattle	Lumen Field	Open	69,000	6	June 15, 19, 24, 26 July 1, 6	8: Qatar, Switzerland, Austria, Jordan, Türkiye, Paraguay, Algeria, Australia

FIFA World Cup Grant Program (FWCGP)

- **Funding total:** \$625 million
- **Source:** U.S. Department of Homeland Security (DHS), Federal Emergency Management Agency (FEMA)
- **Availability:** Through the State Administrative Agency (SAA) and the Host City Committee Task Force
- **Eligibility:** The SAA distributes subawards to the Host City Committee Task Force
- **Supports:** training and exercises, staff background checks, cybersecurity defense, increased police and emergency response for venues, hotels, transportation hubs, and other critical infrastructure

https://www.fema.gov/fact-sheet/notice-funding-opportunity-nofo-fifa-world-cup#_Toc212550793

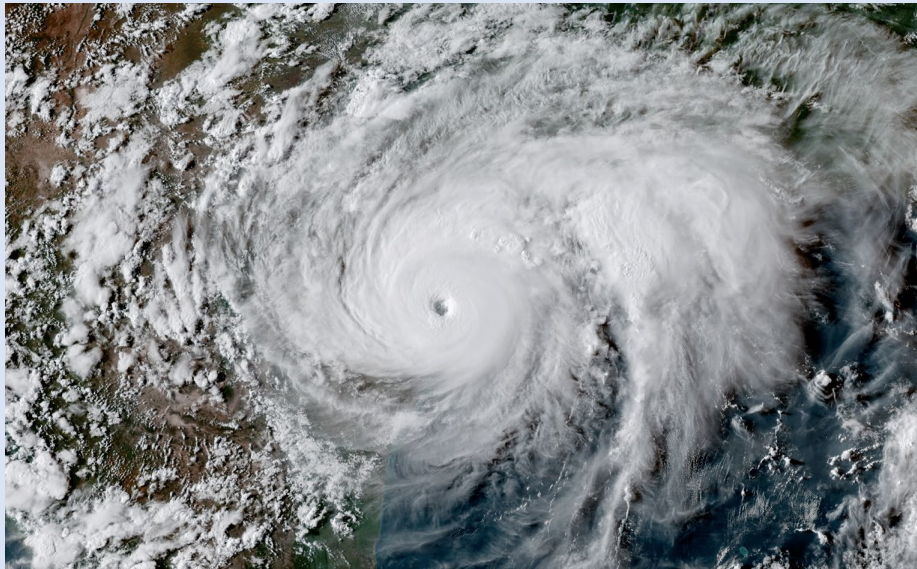
Lesson 1

Extreme Weather Events, Risk, and Vulnerability

Natural Hazard Definition

“...source of harm or difficulty created by a meteorological or geological event.”

(FEMA, 2013)



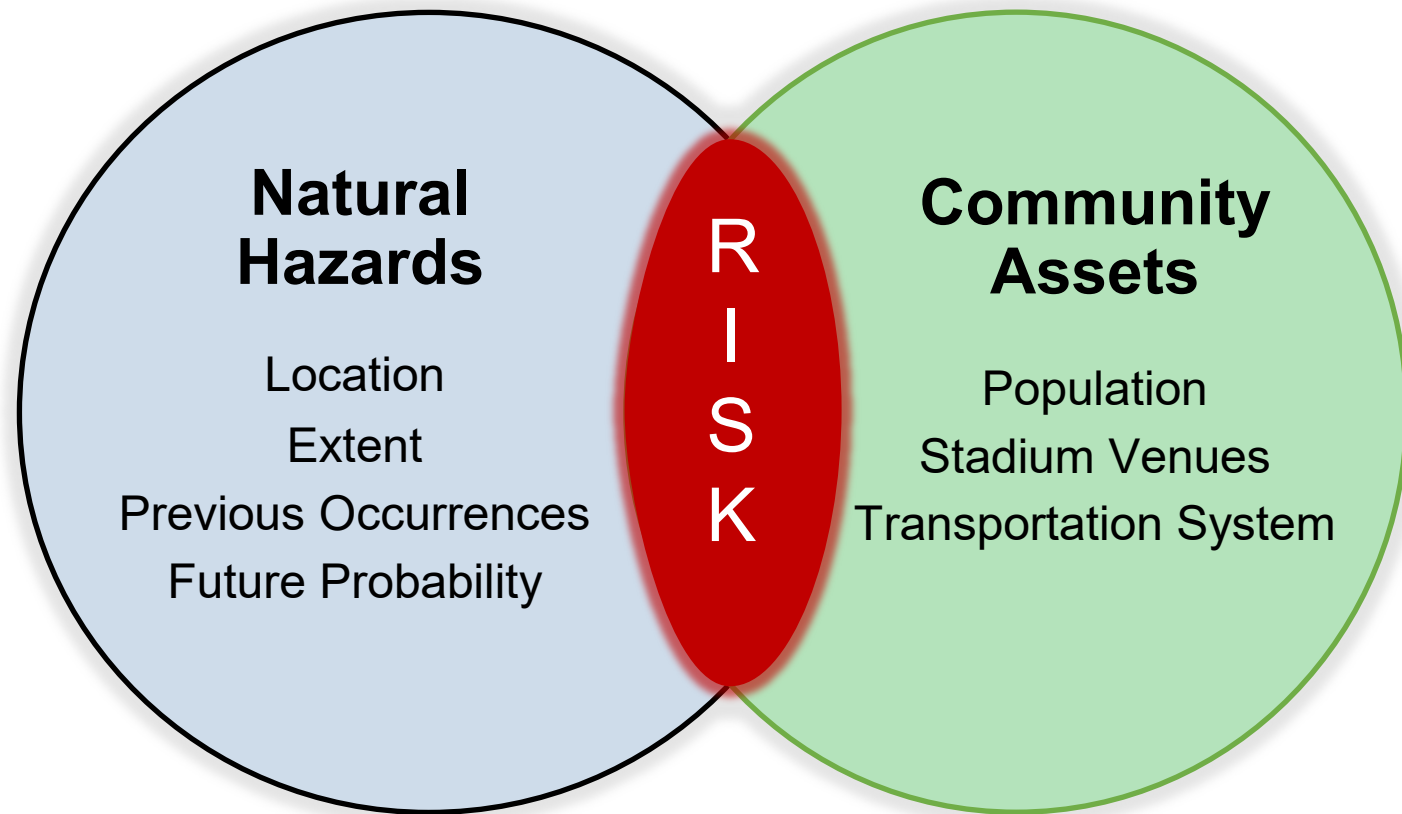
(NOAA, 2017)



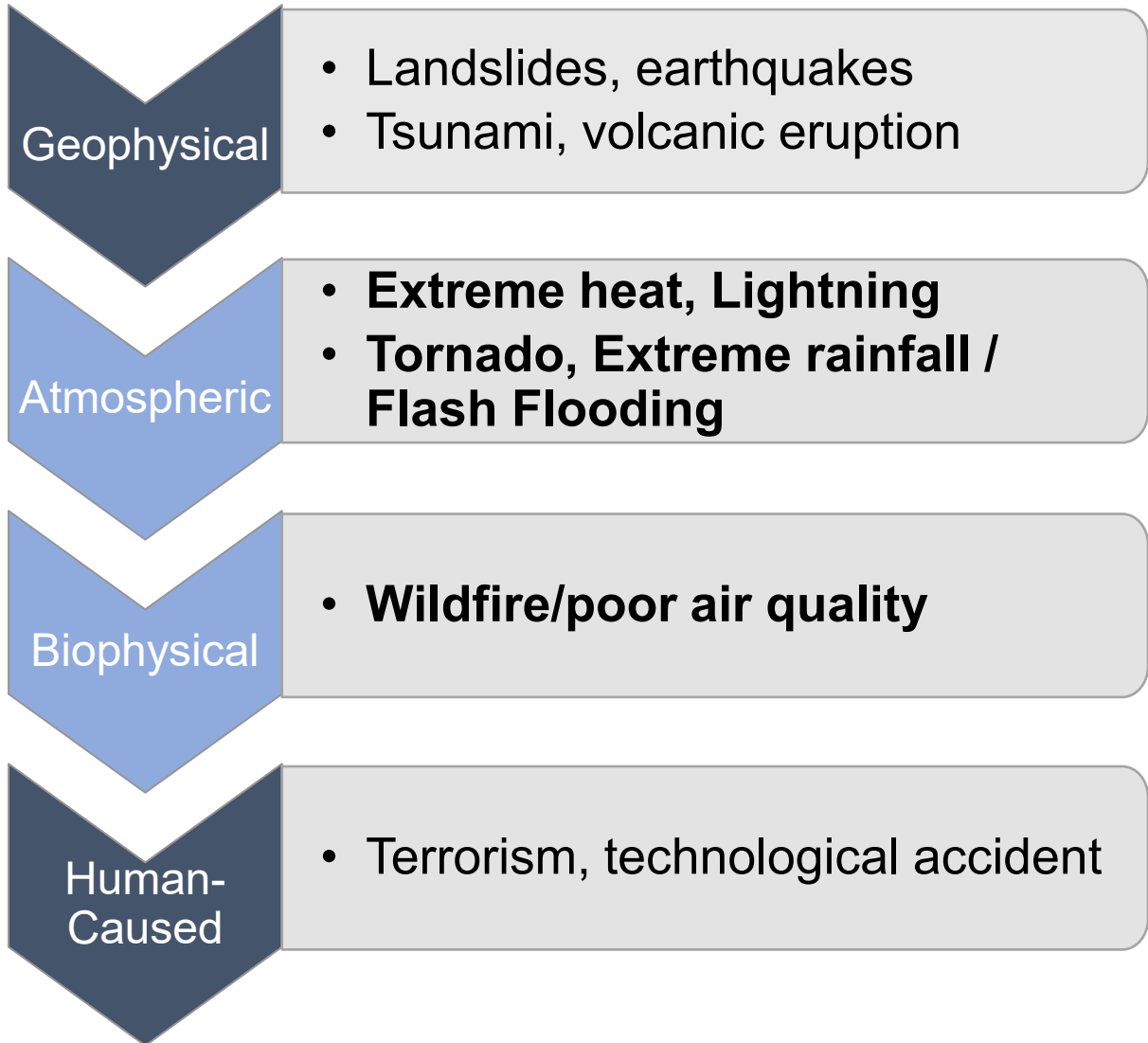
(FEMA, 2017)

Risk Definition

Risk = Likelihood X Consequence



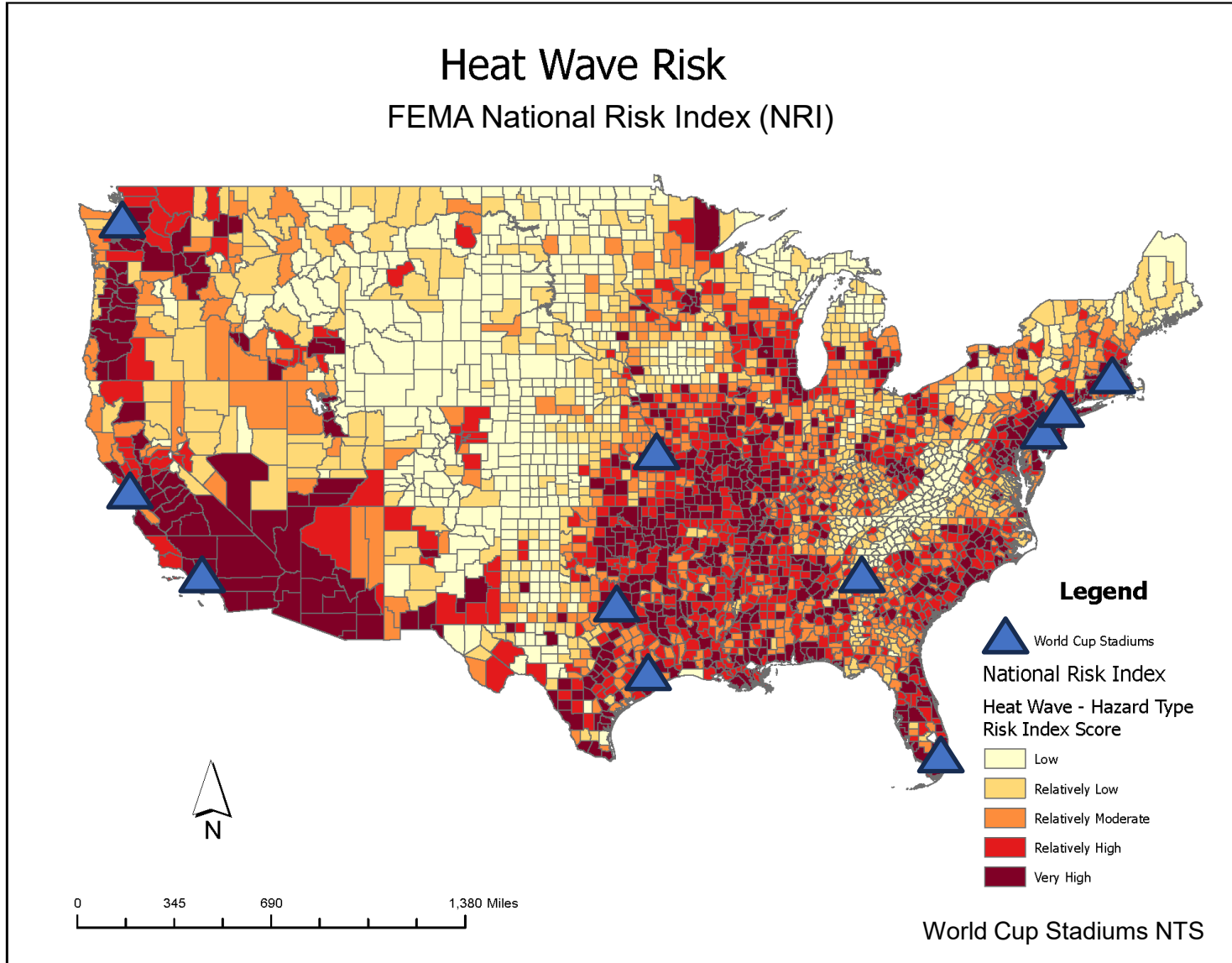
Types of Threats & Hazards



Extreme Weather Hazards = Training Focus



How to Characterize a Hazard



Location: Area impacted

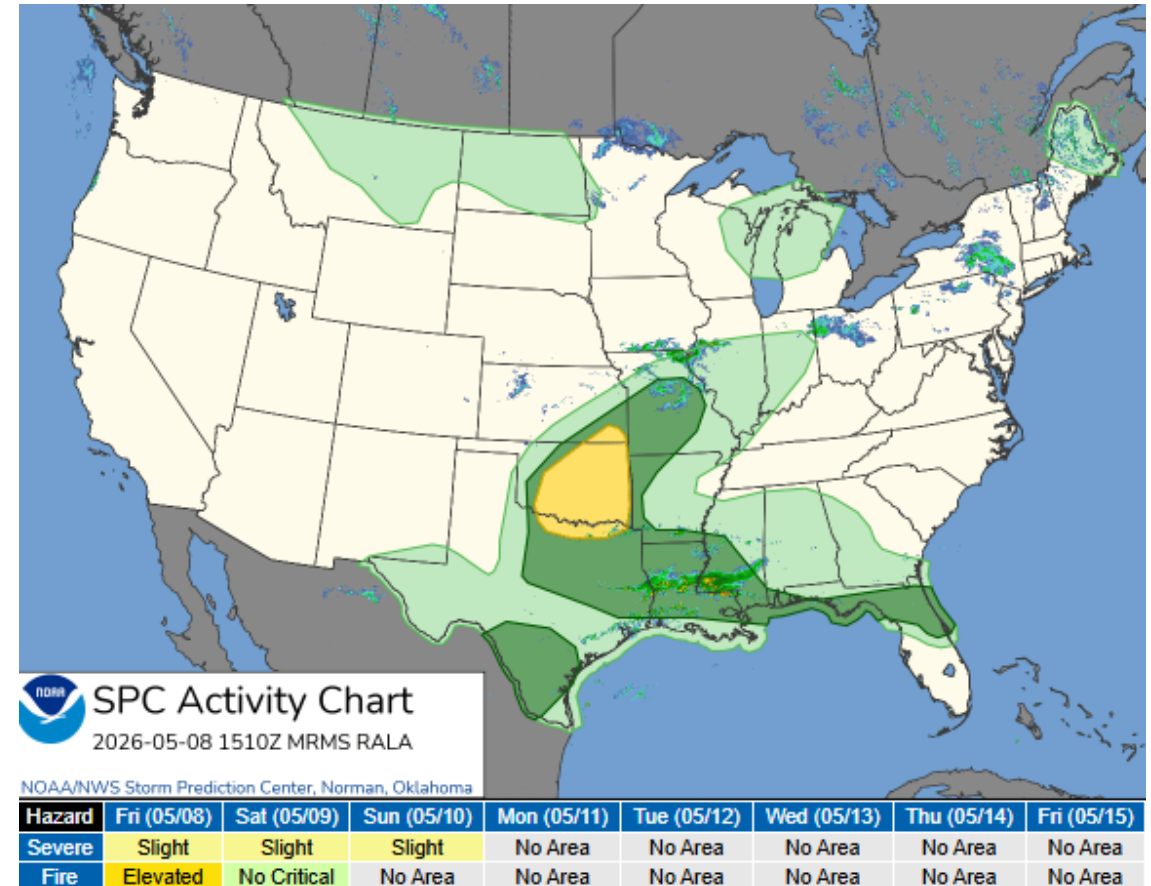
Frequency: past events, likelihood, chronic stressors (extreme heat) vs sudden shock (lightning)

Extent: Magnitude/strength (flood depth, wind, etc.)

Tools for Forecasting Extreme Weather Hazards

As event day approaches, assess the likelihood of extreme weather hazard occurrence using a variety of tools:

- Long range forecasts and outlooks (1 – 4 months)
- Medium range forecasts (3 – 6 days)
- Short range forecasts (12 – 48 hours)
- Current conditions (day of event)
 - NWS (National Weather Service) Watches, Warnings, and Advisories
 - Air Quality Index (AQI)



NOAA's NWS Storm Prediction Center

Three Months Out



May-Jun-Jul_2026

Seasonal Temperature Outlook

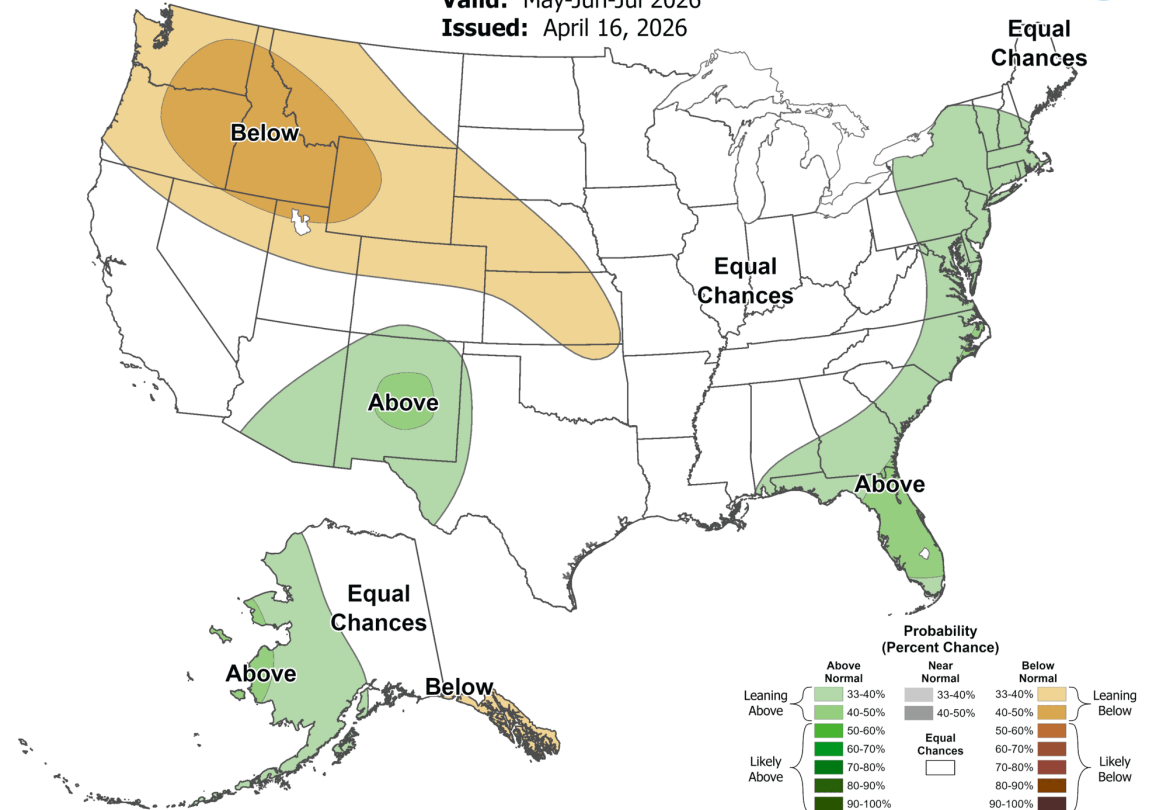
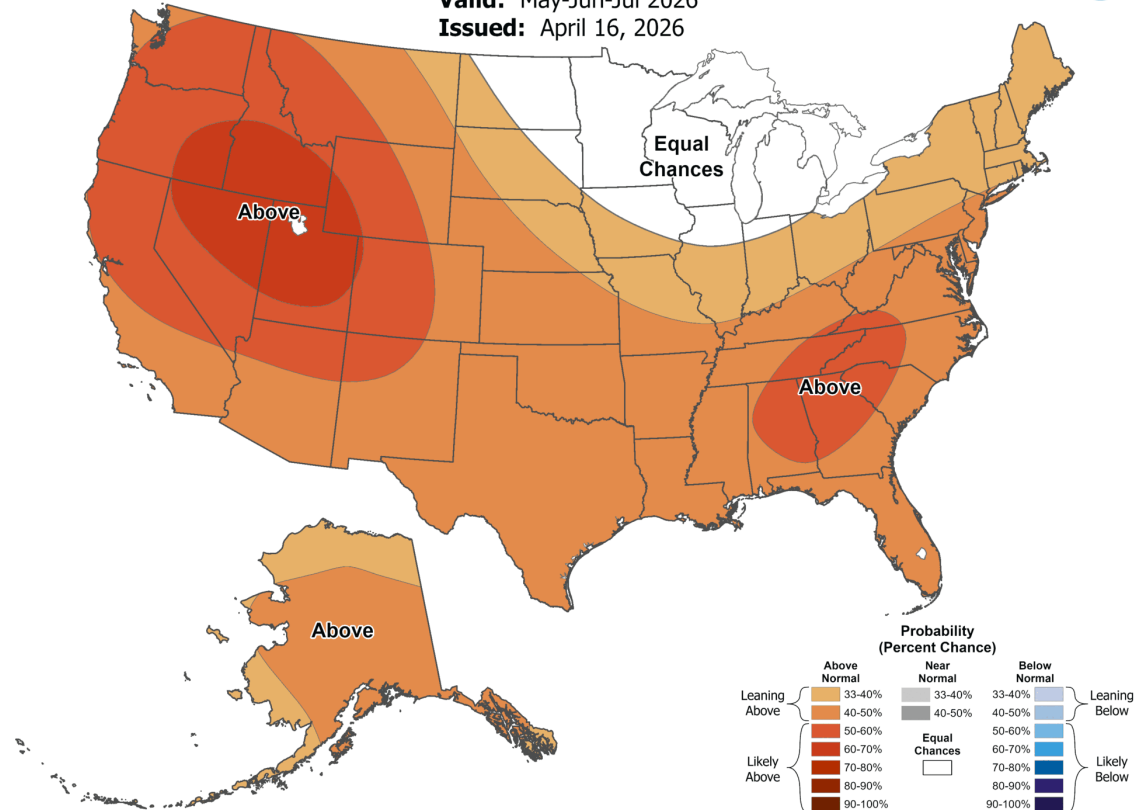
Valid: May-Jun-Jul 2026
 Issued: April 16, 2026



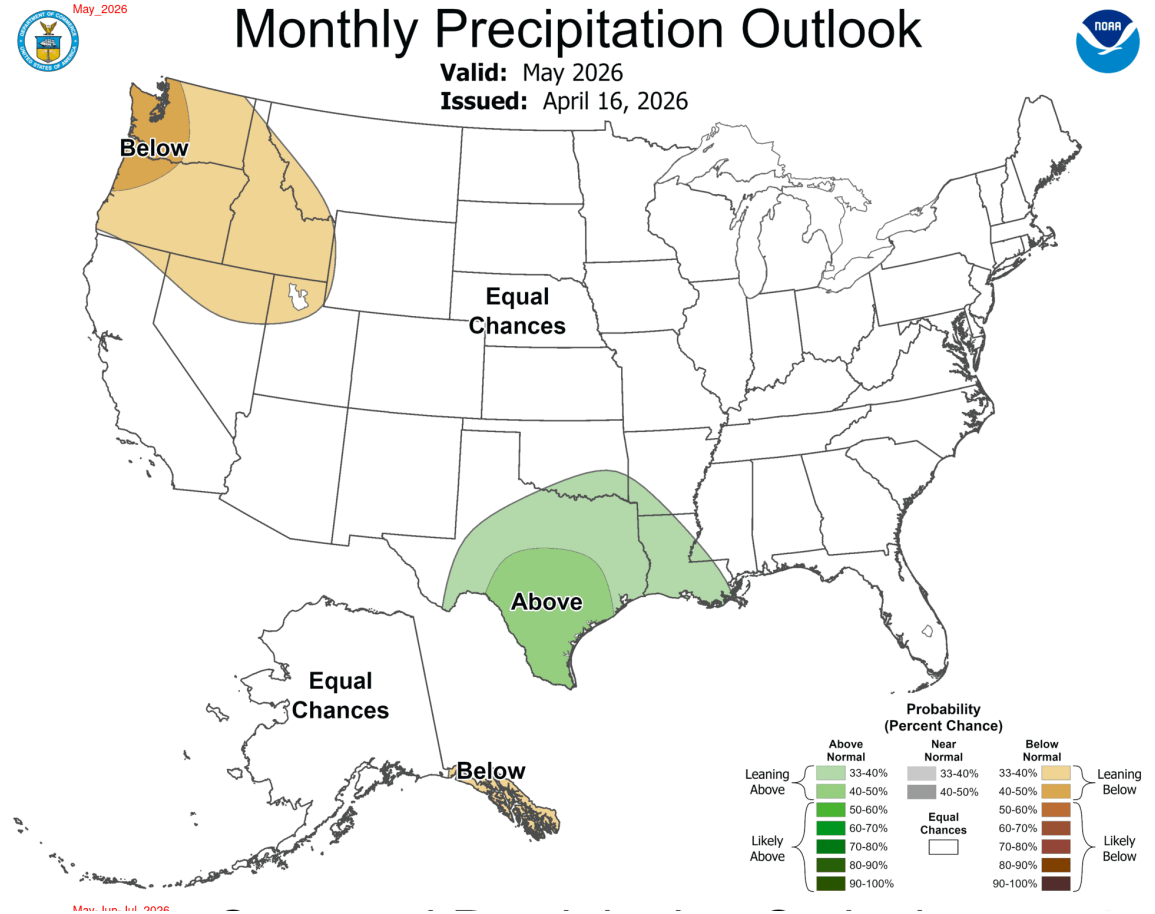
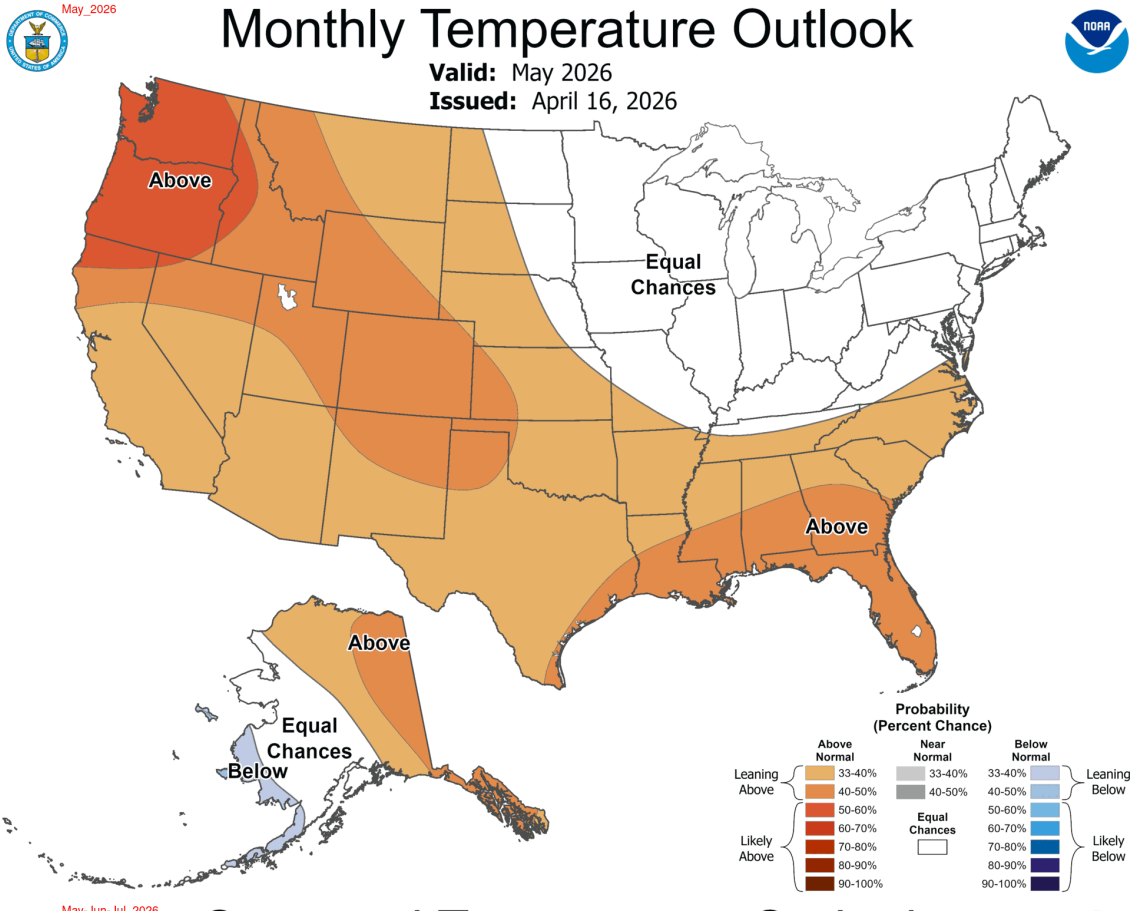
May-Jun-Jul_2026

Seasonal Precipitation Outlook

Valid: May-Jun-Jul 2026
 Issued: April 16, 2026

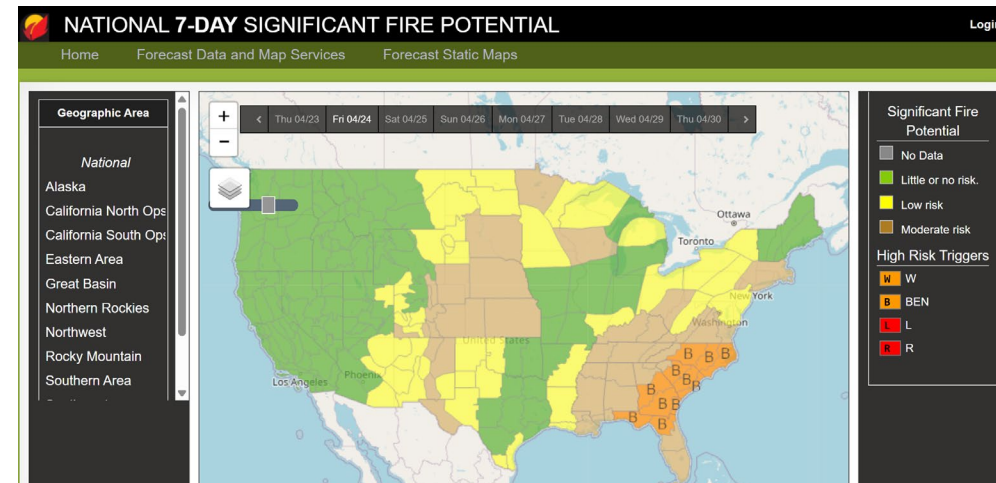
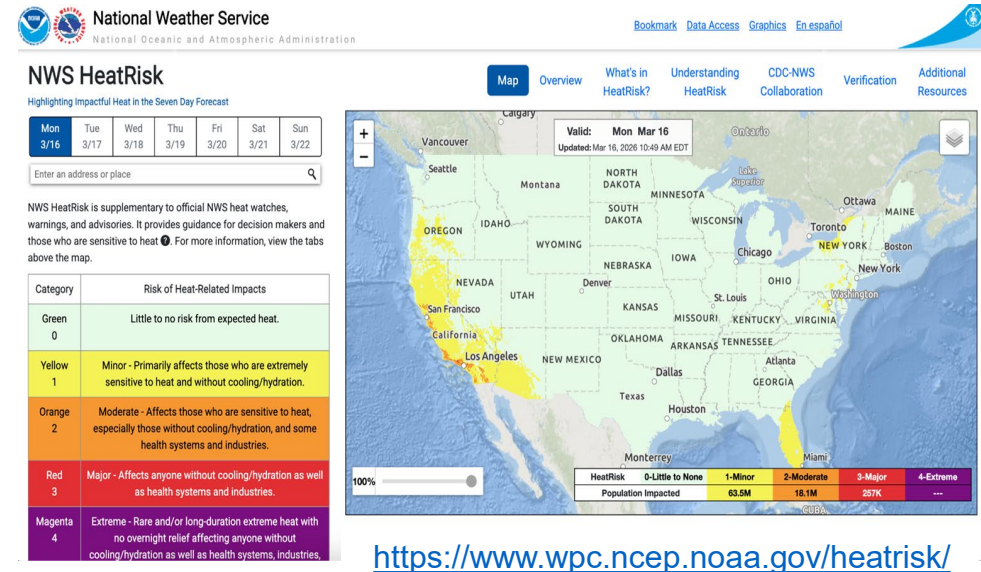


One Month Out



One Week Out

- NWS HeatRisk for assessing extreme heat risk one week prior
- NWS Storm Prediction Center – 8-Day Convective Outlook
- NWS Fire Weather Outlook
- National Interagency Fire Center – 7-Day Significant Fire Potential Outlook



The Day Of

Forecasting and Monitoring Tools:

- NWS HeatRisk
- NWS Excessive Rainfall Outlook
- High Resolution Rapid Refresh Model (HRRR-Smoke) (Figure 1)
- ProbSevere – Lightningcast (Figure 2)
- Air Quality Index (AQI)

NWS Watches, Warnings, Advisories (WWA):

- Tornado Warnings, Watches, Emergencies
- Severe Thunderstorm Watch, Warning
- Red Flag Warning, Fire Weather Watch
- Flood Watch, Advisory; Flash Flood Warning
- Extreme Heat Watch, Warning; Heat Advisory

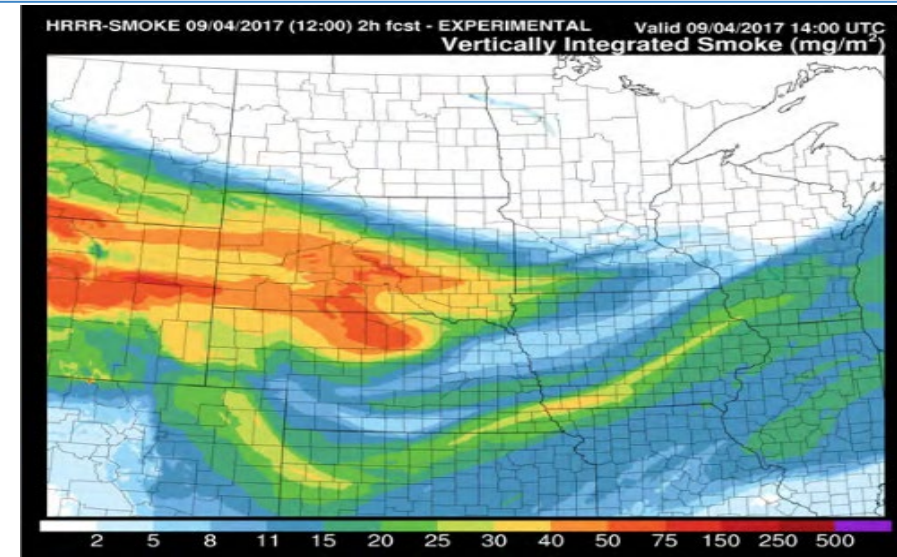


Figure 1 <https://rapidrefresh.noaa.gov/hrrr/HRRRsmoke/>

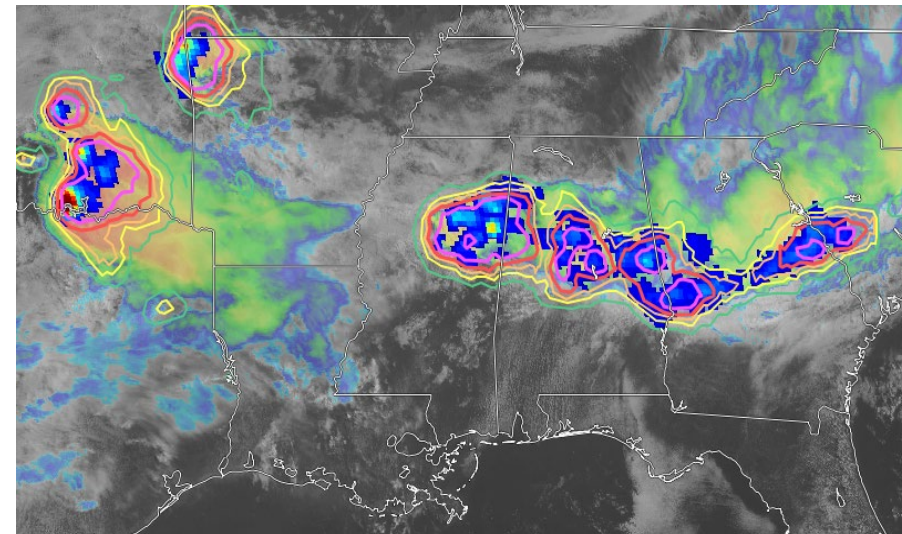


Figure 2 <https://cimss.ssec.wisc.edu/probsevere/lc/map/>

Hazard Risks - Stadiums

Vulnerability Assessment



- **Map exposed areas:** seating bowls, plazas, queues, tailgate areas, and transit zones.
- **Assess heat, lightning, wind, and flooding exposure** from open roofs, metal bleachers, concrete surfaces, low poles, signage.
- **Compare shelter capacity** with expected attendance, staff, vendors, and accessible needs.
- **Time movement to shelter and exits** from seats, suites, field areas, concessions, and restrooms.
- **Identify crowd bottlenecks** at gates, ramps, stairs, elevators, tunnels, and transit stops.
- **Inspect temporary structures** for anchoring, wind rating, drainage, and shutdown procedures.
- **Identify peak vulnerability periods** such as arrival, halftime, dismissal, severe weather watches, and transit surges.
- **Confirm decision triggers** and communications for weather monitoring, event delays, sheltering, evacuation, and public messaging.

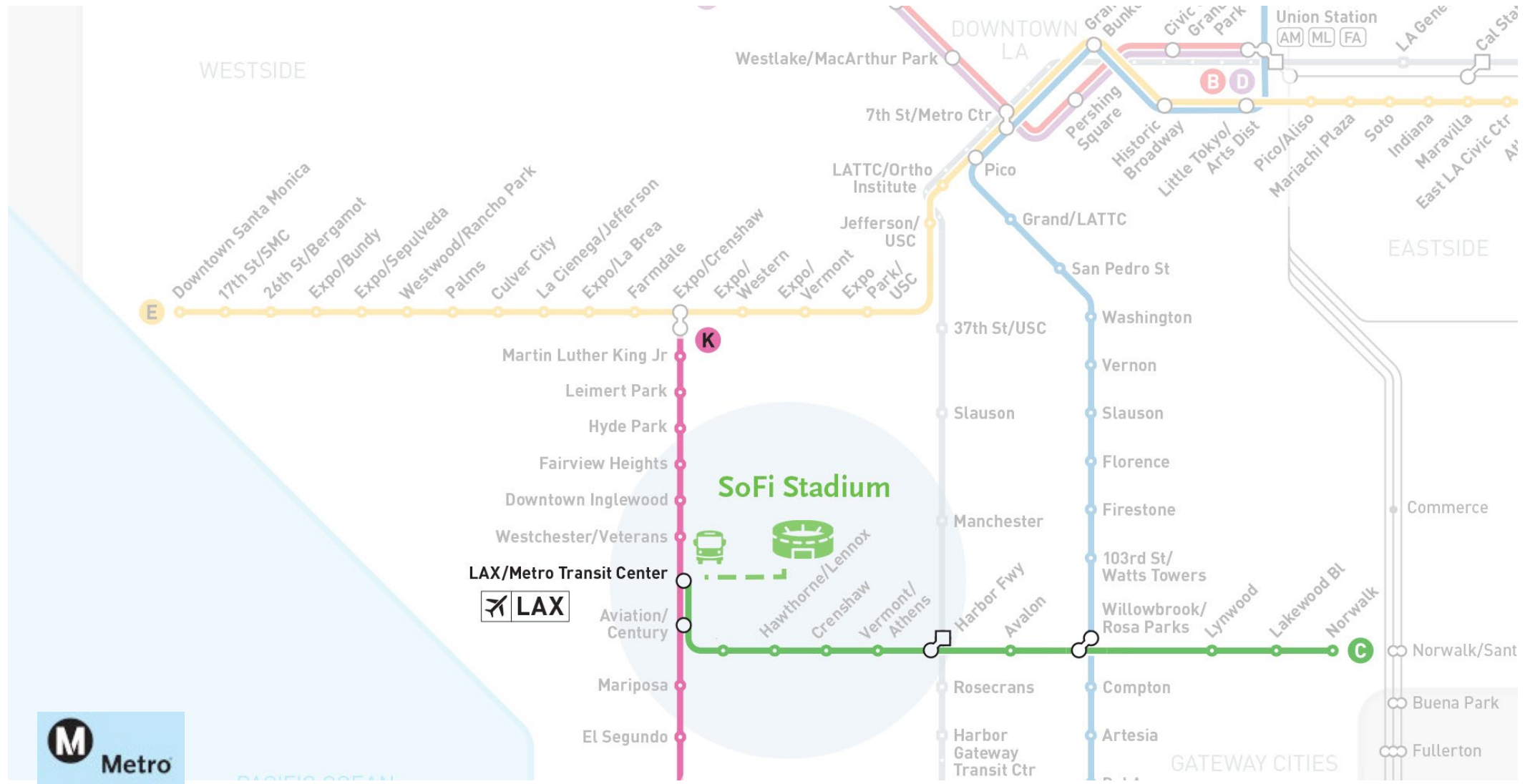
Hazard Risks - Transit

Transit Vulnerability Assessment



- **Map transit stops**, walking routes, crossings, and ride-share zones
- **Assess heat**, shade, shelter, lighting, drainage, flood, and platform exposure
- **Estimate walking times** between transit, parking, and stadium gates
- **Identify bottlenecks** at stations, sidewalks, crossings, and entrances
- **Check transit capacity** during arrival and post-event surges
- **Review wayfinding** for out-of-town guests and infrequent riders
- **Confirm accessible** routes, elevators, ramps, and mobility support
- **Coordinate weather triggers**, service changes, contingency routing and public messaging, multilingual communications

LA Transportation Network



Hazard Risks for Vulnerable Groups

- **Extreme Heat:** lower ability to safely regulate body temperature in high heat for pregnant people, young children, and older adults
- **Wildfire Smoke / AQI:** increased risks for heart attack, stroke and respiratory distress.
- **Tornado / Extreme Rainfall and Flash Flooding / Lightning:** mobility concerns to quickly access safe shelter
- **All Hazards:**
 - Communications limitations for LEP groups that may not easily understand warnings and notices
 - Limited familiarity with surroundings for out-of-town guests, international guests
 - Exertion required to walk long distances and queue for long periods to access the venues



People with mobility needs



Pregnant people



People with heart or lung conditions



Older adults



Very young children



People with limited English language proficiency

Lesson 2

Focus on Extreme Weather, Facilities, and Transportation

Trigger Charts

Linking extreme weather hazard thresholds to event weather safety operations.

Extreme Weather Hazard and Threshold	Recommended Action
Extreme Heat Heat Index > 100°F	<ul style="list-style-type: none">• Encourage attendees to drink plenty of water• Offer free water stations
Lightning	<ul style="list-style-type: none">• When lightning is seen or thunder is heard, outdoor activity should be stopped and everyone should be directed to shelter.• Do not resume activities until approximately 30 minutes after the last thunder was heard.
Sustained Wind > 25 mph	

Extreme Heat

Extreme heat is based on how unusually hot and humid it is for an area.

NWS (National) Heat Index Classifications

Extreme Caution: 90 - 103°F
Danger: 103 – 124°F
Extreme Danger: 125°F or higher

Local **Extreme Heat** thresholds can differ depending on location:

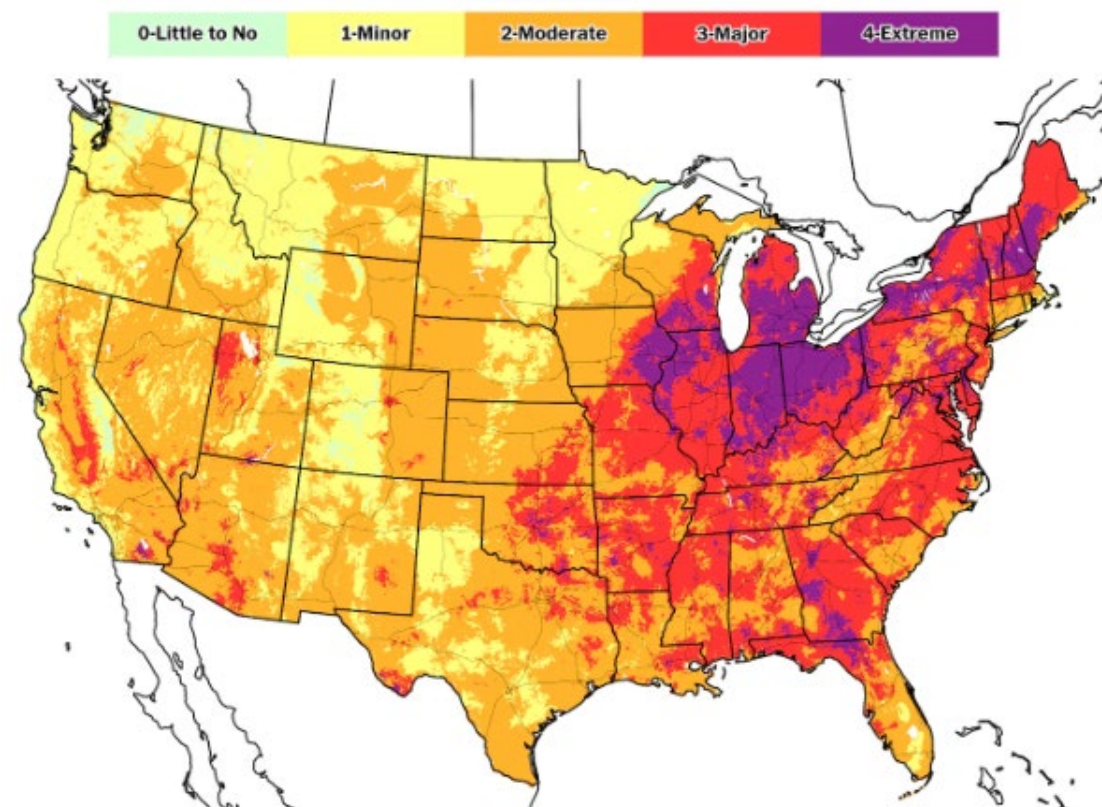
- L.A. Basin = 95°F
- Northeast = 100°F – 104°F
- Southeast/Gulf Coast = 110°F-113°F
- PNW = 100 - 105°F

U.S. Soccer's region-specific guidance for athletes

High-Risk for Heat Related Illness: 84.2 to 91.9°F

Extreme Conditions:
>86.2 to > 92°F

NWS HeatRisk



Source: The Washington Post, 2024

Extreme Heat - Risks and Consequences



Stadium Risks:

- Metal seating surficial temperatures
- Queuing areas with no shade may lead to heat exhaustion risk
- Increased water demand and cooling stations needed for all
- Increased dehydration risks for spectators consuming alcohol
- Physical and psychological risks like increasing aggressive behavior of fans/spectators due to heat agitation



Transit Risks:

- Heat-related slow orders for rail related to rail buckling and “sun kinks”
- Sagging catenary lines and damage to electrical equipment
- Disoriented drivers and riders due to heat exhaustion and dehydration

Lightning

Definition: A visible electrical discharge or spark of electricity in the atmosphere between clouds, the air, and/or the ground produced by a thunderstorm

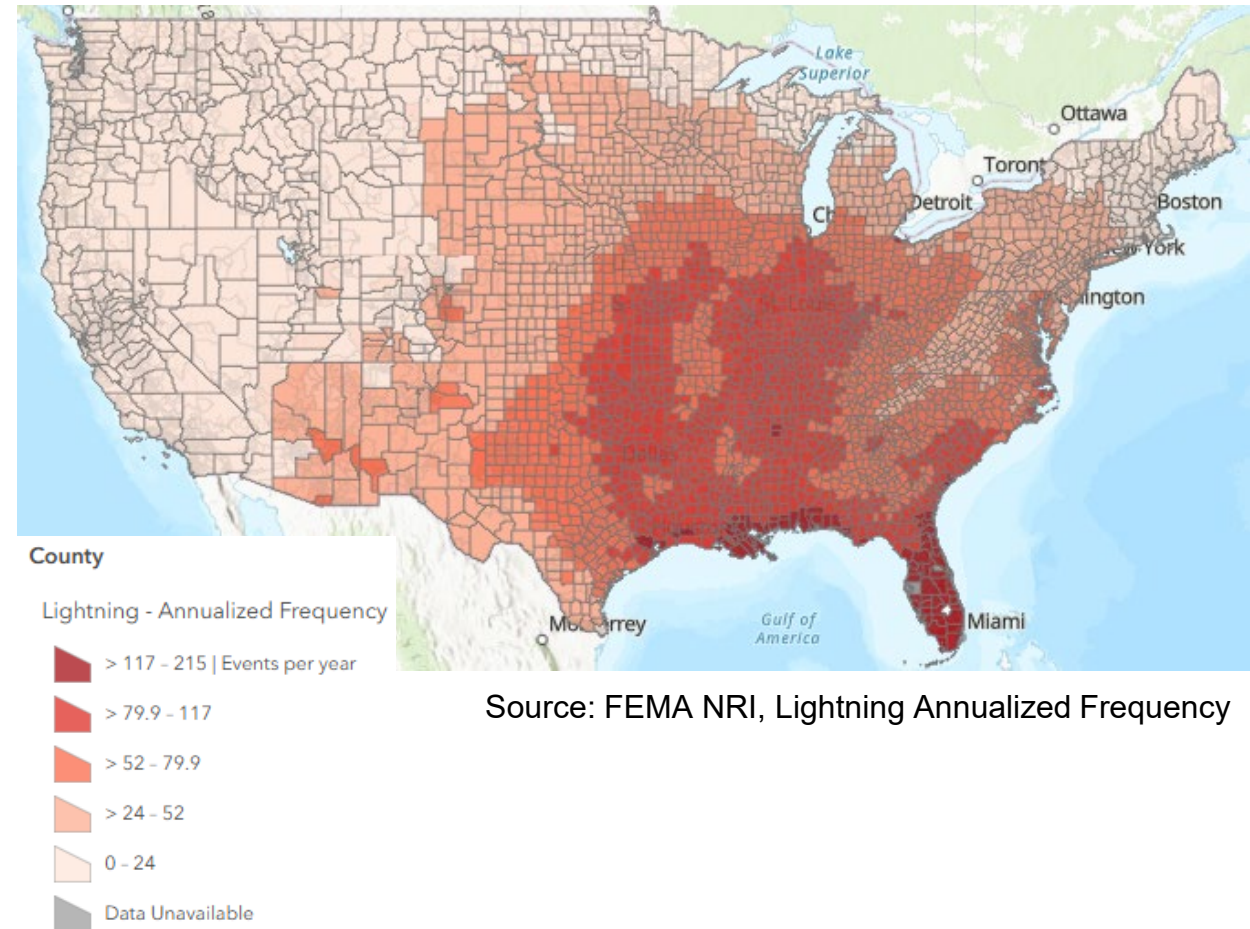
All stadiums are at risk of lightning strikes, some more than others.

Impacts:

- Injury / Death
- Power outages
- Wildfires

Highest risk in June / July =
Texas, Missouri, Atlanta, and Florida

Most strikes occur in the afternoon and evening hours



Lightning – Thresholds to Monitor

20 Mile Radius	Take precautions
6 Mile Threshold/30 Second Rule	If fewer than 30 seconds pass between lightning and thunder, the storm is within 6 miles and shelter is required
30 Minute Wait	Once lightning flashes and thunder has stopped, it is safe to resume outdoor activity after 30 minutes
Flash Bang Calculation	5 seconds gap = 1 mile



“Baseball fans clear the stands as lightning strikes near the Colorado Rockies’ stadium in 2019.”
Source: scientificamerican.com

Lightning – Risks and Consequences



Stadium Risks:

- Open-air stadiums require rapid evacuation to sheltered concourse
- Outdoor security checkpoints and queue lines are highly exposed
- Stampede/crushing spectators if crowds move too quickly through bottleneck spaces

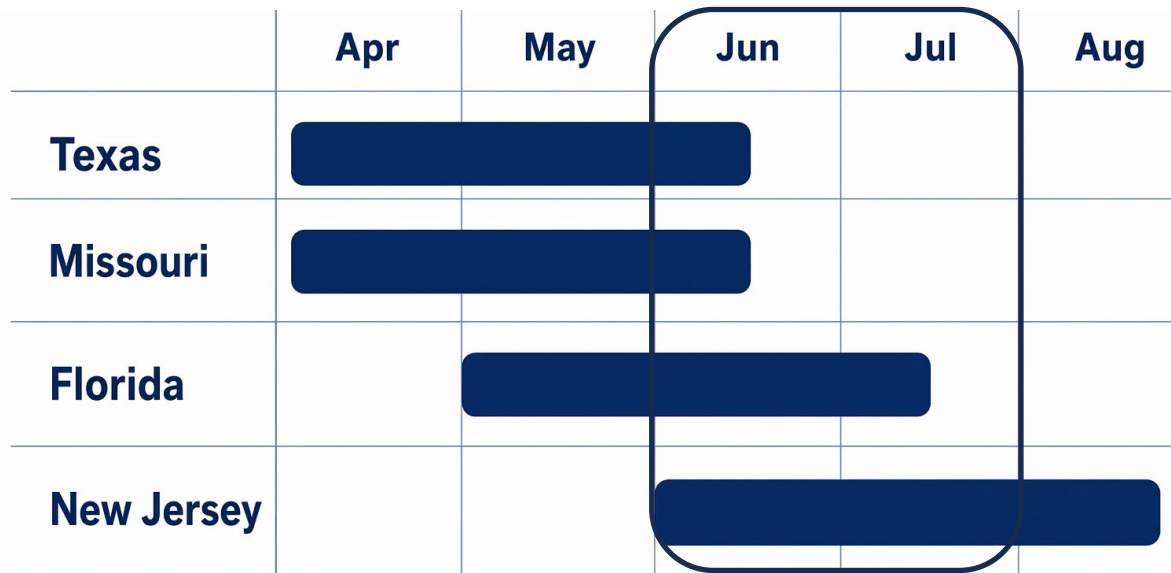


Transit Risks:

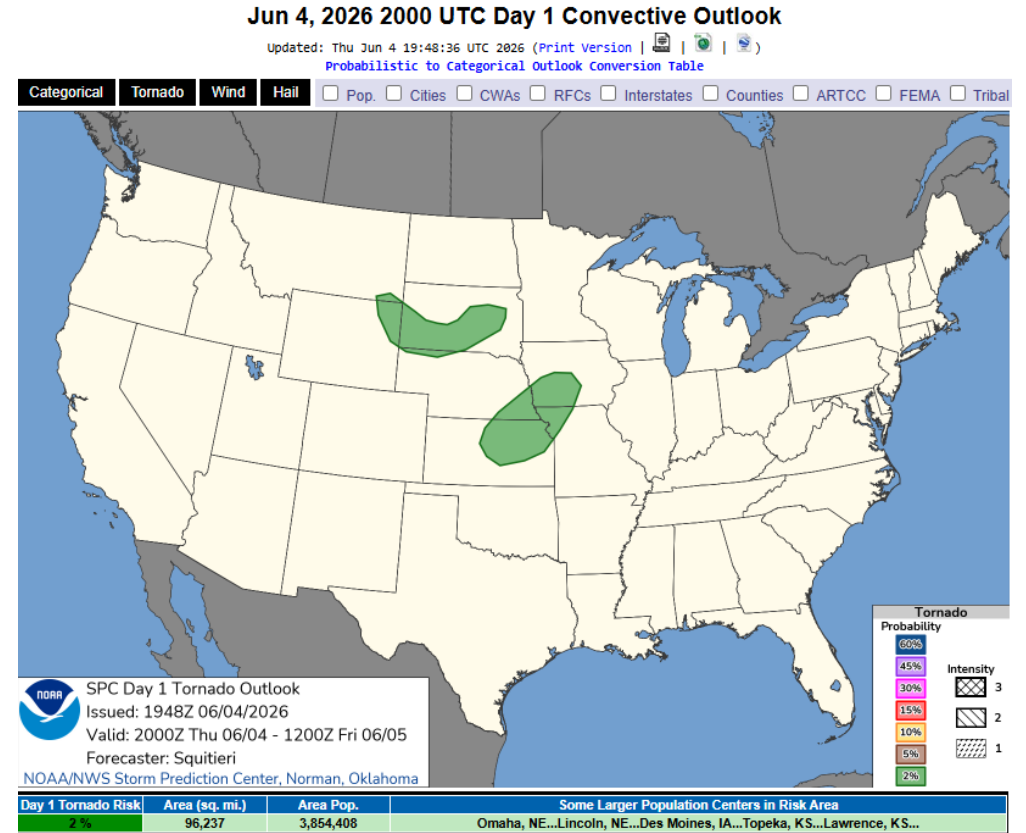
- Lightning can halt light rail and commuter rail boarding
- Unprotected platforms and boarding areas exposed

Tornado

Definition: A violently rotating column of air extending from a thunderstorm to the ground (NOAA)



Peak Tornado Season by State and FWC 2026 Events



Tornado – Thresholds to Monitor

Tornado Watch (NWS)	<p>Forecast of multiple weak tornadoes or any tornado which could produce EF2 or greater damage</p> <p>Forecast event minimum threshold – at least 2 hours over an area of at least 8,000 square miles.</p>
Tornado Warning (NWS)	Radar indication or reliable report of (developing) tornado (duration: 15-45 min)
Tornado Emergency	<p>Severe threat to human life and catastrophic damage is imminent or ongoing.</p> <p>Visual or radar confirmation of tornado (duration: 15-45 minutes)</p>



Source: The Weather Company

Tornado – Risks and Consequences



Stadium Risks:

- High winds affect signage, temporary tents, fan zones
- Sheltering 50,000+ people indoors requires pre-planned procedures



Transit Risk:

- Rail and bus networks may suspend service during high wind conditions



Source: West Central Tribune, 2013

Extreme Rainfall / Flash Flooding

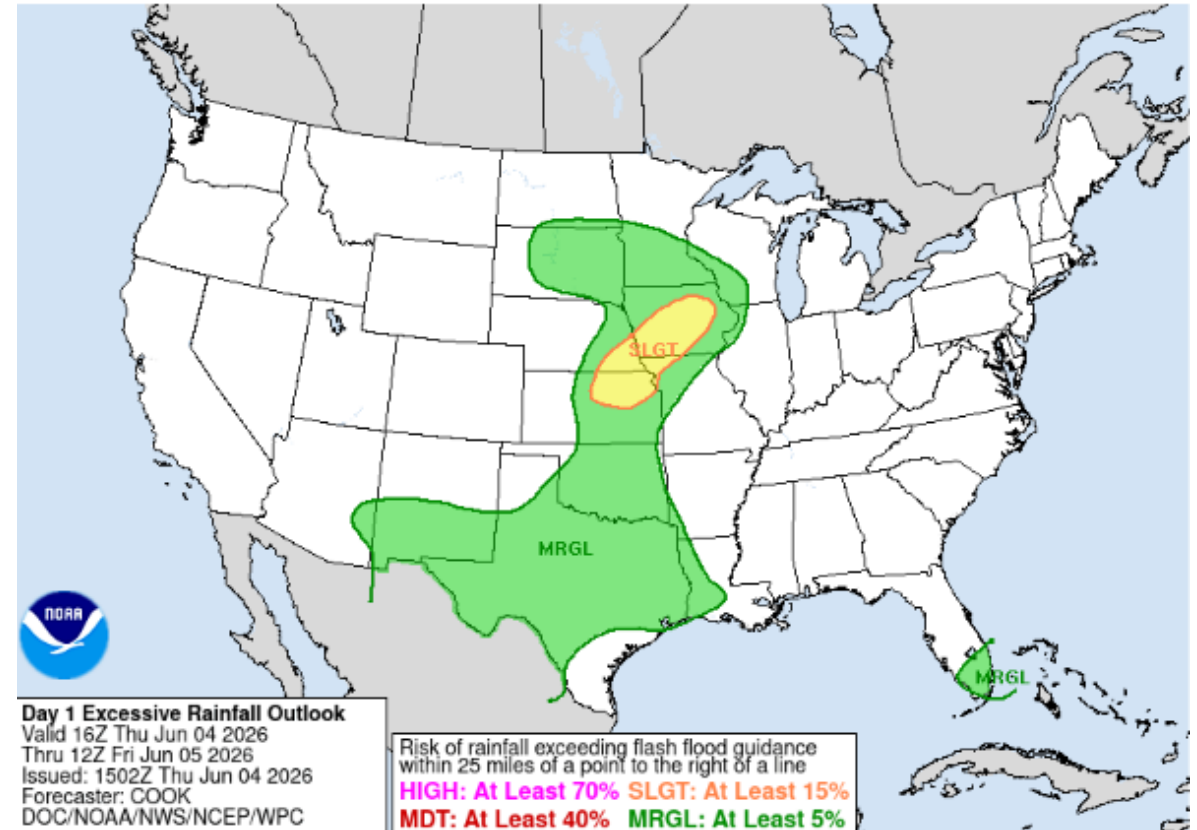
Definition: A sudden, extremely heavy rainfall event, typically producing 2-3 inches of rain in under one hour

Key Characteristics:

- Highly localized and short duration
- Often driven by a single intense thunderstorm cell
- More concentrated than general heavy rainfall

Forecasting Challenge:

- Exact timing and location difficult beyond a few hours
- NWS forecast tools can provide early signals 1+ days in advance



Extreme Rainfall / Flash Flooding– Thresholds to Monitor

- Impacts from extreme rainfall events are highly localized and dependent on rainfall rate and duration
- Capacity of local infrastructure
- NWS Flood Watch / Warning / Advisory / Emergency

Examples:

- NY/NJ: storm drains are designed for current and projected 2, 10, and 100-year storm events, 3.3 to 8.3 inches/24 hrs (NJDEP, Stormwater Management Standards)
- LA: storm drains are designed for 25 yr storm events, ~5 inches/24 hrs (LA Department of Public Works, Hydrology Manual; LA City Planning, Technical Report)



Source: Grist

Extreme Rainfall / Flash Flooding– Risks and Consequences



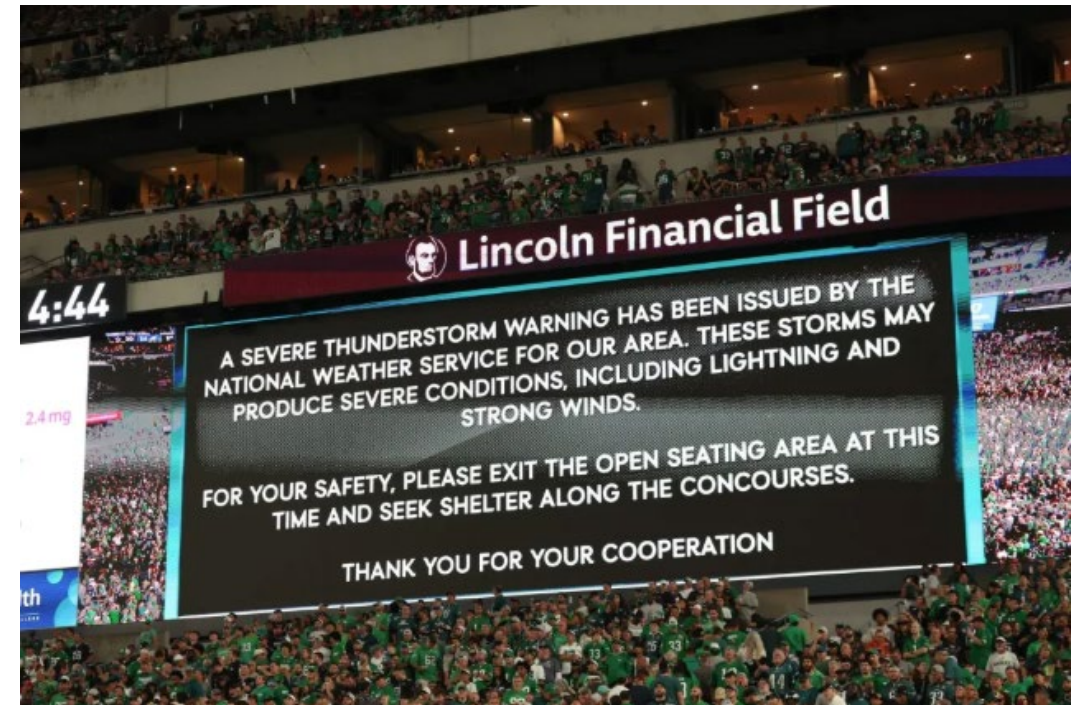
Stadium Risks:

- Sheltering 50,000+ people indoors requires pre-planned procedures
- Open roof construction increases potential for impacts



Transit Risks:

- Stormwater and drainage systems around stadium perimeters may become overwhelmed
- Complete or partial loss of service



Source: Front Office Sports, 2025

Wildfire – Exposure to Particulate Matter

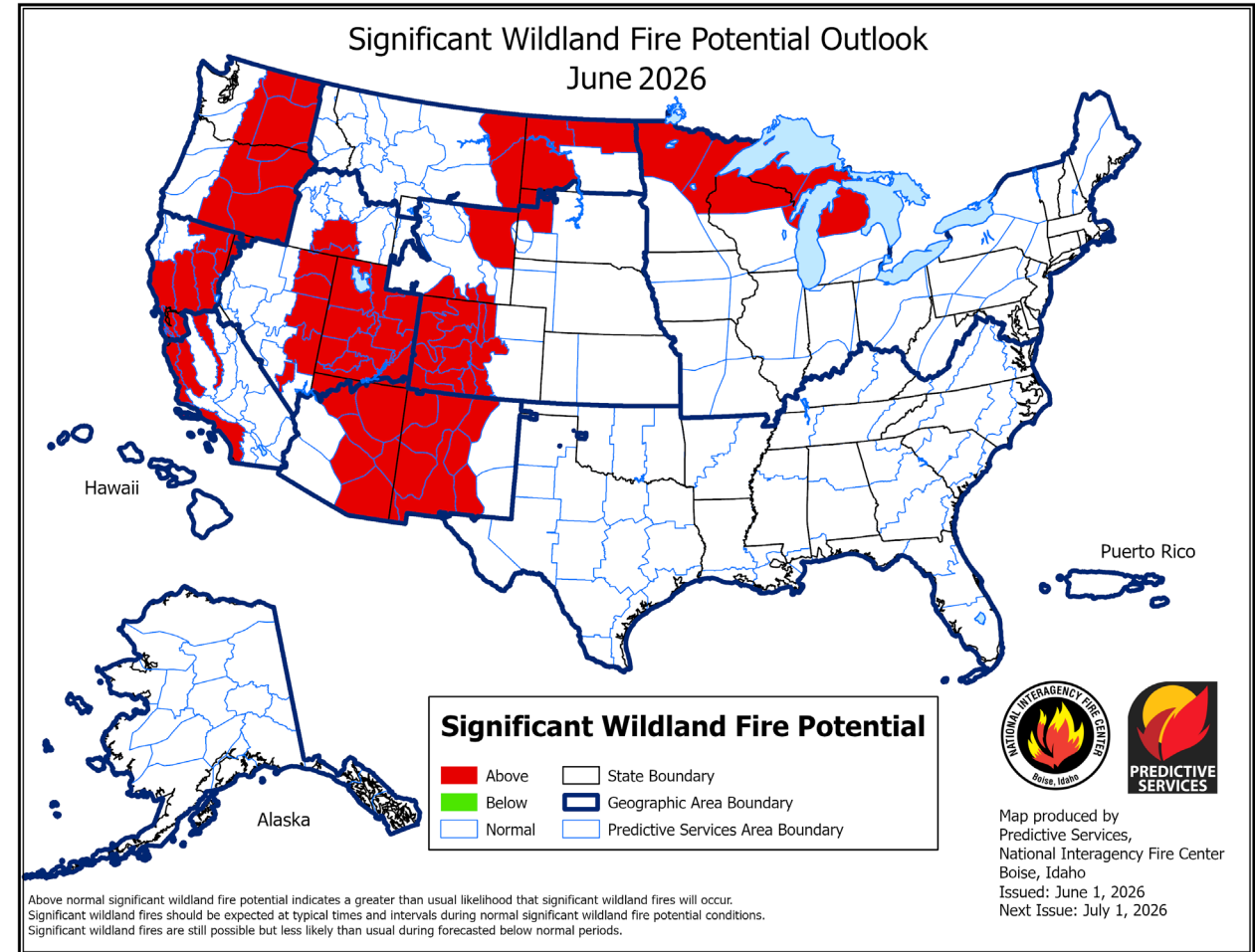
Definition: An unplanned fire burning in natural or wildland areas such as forests, shrubs, or grasslands

Health effects attributed to wildfire smoke exposure:

- Irritation of eyes, throat
- Breathing issues
- Cardiovascular impacts

Higher risk in the West Coast and Pacific Northwest (Seattle, Bay Area, LA).

Wildfire season intensifies *after* FWC

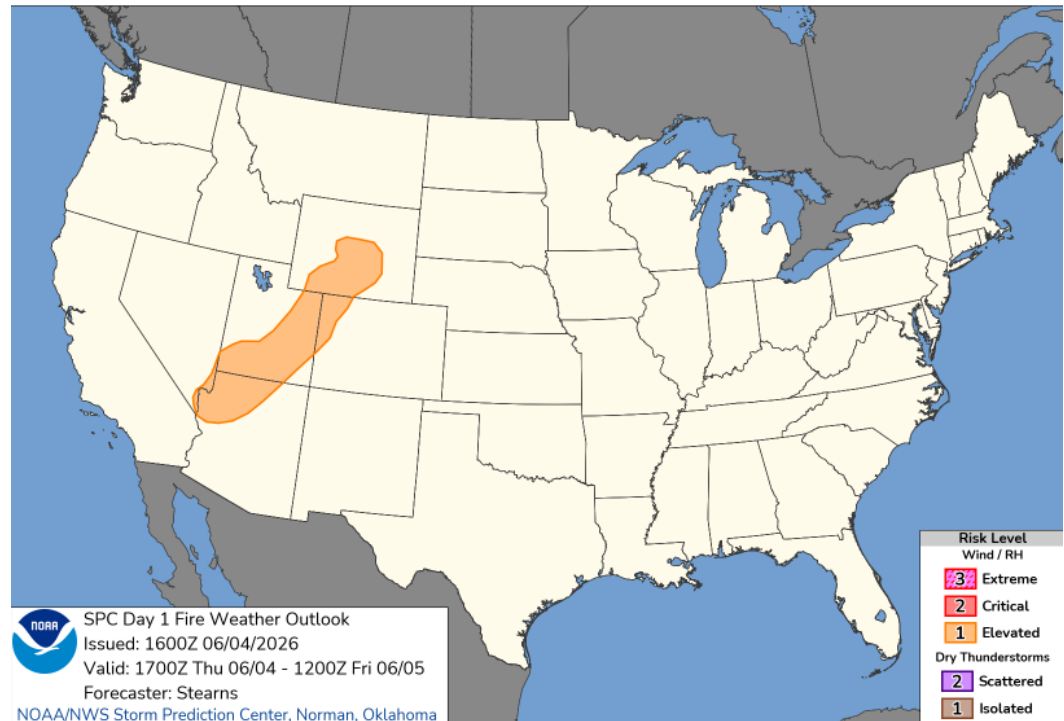


Source: National Interagency Coordination Center, Significant Wildland Fire Potential for June 2026

Wildfire – Exposure to Particulate Matter Thresholds to Monitor

AQI	Action
300+	Must reschedule or move to an indoor facility
200+	Consider a reschedule or move to an indoor facility
150+	Shorten practices and move sensitive athletes indoors; minimize exertion for all
100+	Sensitive athletes consider moving indoors

Sources: Argonne National Laboratory, ClimRR, NCAA Guidelines, Washington State Wildfire Guidance



NWS Storm Prediction Center, Fire Weather Outlook

Wildfire – Exposure to Particulate Matter Risks and Consequences



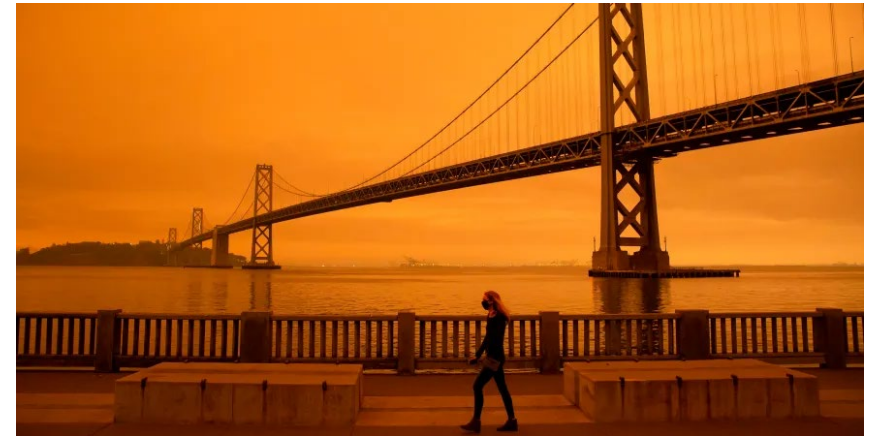
Stadium Risks:

- Stadiums with open roof types are more vulnerable to unhealthy AQI (AQI > 150)
- People in parking lots and open concourses exposed to particulate matter
- HVAC adjustments needed for partially enclosed stadiums



Transit Risks:

- Smoke can impact visibility and lead to delays and cancellations
- Reduced visibility affects bus and rail control decisions (Dense Smoke Advisory)



In September 2020, smoke from wildfires turned the sky over San Francisco a glowing orange.

Source: [kron4.com](https://www.kron4.com)

High Risk Stadiums by Extreme Weather Hazard

Risk Rank (Top 5 Stadiums)	Extreme Heat (summertime max)	Lightning (lightning in 2025)	Tornado (annual frequency)	Extreme Rainfall / Flash Flooding (summer daily max precip)	Wildfire/AQI (historical, summer fire weather index)
1 (Higher Risk)	Arrowhead Stadium Kansas City, MO	AT&T Stadium Dallas, TX	NRG Stadium Houston, TX	Hard Rock Stadium Miami, FL	SoFi Stadium Los Angeles, CA
2	NRG Stadium Houston, TX	NRG Stadium Houston, TX	AT&T Stadium Dallas, TX	Arrowhead Stadium Kansas City, MO	Levi's Stadium San Francisco Bay Area, CA
3	AT&T Stadium Dallas, TX	Arrowhead Stadium Kansas City, MO	Arrowhead Stadium Kansas City, MO	Mercedes Benz Stadium Atlanta, GA	Lumen Field, Seattle, WA
4	Mercedes Benz Stadium Atlanta, GA	Mercedes Benz Stadium Atlanta, GA	Hard Rock Stadium Miami, FL	MetLife Stadium NY/NJ, NY	Arrowhead Stadium Kansas City, MO
5 (Lower Risk)	Lincoln Financial Field Philadelphia, PA	Hard Rock Stadium Miami, FL	Mercedes Benz Stadium Atlanta, GA	Lincoln Financial Field Philadelphia, PA	AT&T Stadium Dallas, TX

Example Trigger Chart

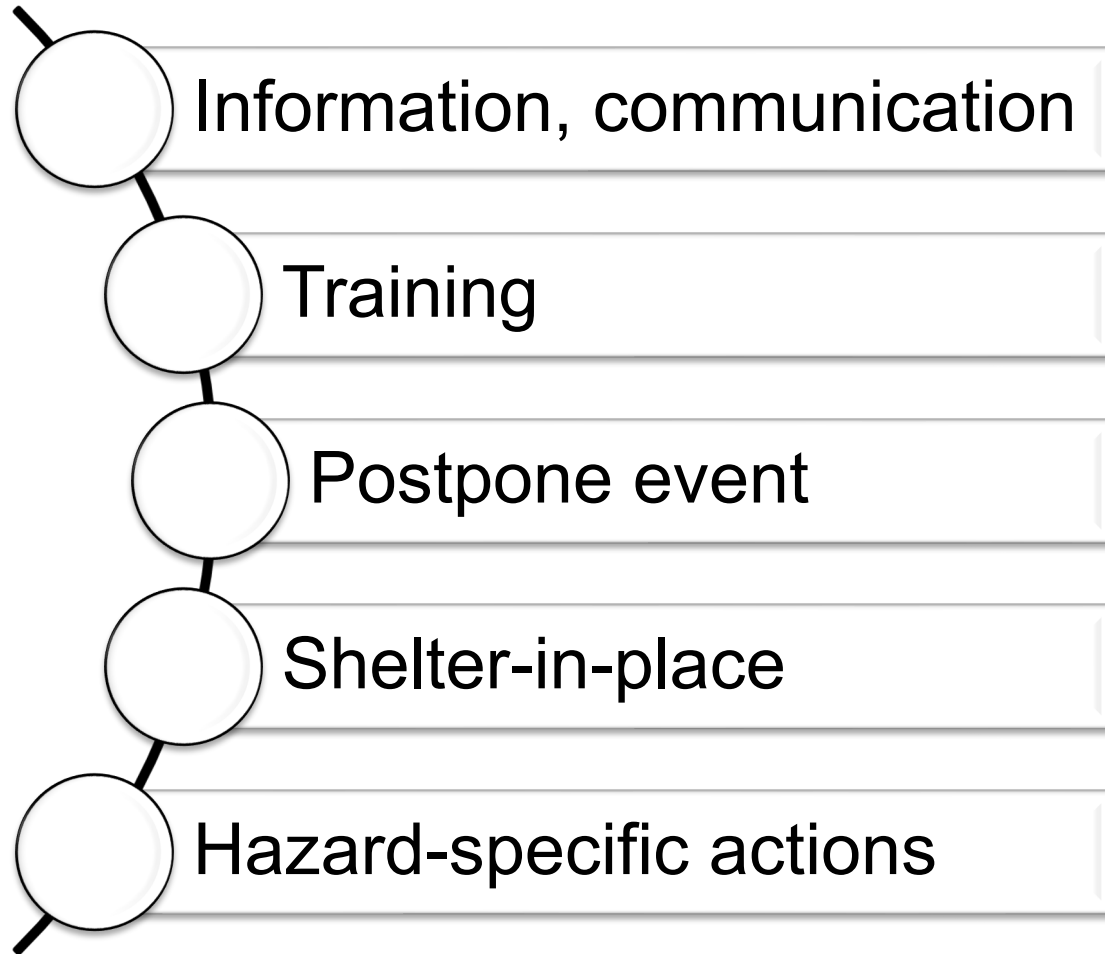
Linking extreme weather hazard thresholds to event weather safety operations.

Extreme Weather Hazard and Threshold	Recommended Action
Extreme Heat Heat Index > 100°F or NWS Extreme Heat Warning	<ul style="list-style-type: none">• Encourage attendees to drink plenty of water• Take frequent breaks in shade or air conditioning• Offer free water stations• Rent misters and/or cooling stations, and be prepared to identify and treat heat illnesses.
Lightning	<ul style="list-style-type: none">• When lightning is seen or thunder is heard, outdoor activity should be stopped and everyone should be directed to shelter.• Do not resume activities until approximately 30 minutes after the last thunder was heard.
Sustained Wind > 25 mph or NWS Wind Advisory	<ul style="list-style-type: none">• Direct attendees to seek shelter• Outside, open spaces: First, identify nearby shelters to send evacuated attendees. If not, find low area away from possible debris sources.

Lesson 3

Mitigation of Extreme Weather Events

Mitigation Strategies



- Stadium Operators: shelter-in-place or post-pone
- Transit Agencies: evacuations
- Emergency Managers: mass care, communicate & coordinate



Mitigation Strategies: Information, Communication

All Partners: emergency managers, stadiums and transit providers to *cooperatively plan joint messaging*

- Pre-scripted emergency notifications for all potential extreme weather hazards to push out via emergency management partners and FIFA directly
- Multi-language messages tested for accuracy and cultural competency, that are ready to deploy through multiple channels



Mitigation Strategies: Training (planning)

- **All Agencies:**
 - Enhanced operations plans or action plan development
 - Consider operationalizing BMPs: Misters (extreme heat), signage for evacuation, weights for portable bathrooms
 - Exercises for extreme heat and smoke events
 - Evacuation timing lightning/tornadoes
- **Emergency Management:**
 - Updated plans for priority hazards
 - EOC coordination trainings for SEAR Level 1 events with Federal Coordination Team



SEAR = Special Event Assessment Rating, Department of Homeland Security (Level 1 highest; Level 5 lowest)

Voluntary assessment for designation, requests federal support

Mitigation Strategies: Training (operational readiness)

- **Transit:**
 - Prepare staff for augmented services
 - Add transit pick-up and drop zones, shuttles
- **Stadiums:**
 - Close roofs where able, increase shade structures
 - Training staff on mass care plans and shelter-in-place protocols
 - Conduct TTX or full-scale exercises with staff and partner agencies



Mitigation Strategies: Postpone Match

All Partners: ready to support FIFA postponement decisions by rescheduling your workforce to the new date, updating subcontractors, etc.

- FIFA decides match postponements
- FIFA local organizing committee in each city is embedded in Stadium Operations Command Centers



June 19, 2025 Severe weather warning causes players to leave pitch during match at NY Stadium. Source: Forbes.com.

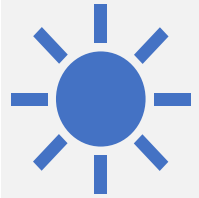
Mitigation Strategies: Shelter-in-Place Order



June 18, 2025 lightning during FIFA Club World Cup Group H match. Source: Forbes.com

- **Transit:**
 - Shelter capacity of major transit hubs is assessed
 - Training with train/bus drivers ahead of time for protocols
- **Stadiums:**
 - Interior concourse shelter capacity is assessed
 - Shelter-in-Place drill conducted with venue staff pre-tournament
 - “Invacuation” to rapidly bring pedestrians indoors
- **Emergency Management:**
 - Pre-scripted multi-language shelter-in-place messages ready

Mitigation Strategies: Hazard Specific Actions



Extreme Heat

- Cooling stations deployment
- Water bottles pre-positioned
- Additional EMS Teams



Lightning

- Detection systems (NWS, local emergency management networks, or private meteorological organizations)
- Public Announcements: shelter-in-place script



Tornados

- Interior concourse shelter capacity assessed
- Shelter-in-place drill with venue staff pre-tournament



Extreme Rainfall / Flash Flooding

- Drainage system capacity confirmation and documentation
- Overflow protocol threshold established



Wildfire / Particulate Matter

- N-95 masks pre-positioned
- AQI decision matrix at command post
- Coordination on air quality monitoring

Lesson 4

Artificial Intelligence for Preparedness Planning



AI in Risk Management, Planning, and Preparedness



1. Predictive Risk Analysis

AI models calculate the probability and impact of risks, allowing managers to anticipate issues rather than react to them.



2. Real-Time Monitoring & Detection

AI monitors large datasets, identifies anomalies, and flags potential fraud far faster than manual review.



3. Scenario Planning & Simulation

Generative AI creates diverse scenarios to test, simulate, and optimize decisions for future disruptions.



4. Automated Mitigation

AI systems can trigger automatic responses, such as adjusting budgets or reallocating resources when risk thresholds are crossed.

AI Prompts for Extreme Weather Preparedness

For emergency, transportation, and facility managers



What hazards are most likely for this venue, time, and season?



Who or what is most at risk (people, systems, routes)?



What are the key operational impacts to safety, facilities, and transportation?



When do we act?
What thresholds trigger sheltering, delays, or evacuation?



What mitigations and backups are in place if conditions worsen?



Who needs to know first, and how will we communicate?



Disclaimer: AI outputs support planning only and do not replace official forecasts, authorities, or life-safety decision-making.

Summary of A.I. Systems

Claude, Gemini, ChatGPT

PER-HAZARD RANK COMPARISON

City	Extreme Heat			Lightning			Tornado			Extreme Rainfall / Flash Flooding			Wildfire / PM		
AI models	Cl	GPT	Gem	Cl	GPT	Gem	Cl	GPT	Gem	Cl	GPT	Gem	Cl	GPT	Gem
Houston	1	1	1	2	1	3	3	3	3	1	2	2	10	7	10
Dallas	3	2	2	3	3	2	2	2	1	7	6	4	7	8	8
Kansas City	2	4	5	4	5	5	1	1	2	4	7	7	9	10	6
Miami	4	6	3	1	2	1	7	5	8	2	3	1	11	11	11
Atlanta	5	3	4	5	4	4	4	4	4	5	5	5	8	9	9
New York / NJ	7	7	7	7	7	7	5	7	6	3	1	3	4	4	5
Philadelphia	6	5	6	6	6	6	6	6	5	6	4	6	5	5	7
Boston	9	8	8	8	8	8	8	8	7	8	8	8	6	6	4
Los Angeles	8	9	9	9	10	10	9	11	10	9	10	11	2	3	1
Seattle	11	10	10	11	9	9	11	9	9	11	9	9	3	1	3
San Francisco	10	11	11	10	11	11	10	10	11	10	11	10	1	2	2

*AI models use available data, and each model uses its own algorithm, which results in variability.

Key Takeaways

- **Plan beyond the stadium gate:**
Weather hazards pose dual risks: in-stadium and transit
- **Match actions to local risk:**
Each host city has distinct summer hazard profile
- **Turn forecasts into decisions:**
Use trusted tools, clear thresholds, back up plans, and coordinated communications





Call to Action



Additional FEMA courses to take:

- [Sport and Special Event Enhanced Risk Management and Assessment \(MGT-466\)](#)
- [Enhanced Sports and Special Events Incident Management \(MGT-440\)](#)
- [Sport and Special Event Public Information and Emergency Notification \(MGT-467\)](#)
- [Crowd Management for Sport and Special Event \(MGT-475\)](#)



Shortlist of emergency planning documents to consult:

- [CPG 201: Threat and Hazard Identification and Risk Assessment \(THIRA\) and Stakeholder Preparedness Review \(SPR\) Guide](#)
- [CPG 101: Developing and Maintaining Emergency Operations Plans](#)

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Slides & a follow up survey will be sent out to attendees following the training!



Data Sources

- NOAA's NWS, Climate Prediction Center (CPC), Three-Month Outlook: https://www.cpc.ncep.noaa.gov/products/predictions/long_range/seasonal.php?lead=1
- NOAA's NWS, CPC Monthly Temperature Outlook: <https://www.cpc.ncep.noaa.gov/products/predictions/30day/>
- NWS, HeatRisk Index: <https://www.wpc.ncep.noaa.gov/heatrisk/>
- NWS, Lightning Safety: Large Venues: https://www.weather.gov/media/safety/lightning/Lightning_Safety_Toolkit_Outdoor_Venues.pdf
- FEMA National Risk Index: <https://www.fema.gov/flood-maps/products-tools/national-risk-index>
- High-Resolution Rapid Refresh (HRRR) Smoke Model: <https://rapidrefresh.noaa.gov/hrrr/HRRRsmoke/>
- Airnow EPA: <https://www.airnow.gov/>
- National Interagency Fire Center, 7-Day Significant Fire Potential: <https://www.nifc.gov/nicc/predictive-services/outlooks>
- National Interagency Fire Center, National Significant Wildland Fire Potential Outlook: <https://www.nifc.gov/nicc/predictive-services/outlooks>
- NOAA's NWS, CDC, Prototype Probabilistic HeatRisk: <https://www.wpc.ncep.noaa.gov/heatrisk/probs/>
- NOAA's NWS, High Wind Warning: <https://www.highwindwarn.com/>
- NOAA's NWS, Storm Prediction Center, Fire Weather Outlook: https://www.spc.noaa.gov/products/exper/fire_wx/
- NOAA's NWS, Storm Prediction Center, Severe Weather Outlook: <https://www.spc.noaa.gov/products/exper/day4-8/>
- ProbSevere – LightningCast: <https://cimss.ssec.wisc.edu/probsevere/lc/map/>
- NOAA's NWS, Excessive Rainfall Forecast: https://www.wpc.ncep.noaa.gov/qpf/excessive_rainfall_outlook_ero.php
- NOAA's NWS, Storm Prediction Center, Today's Convective Outlook (Tornado): <https://www.spc.noaa.gov/products/outlook/>