USA TRIATHLON

RACE DIRECTOR RESOURCE GUIDE:

WEATHER ACTION PLANNING

INTRODUCTION:

Weather incidents are often the highest likelihood and highest impact events that may affect race operations. Weather can have major implications for life safety measures, resource allocation, and financial action. It's important to be prepared for all adverse weather conditions that may be applicable to your area. Based on environmental conditions and history, some weather events may be more likely to occur in your area than others. Focus on higher likelihood incidents and prioritize your planning.

Weather Action Plans use minimum thresholds to establish trigger points for action based on various weather situations and your available resources. In this section, we'll explore key considerations for the following:

- Weather Monitoring
- Lightning
- Heat
- Water Temperature
- Cold
- High Wind
- Fog
- Rain
- Earthquake
- Air Quality

Note: While this Guide does provide recommendations for Weather Action Planning, all planning and decision-making regarding the event is at the discretion of the local Race Director, medical specialists, and weather experts. Additionally, this Guide does provide direction on the competition rules, but it is not a replacement for the* ***Official Multisport Competition Rules.* *For questions about the rules and their application at your event, please reach out to* rulesandofficials@usatriathlon.org.

WEATHER MONITORING:

Approximately 10 days prior to the race, begin monitoring the weather conditions forecasted for your event day(s). As it gets closer to the event, the weather should be checked more frequently to stay abreast of any changes. Plan to regroup with the event team, both internal staff and external agencies the day prior and the morning of the event (as needed) to discuss the final weather projections and review relevant action plans.

Weather Apps / Websites: Today, we have weather at the tip of our fingertips. Here are a few weather apps and websites recommended by event meteorologists and Race Directors:

WEATHER APPS / WEBSITES			
PROGRAM	**WEBSITE**	**APP LOGO**	**NOTES**
Windy	windy.com		Free service with ability to upgrade to paid subscription with more features
My Lightning Tracker	App Store		Free service specializing in thunderstorms and lightning strikes where you can customize settings to provide notifications when lightning is dedicated within a certain radius
MyRadar	myradar.com		Free service with easy-to-read weather forecast displays. Ability to set push notifications for real time weather updates
Weather Underground	wunderground.com	n/a	Free service that provides detailed hourly forecasts to easily see evolution of weather conditions throughout your event timeline
Radar Scope	App Store		Paid service specializing in storm radars: thunderstorm tornado, severe thunderstorm, flash flood, snow squall warnings, and predicted storm tracks
Weathermodels	weathermodels.com	n/a	Paid service recommended for the more advanced weather gurus who been trained on how to read weather models
Perry Weather	perryweather.com		Paid service that provides weather updates for your event location, a notification system framework for alerting event staff, and access to on-call meteorologists.

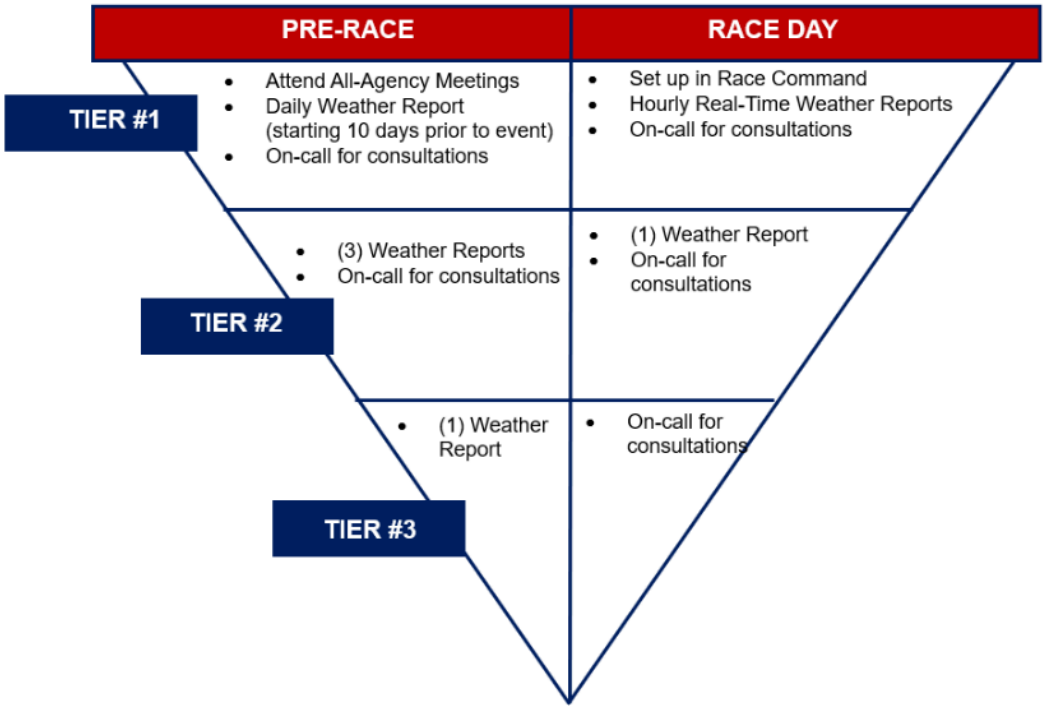
A few important caveats to keep in mind when using online weather services:

- **Quality of Information:** Generally, free weather services do not offer the same quality and quantity of information as paid subscriptions. For example, free lighting apps capture only about 3% of all lightning strike data. They generally record Cloud-to-Ground Strikes, but do not record Cloud-to-Cloud Strikes which also need to be taken into account for on-site Lightning Response. Paid subscriptions tend to offer more robust and accurate information.

- **Interpretation of Information**: It's worth cautioning that weather information is only as accurate as the interpretation of the raw data. In most cases, Race Directors are not meteorologists and not formally trained in weather analysis. The value of online weather services is fairly limited if the information is not interpreted by someone trained to evaluate and extrapolate the data into actionable next steps. The only way to truly eliminate the guesswork is to bring on a trained professional.

Event Meteorologist: Consider hiring a meteorologist to advise on weather developments for your event. This person can help to pull, interpret and provide insight into the weather forecasts to guide your decisions to carry out components of your Weather Action Plans. Their level of involvement is scalable based on the race size and budget as well as city agency requirements. Some cities, like New York City, have started to mandate that events must have a meteorologist involved in the event in order to be issued permits. A meteorologist may be requested through your local Emergency Management Agency.

Below is an example of the levels of involvement for Meteorologists as part of your event team. In most instances, these packages can be custom built depending on your race needs.



INTERESTED IN HIRING AN EVENT METEOROLOGIST? REACH OUT TODAY

Weather Prep | Mike Favetta | mike@wxprep.com

LIGHTNING:

Lightning is the first thunderstorm hazard to arrive and oftentimes the last to leave. It is one of the most unpredictable components of a storm, but developing and following lightning safety guidelines can greatly reduce risk of injury. An effective lightning safety plan begins with answering these three questions:

1. Where is the safest shelter?
2. How far are event participants, staff, volunteers, and spectators from the safe location?
3. How long will it take for these event groups to get to the safe location?

Lightning Action Plan: Evacuation locations and routes should be pre-determined prior to the race as part of the Lightning Action Plan. Event staff and city agencies should be briefed with lightning plans in advance to allow for swift implementation on-site. The lightning plan is divided into the following (3) conditions which also correspond to the Emergency Alert System (EAS) levels.

LIGHTNING ACTION	RESPONSIBLE*	TIME REQ.*
CONDITION YELLOW: 25 MILE AWAY STRIKE DETECTED		
Incident Command informs all staff & volunteers of potential lightning emergency situation via radio. EAS flags changed at all locations to YELLOW.	Incident Command	1 minute
Start team advised of a potential lightning situation. Race Start delayed to avoid athletes entering the water	Swim Start	5-10 minutes
Operations teams to begin opening paths and egresses for evacuation and position security to help facilitate fast egress	Site Teams	5-10 minutes
CONDITION RED: 15 MILE AWAY STRIKE DETECTED		
Incident Command informs all parties of lightning emergency via radio. EAS flags changed at all locations to RED.	Incident Command	1 minute
Evacuation of start area, along the course, and finish area. Volunteers instructed to seek shelter. Athletes are instructed to self-evacuate and	Start, Course, Finish	30 minutes

SAG Vehicles to conduct sweep of athletes off the course and shelter volunteer marshals in vehicles	SAG	30 minutes
CONDITION BLACK: 10 MILE AWAY STRIKE DETECTED		
Operations team confirms outdoor areas are clear of athletes and volunteers. Retreat to indoor locations or vehicles	Start, Course, Finish	10-15 minutes
The 30-minute countdown clock is reset after every strike within 15 miles is detected. All hands hold position until Incident Command confirms there have been no strikes detected within 25 miles for at least 30 minutes	Incident Command	Ongoing

**Note: Time requirements and Responsible columns are suggestions. When developing your Lightning Action Plan, assign staff teams to each action and determine the time needed to complete each task based on available staff, resources, and evacuation routes/locations.*

Lightning Safety: Not only are lightning safety practices important during the race while participants, volunteers, and spectators are on-site, but the same safety principles must also apply during load-in/load-out of your event venues. Evacuating your team to enclosed shelters during lightning incidents should be the top priority, regardless of whether these delays affect the install timeline or setup deadlines. However, in some situations there may not be shelter nearby and the team may be forced to wait out the storm. In these instances, here are some do's and don'ts if you and your team are caught outside in a thunderstorm:

LIGHTNING DO'S & DON'TS	
DO'S	**DON'TS**
• Avoid water and immediately get out of and bodies of water (lakes, rivers, puddles) • Avoid standing near any metal objects (i.e. fencing, bike racks, scaffolds, etc) • Avoid open areas such as fields. Lightning is likely to strike the tallest object in an area. Run to the nearest shelter. • If safe building structures are not accessible, seek shelter in hard-topped metal vehicles with rolled up windows • Avoid open vehicles (i.e. UTVs, golf carts)	• Shelter in tents or pavilions as they do not provide adequate protection from lightning. The building must have four permanent walls. • Touch wired electronics, extension cords, power strips. • Congregate in a group. Separate from one another to reduce the number of injuries if lightning strikes the ground.

HEAT:

The risk of Exertional Heat Stroke (EHS) increases for participants as the ambient temperature and relative humidity rises. Extreme heat situations also present risks for all other stakeholders involved in the event, including staff, volunteers, spectators, and vendors. All groups should be taken into account during the Weather Action Planning process.

Wet Bulb Globe Temperature: The Wet Bulb Globe Temperature (WBGT) is an index of environmental heat stress and is used to estimate the risk of heat related illness. The WBGT is a measure of the heat stress in direct sunlight, which takes into account temperature, humidity, and cloud cover (solar radiation). This differs from heat index, which takes into consideration temperature and humidity and is calculated for shady areas. WBGT is a standardized measure and must be evaluated in conjunction with these other factors:

- **Acclimation:** The WBGT does not take into account local characteristics of your race environment. There may be factors about your race that affect the extent to which athletes acclimate to the weather conditions. Here are some questions to consider:
    - **Frequency -** Are high heat conditions typical for this location or are high temperatures an anomaly?
    - **Duration -** Have the high heat conditions been on-going for an extended period of time or is this one of only a few days where temperatures reach extreme heights? If athletes have been able to train in these conditions, they will be better equipped to handle high temperatures on race day.
    - **Schedule** - Consider where your race falls in the event calendar. Are you the last race of the season where athletes may have a full season of training under their belts? Or is your event the first race of the season where athletes are still in the process of building up their endurance?
- **Understand Your Athlete Population:** When evaluating the mitigating factors for WBGT, it's important to get to know your athlete population. Use your registration data to help paint a picture of who is participating in your race. Here are some factors to consider:
    - **Age -** If your race has large contingents of athletes that are on the younger and/or older ends of the spectrum, high temperatures may present larger risks for these groups.
    - **Fitness** - Are most of your athletes experienced triathletes who have completed multiple events in the past? Do you have a large contingent of first-timers who will be participating in their first triathlon at your event? First-timers might not yet be used to the physical demands of participating in a race. High heat conditions tack on an additional

level of difficulty which might put them at greater risk for injury than those who are accustomed to racing multiple events a year.

- **Local vs. Out-of-Town** - Are the majority of your athletes local to the area? Is your event a destination race where athletes are traveling in for the weekend to participate? Athletes local to the area have been training in this environment and are likely to be more acclimated to the higher temperatures than those who are only in town for the couple days leading up to the event. These out-of-towners have likely been training in different conditions in their respective hometowns with little time to adjust to the new environment.

Pro Tip:
Consider purchasing a Wet Bulb Globe Temperature Thermometer to have on-site at your event to be able to continuously monitor the temperature in real time. During the swim portion of the event, athletes are naturally cooled down by the water and during the bike portion, they experience a bit of a breeze which helps to provide some relief from the heat. The run course is generally the portion of the event where athletes have the largest risk of exertional illness during high heat situations. As a result, it is best practice to position WBGT thermometers along the run course or at the Finish Line. For longer races where the conditions may vary at certain sections (i.e. along the waterfront, long stretches of roadway, etc.) consider setting out multiple thermometers to help provide more data for informed Weather Action decision-making. Ensure that thermometer readings can be easily accessed by / are regularly reported to Race Command to keep a real time pulse on temperatures throughout the event. ***Recommended Model:*** *Extech HT30 Heat Stress WBGT Meter* > *Shop Now* > *Bank of America Chicago Marathon - WBGT Thermometer Training Video*

Heat Action Plan: The Heat Action Plan outlined below is based on World Triathlon recommendations. The acclimation and athlete population factors outlined above may dictate adjustments to the WBGT thresholds outlined below. The Race Director and Medical Director may use discretion when it comes to the creation and implementation of contingency plans. The Heat Action plan should be used along with the Emergency Alert System (EAS) to notify participants, volunteers, and staff along the course of the heat thresholds and recommended action.

HEAT ACTION	RESPONSIBLE*	TIME REQ.*
LOW RISK: WBGT 78.26F AND BELOW		
Race Operations proceed as planned	All personnel	n/a
MODERATE RISK: WBGT 78.26-82.04F		
Incident Command notifies all EAS locations to change the flag to YELLOW	Incident Command	1 minute
Volume of fluids on tables increased at aid stations and at the Finish Line. Misting stations activated (if applicable)	Course / Finish	5 minutes
Public Information team sends advisory about warm temperatures	Public Information	3 minutes
Medical team notified of potential increase to patient volume due to weather conditions	Medical	2 minutes
HIGH RISK: 82.22F-86F		
Medical team prepares for additional patient volume.	Medical	2 minutes
Public Information team sends advisory about warm temperatures	Public Information	3 minutes
Additional ice procured for medical tents	Finance / Logistics	30 minutes
VERY HIGH RISK: WBGT 86.18F-89.96		
Incident Command notifies all EAS locations to change the flag to RED	Incident Command	1 minute
Medical staff redeployed as necessary to accommodate heavy volume	Medical	2 minutes
EXTREME RISK: WBGT 89.96F OR ABOVE		
Heat Emergency Declared. Incident Command notifies all EAS locations to change the flag to BLACK	Incident Command	1 minute
Incident Command informs all hands of heat emergency situation to assist with imminent race stop	All personnel	2 minutes
Athletes are redirected to walk/walk their bikes to the shortest route to Transition / Finish Line areas	Course	5-10 minutes

**Note: Time requirements and Responsible columns are suggestions. When developing your Heat Action Plan, assign staff teams to each action and determine the time needed to complete each task based on available staff and resources.*

Heat Mitigation Efforts: When high temperatures are forecasted leading up to an event, it's important to perform an audit of all athlete services and amenities offered along the course. Work with the Medical Director to determine if additional support needs to be added to minimize risks of exertional heat illness. Below are some potential options to help bolster heat mitigation efforts throughout the event.

HEAT MITIGATION:	
AREA CONSIDERATIONS	
Aid Stations	**Swim:** Ensure that there is water readily available for athletes at the Swim Start to stay hydrated while they wait for the race to begin. Water should also be available at the Swim Exit or in Transition for them to hydrate prior to starting the bike.
	Bike: For longer distance races, consider the addition of a Bike Course Aid Station that facilitates a bottle exchange of water and/or electrolyte.World Triathlon recommends bike aid stations should be located approximately every 13-15 miles along the course.
	Run: Take a close look at the distance between your Aid Stations. World Triathlon best practices dictate that during high heat situations, Aid Stations should be no more than 1.25K (0.78 miles) apart. If it's not possible to maintain this spacing due to course constraints (i.e. water source locations, permitting restrictions, etc), consider incorporating other mitigation efforts between Aid Stations to bolster support. Recommended Run Course Aid Station amenities: ● Cold water & electrolyte ● Ice chips served in cups / bags ● Iced towels ● Sunscreen available for athletes to apply
Spray Stations	Consider incorporating spay stations along the Run Course. Prior to the event, identify fire hydrants and/or water sources along the route that could be tapped for the dedicated purposes of creating sprinklers that the athletes can run through in order to cool down. Obtain any necessary approvals and permits in advance of the event so you are prepared to initiate this high heat contingency measure.
Cooling Stations	Cooling Stations can be implemented for athletes at the race site areas (Swim Start, Transition, Finish Line) and/or along the run course to provide a shaded area for athletes to rest. Consider also adding cooling stations in areas for spectators and volunteers in areas that are highly populated and have little cloud cover to provide a

	respite from the sun. Cooling Stations can range in sophistication depending on event resources, but here are a few suggestions: • Shade Tent(s) • Fans • Evaporative Coolers (aka Swamp Coolers) • Air conditioners • Seating • Water
Medical Assets	**Run:** Since the run portion has the highest risk of athlete exertional illness, medical presence is crucial. World Triathlon best practices dictate that trained medical personnel should be positioned every 500M (0.35 miles) along the course.
	Finish: In high heat situations, the Finish Medical tent should be equipped with cooling fans or air conditioning. Rent or purchase an immersion tub(s) (example) that can be filled with ice and water to facilitate lowering body temperatures of athletes who are overheating. Be prepared with IV Fluids and trained medical personnel comfortable with issuing this treatment.
SAG Assets	Increase SAG capacity in anticipation of an increased number of athletes that may not be able to complete the course as a result of the heat.
Finish Amenities	Plan to ice down water and electrolyte distributed at the Finish. Consider providing cooling towels that have been soaked in ice water. Buffer any ice and/or product orders to ensure you will not run out during the event. In high heat situations, it's better to have too much than not enough!

Heat Related Event Modifications: When the weather projections indicate that WBGTs are likely to fall within the High Risk (82.22F and above) range during the race, consider proactively making adjustments in advance of the event. Also be prepared with contingency plans that can be initiated during the event to be able to make real time adjustments if the temperatures exceed predetermined thresholds. A few suggestions for event modifications:

- **Earlier Race Start:** If possible, consider moving your race start earlier in the morning. The earlier the athletes begin the race, the sooner they will be off the course. Temperature tends to rise as the day progresses. Try to

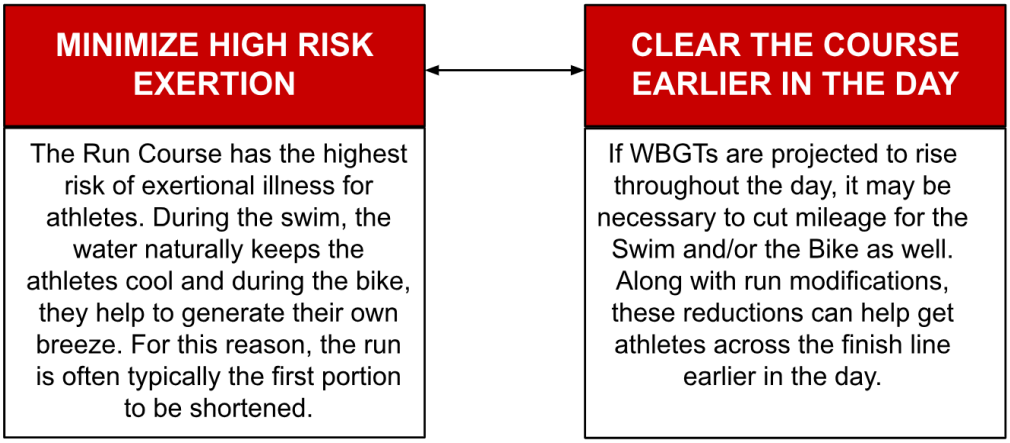
DID YOU KNOW?

The **coldest** part of the day is approximately 1 hour after sunrise. Throughout the night, temperatures continue to decrease in the absence of solar radiation. Once the sun rises, it is still too low in the sky to counteract the earth's cooling. It's not until about 1 hour after sunrise that solar radiation is strong enough to increase the temperature.

The **hottest** part of the day is typically between 3pm-4:30pm. Peak solar radiation occurs at 12pm when the sun is at its apex in the sky. During the hours following the peak, there is a buildup of absorbed heat until the sun lowers in the late afternoon and solar radiation rates decrease.

- **Eliminate Post-Event Festival & Awards Ceremony:** Scale down or eliminate Finish Festival activations to encourage people to leave the site immediately following the event. Plan to distribute awards from a designated area or mail them out post-event in lieu of a formal ceremony. This prevents the need for athletes to wait on-site for prolonged periods of time in the later, hotter part of the day.

- **Shorten the Course:** Prior to the event, plot out alternate, shortened versions of the course. Review these proposed modifications with city agencies well in advance to receive the necessary approvals to be able to enact changes leading up to or during the event. In general, athletes tend to prefer a modified route that maintains a triathlon experience with the three disciplines - swim, bike, and run - as opposed to eliminating an entire leg of the event. When deciding which alternate route(s) to implement, there are two primary factors to consider:



Pro Tip:

When actions are taken to shorten the course, look to see how you can reallocate existing resources from the "cut" areas of the route to the portions of the course that still remain. This can help bolster heat mitigation efforts by concentrating more event resources across a shorter distance.
For example:

- *Move Aid Station / Medical Station / Cooling Station equipment from "cut" areas. Create new areas between existing stations to reduce the distance between resources. Re-position volunteers, staff, and medical personnel*
- *Reallocate product (i.e. water, electrolyte) and ice to remaining locations*

Personnel Considerations: Most of the time, the focus of heat-related discussions is on the athletes, but it's important to also be mindful of the event staff and volunteers. These groups are on-site for long hours performing physical labor. In instances where the course is shortened to prevent athletes from

racing in the heat of the day, this likely means that load-out will now fall during the WBGT apex.The safety and well-being of all personnel should come before breakdown deadlines. Take a look at the punch list to determine which tasks need to be done versus those that could potentially be pushed to later in the day after the heat starts to subside or to the following day, when the crew can return rested.

Here are a few suggestions for keeping event personnel safe:

- If possible, split shifts to minimize the amount of heat exposure time. Bringing in fresh personnel for load-out can also help improve efficiency and minimize the time needed to breakdown
- Encourage frequent breaks within shaded areas
- Ensure coolers are constantly stocked with cold water and electrolyte
- Staff and volunteer tents should be stocked with sunscreen with reminders to re-apply throughout the day

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WATER TEMPERATURE:

For triathlons, changes in weather conditions can also affect the temperature of the water, affecting the swim portion of the event. Per USA Triathlon recommendations, the temperature should be taken in the middle of the swim course and in two other areas on the swim course, at a depth of 24 inches. Where the average measured figure is 80.6F or below, the lowest measured temperature will be considered as the official water temperature. Where the average measured figure is above 80.6F, the highest measured temperature will be considered as the official water temperature.

Interaction of Water Temperature and Air Temperature: In circumstances when the water temperature is lower than 71.6F AND the air temperature is lower than 59F, this compounds the risk for putting athletes in the water. To account for these risks, the measured water temperature is adjusted (lowered) according to the chart below:

Official water temperature adjusted value with cold air present (°F)

		Measured air temperature (°F)										
		59	58	56	54	52	50	48	46	44	43	42
Measured water temperature (°F)	71.6	65.3	64.8	63.8	62.8	61.8	60.8	59.8	58.8	57.8	57.3	x
	70	64.5	64	63	62	61	60	59	58	57	56.5	x
	68	63.5	63	62	61	60	59	58	57	56	55.5	x
	66	62.5	62	61	60	59	58	57	56	55	54.5	x
	64	61.5	61	60	59	58	57	56	55	54	x	x
	62	60.5	60	59	58	57	56	55	54	x	x	x
	60	59.5	59	58	57	56	55	54	x	x	x	x
	59	59	58.5	57.5	56.5	55.5	54.5	x	x	x	x	x
	58	58	58	57	56	55	54	x	x	x	x	x
	56	56	56	56	55	54	x	x	x	x	x	x
	54	54	54	54	54	x	x	x	x	x	x	x
	53	x	x	x	x	x	x	x	x	x	x	x

*This adjustment formula is half the sum of Measured Water Temperature (°F) and Measured Air Temperature (°F).

x = cancel swim

Thresholds for Swim Distance Modifications: Bearing in mind the water temperature adjustments above, USAT has provided the information below to guide decisions for swim distance shortening and/or cancellations:

USAT SWIM DISTANCE MODIFICATION GUIDE

- Cancel the swim if the measured air temperature is below 6.0 °C (42.8 °F).
- Cancel the swim if the adjusted water temperature is below 12.0 °C (53.6 °F).
- Cancel the swim if the measured water temperature is at or above 32.0 °C (89.6 °F).
- Maintain original swim distance if the adjusted water temperature is between 15.0-30.9 °C (59.0-87.7 °F).
- Swim no greater than 3000m if the adjusted water temperature is between 14.0-14.9 °C (57.2-58.9 °F).
- Swim no greater than 1500m if the adjusted water temperature is between 13.0-13.9 °C (55.4-57.1 °F).
- Swim no greater than 750m if the adjusted water temperature is between 12.0-12.9 °C (53.6-55.3 °F) or between 31.0-31.9 °C (87.8-89.5 °F)

Wetsuit Thresholds: When wetsuits are worn, all components of the wetsuit will fit to the athlete's body tightly. In instances with low water temperatures, this can provide insulation from the cold and in instances with high water temperatures, this can become a risk factor for athletes to overheat. The USAT temperature parameters for the use of wetsuits are as follows:

Elite, U23 and Developmental High Performance races:

SWIM LENGTH	PROHIBITED	MANDATORY
1500m and shorter	20.0 °C (68.0 °F) and above	15.9 °C (60.6 °F) and below
Longer than 1500m	22.0 °C (71.6 °F) and above	15.9 °C (60.6 °F) and below

USA Triathlon National Championship and World Triathlon qualifying Age-Group races:

SWIM LENGTH	PROHIBITED	MANDATORY
All distances	24.6 °C (76.2 °F) and above	15.9 °C (60.6 °F) and below

All other races and waves*:

SWIM LENGTH	PROHIBITED	ALLOWED**	PERMITTED	MANDATORY
All distances	84.0 °F (28.9 °C) and above	78.1 to 84.0 °F (25.6 to 28.8 °C)	60.7 to 78.0 °F (16.0 to 25.5 °C)	60.6 °F (15.9 °C) and below

*Athletes in a non-competitive race or wave are not eligible to have their results submitted for rankings.

**Athletes who choose to wear a wetsuit in a competitive non-National Age-Group race or wave when the water temperature is at or above 78.0 °F are not eligible to have their results submitted for rankings or Age-Group awards.

- **Wetsuits vs. Race Suits:** When wetsuit thresholds come into play at your event, it's important to know what differentiates a wetsuit (which may or may not be acceptable) from a race suit (which is always acceptable). At events where USAT Officials are present, they can assist with policing athlete gear at the entrance to the swim start, but in situations where Officials are not present, it may be necessary for event staff to fill this role.
    - **Wetsuit**: Wetsuits are swimwear that provides thermal insulation and is made of rubberized, buoyant material such as polyurethane or neoprene. Wetsuits cannot exceed 5 millimeters thickness anywhere. When wetsuits are permitted, wetsuits tops and/or shorts are allowed but may not be worn in addition to a wetsuit. The combined thickness of any overlapping pieces may not exceed 5 millimeters. When wetsuits are mandatory, wetsuits MUST cover the torso and back.
    - **Race Suit:** Regardless of air and water temperature, athletes are always permitted to wear a one piece or two-piece racing suit. The body of a race suit must be 100% textile material such as nylon or Lycra and must not include rubberized material such as polyurethane or neoprene. Race suits are not allowed to extend above the neck or cover

the face (except for suits worn for religious reasons which can cover the head or hair). However, water temperature does determine the acceptable length of suits for the arms and legs:

- Wetsuit Legal Swim: When the swim is Wetsuit Legal, a race suit may cover the shoulders and may extend to the ankle or wrist, but not the hands or feet.

- Wetsuit Non-Legal Swim: When the swim is not Wetsuit Legal, a race suit may not extend below the elbow and covering any part of the legs below the knees is also forbidden.

- **Wetsuit Accessories:** In addition to wetsuits, which cover the athlete's body, at certain times wetsuit accessories are allowed as well. These accessories can also be comprised of rubberized materials such as polyurethane or neoprene:

  - Wetsuit Caps or Hoods: When the swim is Wetsuit Legal, wetsuit caps and hoods are allowed. The official race swim cap MUST be worn over the cap or hood.

  - Wetsuit Boots or Socks: When the swim is Wetsuit Legal, wetsuit boots or socks are allowed but must not aid in propulsion. They cannot be webbed or have web-like construction between the toes.

  - Wetsuit Gloves: When wetsuits are mandatory, gloves may be worn but must not aid in propulsion. They cannot be swim resistance gloves, hand paddles, webbed gloves or have web-like construction between the fingers. When wetsuits are not mandatory, gloves are only allowed in non-competitive races or waves.

WETSUITS VS. RACE SUITS					
WETSUITS (+ ACCESSORIES)				RACE SUITS	
WETSUIT	HOOD / CAP	BOOTS / SOCKS	GLOVES	FULL LENGTH	HALF LENGTH
	 HOOD  CAP	 BOOTS  SOCKS		 When the swim is wetsuit legal, the race suit can extend to the wrists and/or ankles.	 When the swim is not wetsuit legal, the race suit cannot extend pas the elbows and/or knees.

- **Preparing for a Non-Competitive Wetsuit Wave**: In situations where the final race morning water temperature falls between 78.1F-83.9F, wetsuits are only permitted, as part of non-competitive waves, unless a variance to the rules is provided by USA Triathlon. Athletes that opt to wear wetsuits are not eligible for awards. For timing purposes, it will be important to separate the start of these non-competitive wetsuit athletes from their competitive, age group counterparts. The wetsuit wave should be positioned as the last wave to enter the water. Ensure there is a definitive break between when the last competitive athletes cross the start timing mats and when the wetsuit athletes cross the mats. This allows the timer to log the time of day of the Wetsuit Wave start. All athletes starting after this time will be tagged as non-competitive to exclude them from being included in the awards rankings.

Pro Tip:
Based on water temperatures in the weeks leading up to the event, if there's a chance the race may require a separate wetsuit wave, consider proactively producing a "WETSUIT WAVE" wave sign so it's ready to deploy race morning if needed. Signage will help to create some organization around the process of separating non-competitive wetsuit athletes from the competitive age group athletes.

- **Water Temperature Communication**: In scenarios where the water temperature is on the bubble in the days leading up to the race, the final race morning reading serves as the official verdict. Athletes will anxiously be awaiting the news about whether they will be able/required to wear a wetsuit. It's important to have communication for all scenarios pre-drafted and cued up prior to race morning. This allows the rollout of information to be fast and efficient. The final water temperature and associated wetsuit messaging should be communicated using the following methods:

    - All-Staff Radio Call / Text Alert: First and foremost, ensure all staff are notified via radio / group text so they are prepared to answer athlete questions
    - Social Media Posts
    - Email Blast
    - On-Site Announcements: Transition and Swim Start
    - Race App (if applicable)
    - Athlete Text Alert System (if applicable)

    From a logistics perspective, the earlier the athletes are aware of any wetsuit restrictions, the smoother the operation will be. The goal of the timely communication is to prevent the situation where you have a large contingent of athletes who arrive at the Swim Start with their wetsuits, only to find out they're not permitted. Now they have equipment that needs to be returned to Transition or staged in a secure location where it can be retrieved post-event. In the case of a wetsuit mandatory swim, athletes may arrive at the start without their wetsuit and need to backtrack to retrieve it from Transition, their vehicles or even their homes. These scenarios

disrupt the normal flow of operations and tend to create confusion, which can have a domino effect leading to a delayed race start.

Pro Tip:
For races where Transition and Swim Start are separate venues, have a contingency plan for how you might handle if there is a race morning decision that the swim is no longer wetsuit legal. Athletes may not have time to return to Transition to drop off their wetsuit. Anticipate that you may have a large influx of athletes that have a wetsuit at the start that they now need to find a home for before they enter the water. Be prepared with large clear plastic bags, labels, and markers to be able to label each wetsuit with the athlete's name and bib number. Stage these in a secure location for athletes to be able to return post-event to retrieve from the Swim Start or if applicable, incorporate these wetsuit bags into any existing baggage / transport plans to bring to Transition or the Finish Line.

COLD:

In the case of low air temperatures, generally only the swim portion of the event is modified or canceled as outlined in the previous section. In cases of snow and/or ice, the bike and run portions may also be affected as a result of slippery race conditions.

If temperatures with windchill fall below 40F or 55F along with forecasted precipitation, plan to take the following measures:

DID YOU KNOW?

Windchill is a term used to describe what the air temperature feels like to human skin due to the combination of cold temperatures and winds blowing on exposed skin.

COLD MITIGATION	
AREA CONSIDERATIONS	
Course / Site Ops	Equip Operations Teams with salt, shovels, and scrapers to combat ice and snow.
Warming Stations	Plan for a Warming Station at your event site. If there is an indoor facility nearby, configure this area into a shelter in place. If not, plan to order additional tent(s) equipped with industrial heaters within the Athlete Recovery Area where athletes can go to get warm. If your event has a transportation component that involves buses, consider staging the buses as warming stations for athletes.

Medical Stations	Be on the lookout for hypothermic athletes and encourage them to seek medical assistance. Consider equipping medical stations with the following: • Heaters • Hand Warmers • Hot Water • Mylar Blankets
SAG Assets	Increase SAG capacity in anticipation of an increased number of athletes that may not be able to complete the course as a result of the heat.
Finish Amenities	Distribute mylar blankets at the finish line. Mylar blankets help to keep athletes warm in three ways: • **Prevents Conduct Heat Loss** - The blanket forms a barrier between the athletes and the wind, providing insulation. • **Prevents Evaporative Cooling** - When water evaporates, it uses energy and lowers body temperature. This means the more you sweat, the colder you get. The blankets help to slow down the process of evaporative heat loss by increasing the humidity of the air next to the skin. • **Uses Reflective Insulation** - The blanket reflects radiant heat back toward the body. When worn, the blanket's reflective side should always be facing toward the athlete's skin.
Athlete Baggage	Consider the implications cold weather might have on your athlete baggage operation. With colder temperatures, it's likely athletes will be wearing extra layers up until the time the race begins. There will need to be a plan for where this clothing should be brought to be stored and/or transported for athlete pick-up post race. Distribute clothing bags and labels to athletes pre-race to be able to keep belongings organized.

HIGH WIND:

Events are temporary and rely on temporary structures to allow for quick installation and breakdown of the event infrastructure. As a result, the wind can pose a significant risk at outdoor events. At best, a flyaway tent is an inconvenience. At worst, it can pose a serious threat of injury.

High Wind Action Plan: The purpose of the High Wind Action plan is to ensure that the public, personnel, and

DID YOU KNOW?

Common temporary structures at events:

- Stage Platforms
- Speakers / Tripods
- Bleachers
- Tents
- Trussing
- Inflatables / Arches
- Signage Hardware

temporary structures in the event area remain safe during high wind conditions. Event staff should inspect temporary structures periodically during events of long duration. They should post warnings on, or close, a temporary structure whose intended purpose is being violated (i.e. spectator climbing on a platform to get a better vantage point).

The key components of a High Wind Action Plan include:

1. Outline the process for monitoring wind speed
2. Create a list of your temporary structures at each event venue. If applicable, work with their suppliers to understand the wind levels they are able to tolerate.
3. Determine the potential risks that exist within each wind threshold and outline action that should be taken to mitigate potential dangers
4. Assign roles and responsibilities for the efficient implementation of wind action responses

HIGH WIND ACTION	RESPONSIBLE*	TIME REQ.*
TIER 1 - Sustained 10 MPH, Gusts up to 20 MPH		
Pop-Up Tents: Drop tent heights, remove sidewalls, and add additional weight	Ops Team	30 mins
Ballasted Tents: Remove or open tent walls to allow for blow through	Ops Team	20 mins
Sound: Lower speakers to safe level closer to the ground	Audio Vendor	10 mins
Inflatables:Take down	Ops Team	15 mins
Signage: Completely take down or lower the height of free-standing signage (i.e. L-poles, feather banners)	Ops Team	20 mins
TIER 2 - Sustained 20 MPH, Gusts up to 30 MPH		
Pop-Up Tents: Take down	Ops Team	30 mins
Ballasted Tents: Remove tent tops, only the frames remain	Tent Vendor	60 mins
Sound: Drop all speakers on tripods and secure sound systems	Audio Vendor	10 mins
Signage: Barricades/Fencing/Trussing remains up, but any affixed signage is removed (i.e. mesh fencing / banners)	Ops Team	40 mins
Toilets: Close and lock portable toilets in wind-prone areas. Bundle toilets in groups	Ops Team	15 mins
Equipment / Supplies: Secure garbage cans, remove delineators, and any other free-standing equipment	Ops Team	30 mins
Heavy Equipment: Lower all light towers	Ops Team	15 mins

TIER 3 - Sustained 30 MPH, Gusts up to 40 MPH		
Ballasted Tents: Evaluate possibility of frame breakdown with tent company	Tent Vendor	120 mins
Signage: Barricades/Fencing/Trussing removed and consolidated if possible	Ops Team	120 mins
Toilets: Close and lock all portable toilets	Ops Team	15 mins
Heavy Equipment: Secure all carts and vehicles	Ops Team	15 mins
Staffing / Volunteers: Remove cyclists from course operations	Course Team	30 mins
TIER 4 - Sustained 40 MPH, Gusts up to 50 MPH or TIER 3 that sustains longer than 1 hour (CANCELLATION RECOMMENDED)		
All Persons: Evacuate athletes, volunteers, spectators and staff to designated evacuation areas	All Staff	30 mins

**Note: Time requirements and Responsible columns are suggestions. When developing your Wind Action Plan, assign staff teams to each action and determine the time needed to complete each task based on equipment quantities and available staff and resources.*

Wind Ratings: If a section of your course takes place on a bridge(s), obtain the wind rating from the controlling city agency. Wind ratings allow us to classify bridges into categories based on the amount of wind pressure (sustained winds wind gusts) the structure(s) are able to withstand. At certain thresholds, it can become unsafe to have athletes on bridges, particularly on bikes.

- As a general rule of thumb, cyclists should not be permitted to ride on bridges if there are sustained winds of over 30 mph or max gusts over 35 mph. Be prepared with an alternate course route that eliminates the use of bridge(s) in high wind situations.

Pro Tip:
Adaptive Athlete Consideration: *If your run course includes a bridge, the wind rating thresholds may not be a factor for age group athletes, but these wind limits may come into play for adaptive athletes who are completing the run course in a racing wheelchair.*

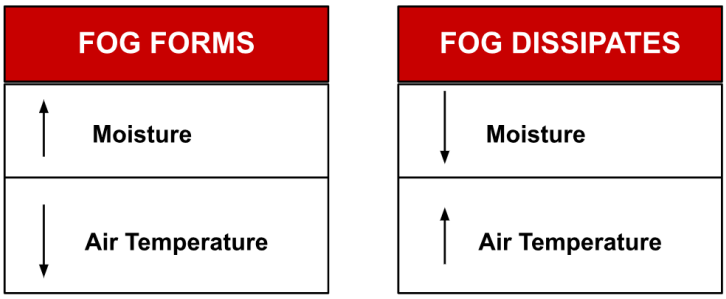
Wind Mitigation Efforts: Below are a few tips and tricks to help combat high winds and create a safer race site. High Wind Action plan wind thresholds should be strictly adhered to.

WIND MITIGATION	
PHOTO GALLERY	**DESCRIPTION**
	**Opt for Blow Through Mesh** For trussing, barricades, and large backdrops, consider using mesh material for signage, as opposed to coroplast or vinyl to allow air to pass through the material. Attributes of mesh banners: • More durable, resistant to tearing, and generally have a longer lifespan than coroplast or vinyl • Colors and graphics tend to be a bit muted • Can only be printed one-sided
	**Add Wind Slits to Vinyl Banners** If vinyl needs to be used for outdoor banners, consider adding wind slits or flaps, which are small incisions cut through the face of your banner. The flaps allow wind to pass through and ease stress on the edges of the banner. Wind the wind is still, the flaps hang down so the design is still legible. Attributes of vinyl banners with wind slits: • Best served for banners being viewed from a distance • Vinyl generally allows for more vibrant colors and sharper graphics than mesh • Generally less expensive and quicker to produce than mesh • Can be printed double-sided
	**V-Brace Fencing** Consider adding braces for tall fencing, especially panels that may have windscreen or signage attached. Plan for (2) additional panels to be affixed to the backside of the fence in a v-configuration to provide additional support. For long stretches of fencing positioned in high wind areas, plan to add v-braces every 8-10 panels (approximately 100-120 ft).

FOG:

Dense fog creates risks for events by decreasing the visibility along the course for safety assets to monitor athletes, particularly during the swim portion of the event. Low visibility also inhibits the ability for athletes to see one another, which can increase risk of collisions during the bike and run portions of the event.

What is Fog?: Fog is often described as a cloud resting near the ground. Fog forms when the air temperature and the dew point approach the same temperature, causing the air to become saturated with water.



Here are a few key characteristics of fog that are helpful with forecasting its impact on your event:

- When fog occurs, this brings an increase in humidity levels which can put extra heat stress on athletes.
- Once the sun rises and solar heating begins, ground temperatures tend to rise. The faster the temperature rises, the faster the fog dissipates.
- Pay attention to the wind speed forecast. Generally, fog tends to occur when wind speeds are low. As wind speeds pick up, there is a higher likelihood that fog might start to clear.
- Air quality is a factor in how quickly fog forms and how long it persists. In environments where the air is high in pollutants, dense fog can occur with relatively small water vapor content, which means it tends to happen more often and last longer.

Fog Action Plan: When it comes to judging whether your event is safe to produce during foggy conditions, there are not measurable thresholds like those that exist for temperature and wind speed. Decisions to delay, modify, or cancel the event as a result of fog conditions are a judgment call based on visibility levels. Consult with your course, safety, and medical personnel to come to a joint decision, keeping in mind the following factors:

FOG ACTION PLAN CONSIDERATIONS:	
AFFECTED GROUPS	**CONSIDERATIONS**
Athletes	• Athletes have ample line of sight for the course during the swim, bike, and run portions of the event. • Athletes are able to see athletes racing alongside and in front of them without risk of collision • Athletes are able to see course signage, delineation, and/or directional volunteers from a far enough distance that they have sufficient time to react accordingly

Swim Course Assets	• Lifeguards must confirm fog levels will not obstruct their ability to see and closely monitor all athletes • Rescue boats, jet skis, kayaks, and other swim safety assets are able to safely navigate the water
Event Vehicle Assets	• Course vehicles, motorcycles, and cyclists are able to navigate the roadways and perform their necessary functions • Athlete transportation (i.e. shuttles/buses) are able to proceed safely • EMS units are able to adequately respond to calls and carry out emergency transport procedures
General Public Motorists	• For events where the bike and/or run route are not closed and roadways are shared with motorists, all vehicles must be able to see event notification signage, delineation, and/or athlete crossings.
Event Security	• Event security is able to maintain watch of assigned areas to ensure unauthorized persons are not permitted to enter secure footprints

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RAIN:

While most endurance events are considered “rain or shine,” periods of heavy rain leading up to and during the race can create safety risks that should be evaluated before allowing the event to continue.

Flooding and Puddling: Heavy rainfall within a short period of time can result in flooding and/or puddling at your event site and/or along the course. Slick surfaces create hazards for athletes, especially along the bike course as they navigate sharp turns and downhills. Puddling of water at the event site also increases the risk of slip and falls among volunteers, spectators, and staff within the event footprint.

- **Flood Mapping:** FEMA (Federal Emergency Management Agency) maintains and updates flood maps, which show how susceptible areas are to flooding. Any location with a 1% chance or higher of experiencing a flood each year is considered to have a high risk. These free, downloadable maps are a great resource for evaluating potential flood risks within your event footprint. Visit the FEMA Map Service Center to search and download flood maps.

HOW TO READ A FLOOD MAP	
KEY	**EXAMPLE**
Flood Zone Designations are geographic areas that show the flood risk per area. Each zone is represented differently on the mpa to convey low, moderate, and high-risk flood zones. **High Risk:** Flood area labels begin with the letters A or V and are shaded in blue. **Moderate-To-Low-Risk:** Flood area labels begin with the letters B, C, or X. Moderate-risk areas have orange shading and low risk areas are clear or unshaded. **Undetermined Risk:** Areas with undetermined flood risks are labeled beginning with the letter D.	

- **Puddling:** The two primary causes of puddling are lack of drainage and the existence of potholes that collect water. Prior to the event, schedule some time to visit your event site and drive the course while it's raining and/or immediately following a storm. Identify if there are areas that hold water and note the depth of puddles that have formed. Based on these observations, you can proactively take steps to patch potentially problematic roads/paths prior to the event and also provide the Ops Team working in these areas with equipment that can help to reduce puddling on event day.

PUDDLE MITIGATION			
COLD PATCH	**PUSH BROOMS**	**WATER PUMP**	**CAT LITTER**
			
Prior to the race, check with city agency contacts if they're able to pave /	Supply areas prone to puddling with push	For deep puddles, consider renting or purchasing a	For muddy areas on-site, lay down cat litter to absorb the

patch potholes. If not, ask if you can apply your own cold patch to the area as a temporary bandaid for the event. Filling potholes before the rain begins can help to reduce puddling.	brooms. For shallow puddles, staff will be able to use the brooms to push the puddles from the roadway or path to a nearby drain.	submersible pump and hose to be able to empty puddles. For large-scale drainage needs, water removal companies can be hired to be on-call for the event (i.e. research local companies that pump water out of flooded basements)	moisture. This will help to dry out the dirt and make the area less slippery.

Pro Tip:

In anticipation of potential puddling, plan to have materials on-hand that can warn event attendees about potential hazards. This may include "SLOW DOWN" and/or "SLIPPERY WHEN WET" signage that can be posted ahead around slick surfaces. Equip your staff supply kit with caution tape which can be attached to barricades, delineators, etc. to keep people out of slippery areas on-site that may present a tripping hazard.

Swim Water Quality: Extended periods of heavy rain in the days leading up to the event can have an impact on the water quality for the body of water where the swim will take place. During heavy downpours, the area's sewage system can become overwhelmed. Instead of draining properly, the overflow of wastewater builds up within the system causing sewage levels to rise until it is released into local water sources. With more sewage comes higher bacteria levels, which can create unsafe swimming conditions. Plan to conduct water quality tests in the days leading up to your event and potentially secondary tests if heavy rainfall is forecasted. The two types of bacteria that should be closely monitored are the Fecal Coliform and Enterococcus levels.

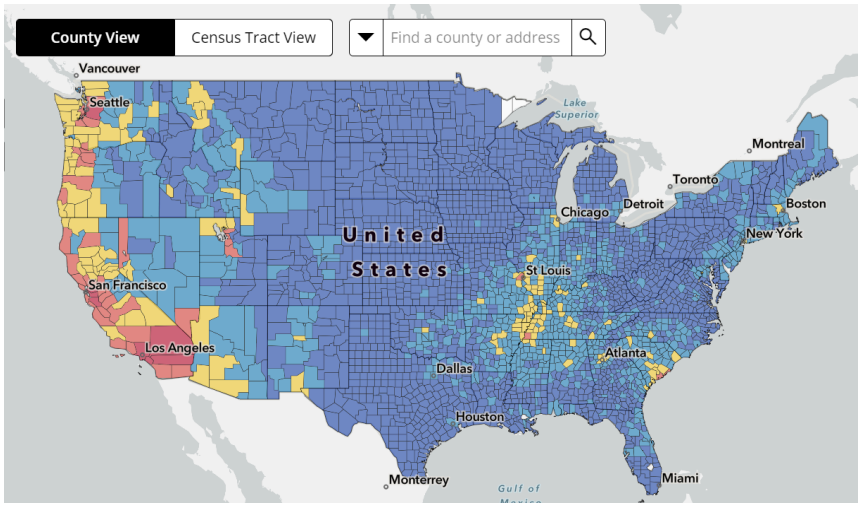
Visibility: Heavy rain during the event can create many of the same visibility challenges discussed during the fog section above. Check in with course, safety, and medical personnel to ensure they're able to carry out their primary functions.

EARTHQUAKE:

The earth is composed of tectonic plates, which are giant rock slabs that make up Earth's upper layer. The plates are always slowly moving, but there are instances when the collision of plates creates friction, releasing energy waves into the earth. These energy waves create the shaking that occurs during an earthquake. Geographic areas located near fault lines between tectonic plates are more likely to experience earthquakes. While earthquakes are unpredictable and occur suddenly without warning, understanding these attributes of your event site, can help you to get a better idea of earthquake risk and possible severity of the shaking if an earthquake occurs:

DISTANCE FROM FAULT	TYPE OF SOIL	DEPTH OF THE BEDROCK
The closer the site is located to the fault, the stronger the earthquake shakes	The softer the soil, the bigger the energy waves will be which increases the intensity of the earthquake shakes	The shallower the bedrock, the higher the likelihood damage will occur since the earthquake is closer to the surface

Earthquake Risk: FEMA's National Risk Index Map is an available resource to identify the potential risk of earthquakes in the region where your event is held. The map showcases an area's earthquake risk relative to its state and the rest of the U.S.

EARTHQUAKE RISK	
MAP	**KEY**
	

Aftershocks: When planning your earthquake response actions, it's important to consider the possibility of Aftershocks, which are smaller earthquakes that follow main shocks. They are caused by adjustments of the fault as it settles into a new relaxed state. Like the primary earthquake incidents, aftershocks are also unpredictable and can occur minutes, hours, days, weeks, or even months after the initial earthquake. Be prepared for the worst case scenario where you have to deal with both the earthquake and the aftershock all in the span of your event time frame.

Earthquake Warning: The ShakeAlert Early Warning System is an available resource that detects significant earthquakes early and oftentimes, before the shaking begins. The alerts don't predict earthquakes, but indicate that shaking is imminent, which can provide you with a heads up to begin preparation. Below is information on how to get ShakeAlert powered messages configured on your mobile devices:

EARTHQUAKE ALERT APPS			
PROVIDER	**APP LOGO**	**STATES**	**NOTES**
Google	n/a	CA, OR, WA	The ShakeAlert Warning System is automatically configured within the Android Operating System for all users located in these states
MyShake		CA, OR, WA	Earthquake notification provides map showing Epicenter of the earthquake with instructions on recommended action
QuakeAlertUSA		CA, OR	QuakeAlert notifications include the following info: • Expected arrival time • Expected intensity • Distance from the EpiCenter • Magnitude • Suggested Safety Measures

Earthquake Action Plan: Taking steps to properly secure temporary structures prior to the event can help to mitigate earthquake effects. During an earthquake incident, all event attendees and personnel should move away from structures and avoid entering buildings. It's important to identify designed Safety Zones at your event site and along the course where attendees can safely gather out in the open.

EARTHQUAKE ACTION	RESPONSIBLE*	TIME REQ.*
EARTHQUAKE OCCURS PRIOR TO THE EVENT		
Staff to position themselves around the event site and have attendees hold in place. Participants/spectators/staff should NOT go toward any buildings - everyone should remain in the open	All Staff	10 mins
Once the earthquake has passed, the Incident Command will access next steps based on the damage, which may include dispersing crowds	Incident Command	10 mins

EARTHQUAKE OCCURS DURING THE RACE		
If the earthquake is strong enough, Incident Command will notify staff to stop the race and direct athletes off the course	Incident Command	5 mins
Event staff and course marshals will lead runners off the course into the designated Safety Zones	Course Team	20 mins
Event course vehicles and Police Department assets to deploy along the course, ensuring the runners stop and evacuate	Course Team / Agency Support	20 mins
Emergency Support vehicles and/or medical personnel to be dispatched to the Safety Zones.	Medical Team	20 mins
On course communication to runners will be through Police Department / Emergency vehicle loudspeakers, megaphones, and the Event Alert Flag System (EAS)	Course Team / Agency Support	20 mins

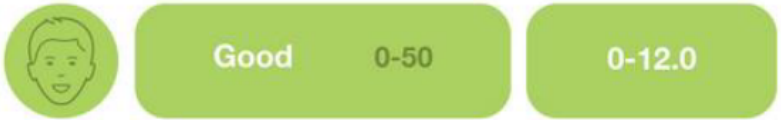
**Note: Time requirements and Responsible columns are suggestions. When developing your Earthquake Action Plan, assign staff teams to each action and determine the time needed to complete each task based on equipment quantities and available staff and resources.*

AIR QUALITY:
Poor air quality can be caused by any airborne irritant - a particle or substance in the air that is harmful to a person to breathe in. Natural disasters, like wildfires, often cause short-term spikes in poor air quality as the smoke, which contains carbon monoxide and other dangerous chemicals, enters the atmosphere. These tiny particles can be inhaled deep into the lungs and can be absorbed into the bloodstream. Air pollution from wildfire smoke can make breathing difficult for anyone, but especially for young children, older adults, pregnant women, and people with asthma and/or other pre-existing respiratory conditions.

AIR QUALITY APPS		
PROVIDER	**APP LOGO**	**NOTES**
IQAir AirVisual | Air Quality		Historical, real-time and forecasted 7-day air pollution data with associated health recommendations

Measuring Air Quality: The Environmental Protection Agency (EPA) uses Air Quality Index (AQI) to report air quality, which ranges from 0 to more than 300, with levels 50 and below being considered the healthiest. When levels exceed 150, the general population may start to experience symptoms. Levels

over 200 are considered very unhealthy. If you're faced with a situation where air quality is a concern, reference the chart below for the AQI thresholds and associated recommendations.

AQI MESSAGING & RECOMMENDATIONS	
US AQI LEVEL	**RECOMMENDATION**
US AQI LEVEL **PM2.5 (µg/m3)**  When categorized as good, air quality poses little to no health risk at an AQI of 0 up to an AQI of 50. You can enjoy your usual outdoor activities. You may choose to open your windows and ventilate your home to bring in outdoor air.	Proceed as normal
US AQI LEVEL **PM2.5 (µg/m3)**  Due to the risk of respiratory illness symptoms, sensitive groups should greatly reduce outdoor exercise when air quality is moderate (US AQI 51-100). Avoid ventilating indoor spaces with outdoor air, and close windows to avoid letting outdoor air pollution indoors. Note that sensitive groups for all categories include children, the elderly, pregnant people, and people with cardiac and pulmonary diseases.	Proceed as normal but monitor conditions and athletes
US AQI LEVEL **PM2.5 (µg/m3)**  When air quality is unhealthy for sensitive groups, everyone is at risk for eye, skin, and throat irritation as well as respiratory problems. The public should greatly reduce outdoor exertion.Sensitive groups are at greater health risk, should avoid all outdoor activity, and should consider wearing an air pollution mask outdoors. Ventilation is discouraged. A high-performance air purifier should be turned on if indoor air quality is unhealthy.	Be aware of health effects of smoke and related symptoms

US AQI LEVEL **PM2.5 (µg/m3)**  Unhealthy AQI measurements mean that there is an increased likelihood of heart and lung aggravation as well as health impacts among the public, particularly for sensitive groups. Everyone should avoid and wear a pollution mask outdoors. Ventilation is discouraged. Air purifiers should be turned on.	Consider reduction of length of events to 1 hr. Provide a warning to competitors with respiratory issues.
US AQI LEVEL **PM2.5 (µg/m3)**  When air quality is very unhealthy, the public will be noticeably affected. Sensitive groups will experience reduced endurance in activities. These individuals should remain indoors and limit activities.Everyone should avoid outdoor exercise and wear a pollution mask outdoors. Ventilation is discouraged. Air purifiers should be turned on.	Cancel or postpone the event
US AQI LEVEL **PM2.5 (µg/m3)**  Everyone is at high risk of experiencing strong irritation and negative health effects that could trigger cardiovascular and respiratory illnesses. Avoid exercise and remain indoors. Avoid outdoor exercise and wear a pollution mask outdoors. Ventilation is discouraged. Air purifiers should be turned on. .	Cancel or postpone the event

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CONCLUSION:

Establishing Weather Action thresholds prior to the event helps to create a framework for decision-making during high stress, high impact situations. Equally as important as the thresholds themselves is the Incident Command process for decision-making and the communication of next steps to all relevant parties. Effective weather response is achieved when the right people are equipped with the right information at the right times.

The information in this Guide is meant to function as a baseline for generic weather response planning. As a next step, Race Directors should consider weather implications specific to their event environment and outline action protocols based on resources, timelines, and any other factors that may have an impact on response.