TEXAS

The University of Texas at Austin

Emergency Operations Plan

2018

Annex II – Severe Weather

Approvals

This supersedes and rescinds all previous versions of this document.

Approved: _____ Date: 1/24/18 cor 2/23/2018

Dr. Gregory L. Fenves, President
Office of the President
The University of Texas at Austin

Approved: Darrell Bazzell Date: 1/18/18

Darrell Bazzell, Senior Vice President and Chief Financial Officer
Financial and Administrative Services
The University of Texas at Austin

Approved: _____ Date: 1-10-2018

James H. Johnson, Interim Associate Vice President for Campus Safety & Security
Campus Safety and Security
The University of Texas at Austin

Published January 2018

Record of Changes

Description of Change	Entered By	Date Entered
Deletion of NOAA All Hazards Weather Radio reference	David Cronk	December 12, 2011
Change in NWS definition of severe hail size	David Cronk	December 12, 2011
Add Ice to Section H. Level of Readiness/Activation Campus Closure or Delay Guidelines and Decision Considerations addition	David Cronk David Cronk	February 20, 2014 February 20, 2014
UTPD Weather Operations Plan	David Cronk	December 10, 2015
Editorial changes made by University/Incident Response Meteorologist, Troy Kimmel	Patrick Funari	October 20, 2016
Editorial changes made by University/Incident Response Meteorologist, Troy Kimmel	Robin Richards	November 20, 2017
Formatting and organizational changes throughout; minor language changes throughout to improve clarity and readability; clarified that this document is an annex to the Emergency Operations Plan	Robin Richards	November 20, 2017
Added Sections 1.1, 1.2 and 3-7 to coordinate with Emergency Operations Plan	Robin Richards	November 20, 2017
Modified University Levels of Action and Planning and Incident Response Level Criteria to match revisions in Emergency Operations Plan	Robin Richards	November 20, 2017
Modified Concept of Operations to coordinate with Emergency Operations Plan; Modified Explanation of Terms to include additional terminology; Modified Level of Readiness/Activation Conditions to correlate with new Levels of Readiness and Activation in Emergency Operations Plan	Robin Richards	November 20, 2017
Removed C. Sources of Official Information; Removed K. Organization and Assignment of Responsibilities: High Readiness Activities – information is incorporated into Emergency Support Function Annexes; Removed L. Outdoor Warning System/Shelter-in-Place, information is contained elsewhere; Removed M. Campus Closure or Delay Guidelines and Decision Considerations, information is based on retired policy; Removed N. UTPD-Weather Operational Plan, department-level plans will be maintained by individual departments; Removed Appendices Residential Student Action Plans, department-level plans will be maintained by individual departments	Robin Richards	November 20, 2017

Acknowledgement

The University of Texas at Austin Campus Safety and Security Committee would like to acknowledge the major contributions of Troy M. Kimmel, Jr. to the creation of this Weather Events Response Annex.

Troy Kimmel is the University/Incident Response Meteorologist and Member, Campus Safety and Security Committee, as well as senior lecturer for Studies in Weather and Climate; manager of the Weather and Climate Resource Center, Department of Geography and the Environment, at The University of Texas at Austin; and chief meteorologist for the Austin Radio Network (Austin, Texas).

Contents

1. Purpose, Scope, Situation, and Assumptions

1.1. Purpose

This document is an annex to The University of Texas at Austin's (University) Emergency Operations Plan. The Severe & Inclement Weather Annex provides a framework for weather-specific preparedness and response activities and serves as a foundation for further planning, drills, and emergency preparedness activities. The information in this document serves as a supplement to, and not replacement for, the information in the Emergency Operations Plan. The information in the Emergency Operations Plan continues to apply in the case of a severe weather event. This document addresses information specific to weather-related emergencies that is not covered in the Emergency Operations Plan.

1.2. Scope

This annex is limited to preparedness and response for the main campus, Pickle Research Campus (PRC), and other University facilities as designated (*See* Emergency Operations Plan, Section 1.4). This annex includes preparedness and response principles and guidelines that are specific to severe weather events. This annex does not address all departmental responsibilities, but instead establishes an overall University response to a severe weather emergency

1.3. Situation

1.3.1. Greater Austin Metropolitan Area Climatological Summary

Austin and south central Texas are located on the westernmost fringes of the humid subtropical climate type that covers the southeastern quarter of the United States. This climate type is strongly influenced by the maritime tropical air masses that emerge from the Gulf of Mexico to the southeast. Although this is the dominant air mass, south central Texas and the Austin area is frequented at different times of the year, as well, by other air masses that emerge from areas such as northern Mexico, Canada, the Pacific Ocean, and even occasionally from the arctic regions. With the close proximity of the semiarid climate to the west, south central Texas can experience a variety of precipitation amounts, ranging from drought to flood in any given year.

The winter season is normally the cloudiest and most humid time of the year although that moisture does not necessarily find its way into the rain gauge as precipitation. Fog and low clouds are quite common. Temperatures do cool with cold frontal passages, but those fronts are most often of modified Pacific or Canadian origin. Several times a year, the much colder Arctic air masses proceed southward across Texas. Freezing or frozen precipitation is infrequent, but when it does occur, travel difficulties result as the area is unaccustomed to such events. Freezing rain, freezing drizzle, and sleet (ice pellets) are most common since the depth of the cold air needed for more significant snow events does not occur very often.

Changes in weather patterns typically occur during the spring and fall months. Spring and fall months typically see changing weather patterns. . Convective activity, namely rain showers and thunderstorms, become more frequent during the spring months with most of the severe and inclement weather (large hail, damaging thunderstorm wind, flash flooding, and tornadoes) occurring during these months. Although severe weather is not an everyday event, it most commonly occurs in advance of southeastward moving cold fronts and/or upper-level low pressure disturbances as they move sluggishly through increasingly warm and unstable air masses that become more established during the mid and late spring months.

The summer months are fairly consistent as far as weather is concerned. Cold frontal passages are very infrequent as maritime tropical air masses dominate. Normally, summertime in south central Texas is made up

of mostly sunny or partly cloudy days with highs in the 90s with overnight lows in the 70s. Air mass rain showers and thunderstorms do occur in association with maximum daytime heating. Occasionally, tropical cyclones do emerge from the Gulf of Mexico in mid and late summer into the early and mid-fall months, but the events are usually few and far between.

The last tropical cyclones to directly affect the area was Hurricane Harvey in August 2017; before that Hurricane Allen in 1980, Hurricane Celia in 1970, and Hurricane Carla in 1961. Even though Austin is a little more than 100 miles inland from the Texas Gulf Coast, these tropical cyclones are still a force to be reckoned with locally as they can produce sustained high winds, torrential rains, and flooding, as well as tornadoes.

1.4. Threat and Vulnerability

Here is a summary of the different types of severe and inclement weather that south central Texas experiences ranked on the average frequency of their occurrence.

- **Flash Flooding:** South central Texas, including the Austin metropolitan area, is considered the flash flood capital of the United States. This weather hazard is the top weather hazard in the area because of the hilly nature of the adjoining Texas Hill Country, subsoil limestone layers, and the increased urbanization of the area. People driving across flooded low-water crossings during heavy rain events in our area results in deaths, injuries, and rescues every year.

- **Lightning:** With an average of 40 to 45 thunderstorm days a year in Austin, lightning is a dangerous atmospheric hazard. Lightning is especially hazardous given that the local area is popular for those involved in outdoor recreation and activities. In addition, lightning can strike up to 10 to 15 miles away from the parent thunderstorm so that people can be struck even outside of the main precipitation area of the thunderstorm. Because of this danger, major University outdoor events receive additional consideration.

- **Hot Temperatures / High Humidity:** High humidity combines with summertime temperatures to create a heat stress danger to humans. When the atmospheric humidity levels are high, the human body isn't able to cool itself as efficiently through sweating and the resultant evaporative cooling that takes place. A related problem is when children are left unattended in automobiles. In summertime heat, the inside of vehicles, without air conditioning, can run as high as 130 °F to 150 °F.

- **Straight-line Thunderstorm Wind:** These powerful diverging winds are created when downdrafts sink to the ground directly under mature or dissipating thunderstorms. Since the wind is diverging (unlike in tornadoes when the wind is converging), damage tends to cover a larger area. Winds can gust upwards of 50 to 100 mph in stronger straight-line thunderstorm wind events. Most wind damage in thunderstorms is created by this type of wind rather than that associated with tornadoes (see below).

- **Hail:** Most losses associated with hail in the United States are related to automobile, home/ business structure, and agricultural damage. Fatalities and injuries are relatively rare. Nevertheless, damage can be quite severe. Hailstones with diameters of 1 inch or larger are considered severe by the National Weather Service.

- **Tornadoes:** Tornadoes are more common in areas of the central and southern plains of the United States well to the north of the Austin area. Even so, we have seen our share of tornadoes and they are considered to be a threat. Tornadoes, except in the most severe cases, tend to produce a relatively narrow convergent damage pattern. Most wind damage associated with thunderstorms is not related to tornadoes, but instead to straight-line thunderstorm winds (see above).
- **Freezing / Frozen Precipitation:** Freezing rain, freezing drizzle, sleet (ice pellets), and snow are all occasional winter visitors to our Austin area. In most cases, the fairly shallow nature of colder air just off and near the ground at this southern latitude results in a much better chance of seeing freezing rain and freezing drizzle with sleet (ice pellets) and snow coming as the colder air overhead thickens into a deeper layer, which is more uncommon given our southern latitude. On an annual basis, it is not unusual to see one or two freezing rain/freezing drizzle events during the winter months with sleet (ice pellets) occurring about once a winter season. Snow is more infrequent with lightly (and briefly) accumulating snows occurring once every five to ten years.
- **Tropical Cyclones:** Austin is located about 140 miles inland from the Texas coast. Even so, tropical cyclone (hurricanes, tropical storms, tropical depressions) are still a threat, especially with slow-moving weaker systems that tend to produce flooding, as well as quicker moving intense systems that can bring sustained winds to and above hurricane force to the Austin area. Tropical tornadoes, associated with fast moving rain bands within the tropical cyclone, are also a big threat.
- **Cold Temperatures:** Occasional visits by arctic air masses sometimes bring very cold temperatures southward into the area. The record low temperatures of -5°F at Bergstrom Air Force Base and -2°F at Robert Mueller Airport on January 31, 1949 are a testament to the fact that we can experience very cold temperatures. While fairly rare, these very cold temperatures pose a hazard to the homeless population.

1.5. Planning Assumptions

As discussed in Section 1.6 of the Emergency Operations Plan, severe weather represents the most probably threat to the University. Therefore, the Emergency Operations Plan is based on the planning assumptions of a severe weather model. The planning assumptions listed in Section 1.6 of the Emergency Operations Plan are incorporated here by reference.

2. Concept of Operations

The University utilizes the Incident Command System and the National Incident Management System to manage severe weather events.

2.1. University Responsibilities During Severe Weather Emergencies

The University is responsible for protecting life and property from the effects of a severe weather event on campus. The University has the primary responsibility for the management of a severe weather emergency that occurs on campus or impacts campus. The University is also responsible for coordinating amongst external agencies that also respond to a severe weather emergency on campus.

The University's top priorities during an emergency are to:

- Protect the lives, health, and safety of students, faculty, staff, visitors, and emergency responders,
- Ensure the security of the University,
- Protect and restore critical infrastructure and key University resources,
- Protect University property and mitigate damage to the University,
- Facilitate the recovery of University individuals, and
- Restore University operations.

2.2. Key Areas of Severe Weather Emergency Planning and Incident Management

The University's Emergency Operations Plan notes the various activities the University conducts before, during, and after an emergency. Examples of the specific activities that the University conducts regarding a severe weather event are:

- **Mitigation**

  The University conducts mitigation activities to lessen the impact of a severe weather event. Some of the mitigation activities related to a severe weather event are listed below.

  - The Incident Response Meteorologist conducts weather monitoring before and during special events, as well as general monitoring of any forecasted severe weather.

- **Preparedness**

  The University conducts preparedness activities to develop the response capabilities need in the event of a severe weather event. Some of the preparedness activities specific to a severe weather event the University conducts are:

  - Emergency planning, including maintaining this annex and associated procedures, and
  - Conducting or participating in tests, training, and exercises related to severe weather events.

- **Response**

  The University will respond to a severe weather event that affects the campus community. Response activities may include:

  - Activation of the Emergency Operations Center;
  - Conducting weather monitoring activities;
  - Providing ongoing communication to the University community regarding the impact of and response to severe weather on campus;
  - Providing psychological and social support services to the campus community, including to emergency responders and other staff; and
  - Coordinating among University departments involved in the response and with outside agencies.

- **Recovery**

  The University will conduct recovery activities in the aftermath of a severe weather event. Recovery activities will focus on returning the University to normal operations as well as developing any Corrective Action Plans to improve preparedness and response capabilities.

2.3. Levels of Readiness and Activation

As described in Section 2.3 of the Emergency Operations Plan, the University uses a four level system to describe different levels of emergency response activation. This system will be used in a severe weather event. The table below depicts the activation and readiness levels as they apply in a severe weather event.

Level	Definition	Description
IV	**Normal Conditions**	Severe weather events pose a minimal immediate risk to students, faculty, and staff. The University continues to conduct normal business and monitors threats. The Incident Response Meteorologist monitors conditions for severe weather and weather that may impact special events. This is the default level of readiness and activation for the University. The University emphasizes prevention and preparedness activities. Typical activities: Monitoring weather conditions, plan testing, training, and exercises.
III	**Increased Readiness**	Severe weather events pose an increased risk to students, faculty, and staff. Actions may include developing coordination meetings or conference calls as well as increased health monitoring and education activities. Severe weather related triggers for this level may include: tropical weather threat, tornado/severe thunderstorm watch, flash flood watch, wildfire threat, and ice. Typical activities: Conducting coordination meetings or conference calls among University departments and with UT Systems and local partners, increased weather monitoring, notifying staff to be on alert or on call, preparation/monitoring of areas known to flood, notifying campus community of pending risk.
II	**Partial Activation**	Severe weather events pose a significant risk to students, faculty, and staff. The University has most if not all of the resources required to respond to the event although increased coordination among University departments and outside agencies may occur. University operations and activities may be impacted or canceled. The EOC is activated and the CCMT may be activated if any policy questions need to be addressed. Severe weather related triggers for this level may include: tropical storm threat likely to impact the area within 72 hours, tornado/severe thunderstorm warning, flash flood warning, and winter storm warnings. Typical activities: Weather monitoring, preparing for possible evacuations or the need to shelter in place.
I	**Full Activation**	Severe weather events pose a major risk to students, faculty, and staff. The University may not have all of the resources required to respond to the event and significant coordination among University departments and outside agencies is required. University operations will be impacted or canceled. The EOC and CCMT are activated to coordinate response activities, communications, and policy decisions, as appropriate. Severe weather related triggers for this level may include: tropical weather impacting the area, tornado/severe thunderstorm impacting the area, and a flash flooding impacting the area. Typical activities: Cancelation of classes and other activities; evacuation, or sheltering in place.

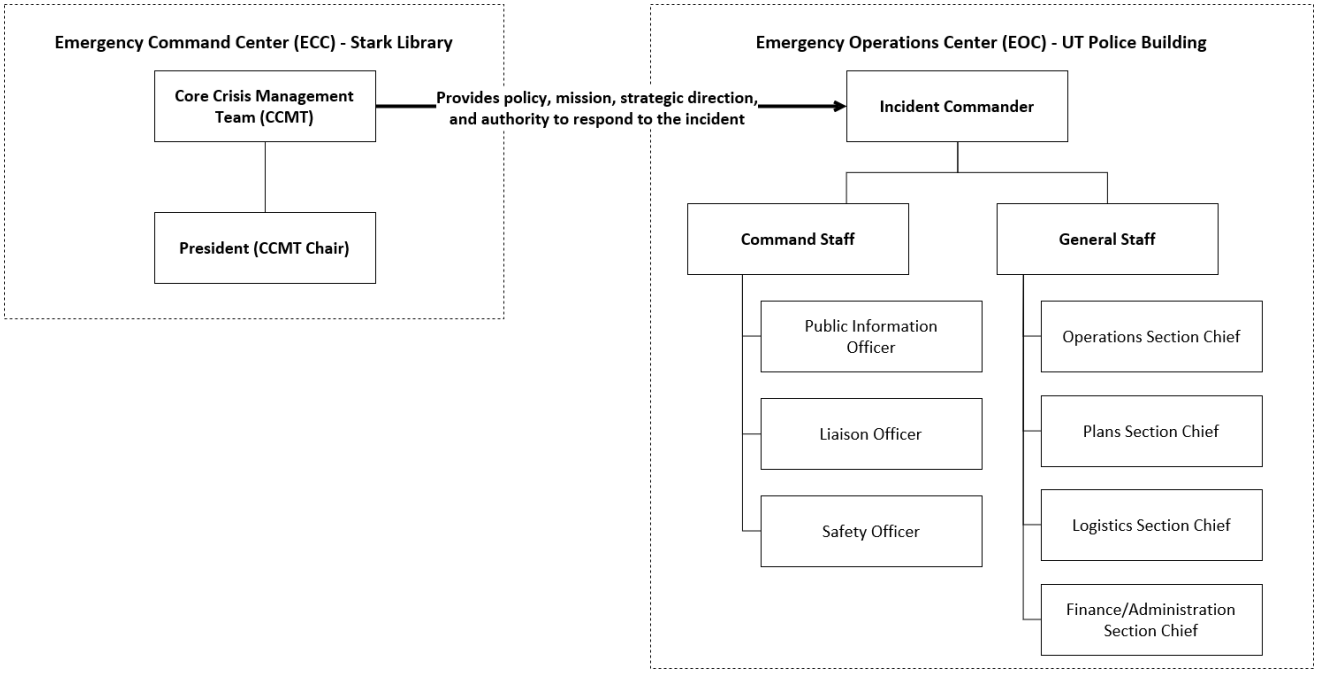
2.4. Severe Weather Activation

The response activities detailed in this annex will be activated in accordance with needs, available resources, and the declared readiness level. The Associate Vice President of Campus Safety & Security (AVPCS&S) will determine if this annex needs to be activated. Activation will follow the guidelines set forth in the Emergency Operations Plan.

3. Direction, Control, Organization, and Coordination

3.1. Command and Control

The same command and control structure detailed in the Emergency Operations Plan will be used during an severe weather event. The depiction below summarizes that command structure.



During a severe weather event, as with any emergency, the University is led by two working groups, the Core Crisis Management Team, working out of the Emergency Command Center, and the Incident Command Staff working out of the Emergency Operations Center.

3.2. Support Components Responsibilities

As discussed in the Emergency Operations Plan Section 3.4, the University relies on Emergency Support Functions (ESFs) and non-emergency support functions to carry out emergency operations. Some of these groups have specific responsibilities related to a severe weather event response, in addition to general emergency responsibilities. The ESFs that have specific tasks related to a severe weather emergency are listed below. The specific tasks for which the ESFs are responsible are included in the appropriate ESF Annex.

ESF#	Emergency Support Function	University Department/Partner Agency
1	Transportation	Parking and Transportation Services, UT-Austin
2	Communications	Information Technology Services, UT-Austin
3	Public Works	Facilities Services, UT-Austin
6	Mass Care, Emergency Assistance, Temporary Housing, and Human Services	Department of Housing and Food Services, UT-Austin International Office, UT-Austin Travel Management Services, UT-Austin
10	Hazardous Materials	Environmental Health and Safety, UT-Austin
13	Public Safety and Security	University of Texas Police Department, UT-Austin

4. Communications

The University will employ the communications measures detailed in the Emergency Operations Plan Section 4. Communications during a severe weather event.

These communications measures include emergency notifications and interoperable radio communications for first responders. Per the incident command structure detailed above, the Public Information Officer will coordinate external communications.

4.1. Outdoor Warning Siren

One of the communication methods the University can utilize during a severe weather emergency is the outdoor siren. This siren indicates that all persons outside on University grounds should immediately take shelter indoors. For additional information, see the Emergency Operations Plan Section 4. Communications.

5. Administration, Finance, and Logistics

The University will employ the administration, finance, and logistics procedures detailed in the Emergency Operations Plan Section 5 during a severe weather event.

6. Annex Development and Maintenance

This annex will be developed and maintained in accordance with the procedures detailed in the Emergency Operations Plan Section 6.

Appendices

I. Definitions

The definitions below are a selection of severe weather watch, warning, and advisory definitions from the National Weather Service as well as other relevant definitions from the National Weather Service.

Excessive Heat Warning: Issued within 12 hours of the onset of the following criteria: heat index of at least 105°F for more than 3 hours per day for 2 consecutive days, or heat index more than 115°F for any period of time.

Excessive Heat Watch: Issued by the National Weather Service when heat indices in excess of 105°F (41°C) during the day combined with nighttime low temperatures of 80°F (27°C) or higher are forecast to occur for two consecutive days.

Flash Flood Warning: Issued to inform the public, emergency management, and other cooperating agencies that flash flooding is in progress, imminent, or highly likely.

Flash Flood Watch: Issued to indicate current or developing hydrologic conditions that are favorable for flash flooding in and close to the watch area, but the occurrence is neither certain or imminent.

Heat Advisory: Issued within 12 hours of the onset of the following conditions: heat index of at least 105°F but less than 115°F for less than 3 hours per day, or nighttime lows above 80°F for two consecutive days.

Hurricane Warning: An announcement that hurricane conditions (sustained winds of 74 mph or higher) are expected somewhere within the specified coastal area. Because hurricane preparedness activities become difficult once winds reach tropical storm force, the hurricane warning is issued 36 hours in advance of the anticipated onset of tropical-storm-force winds. The warning can remain in effect when dangerously high water or a combination of dangerously high water and waves continue, even though winds may be less than hurricane force.

Hurricane Watch: An announcement that hurricane conditions (sustained winds of 74 mph or higher) are possible within the specified coastal area. Because hurricane preparedness activities become difficult once winds reach tropical storm force, the hurricane watch is issued 48 hours in advance of the anticipated onset of tropical-storm-force winds.

Ice Storm Warning: This product is issued by the National Weather Service when freezing rain produces a significant and possibly damaging accumulation of ice. The criteria for this warning varies from state to state, but typically will be issued any time more than 1/4" of ice is expected to accumulate in an area.

Severe Thunderstorm Warning: This is issued when either a severe thunderstorm is indicated by the WSR-88D radar or a spotter reports a thunderstorm producing hail one inch or larger in diameter and/or winds equal or exceed 58 miles an hour; therefore, people in the affected area should seek safe shelter immediately. Severe thunderstorms can produce tornadoes with little or no advance warning. Lightning frequency is not a criteria for issuing a severe thunderstorm warning. They are usually issued for a duration of one hour. They can be issued without a Severe Thunderstorm Watch being already in effect.

Severe Thunderstorm Watch: This is issued by the National Weather Service when conditions are favorable for the development of severe thunderstorms in and close to the watch area. A severe thunderstorm by definition is a thunderstorm that produces one inch hail or larger in diameter and/or winds equal or exceed 58 miles an hour. The size of the watch can vary depending on the weather situation. They are usually issued for a duration of 4 to 8 hours. They are normally issued well in advance of the actual occurrence of severe weather. During the watch, people should review severe thunderstorm safety rules and be prepared to move a place of safety if threatening weather approaches.

Tornado Warning: This is issued when a tornado is indicated by the WSR-88D radar or sighted by spotters; therefore, people in the affected area should seek safe shelter immediately. They can be issued without a Tornado Watch being already in effect. They are usually issued for a duration of around 30 minutes.

Tornado Watch: This is issued by the National Weather Service when conditions are favorable for the development of tornadoes in and close to the watch area. Their size can vary depending on the weather situation. They are usually issued for a duration of 4 to 8 hours. They normally are issued well in advance of the actual occurrence of severe weather. During the watch, people should review tornado safety rules and be prepared to move a place of safety if threatening weather approaches.

Tropical Storm Warning: An announcement that tropical storm conditions (sustained winds of 39 to 73 mph) are expected somewhere within the specified coastal area within 36 hours.

Tropical Storm Watch: An announcement that tropical storm conditions (sustained winds of 39 to 73 mph) are possible within the specified coastal area within 48 hours.

Wind Advisory: Sustained winds 25 to 39 mph and/or gusts to 57 mph. Issuance is normally site specific. However, winds of this magnitude occurring over an area that frequently experiences such winds

Winter Storm Warning: This product is issued by the National Weather Service when a winter storm is producing or is forecast to produce heavy snow or significant ice accumulations. The criteria for this warning can vary from place to place.

Winter Storm Watch: This product is issued by the National Weather Service when there is a potential for heavy snow or significant ice accumulations, usually at least 24 to 36 hours in advance. The criteria for this watch can vary from place to place.

Winter Weather Advisory: This product is issued by the National Weather Service when a low pressure system produces a combination of winter weather (snow, freezing rain, sleet, etc.) that present a hazard, but does not meet warning criteria.

II. Weather Safety Guidelines

Lightning

- General Guidelines:
  - If you hear thunder, you are close enough to the thunderstorm to be struck by lightning. Go to safe shelter immediately.
  - Go to a steady building or to an automobile. Do not take shelter in small sheds, under isolated trees, or in convertible automobiles. Stay out of boats and away from water.
  - If shelter is not available, find a low spot away from trees, fences, and poles. In wooded areas, take shelter under shorter trees.
  - Telephone lines and metal pipes can conduct electricity. Unplug appliances not necessary for obtaining weather information. Avoid using corded telephones e or any electrical appliances. . When in your home, do not take a bath or shower.
  - If you feel your skin begin to tingle or your hair starts to stand on end, squat low to the ground on the balls of your feet. Place your hands on your knees with your head between your knees and hands. Make yourself the smallest target possible; minimize your contact with the ground.
- Local Considerations for the UT Campus:
  - It is easy to remain safe during lightning episodes when thunderstorms are overhead or in the vicinity of the campuses by simply staying or remaining inside of buildings or in your vehicle. When thunderstorms develop or move onto campus, you may wish to wait out the thunderstorm before moving between buildings (even during class changes). Remember that lightning can strike even from storms as far as 10 to 15 miles away from the parent thunderstorm.. Special considerations should be given to the hazard when considering outdoor events and activities.

Flash Flooding

- General Guidelines:
  - When heavy rain threatens, get out of areas subject to flooding. This includes creeks, streams, dips, washes, low spots, canyons, as well as low water crossings.
  - Do not camp or park vehicles along streams and creeks, particularly during threatening weather.
  - Avoid already flooded and high velocity flow areas. Do not cross, on foot or in your vehicle, quickly flowing creeks, streams, or low water crossings, especially if you do not know the water depth.
  - Road beds may not be intact in low water crossings during flash flood episodes. Be especially cautious at night when it is harder to recognize flood dangers.
  - If your vehicle stalls in high water, leave it immediately and seek high ground.
- Local Considerations for the UT Campus:
  - The threat of flash flooding on our campus is pretty much limited to areas around Waller Creek, which crosses our campus. During periods of heavy rain, avoid low-lying areas. Listen to the advice of campus officials regarding areas where flooding is occurring and avoid these areas.

Tornadoes

- General Guidelines:
    - When tornadoes threaten, you should leave automobiles and mobile homes for more substantial shelter.
    - In substantial shelter, you should put as many walls between you and the tornado as you can. This means that interior bathrooms, hallways, and closets on the lowest floor are the best place to be. If it is available, move to a below-ground shelter, such as a basement.
    - Stay away from windows.
    - Do not try to outrun a tornado in your automobile.
    - If caught outside or in a vehicle with an approaching tornado, lie flat in a nearby ditch or depression (away from your vehicle if you are leaving it).
- Local Considerations for the UT Campus:
    - Tornado safety is based upon avoiding windblown debris when tornadoes are nearby. The common thread in safety rules is putting as many walls as you can between you and the tornado and always on the lowest floor of the building as you can safely get to before the tornado strikes. All building safety plans for tornadoes are centered on these guidelines. On our campuses, always move to interior hallways on the lowest floor possible in all buildings, away from glass and shelter in place.

Hurricanes

- General Guidelines:
    - Even though we are more than 100 miles inland from the coast, landfalling hurricanes can still be a serious threat.
    - Depending on the track of the storm:
    - High winds, even hurricane force winds, can occur locally.
    - Torrential rains can cause severe flash and river flooding.
    - Sudden, quick moving tornadoes are common with landfalling hurricanes, even hundreds of miles inland.
    - Evacuees from coastal areas will move inland into our area. Roadways may become congested along with a corresponding shortage of hotel and other living spaces. Shelters may be set up throughout our area.
- Local Considerations for the UT Campus:
    - Although we most commonly think of hurricane force winds occurring in coastal areas, in a category 5 hurricane making landfall on the middle Texas coast and moving inland to overhead or just southwest of the Austin area, we could see several hours of hurricane force winds (75 to 110 mph) even in the Austin metropolitan area and the UT campus. Again, safety rules would center upon going into interior hallways on the lowest floor possible and remaining there during these types of events. You should also be aware of the threats of hurricane related tornadoes and flash floods.

Winter (Cold) Weather

- General Guidelines:
    - Bundle up when going out. Remember that most of the body heat that is lost to the atmosphere is lost from the region around your head. Wear caps or hats keeping as much of your head (ears, etc) covered as possible.
    - Even though air temperatures must be below 15°F with wind speeds in excess of 25 to 30 mph to achieve wind chill temperatures of -25°F or lower, if that does occur, the human body becomes incapable of matching the rate of heat loss. As a result, with wind chill temperatures of -25°F or below, skin temperatures will decrease and exposed flesh may freeze.
    - In freezing and frozen precipitation, driving conditions are dangerous. On roadways, slow down (even if other motorists do not). When stopping, do not lock your brakes. Touch them, slowing the vehicle gradually. If the wheels lock, take your foot off of the brakes. If you start skidding, steer the car in the direction that you want to go.

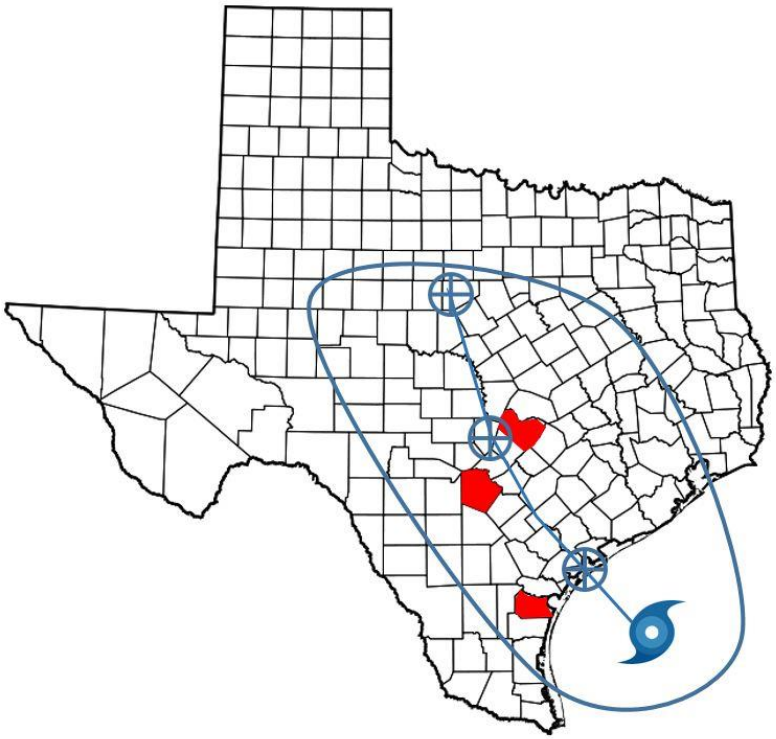
Summer (Heat) Weather

- General Guidelines
    - When the temperatures go up, you should slow down!
    - Heed your body's early warnings. Reduce your activities and stay in a shady, cool or air conditioned place as much as possible, especially when humidity levels are high.
    - Do not dry out. Remain hydrated. Drink plenty of water/non-alcoholic liquids while the hot spell lasts.
    - Dress for hot weather. Wear lightweight, light colored and loose fitting clothing to help maintain normal body temperatures. A hat or cap, and sunglasses are a must if prolonged exposure to the sun's rays and glare is anticipated.
    - Avoid thermal shock. Go slow for those first few real hot days. Heatstroke frequently develops swiftly with little warning. Heatstroke is imminent if you quit sweating, which is your body's air conditioning system. Immediate medical attention is necessary with heat-related illnesses.
- Local Considerations for the UT Campus:
    - We need to be aware of conditions (high temperatures and high humidity) that create heat stress danger. Campus related athletic activities and other activities performed by outdoor staff (lawn/ground maintenance) are especially prone to heat stress dangers. Stay as cool and as hydrated (drink plenty of water) as possible if you are going to be outdoors in high heat stress conditions.

III. Worst Case Track Scenario for the Austin Area of a Tropical Cyclone

The following scenarios, given landfall on the Texas coast and movement as indicated in the map, are approximations depending on the following:

- Small changes in the track can result in major changes in conditions that might be expected at any given location. Remember that, in general, if the storm center passes east of Austin, the local effect will be less while systems passing immediately south and west of the area will result in more extreme conditions since the north and east side of tropical cyclones often have the worst meteorological impacts.
- The rate at which tropical cyclones weaken as they move ashore varies considerably.
- The forward speed of the system is an important factor on the strength of a system as it moves inland.



On this track, with a landfalling….	…The Austin Metropolitan Area has the potential to see…
Tropical Depression (<39 mph)	• Tropical funnel clouds/very weak short-lived tornadoes (less of a risk if Austin is not in the right forward quadrant of the system) • Highest risk of flooding/flash flooding (particularly in slower moving systems with nighttime core rains) • Sustained winds of 10 to 20 mph with wind gusts up to 20 to 30 mph in heavier rain bands Wind effects: Some small weak tree limbs down in strongest gusts
Tropical Storm (39 to 74 mph)	• Tropical funnel clouds/weak short lived tornadoes (less of a chance if Austin is not in the right forward quadrant of the system) • Highest risk of flooding/flash flooding (particularly in slower moving systems with nighttime core rains) • Sustained winds of 15 to 30 mph with wind gusts up to 30 to 50 mph in heavier rain bands Wind effects: Some tree limbs broken/downed, some light sign damage, some power line arcing with other power lines/tree limbs
Category 1 Hurricane (74 to 95 mph)	• Tropical funnel clouds/tornadoes (less of a chance if Austin is not in the right forward quadrant of the system) • High risk of flooding/flash flooding (particularly in slower moving systems with nighttime core rains) • Sustained winds of 30 to 45 mph with wind gusts up to 45 to 65 mph in heavier rain bands
Category 2 Hurricane (96 to 110 mph)	• Tropical funnel clouds / tornadoes (less of a chance if Austin is not in the right forward quadrant of the system) • High risk of flooding / flash flooding (particularly in slower moving systems with nighttime core rains) • Sustained winds of 45 to 65 mph with wind gusts up to 65 to 75 mph in heavier rain bands Wind effects: Damage primarily to unanchored mobile homes, shrubbery, and trees; some power lines downed with widely scattered to scattered power outages, moderate damage to signs, more substantial damage to roof shingles
Category 3 Hurricane (111 to 130 mph)	• Tropical funnel clouds/tornadoes (less of a chance if Austin is not in the right forward quadrant of the system) • Moderate to high risk of flooding/flash flooding (particularly in slower moving systems with nighttime core rains) • Sustained winds of 55 to 75 mph with wind gusts up to 75 to 85 mph in heavier rain bands Wind effects: Trees and some power poles down, power lines downed with scattered power outages, more extensive sign damage, unanchored mobile homes may be extensively damaged or overturned, more extensive roofing damage, some light damage to cell towers, light structural damage to poorly constructed building
Category 4 Hurricane (131 to 155 mph)	• Tropical funnel clouds/tornadoes (less of a chance if Austin is not in the right forward quadrant of the system) • Moderate to high risk of flooding/flash flooding (particularly in slower moving systems with nighttime core rains) • Sustained winds of 65 to 80 mph with wind gusts up to 80 to 90 mph in heavier rain bands Wind effects: Some roofing material, door and window damage to buildings, considerable damage to shrubbery and trees with some trees blown completely down or uprooted, power lines and poles downed with extensive power outages, some damage to cell towers, considerable damage to mobile homes, signs and piers
Category 5 Hurricane (>155 mph)	• Tropical funnel clouds/tornadoes (less of a chance if Austin is not in the right forward quadrant of the system) • Moderate to high risk of flooding/flash flooding (particularly in slower moving systems with nighttime core rains) • Sustained winds of 80 to 95 mph with wind gusts up to 95 to 110 mph in heavier rain bands Wind effects: Structural damage to small residences and utility buildings with some curtain wall failures, widespread damage to shrubbery and trees with foliage blown from trees and large trees blown down or uprooted, power lines and poles downed with widespread power outages, cell towers badly damaged or downed, mobile homes and signs are destroyed

The chart below shows the Level of Readiness/Activation that would be appropriate based on the strength of the storm and the time frame before or after landfall.

	-72 Hours to Landfall	-48 Hours to Landfall	-24 Hours to Landfall	0 Hour (Landfall)	+ 12 Hours Past Landfall	+ 24 Hours Past Landfall
Tropical Depression	• Standby • Monitor • Alert	• Standby • Monitor • Alert	• Standby • Monitor • Alert	• Standby • Monitor • Alert	• Damage Assessment • Relay info • Begin Cleanup procedures • Resume Business	• Continue +12 hour activities • Begin after action report
Tropical Storm	• Standby • Monitor • Alert	**Level of Readiness/ Activation** Level III: Increased Readiness	**Level of Readiness/ Activation** Level III: Increased Readiness	**Level of Readiness/ Activation** Level III: Increased Readiness	• Damage Assessment • Relay info • Begin Cleanup procedures • Resume Business	• Continue +12 hour activities • Begin after action report
Category 1 Hurricane	• Standby • Monitor • Alert	**Level of Readiness/ Activation** Level III: Increased Readiness	**Level of Readiness/ Activation** Level III: Increased Readiness	**Level of Readiness/ Activation** Level III: Increased Readiness	• Damage Assessment • Relay info • Begin Cleanup procedures • Resume Business	• Continue +12 hour activities • Begin after action report
Category 2 Hurricane	• Standby • Monitor • Alert	**Level of Readiness/ Activation** Level III: Increased Readiness	**Level of Readiness/ Activation** Level III: Increased Readiness	**Level of Readiness/ Activation** Level III: Increased Readiness	• Damage Assessment • Relay info • Begin Cleanup procedures • Resume Business	• Continue +12 hour activities • Begin after action report
Category 3 Hurricane	• Standby • Monitor • Alert	**Level of Readiness/ Activation** Level III: Increased Readiness	**Level of Readiness/ Activation** Level II: Partial Activation	**Level of Readiness/ Activation** Level II: Partial Activation	• Damage Assessment • Relay info • Begin Cleanup procedures • Resume Business	• Continue +12 hour activities • Begin after action report
Category 4 Hurricane	• Standby • Monitor • Alert	**Level of Readiness/ Activation** Level III: Increased Readiness	**Level of Readiness/ Activation** Level II: Partial Activation	**Level of Readiness/ Activation** Level II: Partial Activation	• Damage Assessment • Relay info • Begin Cleanup procedures • Resume Business	• Continue +12 hour activities • Begin after action report
Category 5 Hurricane	• Standby • Monitor • Alert	**Level of Readiness/ Activation** Level III: Increased Readiness	**Level of Readiness/ Activation Level I: Full Activation**	**Level of Readiness/ Activation Level I: Full Activation**	• Damage Assessment • Relay info • Begin Cleanup procedures • Resume Business	• Continue +12 hour activities • Begin after action report