

WEATHER SAFETY WARMUP

WEBINAR SERIES

HOUSEKEEPING

- This webinar is being recorded and will be sent out shortly after the webinar
- Have a question? Use the chat box and we will get to the question at the end of the session
- Want to learn more? We have additional sessions every month!
- For those interested in a **certificate of attendance**, please let us know in the chat or reply to the follow up email
- You can also provide feedback, suggest a topic or ask a question by emailing us at info@earthnetworks.com



STAYING AHEAD OF SEVERE THUNDERSTORMS

AGENDA

- Severe Thunderstorms
- Impact
- How they form
- Severe Thunderstorm elements
- Quick facts
- Severe Thunderstorm alerting options
 - Dangerous Thunderstorm Alert (DTA)
 - National Weather Service (NWS) severe thunderstorm alerts
- Best safety practices

PRESENTERS

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TULSA SPORTS COMMISSION

Tulsa
Sports
Commission

LOCATION

Tulsa, OK

DETAILS

- Established in 1993
- Tasked with developing sporting events and conventions in the Tulsa community
- Attracts, markets and hosts amateur championships and events
- Operates out of multiple stadiums, parks, recreational centers, and sports complexes like the Mohawk Sports Complex
- Founding member of the National Association of Sports Commission



STAYING AHEAD OF SEVERE THUNDERSTORMS



SEVERE THUNDERSTORMS

Categorized as a storm that can produce over 58mph wind gust, a tornado or hail of an inch or larger



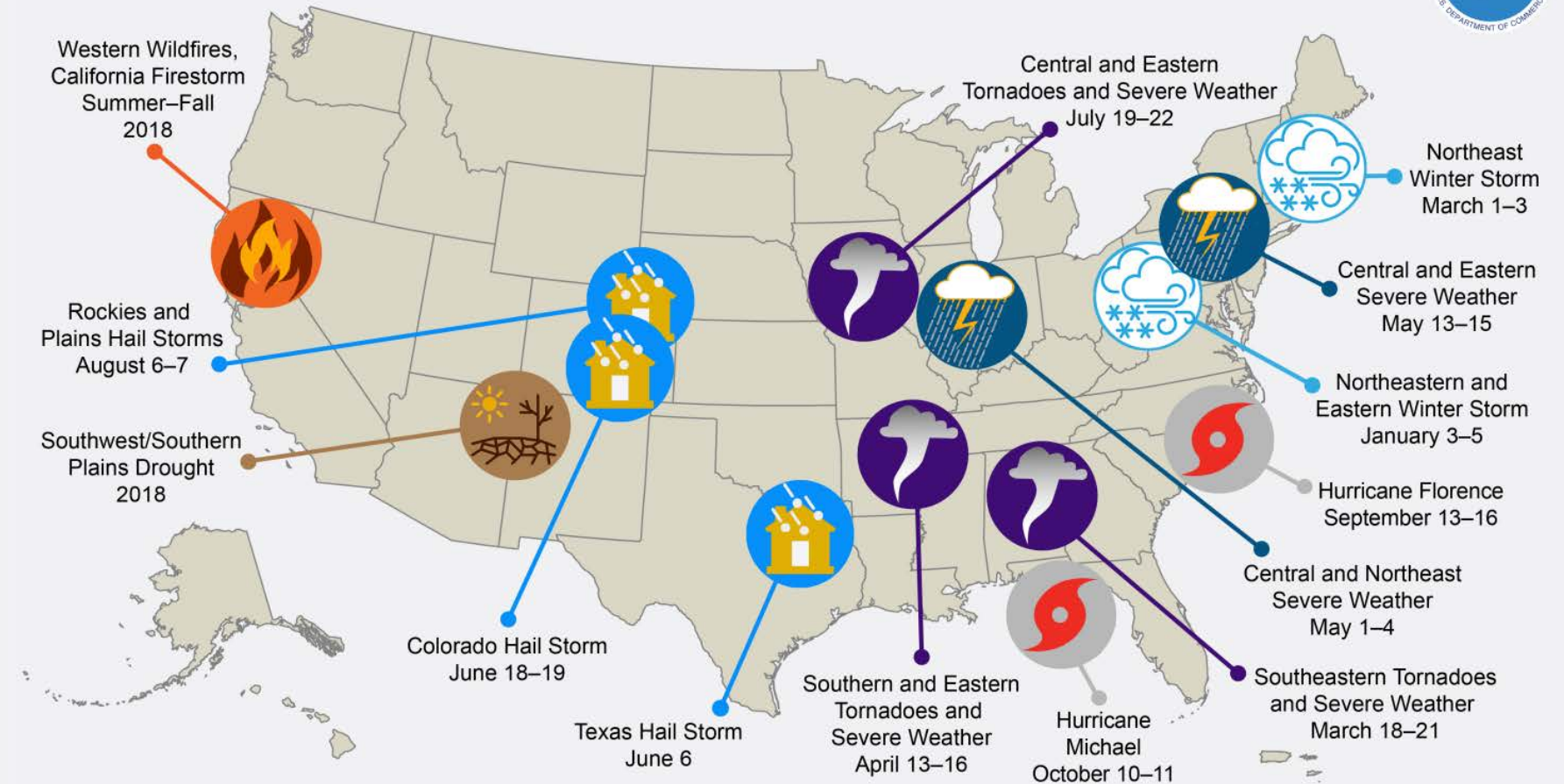
2018 SEVERE THUNDERSTORMS IMPACT

8 of the 14 billion dollar weather disasters in 2018 were caused by severe thunderstorms

Note: 2019 billion dollar disasters so far

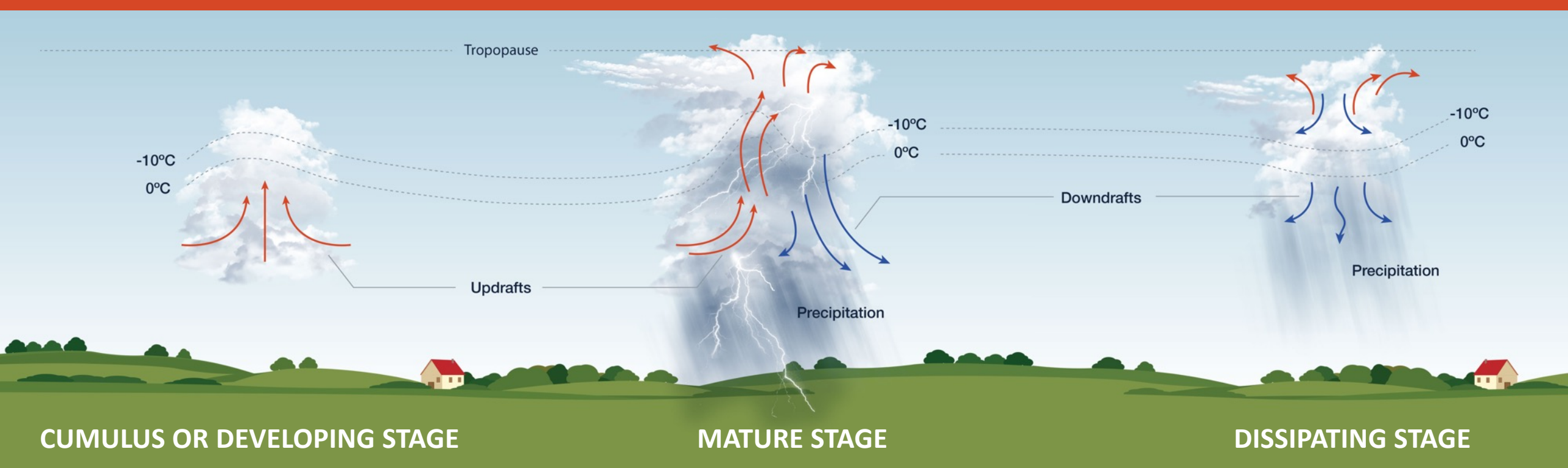
- South & Northeast Severe thunderstorm | Feb, 2019
- Midwest bomb cyclone storm | March, 2019

U.S. 2018 Billion-Dollar Weather and Climate Disasters



This map denotes the approximate location for each of the 14 separate billion-dollar weather and climate disasters that impacted the United States during 2018.

HOW DOES IT FORM? A THUNDERSTORM LIFE CYCLE



- Sun heats the Earth's surface
- Warm moist air rises in an updraft
- Water condenses as the temperature decreases, further heating the air, causing it to rise faster
- When enough water condenses, a cloud forms
- Occasional lightning or rain at this stage

- The updraft accumulates moisture in the cloud, becoming heavy and resulting in downpouring rain/hail
- The heavy falling precipitation creates a downdraft and leads to strong, gusty winds on the ground
- This stage is known to have a lot of hail, heavy rain, frequent lightning, strong winds and tornadoes

- Downdrafts dominate the storm
- Rainfall decreases in intensity
- Lightning and high wind gusts remain a danger at this point

SEVERE THUNDERSTORM ELEMENTS



Heavy Rain



High Winds



Flooding



Tornadoes



Lightning



Hail

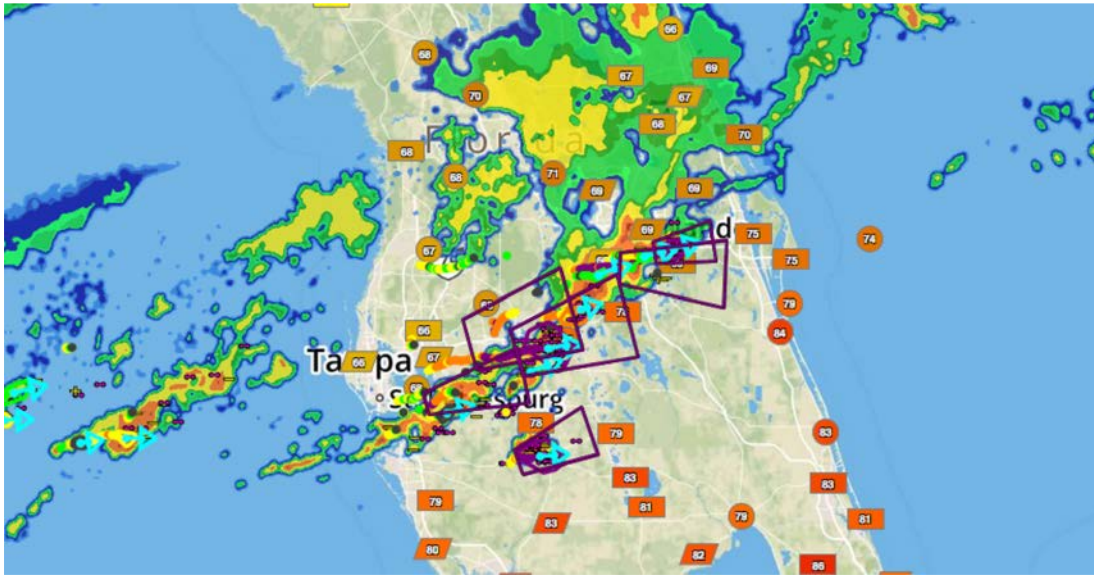
QUICK FACTS

Did you know?

- Thunderstorms are more likely in the evening and night during spring and summer months
- There are about 100,000 thunderstorms each year in the U.S.
- 10% of all thunderstorms reach severe levels
- Greatest threat in U.S. extends from Texas to southern Minnesota
- There are three types of thunderstorms:
 - **Single-cell:** Has a single updraft column
 - **Multi-cell:** Multiple single-cell storms
 - **Supercell:** Thunderstorm with a rotating updraft, producing the most severe weather and tornadoes

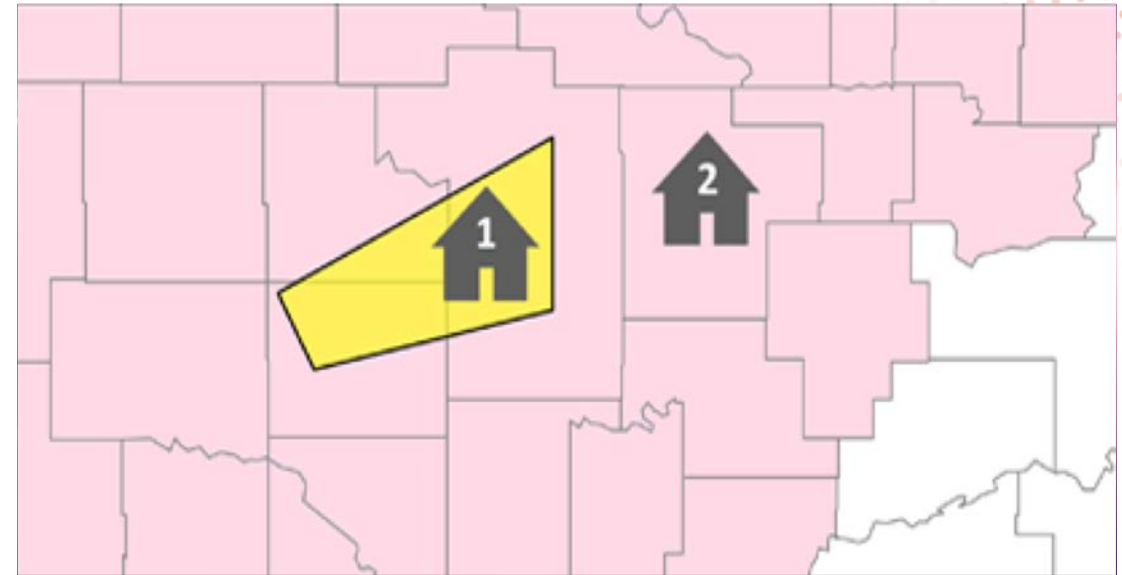


SEVERE THUNDERSTORM DETECTION & ALERTING OPTIONS



DANGEROUS THUNDERSTORM ALERTS (DTA)

- Visually displayed polygons that represent severe thunderstorms warnings
- Uses in-cloud and cloud-to-ground lightning strikes to detect severe thunderstorms
- Alerts delivered via mobile alerts or visually using Earth Networks visualization tool, Sferic Maps
- Fully automated
- Hence up to 50% faster than other alerts

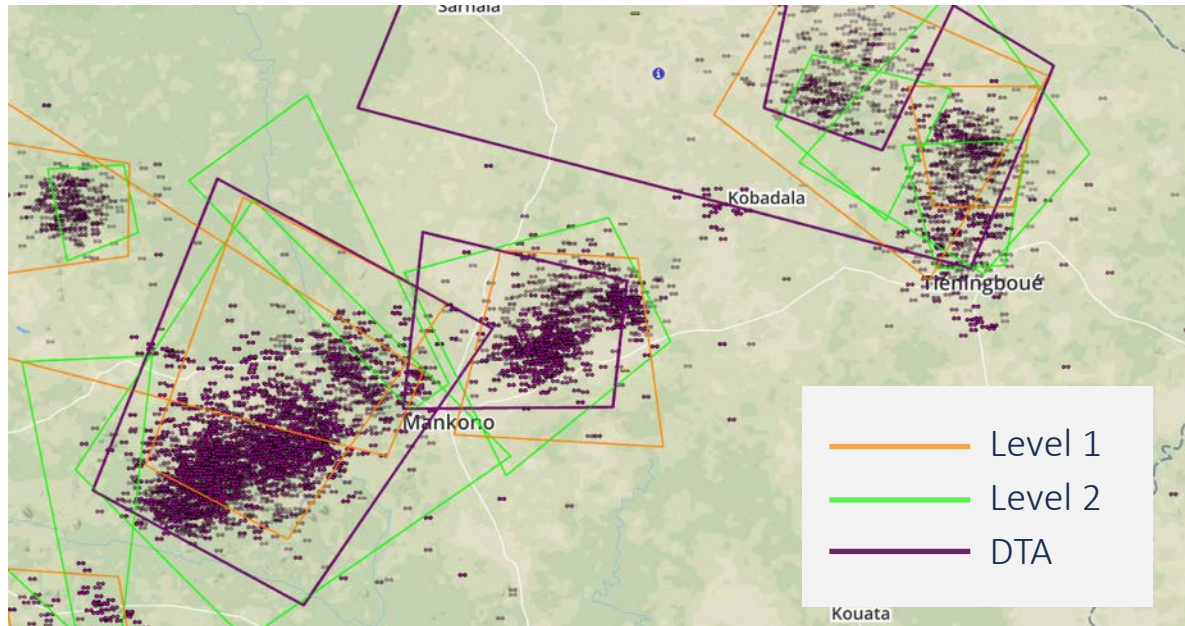


NATIONAL WEATHER SERVICE THUNDERSTORM ALERTS

- Severe thunderstorm alerts provided by the National Weather Service
- Uses radar and onsite meteorologist
- Alerts are delivered online and via mobile alerts
- Limited to the U.S. and alerts are issued by county
- Urban areas are prioritized
- Not fully automated hence can be slower

VISUAL COMPARISON

DANGEROUS THUNDERSTORM ALERTS (DTA)



Level 1 (Advisory)

- 2 lightning flashes per minute
- **Action** – Monitor situation

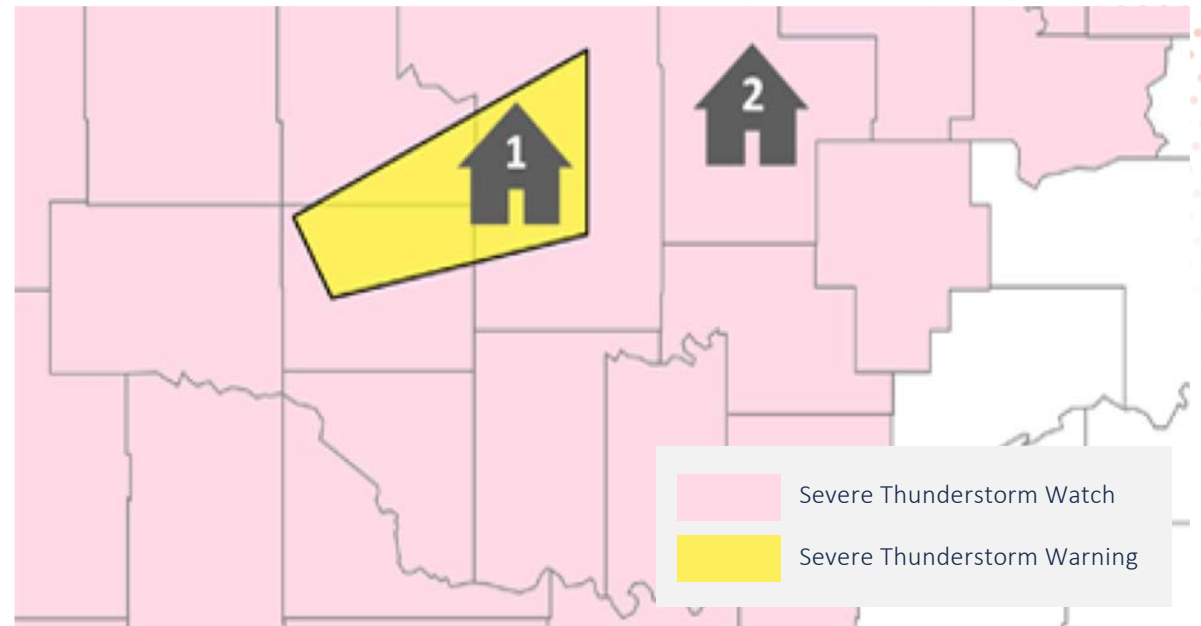
DTA Alert

- 45 lightning flashes per minute
- **Action** – Take action

Level 2 (Watch)

- 12 lightning flashes per minute
- **Action** – Prepare to take action

NATIONAL WEATHER SERVICE THUNDERSTORM ALERTS



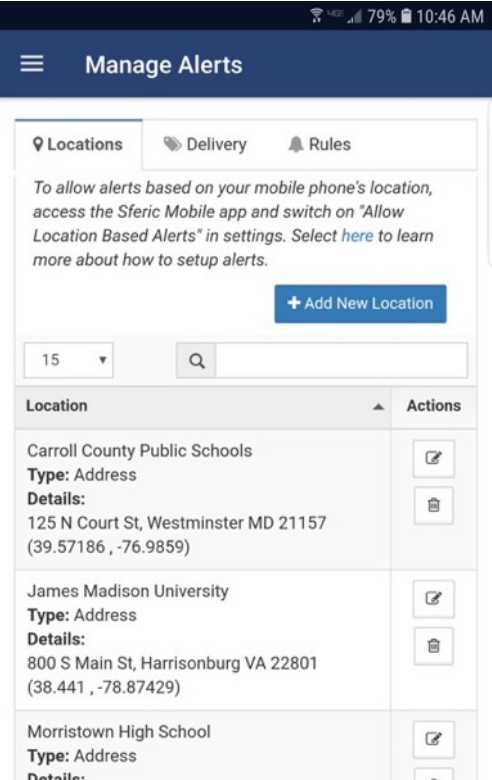
Severe Thunderstorm Watch

- Issued when there is a possibility of severe thunderstorm in and around the watch area
- Alert sent out to impacted counties
- **Action** – Be prepared

Severe Thunderstorm Warning

- Issued when severe weather has been reported in that specific area
- Alert sent out to impacted counties
- **Action** – Take shelter

SETTING UP A DANGEROUS THUNDERSTORM ALERT



Manage Alerts

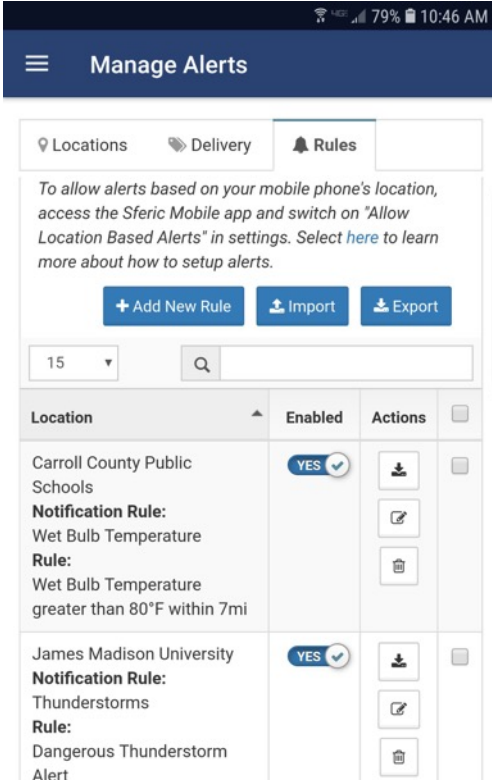
Locations Delivery Rules

To allow alerts based on your mobile phone's location, access the Sferic Mobile app and switch on "Allow Location Based Alerts" in settings. Select [here](#) to learn more about how to setup alerts.

+ Add New Location

15

Location	Actions
Carroll County Public Schools Type: Address Details: 125 N Court St, Westminster MD 21157 (39.57186, -76.9859)	
James Madison University Type: Address Details: 800 S Main St, Harrisonburg VA 22801 (38.441, -78.87429)	
Morristown High School Type: Address Details:	



Manage Alerts

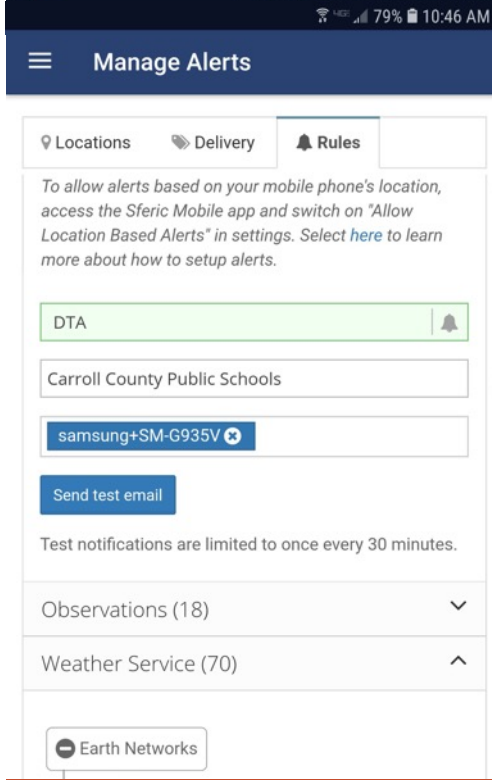
Locations Delivery Rules

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+ Add New Rule Import Export

15

Location	Enabled	Actions
Carroll County Public Schools Notification Rule: Wet Bulb Temperature Rule: Wet Bulb Temperature greater than 80°F within 7mi	YES	
James Madison University Notification Rule: Thunderstorms Rule: Dangerous Thunderstorm Alert	YES	



Manage Alerts

Locations Delivery Rules

To allow alerts based on your mobile phone's location, access the Sferic Mobile app and switch on "Allow Location Based Alerts" in settings. Select [here](#) to learn more about how to setup alerts.

DTA

Carroll County Public Schools

samsung+SM-G935V

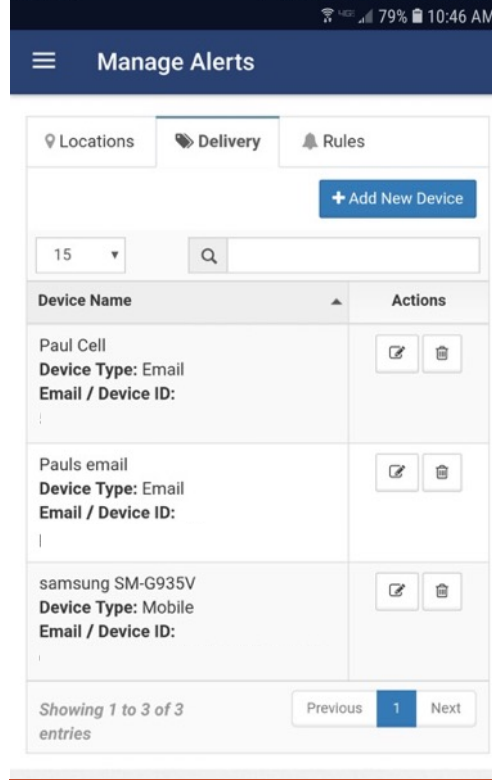
Send test email

Test notifications are limited to once every 30 minutes.

Observations (18)

Weather Service (70)

Earth Networks



Manage Alerts

Locations Delivery Rules

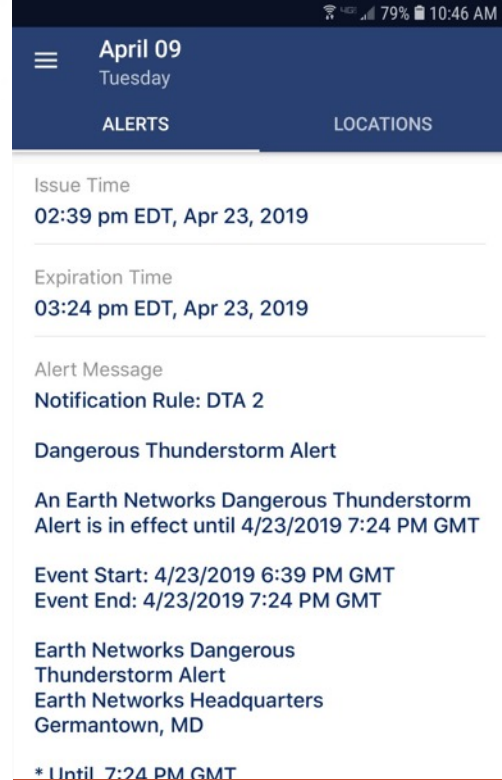
+ Add New Device

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Device Name	Actions
Paul Cell Device Type: Email Email / Device ID:	
Pauls email Device Type: Email Email / Device ID:	
samsung SM-G935V Device Type: Mobile Email / Device ID:	

Showing 1 to 3 of 3 entries

Previous 1 Next



April 09
Tuesday

ALERTS LOCATIONS

Issue Time
02:39 pm EDT, Apr 23, 2019

Expiration Time
03:24 pm EDT, Apr 23, 2019

Alert Message
Notification Rule: DTA 2

Dangerous Thunderstorm Alert

An Earth Networks Dangerous Thunderstorm Alert is in effect until 4/23/2019 7:24 PM GMT

Event Start: 4/23/2019 6:39 PM GMT
Event End: 4/23/2019 7:24 PM GMT

Earth Networks Dangerous Thunderstorm Alert
Earth Networks Headquarters
Germantown, MD

* Until 7:24 PM GMT

Set your facility location

Set the radius to monitor

Pick what weather variables to monitor

Set who gets the alerts

Receive alerts

PRACTICAL EXAMPLE: A SPORTS COMPLEX LOCATION

OUTER – 25 Miles

ALERT

Email warning sent to key admin: **Operations Manager**

ACTION

Monitor the situation (Take note of potential severe weather movement)

MIDDLE – 15 Miles

ALERT

Mobile alerts are sent to managers: **Operations manager & head grounds crew**

ACTION

Monitor direction of storm

ACTION

Prepare to halt all outdoor activities

INNER – 10 Miles

ALERT

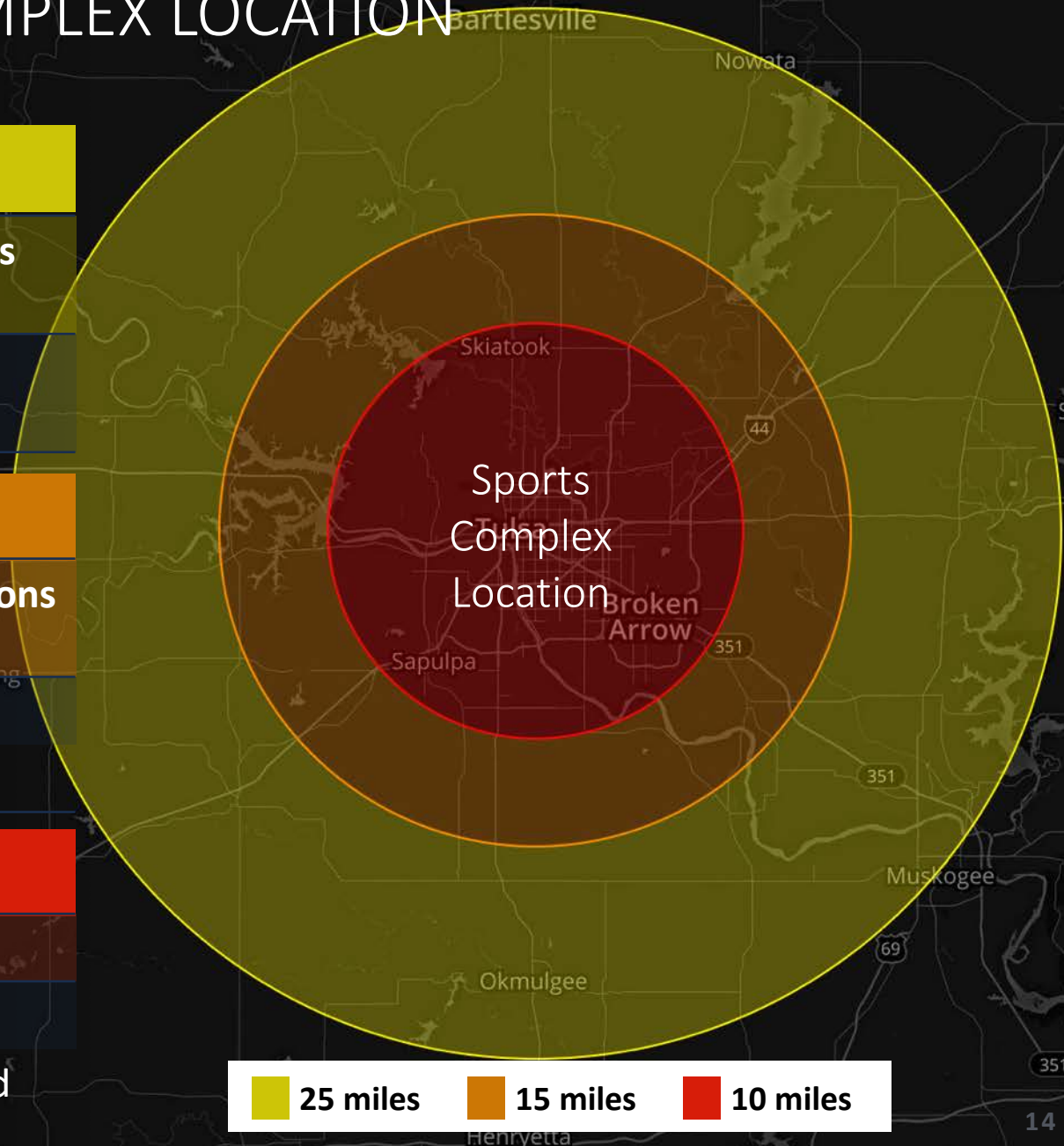
Outdoor alerts are activated

ACTION

All outdoor activities are halted

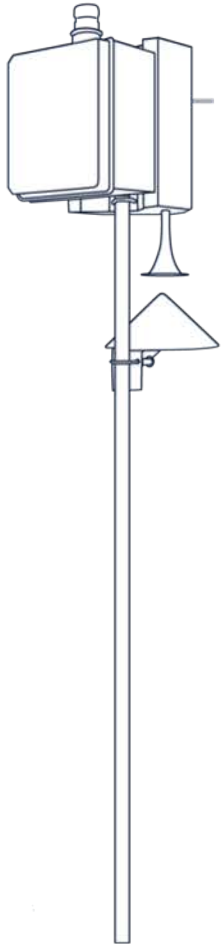
ACTION

Staff, athletes and visitors head to designated indoor area for safety until all clear is given



PRACTICAL EXAMPLE - AUTOMATED LIGHTNING ALERTING

1. System detects lightning within a pre-determined radius around the facility.



2. Horn sounds for 15 seconds and strobe light activates (strobe stays on during the entire alert period).



3. Everyone must immediately seek shelter. Activities suspended until all-clear signal is received.



4. Countdown clock keeps people informed. When system no longer detects a threat beyond the pre-configured time frame, three 5-second blasts from horn will sound and the strobe light will stop.



5. This is the signal that it is safe to return outdoors.



SAFETY TIPS FOR MANAGING SEVERE THUNDERSTORMS

Planning

- Stay up to date on forecasted severe weather
- Turn on severe thunderstorm alert notifications from Sferic Maps or the NWS
- Make sure you have outdoor alerting capabilities that cover your facility
- Have a well drilled safety protocol
- Select and train your safety team on safety responsibilities
- Educate stakeholders about the threat
- Communicate incoming severe weather to stakeholders
- Secure your shelter location
 - No nearby windows
 - Ground level or lower



SAFETY TIPS FOR MANAGING SEVERE THUNDERSTORMS

During a storm

- Activate safety protocol and alert responsible parties
- Alert facility staff and the public to the threat
- Direct everyone to secure indoor shelter location
- Keep everyone up to date on weather movements
- Stay on top of live weather alerts



REMEMBER - THE GOAL OF ANY SEVERE WEATHER SAFETY PROTOCOL

MINIMIZE

Property Damage



Human Risk



Business Disruption



TAKEAWAYS



Severe thunderstorms are dangerous and can be a threat anywhere in the U.S.



Effectively monitor and alert on incoming storms using DTAs and NWS severe thunderstorm alerts



Timely and effective severe weather alerting will save lives, protect property, and reduce business disruptions.



THANK YOU

QUESTIONS AND COMMENTS?

Contact us at info@earthnetworks.com