

# Dangerous Thunderstorm Forecasts for Operators of Outdoor Concert Venues

# The Problem

- According to the National Oceanic and Atmospheric Administration (NOAA), dozens are killed, and hundreds are injured by lightning strikes in the U.S.
- People attending concerts at outdoor venues are especially vulnerable due to lack of shelter, and the fact that tens of thousands, or even hundreds of thousands of attendees, cannot be evacuated simply in a short period of time.
- Advanced notice of hazardous thunderstorms is vital to any evacuation plan.

# The Problem



# The Problem

- The image in the previous slide was from video of a stage collapse at the Indiana State Fairgrounds on August 13, 2011.
- 7 people were killed, dozens injured.
- The collapse was caused by high winds from a severe thunderstorm.
- Financial settlements to plaintiffs of a lawsuit totaled \$39 million (U.S. dollars) with another \$11 million (U.S. dollars) from the State of Indiana.
- Still image was from a video posted on YouTube. The video can be found at <https://www.youtube.com/watch?v=Fe5HNtfTdGE>

# The Problem

- From a CNN article at <https://www.cnn.com/2014/12/19/us/indiana-state-fair-settlement/index.html>

Two investigative reports released in spring 2012 found that the scaffolding was not up to standards and the Indiana State Fair Commission did not have adequate emergency planning in place.

# The Problem

- One of the investigative reports, which can be read at [https://corpuat.wittobriens.com/wp-content/uploads/2017/09/171758\\_1883990\\_3448726\\_1\\_6041423\\_Witt-Associates-Indiana-State-Fair-Report-April-2012.pdf](https://corpuat.wittobriens.com/wp-content/uploads/2017/09/171758_1883990_3448726_1_6041423_Witt-Associates-Indiana-State-Fair-Report-April-2012.pdf) listed many recommendations going forward. One of the recommendations was “The Indiana State Fair Commission (ISFC) should deploy a private weather forecasting service during the State Fair.”



# The Problem

- More from the report referenced in the previous slide...

The National Weather Service (NWS) issued notices throughout the day and evening warning of strong thunderstorms in Central Indiana. Ray Allison, the ISFC's Director of Public Safety and Logistics periodically called the local NWS office for updates. Twice he related the forecasts to ISFC personnel via a newly acquired system which allowed for voice or text messages to be distributed to those on a preset list. After 7:00 p.m., he

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communicated that we will experience heavy rain, possible high winds, hail and some lightning between 9:00 and 9:30 p.m.

The ISFC Executive Director Cindy Hoye scheduled a meeting for 8:00 p.m. to discuss the implications of the forecast on the scheduled 8:45 p.m. start time for the Sugarland concert. Per Director Hoye, the meeting was about timing of the production; public safety was not the focus. The State Police were not involved in the 8:00 p.m. meeting or any discussions regarding delaying the show.

Following the 8:00 p.m. meeting, Eric Milby, a subcontractor to Lucas, was sent to speak with band management and communicate the ISFC's desire to delay the show. Milby spoke with Helen Rollens, Sugarland's Tour Manager, in the band's office underneath the stage. Both concur that they spoke only about the forecast for rain. Noting that Sugarland plays in rain frequently, Rollens said the band wanted to go on and, if the weather got bad, would stop, and then come back to finish the performance.

# The Problem

- Clearly there were gaps in communication and no sense of urgency or awareness of the threats.
- The report discussed communication of the weather forecast the day of the event. What about forecasts days ahead of an event? What would advanced notice 3, 4, 5 days ahead of an event mean for emergency planning?

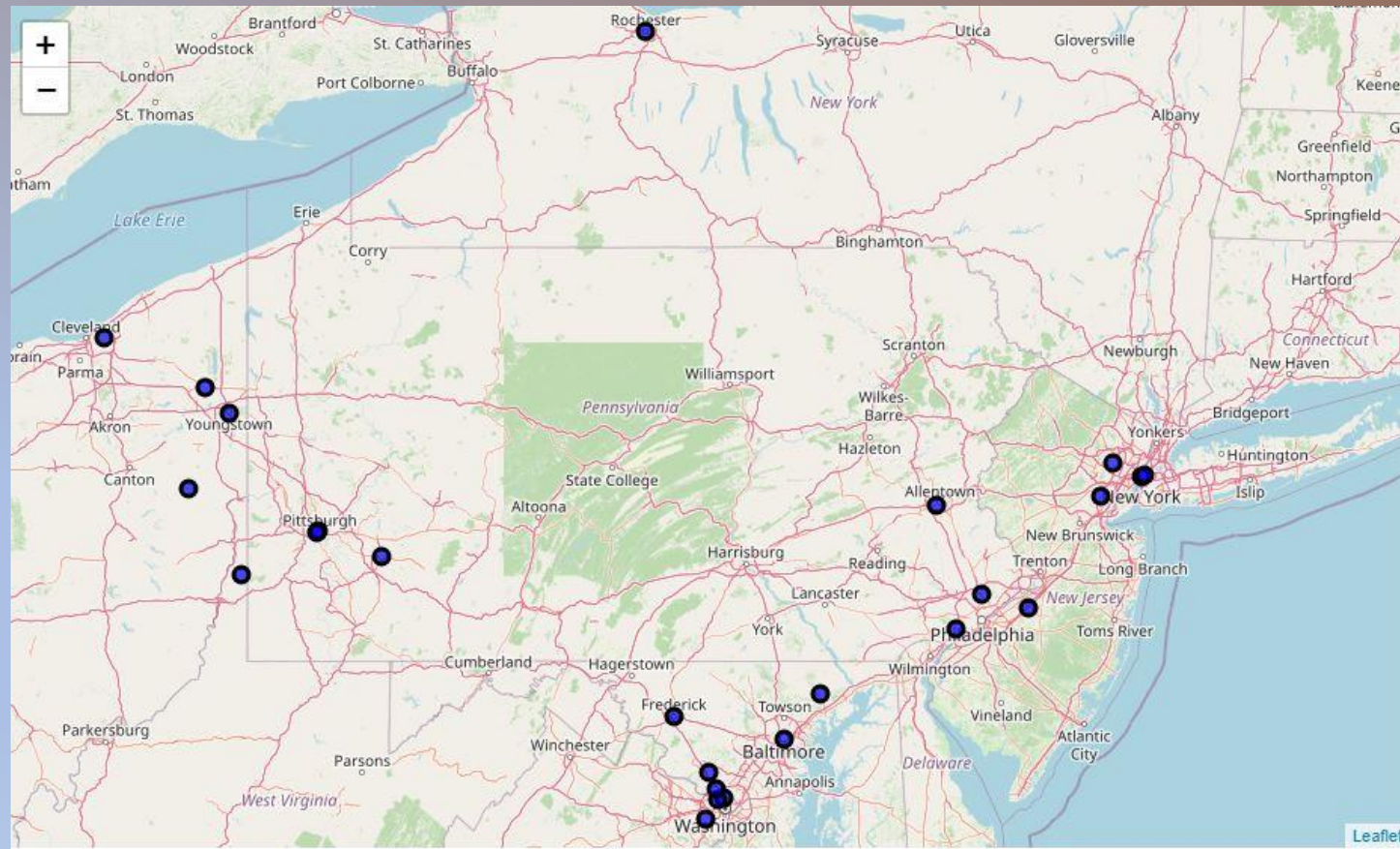


# The Solution

- Converting plain language weather forecasts into a 3-tiered color code system that provides actionable information and does not require interpretation of weather information by non-meteorologists helps emergency and security personnel make better decisions.

# The Solution

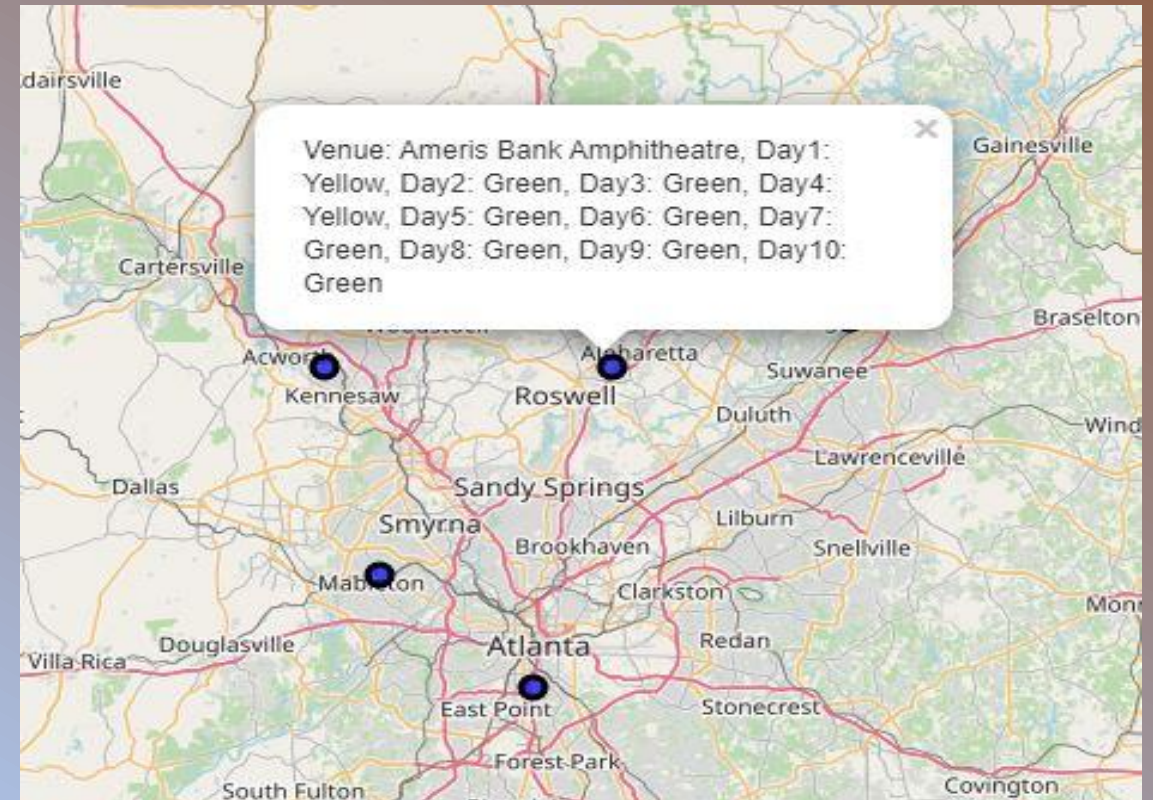
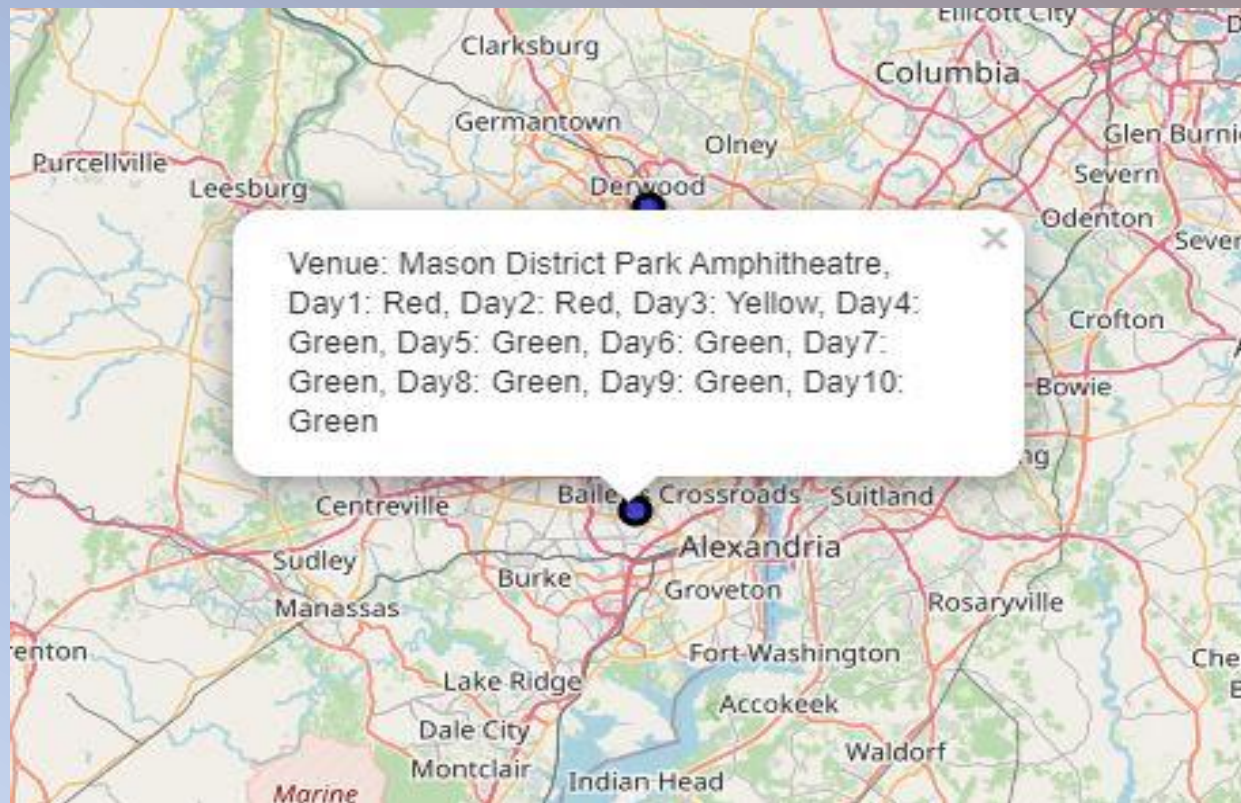
An interactive map that displays the location of all outdoor concert venues





# The Solution

Locations can be clicked to display a popup box with text information. A 10-day forecast with a color code of Green (no thunderstorms), Yellow (thunderstorms, but no hail or high winds) and Red (thunderstorms with a risk of hail, high winds and/or tornadoes).



# Conclusion

- The weather cannot be controlled but having accurate and actionable weather information can help planners and decision makers mitigate the risks, protect property and save lives.
- Extreme weather cost individuals and companies hundreds of billions of dollars every year. Many businesses, including venue operators, have no plan to manage the risks.
- What happened on August 13, 2011 was tragic but an example of what can happen with inadequate communication, lack of planning for weather emergencies and minimal advanced notification of hazardous weather.