



# Weather Impacting COVID-19 Management Strategies

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## Abstract

Tornadoes have always plagued the Midwest. With the recent pandemic, the damage they inflict adds another element to managing COVID-19 infections. I chose this topic because it is interesting to me and can be applied to other weather conditions, such as the Santa Ana winds we experience in Southern California. My goal was to research the Midwest's response to tornado season and find out how they adapted their management strategies to coincide with the pandemic. I used GOES-17 to learn more about storms and tornadoes and how the satellite images are used to warn people of severe weather. I discovered some management strategies that had to be implemented due to tornadoes. These include the allowance of public shelters, relaxation of social distancing during a weather crisis, and other necessary changes that still maintain an awareness of the virus. To conclude, tornadoes have had an impact on management strategies relating to COVID-19 in the Midwest, especially April through June, when tornadoes primarily occur there.

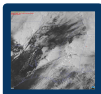
## Research Question

How do tornadoes impact COVID-19 management strategies in the Midwest?

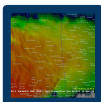
## Future Research

- Other weather-related impacts during the pandemic such as the Santa Ana winds

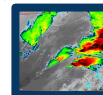
## Methods/Procedure



The GOES-R “Red” Visible Band (0.64  $\mu\text{m}$ )—useful for analyzing storms due to its fine spatial resolution—shows the development and growth of deep convection.



The GOES-R “Clean” Infrared Band (10.35  $\mu\text{m}$ )—less sensitive than other infrared bands—showed the pulsing cloud-top infrared brightness temperatures about 35 minutes prior to the destructive tornado that moved through Bassfield.



- Fear of COVID-19 is second priority to weather
- Tornado management strategies drastically change during pandemic
- FEMA maintains readiness for disaster and DHS increases disaster response
- GOES-R satellite imagery warns people of threats and allows them time to prepare
- Supplies instruments, imagery, and products with better spectral, spatial, and temporal resolution
- Provides resources to forecasters within 20 minutes of the hourly processing of GOES retrievals
- GOES-R lead times are typically between 30 to 50 minutes
- $\geq 35\text{-dBZ}$ -intensity radar echo at  $-10^\circ\text{C}$  altitude

## Related Jobs

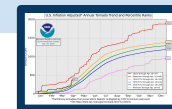
- Meteorologist
- Hospital worker
- Emergency manager
- COVID-19 researchist

## Results

- Tornadoes severely impact management strategies of Midwest
- GOES-R satellite imaging allows tornado-prone areas to prepare for bad weather
- With so many places forced together—whether it be disaster response, repair, or emergency shelters—sometimes social distancing isn't always the best choice of action
- GOES-R provides warning forecasters with better situational awareness and predictive information that betters their ability to monitor atmospheric conditions

## Conclusion

- Management strategies are forced to be altered to make room for old threats such as bad weather, but it is possible to adapt and be resilient in this time of crisis
- Simultaneously dealing with the recent pandemic and severe weather is not easy but with smart, informed modifications to management, we can overcome these issues
- Overall, tornadoes, and similar sources of disaster, are important to know about in order to maintain a safe society and minimize damage done
- GOES-R allows us to increase our situational awareness of weather events by informing forecasters and supporting NWS



(Tornado trend graph 2020)

## References

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