

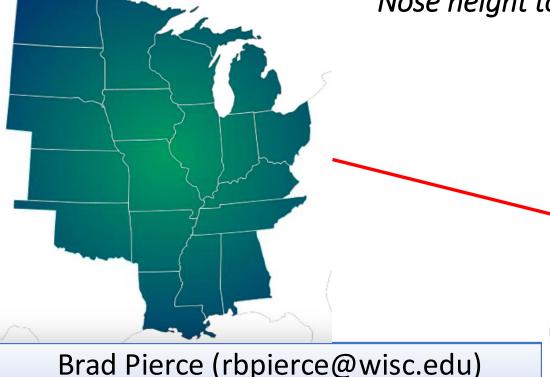
Harnessing-the-Heartland

Livelihoods – Lives – and the Weather

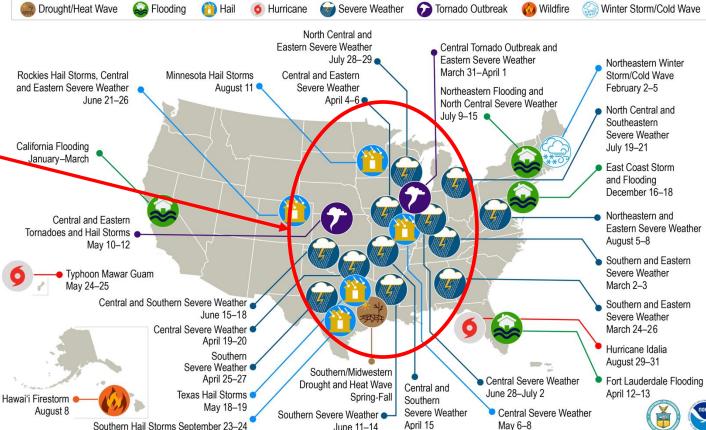


Nose height to Satellite Interactive Panel:

U.S. 2023 Billion-Dollar Weather and Climate Disasters



Brad Pierce (rbpierce@wisc.edu)
University of Wisconsin – Madison
Space Science and Engineering Center



This map denotes the approximate location for each of the 28 separate billion-dollar weather and climate disasters that impacted the United States in 2023.



Harnessing-the-Heartland

Livelihoods – Lives – and the Weather



Fast Coast Storm and Flooding December 16-18 Northeastern and

August 5–8

Eastern Severe Weather

Fort Lauderdale Flooding

April 12-13

Nose height to Satellite Interactive Panel:

California Flooding

Hawai'i Firestorm

January-March

Central and Eastern

May 10-12

The most costly events in 2023 were the Southern/Midwestern drought and heat wave event at \$14.5 billion, and the Southern/Eastern severe weather event in early March, at \$6.0 billion

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Mildfire Severe Weather Tornado Outbreak Wildfire Drought/Heat Wave Winter Storm/Cold Wave North Central and Eastern Severe Weather Central Tornado Outbreak and Eastern Severe Weather July 28-29 Northeastern Winter March 31-April 1 Rockies Hail Storms, Central Minnesota Hail Storms Central and Eastern Storm/Cold Wave and Eastern Severe Weather August 11 February 2-5 Northeastern Flooding and June 21-26 North Central Severe Weather North Central and July 9-15 Southeastern Severe Weather July 19-21

U.S. 2023 Billion-Dollar Weather and Climate Disasters

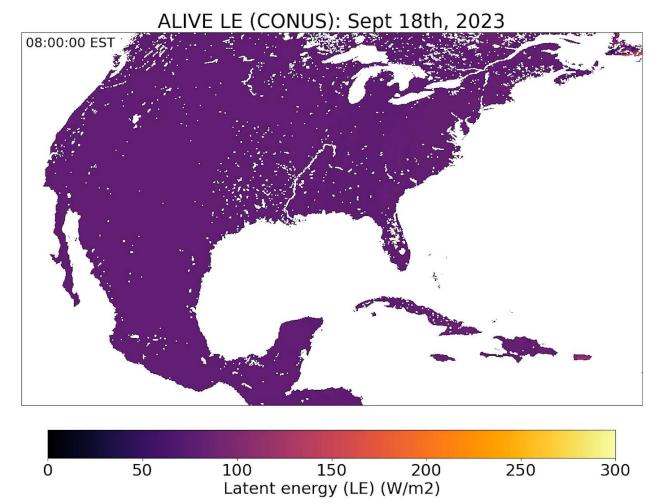
Southern and Eastern Severe Weather Typhoon Mawar Guam March 2-3 Central and Southern Severe Weather Southern and Fastern Severe Weather March 24-26 April 19-20 Hurricane Idalia August 29-31 Severe Weather

Southern/Midwestern April 25–27 Central Severe Weather Drought and Heat Wave Central and June 28-July 2 Texas Hail Storms Central Severe Weather

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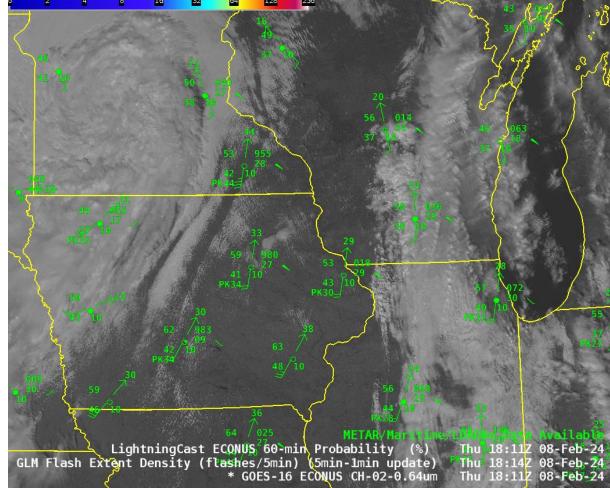
Advanced Baseline Imager Live Imaging of Vegetated Ecosystems (ALIVE) – Paul Stoy (UW Madison)

ABI Machine Learning model trained on Water and Carbon fluxes from <u>Ameriflux</u> and <u>NEON, Inc.</u> eddy covariance towers across the conterminous United States.



Advanced Baseline Imager ProbSevere LightningCast – John Cintineo (SSEC/CIMSS)

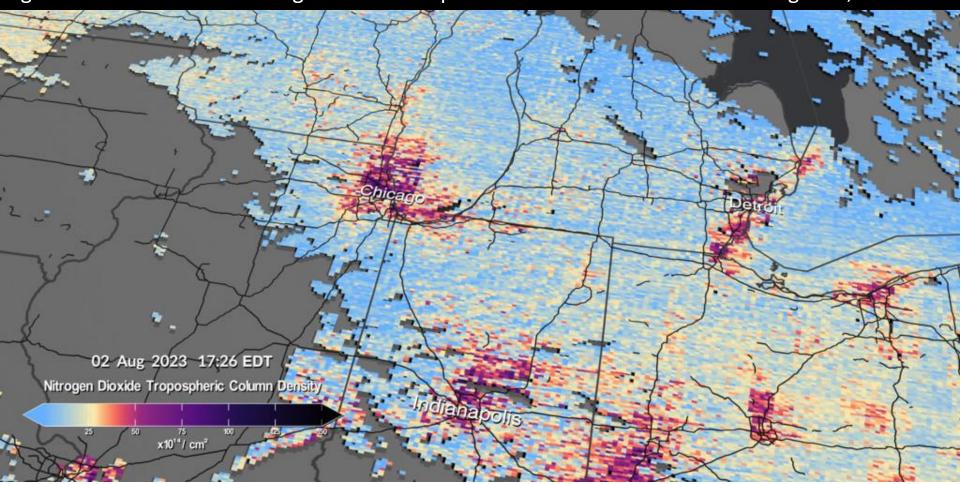
ABI machine learning model trained on, radar and Geostationary Lightning Mappe to predict next-hour lightning probability





TEMPO First Light: August 2nd 2023

The Tropospheric Emissions: Monitoring of Pollution (TEMPO) instrument collected its "first light" measurements of nitrogen dioxide air pollution over North America on August 2, 2023.



- TEMPO is a precursor to the Atmospheric Composition instrument (ACX), part of the GeoXO satellite system.
- Also measures formaldehyde, which is an indirect indicator of biogenic activity
- May also be able to measure chlorophyll induced fluorescence, a direct indicator of biogenic activity