The Midwest Dust Storm of 16 May 2025

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1.0 Introduction

During the late afternoon and evening hours of 16 May 2025, a significant blowing dust event occurred across portions of Illinois, Indiana, and Michigan. A complex of thunderstorms moving through an environment favorable for efficient thunderstorm downdraft production triggered a outflow of straight-line winds in central Illinois. These gusty winds moved across rural, agricultural areas that were recently tilled and planted for the spring, with soil moisture values below average for May. A significant amount of dirt and dust was lofted, leading to a rare dust storm for the area. A multi-county area experienced visibilities less than 1 mile, and the minimum observed visibility was 0.25 miles and near 0 miles at official weather stations and from unofficial reports, respectively.

According to the American Meteorological Society's Glossary of Meteorology, blowing dust/dirt events with minimum visibilities of 0.63 miles or less are indicated as a "dust storm," with minimum visibilities below 0.31 miles indicated as "severe dust storm." Severe dust storms associated with a wall of dust and a rapid onset of reduced visibilities and gusty winds are sometimes caused by thunderstorm outflows or frontal passages, such as what was observed on 16 May (Figure 1). In these situations, the dust storm is often referred to as a "haboob," based upon the Arabic word for "to blow." Severe dust storms or haboobs are uncommon in the Midwest, and much more frequently observed in the Desert Southwest and Great Plains of the United States or in arid regions of the Middle East, Sahara Desert, or Central Australia (American Meteorological Society, 2025).

Frequently observed as an advancing "dust wall" which is typical of haboobs, the dust storm of 16 May began around 2130 UTC (4:30 PM CDT), progressed rapidly northeastward into the Chicago metropolitan area of northeastern Illinois by around 2315 UTC (6:15 PM CDT), and then dissipated in southwestern Michigan around 0200 UTC on 17 May (9:00 PM CDT/10:00 PM EDT on 16 May). Multiple car crashes were attributed to the dust storm in central Illinois, and visibilities were significantly reduced across the area from about a half hour to nearly two hours. The reduced visibilities also disrupted airplane travel in the Chicago area. A map of the general area experiencing reduced visibilities due to the dust storm, location of known vehicle crashes, and airports where additional data was collected for analysis is show by Figure 2.

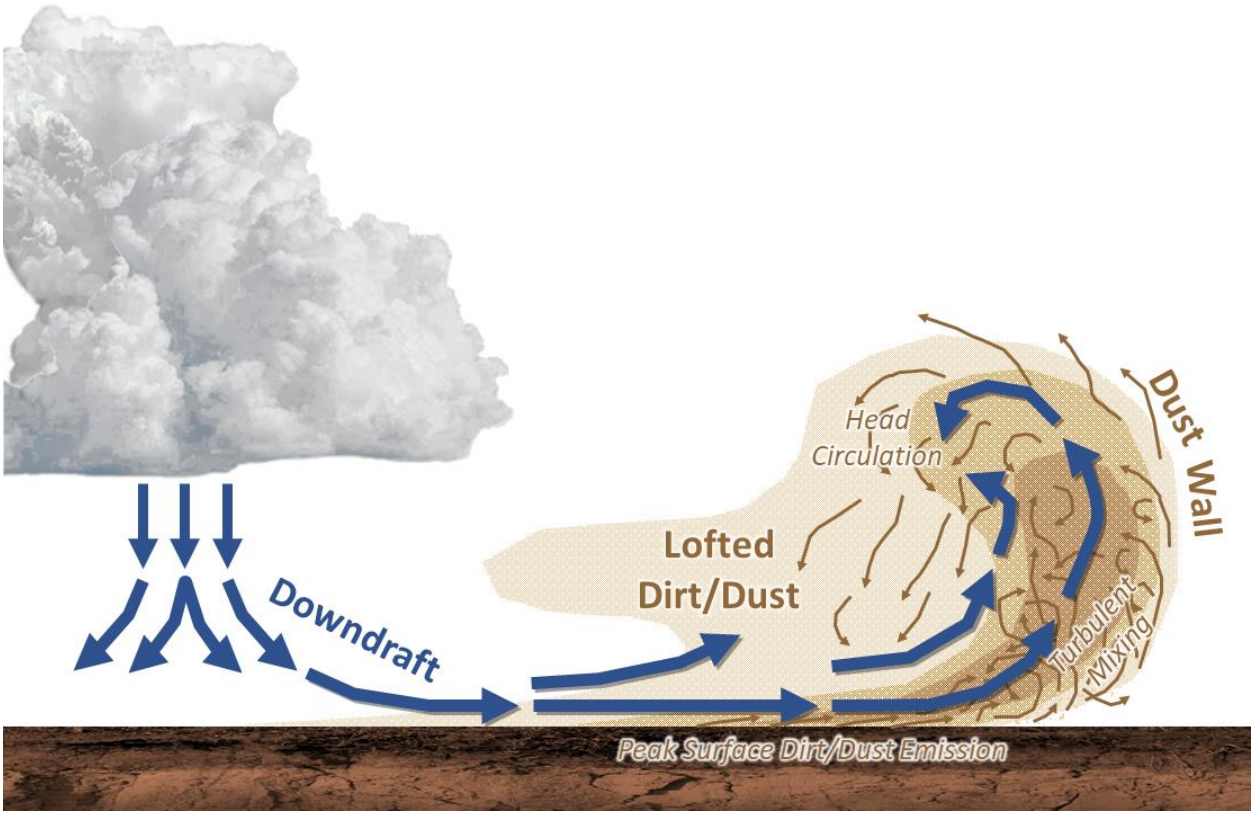

Figure 1. Idealized diagram of a dust storm caused by thunderstorm outflow. Downdraft winds from a thunderstorm hit the ground and spread out rapidly, with the strongest winds just behind the gust front. The highest concentration of lofted dirt and dust from the surface occurs near this abrupt shift in wind direction and speed, with turbulent mixing occurring as this dirt and dust ascends, leading to the visual appearance of a "dust wall." Figure adapted from Figure 1 from Siegel and Heever (2012) and other NWS outreach materials.

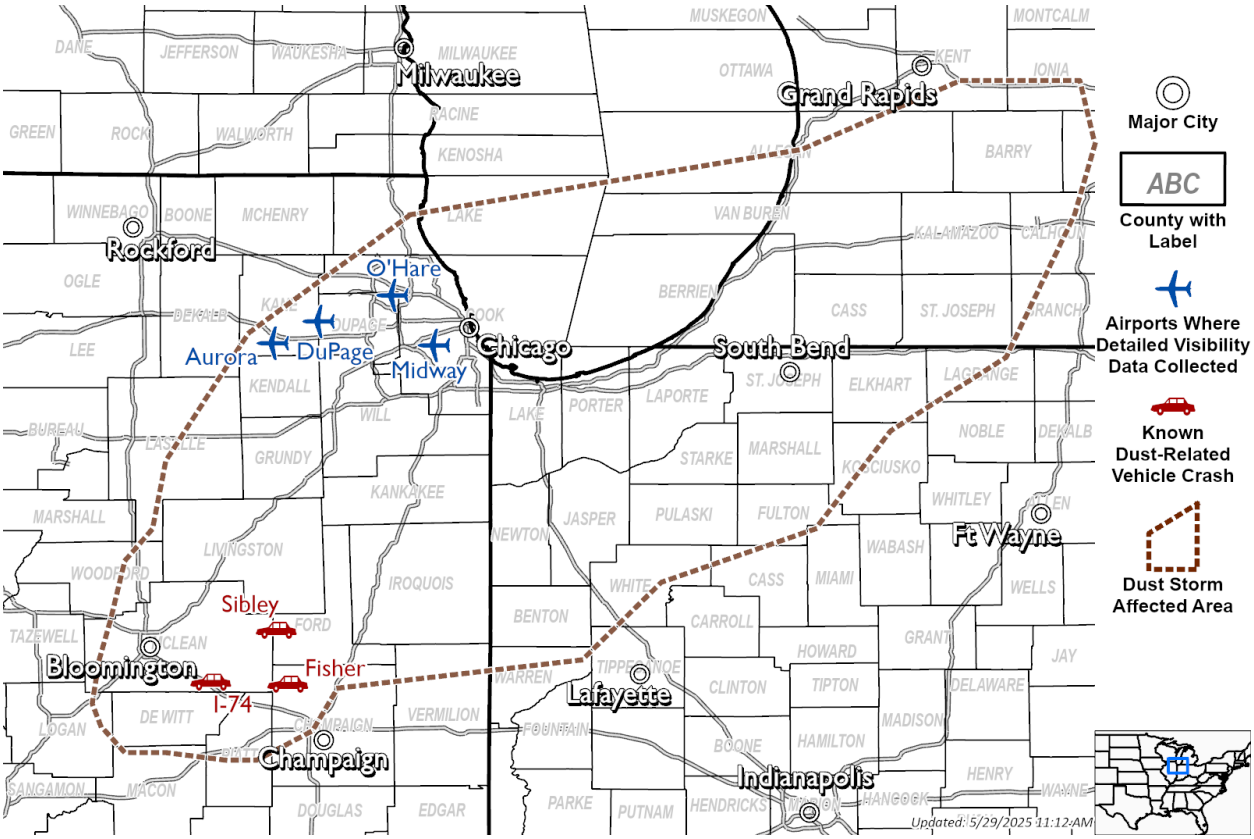

Figure 2. Map showing the approximate extent of reduced visibilities due to blowing dust from the 16 May 2025 Dust Storm event. The locations of known vehicle crashes due to blowing dust are indicated by red icons. The location of airports were more detailed visibility data were collected are indicated by blue icons.

2.0 Data Collection & Analysis

2.1 Surface Observations

Surface observations from area airports were collected from Iowa State University's Iowa Environmental Mesonet (IEM; https://mesonet.agron.iastate.edu/request/download.phtml). Air temperature, dewpoint, wind speeds, wind directions, visibility, and observed weather codes were retrieved for 59 sites in central and northeastern Illinois, northern Indiana, and southern Michigan. Data was downloaded and converted into a GIS dataset for comparison with other datasets. Some weather stations reported significantly reduced visibilities with "haze" reported as the weather condition. For the purposes of this report, weather reported as "haze" was assumed to actually be blowing dust if dewpoint values were not near the indicated temperature, there was no near rainfall depicted on radar, and the time of reduced visibilities roughly corresponded to the estimated onset time of the advancing dust storm.

Preliminary local storm reports were also retrieved from the IEM (https://mesonet.agron.iastate.edu/lsr/). These reports contain information about visibility reductions due to the dust storm from emergency management, the public, and a review of state traffic camera networks in realtime during the event.

2.2 Radar and Satellite Data

Radar data digitized and converted to a GIS-friendly format were retrieved from the IEM every 15 minutes from approximately 2100 UTC on 16 May to 0200 UTC on 17 May. TrueColor satellite data were retrieved from Space Science and Engineering Center's Community Satellite Processing Package (CSPP) GeoSphere platform (https://geosphere.ssec.wisc.edu/) at 15-minute increments from 2130 UTC on 16 May to 0100 UTC on 17 May. Satellite images were georeferenced using GIS software based upon the latitude and longitude grid lines indicated on the imagery.

2.3 Surface Weather Features

Surface weather features were analyzed using a combination of surface weather observations, radar data, and satellite data at a 15-minute increment. The main weather features tracked during this event include a surface dry line that moved eastward across northern and central Illinois, and a "dust wall" associated with the rapid onset of the dust storm that moved northeastward ahead of the dry line. The location of dust storm onset was easy to determine from 2200 UTC on 16 May to 0000 UTC on May 17 due to cloud-free satellite imagery showing the area of dust, radar data depicting the leading edge of the dust storm, and multiple observations from airport weather stations and weather spotters. From 2130 UTC to 2200 UTC, surface weather observations and reports from weather spotters were used to estimate the location of the leading edge of the dust storm. From 0000 UTC to 0200 UTC, estimating the

location of the leading edge of the dust storm became more difficult due to the loss of daytime satellite imagery.

2.4 Calculation of Dust Storm Duration

Surface weather observations from area airports were reviewed to determine certain impacts from the dust storm. First, the minimum visibility value was determined for each site. Next, the duration of time that visibility was reduced due to the dust storm was calculated. The start of this period was defined using the time stamp of the first observation when visibility dropped below 8 miles or the time stamp of the first observation of blowing dust (sometimes incorrectly coded as “haze”), whichever came first. The end of this period was defined using the time stamp of first observation (after the dust) when visibility climbed to at least 8 miles or the time stamp of the last observation of blowing dust, whichever came last. Although the AMS definition of “dust storm” is based upon visibilities of 0.63 miles or less, “blowing dust” was often reported by weather stations at the beginning and end of the event, coincident with visibilities in the 5-to-7-mile range. The duration of time that visibility was *significantly* reduced was also calculated, where applicable. A significant reduction in visibility was defined as values of 1 mile or less.

3.0 Dust Storm Progression

The dust storm originated south of Bloomington, Illinois, and west of Champaign, Illinois around 2130 UTC (4:30 PM CDT) on 16 May, and quickly became evident on visible satellite imagery as the high-level clouds from decaying shower and thunderstorm activity moved rapidly to the east (Figure 3). The dust storm then expanded rapidly to the north and northeast, passing Bloomington around 2200 UTC (5:00 PM CDT). As the leading edge of the dust storm crossed I-74 between Bloomington and Champaign, multiple crashes were reported, and the roadway was closed (Holesha, 2025). Shortly afterward, a multi-vehicle crash occurred just west of Fisher, Illinois, leading to four injuries (Holesha, 2025). At 2215 UTC (5:15 PM CDT), a multi-vehicle crash was reported near Sibley, Illinois, by Ford County emergency management.

Satellite imagery indicated that the dust storm covered large portions of Livingston, Ford, Kankakee, and Iroquois counties around 2245 UTC (5:45 PM CDT) on 16 May (Figure 4) and was approximately 40-50 miles wide from north to south. The leading edge of the dust storm entered the southern portion of the Chicago metropolitan area around 2300-2315 UTC (6:00-6:15 PM CDT) and extended eastward into northwestern Indiana (Figure 5). Satellite imagery indicated that portions of the dust storm were obscured by clouds in the Chicago area around 2345 UTC (6:45 PM CDT) but showed the dust storm covering southern Chicago and Cook County, most of Will County, all of Lake County (Indiana) and Porter counties, southern La Porte County, and northern Starke County (Figure 6). At that time the dust storm was approximately 30-40 miles wide from north to south. By 0000 UTC (7:00 PM CDT/8:00 PM EDT), the leading edge of the dust storm reached the Chicago Loop, Lake Michigan, and South Bend, Indiana. No significant traffic impacts were reported by Chicago area media outlets, but the significantly reduced visibilities caused a ground stops at Chicago Midway Airport and Chicago O'Hare Airport (Chicago Tribune, 2025). By 0100 UTC (9:00 PM EDT), the leading edge of the dust storm was located in southwestern Michigan. The dust storm began dissipating over the next hour, and was almost indiscernible by 0200 UTC (10:00 PM EDT). The progression of the dust storm and surface weather features in 15-minute intervals is shown by Figure 7, Figure 8, Figure 9, Figure 10, and Figure 11.

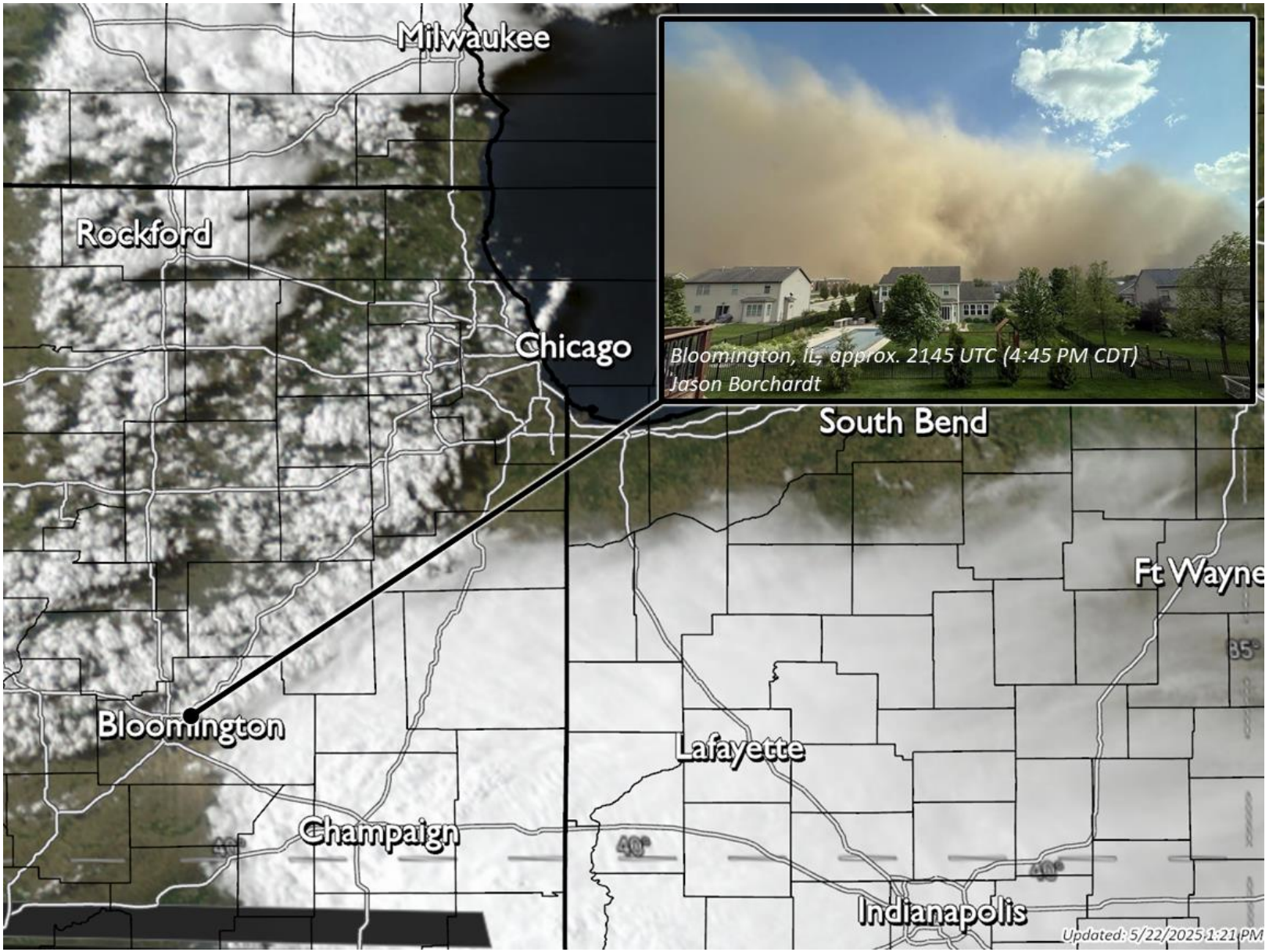

Figure 3. Geo-referenced "true color" satellite image from the GOES-19 satellite valid at 2146 UTC (4:46 PM CDT/5:46 PM EDT) on 16 May 2025. The inset shows the appearance of the dust wall along the leading edge of the dust storm as it moved through Bloomington, Illinois, at approximately the same time.

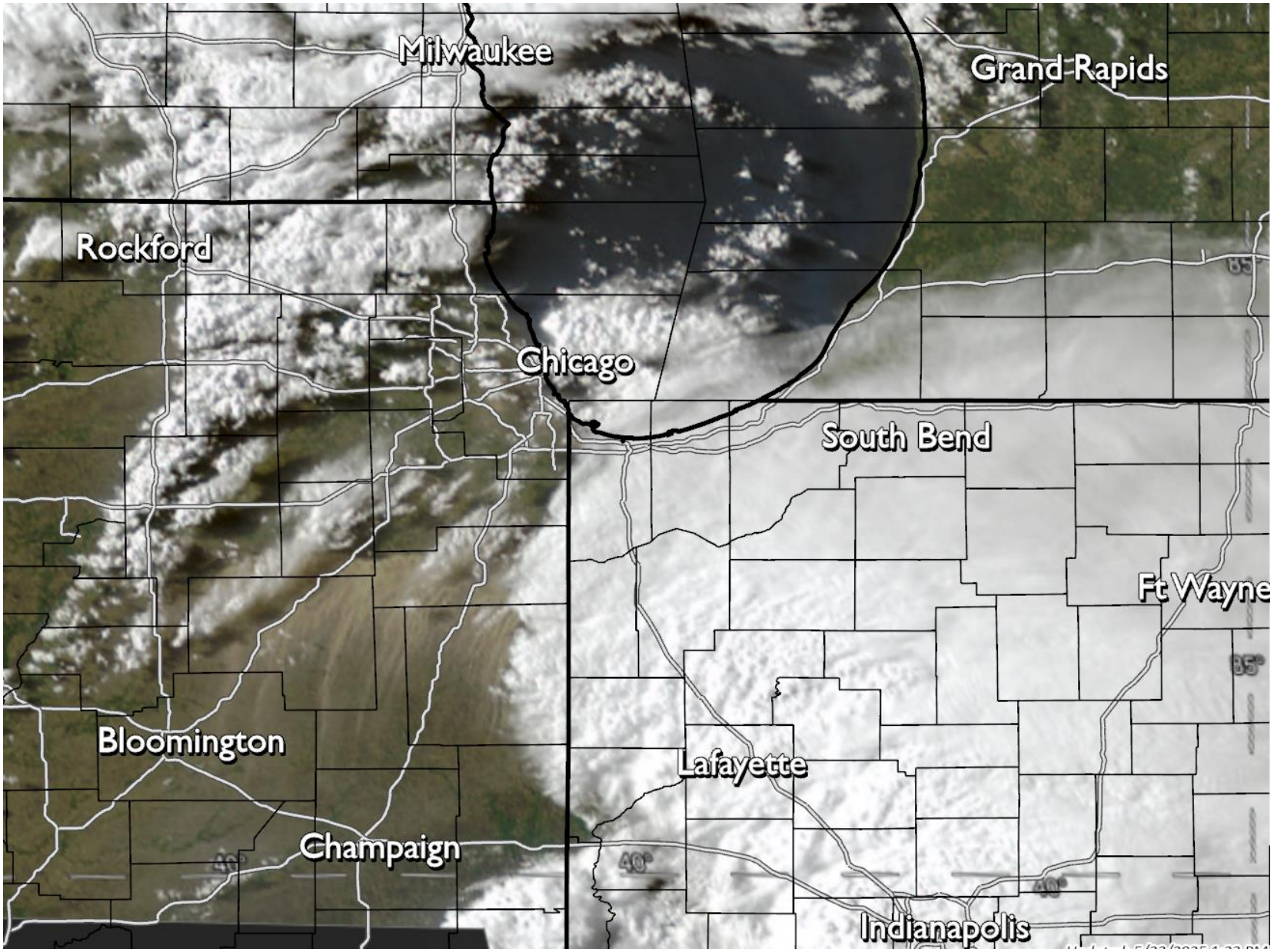

Figure 4. Geo-referenced "true color" satellite image from the GOES-19 satellite valid at 2246 UTC (5:46 PM CDT/6:46 PM EDT) on 16 May 2025.

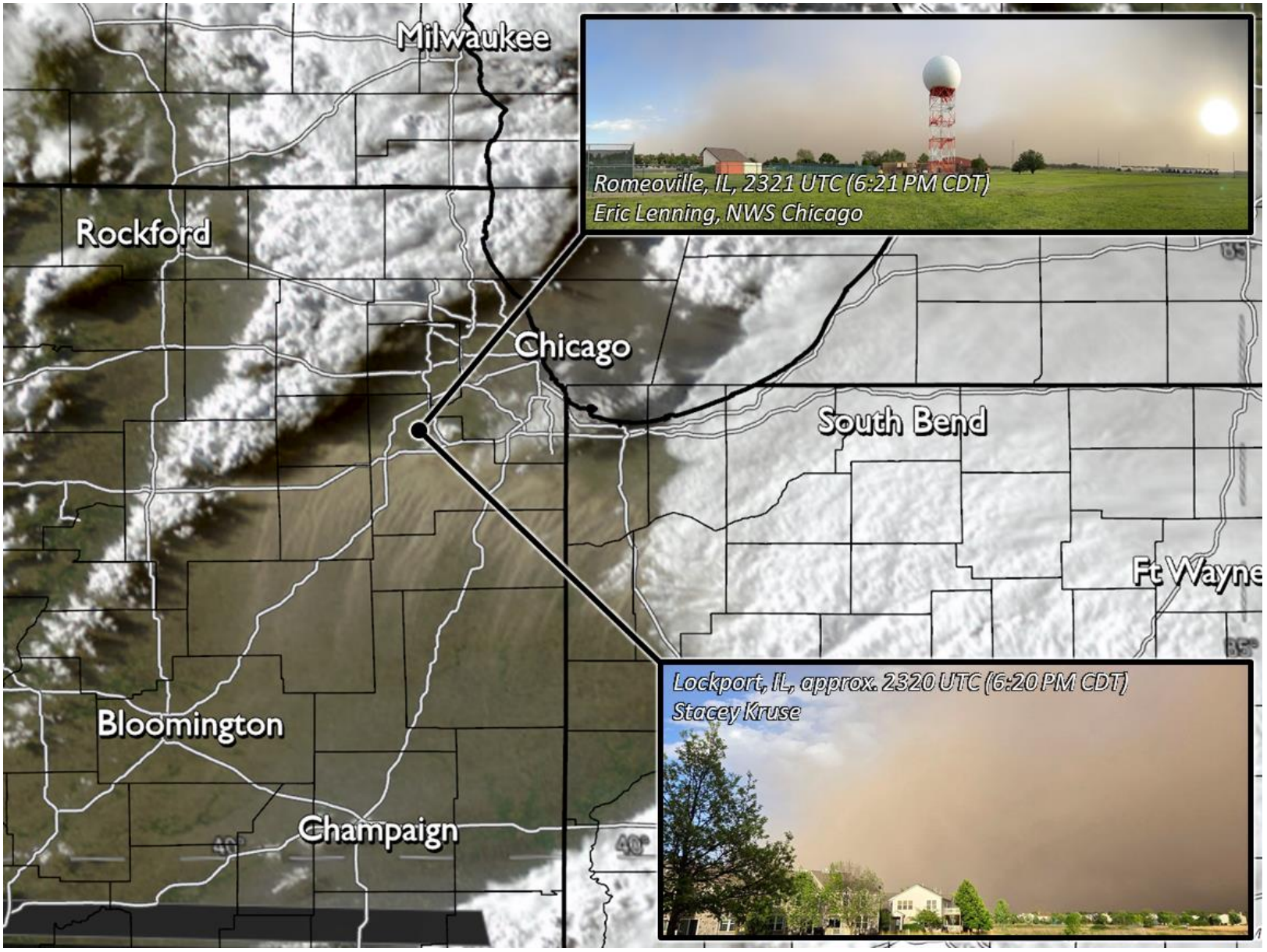

Figure 5. Geo-referenced "true color" satellite image from the GOES-19 satellite valid at 2315 UTC (6:15 PM CDT/7:15 PM EDT) on 16 May 2025. The top right and bottom right insets show the appearance of the dust wall along the leading edge of the dust storm as it neared the NWS Chicago office in Romeoville, Illinois, and Lockport, Illinois, respectively, about 5 minutes later.

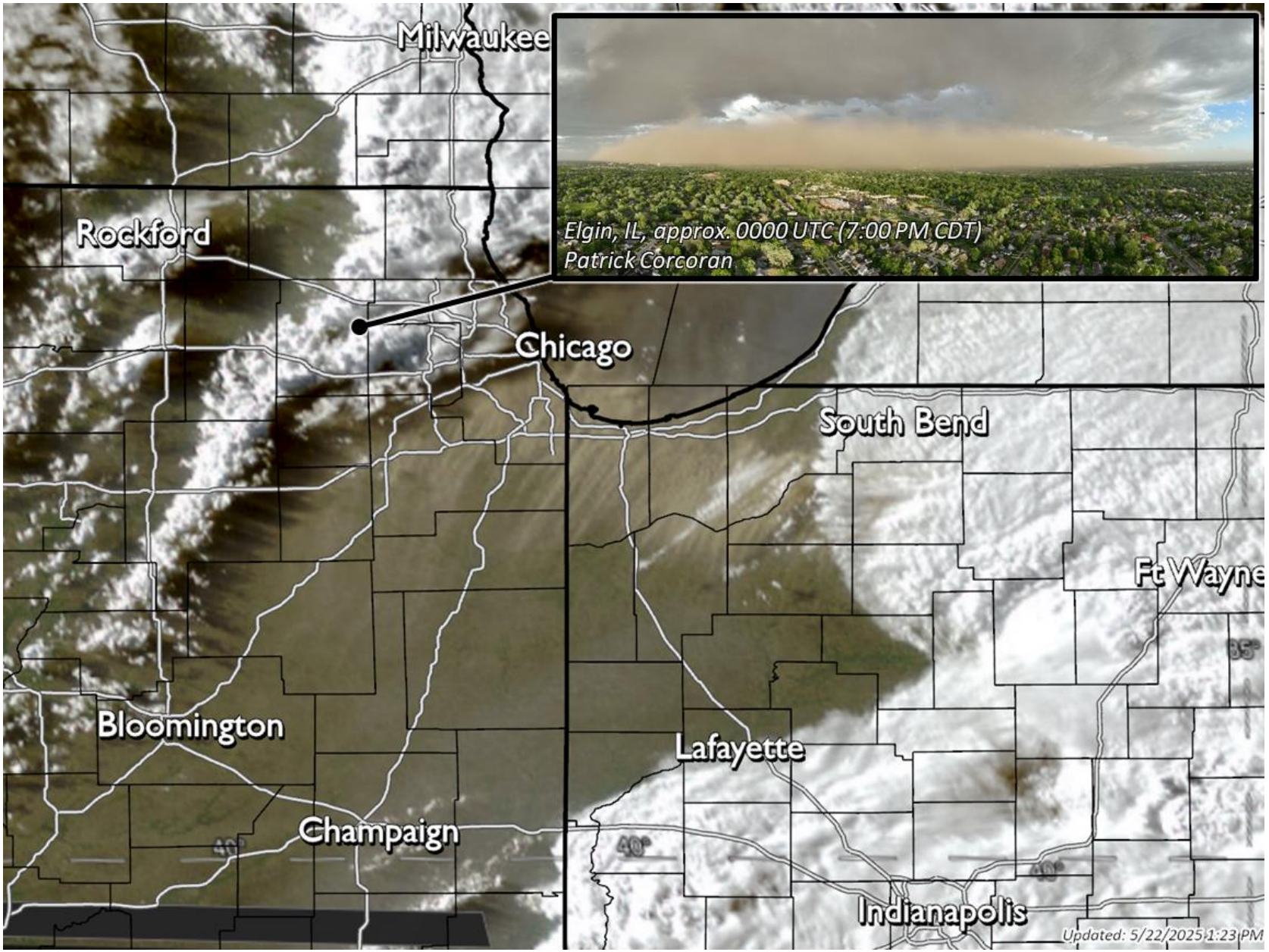

Figure 6. Geo-referenced "true color" satellite image from the GOES-19 satellite valid at 2346 UTC (6:46 PM CDT/7:46 PM EDT) on 16 May 2025. The inset shows the appearance of the dust wall along the leading edge of the dust storm as it neared Elgin, Illinois, approximately 15 minutes later.

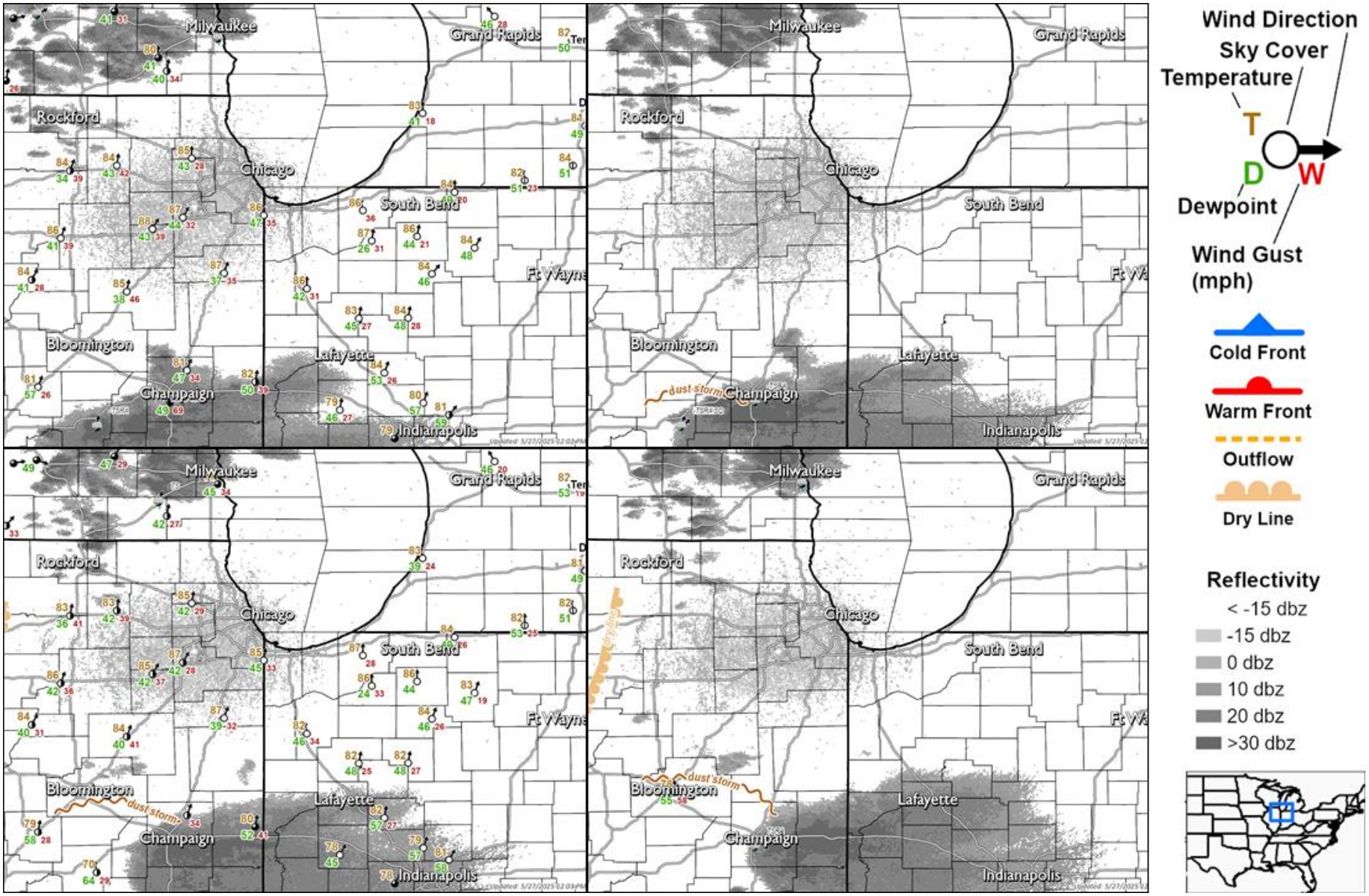

Figure 7. Surface weather features and dust storm progression analyzed at 15-minute intervals beginning at 2115 UTC (4:15 PM CDT/5:15 PM CDT) on 16 May 2025. Maps are in left to right, top to bottom order. Radar imagery in grayscale added as an underlay.

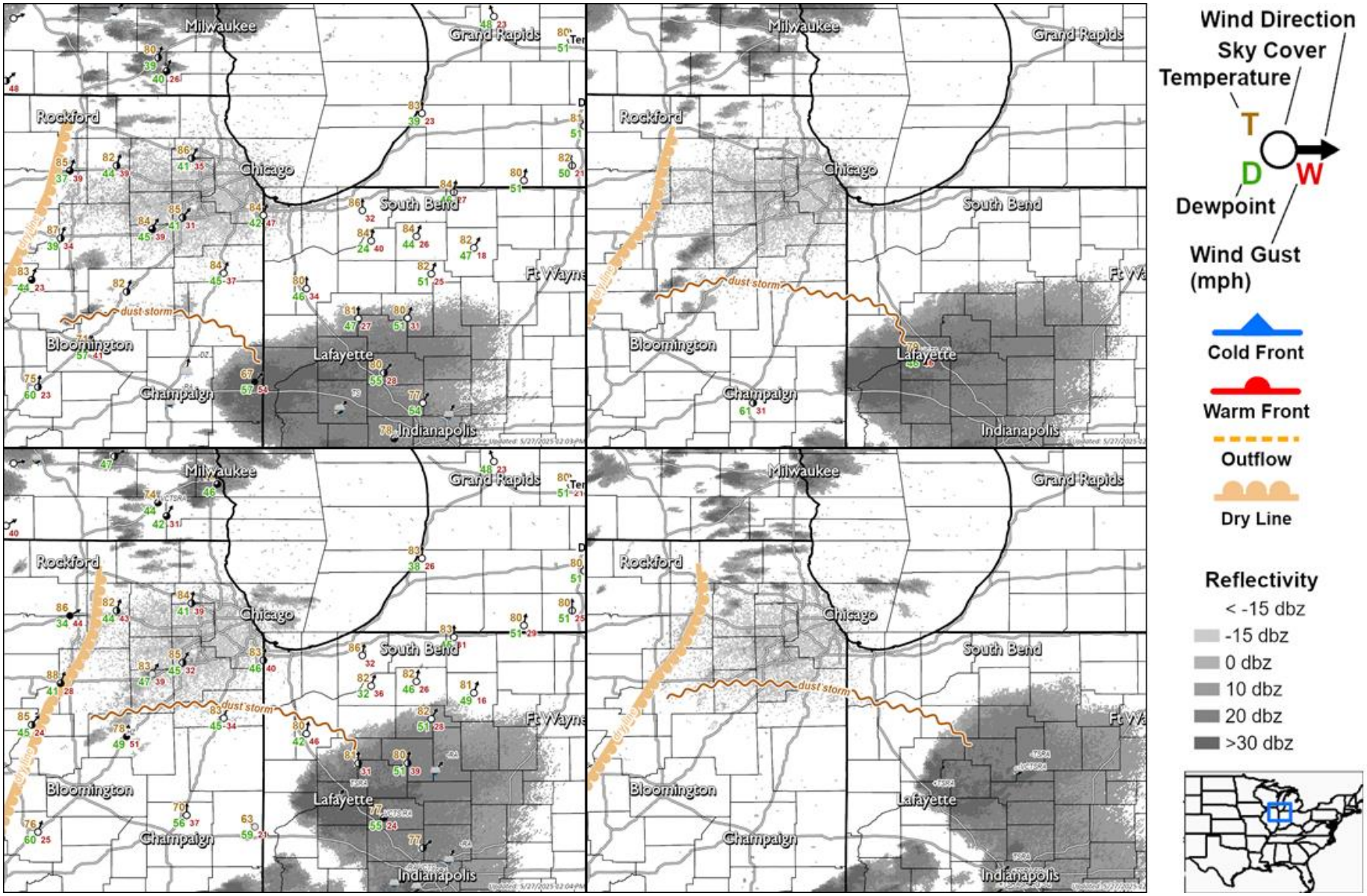

Figure 8. Surface weather features and dust storm progression analyzed at 15-minute intervals beginning at 2215 UTC (5:15 PM CDT/6:15 PM EDT) on 16 May 2025. Maps are in left to right, top to bottom order. Radar imagery in grayscale added as an underlay.

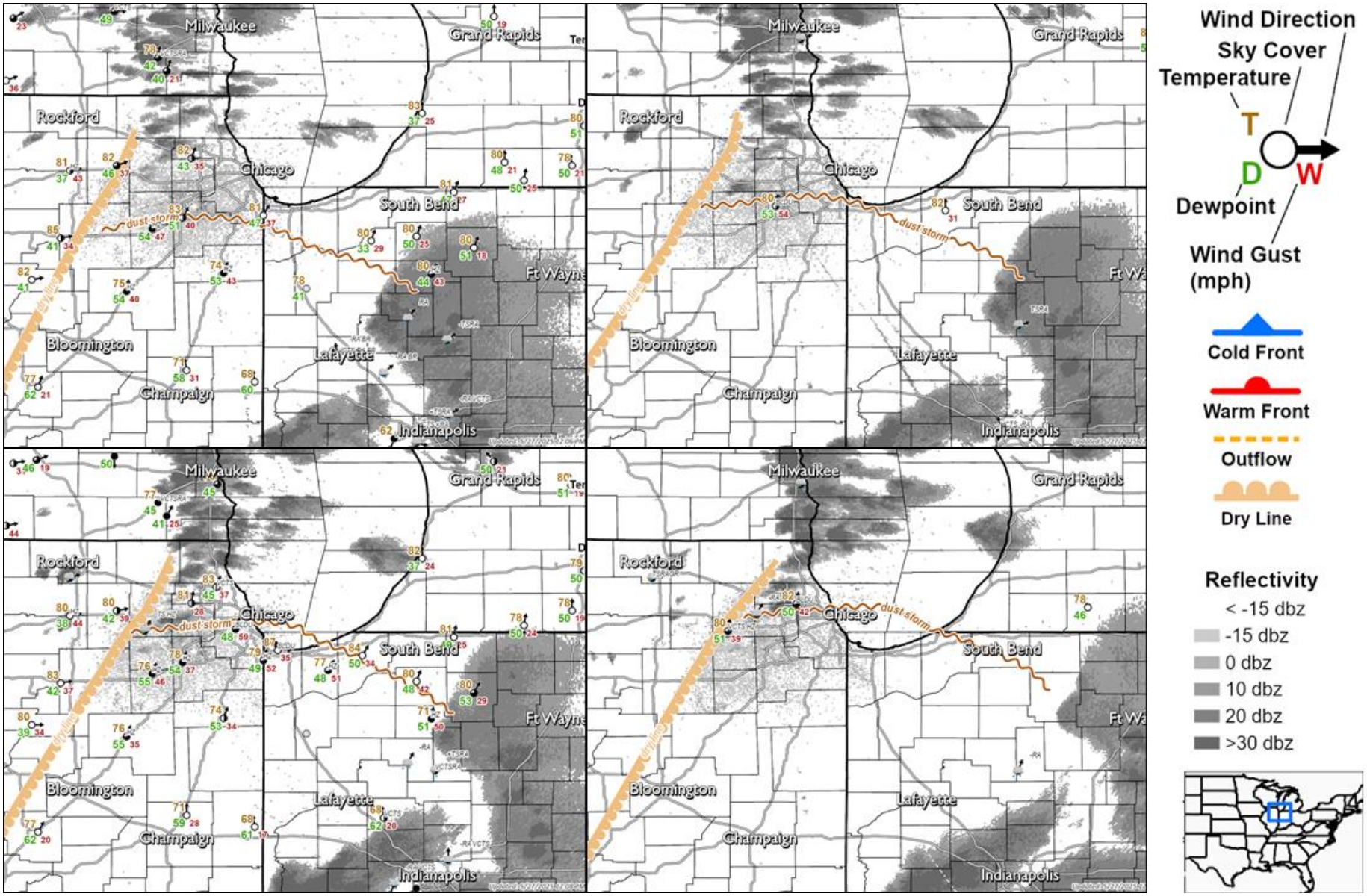

Figure 9. Surface weather features and dust storm progression analyzed at 15-minute intervals beginning at 2315 UTC (6:15 PM CDT/7:15 PM EDT) on 16 May 2025. Maps are in left to right, top to bottom order. Radar imagery in grayscale added as an underlay.

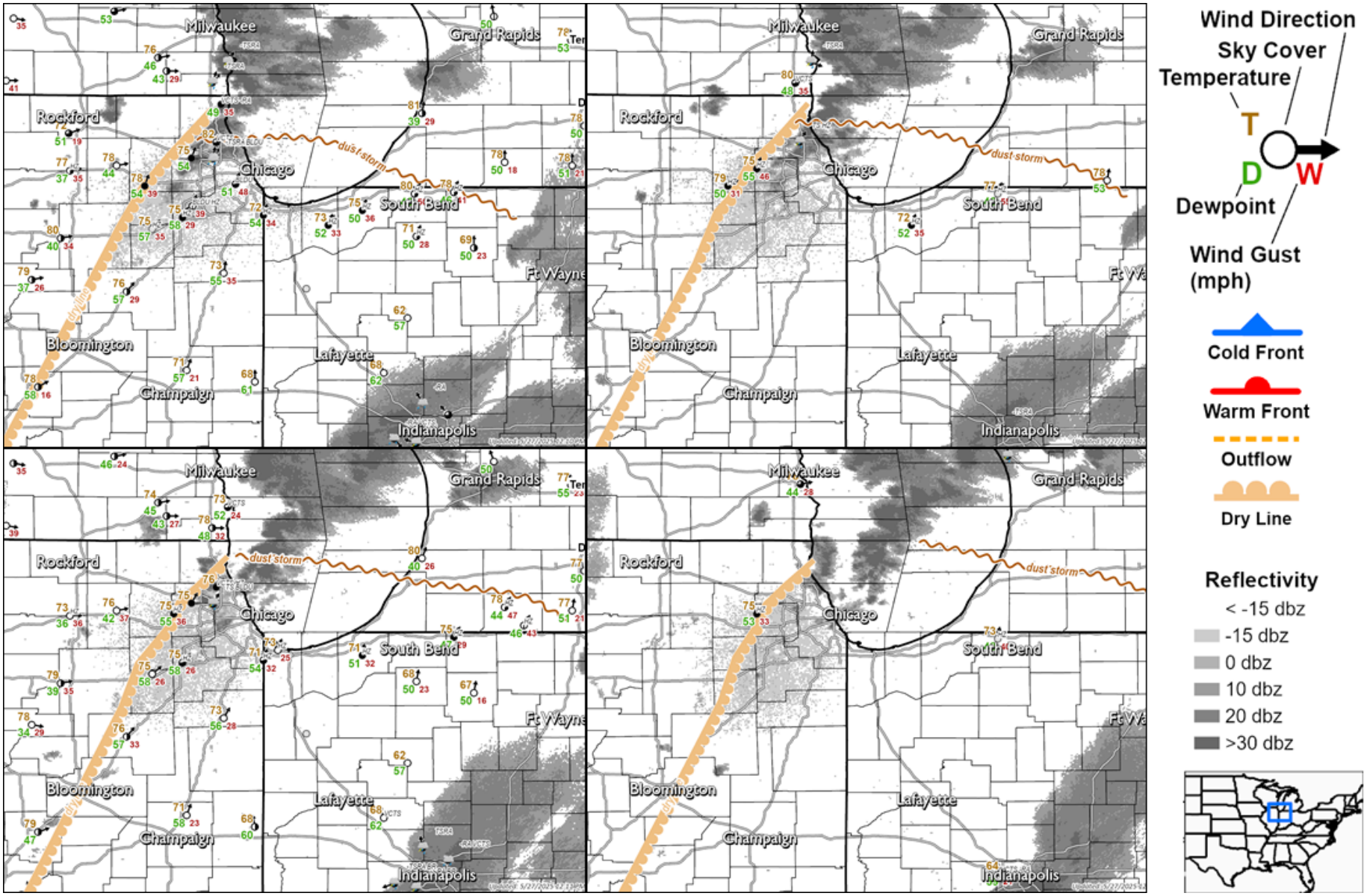

Figure 10. Surface weather features and dust storm progression analyzed at 15-minute intervals beginning at 0015 UTC on 17 May 2025 (7:15 PM CDT/8:15 PM EDT on 16 May). Maps are in left to right, top to bottom order. Radar imagery in grayscale added as an underlay.

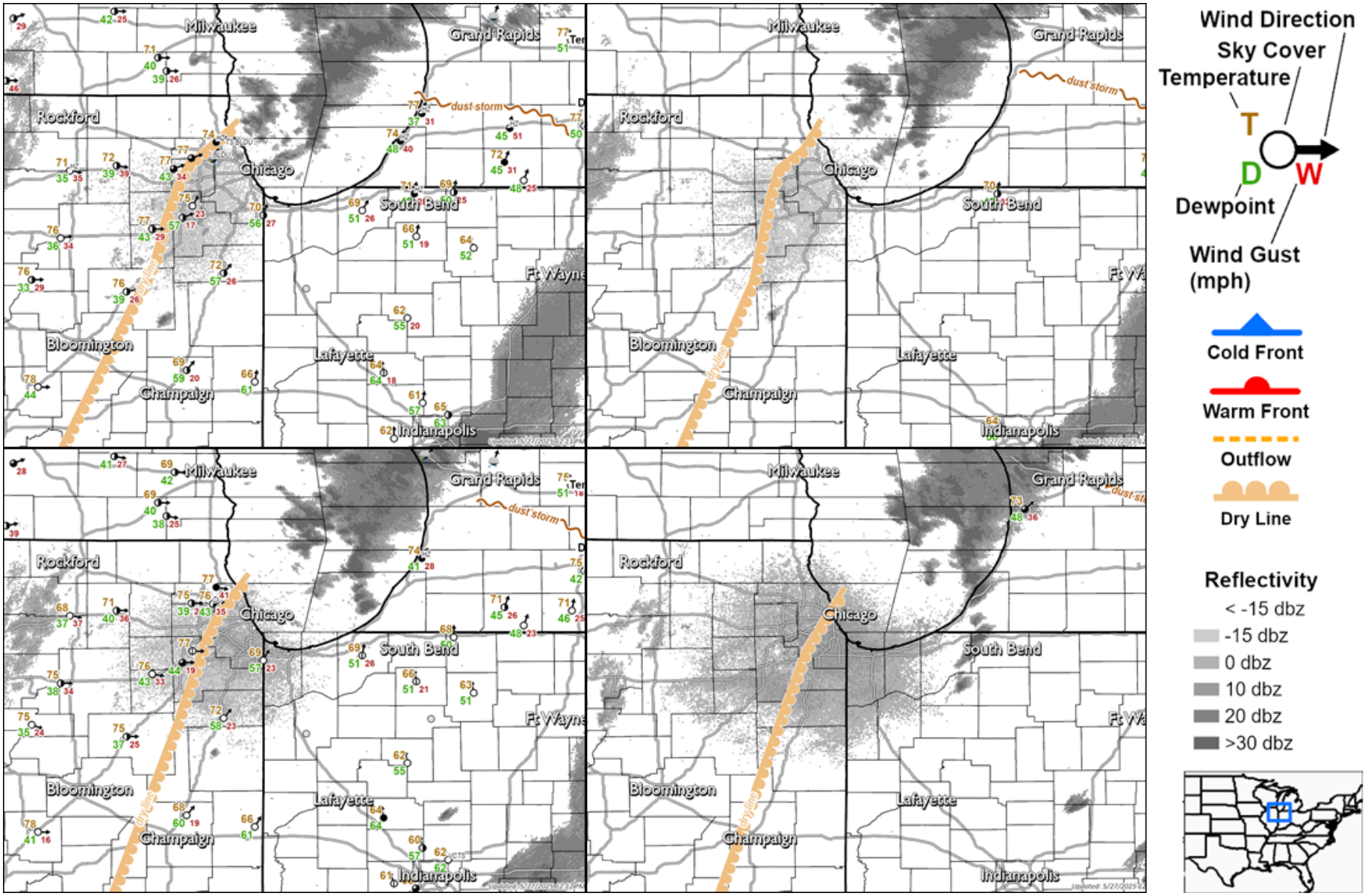

Figure 11. Surface weather features and dust storm progression analyzed at 15-minute intervals beginning at 0115 UTC on 17 May 2025 (8:15 PM CDT/9:15 PM EDT on 16 May). Maps are in left to right, top to bottom order. Radar imagery in grayscale added as an underlay.

Shortly after the dust storm began, the dust wall associated with the leading edge moved to the north-northeast at about 60 mph with propagation of new areas of blowing dust behind the area of decaying showers and thunderstorms moving to the east-northeast at about 70-80 mph. As the dust storm moved into the Chicago metro area, the forward motion had slowed to about 45 mph. The forward motion generally remained constant from this point to the dissipation of the dust in Michigan. Visibility observations from across the Chicago Metropolitan Area (Figure 12) illustrate the quick movement of the dust wall and the significant amount of dust lofted by the event, which led to a rapid-onset of significant visibility reductions.

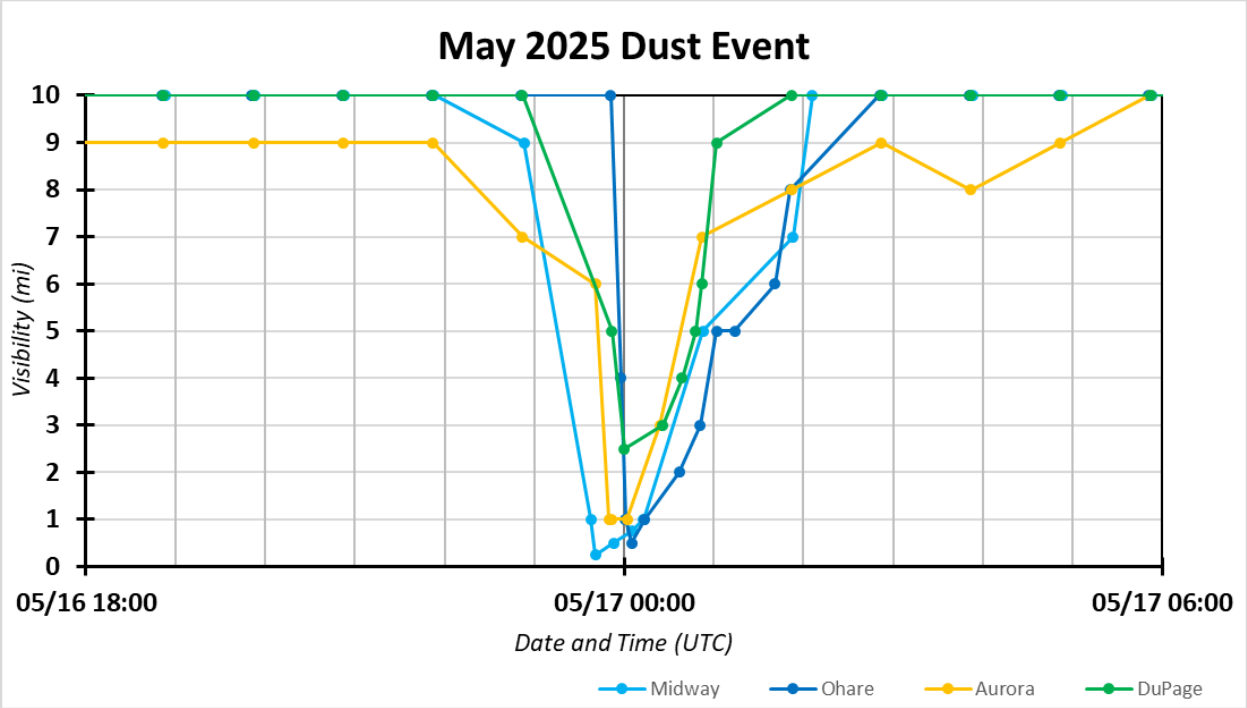

Figure 12. Visibility observations around the Chicago Metropolitan Area collected during the 16 May 2025 dust storm event.

The dust storm onset was associated with wind gusts in excess of 40 mph in almost all areas, with scattered gusts to near 50 mph. Close to the complex of thunderstorms that triggered the dust storm, across southern Iroquois County, Illinois, most of Benton County and southern portions of Newton and Jasper County, Indiana, wind gusts of 60-75 mph were reported. As the dust storm reached Chicago, wind gusts near 60 mph were reported at Midway Airport and a gust to 78 mph was reported above Lake Michigan at the Harrison-Dever Crib two miles offshore. Gusty winds from these storms were associated with dry air above the surface, particularly between the 850 mb and 600 mb levels, which was evident on the sounding from Lincoln, Illinois (ILX), taken at 1800 UTC (1:00 PM CDT) on 16 May (Figure 13), approximately 4.5 hours prior to the start of the dust storm.

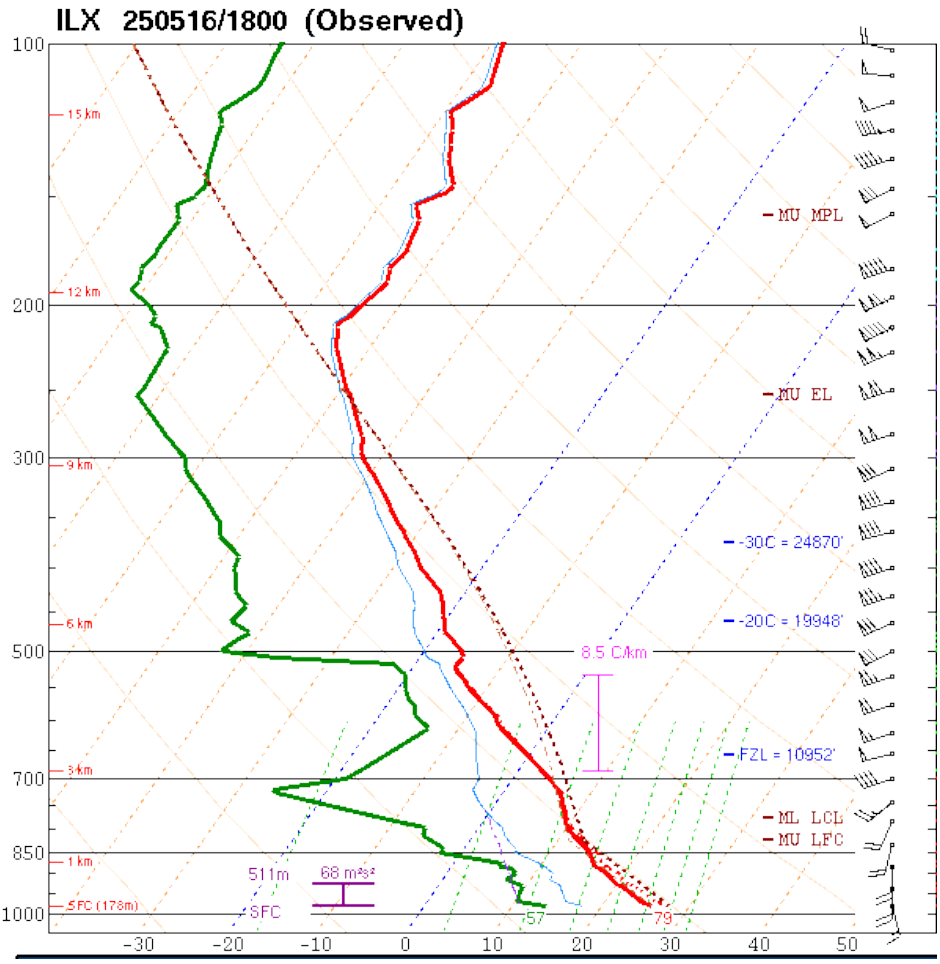

Figure 13. Sounding from Lincoln, Illinois (ILX), from 1800 UTC (1:00 PM CDT) on 16 May 2025. From SPC soundings page (https://www.spc.noaa.gov/exper/soundings/).

Through the entire area impacted by the dust storm, minimum visibilities were typically 1-2 miles or less (Figure 14). Two notable areas of even lower visibilities were noted. The first, extending from near Bloomington and Champaign north-northeastward to near Chicago, had visibilities around 1 mile or less along the entire length, with some stations reporting visibilities as low as 0.25 miles. A review of photos collected from the event and reports received from emergency managers and the public indicated that some isolated areas experienced periods of near zero visibility during the event. The duration of reduced visibility due to the dust storm was from as little as 35 minutes to as long as 140 minutes (Figure 15). The longest duration of reduced visibilities was reported in the Chicago metropolitan area. For areas where significantly reduced visibilities (<1 mile) were reported, the duration ranged from 15 minutes to 72 minutes. Significantly reduced visibilities were more scattered in nature, with such areas occurring near Chicago, Illinois, South Bend, Indiana, and likely rural areas near the origin of the dust storm south and east of Bloomington (Figure 16). Based upon the AMS criteria for “dust storm” to be indicated in official weather observations (0.63 visibility or less), dust storm conditions were reported at Pontiac, Joliet, Chicago Midway Airport, and Chicago O’Hare Airport in Illinois, and South Bend, Indiana. “Severe” dust storm conditions (visibility less than 0.31 miles) were reported at Chicago Midway Airport, Illinois, and South Bend, Indiana.

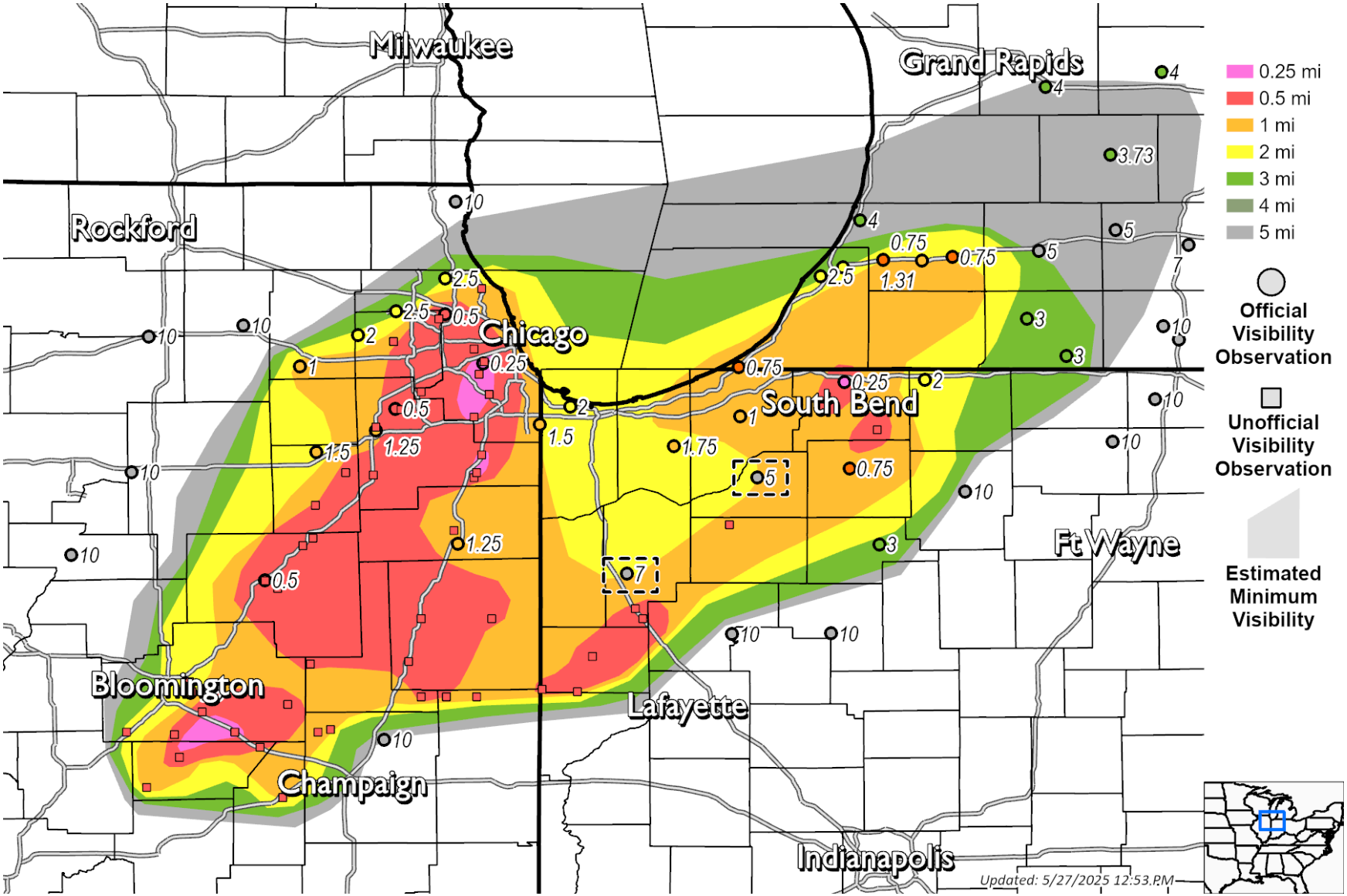

Figure 14. Estimated minimum visibilities from the dust storm that occurred on 16 May 2025, with minimum values recorded at official weather stations (circles) labeled. Stations with incomplete data, possibly due to power outages during the dust storm, are highlighted with dashed line boxes. Unofficial storm reports of dust storm conditions (visibility 0.63 miles or less) are indicated with squares. Estimated minimum visibility contours were estimated based upon a combination of weather station observations and storm reports.

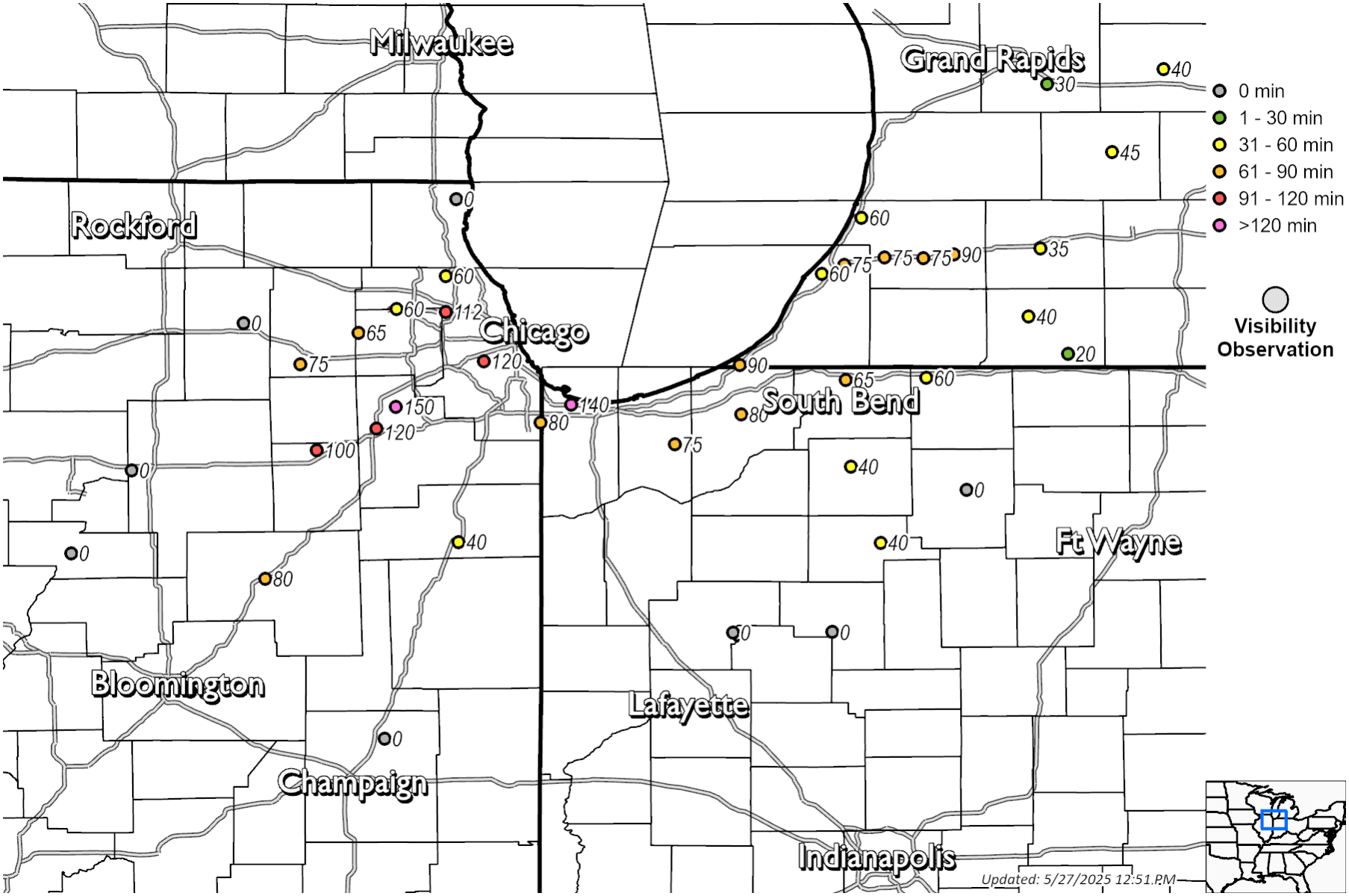

Figure 15. Duration (in minutes) of reduced visibilities from the dust storm that occurred on 16 May 2025.

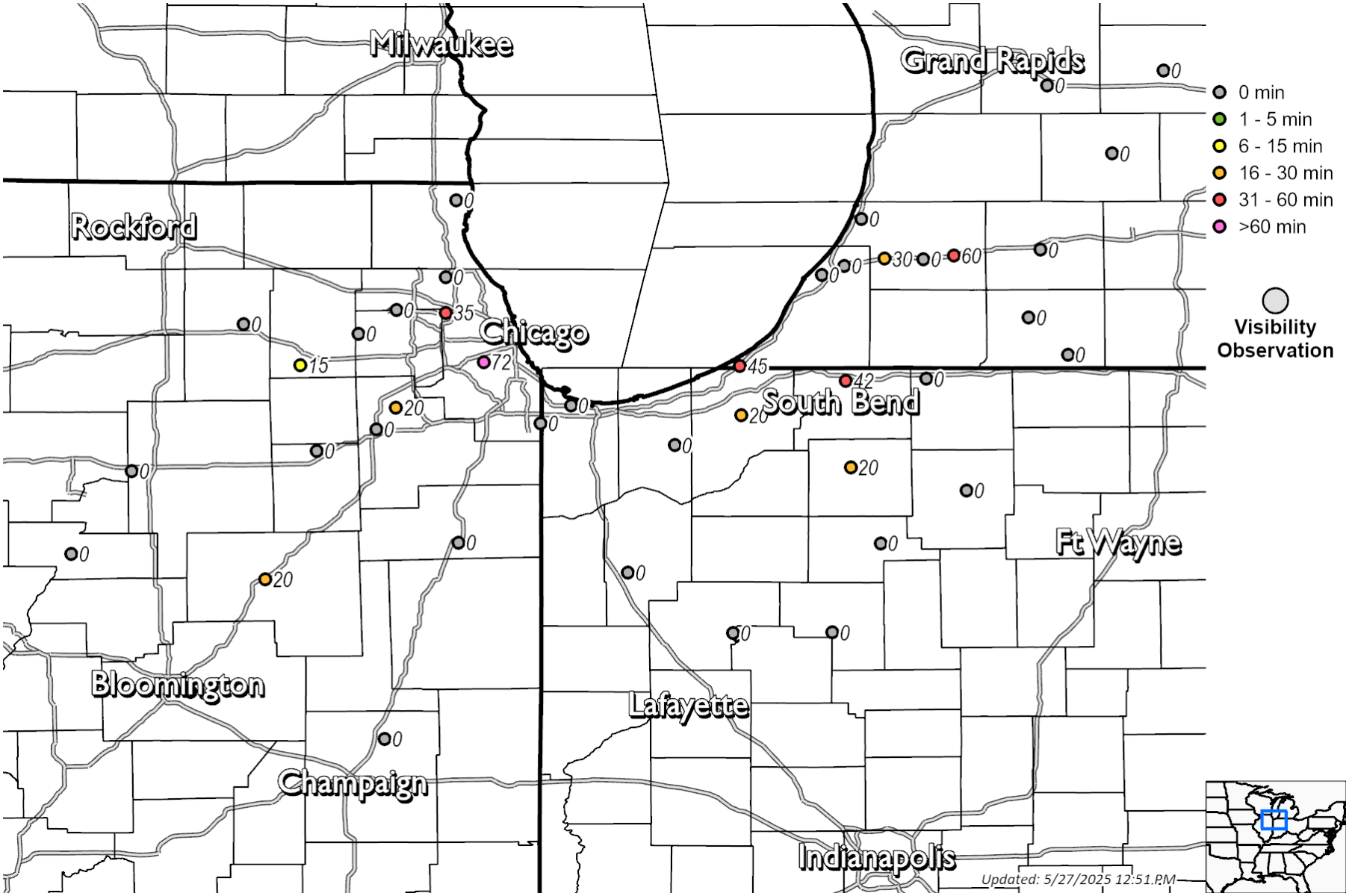

Figure 16. Duration, in minutes, of significantly reduced visibilities (<1 mile) from the dust storm that occurred on 16 May 2025.

4.0 Climatological Context

A review of National Weather Service records, newspaper articles from the Chicago Tribune, and automated weather observations from northeastern Illinois airports was conducted to determine if similar events to that of 16 May 2025 occurred in the Chicago area. National Weather Service's *Storm Data* publication (https://www.ncdc.noaa.gov/stormevents/) covered more recent years from 1950-present, while the Chicago Tribune archive was available back into the late 1800s. IEM provides an analysis and plotting tool that reviews weather observations for certain present weather codes over the period 1971 to present, and then indicates the frequency of such events by day of the year or week of the year (https://mesonet.agron.iastate.edu/plotting/auto/?_wait=no&q=87). A review of weather station observations indicated only one blowing dust and/or dust storm event at Chicago Midway and O'Hare Airports since 1971, which was 16 May 2025. Multiple other events with reduced visibility due to blowing dirt and dust were found, although most of these events were associated with the "Dust Bowl" drought period of the 1930s. While mild drought conditions and drier than average soil moisture values were observed across northern Illinois prior to the 16 May dust storm event (Figure 17), few similar events were found during the more significant drought periods of 2012 and 1988. A few events were also found in the Chicago Tribune that were described as "dust storms" that instead seemed like neighborhood-scale blowing dust/dirt events because they were not corroborated by other contemporary weather records.

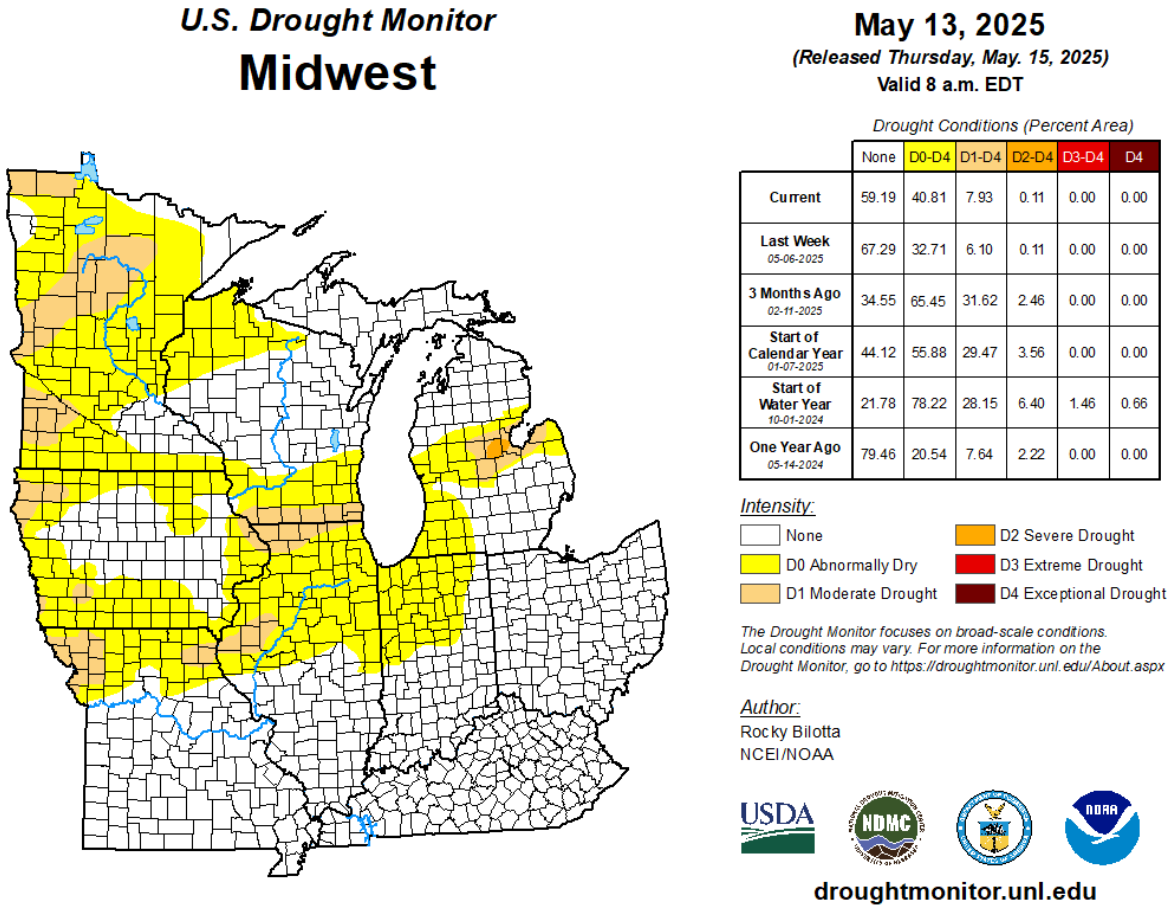

Figure 17. United States Drought Monitor valid 13 May 2025.

The most similar analog events to 16 May were the events of November 1933, May 1934, and May 1985. On 12 November 1933, rapid-onset of gusty winds and reduced visibilities to half a mile occurred after a thick wall of dust approached the city of Chicago from the west. On 10 May 1934, blowing dust after passage of light rainfall caused visibilities as low as 0.75 miles. On 31 May 1985, blowing dust and visibilities near zero caused a 15-car crash on I-90 west of Chicago that led to one fatality and 10 injuries. A few other instances of blowing dust, sometimes mixed with hazy or “smoky” conditions occurred during the 1930s in Chicago, typically with less significant reductions in visibility. In central Illinois, south of Chicago, blowing dust events occurring in May 2023, May 2017, June 1990, May 1983, resulted in vehicle crashes and sometimes fatalities (https://www.weather.gov/ilx/01may2023-dust). A summary of known blowing dust events in the Chicago area is provided by Table 1.

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Table 1. A summary of known dust storm events in the vicinity of the Chicago Metropolitan Area. Events were collected from the NOAA Storm Data publication and from a review of Chicago Tribune newspaper articles using the search term "dust storm." The indicated minimum visibility value is based upon observations taken at Chicago Midway Airport, and may not be representative of all areas impacted by a particular event.

Date	Minimum Vis. (mi)	Description
1896/12/03	NA	The Chicago Tribune indicated a "dust storm followed by snow" which included clouds of dust that reduced visibility (Chicago Tribune, 1896). Dust entered buildings. The snow that followed the blowing dust was indicated as "dirty." The original monthly weather form for the Chicago observing site in today's loop area did not have any remarks indicating a dust storm, and otherwise indicated rainfall light snow and maximum gusts to 40 mph (U.S Department of Agriculture Weather Bureau, 1896). No official reports of visibility were available. A review of monthly cooperative observer forms for the vicinity of Chicago did not indicate any observations sites with a dust storm or blowing dust remark (U.S. Department of Agriculture Weather Bureau).
1897/10/14	NA	The Chicago Tribune indicated a "dust storm" due to hot weather and drought conditions (Chicago Tribune, 1897). A coating of dust was reported on carpets/rugs and pictures, and persons reported eye irritation. The original monthly weather form for the Chicago observing site in today's loop area did not have any remarks indicating a dust storm, but did indicate maximum gusts to 50 mph (U.S Department of Agriculture Weather Bureau, 1896). No official reports of visibility were available. A review of monthly cooperative observer forms for the vicinity of Chicago did not indicate any observations sites with a dust storm or blowing dust remark for this date, but the Aurora observer indicated "much complaint from dust" for the first part of the month up until 9 October (U.S. Department of Agriculture Weather Bureau).
1899/08/11	NA	The Chicago Tribune indicated blowing "black dust" which entered buildings and stuck to persons around the onset of a brief thunderstorm with gusty winds (Chicago Tribune, 1899). The original monthly weather form for the Chicago observing site in today's loop area did not have any remarks indicating a dust storm, and otherwise indicated rainfall of 0.3 inches and maximum gusts to 61 mph (U.S. Department of Agriculture Weather Bureau, 1899). No official reports of visibility were available. A review of monthly cooperative observer forms for the vicinity of Chicago did not indicate

Date	Minimum Vis. (mi)	Description
		any observations sites with a dust storm or blowing dust remark, but the Elgin observer indicated damage to multiple nearby farms from the storm (U.S. Department of Agriculture Weather Bureau).
1902/01/05	NA	The Chicago Tribune indicated “blinding dust” which collected in gutters, entered street cars, and stuck to persons (Chicago Tribune, 1902). The blowing dust occurred for most of the day and evening during a period of gusty winds. The original monthly weather form for the Chicago observing site in today’s loop area did not have any remarks indicating a dust storm, and otherwise indicated maximum wind gusts to 39 mph (U.S. Department of Agriculture Weather Bureau, 1902). No official reports of visibility were available at Chicago. A review of monthly cooperative observer forms for the vicinity of Chicago did not indicate any observations sites with a dust storm or blowing dust remark (U.S. Department of Agriculture Weather Bureau).
1933/11/12	0.5	Smoky conditions earlier in the day, wind shift with increase in wind speeds from the west coincided with drop in visibility over 3-4-hour period from 10 mi to 0.5 mi. Blowing dust was visible in Chicago’s western sky prior to arrival. The Chicago Tribune indicated that the dust storm originated 500 miles away in the western plains (Chicago Tribune, 1933), and later analysis of this event indicated that blowing dust was significant across the Midwest and the northeast (Mattice, 1935). Caused temporary suspension of rides at World’s Fair. Monthly cooperative observer forms for northern Illinois confirm that this dust storm was widespread and significant across the area, with a duration of 6 hours or less at most locations (U.S. Department of Agriculture Weather Bureau). The dust storm began at Galena, IL, around 2:00 PM, Waukegan around 1:00 PM, Freeport around 3:00 PM, Mt. Carroll around 3:30 PM, Monmouth around 4:30 PM, Streator around 4:45 PM, Rockford and Quincy around 5:00 PM, Cicero around 5:30 PM, Havana and Lincoln around 6:00 PM, Minonk and Aurora around 7:00 PM, Geneseo and Chicago around 7:30 PM, Kankakee around 8:00 PM, Urbana around 9:00 PM, Decatur around 9:30 PM; estimated motion from NW to SE 25-30 mph.
1934/04/22	0.75	Event coded by observers as alternating between smoky conditions and blowing dust over 36-48 hour period. The Chicago Tribune indicated that the event was the worst since 11 November 1933, but

Date	Minimum Vis. (mi)	Description
		other than dust on persons and in structures, the worst impacts were west of the city (Chicago Tribune, 1934).
1934/05/10	0.75	Event began with light rain followed by gusty winds and blowing dust, then smoky conditions. The Chicago Tribune cited air measurements which indicated dust that was “6 times normal” and that nothing similar to the recent dust storms had been experienced in decades (Chicago Tribune, 1934). Otherwise no specific impacts noted. Separate Chicago Tribune article also indicated that layer of dust left behind by event “foiled a prison escape” at Stateville Prison (Chicago Tribune, 1934). Event lasted for about 22-24 hours.
1935/03/22	1.5	Event coded by observers as alternating between smoky conditions and blowing dust over 30-36 hour period. Transition to blowing dust in the middle of the event appeared to coincide with increased wind speeds. The Chicago Tribune indicated “clouds of dust over city for 2 hours” until winds off the lake cleared the air (Chicago Tribune, 1935). The article also cited pilots who estimated that the dust exceeded 1 mile in height above ground.
1935/04/10	0.75	Event was coded by observers as smoke the entire 48-54 hour period with visibility typically a few miles or more. A brief period of visibilities around 1 mile or less occurred, which may suggest dust, although this occurred during relatively light winds. The Chicago Tribune indicated that “heavy rain and fog saved the city from dust” (Chicago Tribune, 1935). The article indicated some impact to flights at Chicago Airport (Midway) and delays to trains west of Chicago.
1935/05/29	0.75	Event was coded by observers as smoke almost the entire 60-66 hour period with visibility typically a few miles or more. A few brief periods had visibility reduced to around 1 mile or less, with weather condition indicated as “thick smoke”, which may suggest dust. Winds were generally light throughout the period.
1983/05/06	1.5	A few periods of blowing dust at Chicago Midway Airport with clearer periods in between. Other airports across northern Illinois indicated periods of blowing dust with similar visibility drops, including Meigs Field (Northerly Island) and 68th Street Crib. The Chicago Tribune reported strong winds and power outages during the event, but did mention dust that “clouded a 200 mile stretch from

Date	Minimum Vis. (mi)	Description
		Springfield to southern Wisconsin" that was suppressed by rainfall (Chicago Tribune, 1983). 2 persons were killed from dust-related traffic accidents, but no specific locations provided.
1985/05/31	3.0	A brief period of reduced visibilities due to blowing dust was reported at sites across northern Illinois over a 2-4 hour period. The Chicago Tribune reported a 15-vehicle pile-up on I-90 near Marengo with 1 fatality and 10 injuries due to visibility near zero (Sullivan, 1985). Power outages were also noted in the Chicago area due to winds up to 60 mph. Dust was mentioned as being reported across northern Illinois.

Observations of visibility were compared for several of the indicated blowing dust and dust storm events. While the November 1933 and May 1934 events had visibilities drop below one mile, they did not reach the 0.25-mile minimum visibility recorded on 16 May 2025 (Figure 18). The onset of the 16 May 2025 event was also quite rapid, with visibility observations dropping from 9 miles to 0.25 miles in less than one hour. Only the March 1935 and May 1983 events had similar rapid-onset visibility decreases.

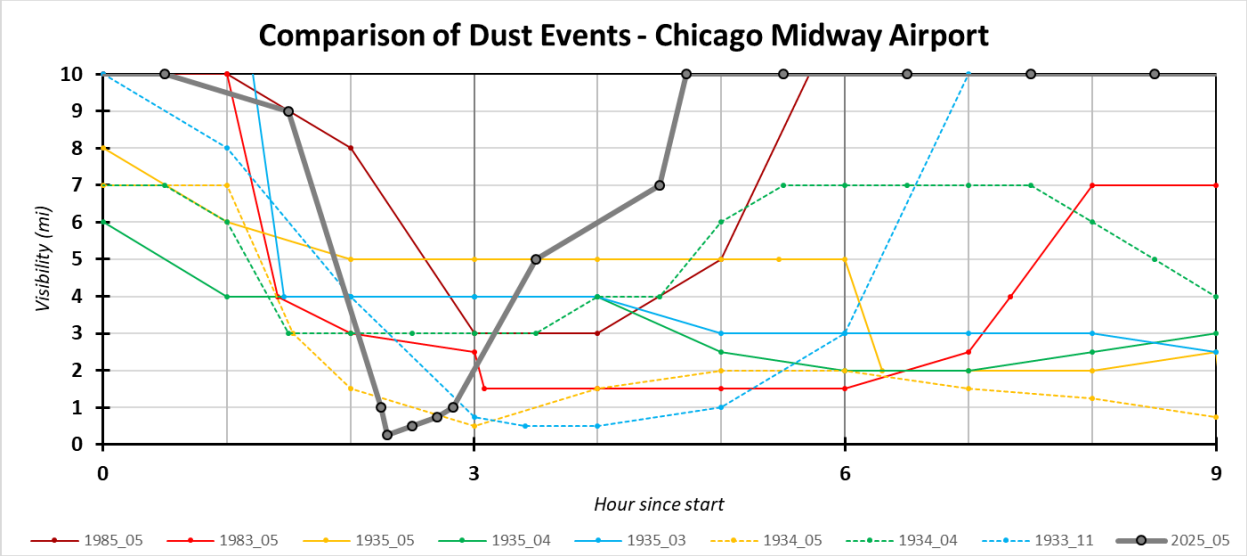

Figure 18.Visibility observations for the known blowing dust and dust storm events impacting Chicago. Visibility observations are from Chicago Midway Airport (MDW).

4.0 Summary/Conclusions

A rare dust storm occurred across portions of the Midwest on 16 May 2025 due to outflow winds from a complex of thunderstorms moving from central Illinois into central Indiana. While unusual, blowing dust events are not unprecedented for the area. A combination of drier than average soils, recent agricultural tilling due to planting of crops, and dry outflow winds likely combined to loft a significant amount of dirt and dust.

The University of Illinois Extension office published a report, just three and a half weeks prior to the event of 16 May, that described the complex interaction of multiple factors that can create dust events in Illinois (Brooks, Curry, Friend, & Heath, 2025). It was indicated that there is no clear statewide trend in soil moisture or winds that can explain recent blowing dust events, indicating that weather is "not the primary cause of widespread dust storms." Modeling of an Illinois dust storm event on 1 May 2023 near Springfield by the University of Illinois' *farmdoc Daily* publication suggested that a combination of bare fields, relatively low soil moisture, and tree placement may have contributed to the near zero visibilities during that event (Coppess, et al., 2025). It is beyond the scope of this report to provide an in-depth analysis of the agricultural factors that contribute to these events. From the currently available information, however, a heightened awareness of potential impactful blowing dust events is advised in the weeks after spring planting (typically in May), especially during dry periods with below average soil moisture conditions. Future work on this topic could include simple modeling of potential blowing dust risk using a combination of soil moisture, crop planting schedules, and wind forecasts.

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6.0 References

American Meteorological Society. (2025, May). Glossary of Meteorology. From https://glossary.ametsoc.org/wiki/

Brooks, K., Curry, R., Friend, D., & Heath, T. (2025, April 25). *University of Illinois Urbana-Champaign College of Agricultural, Consumer, & Environmental Sciences, Illinois Extension.* From Dust storms in Illinois: Identifying farm solutions: https://extension.illinois.edu/news-releases/dust-storms-illinois-identifying-farm-solutions

Chicago Tribune. (1896, December 4). Dust Storm Followed by Snow. *Chicago Tribune*.

Chicago Tribune. (1897, October 15). Knocks Out Hot Record. *Chicago Tribune*.

Chicago Tribune. (1899, August 12). Havoc in the Storm's Path. *Chicago Tribune*.

Chicago Tribune. (1902, January 6). Dust and Grime Fill the Air. *Chicago Tribune*.

Chicago Tribune. (1933, November 13). Dust Storm Sweeps City; Midwest Hit. *Chicago Tribune*.

Chicago Tribune. (1934, May 12). Big Dust Storm Foils Stateville Prison Escape. *Chicago Tribune*.

Chicago Tribune. (1934, May 11). City Choked by Drouth Dust. *Chicago Tribune*.

Chicago Tribune. (1934, April 24). Dust Blankets Arid Corn Belt; Dims Sun Here. *Chicago Tribune*.

Chicago Tribune. (1935, March 23). Clouds of Dust Roll Over City for Two Hours. *Chicago Tribune*.

Chicago Tribune. (1935, April 12). Heavy Rain, Fog Save City From Storm of Dust. *Chicago Tribune*.

Chicago Tribune. (1983, May 8). Strong winds rake area, cause power outages. *Chicago Tribune*.

Chicago Tribune. (2025, May 16). Dust storm engulfing much of Northern Illinois weather officials urge caution. *Chicago Tribune*. From https://www.chicagotribune.com/2025/05/16/dust-storm-engulfing-much-of-northern-illinois-weather-officials-urge-caution/

Coppess, J., Abhijit, D., Xu, Y., Li, Q., Wang, S., Zhou, Q., . . . Guan, K. (2025, April 10). Research & Conservation: Reviewing the Illinois Dust Storm of 2023. *farmdocdaily*.

Holesha, E. (2025, May 17). Five-vehicle crash in Champaign Co. leads to four hospitalizations. *WCIA-TV*. From https://www.wcia.com/news/champaign-county/five-vehicle-crash-in-champaign-co-leads-to-four-hospitalizations/

Holesha, E. (2025, May 16). State Police dealing with multiple crashes on I-74. *WCIA-TV*. From https://www.wcia.com/news/crashes/state-police-dealing-with-multiple-crashes-on-i-74/

Mattice, W. (1935). Dust Storms, November 1933 to May 1934. *Monthly Weather Review*.

Seigel, R., & Heever, S. (2012). Dust Lofting and Ingestion by Supercell Storms. *Journal of Atmospheric Sciences*.

Sullivan, P. (1985, June 1). Dust blizzard clouds city, causes pile-up. *Chicago Tribune*.

U.S Department of Agriculture Weather Bureau. (1896, December). *NCEI Edads V2.* From Monthly Surface Weather Observation Forms.

U.S. Department of Agriculture Weather Bureau. (1899, August). *NCEI Edads V2.* From Monthly Surface Weather Observation Forms.
U.S. Department of Agriculture Weather Bureau. (1902, January). *NCEI Edads V2.* From Monthly Surface Weather Observation Forms.
U.S. Department of Agriculture Weather Bureau. (n.d.). *NCEI Edads V2.* From Monthly Cooperative Observation Forms.