Central Region Technical Attachment

Number 25-01

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The April 1973 Rock River Basin Floods

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1.0 Summary

As part of an effort to update flood impacts along Turtle Creek in the Beloit, Wisconsin, and South Beloit, Illinois, areas associated with the Clinton river gauge, an extensive review was conducted of the record flood which occurred on 21 April 1973. This flood event was part of a significant and expansive multi-week flood event impacting the Mississippi River Basin in the central United States in the spring of 1973 (Chin et al. 1975). In Illinois and Wisconsin, flooding was most severe in the Rock River Basin, impacting multiple rivers and small streams. At multiple stream gauges record or near-record water levels were observed, some of which remain the record today. Along Turtle Creek near Beloit, Wisconsin (near the Illinois-Wisconsin state line), flooding impacted hundreds of residences and businesses. In Rockford, Illinois, numerous structures were flooded along Kent and Keith creeks. Nearby and in between, small creeks and ditches damaged multiple roadways. Flood damage was estimated at $50-75 million ($366-550 million in 2025).

Rainfall contour analysis indicates that the heaviest rainfall in Illinois and Wisconsin occurred in a narrow corridor from near Davenport, Iowa, to near Rockford, Illinois, to near Milwaukee, Wisconsin. Within this corridor of heavy rainfall, 3-7 inches of rainfall was common. Rainfall with less than a 1% chance of occurring in a given year occurred just east of the Quad Cities, with multiple areas near Elkhorn and Beloit receiving rainfall with less than a 2% chance of occurring in a given year.

2.0 General Meteorological Conditions

At 0600 CST (1200 UTC; all remaining times denoted only in CST) on 19 April 1973, skies were cloudy across a large portion of the Midwest with widespread temperatures around 15°C (upper 50s °F) and dewpoints ranging from 10 to 13°C (low-to-mid 50s °F; Figure 1). Winds were out of the south and southeast which contributed to increasing surface dewpoints throughout the day. An area of low pressure was located near the Colorado-Nebraska-Kansas border, with a cold front extending to the south across the southern plains. Further to the east, an area of surface convergence and possibly a dry line extended from southern Minnesota southward to eastern Oklahoma. By 1800 CST on 19 April, this low pressure system had moved eastward into western Nebraska. An area of scattered showers extended from just northeast of this low toward southern Lake Michigan. Temperatures around 18 to 21°C (mid-to-upper 60s °F) and dewpoints near 16°C (60°F) were common east of the low.

At 0600 CST on 20 April, skies remained cloudy across a large portion of the Midwest with scattered areas of showers and drizzle. Temperatures were generally 14 to 17°C (upper 50s to low 60s °F), with dewpoints around 14 to 15°C (upper 50s °F), except for areas to the west in Minnesota, Iowa, and Missouri, where a moisture discontinuity or dry line had moved into the area and caused a drop in dewpoints. Throughout the day, temperatures climbed to about 19 to 21°C (upper 60s and low 70s °F) and dewpoints climbed to around 16 to 18°C (low 60s °F). Even though temperatures also climbed to the west in Kansas, Nebraska, western Iowa, and southwestern Minnesota, dewpoints remained much lower. An area of widely scattered showers was indicated by radar east of the boundary in northeastern Missouri and eastern Iowa. By 1200 CST, the area of showers had strengthened slightly but had only drifted to the east slightly, now extended from eastern Iowa through far northwestern Illinois into south-central Wisconsin. Over the next few hours, this area of showers and embedded thunderstorms expanded to cover most of northern Illinois and far western Indiana. Radar observations indicated multiple clusters of thunderstorms and lines of storms moving to the northeast and east, with continued redevelopment across the area.

At approximately 0600 CST on 20 April, radar observations indicated rapid development of thunderstorms in an area from far southeastern Iowa into central Illinois (Figure 2). By 2100 CST, the storms had formed into two distinct north-south lines, one located near Rockford, Illinois, and another extending from near Davenport, Iowa, to near Kirksville, Missouri. Although individual cells were moving 18-22 m s^{-1} (40-50 mph), storm motion to the northeast caused multiple storms to impact the same areas as the lines drifted eastward around 9 m s^{-1} (20 mph). By 1200 CST on 21 April, these once separate areas of storms had evolved into one continuous line

stretching from near Milwaukee, Wisconsin, to Rockford, Illinois, to near Quincy, Illinois, covering most of the Rock River Basin. This line drifted very slowly eastward over the next three hours, not exiting the Rock River Basin area until approximately 0300 CST. Light rain showers continued across the area until about 0600 CST on 21 April (Figure 3). Periodic shower and thunderstorm activity continued throughout the day on 21 April as a cold front neared southern Wisconsin and northern Illinois, but additional rainfall accumulation was relatively light compared to the previous overnight (Figure 4).

Upper air analysis data valid at 0600 CST on 20 April 1973 indicated a strong southwest-to-northeast jet at 500 mb located from the southern Great Plains to the upper Midwest, with an upper-level low pressure area located near the Black Hills of South Dakota (Figure 5). East of this upper level jet, winds were generally out of the south at 850 mb, which were bringing saturated air northward. The 0600 CST sounding from Peoria, Illinois (PIA), indicated a precipitable water value of 2.87 cm (1.13 inches), above the 90th percentile for that date according to the combined climatology compiled by SPC for the Rantoul, Illinois (RAN), PIA, and Lincoln, Illinois (ILX), upper-air observation sites (https://vortex.plymouth.edu/myowxp/upa/pltmap-a.html). A corridor of precipitable water values around 2.5 to 3.8 cm (1.0 to 1.5 inches) extended from the Gulf Coast northward into the central Mississippi Valley. Little change was noted in the upper air pattern around 1800 CST on 20 April, with the 500 mb upper level low and associated jet located in approximately the same location, and a plume of moisture continuing to move northward into Illinois and Wisconsin at 850 mb (Figure 6). At this time the sounding from PIA indicated an increased precipitable water value of 3.63 cm (1.43 inches), again above the 90th percentile but also the record highest value for that date (Figure 7). The overall upper air pattern of southwesterly flow at 500 mb and south-southwesterly flow at 850 mb continued overnight into 21 April, with a pattern generally favorable for heavy rainfall remaining in place across northern Illinois and southern Wisconsin (Figure 8). Although the PIA precipitable water value decreased slightly by 0600 CST on 21 April, the corridor of elevated atmospheric moisture from the Gulf Coast into the Mississippi River Valley remained almost unchanged from the day prior. A notable decrease in precipitable water values was not noted until the soundings from 0600 CST on 22 April.

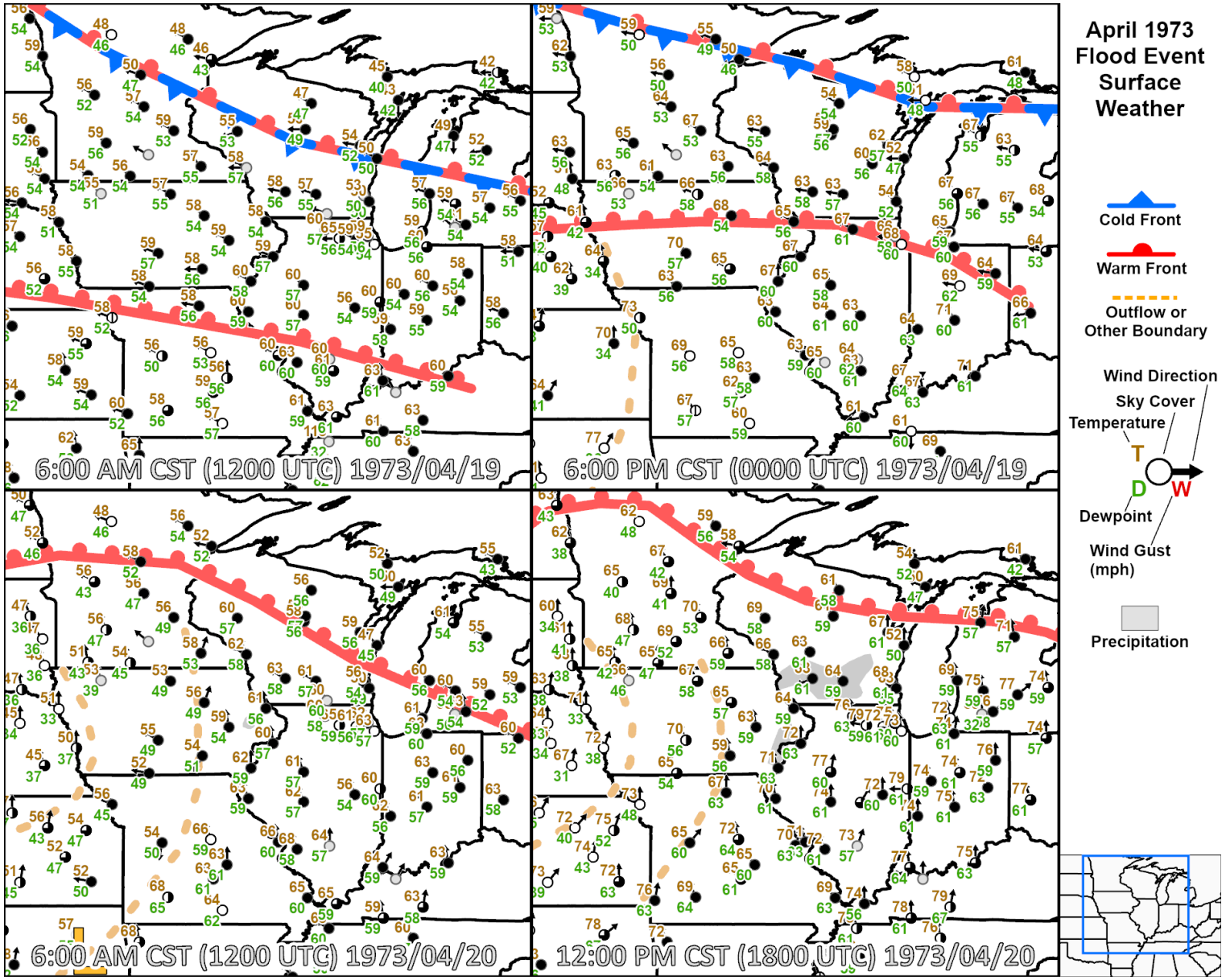


Figure 1. Surface weather maps from 19 April 1973 at 0600 CST through 20 April 1973 at 1200 CST. Images are in left-to-right, top-to-bottom order.

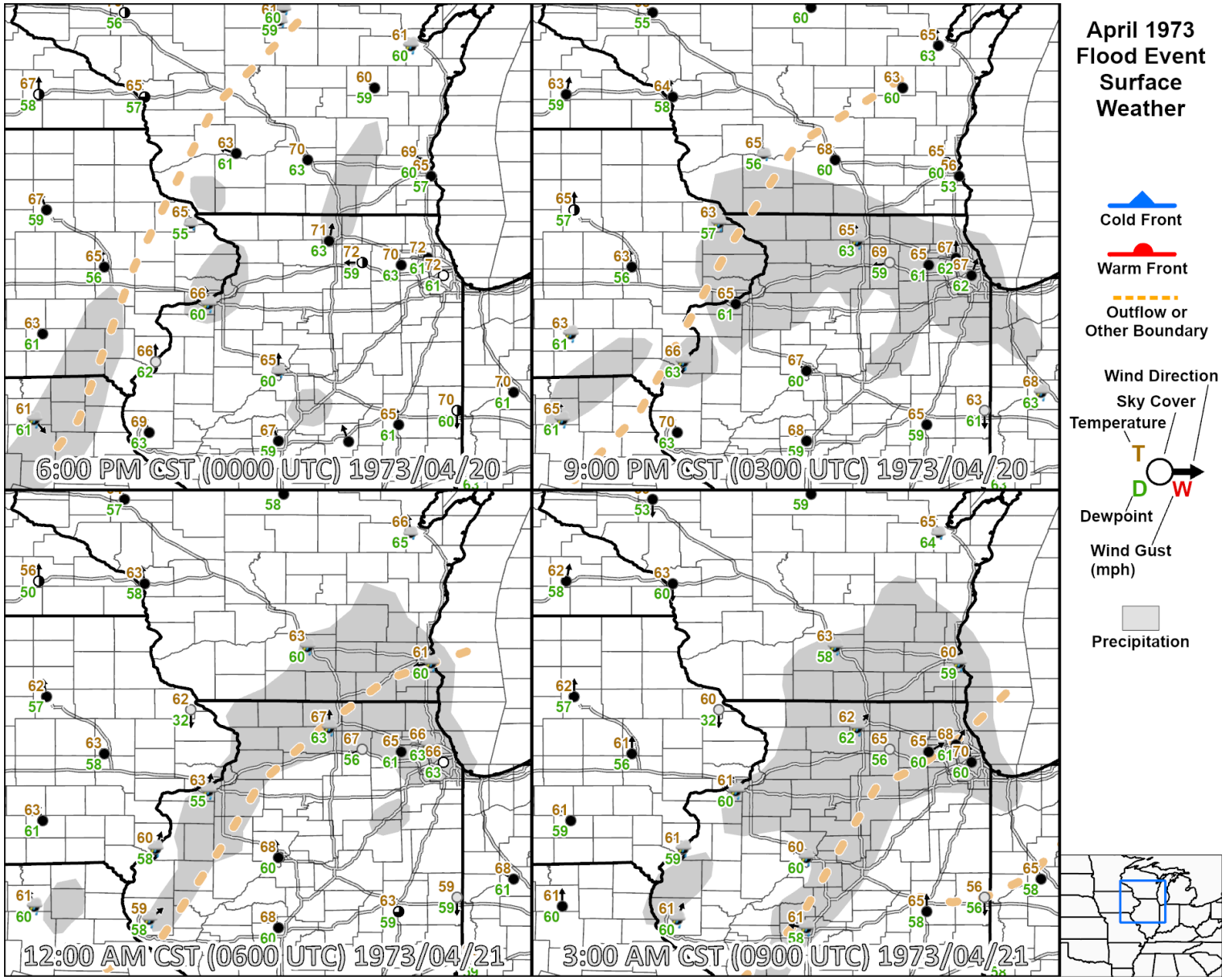


Figure 2. Surface weather and radar maps from 20 April 1973 at 1800 CST through 21 April 1973 at 0300 CST. Images are 3 hours apart, in left-to-right, top-to-bottom order.

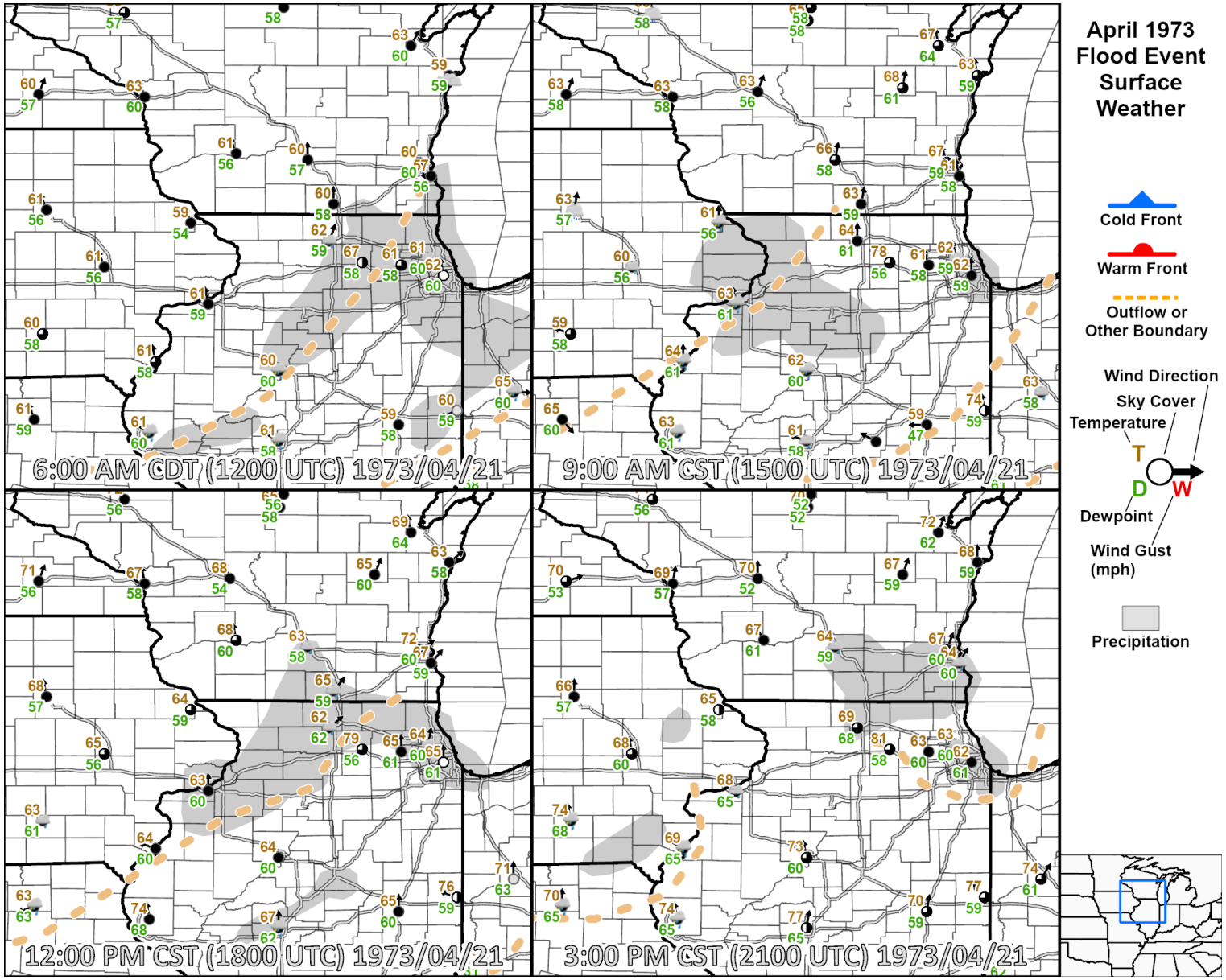


Figure 3. Surface weather and radar maps from 21 April 1973 at 0600 CST through 21 April 1973 at 1500 CST. Images are 3 hours apart, in left-to-right, top-to-bottom order.

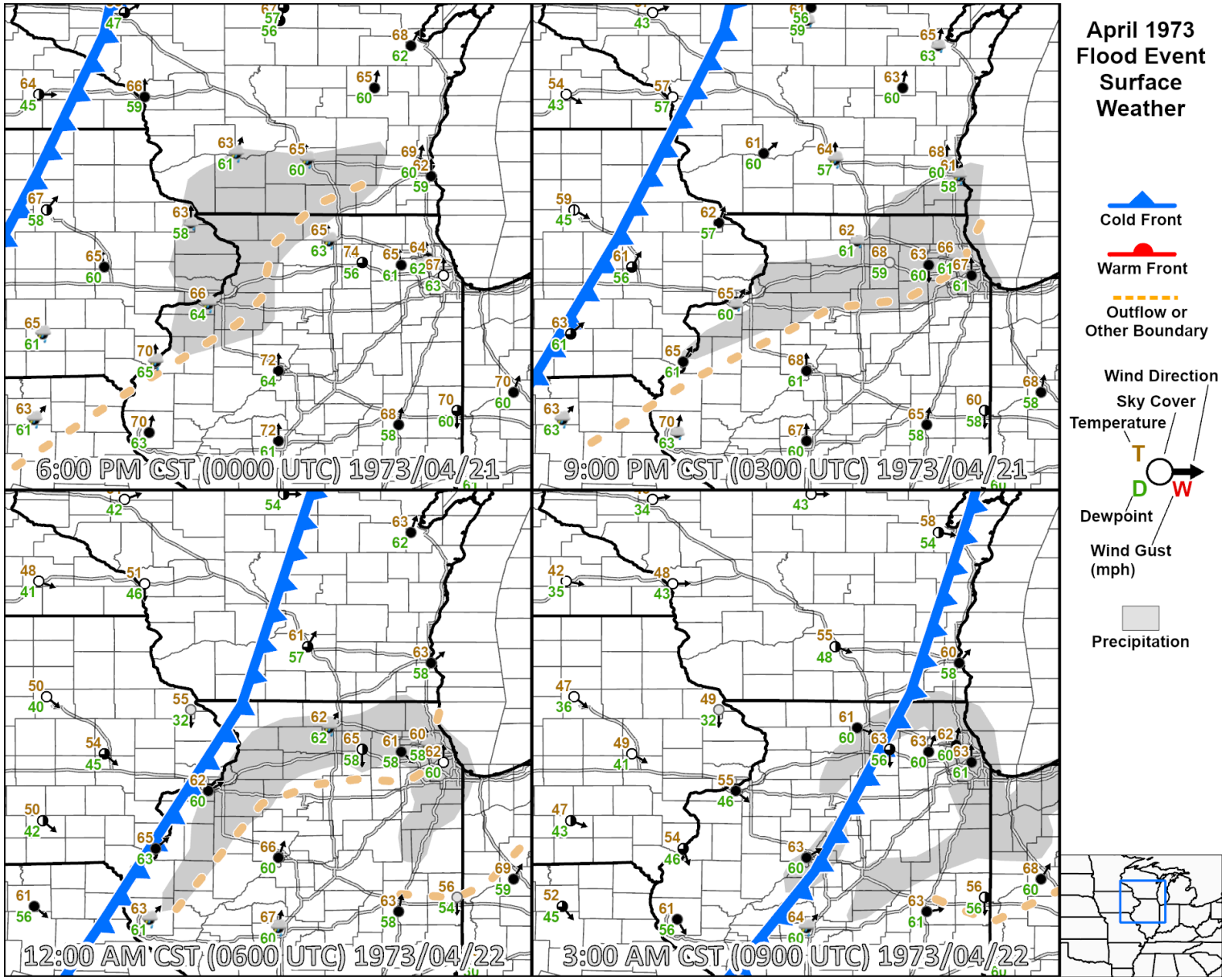


Figure 4. Surface weather and radar maps from 21 April 1973 at 1800 CST through 22 April 1973 at 0300 CST. Images are 3 hours apart, in left-to-right, top-to-bottom order.

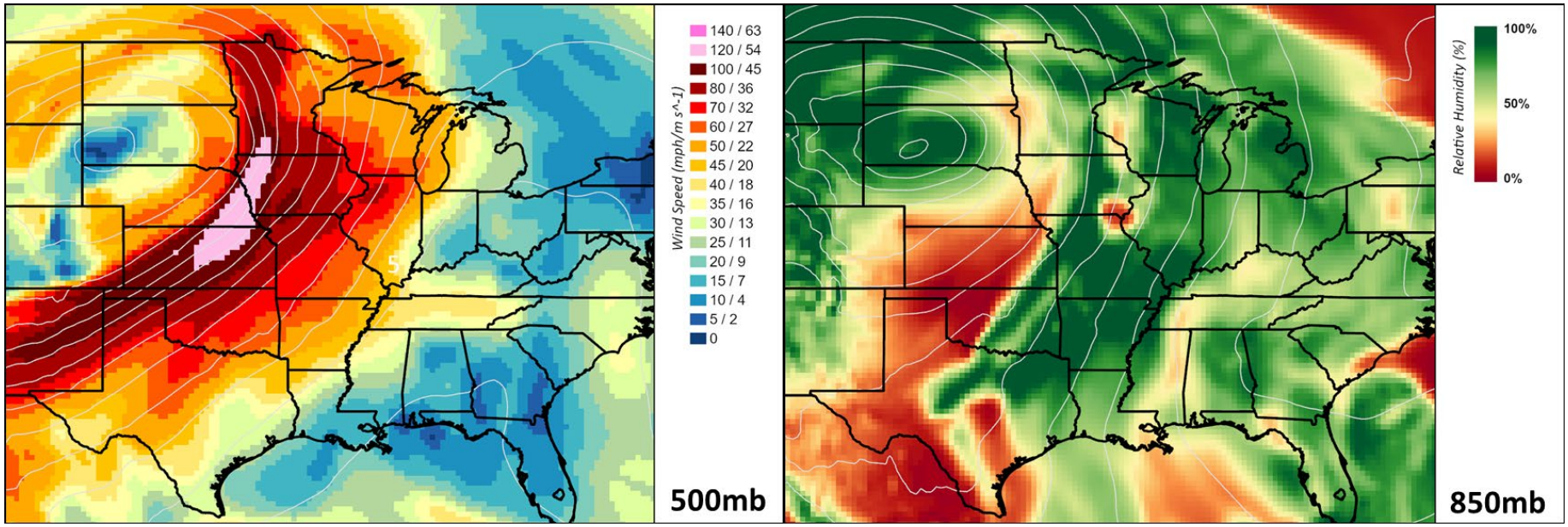


Figure 5. Wind speeds at 500 mb (left) and relative humidity at 850 mb (right) valid at 20 April 1973 at 0600 CST. Contours of pressure height added as an overlay (white lines). Data derived from the ERA5 reanalysis (Hersbach, et al. 2025).

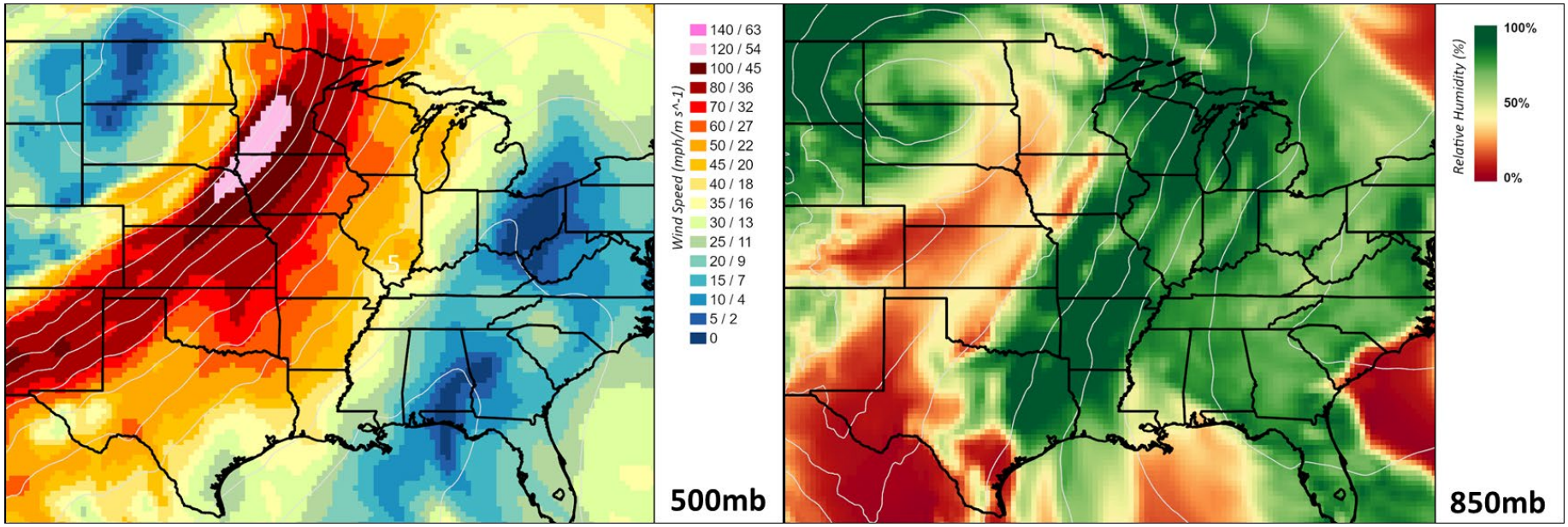


Figure 6. Wind speeds at 500 mb (left) and relative humidity at 850 mb (right) valid at 20 April 1973 at 1800 CST. Contours of pressure height added as an overlay (white lines). Data derived from the ERA5 reanalysis (Hersbach, et al. 2025).

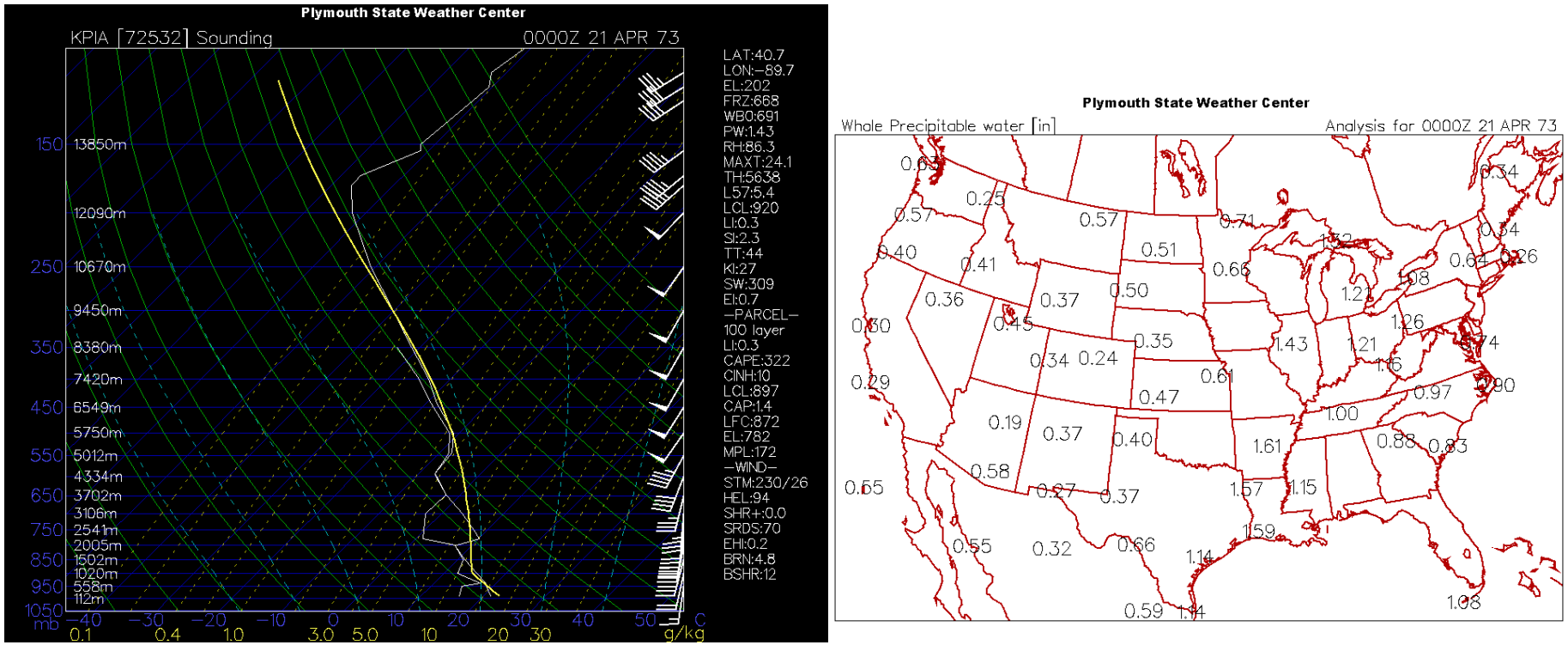


Figure 7. Sounding from Peoria, Illinois (PIA), valid at 1800 CST on 20 April 1973 (left) and a map of precipitable water values valid at the same time across the contiguous U.S. (right), each from the Plymouth State Weather archive (https://vortex.plymouth.edu/myowxp/upa/). The indicated precipitable water value of 3.63 cm (1.43 inches) at PIA remains the daily record value for 21 April, according to the Storm Prediction Center sounding climatology.

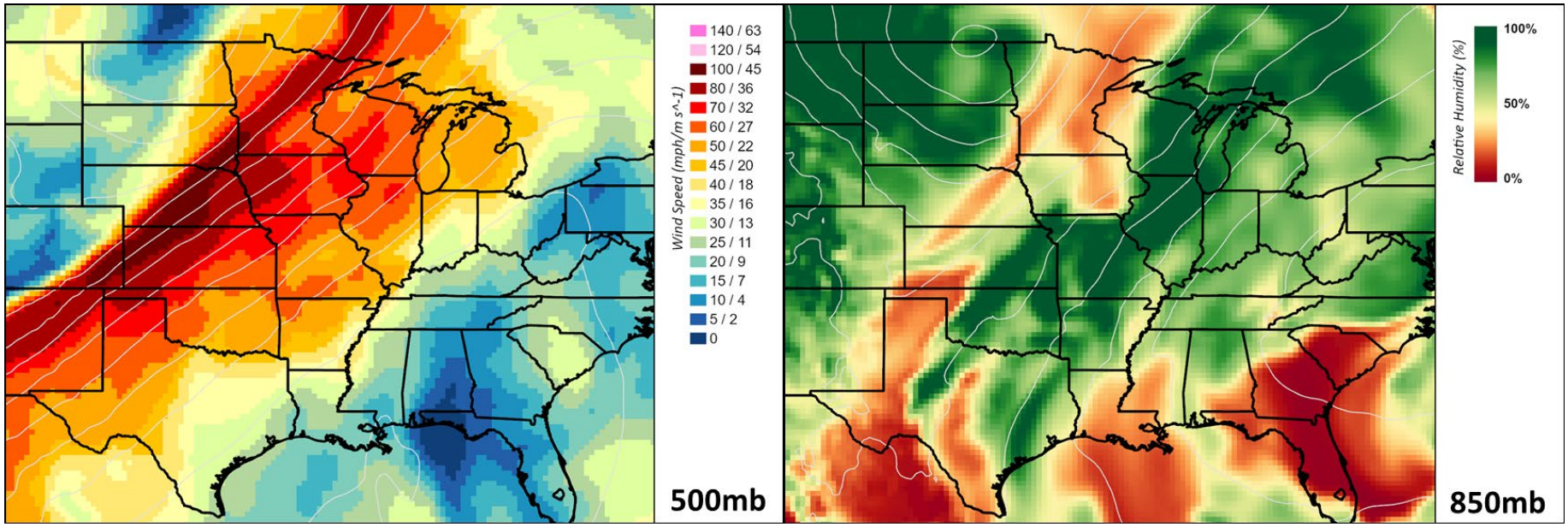


Figure 8. Wind speeds at 500 mb (left) and relative humidity at 850 mb (right) valid at 21 April 1973 at 0000 CST. Contours of pressure height added as an overlay (white lines). Data derived from the ERA5 reanalysis (Hersbach, et al. 2025).

3.0 Data Sources and Data Collection

3.1 Rainfall Data

Due to the year when this event occurred and also the number of years that have since elapsed, available rainfall observations were more limited than what would be available for a contemporary analysis. Daily rainfall data were collected by NWS cooperative observers (COOP) and airport observers for this event, with these data available via the Iowa Environmental Mesonet NWS COOP Plotter application (https://mesonet.agron.iastate.edu/GIS/apps/coop/plot.phtml). A few unofficial rainfall observations were collected from local newspaper reports on the flood event, with such observations most often coming from city employees at water treatment plants. Unofficial observations generally represented the storm total rainfall, and were not confined to the 1-day periods associated with official daily observations. For a subset of airports and cooperative observers, hourly data were available from the National Center for Environmental Information. No remote-sensed rainfall estimates were available, such as from radar, for events during this time period. In addition, no known volunteer networks of private weather observers existed.

Daily observations cover a meteorological observation day (the 24-hour period ending at 1200 UTC, or 0600 CST). For a comparison between meteorological days, calendar days, and the time periods of heaviest rainfall that occurred during the April 1973 flood event, see Figure 9. A count of observations retrieved and the source dataset are indicated by (Table 1). Observations of 0.0 cm/inches in areas of obvious heavy rainfall were ignored for this analysis. Further quality control of observations was limited due to the lack of radar data to use for estimates.

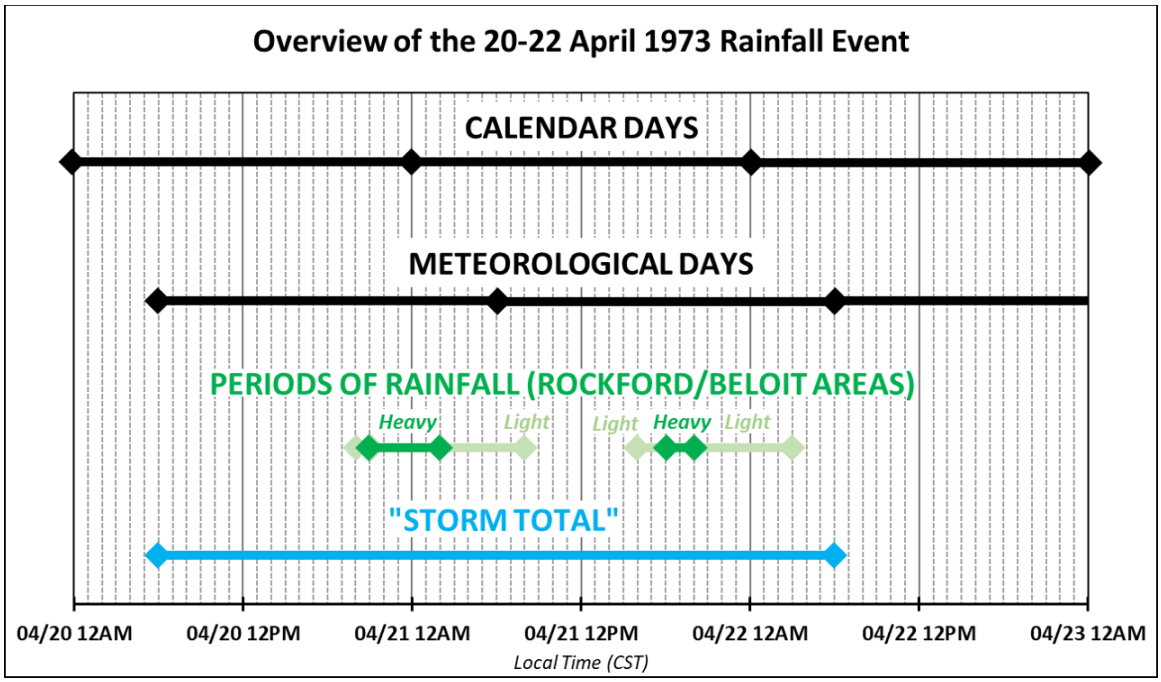


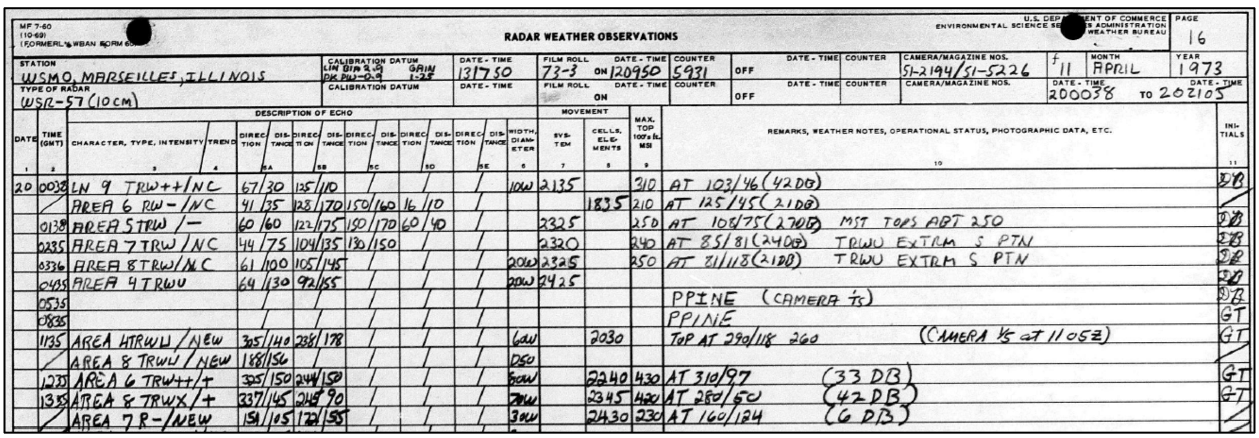
Figure 9. General timeline of rainfall associated with the 20-22 April 1973 flood event compared to calendar days and meteorological observation days. For the purposes of this report, the "storm total" rainfall corresponds to the 48-hour period (two meteorological observation days) ending at 0600 CST on 22 April 1973.

Table 1. Number of observations collected by source.

Rainfall Observation Source	Number of Observations
NWS COOP and Airport Observers	944
Other Observations (collected via newspapers)	12
Total	956

3.2 Radar Data

Although no raw radar images were available for this event, radar weather observation forms for site MMO (Marseilles, Illinois) were retrieved from the NCEI (Figure 10). Radar weather observation forms contain hourly descriptions of radar echoes in a particular radar site's coverage area as observed by radar operators. Descriptions typically include the type of echoes, the location of echoes relative to the radar site, the direction of movement, echo intensity, and echo tops. Types of echoes often include single cells, lines of cells, or areas of cells. Manual radar observations were digitized into a time-enabled GIS format for comparison with other spatial data. An example of the digitized radar weather observation information is shown by Figure 11. Using digitized radar observations combined with hourly rain gauge observations and airport weather observations, an estimated radar depiction was created for each hour.



MF 7-60 (10-69) (FORMERLY WBAN FORM 6…)

RADAR WEATHER OBSERVATIONS

U.S. DEP… OF COMMERCE, ENVIRONMENTAL SCIENCE SE… ADMINISTRATION, WEATHER BUREAU — PAGE 16

STATION: WSMO, MARSEILLES, ILLINOIS — CALIBRATION DATUM: LIN BIA 2.9, PK PW–0.9, GAIN 1-25 — DATE-TIME: 131750 — FILM ROLL: 73-3 — ON DATE-TIME: 120950 — COUNTER: 5931 — OFF — CAMERA/MAGAZINE NOS.: 51-2194/51-5226 — f 11 — MONTH: APRIL — YEAR: 1973

TYPE OF RADAR: WSR-57 (10 CM) — DATE-TIME: 200038 TO DATE-TIME: 202105

DATE (1)	TIME (GMT) (2)	CHARACTER, TYPE, INTENSITY (3)	TREND (4)	5A DIRECTION/DISTANCE	5B DIRECTION/DISTANCE	5C DIRECTION/DISTANCE	5D DIRECTION/DISTANCE	5E DIRECTION/DISTANCE	WIDTH, DIAMETER (6)	MOVEMENT SYSTEM (7)	MOVEMENT CELLS, ELEMENTS (8)	MAX. TOP 100's ft. MSL (9)	REMARKS, WEATHER NOTES, OPERATIONAL STATUS, PHOTOGRAPHIC DATA, ETC. (10)	INITIALS (11)
20	0038	LN 9 TRW++	NC	67/30	125/110	/	/	/	10W	2135		310	AT 103/46 (42DB)	DB
	/	AREA 6 RW–	NC	41/35	128/170	150/160	16/10	/			1835	210	AT 125/45 (21DB)	/
	0138	AREA 5 TRW	—	60/60	122/175	150/170	60/40	/		2325		250	AT 108/75 (27DB) MST TOPS ABT 250	DB
	0235	AREA 7 TRW	NC	44/75	104/135	130/150	/	/		2320		240	AT 85/81 (24DB) TRWU EXTRM S PTN	DB
	0336	AREA 8 TRW	NC	61/100	105/145	/	/	/	20W	2325		250	AT 81/118 (21DB) TRWU EXTRM S PTN	DB
	0435	AREA 4 TRWU		64/130	92/155	/	/	/	20W	2425				DB
	0535			/	/	/	/	/					PPINE (CAMERA ts)	DB
	0835			/	/	/	/	/					PPINE	GT
	1135	AREA 4 TRWU	NEW	305/140	238/178	/	/	/	60W		2030		TOP AT 290/118 260 (CAMERA ⅕ at 1105Z)	GT
	/	AREA 8 TRWU	NEW	188/156	/	/	/	/	D50					/
	1235	AREA 6 TRW++	+	305/150	244/150	/	/	/	50W		2240	430	AT 310/97 (33 DB)	GT
	1335	AREA 8 TRWX	+	337/145	245/90	/	/	/	70W		2345	420	AT 280/50 (42 DB)	GT
	/	AREA 7 R–	NEW	151/105	172/155	/	/	/	30W		2430	230	AT 160/124 (6 DB)	/

Figure 10. Example of radar descriptions provided on the radar weather observation form for radar site MMO on 20 April 1973.

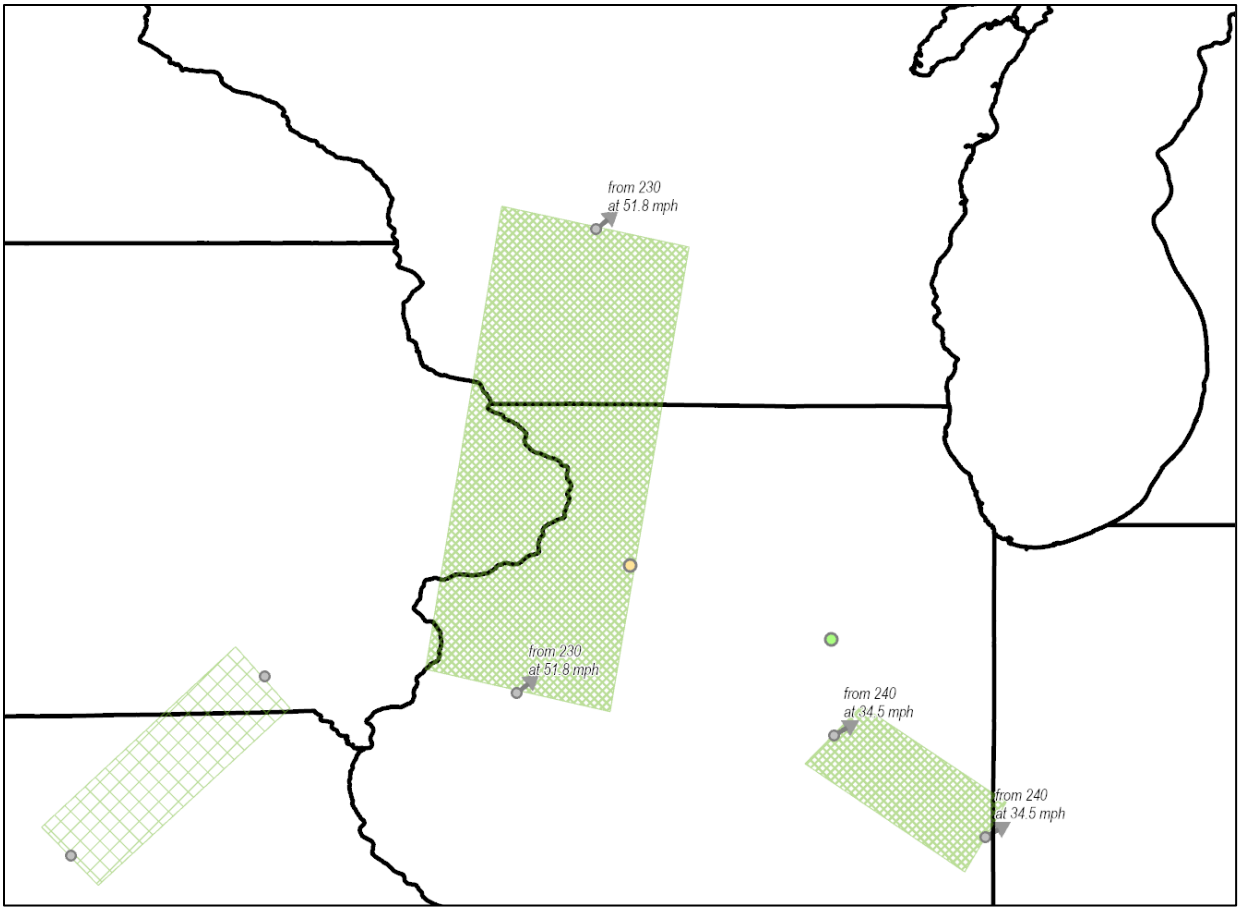


Figure 11. Example of digitized radar information from the hourly radar weather observation form from radar site MMO valid at 0735 CST (1335 UTC) on 20 April 1973. Hatched green areas depict areas of radar echoes, with the spacing of the hatched lines indicating relative coverage of echoes within the area. Storm motions indicated by the radar operator are shown with arrows and labels. See Figure 10 for the handwritten notes used to create the digital data depicted here.

3.3 Flood Impacts

Limited detailed information about flooding from this event was available in NWS records due to the age of the event. The official publication of weather impacts, *Storm Data*, provided only a broad overview (U.S. Department of Commerce 1973). The Illinois entry for April 1973 indicated "2 to 6 inches of rain in area already saturated caused flash flooding, two dams failed" in the "northwest and north" parts of Illinois, and also indicated that "floods and flash floods ravaged the state through the month…many rivers and streams experience flash flooding or flooding on several different occasions…" with flood damage away from the Mississippi River floodplain "estimated at about 50-75 million dollars." The Wisconsin entry for April 1973 indicated "heavy rains on top of snowmelt runoff from the storm 10 days earlier brought rivers and streams in southeastern Wisconsin over their [banks]. Severe flooding occurred along the Turtle Creek in the Beloit area…. Several million dollars damage alone to inventory of shoes at Beloit factory." River gauge data records indicate the April 1973 event as a significant flood for multiple sites along multiple rivers. In total, these contemporary records provide little detail on the magnitude and extent of the flooding.

A review of newspaper articles, local historical society publications, and social media posts was conducted to collect more information about flood impacts from this event. Flooding was classified as "roadway flooding," "structure flooding," or "other." Roadway flooding was further subdivided to differentiate typical flooding from "major" flooding, with the major roadway flooding defined as closure of major highways such as interstates or several feet of swiftly moving water. Structure flooding was further subdivided to differentiate basement flooding from first-floor inundation. Descriptions of flooding impacts were reviewed to determine the location by looking for addresses, nearby intersections, or landmarks. When an exact location could not be determined, the center of a particular town or neighborhood was used. For photos of flooding, historical aerial imagery was used for comparison to determine the likely location. Historical business directors were used in a few situations when a flooded building or landmark indicated no longer existed.

3.4 Hydraulic Modeling

A hydraulic model used for the development of the Turtle Creek flood insurance study was provided by the US Army Corps of Engineers to assist with the NWS review of flood impacts along Turtle Creek in the Beloit and South Beloit areas. This model was converted from a 1D hydraulic model to a full 2D hydraulic model to better model overbank flooding in the Beloit area. Using observed streamflow data on Turtle Creek and observed water levels on the Rock River, the model was used to simulate the April 1973 flood. Flood photos from newspaper articles and library collections were compared to output from this simulation to make numerous adjustments and iterations to improve model output such that it better matched observed flood behavior of the creek. Simulated water levels for the event were also compared to anecdotal descriptions of the flood in newspapers.

4.0 Rainfall Amounts

A review of all available rainfall data indicated that a large area of the Midwest, including most of Missouri, far eastern Iowa, northern Illinois, and far southeastern Wisconsin, received heavy rainfall (>2.54 cm, or 1.0 in) during the two day period from 0600 CST on 20 April 1973 through 0600 CST on 22 April 1973. The heaviest rainfall occurred in a narrow corridor from Kirksville, Missouri, to Davenport, Iowa, to Rockford, Illinois, to Milwaukee, Wisconsin. Within this corridor of heavy rainfall, averaging approximately 65 km (40 miles) in width, 7.6 to 17.8 cm (3-7 in) of rainfall was common (Figure 12). In northern Illinois, this corridor of heaviest rainfall generally followed the Rock River from near the Quad Cities to Rockford (Figure 13). In Wisconsin, this corridor of heaviest rainfall extended from just east of Beloit northeastward to just west of Milwaukee.

Two notable periods of heavy rainfall occurred, especially across northern Illinois. The first period of heavy rainfall occurred from approximately 2000 CST on 20 April to 0400 CST on 21 April. The second period of heavy rainfall occurred from approximately 1700 CST on 21 April to 2200 CST on 21 April. Figure 14 and Figure 15 show running accumulations of rainfall at multiple locations across northern Illinois and southern Wisconsin. At Rockford and Oregon, Illinois, over half of this rainfall occurred in less than 6 hours during the overnight hours early on 21 April.

Digitized radar data indicated a multi-hour period of numerous radar echoes moving over the same general areas of northern Illinois and southern Wisconsin from late in the evening on 20 April into the morning of 21 April. During the period of heaviest rainfall recorded by the rain gauge at the Rockford, Illinois, airport, radar observations and hourly rain gauge data indicated a nearly continuous period of moderate to heavy echoes in the vicinity, with individual echoes moving to the northeast but reforming over the same areas (Figure 16).

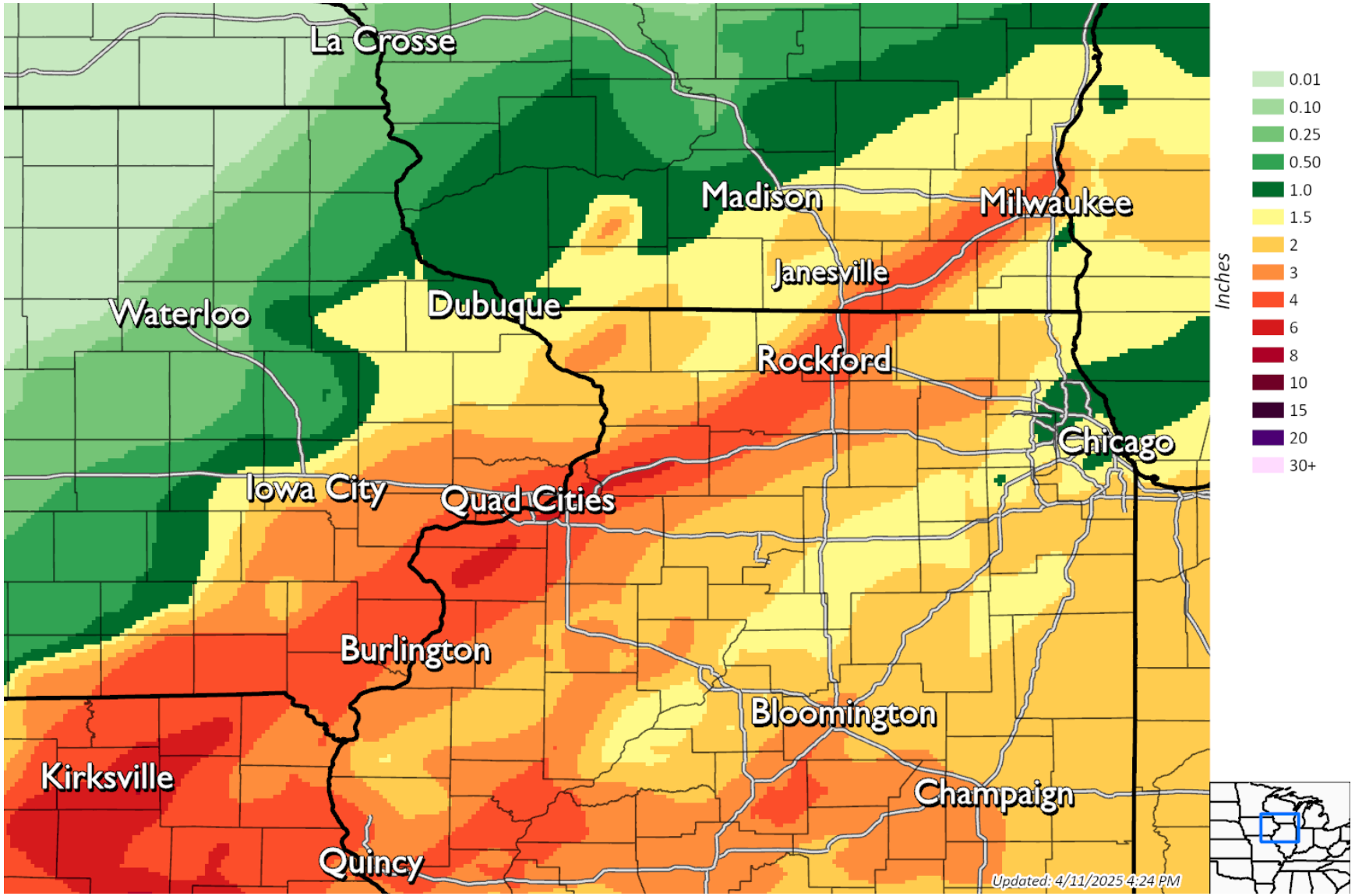


Figure 12. Contoured rainfall analysis for the 2-day period ending at 0600 CST on 22 April 1973. For the purposes of this report, this duration of rainfall is considered the "storm total," but the overwhelming majority of rainfall at a given location occurred from two periods of heavy rainfall both of which occurred within a 24-30-hour period.

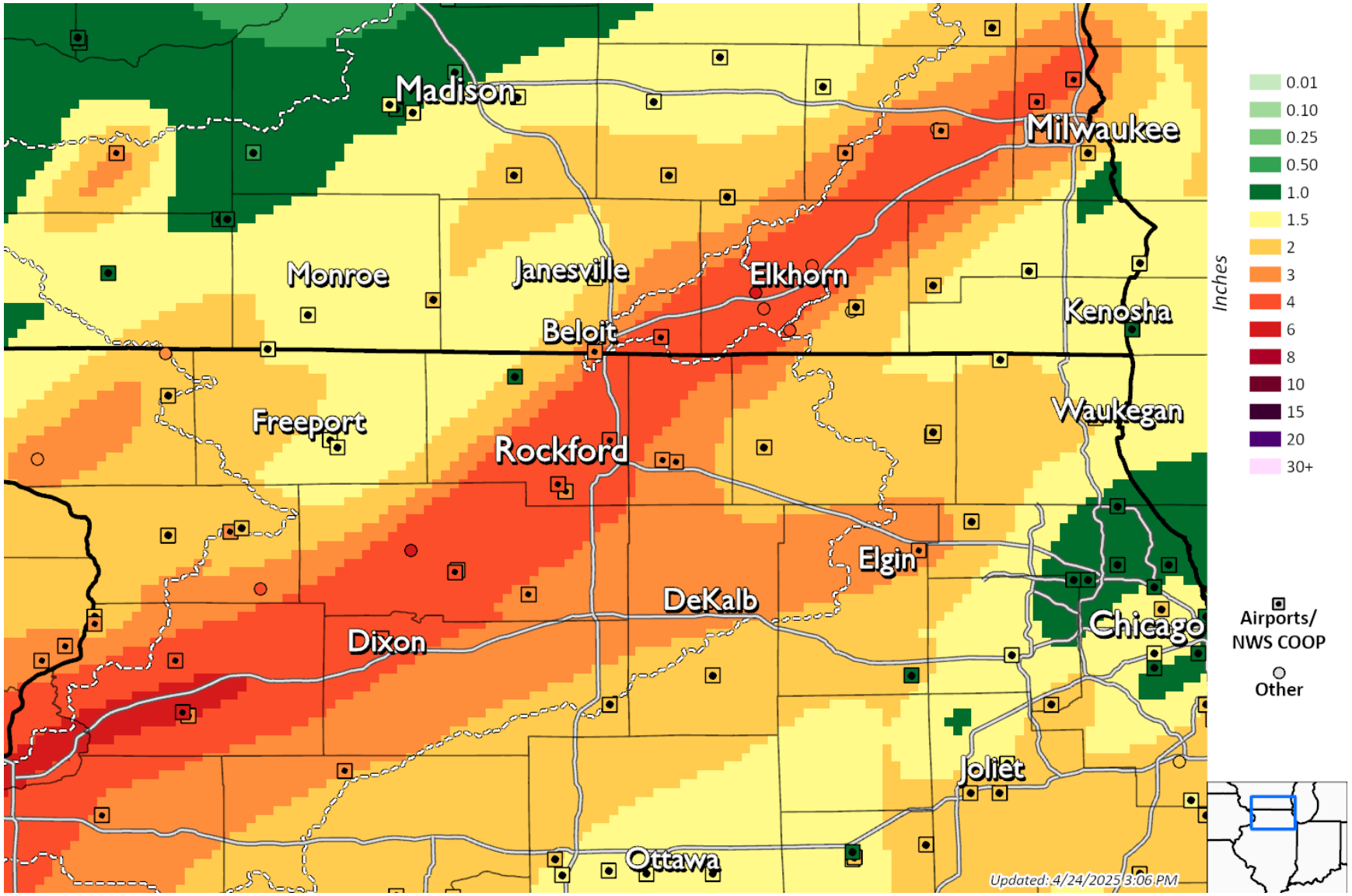


Figure 13. Contoured rainfall analysis for the 2-day period ending at 0600 CST on 22 April 1973, zoomed in to the Rock River Basin area near the Illinois-Wisconsin border. The boundary of Rock River basin and the Turtle Creek sub-basin are indicated with white dashed lines; the Turtle Creek sub-basin is generally located between the Beloit and Elkhorn labels. For the purposes of this report, this duration of rainfall is considered the "storm total," but the overwhelming majority of rainfall at a given location occurred from two periods of heavy rainfall both of which occurred within a 24-30-hour period.

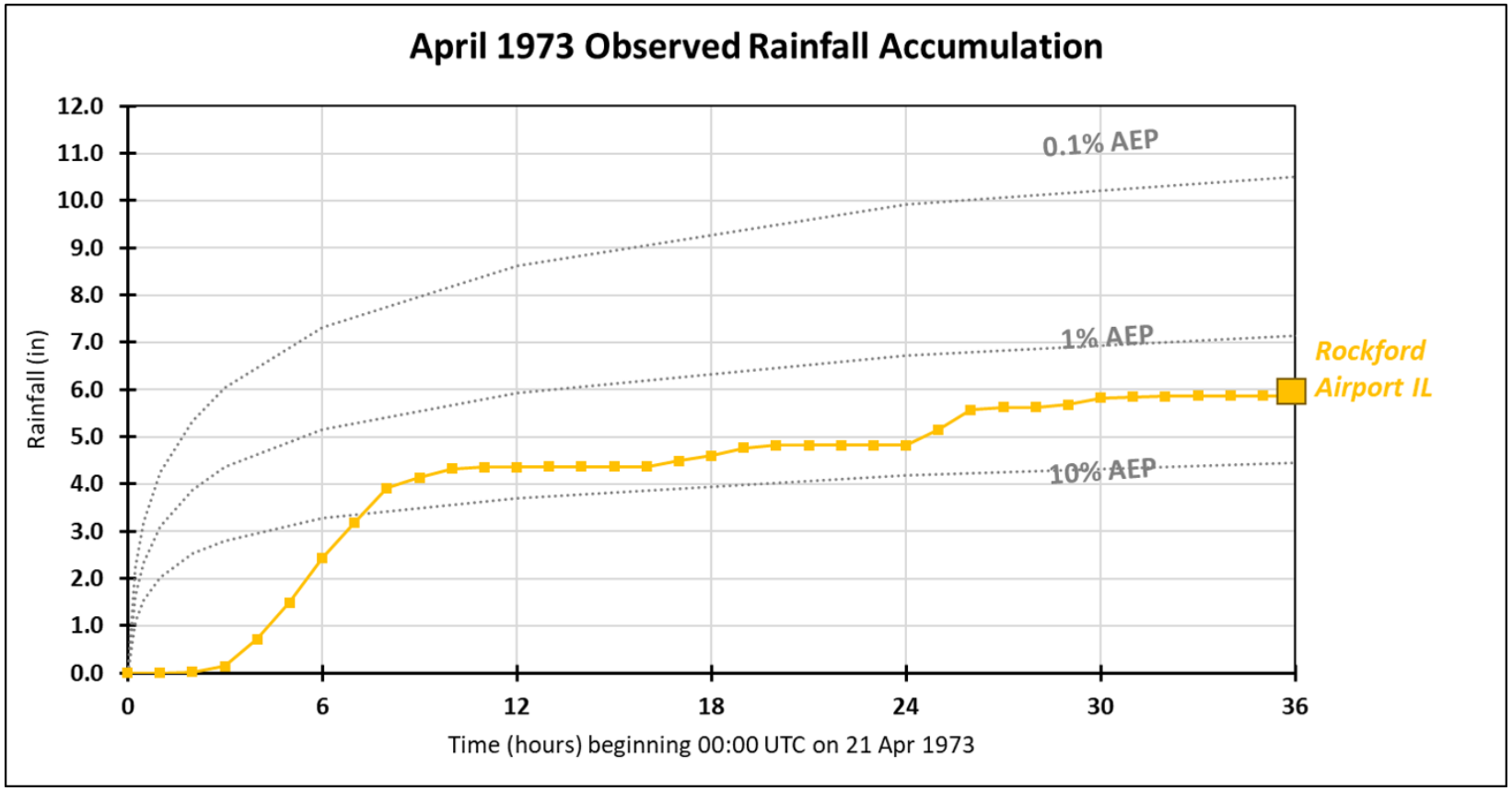


Figure 14. Running hourly rainfall accumulation at Rockford Airport beginning at 1800 CST on 20 April 1973 (0000 UTC on 21 April 1973). Rainfall depth-duration-frequency estimates for the Rockford area from NOAA Atlas 14 (https://hdsc.nws.noaa.gov/pfds/) were added for context. These estimates indicate the annual exceedance probability (AEP) which represents the annual chance of occurrence for a given rainfall amount.

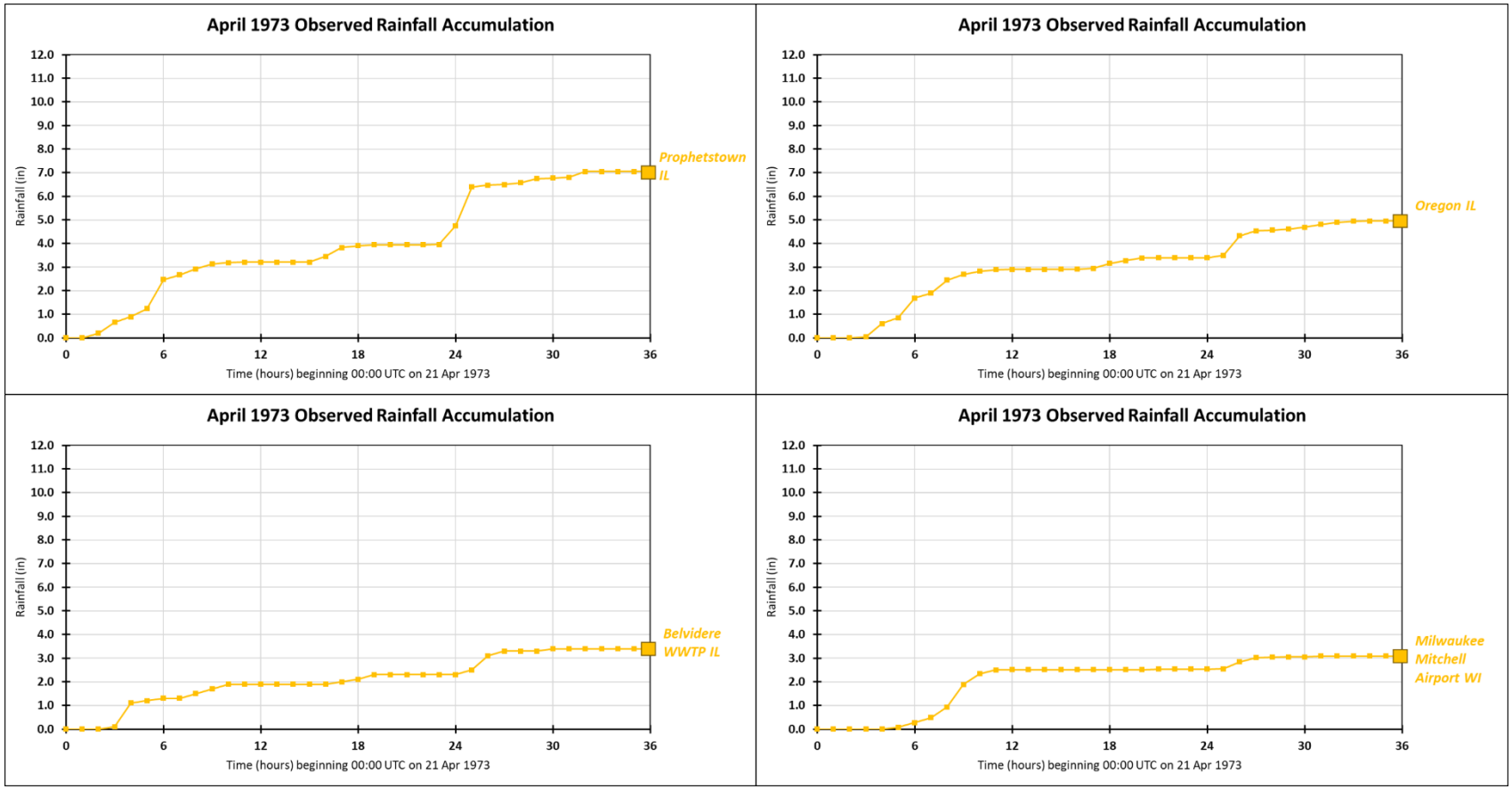


Figure 15. Running hourly rainfall accumulation at Prophetstown, IL, Oregon, IL, Belvidere, IL, and Milwaukee, WI, beginning at 1800 CST on 20 April 1973 (0000 UTC on 21 April 1973).

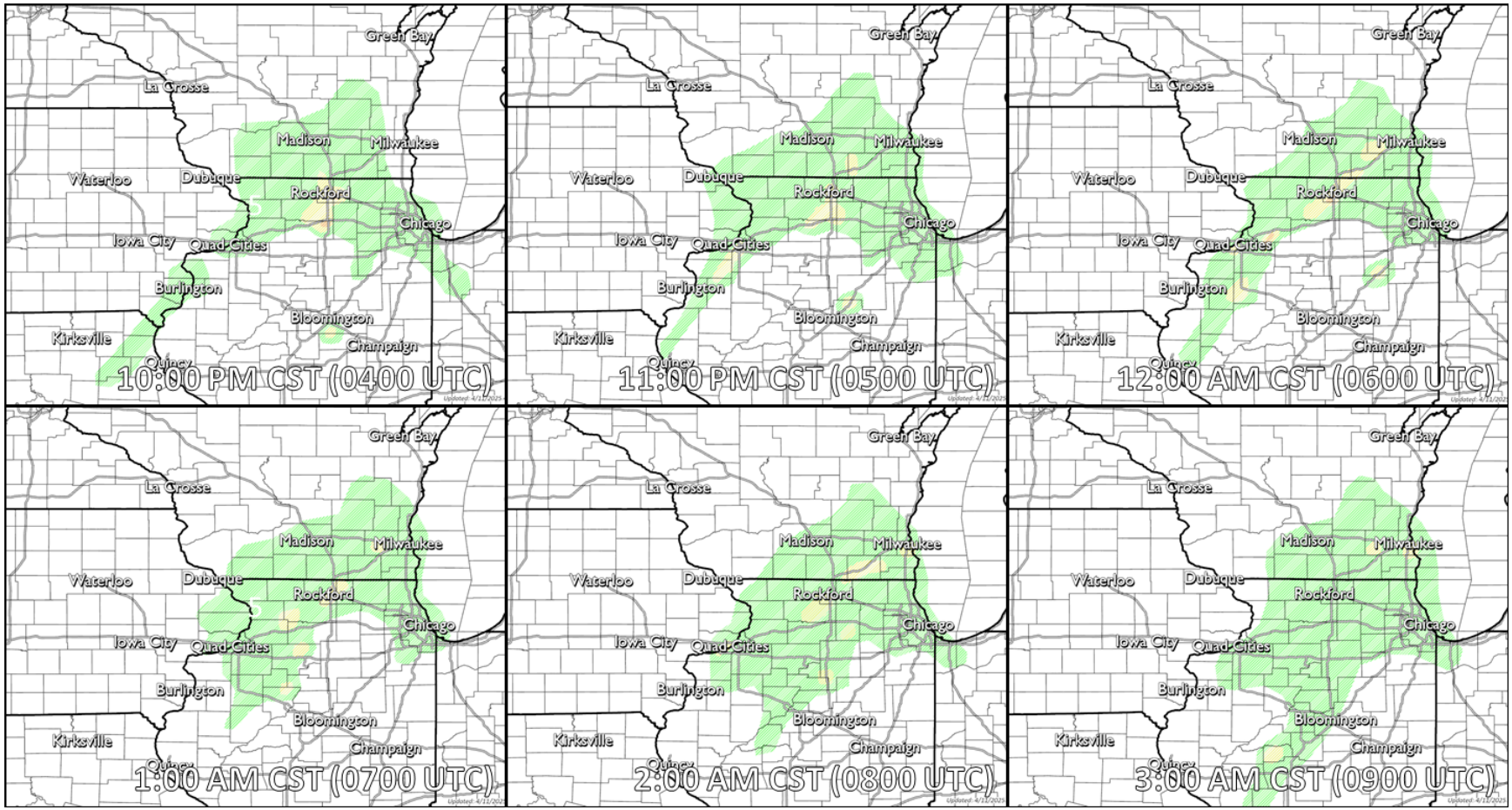


Figure 16. Digitized radar data estimated from the hourly radar weather observation forms for site MMO. Panels are in left to right, top to bottom order, beginning at 2200 CST on 20 April 1973 and ending at 0300 CST on 21 April 1973. Color shading corresponds to relative intensity level of the radar echoes, with yellow and orange areas representing areas of heavier rainfall.

4.1 Climatological Context of Rainfall

The contoured rainfall analysis was compared to NOAA Atlas 14 to calculate the annual exceedance probability (AEP) which represents the annual chance of occurrence for a given rainfall amount. For the purposes of this analysis, rainfall with a 1% or less chance of occurring in a given year (also sometimes referred to as a 100-year average recurrence interval) was considered an extreme event. Across northern Illinois and southern Wisconsin, rainfall on 20-22 April 1973 ranged from typical to extreme. The rarest rainfall amounts occurred just east of the Quad Cities area where the observed rainfall was estimated to have less than a 1% chance of occurring in a given year (Figure 17). From near Rockford to near Elkhorn, just east of Beloit, multiple areas received rainfall with less than a 2% chance of occurring in a given year. In many areas, the distance between typical rainfall amounts and unusual rainfall amounts was just a few miles.

Although rainfall amounts in many areas that experienced flooding would not be considered "extreme" according to more recent depth-duration-frequency analyses, antecedent conditions leading into this event worsened flood impacts. Due to rainfall and snow melt earlier in April, water levels along some waterways were already elevated, and soil moisture was also elevated. For example, at the Beloit and Clinton, Wisconsin, COOP stations, precipitation over 30 days preceding the 21 April 1973 flood event was above average at 4.43 and 4.09 inches, respectively. A large portion of this precipitation fell as a mixture of rain and snow during an event occurring on 9-10 April, with 2.50 inches and 1.22 inches of liquid equivalent observed at the Beloit and Clinton COOP stations, respectively. The 5-10 inches of snowfall that occurred with this event melted over the next several days, with multiple periods of lighter rain occurring every few days up to 21 April. Adding the significant rainfall from 21 April onto the already above average rainfall from early April yielded record high month-to-date precipitation values of 7.96 inches and 8.20 inches at the Beloit and Clinton COOP stations, respectively. These records remain through the present year, even with the extensive 133-year period of record at the Beloit site. The wet conditions of spring 1973 also led to elevated river levels up to the 21 April flood event. For example, streamflow values at the Rock River at Afton, and Turtle Creek at Clinton, Wisconsin, gauges were above average for most of March and April of 1973 leading up to the event, with the Turtle Creek gauge in particular indicated as already "much above normal" by the USGS on 20 April. These conditions indicate that a smaller amount of rainfall was required to cause major, and in some cases historic/record, flood impacts.

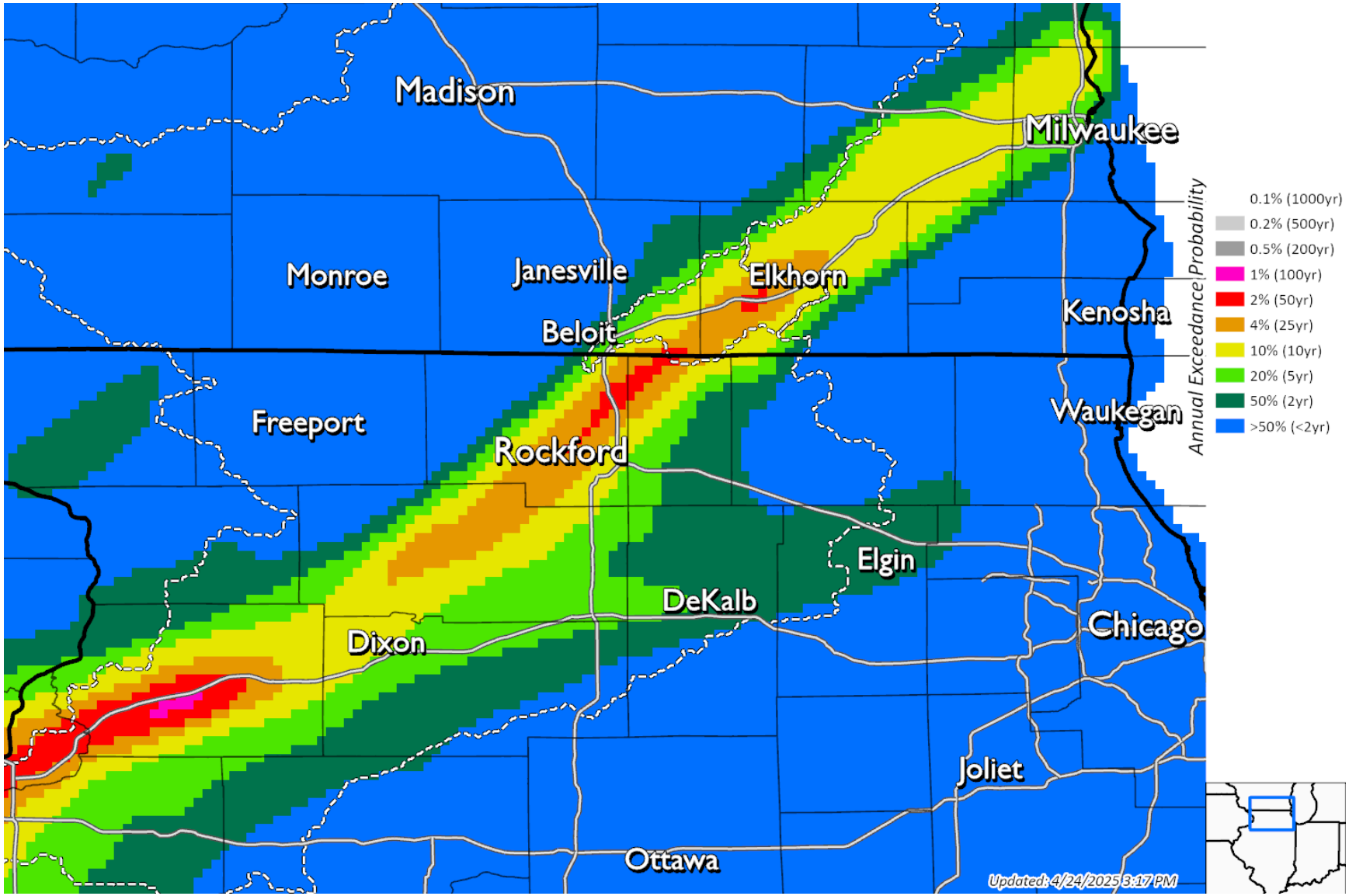


Figure 17. Annual exceedance probability for the storm total rainfall ending at 0600 CST on 22 April 1973. The boundary of Rock River basin and the Turtle Creek sub-basin are indicated with white dashed lines; the Turtle Creek sub-basin is generally located between the Beloit and Elkhorn labels. Although the storm total rainfall covered two meteorological observation days, hourly rainfall data indicated that the overwhelming majority of this rainfall occurred within a 24-hour period, so a 24-hour period was used for annual exceedance probability calculation.

5.0 Flood Impacts

According to reports collected from newspapers, local historical societies, and social media, flooding was widespread across portions of northern Illinois and southern Wisconsin on 21-22 April 1973. A corridor from Dixon to Rockford to Elkhorn to Milwaukee experienced extensive, significant flash flooding, with over 200 reports collected. Flooding in the area of most significant impacts included not only general flooding of numerous roadways but also roadway damage as culverts were washed away. In the Rockford and Beloit areas, hundreds of structures were flooded in the basement and first floor levels. The locations of collected flood impacts from all sources is shown by Figure 18.

Flood damage costs from this event are difficult to estimate. *Storm Data* indicates flood damage at $50-75 million ($366-550 million in 2025). A review of newspaper articles from this event indicated a few additional details, including descriptions of roads, neighborhoods, lakes, and businesses that were flooded. A *Rockford Morning Star* article indicated $10 million in flood damage in Winnebago County, Illinois, of which $5 million occurred in South Beloit alone (Johnson 1973). A separate article indicated $1 million for the Beloit, Wisconsin, area (Newton 1973). An article in the *Waukesha Daily Freeman* indicated flood damage estimates in the combined Beloit, Wisconsin, and South Beloit, Illinois, areas at $10 million, with $2 million of that total from a single factory in Beloit (Waukesha Daily Freeman 1973). The *Delavan Enterprise* indicated $200-500 thousand in damage was caused to roadways in Walworth County, Wisconsin (Delavan Enterprise 1973). In total, newspaper articles documented approximately $15 million ($110 million in 2025) in damage to specific areas, less than the amount provided in *Storm Data* but likely excluding many flooded areas. In addition to flooding of roadways and structures, one person was killed when their car was swept off Love Road near Kinnikinnick Creek near Roscoe, Illinois (Waukesha Daily Freeman 1973).

Multiple stream gauges recorded record or near-record water levels during this event (Figure 19). Most notable was the record flooding on Turtle Creek and Little Turtle Creek east of Beloit, Wisconsin, record flooding on the Menomonee River near Wauwatosa, Wisconsin, and record flooding on the Rock River near Como, Illinois. In each of these cases, the river gauge that recorded the crest has a period of record of at least 50 years, and the record high stage from April 1973 has remained the record through present day. Other notable river and stream flooding includes Keith Creek in Rockford nearing water levels just below the record 1952 flood event (Rubendall 1973) and flooding of Pine Creek at White Pine State Park described as the highest in 60-70 years that stranded campers and damaged roads (Brown 1973). In these situations, the lack of gauging equipment makes determining the climatological context of water levels difficult.

Using the hydraulic model of Turtle Creek to simulate water levels near Beloit during this event helped illustrate how quickly flood waters exceeded the creeks banks and inundated hundreds of structures. Although most of the Turtle Creek in Walworth and Rock County, Wisconsin, has a well-defined floodplain with elevation generally rising with distance away from the creek, the floodplain is more complicated in Beloit and South Beloit. The floodplain areas are much flatter, with little elevation gain with distance from the creek, and in some instances the natural levees lining Turtle Creek are higher than most of the floodplain. Once a rising Turtle Creek reaches the lowest sections of river bank, water rapidly spreads out to inundate a large area as it moves westward through commercial and residential areas to reach the Rock River (Figure 20). Anecdotal reports confirm that this is what occurred on 21 April; flooding in and near the Beloit/South Beloit business district was almost non-existent for several hours while flooding had been ongoing just upstream in the eastern portion of Beloit. When flooding began in the city, the onset was quick. Freeman Shoe Company president William Schmitz indicated that no flooding was ongoing at 1330 CST, but employees called him to report flooding of the nearby business district at 1500 CST. Modeling suggests that flood impacts from Turtle Creek are generally confined to areas upstream of the Beloit/South Beloit business district until very high streamflows are reached, after which flood severity increases exponentially.

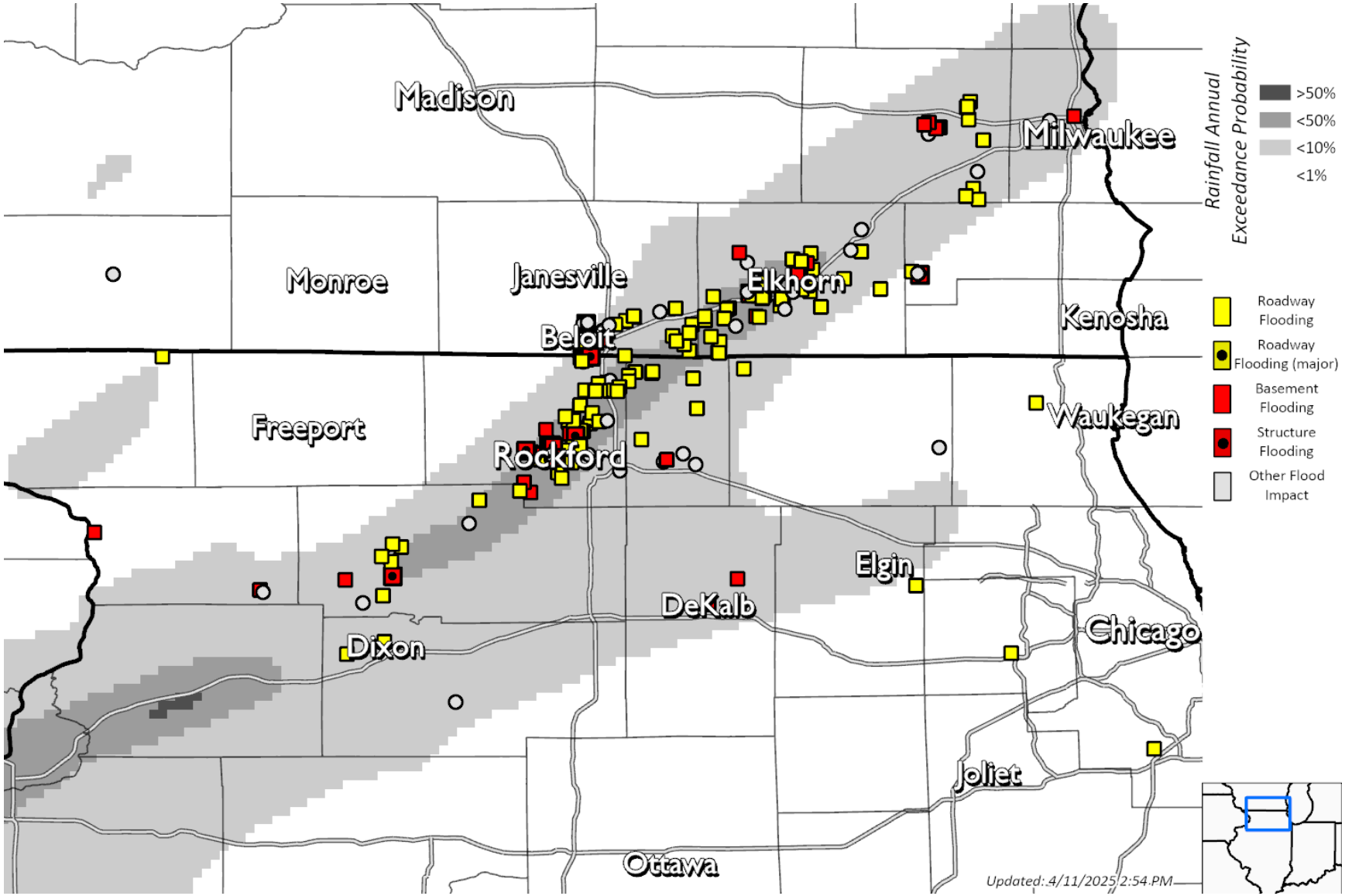


Figure 18. Flood impacts collected for the 21-22 April 1973 flood event (both periods of heavy rainfall). Reports are generally intended to represent the worst impact from a given area and likely do not include all areas impacted. Flood impacts not reported by the available newspaper articles and historical society accounts will not be depicted on the map. Bias-corrected rainfall annual exceedance probability is shown as an underlay in grayscale.

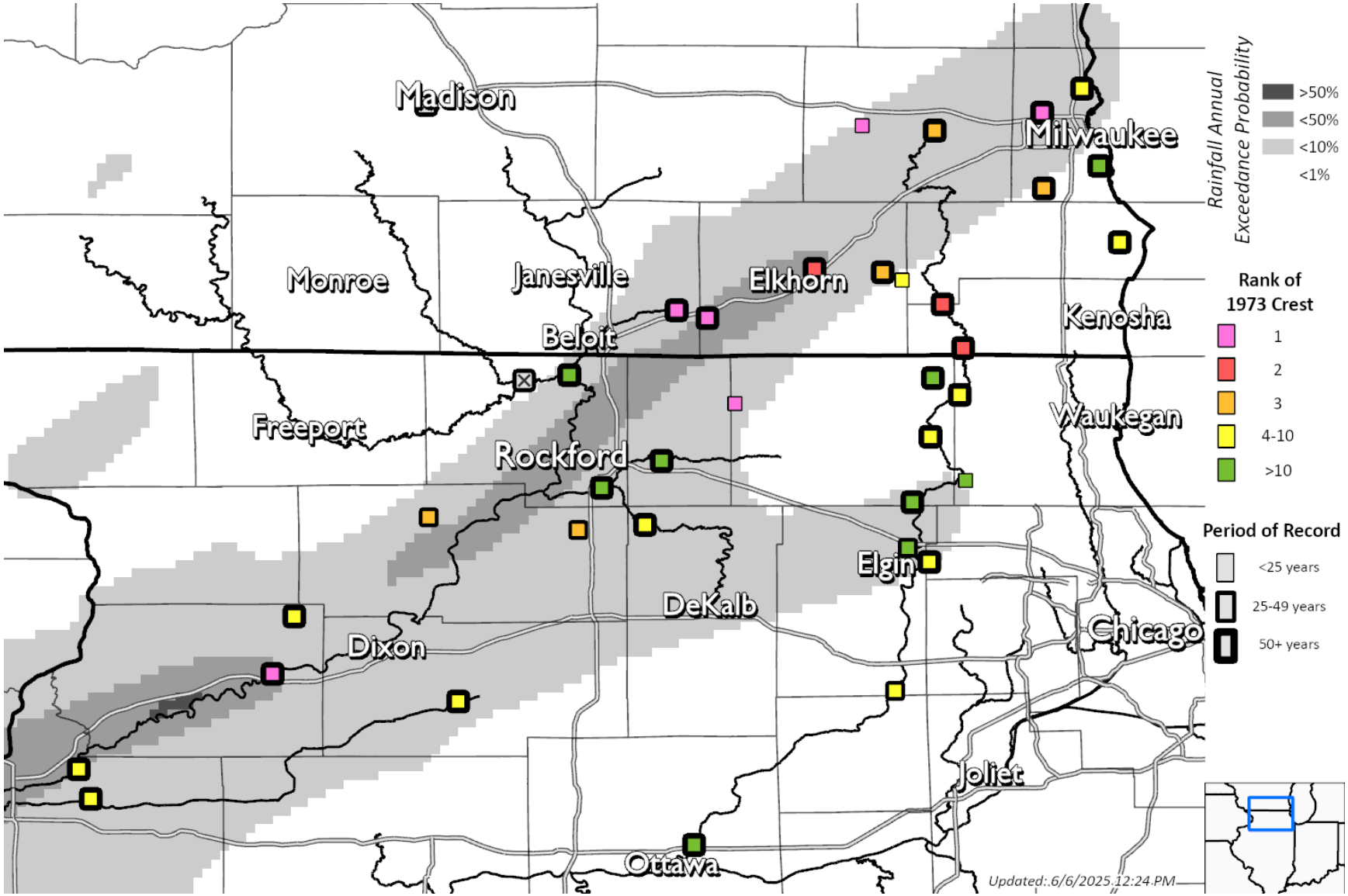


Figure 19. Rank of stream gauge crests set during the April 1973 flood event. Bias-corrected rainfall annual exceedance probability is shown as an underlay in grayscale.

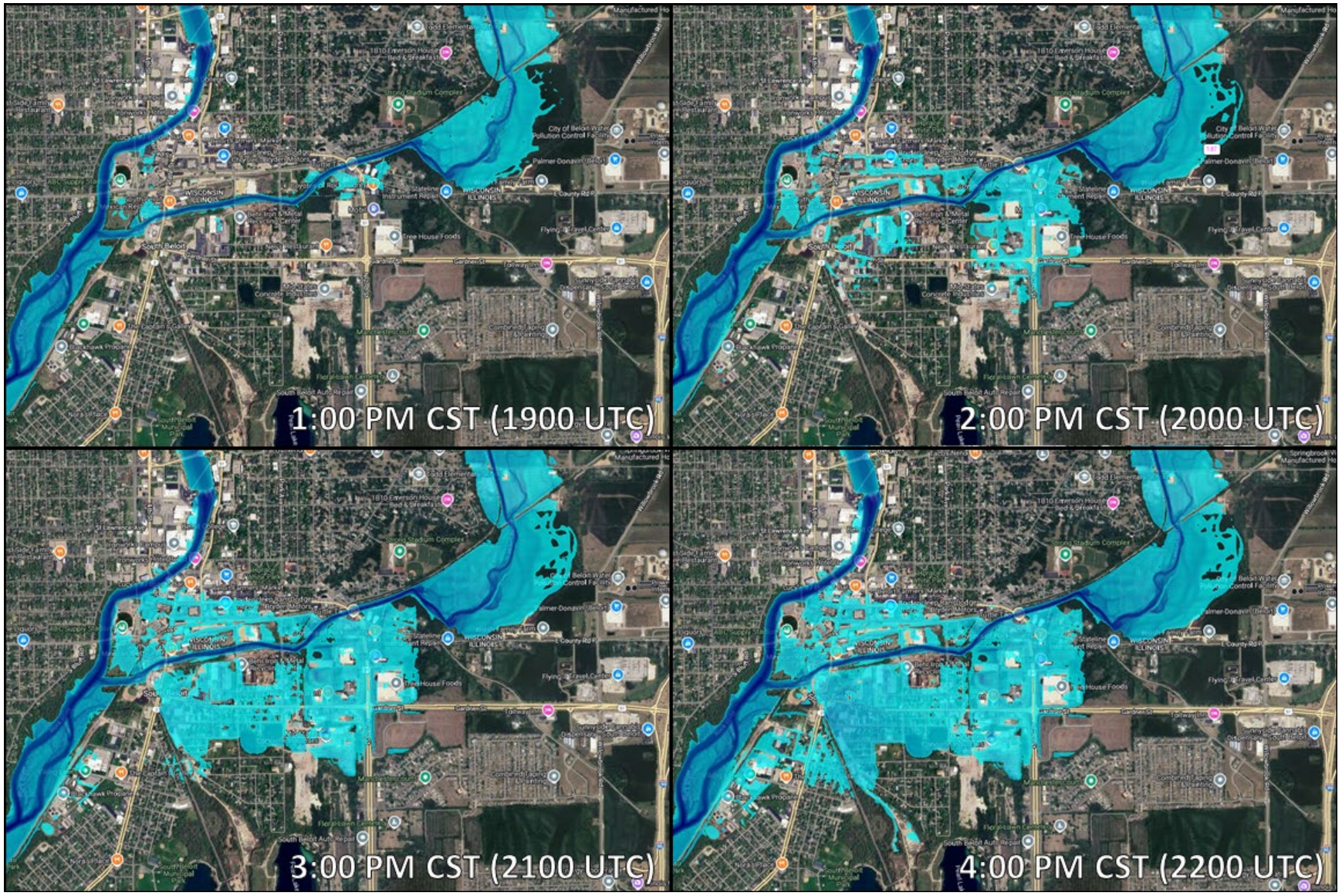


Figure 20. Modeled flood inundation in the Beloit, Wisconsin, and South Beloit, Illinois, area from flooding of Turtle Creek on 21 April 1973. Depiction of flooding was simulated using a hydraulic model developed for review of flood impacts along Turtle Creek associated with the Clinton river gauge and was based upon models developed by the US Army Corps of Engineers, the Wisconsin DNR, and the Illinois State Water Survey for flood insurance studies.

6.0 Conclusions

A significant and expansive multi-week flood event impacted the Mississippi River Basin in the spring of 1973. In Illinois and Wisconsin, flooding was most severe in the Rock River Basin, impacting multiple rivers and small streams, including Turtle Creek near the Illinois-Wisconsin state line. A narrow corridor of heavy rainfall ranging from 7.6 to 17.8 cm (3-7 in) roughly followed the Rock River from near the Quad Cities to near Rockford. Flood damage in Illinois (away from the Mississippi River) was estimated at $50-75 million ($366-550 million in 2025).

Acknowledgements

The author would like to thank the staff from multiple public libraries for their assistance retrieving archived newspaper articles detailing this event. These libraries include the Beloit Public Library in Beloit, Wisconsin, Aram Public Library in Delavan, Wisconsin, the Elkhorn Matheson Library in Elkhorn, Wisconsin, Lewis University Library in Romeoville, Illinois, and Rockford Public Library in Rockford, Illinois. The author acknowledges Anthony Heddlesten and Lindsay Scalara of the US Army Corps of Engineers Rock Island District for their assistance retrieving model data and other archival records. The author acknowledges Rob Waschbush of the USGS Upper Midwest Water Science Center for retrieval of archived water level records and metadata for the Turtle Creek near Clinton river gauge. The author would like to thanks NWS Chicago Science and Operations Officer Kevin Donofrio and Jeff Manion of NWS Central Region Headquarters for their helpful comments and review.

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Appendix

To analyze the rainfall event that occurred over the two-day period from 0600 CST on 20 April 1973 through 0600 CST on 22 April 1973, rainfall observations were collected from 956 locations across the Midwest and Great Lakes states. Most observations were collected from official NWS observations stored in the ISU Iowa Environmental Mesonet database (https://mesonet.agron.iastate.edu/GIS/apps/coop/plot.phtml), but a few were collected from newspaper reports of the event. A list of observations used in this analysis, filtered to values greater than or equal to 3.0 inches and observations occurring within the domain of Figure 12, is provided here.

Location	Network/ Source	04/21	04/22	Storm Total	Comments
Prophetstown IL	NWS/COOP	3.43	3.84	7.27	
ALEDO	NWS/COOP	4.87	2.20	7.07	
Moline Quad City Airport IL	NWS/COOP	3.25	3.45	6.70	
SHELBINA	NWS/COOP	5.07	1.08	6.15	
BLOOMFIELD	NWS/COOP	4.00	2.10	6.10	
MOUNT-PLEASANT	NWS/COOP	2.50	3.50	6.00	
BROOKFIELD	NWS/COOP	4.14	1.86	6.00	
Delavan	other			6.00	*Reported by Delavan Enterprise 1973/04/26. Exact location unknown, assumed to be Delavan Sewage Plant.*
Mt Morris	other			6.00	*Reported by Rockford Register Star 1973/04/22, no exact locations known but "4-7 inches of rainfall" reported across Ogle County.*
Rockford Airport IL	NWS/COOP	4.37	1.51	5.88	
KEOSAUQUA	NWS/COOP	4.20	1.66	5.86	
KEITHSBURG	NWS/COOP	2.63	3.18	5.81	
MACON	NWS/COOP	4.65	0.91	5.56	
NEW BOSTON DAM 17	NWS/COOP	2.46	3.04	5.50	
Delavan Lake Northshore	other			5.50	*Reported in Delavan Enterprise 1973/04/26. Photo shows rain gauge at private residence on north shore of Lake Delavan.*
Milledgeville	other			5.20	*Reported by Rockford Register Star 1973/04/22, exact location unknown. Rainfall occurred in 4 hours.*
MORRISON	NWS/COOP	4.00	1.05	5.05	
KEOSAUQUA 2	NWS/COOP	3.37	1.67	5.04	
Oregon IL	NWS/COOP	2.95	2.05	5.00	
SHELBYVILLE	NWS/COOP	3.80	1.18	4.98	
QUINCY	NWS/COOP	4.22	0.74	4.96	
LURAY 2 N	NWS/COOP	3.23	1.71	4.94	

Location	Network/ Source	04/21	04/22	Storm Total	Comments
DOWNING	NWS/COOP	3.09	1.85	4.94	
Elkhorn Disposal Plant	other			4.90	*Reported by Elkhorn Independent*
EDINA	NWS/COOP	2.70	2.20	4.90	
CLINTON	NWS/COOP	4.39	0.42	4.81	
MEMPHIS	NWS/COOP	2.69	2.08	4.77	
MONROE CITY	NWS/COOP	4.35	0.38	4.73	
QUINCY MEMORIAL BRIDGE	NWS/COOP	3.88	0.83	4.71	
MT PULASKI	NWS/COOP	3.35	1.32	4.67	
QUINCY DAM 21	NWS/COOP	3.72	0.89	4.61	
DIXON 1 NW	NWS/COOP	1.96	2.59	4.55	
ROCKFORD 6 ENE	NWS/COOP	3.49	1.04	4.53	
Wapello	NWS/COOP	2.48	2.05	4.53	
GLADSTONE DAM 18	NWS/COOP	2.85	1.62	4.47	
MILWAUKEE N SIDE	NWS/COOP	4.07	0.30	4.37	
Le Claire L&D 14	NWS/COOP	2.32	2.02	4.34	
MOLINE QUAD CITY INTL AP	NWS/COOP	4.26	0.07	4.33	
BARRY	NWS/COOP	4.09	0.22	4.31	
BLUFFS	NWS/COOP	3.89	0.39	4.28	
WAYLAND 2 W	NWS/COOP	3.05	1.22	4.27	
BEARDSTOWN	NWS/COOP	3.18	1.05	4.23	
Donnellson	NWS/COOP	1.90	2.33	4.23	
CANTON L&D 20	NWS/COOP	3.39	0.83	4.22	
Alexis 1 SW IL	NWS/COOP	2.20	2.00	4.20	
STEFFENVILLE	NWS/COOP	3.18	1.02	4.20	
LINCOLN	NWS/COOP	2.14	2.05	4.19	
RUSHVILLE 4NE	NWS/COOP	3.10	1.05	4.15	
MILWAUKEE MT MARY CLG	NWS/COOP	3.85	0.30	4.15	
Fontana	other			4.10	*Reported by Delavan Enterprise 1973/05/03. Indicated as ""more than 4 inches"" at Fontana. Location estimated as center of town.*
MT STERLING	NWS/COOP	3.75	0.33	4.08	
KIRKSVILLE	NWS/COOP	3.00	1.00	4.00	
DAVENPORT LOCK & DAM 15	NWS/COOP	2.00	1.95	3.95	
BELOIT	NWS/COOP	3.90	0.00	3.90	
Waukesha	other			3.90	*Reported by Delavan Enterprise 1973/05/03. Indicated as "almost 4 inches" at Waukesha. Exact location unknown, location estimated near sewage treatment plant.*
CLINTON 1SSW	NWS/COOP	2.58	1.30	3.88	
PALMYRA	NWS/COOP	3.24	0.62	3.86	

Location	Network/ Source	04/21	04/22	Storm Total	Comments
SAVERTON L&D 22	NWS/COOP	3.62	0.21	3.83	
KEOKUK LOCK DAM 19	NWS/COOP	2.38	1.44	3.82	
ILLINOIS CITY DAM 16	NWS/COOP	2.30	1.51	3.81	
ALEXIS 1 SW	NWS/COOP	2.24	1.55	3.79	
ROCHELLE 6 NW	NWS/COOP	2.20	1.58	3.78	
AUGUSTA	NWS/COOP	3.06	0.69	3.75	
GRIGGSVILLE	NWS/COOP	3.45	0.28	3.73	
LABELLE	NWS/COOP	2.24	1.48	3.72	
Davenport L&D 15 IL	NWS/COOP	1.70	2.00	3.70	
PETERSBURG 3SSW	NWS/COOP	2.58	1.09	3.67	
PAYSON	NWS/COOP	3.39	0.27	3.66	
LIBERTY	NWS/COOP	3.20	0.40	3.60	
MONMOUTH	NWS/COOP	2.33	1.27	3.60	
South Branch Kishwaukee River at De Kalb	NWS/COOP	1.93	1.66	3.59	
CHANDLERVILLE	NWS/COOP	2.76	0.82	3.58	
MUSCATINE 2	NWS/COOP	2.28	1.28	3.56	
LIVONIA	NWS/COOP	2.03	1.52	3.55	
BELVIDERE	NWS/COOP	3.01	0.53	3.54	
MOLINE BRIDGE	NWS/COOP	2.29	1.23	3.52	
WEST ALLIS	NWS/COOP	3.52	0.00	3.52	
Hanover	other			3.50	*Reported by Rockford Register Star 1973/04/22, exact location unknown.*
ROCKFORD GTR ROCKFORD AP	NWS/COOP	3.38	0.05	3.43	
CLINTON-1	NWS/COOP	3.00	0.43	3.43	
Belvidere WWTP IL	NWS/COOP	1.90	1.50	3.40	
MONTICELLO (RIVER)	NWS/COOP	2.14	1.26	3.40	
CLINTON 2	NWS/COOP	2.23	1.17	3.40	
WAUKESHA	NWS/COOP	3.37	0.02	3.39	
KAHOKA	NWS/COOP	2.65	0.74	3.39	
ELGIN	NWS/COOP	0.73	2.65	3.38	
Eagle 2W WI	NWS/COOP	3.02	0.30	3.32	
DODGEVILLE	NWS/COOP	2.40	0.92	3.32	
Fort Madison	NWS/COOP	2.28	1.01	3.29	
ROCK ISLAND L&D 15	NWS/COOP	2.21	1.07	3.28	
WASHINGTON	NWS/COOP	2.40	0.88	3.28	
MAROA	NWS/COOP	1.91	1.35	3.26	
BLOOMINGTON WATERWORKS	NWS/COOP	1.98	1.27	3.25	
LA HARPE	NWS/COOP	2.03	1.20	3.23	
URBANA	NWS/COOP	2.34	0.89	3.23	
SPRINGFIELD CAPITAL AP	NWS/COOP	2.11	1.11	3.22	

Location	Network/ Source	04/21	04/22	Storm Total	Comments
SPRINGFIELD 4 SE	NWS/COOP	2.27	0.94	3.21	
NORMAL	NWS/COOP	2.20	0.99	3.19	
PROPHETSTOWN	NWS/COOP	2.76	0.43	3.19	
Toronto IA	NWS/COOP	1.84	1.35	3.19	
JACKSONVILLE 2	NWS/COOP	2.22	0.95	3.17	
RIVERTON (RIVER)	NWS/COOP	1.95	1.22	3.17	
FARMER CITY 3W	NWS/COOP	1.65	1.51	3.16	
OREGON	NWS/COOP	2.50	0.64	3.14	
TUSCOLA NO 2	NWS/COOP	1.59	1.54	3.13	
GALVA	NWS/COOP	1.37	1.75	3.12	
LANARK	NWS/COOP	2.62	0.50	3.12	
MARIETTA	NWS/COOP	2.44	0.66	3.10	
Milwaukee Mitchell Airport WI	NWS/COOP	2.51	0.58	3.09	
KNOXVILLE	NWS/COOP	2.16	0.92	3.08	
QUINCY RGNL AP	NWS/COOP	2.86	0.21	3.07	
WINCHESTER	NWS/COOP	2.24	0.83	3.07	
CENTERVILLE	NWS/COOP	1.31	1.76	3.07	
PRINCEVILLE 2W	NWS/COOP	2.56	0.50	3.06	
GENESEO	NWS/COOP	3.01	0.04	3.05	
WALNUT	NWS/COOP	2.04	1.00	3.04	
FULTON L&D #13	NWS/COOP	1.91	1.12	3.03	
TUSCOLA	NWS/COOP	1.92	1.08	3.00	
GREGORY LANDING	NWS/COOP	2.53	0.47	3.00	
Warren	other			3.00	*Reported by Rockford Register Star 1973/04/22, exact location unknown.*