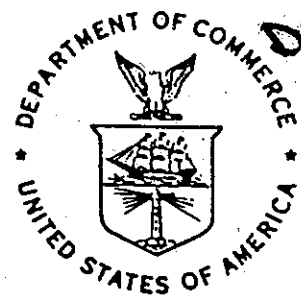


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NOAA TECHNICAL MEMORANDUM NWS NSSFC-11



SEVERE THUNDERSTORM CASES OF 1985

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John E. Hales, JR. and Hugh G. Crowther
National Severe Storms Forecast Center
Kansas City, Missouri 64106

February 1986

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U.S. DEPARTMENT OF
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/ National Oceanic and
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Service

NOAA TECHNICAL MEMORANDA

National Weather Service

National Severe Storms Forecast Center

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SEVERE THUNDERSTORM CASES OF 1985

John E. Hales, Jr. and Hugh G. Crowther
National Severe Storms Forecast Center
Kansas City, Missouri 64106

February 1986

UNITED STATES
DEPARTMENT OF COMMERCE
Malcolm Baldrige, Secretary

National Oceanic and
Atmospheric Administration
Anthony Calio, Administrator

National Weather
Service
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SEVERE THUNDERSTORM CASES OF JANUARY THRU JUNE 1985

JOHN E. HALES JR.
HUGH C. CROWTHER

ABSTRACT

Severe thunderstorm occurrences are relatively infrequent in much of the United States. As a result a forecaster only occasionally has an opportunity to forecast their development. This proves to be a problem as certainly one of the more important factors in forecasting them is the level of experience an individual forecaster has. Realizing the importance that experience plays and difficulty involved for a meteorologist to study past cases, a summary was compiled of all the organized severe thunderstorm episodes of 1985 the month of June. Included in each case were the times and locations of the severe weather along with specifics of the more noteworthy events. A composite of those parameters most frequently found to be associated with severe thunderstorms was included. Each case has a surface and 500mb analysis along with an infrared satellite photo. The objective was to give an overview to a forecaster as to what ingredients went into severe development with a more detailed analysis being left up to the individual.

INTRODUCTION

More severe thunderstorms occur in the United States than in any other area in the world. Organized severe thunderstorm episodes can occur in any section of the country and in any month of the year. The synoptic conditions that result in the development of these storms vary widely across the country. Severe storm climatology shows the episode frequency decreasing with distance from the center of the country, however only the Pacific coastal states lack a significant number of cases for any great concern.

One of the more important tools in forecasting severe thunderstorm episodes is experience. The more opportunities a forecaster has in working a severe weather situation, the greater his skill and confidence becomes. Unfortunately these episodes are infrequent enough that, with the exception of the most active areas in the central United States, an individual forecaster may only work a severe situation once or twice per year.

The usual technique for increasing one's experience base is to go back and examine the synoptic charts, particularly for cases with which the forecaster was not previously involved. This can be a rather difficult undertaking because charts of interest may not be readily available and/or organized in a systematic manner. This is the case at the NSSFC, but it is often so to a much greater extent at the local field offices.

The purpose of this publication is to identify and organize those severe thunderstorm episodes that occurred across the nation during the first 6 months of 1985 into a handy and easy to use format such that a forecaster can readily review those cases that may be of interest to him. The selection procedure of the cases was not very restrictive and included most of the organized severe thunderstorm episodes that occurred nationally. In those areas where storms are rather infrequent, such as west of the Rocky Mountains, the selection threshold was somewhat lower.

Due to the considerable delay in receiving at NSSFC the microfilmed NMC analyses only the first 6 months of 1985 are included. This allows the publication to be distributed soon enough to be utilized in the field for the next severe weather season. If this publication is continued in coming years it will include the 12 month period from July to June.

CASE FORMAT

The basic approach in compiling the cases was to provide the interested forecaster with a comprehensive, but not excessive, number of charts. The following is a description of each chart included.

Daily Activity Summary-A fairly tight depiction of the day's organized severe convection is shown(solid line). A listing of any noteworthy individual event is included for each day. The criteria for listing a report would be most of the F2(Fujita 1981) or greater tornadoes, tornadoes/wind damage that result in death, a significant number of injuries and/ or damage that generally exceeds \$100,000. Storms that resulted in damage in excess of about \$100,000 were included in the listing by category as used in Storm Data(U.S.Dept of Commerce 1985). Those reports were then located on the activity summary chart by number, with an * not in a watch). Also included is a table listing the daily total of severe reports. Following the date there is included the time range of the organized severe occurrence. All times for this chart were in CST.

Composite Chart-The purpose of a composite is to represent on one chart those parameters important in producing severe thunderstorm. The basic composite is similar to that done in TR-200(e.g.,Miller, 1972) with some modifications. Instead of using the 850 Td, the mean mixing ratio(solid line g/kg) was incorporated as a better representation of the low level moisture supply. The relevant short wave trough(line of triangles)was taken from the 700mb level rather than 500mb. This was done for two reasons a)the 500mb analysis being included in the study and b)a more frequent correlation of troughs at 700mb with severe thunderstorm development. The polar and subtropical jet-stream is depicted by the maximum wind axis(wide solid line with arrowhead in kts) at the 250mb level. The lifted index analysis(dashed line) used the lower 100mb of moisture and a forecasted maximum surface temperature. Any areas of upper diffluence(zig zag line) and mid level drying(heavy dashed line), the 850mb jet(line with arrowhead in kts), as well as the thermal ridge(heavy dotted line) as shown on the 850 mb analysis, are included.

500mb Analysis- The NMC operational 500mb analyses using the observation time most relevant to the severe thunderstorm development was included. Due to the unavailability of 500mb analyses the 300mb level was used on May 26 and 27.

Surface Analysis-The NMC operational analyses nearest either the time of initial severe thunderstorm development or the time of the most severe storm occurrence was included.

Satellite Photo-The Infrared photo closest to the time of the most severe storm occurrence of the day was included.

SUMMARY

The details of synoptic patterns that are associated with severe weather events

are soon forgotten. However similar a severe weather situation seems to an earlier occurrence there are always important differences. Having available the pertinent synoptic conditions that were present in a past situation should enable a forecaster to better identify future storm producing patterns.

ACKNOWLEDGEMENTS

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Department of Commerce, 1985: Storm Data. Environmental Data Services, NOAA, National Climatic Center, Asheville, NC.

Fujita, T.T. and A.D. Pearson, 1973: Results of FPP classification of 1971 and 1972 tornadoes. Proc. 8th Conf. Severe Local Storms, Amer. Meteor. Soc., Boston, 142-145.

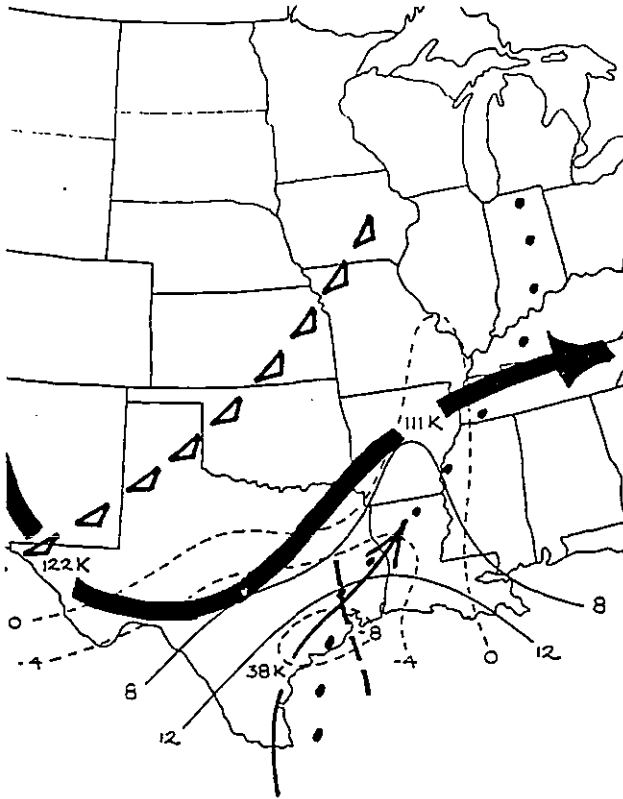
Hales, J.E. and Crowther, H.G., 1985: Severe Thunderstorm Cases of 1984, NOAA Tech Memo NWS NSSFC-7., Kansas City, 88pp.

Miller, R.C., 1972: Notes on analysis and severe storm forecasting procedures of the Air Force Global Weather Central. Air Weather Service Tech. Report 200(Rev.), Headquarters AWS, Scott AFB, IL, 94 pp.

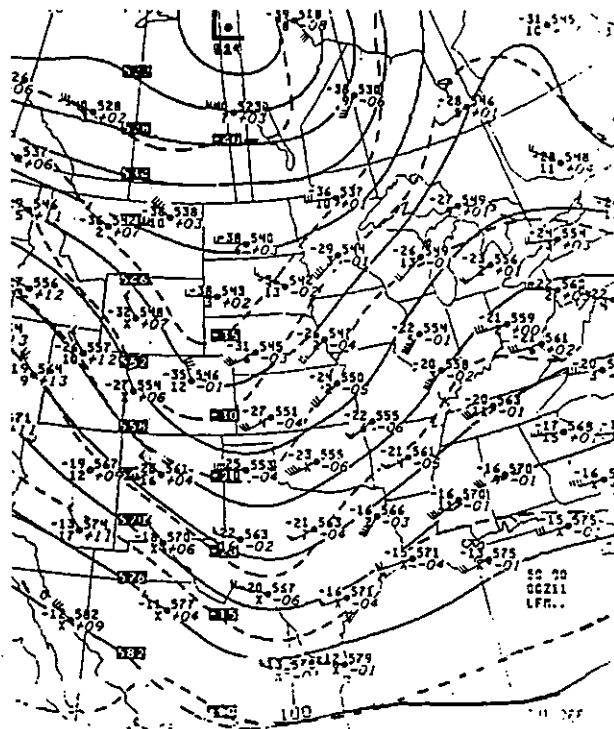
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6. March 28, (IL IN OH)
7. April 4, (OK KS MO AR IL MI)
8. April 5, (AR LA MS MO IL IN KY TN MS AL GA SC NC OH)
9. April 19, (ND SD NE MN IA)
10. April 20, (TX OK NE SD MN IA)
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14. April 30, (TX OK KS MO AR LA MS AL TN)
15. May 7, TX
16. May 12, (TX OK KS)
17. May 13, (TX OK KS MO AR)
18. May 14, (MO IA MN WI IL IN KY)
19. May 20, (TX OK AR LA)
20. May 21, (LA MS AL FL)
21. May 22, NC
22. May 26, (OK KS NE IA MO IL WI MI IN)
23. May 27, (TX OK CO WY NE IN OH)
24. May 28, (NE SD ND WY MT OK AR MO MS)
25. May 29, (OK KS NE MO AR MS)
26. May 30, (MT ND SD NE KS IA MO MN WI IL IN MI OH NY PA)
27. May 31, (OH PA NY)
28. June 1, (TX OK KS MO IA AR)
29. June 3, CO
30. June 4, (KY TN NC SC)
31. June 5, (NC SC WV KY TN MO)

- 29. June 3, CO
- 30. June 4, (KY TN NC SC)
- 31. June 5, (NC SC WV KY TN MO)
- 32. June 8, (WI MI)
- 33. June 9, (TN KY IN)
- 34. June 14, (OK TX KS NE SD MN ND IA)
- 35. June 15, (IL IN)
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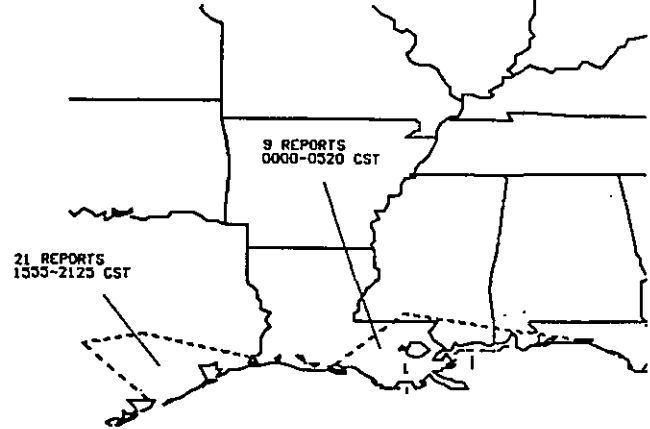


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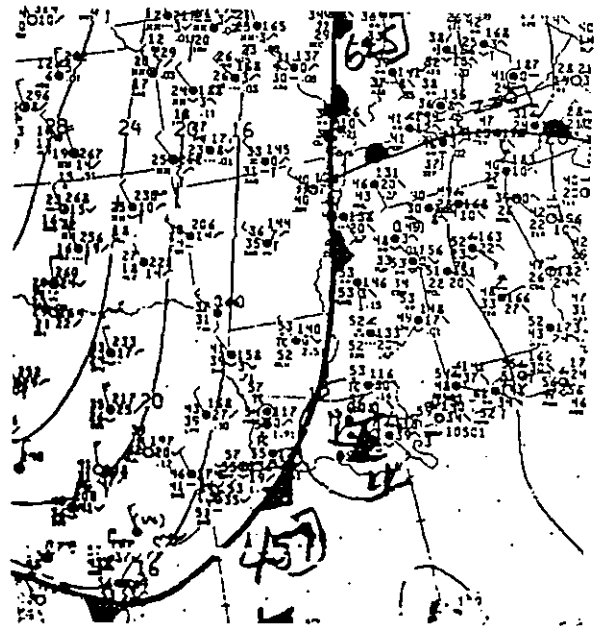


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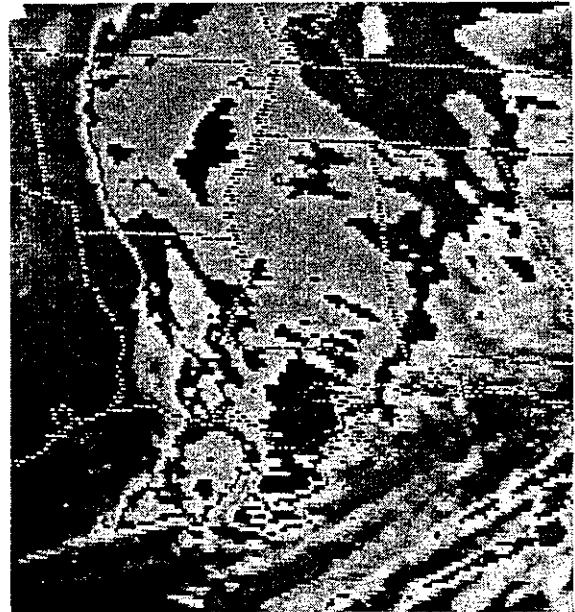
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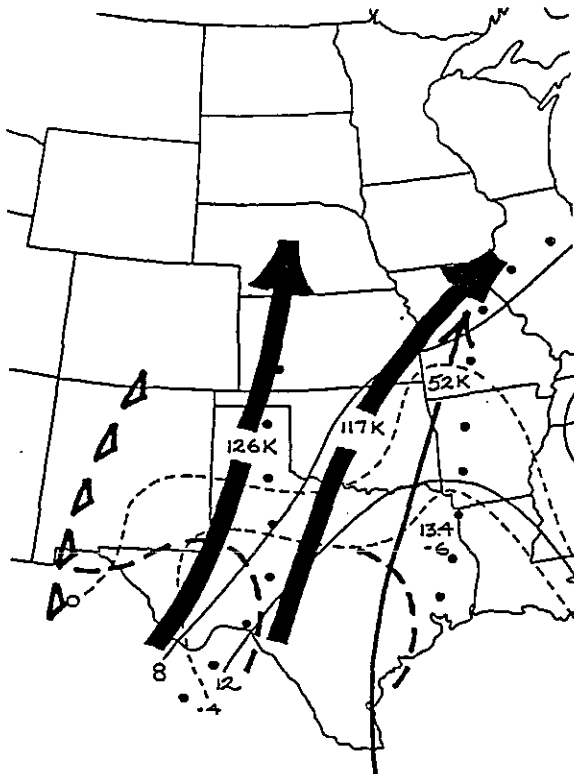


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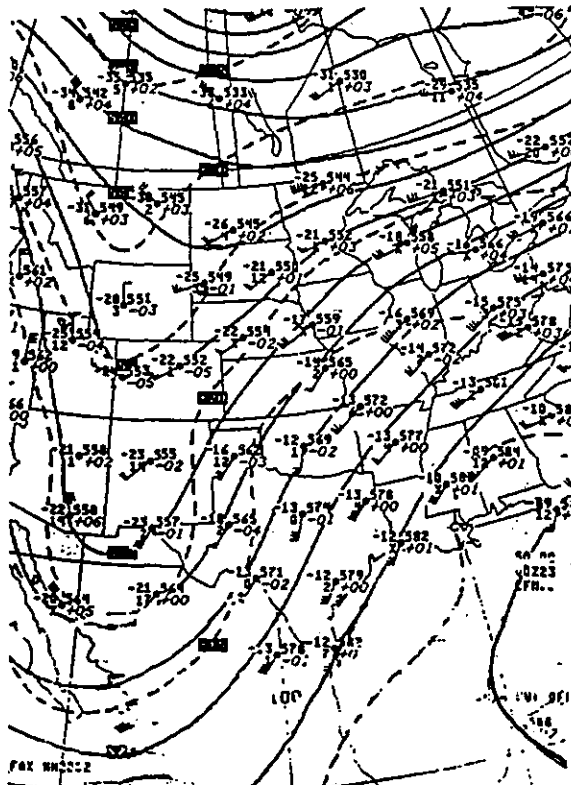


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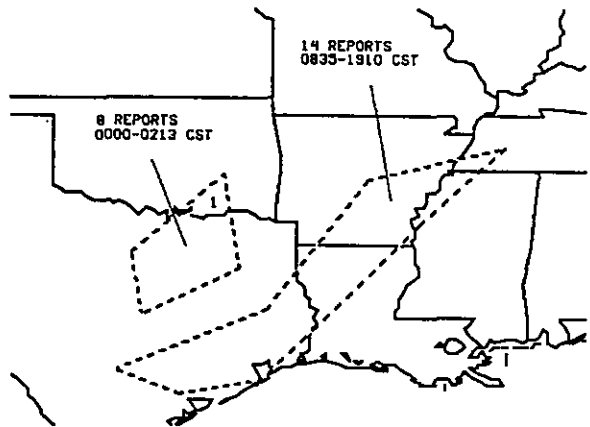


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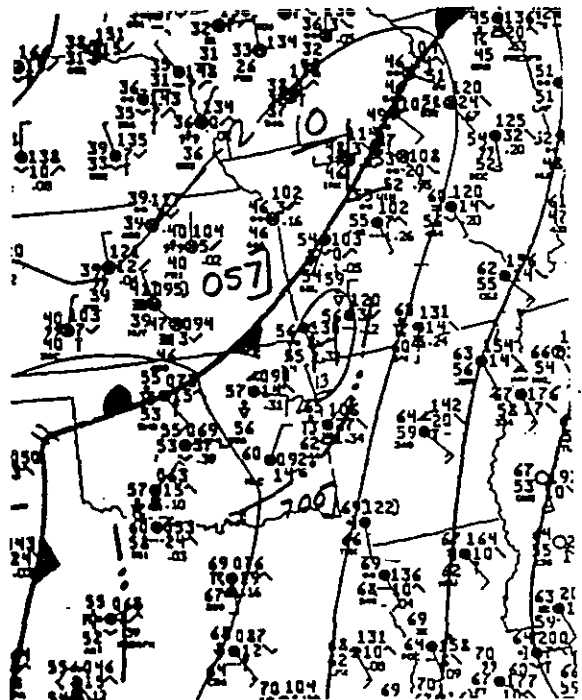


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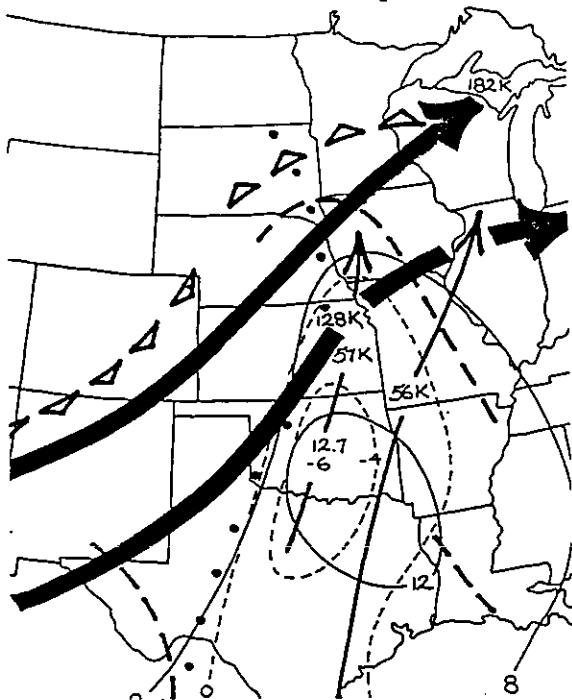


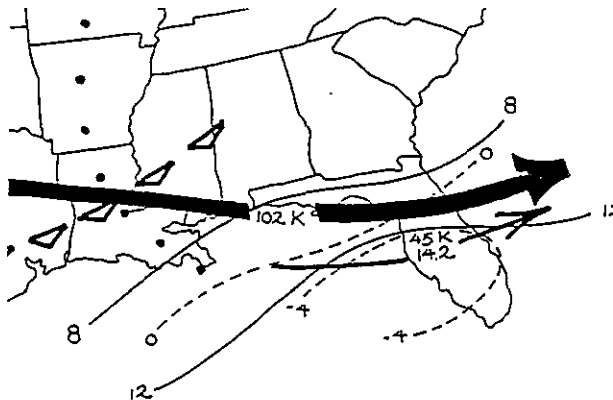
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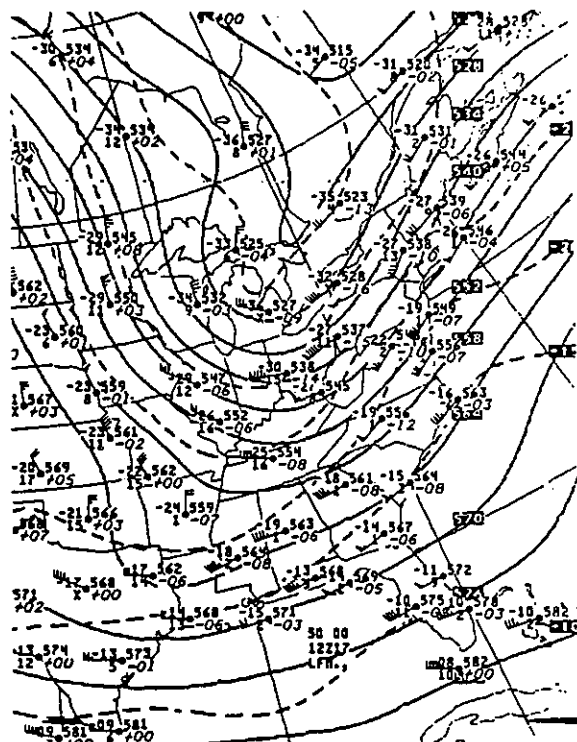


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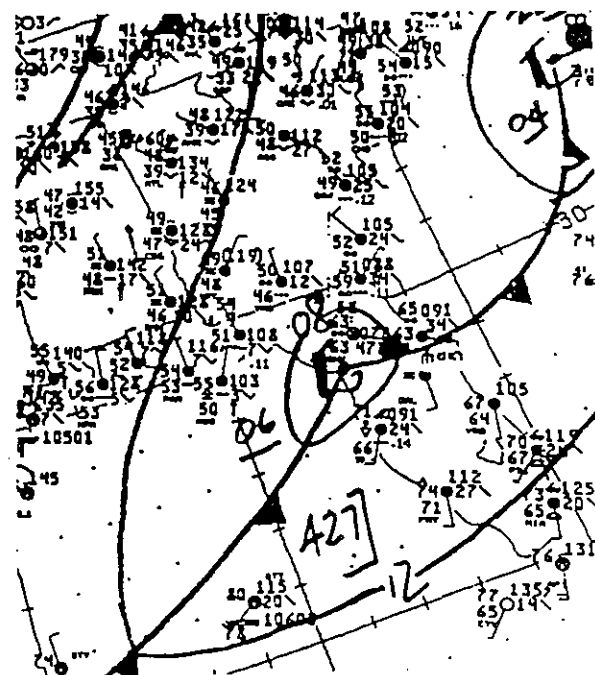
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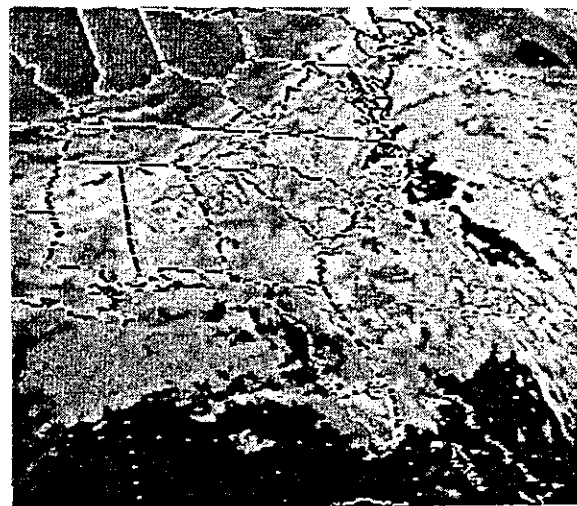
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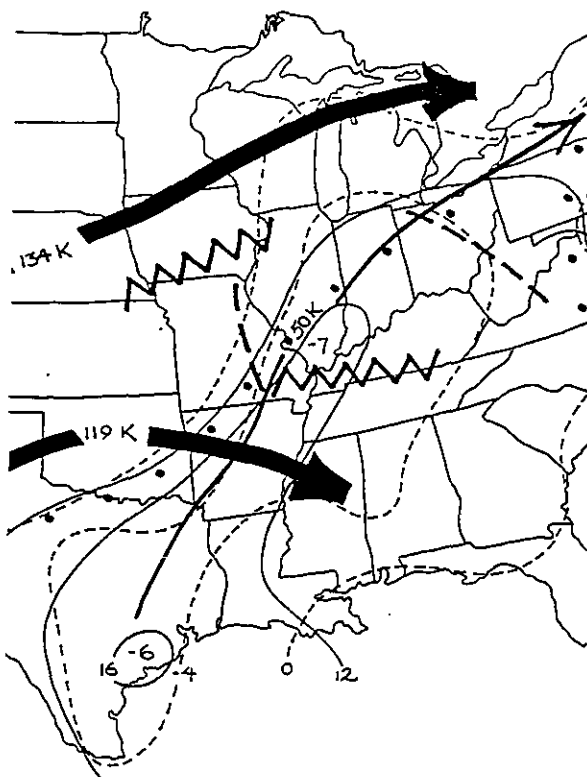


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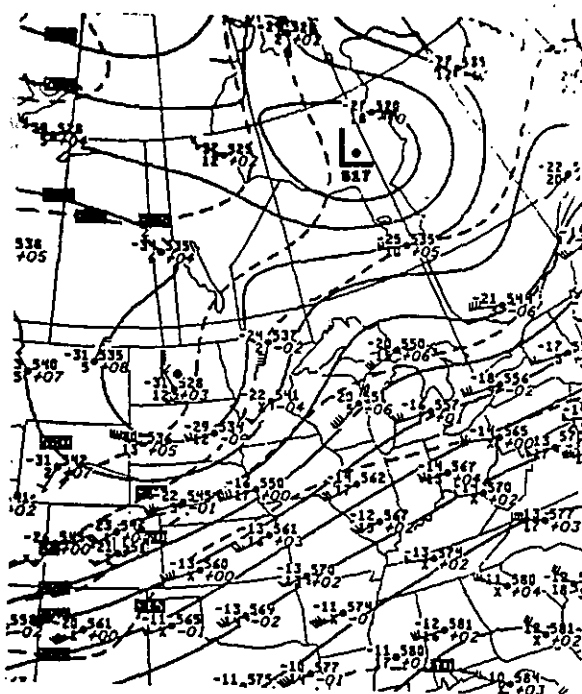


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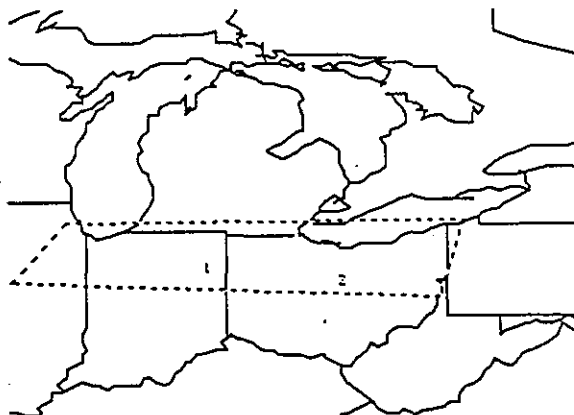


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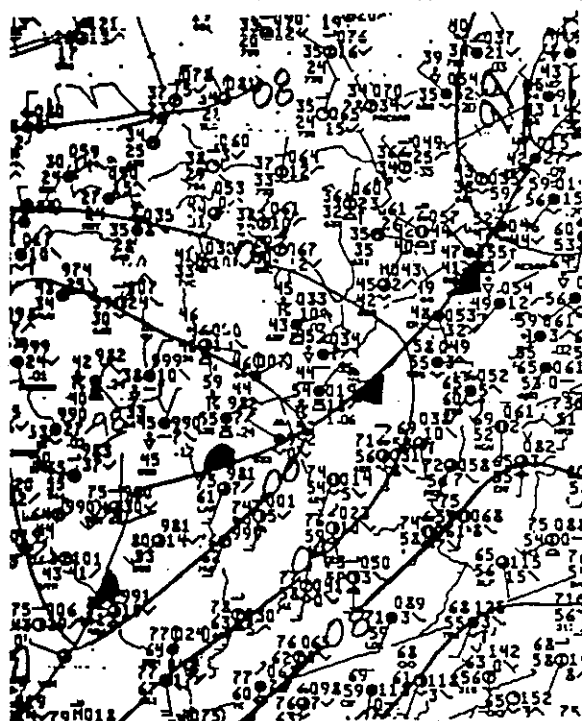


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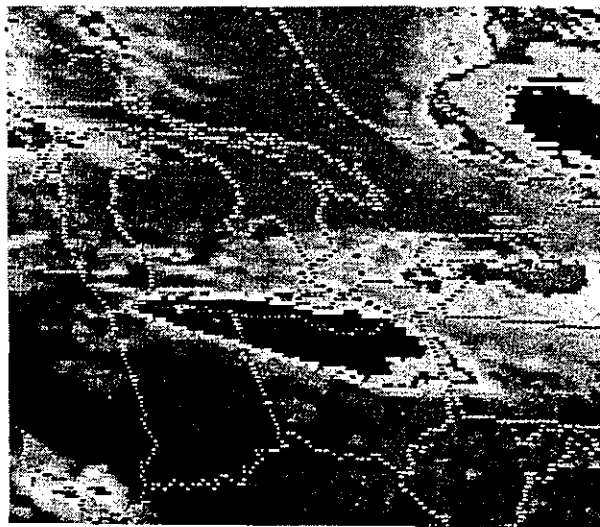
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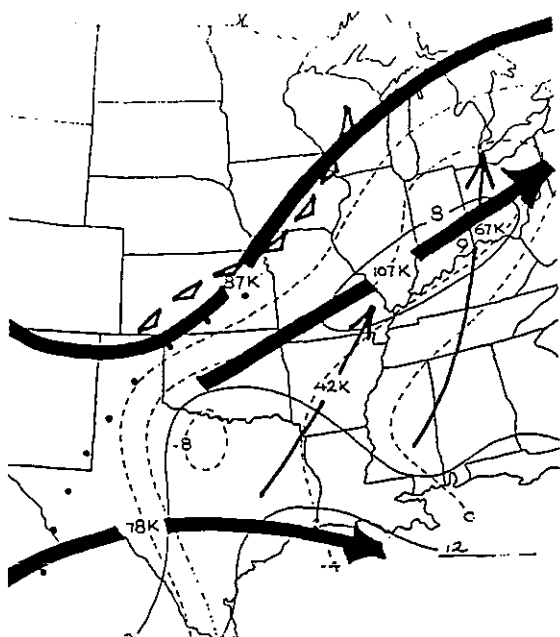
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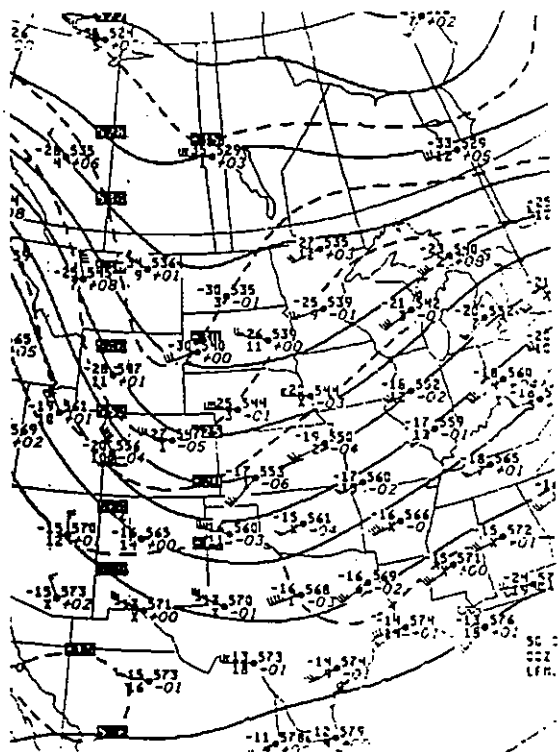
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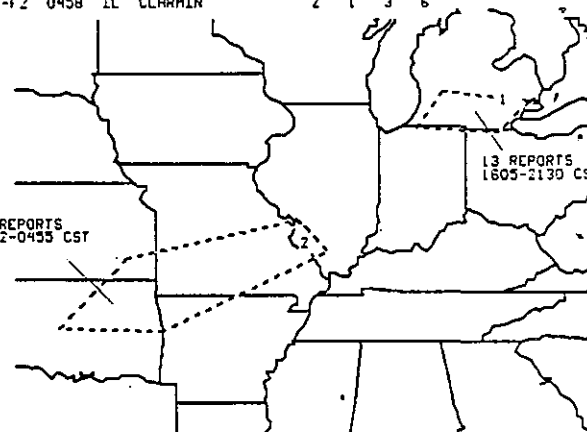
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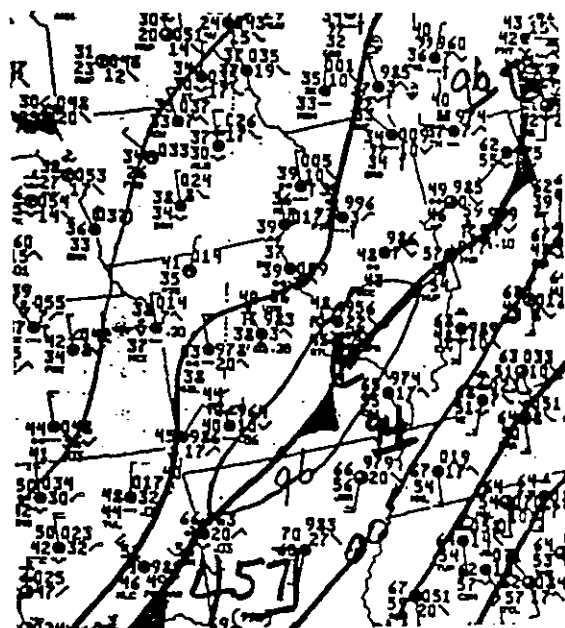
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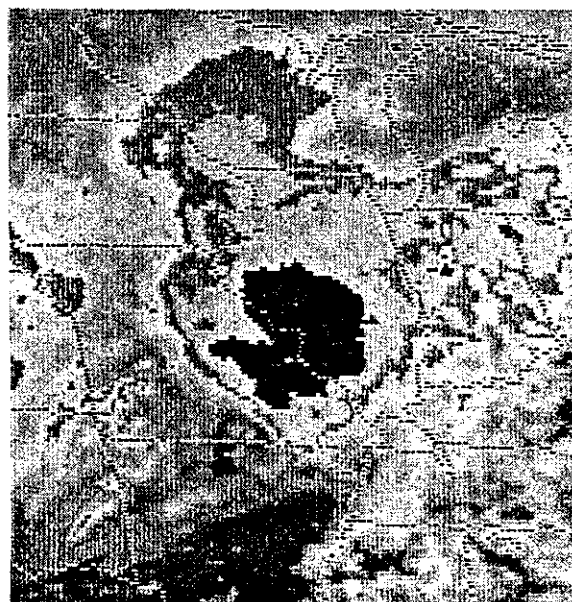
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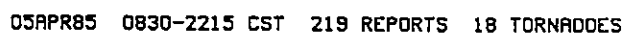
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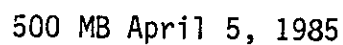
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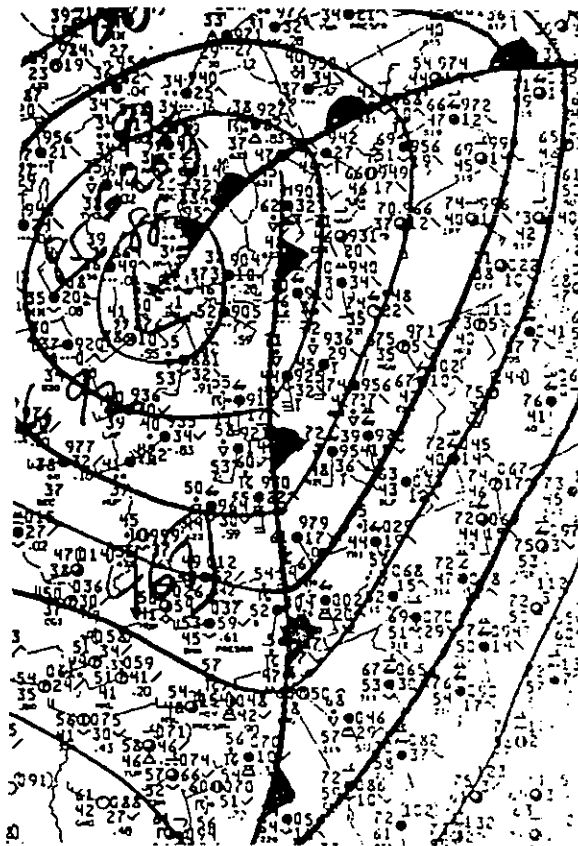


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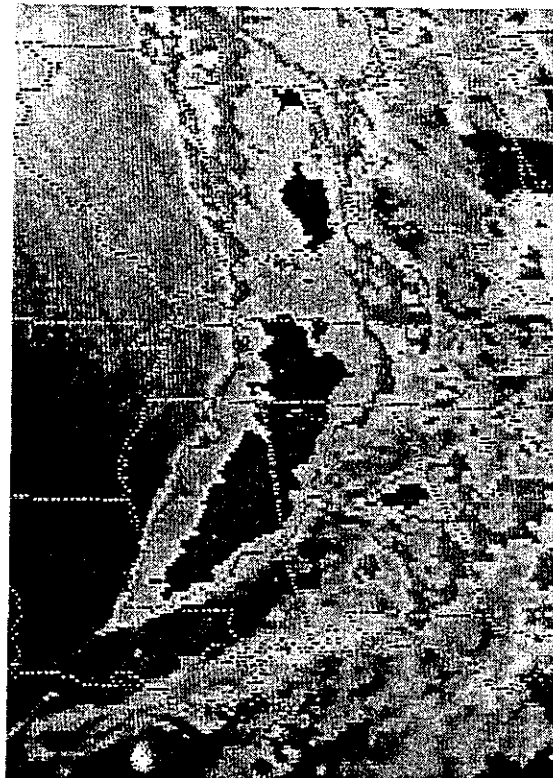


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3	TORNADO-F2	1522	IN	LEXINGTON	2.0	0	0	3
4	TORNADO-F2	1525	IN	KENT	1.0	0	0	4
5	TORNADO-F2	1528	IN	PEKIN	1.0	0	0	6
6	GUST	1616	AL	TUSCALOOSA	.	0	5	4
7	TORNADO-F3	1634	AL	ETHA	3.0	0	0	5
8	TORNADO-F3	1645	AL	ALBERTVILLE	8.0	0	5	6
9	GUST	1658	AL	BIRMINGHAM	.	0	9	5
10	TORNADO-F3	1710	AL	UNION	8.0	0	1	6
11	TORNADO-F3	1720	AL	ALPINE	3.0	0	0	4
12	TORNADO-F2	1745	AL	OXFORD	3.0	0	5	0
13	G 90 MPH	1830	GA	BREMEN	.	0	0	6
14	TORNADO-F2	1835	GA	HINTON	.	0	0	6
15	GUST	1845	AL	ROANOKE	2	0	4	0
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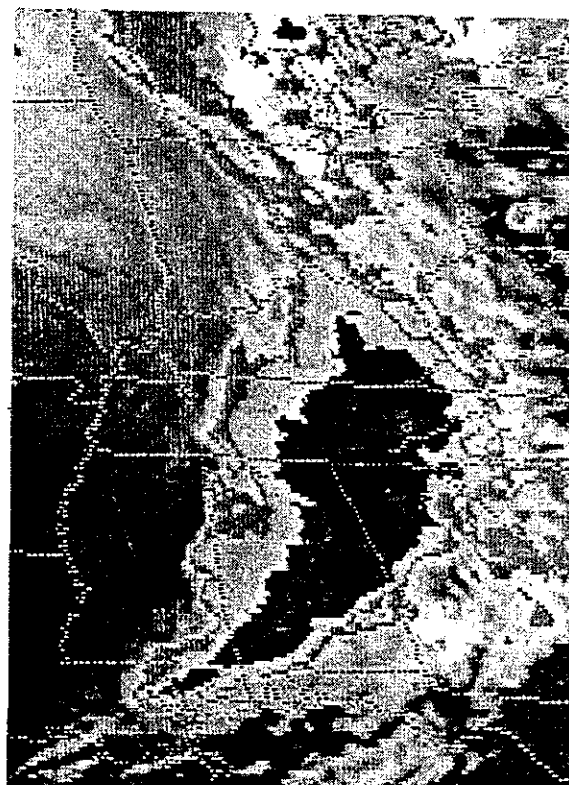




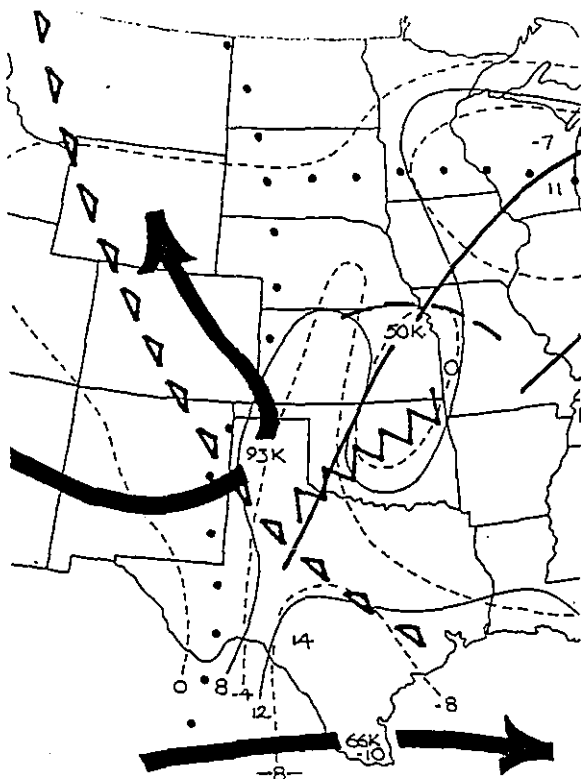
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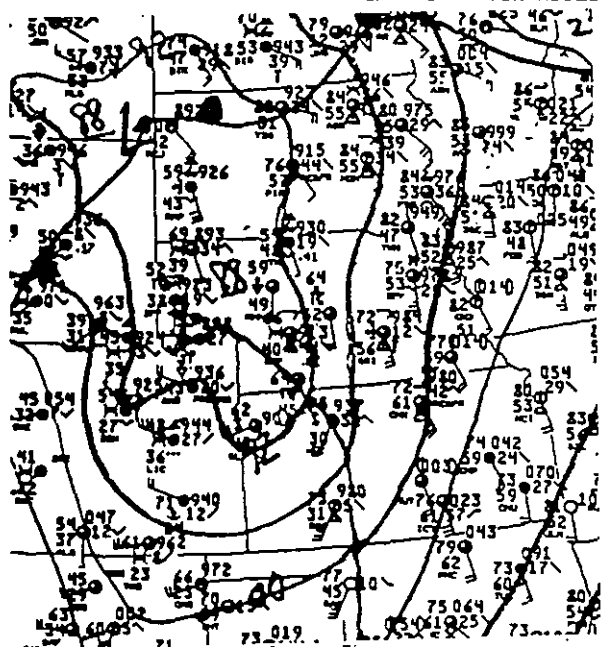
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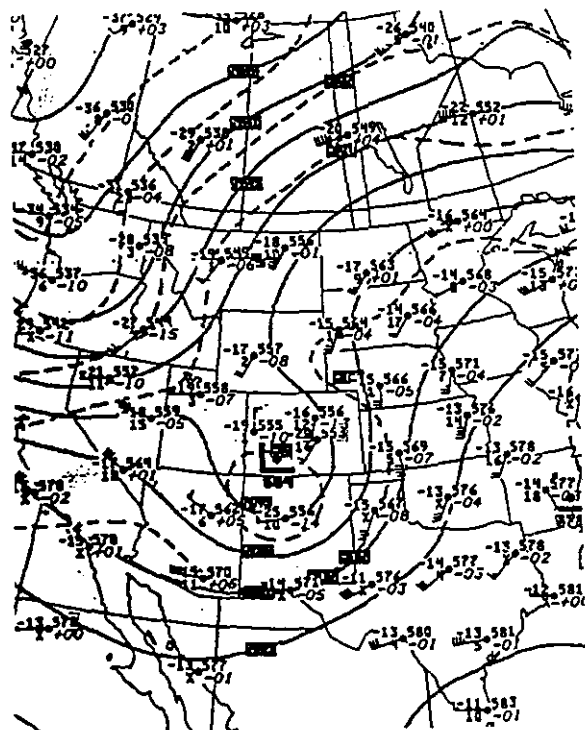
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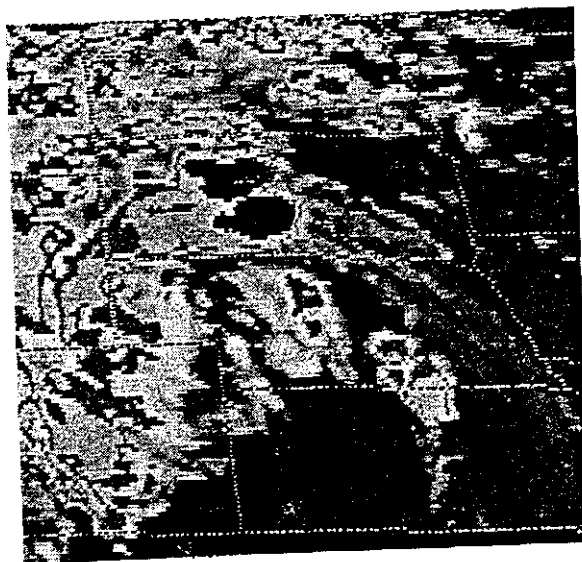
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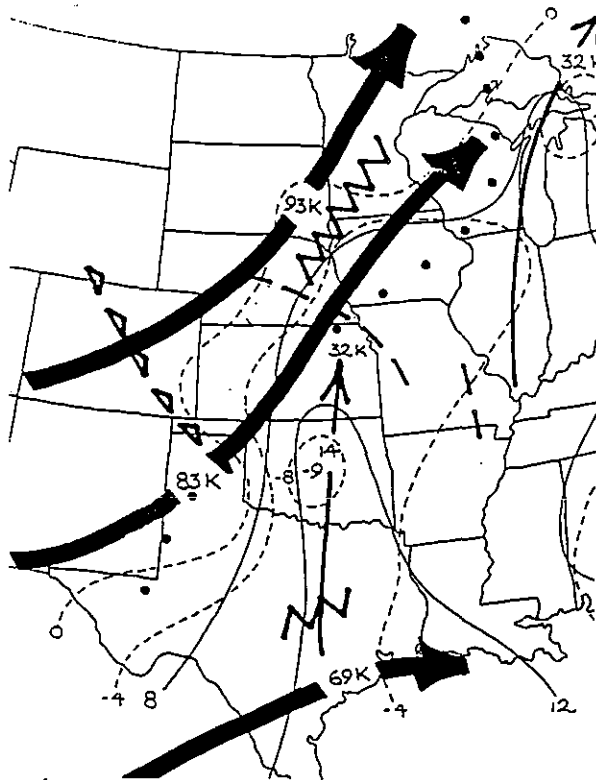


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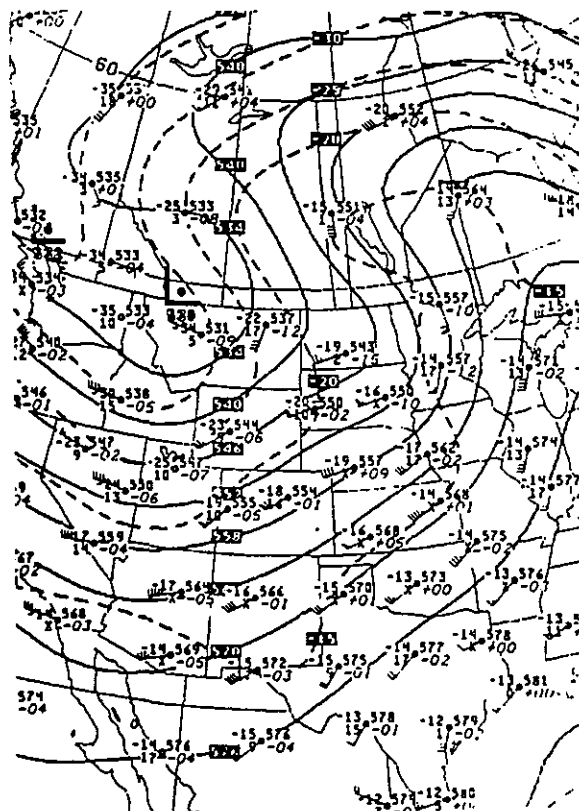


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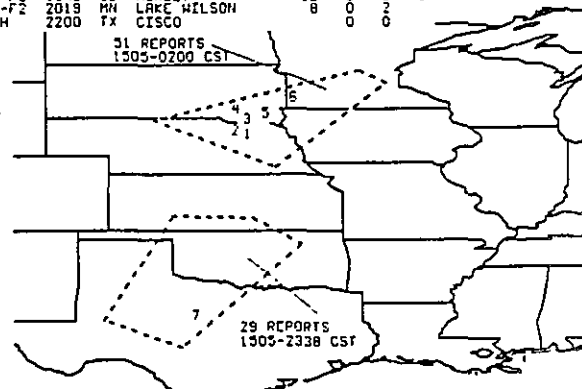


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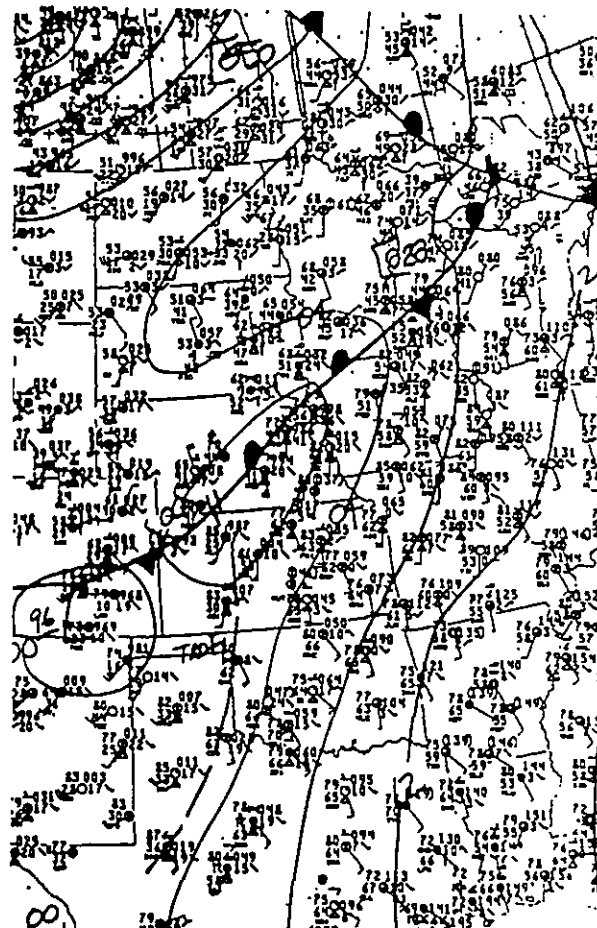


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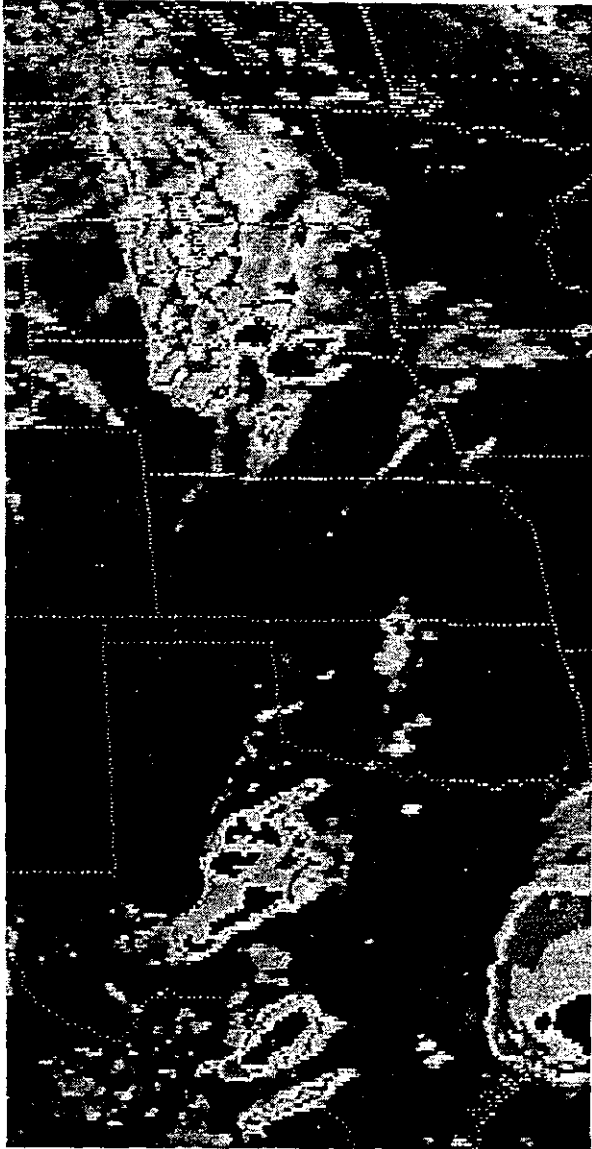
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3	TORNADO-F2	1800	SO	TABOR	10	4	0	0
4	TORNADO-F2	1825	SO	UTICA	10	4	0	0
5	TORNADO-F2	1845	SO	MURLEY	10	4	0	0
6	TORNADO-F2	2019	MN	LAKE WILSON	10	4	0	0
7	TORNADO-F2	2200	TX	CISCO	10	4	0	0



20APR85-21APR85 1300-0514 CST 86 REPORTS 14 TORNADOES



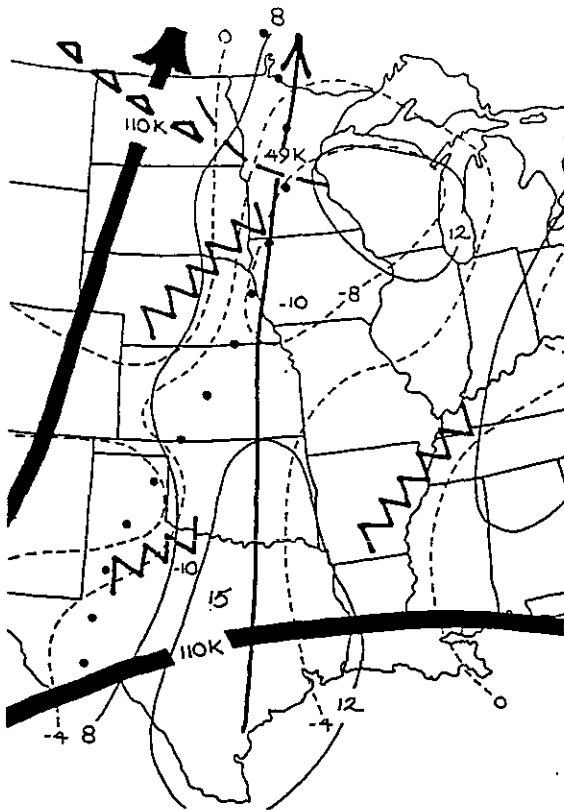
Surface 6PM CST April 20, 1935



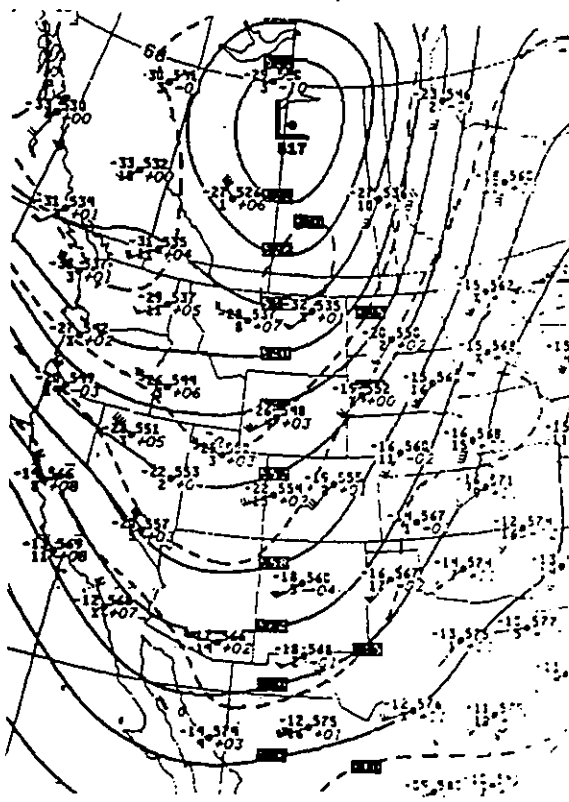
GOES 4PM CST April 20, 1985



GOES 8PM CST April 20, 1985



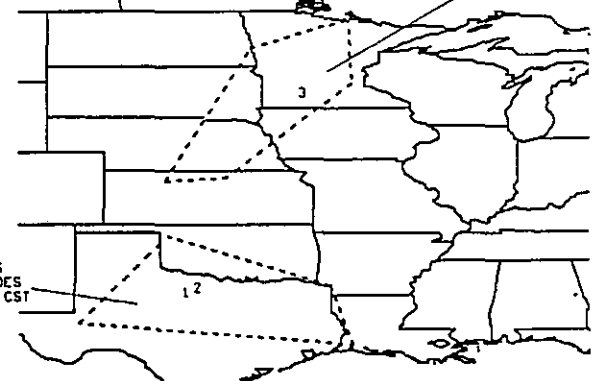
Composite 6PM CST April 21, 1985



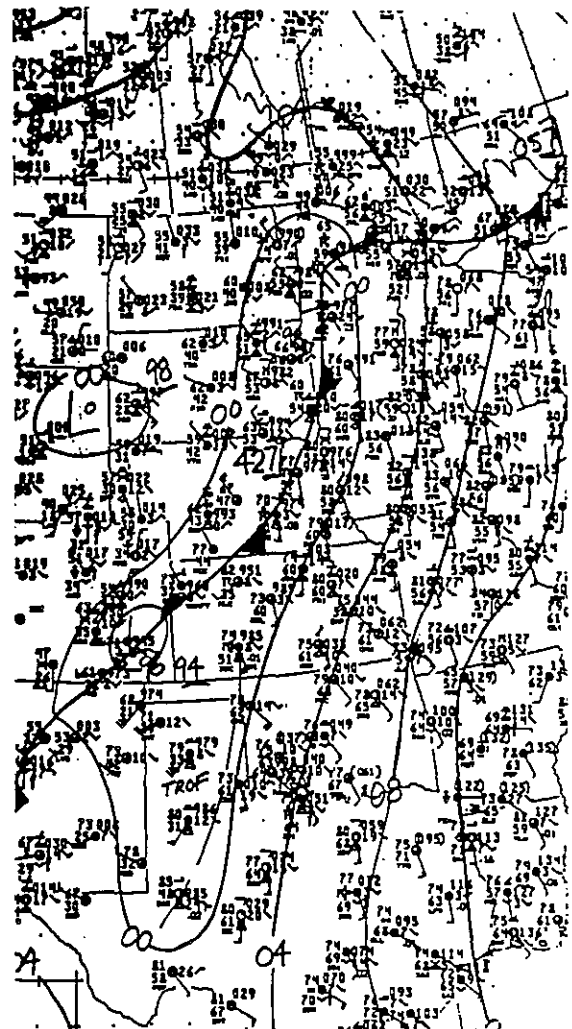
500 MB 6PM CST April 21, 1985

NO	EVENT	TIME	ST	LOCATION	PATH	KIL	INJ	DHG
1	TORNADO-F3	1745	TX	YOUNG CO	3	0	3	3
2	TORNADO-F2	1830	TX	OLNEY	3	0	2	3
3	TORNADO-F2	1900	MN	REDWOOD FALLS	1	0	0	3

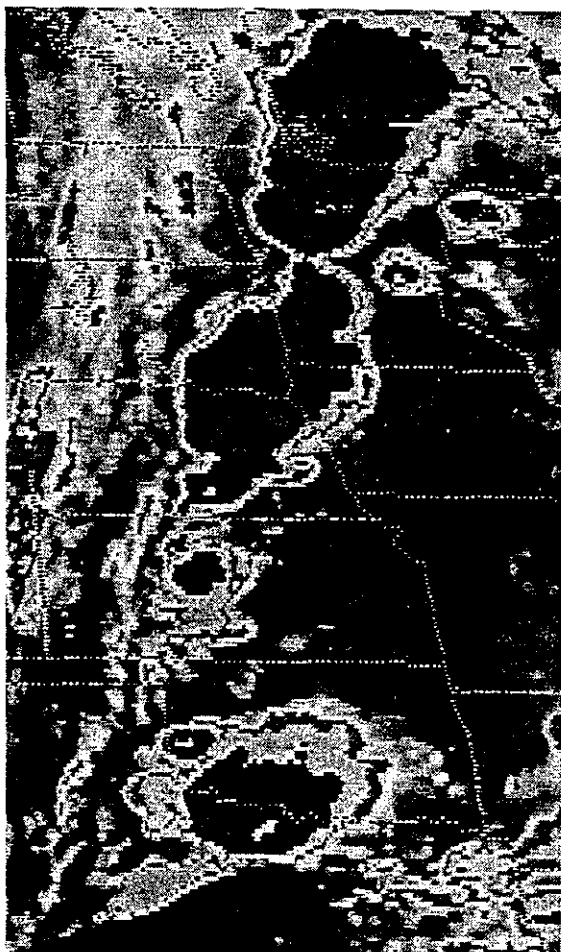
60 REPORTS
13 TORNADOES
1144-0113 CST



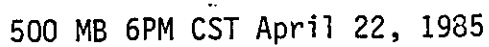
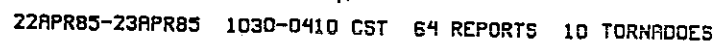
21APR85-22APR85 1110-0515 CST 96 REPORTS 23 TORNADOES

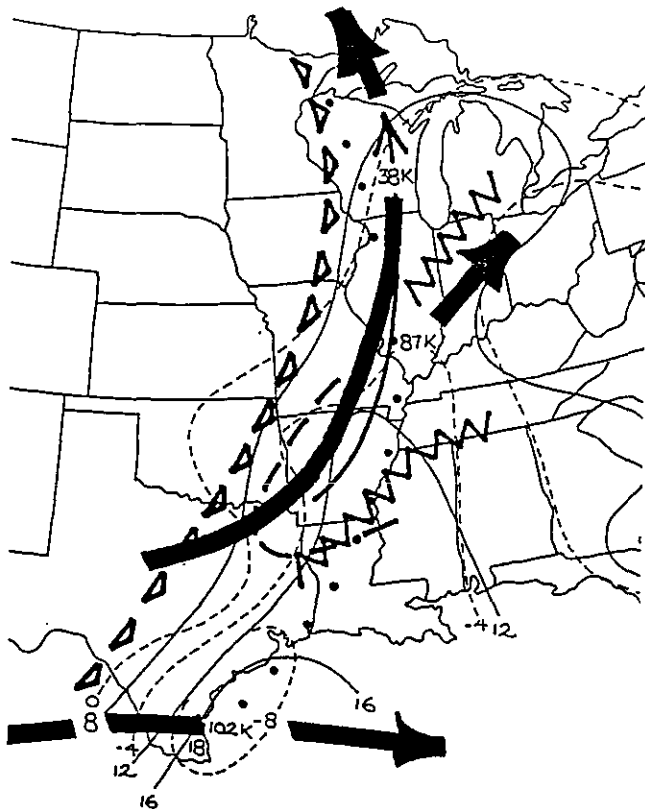


Surface 6PM CST April 21, 1985

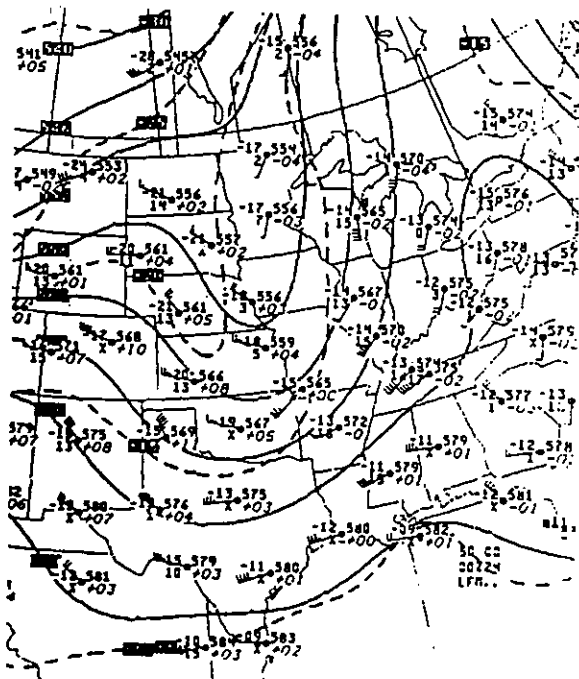


GOES 6PM CST April 21, 1985



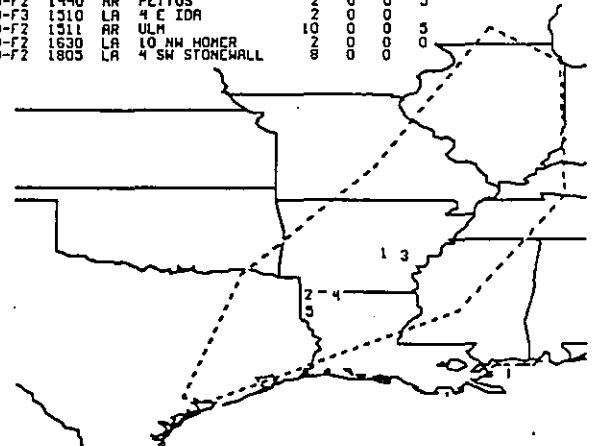


Composite 6PM CST April 23, 1985

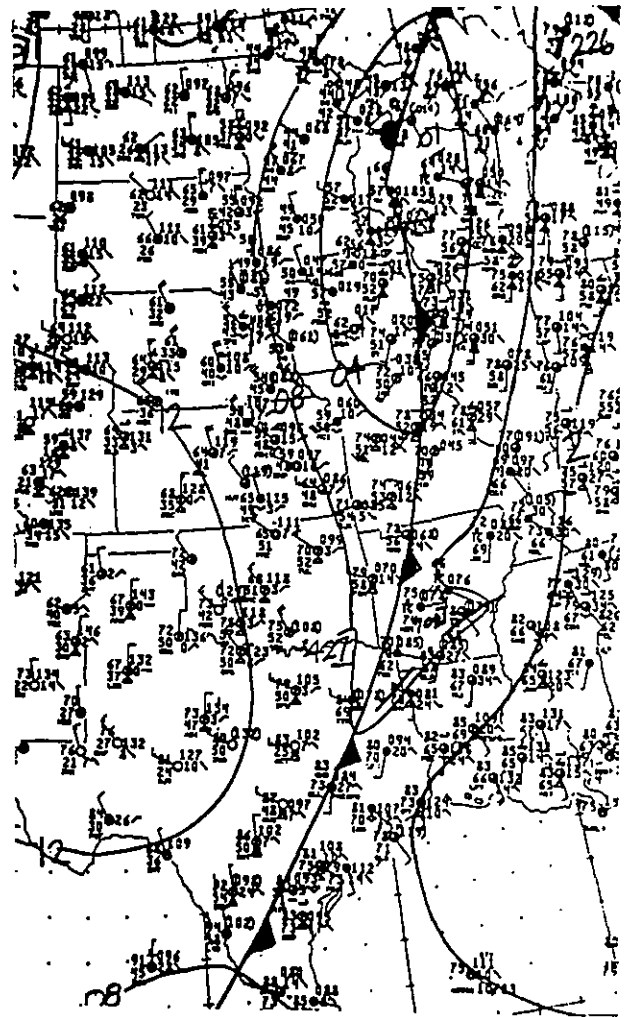


500 MB 6PM CST April 23, 1985

NO	EVENT	TIME	ST	LOCATION	PATH	KIL	INJ	DMS
1	TORNADO-F2	1440	AR	PETTUS	2	0	0	3
2	TORNADO-F3	1310	LA	4 E IDA	10	0	0	5
3	TORNADO-F2	1311	AR	ULM	10	0	0	5
4	TORNADO-F2	1630	LA	10 NM HOMER	8	0	0	0
5	TORNADO-F2	1805	LA	4 SW STONEWALL	8	0	0	0

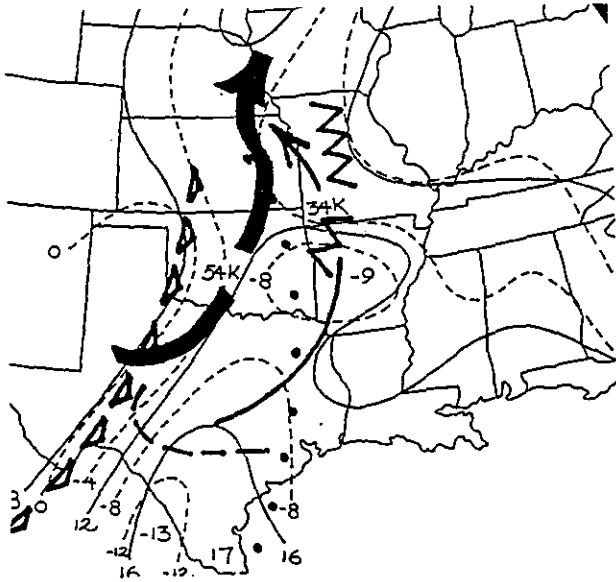


23APR85 1225-1953 CST 101 REPORTS 11 TORNADES

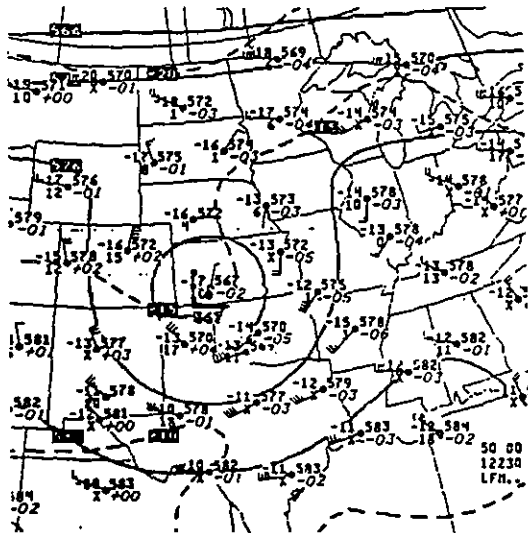


Surface 3PM CST April 23, 1985

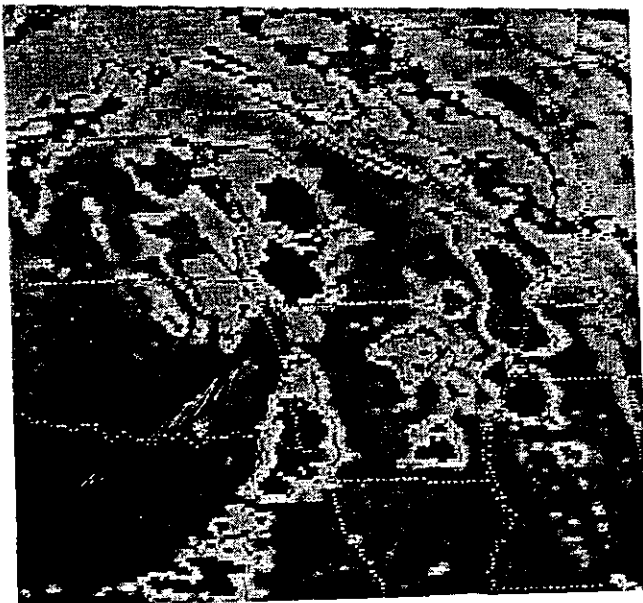
No. 13 April 30, 1985



Composite 6AM CST April 30, 1985

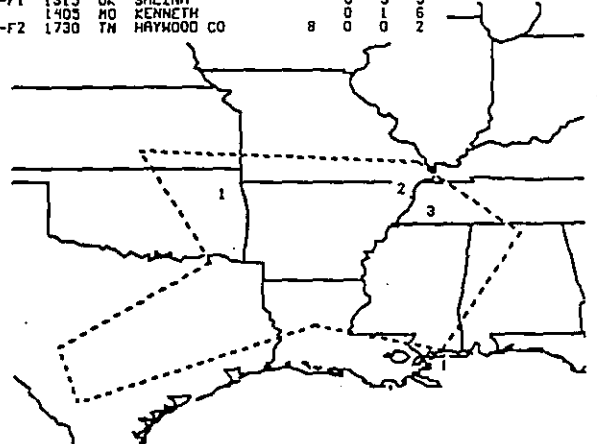


500 MB 6AM CST April 30, 1985

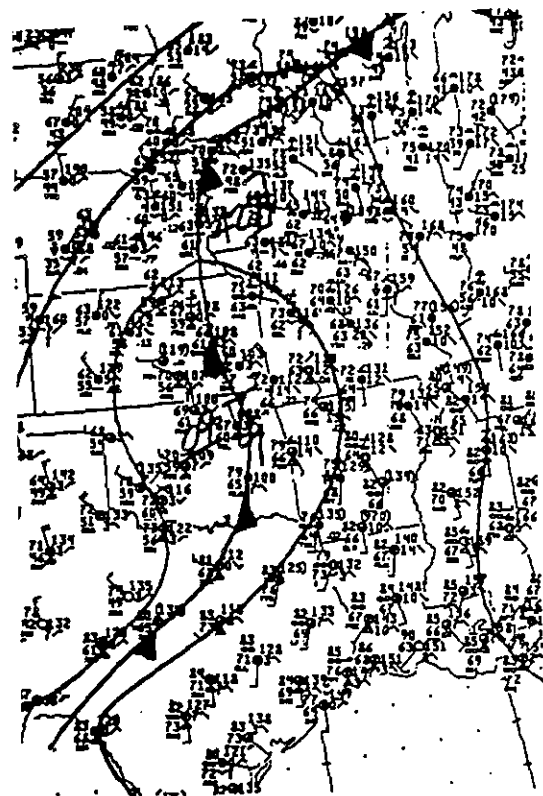


GOES 2PM CST April 30, 1985

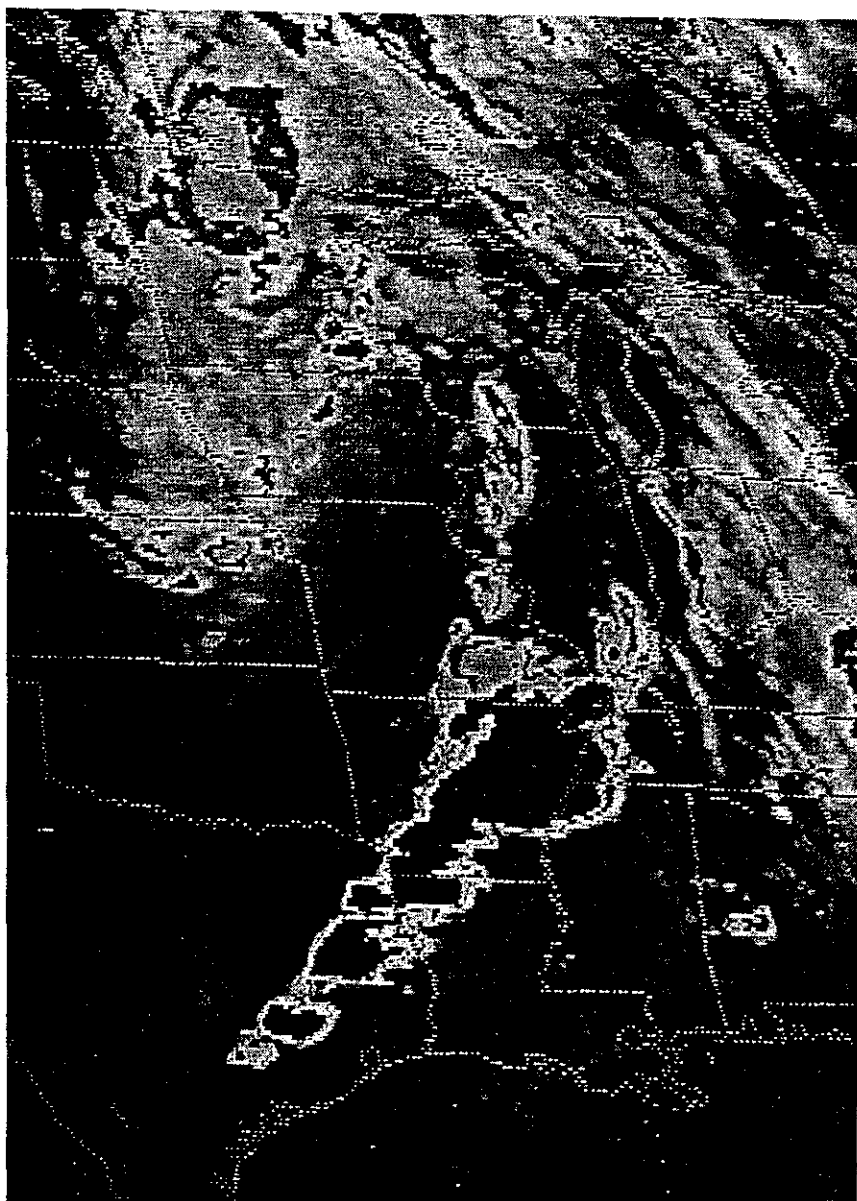
NO	EVENT	TIME	ST	LOCATION	PATH	KIL	INJ	DMG
1	TORNADO-F1	1315	OK	SALINA		0	3	3
2	GUST	1405	MO	KENNETH		0	1	6
3	TORNADO-F2	1730	YN	HAYWOOD CO		8	0	2



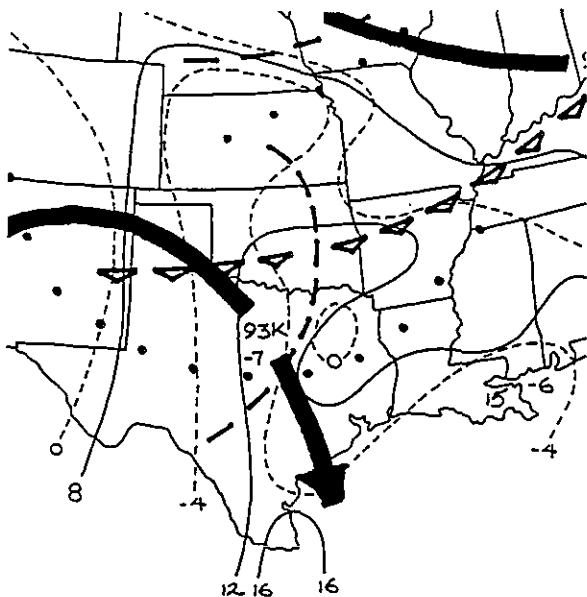
30APR85-01MAY85 0812-0114 CST 96 REPORTS 6 TORNADOES



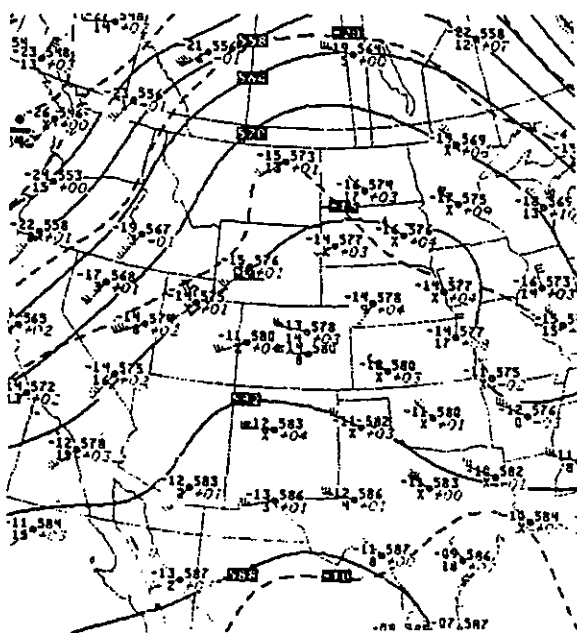
Surface Noon CST April 30, 1985



GOES 3PM CST April 23, 1985

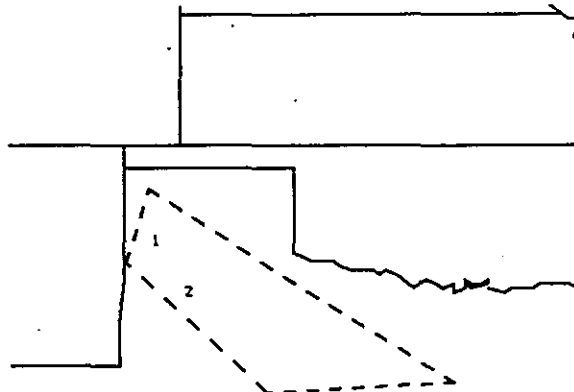


Composite 6PM CST May 7, 1985

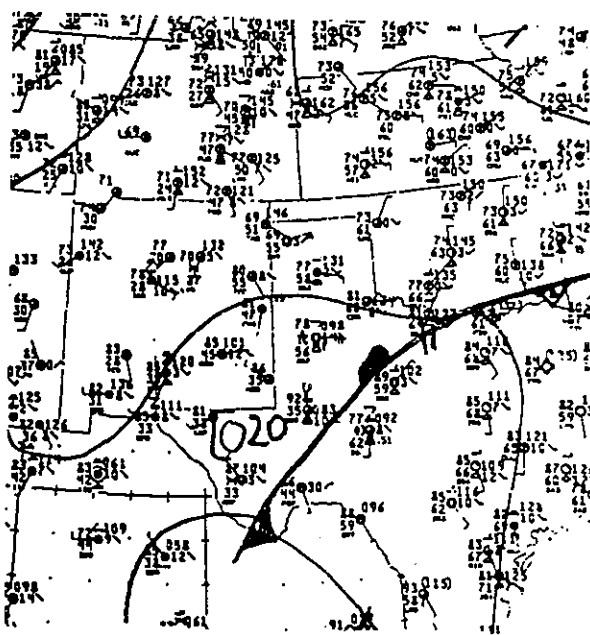


500 MB 6PM CST May 7, 1985

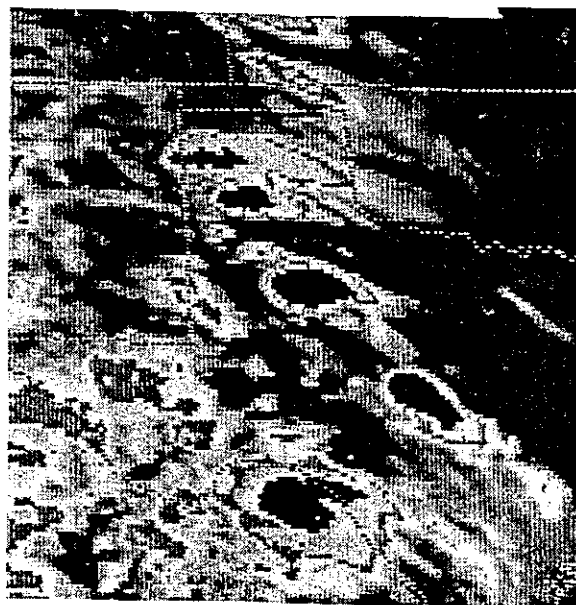
NO	EVENT	TIME	ST	LOCATION	PATH	KIL	INJ	DHG
1	HAIL	1.75	1910	TX	HEREFORD	0	0	6
2	HAIL	2.75	2214	TX	ABERNATHY	0	0	3



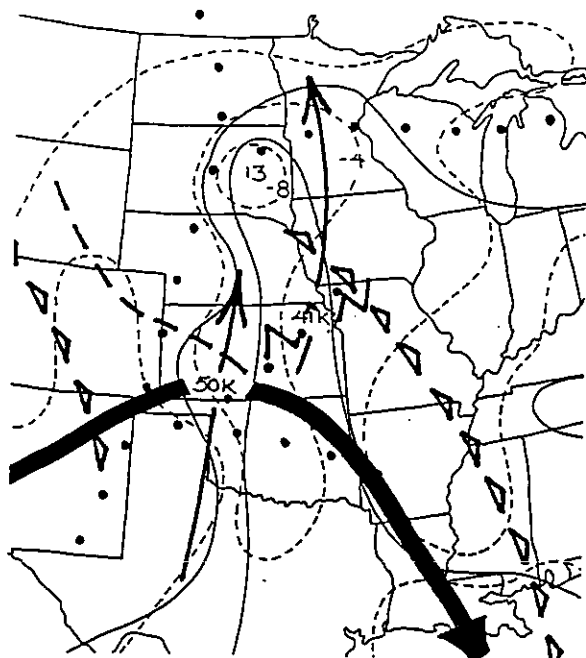
07MAY85-08MAY85 1755-0327 CST 19 REPORTS



Surface 6PM CST May 7, 1985

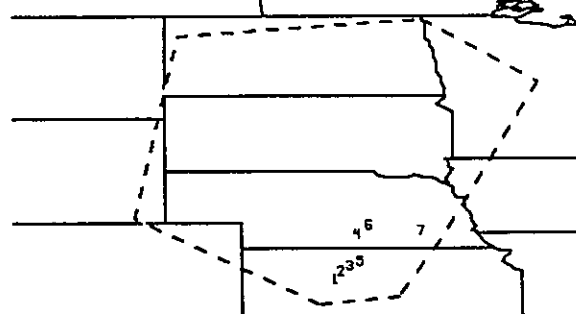


GOES 7PM CST May 7, 1985

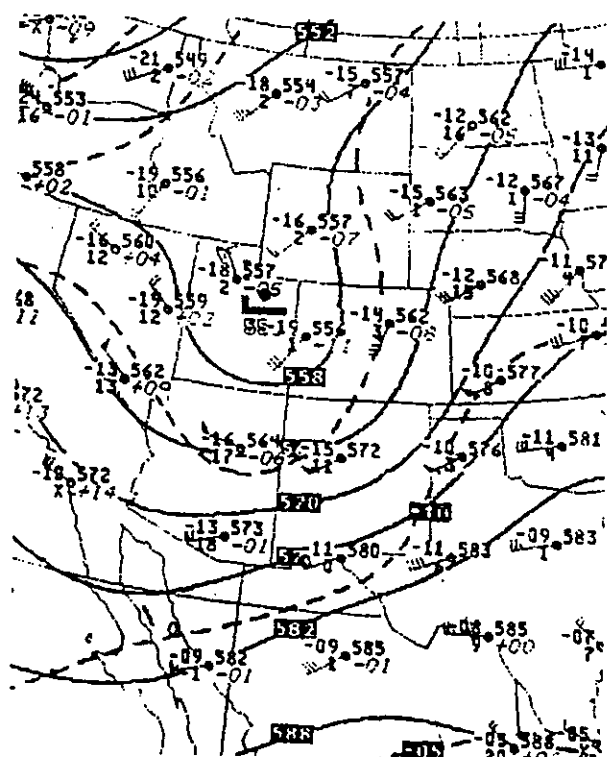


Composite 6PM CST May 10, 1985

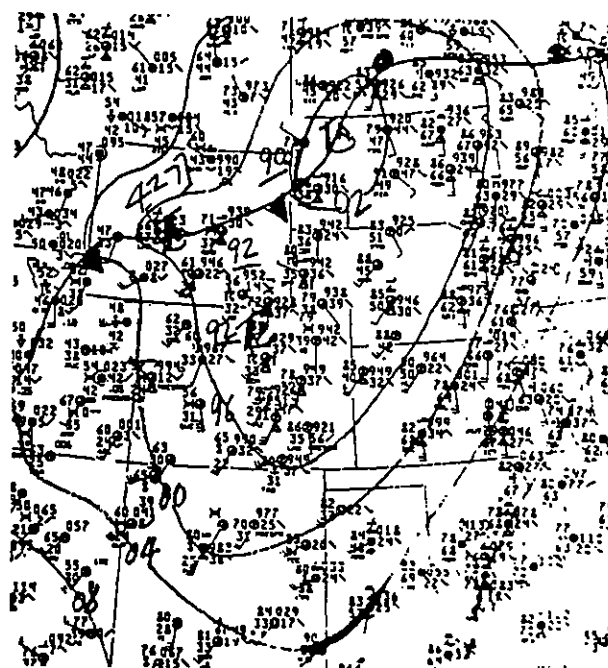
NO	EVENT	TIME	ST	LOCATION	PATH	KIL	INJ	DMG
1	TORNADO-F3	1310	KS	4 W ELLIS	10.0	0	0	3
2	TORNADO-F3	1350	KS	3 SW ZURICH	30.0	0	0	6
3	TORNADO-F4	1640	KS	WEBSTER	32.0	0	0	7
4	TORNADO-F3	1702	NE	3 NE KEARNEY	17.0	0	2	6
5	TORNADO-F4	1800	KS	3 SW AGRA	56.0	0	0	7
6	HAIL 3.00	1813	NE	BOELUS	0.0	0	0	4
7	TORNADO-F2	2155	NE	UTICA	0.5	0	4	6



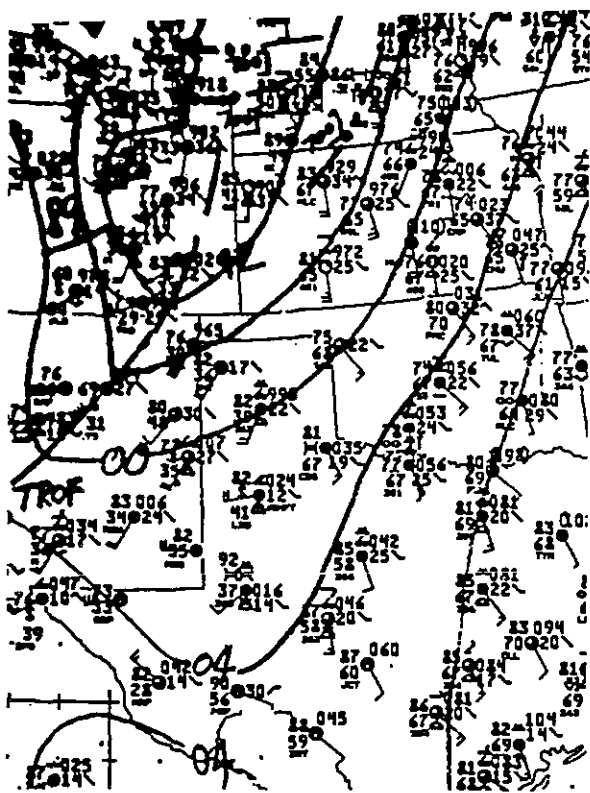
10MAY85 1330-2342 CST 62 REPORTS 16 TORNADOES



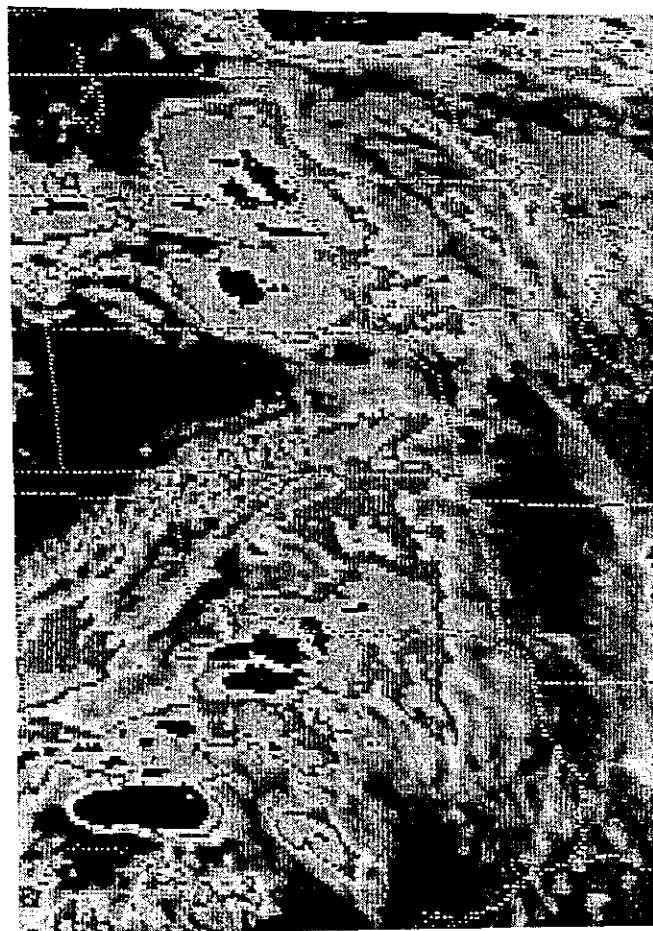
500 MB 6PM CST May 10, 1985



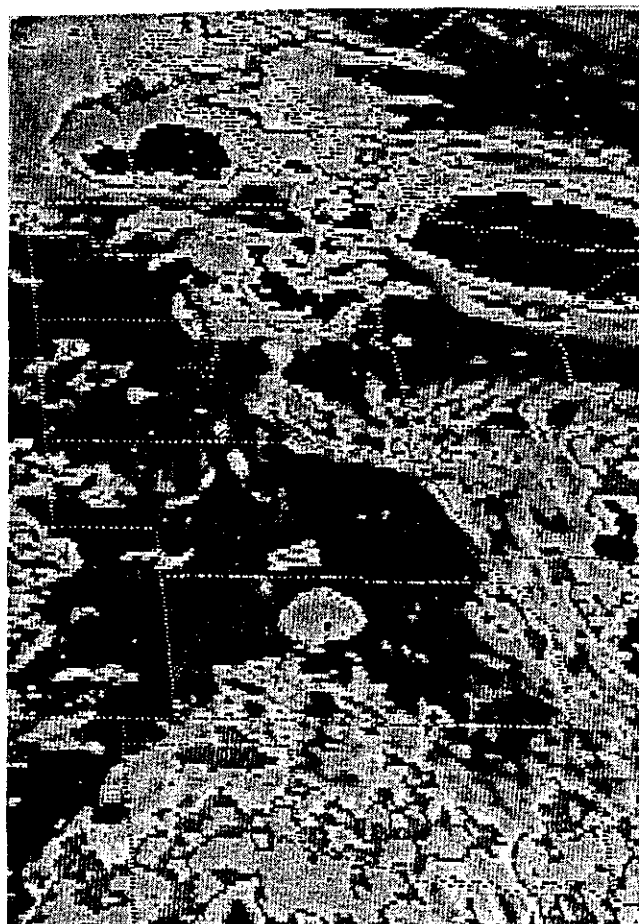
Surface 3PM CST May 10, 1985



Surface 6PM CST May 10, 1985

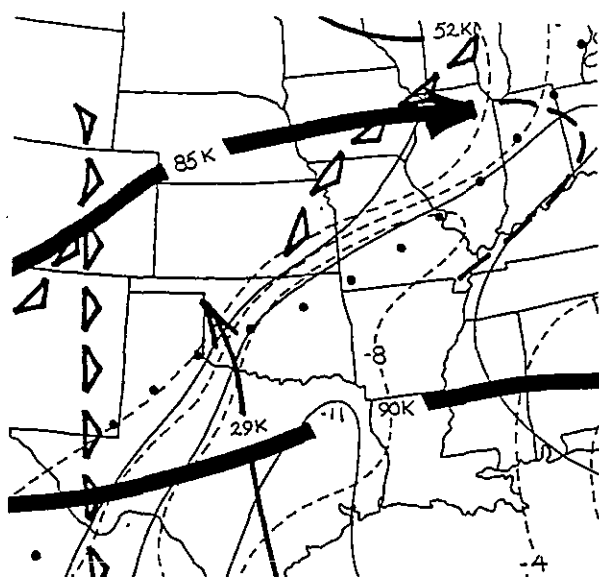


GOES 9PM CST May 10, 1985

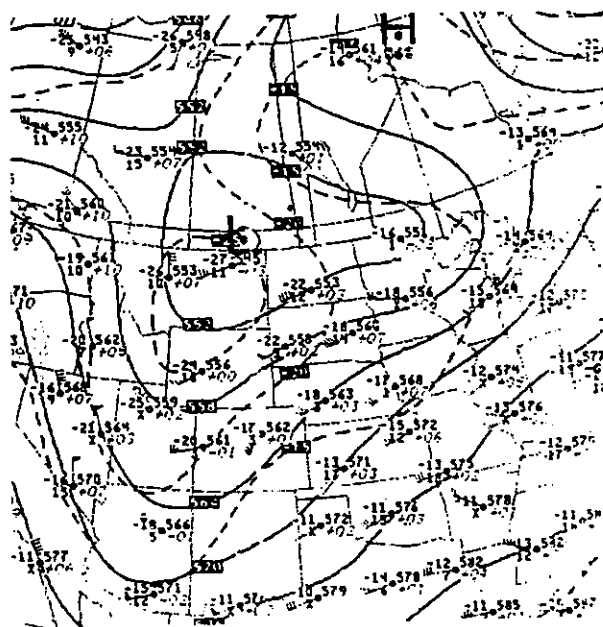


GOES 3PM CST May 10, 1985

No. 16 May 12, 1985

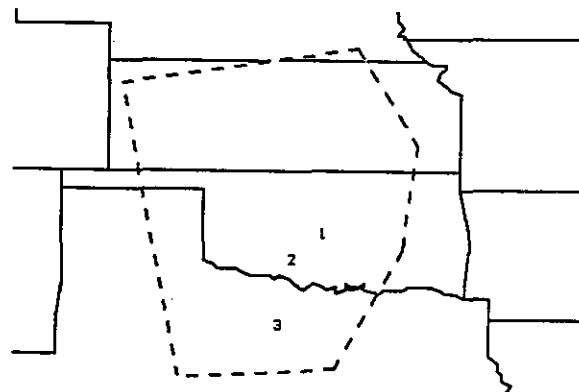


Composite 6PM CST May 12, 1985

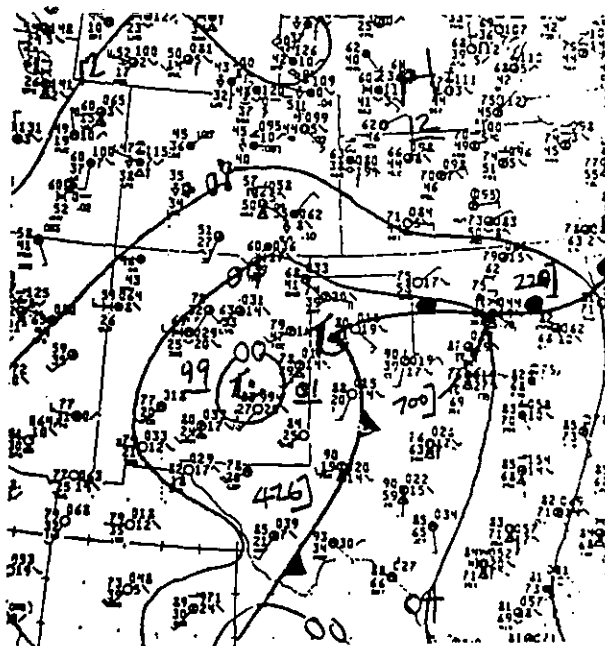


500 MB 6PM CST May 12, 1985

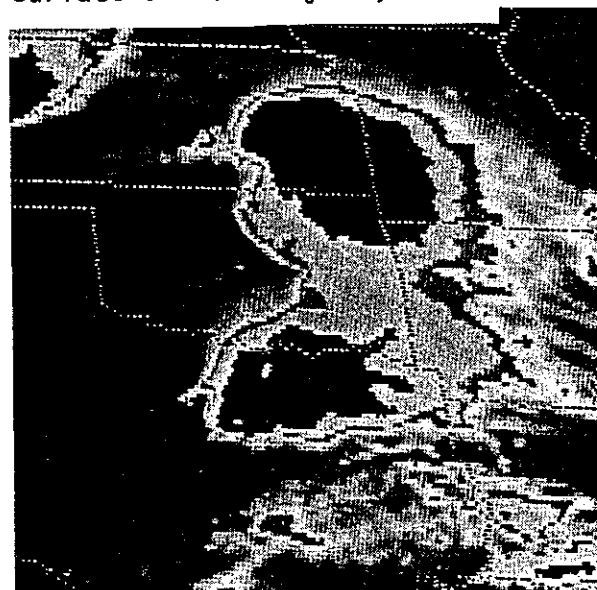
NO	EVENT	TIME	ST	LOCATION	PATH	KIL	INJ	DHG
1	HAIL	4.00	1800	OK	OKLAHOMA CITY			
2	HAIL	3.00	1841	OK	STERLING			
3	6 86 MPH	1900	TX	POSSUM KIN	600M			



12MAY85-13MAY85 1430-0535 CST 63 REPORTS 5 TORNADOES

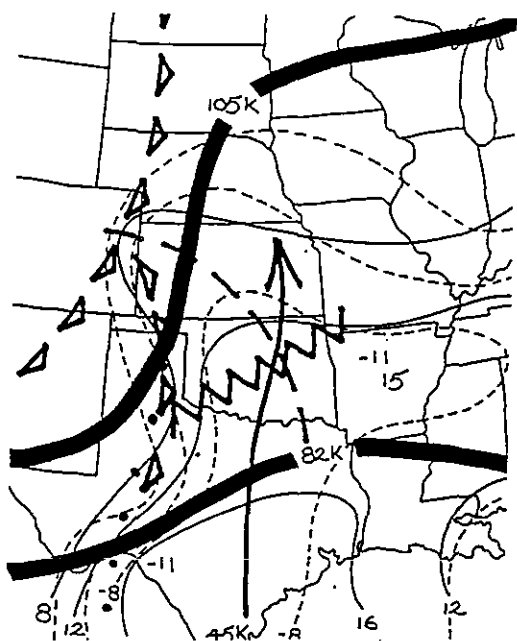


Surface 6PM CST May 12, 1985



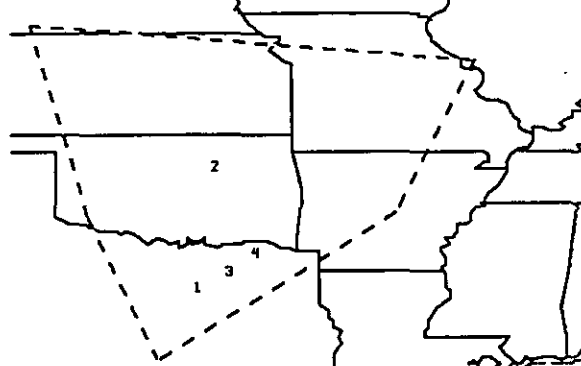
GOES 11PM CST May 12, 1985

No. 17 May 13, 1985

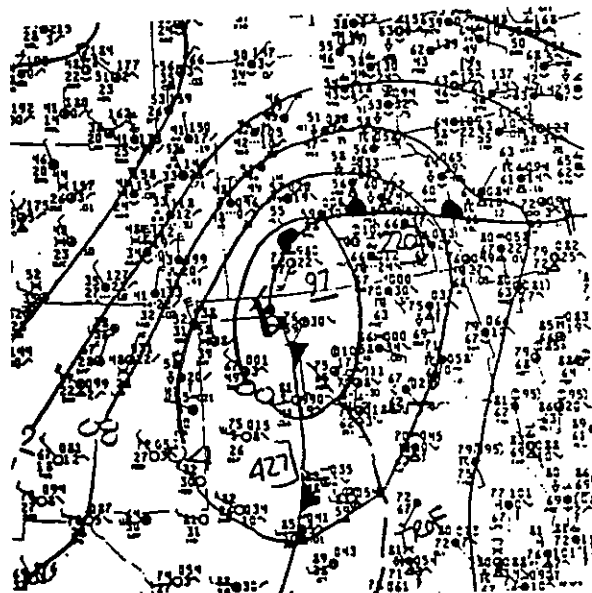


Composite 6AM CST May 13, 1985

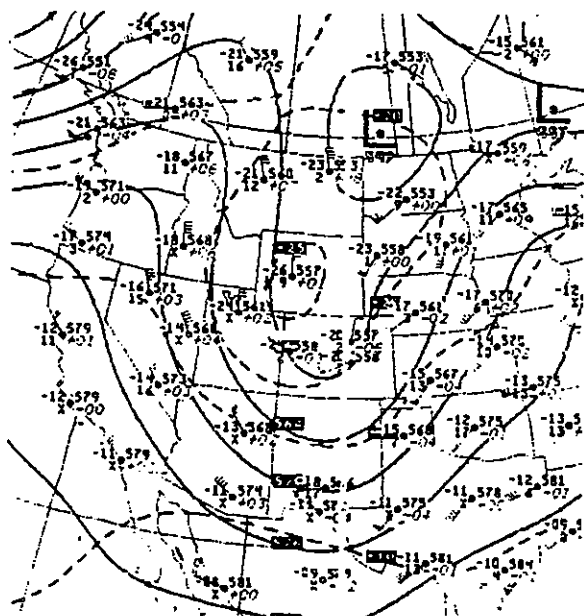
NO	EVENT	TIME	ST	LOCATION	PATH	KIL	INJ	DMG
1	TORNADO-F2	1042	TX	DE SOTO	4.5	0	16	6
2	HAIL	4.50	OK	HANNFORD				
3	TORNADO-F2	1130	TX	GREENVILLE	8.0	0	23	6
4	TORNADO-F2	1230	TX	PARIS	4.0	0	8	6



13MAY85 0720-2210 CST 65 REPORTS 11 TORNADOES



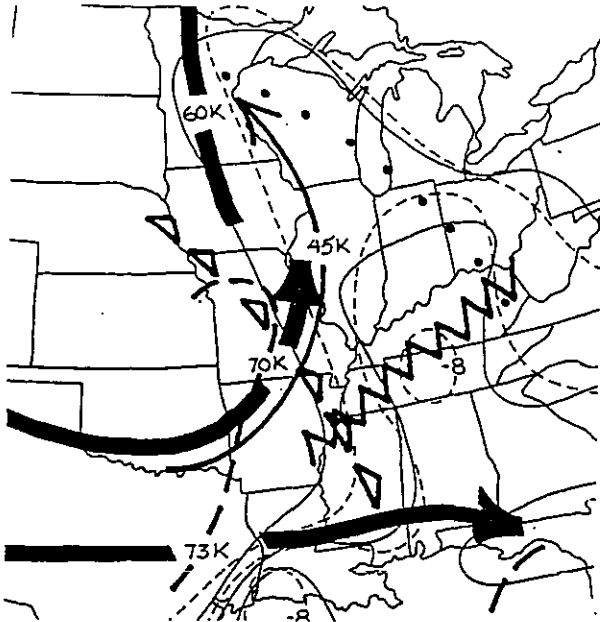
Surface Noon CST May 13, 1985



500 MB 6AM CST May 13, 1985

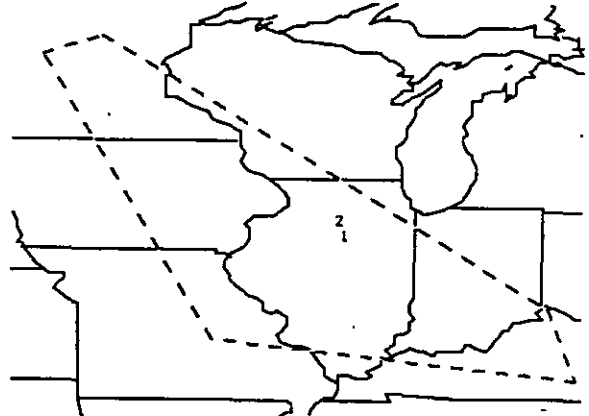


GOES 10AM CST May 13, 1985

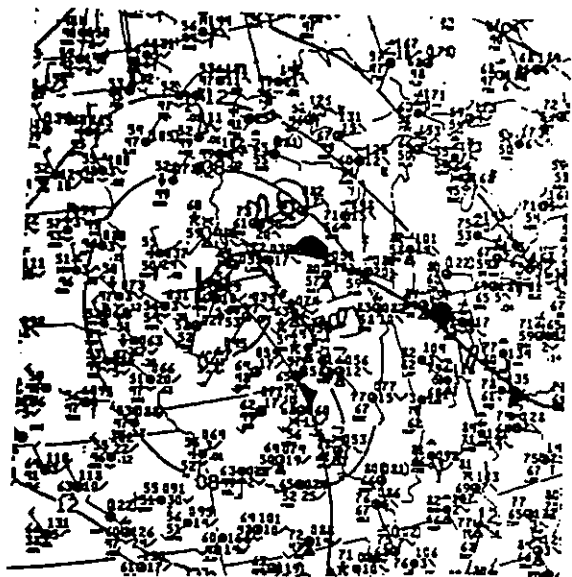


Composite 6PM CST May 14, 1985

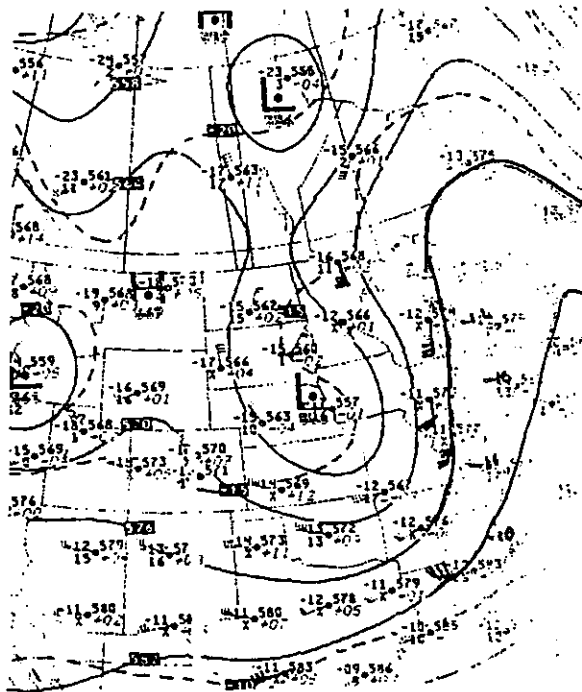
NO	EVENT	TIME	ST	LOCATION	PATH	KIL	INJ	DMS
1	6 100 MPH	1815	IL	6 E MENDOTA				
2	WIND GUST	1830	IL	MENDOTA		0	14	7



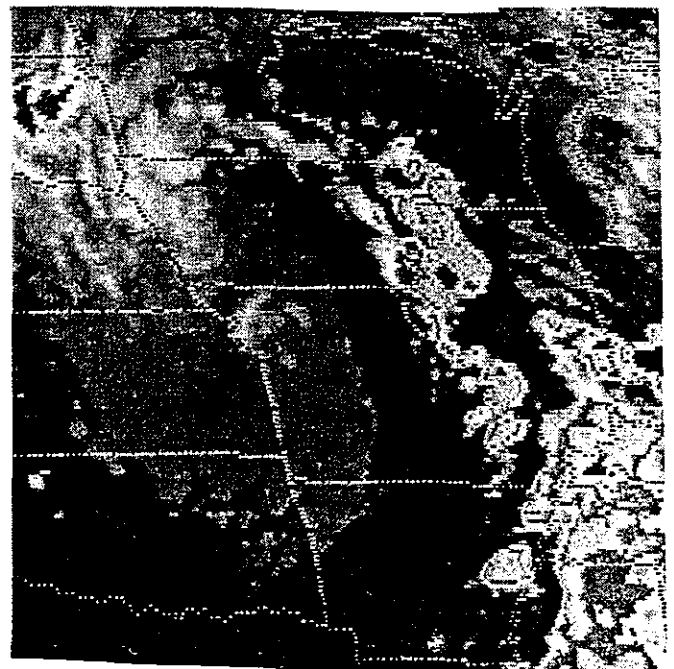
14MAY85 1420-2355 CST 58 REPORTS 4 TORNADOES



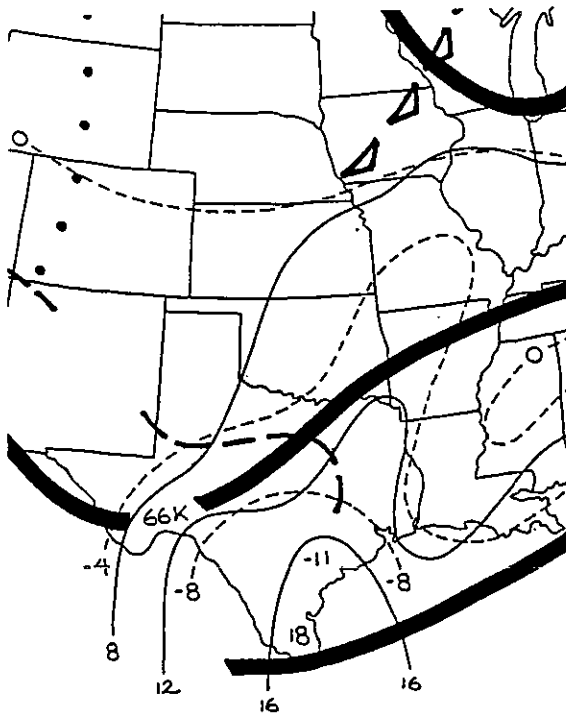
Surface 6PM CST May 14, 1985



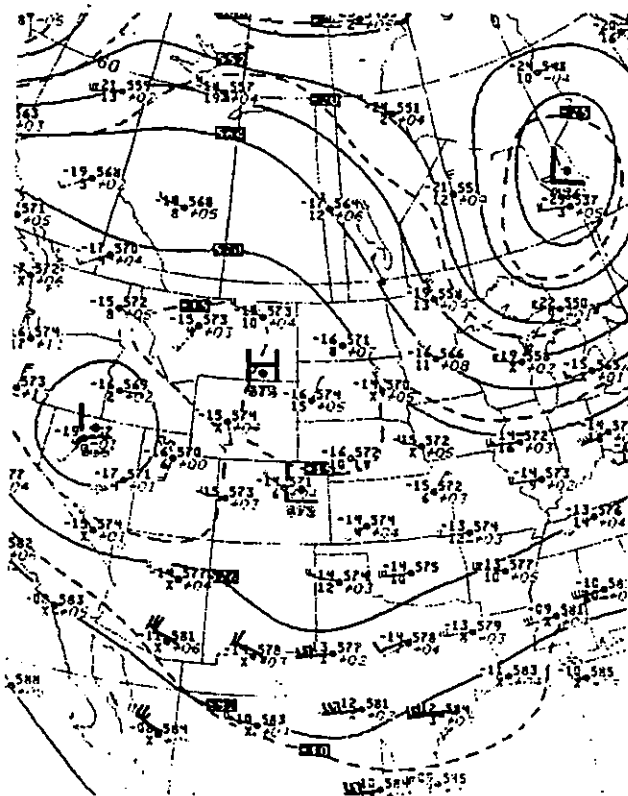
500 MB 6PM CST May 14, 1985



GOES 10PM CST May 14, 1985

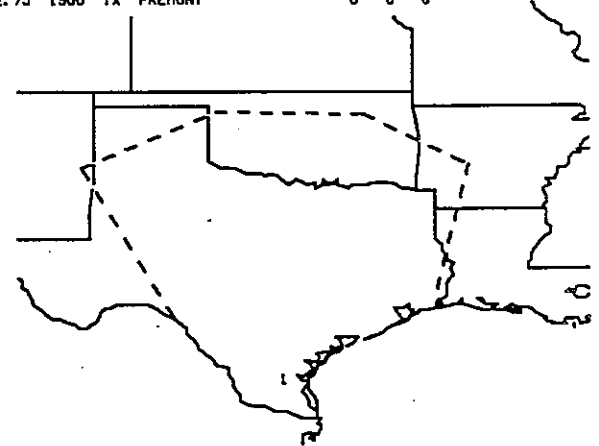


Composite 6PM CST May 20, 1985

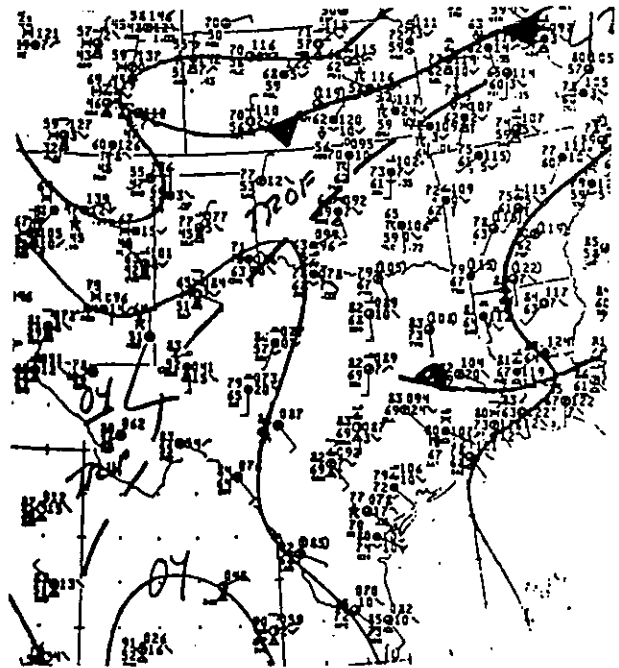


500 MB 6PM CST May 20, 1985

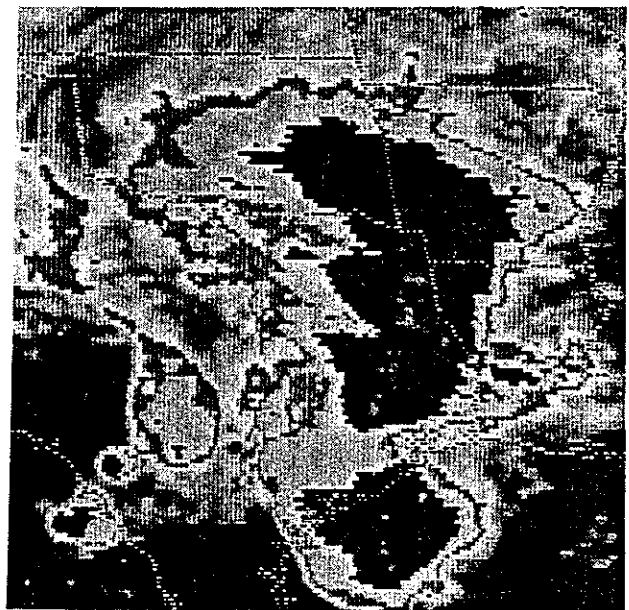
NO	EVENT	TIME	ST	LOCATION	PATH	KIL	INJ	DMS
1	HAIL	2.75	1900	TX	PREMONT	0	0	6



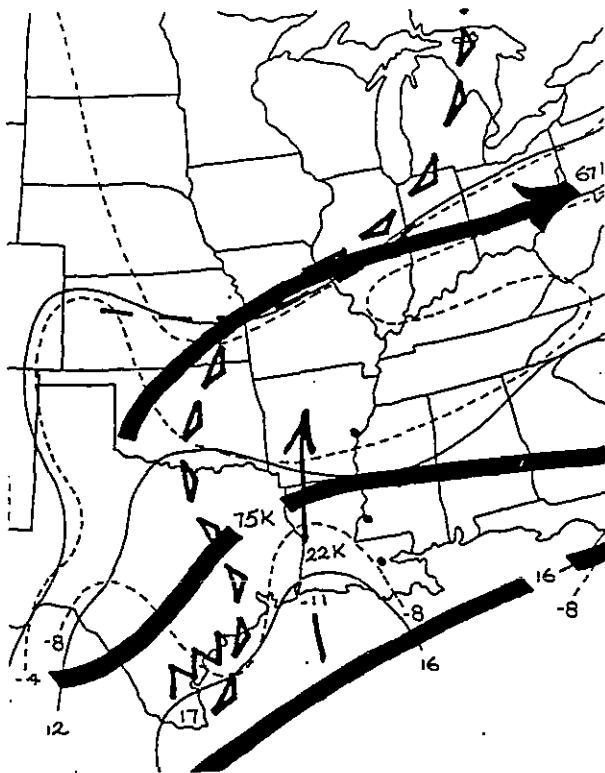
20MAY85-21MAY85 1200-0500 CST 60 REPORTS 11 TORNADOES



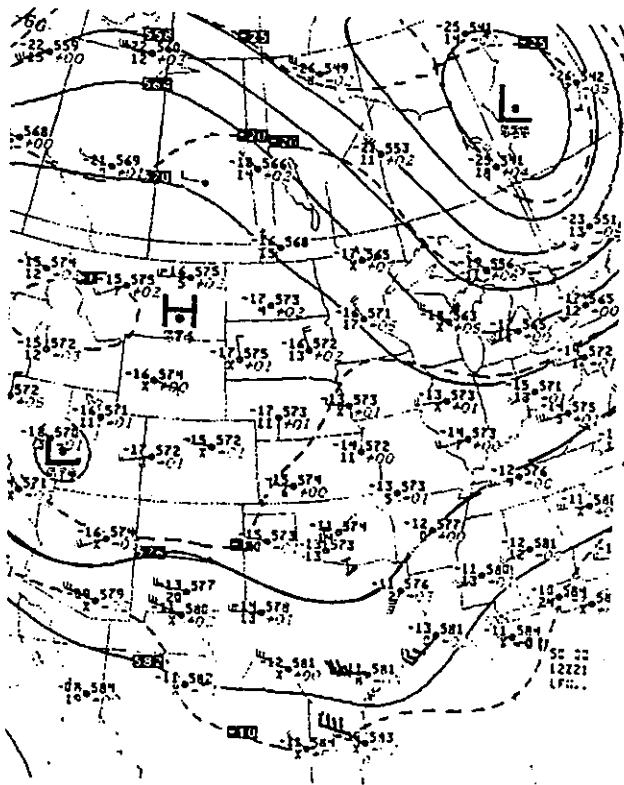
Surface 6PM CST May 20, 1985



GOES 11PM CST May 20, 1985

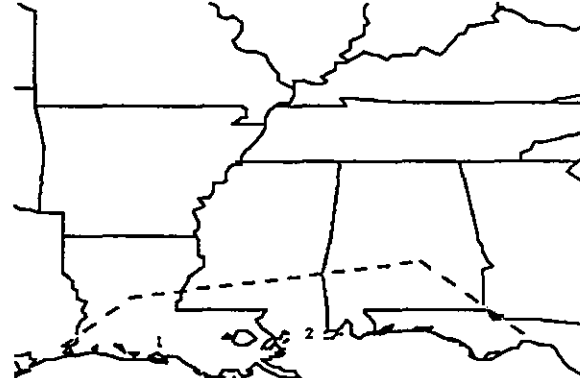


Composite 6AM CST May 21, 1935

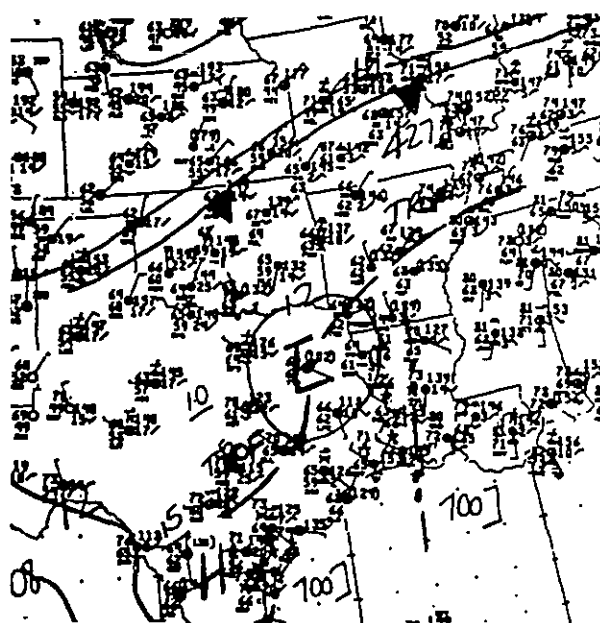


500 MB 6AM CST May 20., 1935

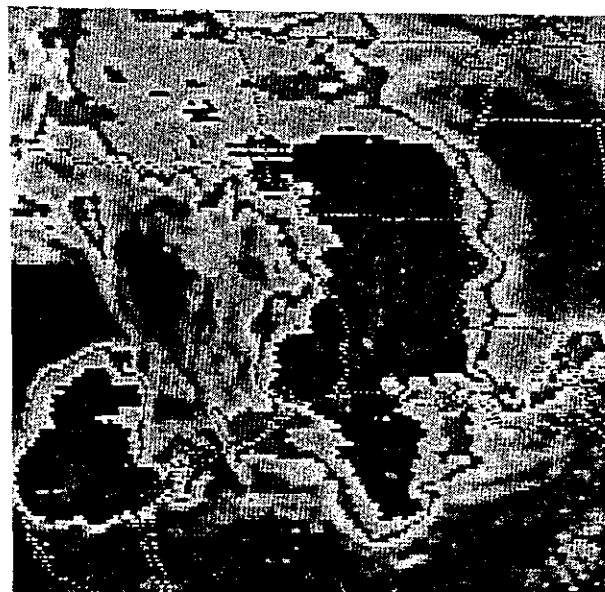
NO	EVENT	TIME	ST	LOCATION	PATH	KIL	INJ	DWG
1	670 MPH	0830	LA	SRN LOUISIANA		2	7	3
2	TORNADO-F2	1410	MS	OCEAN SPRINGS	3.5	0	0	3



21MAY85 0720-1757 CST 41 REPORTS 5 TORNADOES

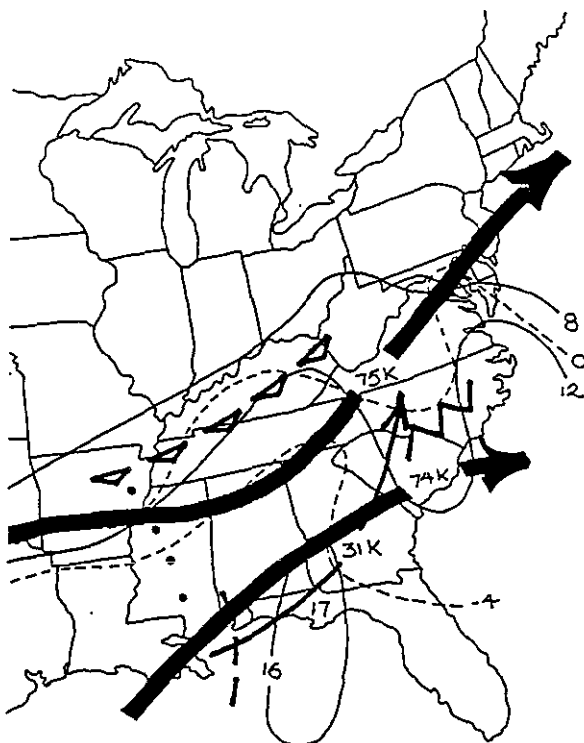


Surface 9AM CST May 21, 1985



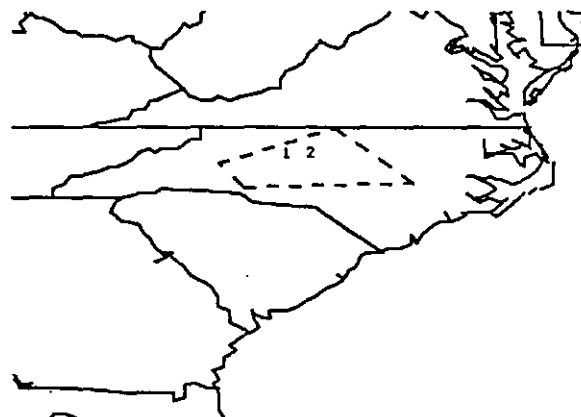
GOES 8AM CST May 21, 1985

No. 21 May 22, 1985

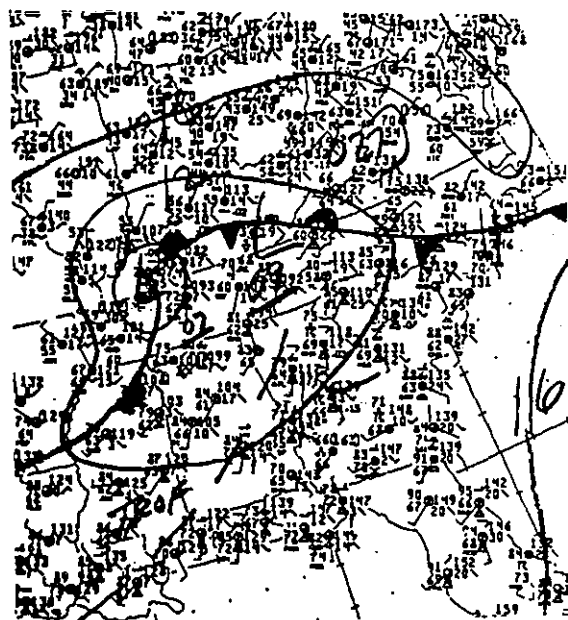


Composite 6PM CST May 22, 1985

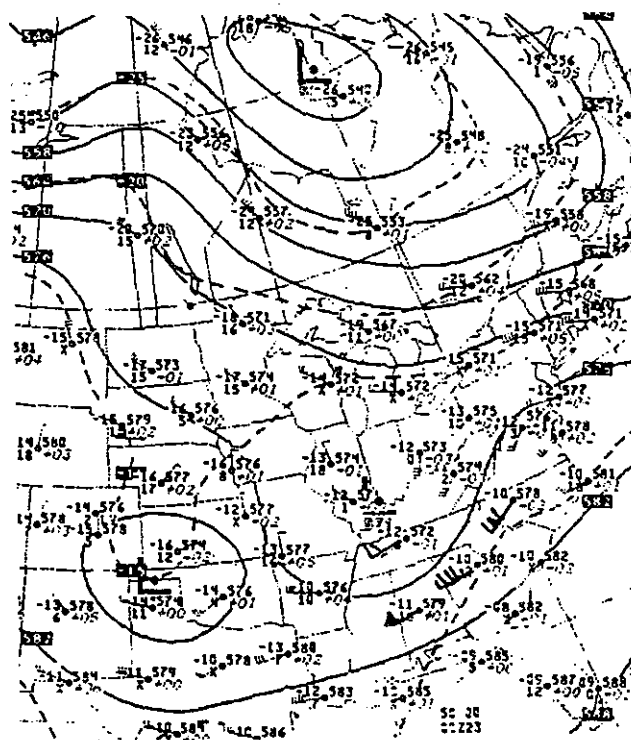
NO	EVENT	TIME	ST	LOCATION	PATH	KIL	INJ	DMG
1	TORNADO-F3	1630	NC	WINSTON-SALEM	3.5	0	0	6
2	HAIL	2.75	NC	SWRN GUILFORD CO		0	1	6



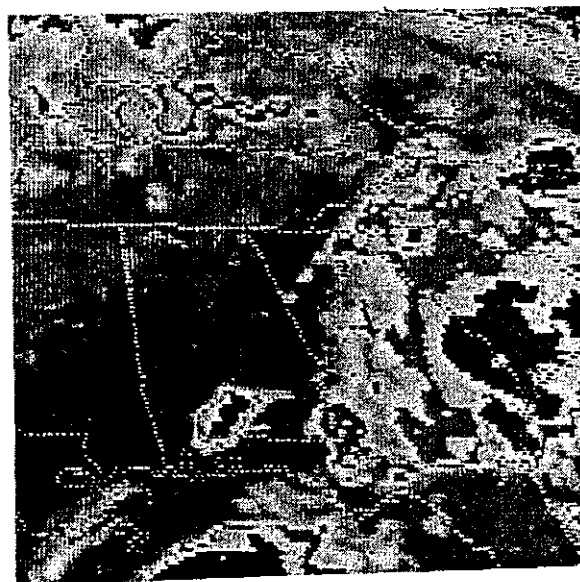
22MAY85 1400-1925 CST 15 REPORTS 1 TORNADO



Surface 3PM CST May 22, 1985

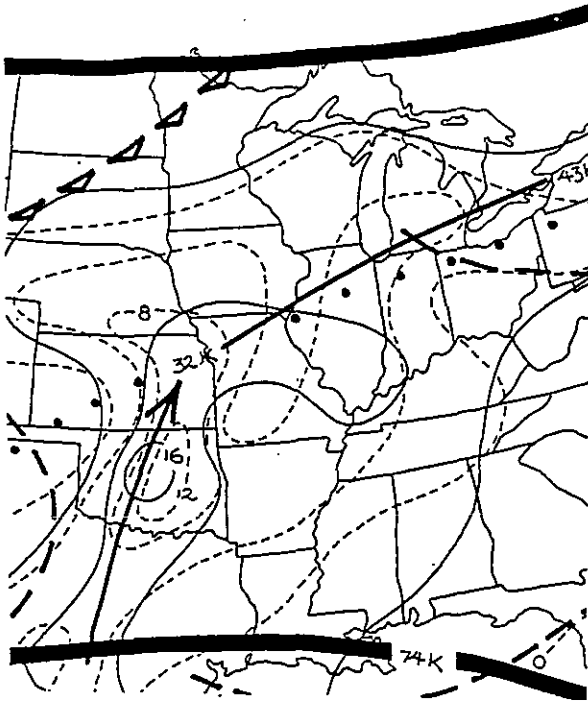


500 MB 6PM CST May 22, 1985

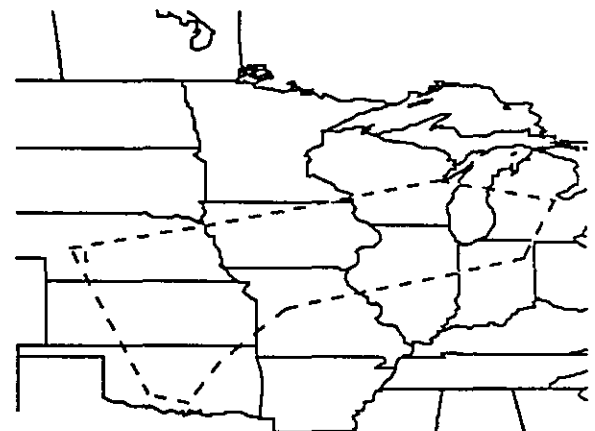


GOES 5PM CST May 22, 1985

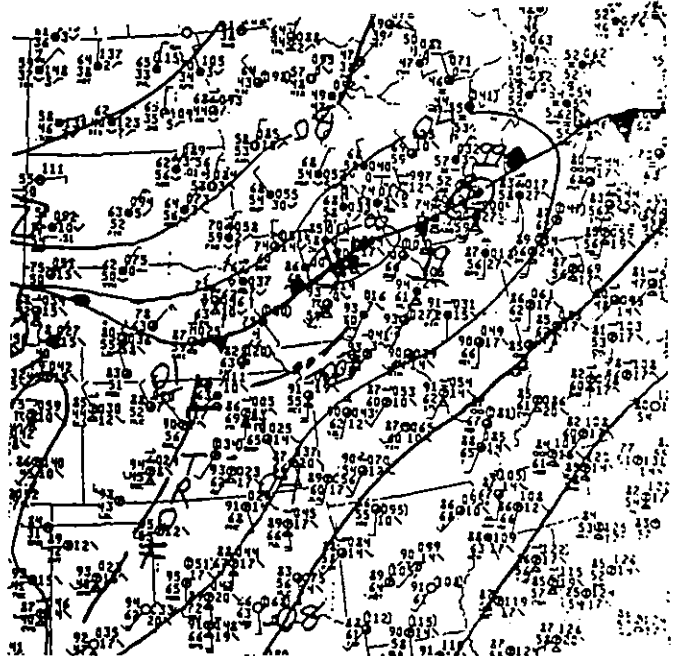
NO	EVENT	TIME	ST	LOCATION	PATH	KIL	INJ	DMS
1	HAIL	3.00	NE	8 NW NORTH PLATTE		0	0	5



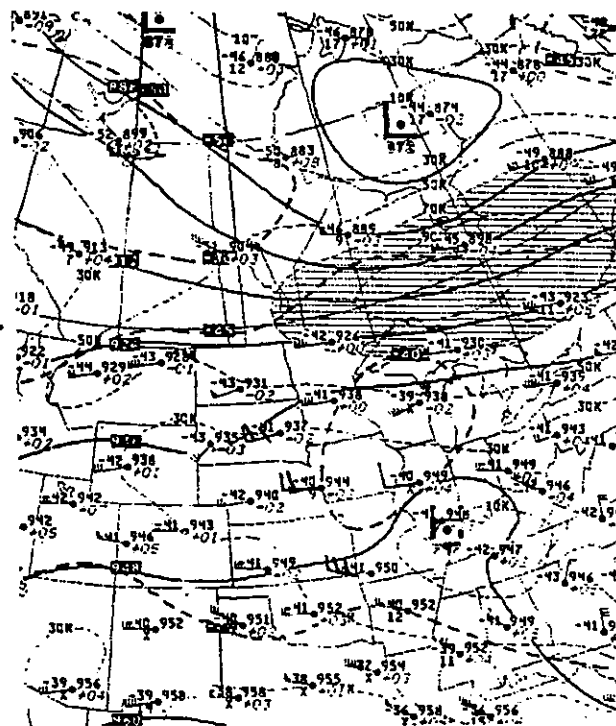
Composite 6PM CST May 26, 1985



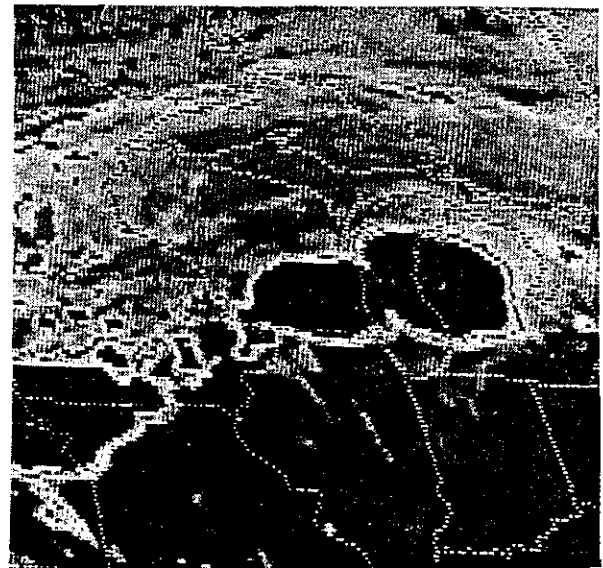
26MAY85-27MAY85 1315-0220 CST 89 REPORTS 6 TORNADOES



Surface 3PM CST May 26, 1985



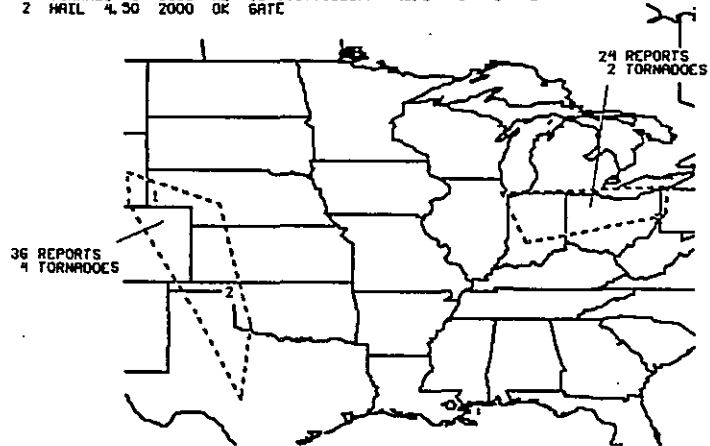
300 MB 6PM CST May 26, 1985



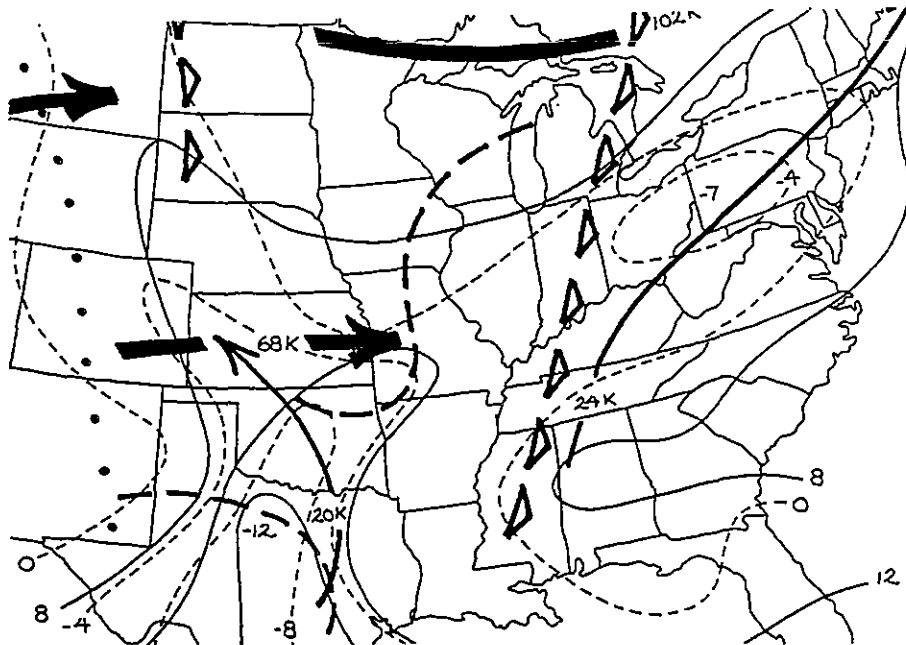
GOES 4PM CST May 26, 1985

No. 23 May 27, 1935

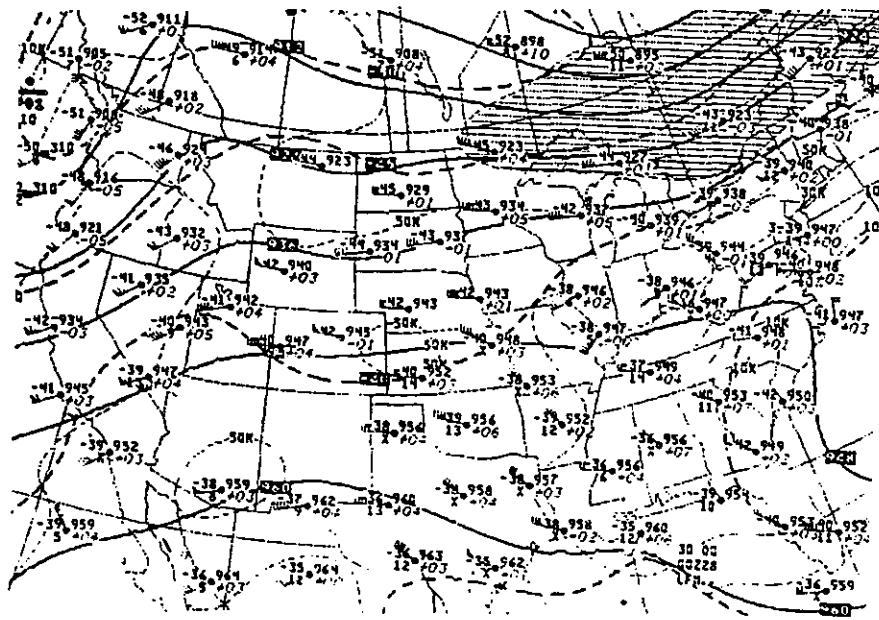
NO	EVENT	TIME	ST	LOCATION	PATH	KIL	INJ	DMS
1	TORNADO-F3	1608	NE	10 SCOTTSBLUFF	48.0	0	0	6
2	HAIL	4.30	2000	OK	GATE			



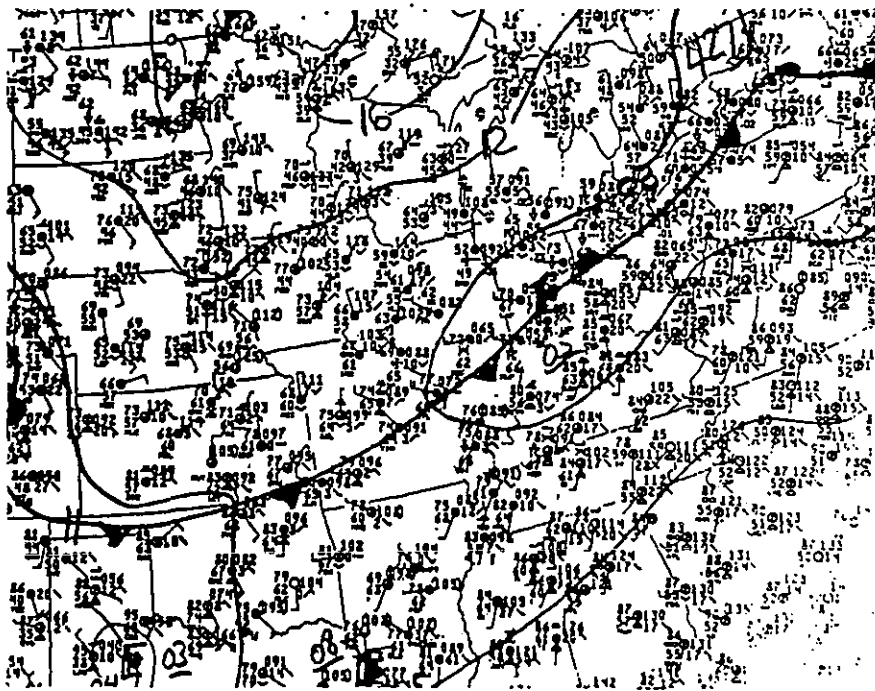
27MAY85-28MAY85 0808-0145 CST 60 REPORTS 6 TORNADOES



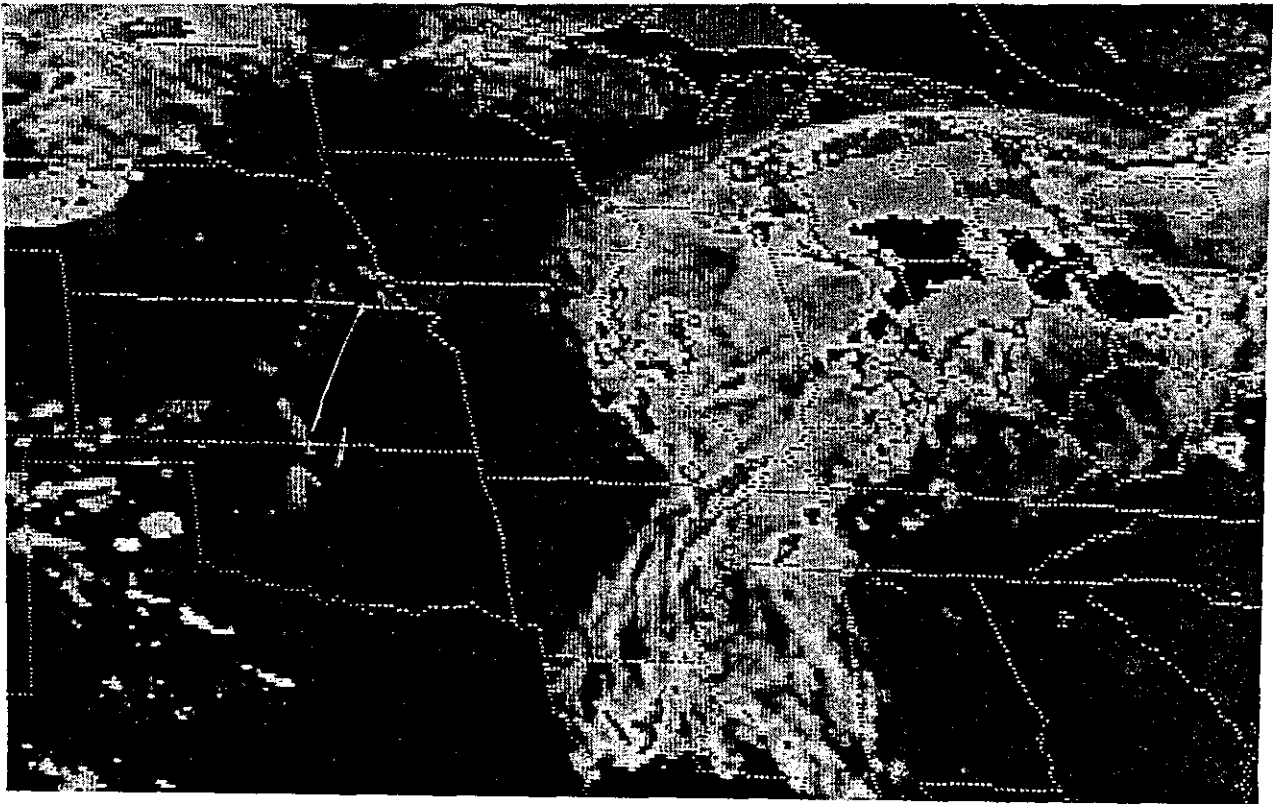
Composite 6PM CST May 27, 1935



300 MB 6PM CST May 27, 1935

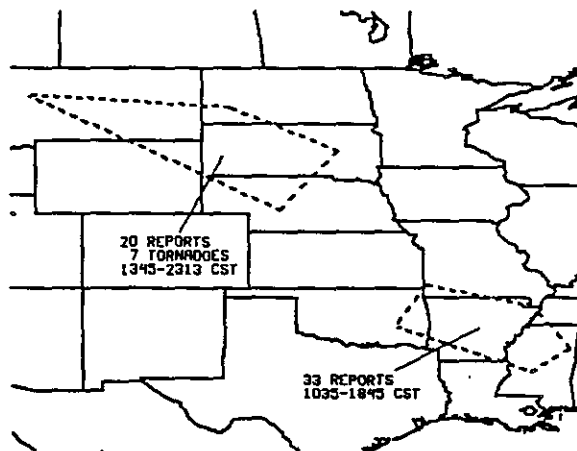


Surface 3PM CST May 27, 1985

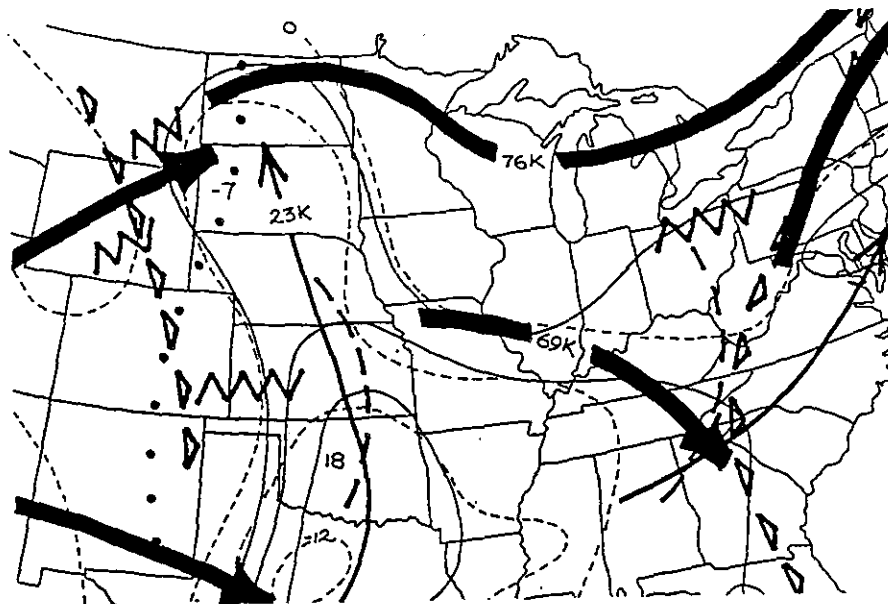


GOES 4PM CST May 27, 1985

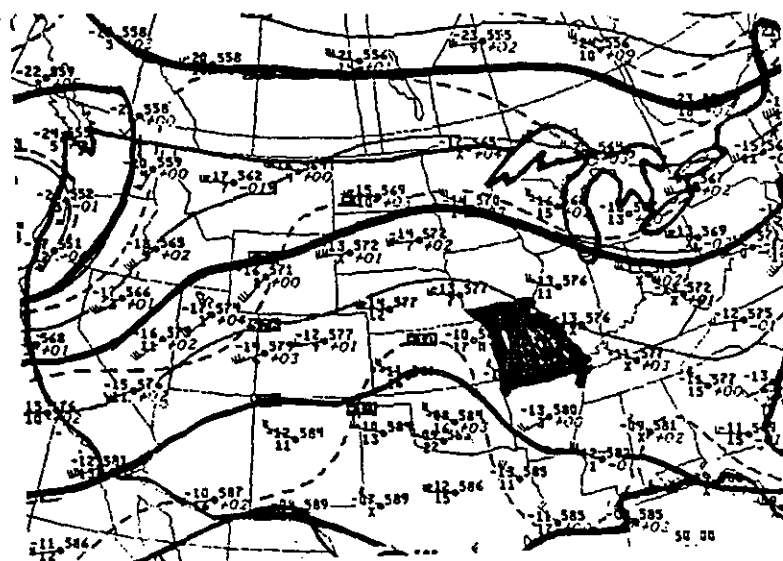
No. 24 May 28, 1935



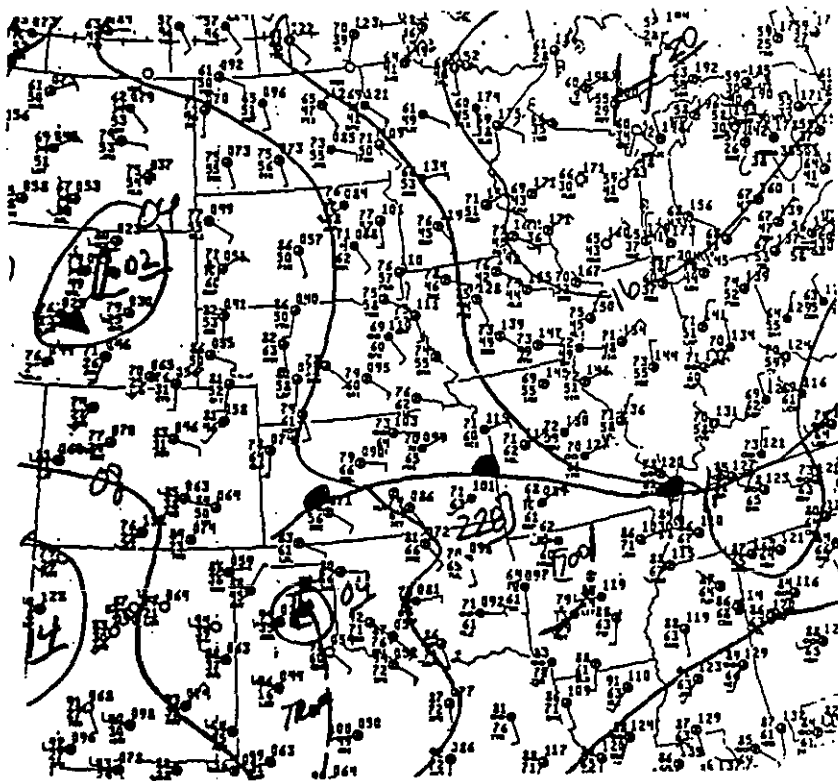
28MAY85 1035-2313 CST 53 REPORTS 7 TORNADOES



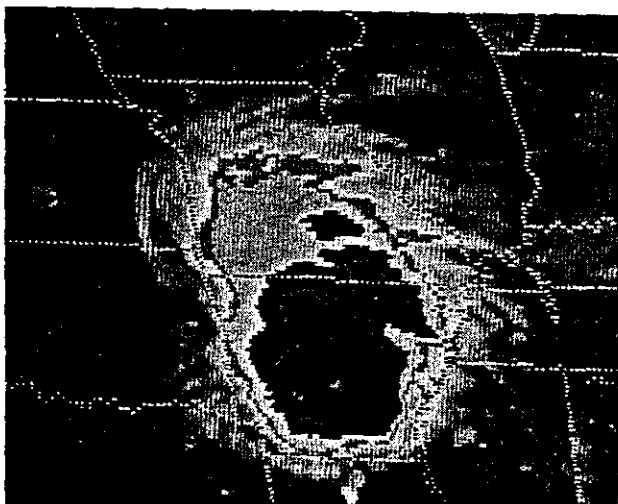
Composite 6PM CST May 28, 1985



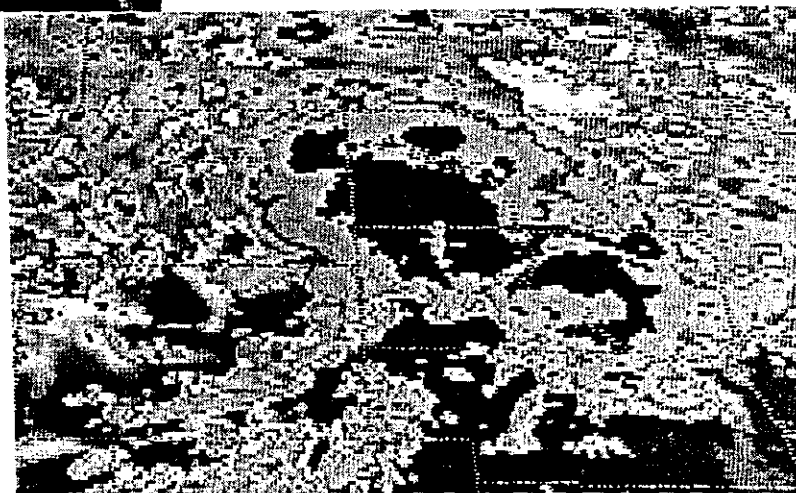
500 MB 6PM CST May 28, 1985



Surface 2PM CST May 28, 1985



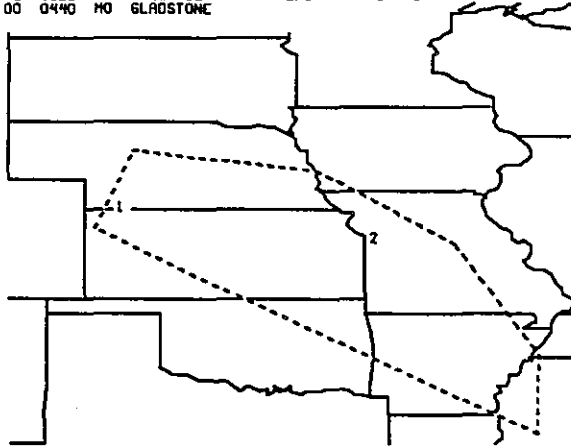
GOES 3PM CST May 28, 1985



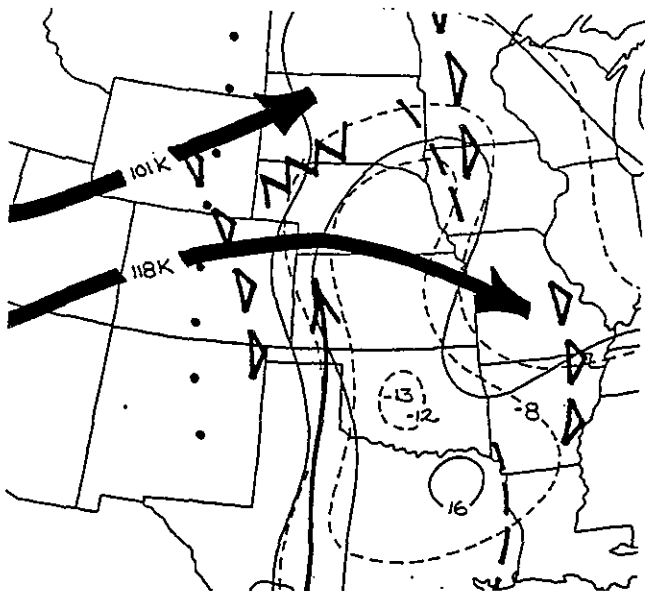
GOES 7:30PM CST May 28, 1985

No. 25 May 29, 1985

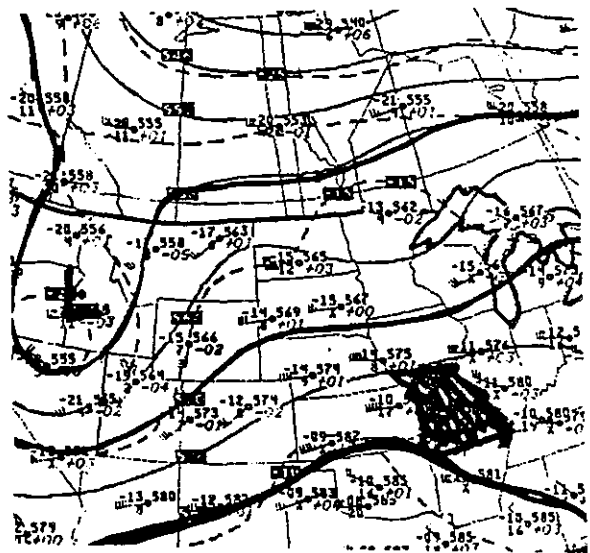
NO	EVENT	TIME	ST	LOCATION	PATH	KIL	INJ	DWG
1	TORNADO-F2	1925	MO	PALISADE	2.0	0	0	6
2	HAIL	0440	MO	GLADSTONE				



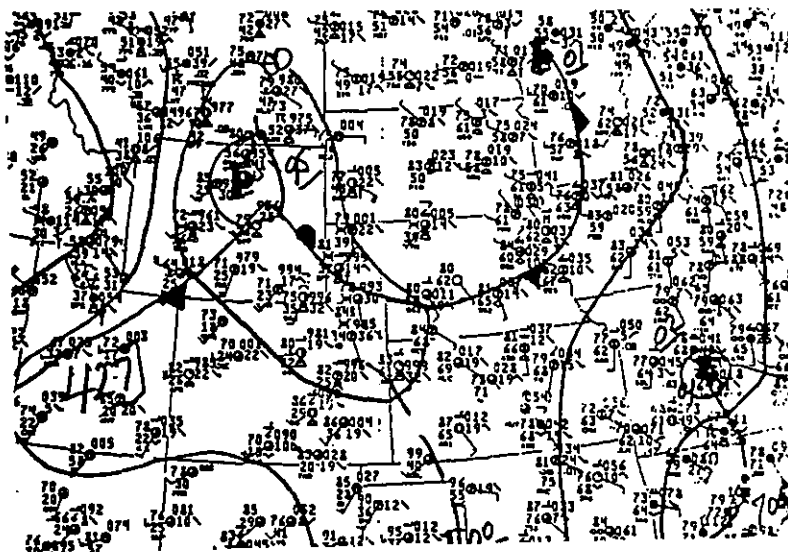
29MAY85-30MAY85 0700-0530 CST 51 REPORTS 5 TORNADOES



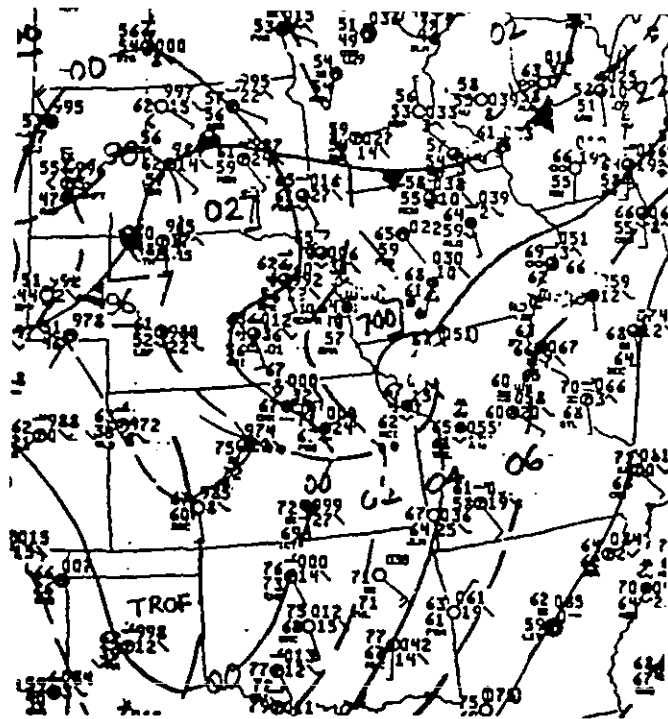
Composite 6PM CST May 29, 1985



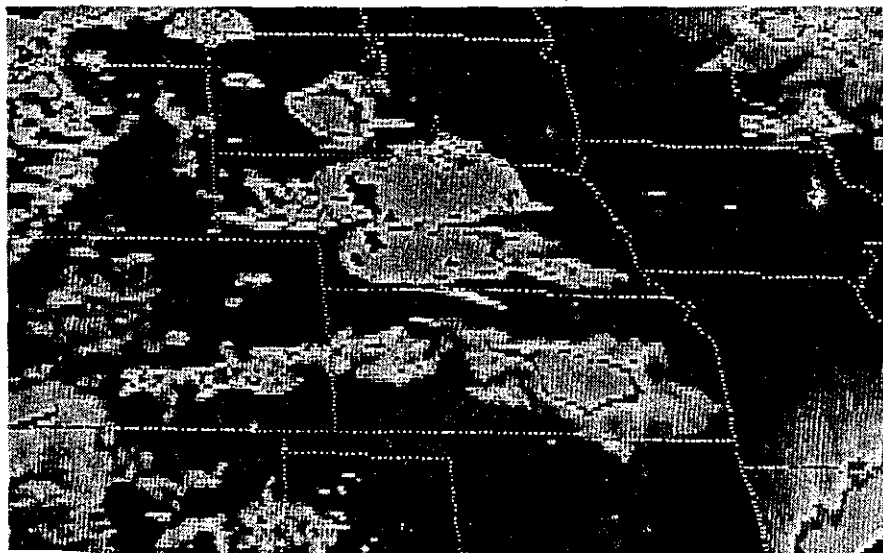
500 MB 6 PM CST May 29, 1985



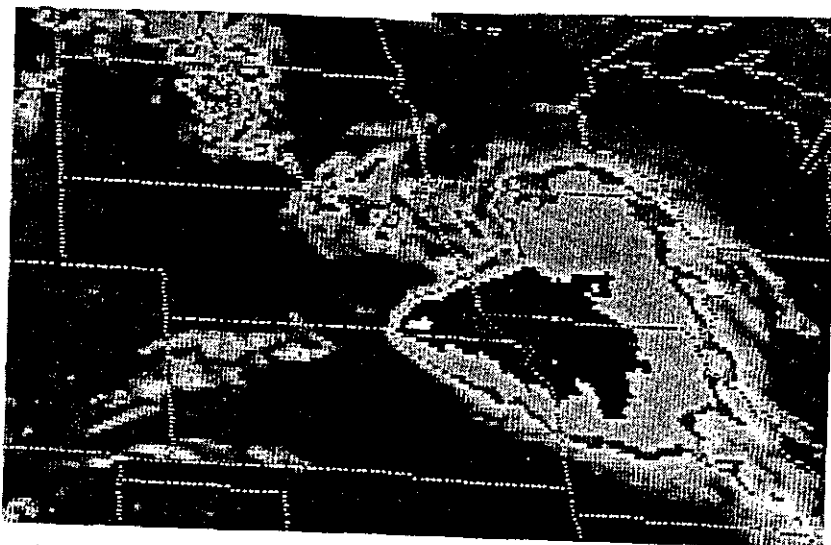
Surface 6PM CST May 29, 1985



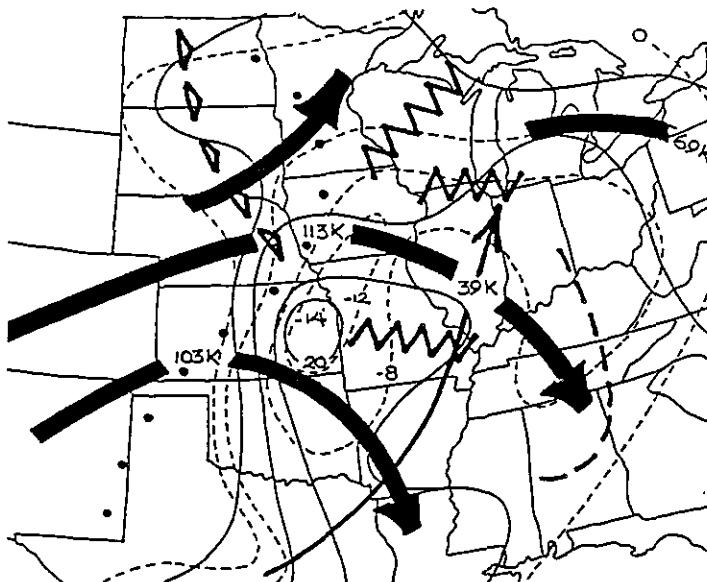
Surface 3AM CST May 30, 1985



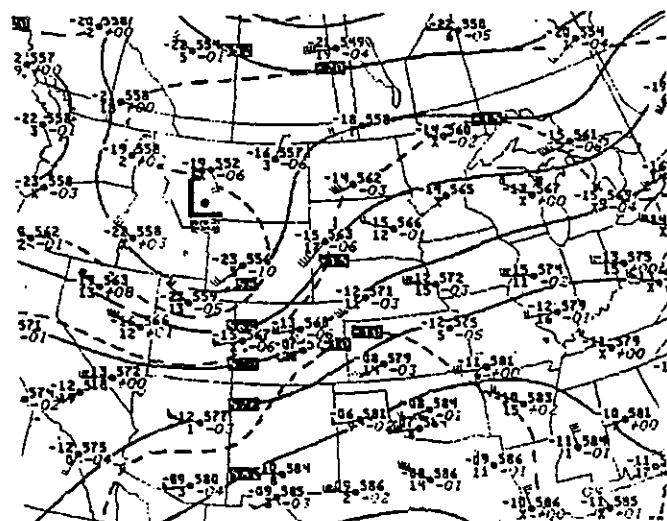
GOES 7PM CST May 29, 1985



GOES 4AM CST May 30, 1985

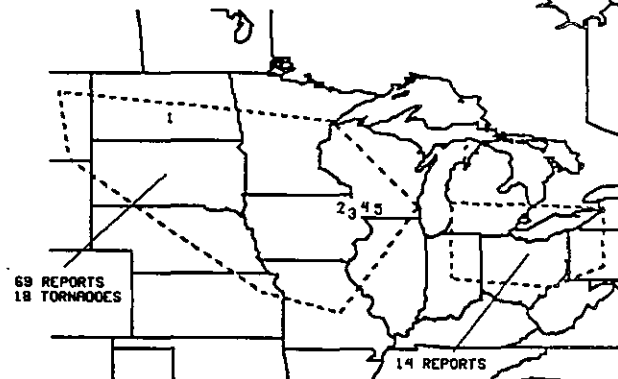


Composite 6AM CST May 30, 1985

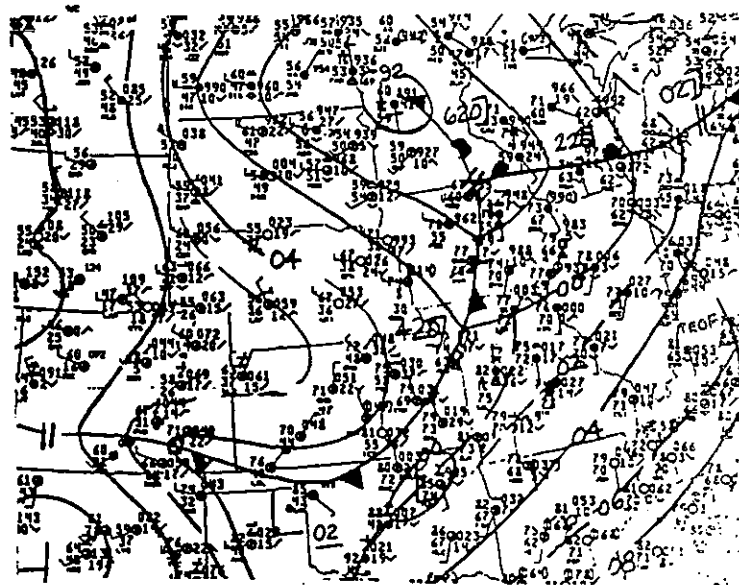


500MB 6AM CST May 30, 1985

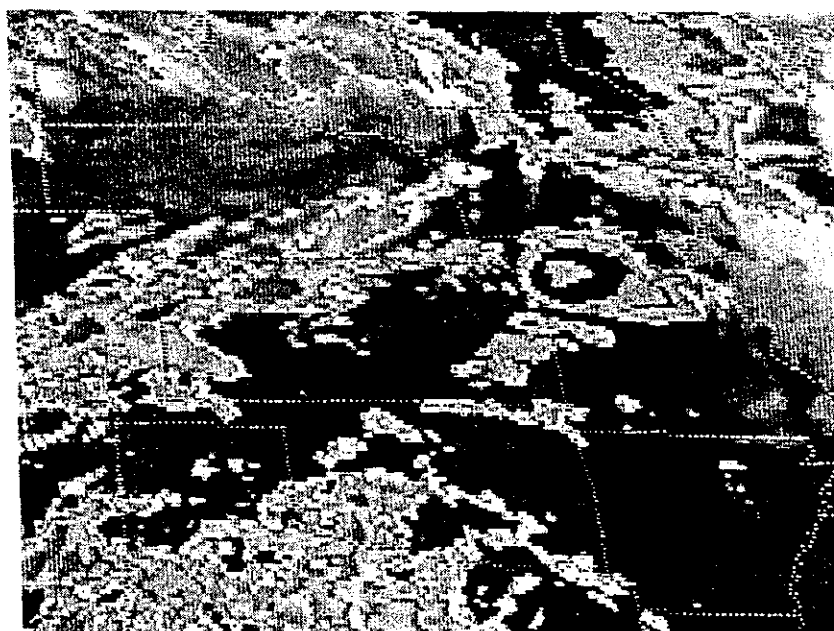
NO	EVENT	TIME	ST	LOCATION	PATH	KIL	INJ	DMS
1	TORNADO-F2	1355	NO	4 N WING	0.5	0	0	4
2	TORNADO-F3	2122	IA	6 W CLKADER	22.0	2	25	7
3	TORNADO-F2	2200	MI	BAGLEY	11.0	0	0	6
4	TORNADO-F2	2250	MI	LIVINGSTON	16.0	0	0	3
5	TORNADO-F2	2320	MI	DALEYVILLE	18.0	0	0	3



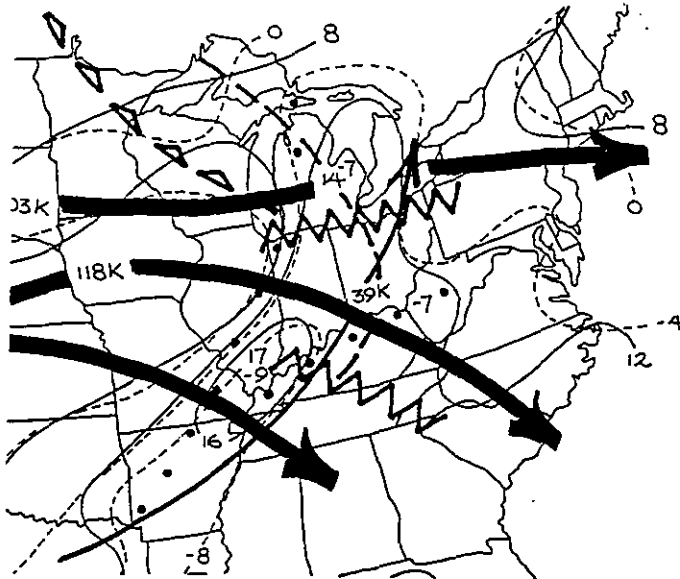
30MAY85-31MAY85 0601-0547 CST 83 REPORTS 18 TORNADOES



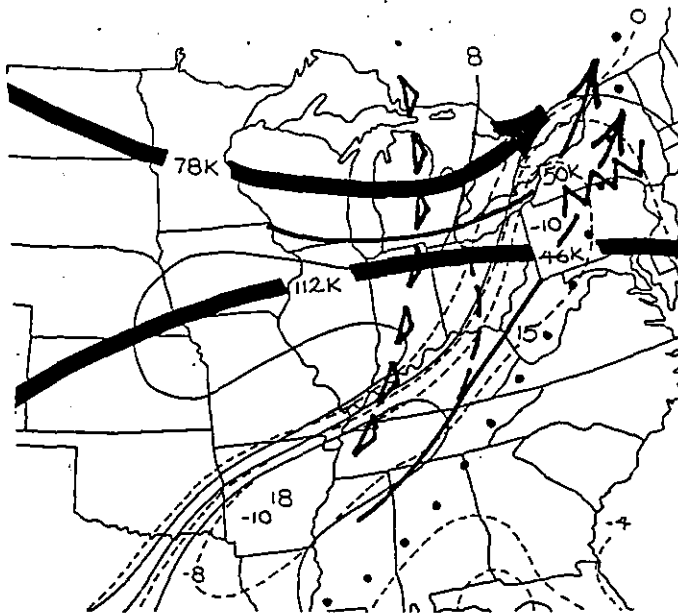
Surface 9PM CST May 30, 1985



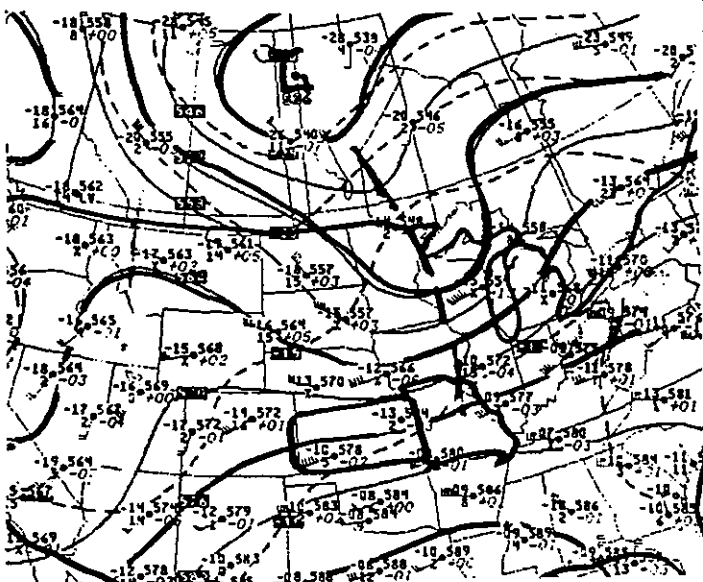
GOES 7PM CST May 30, 1985



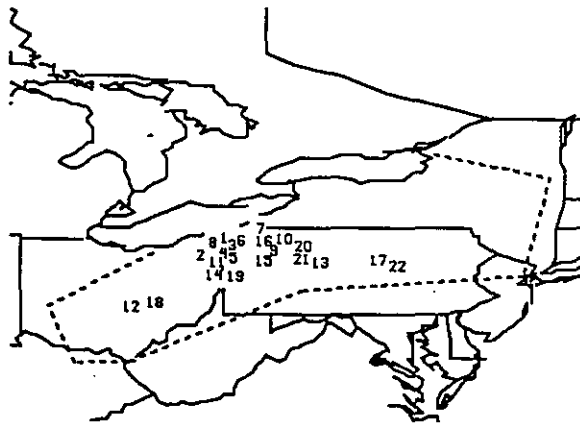
Composite 6AM CST May 31, 1985



Composite 6PM CST May 31, 1985

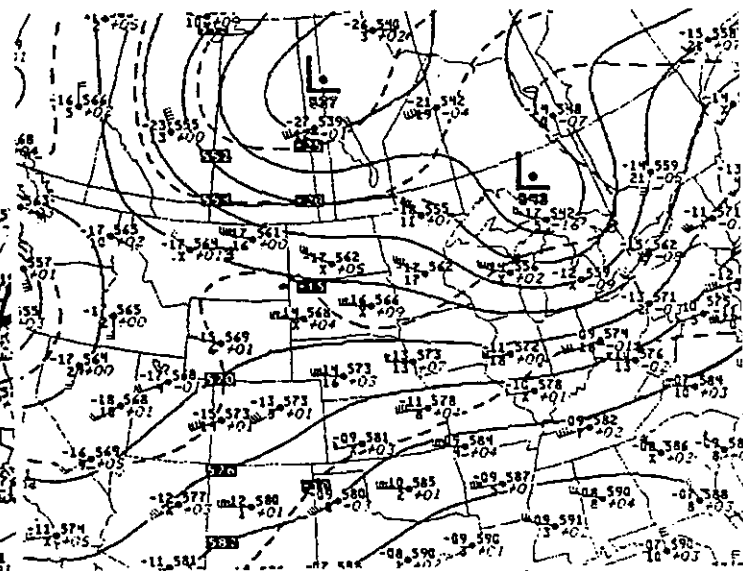


500 MB 6AM CST May 31, 1985

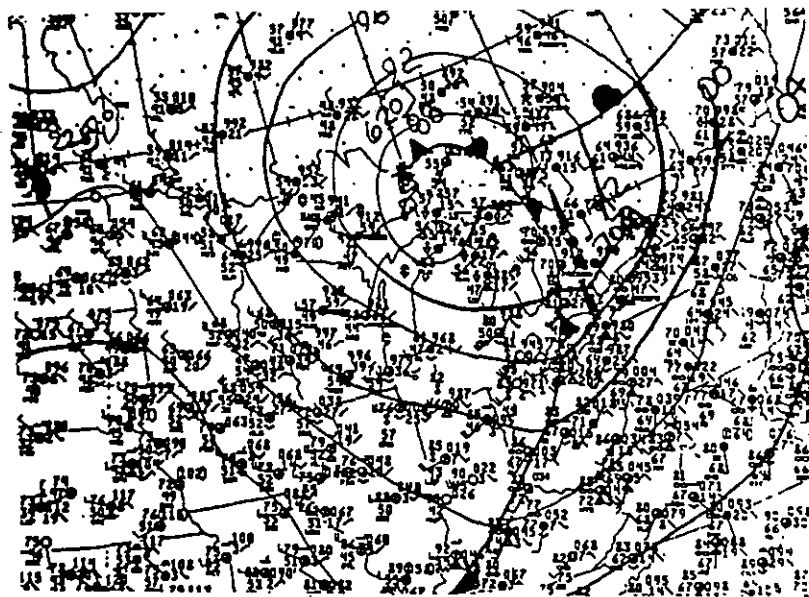


31MAY85 1420-2030 CST 75 REPORTS 28 TORNADES

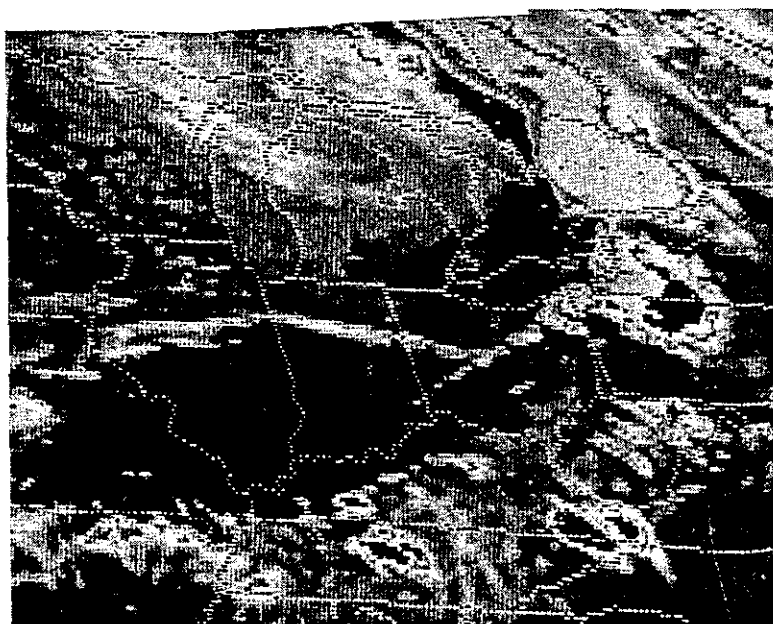
NO	EVENT	TIME	ST	LOCATION	PATH	KIL	INJ	DNG
1	TORNADO-F4	1505	OH	MONROE CENTER	14.0	12	82	7
2	TORNADO-F3	1510	OH	MESOPOTAMIA	15.0	0	30	6
3	TORNADO-F2	1510	PA	LINESVILLE	4.0	0	1	?
4	TORNADO-F4	1517	OH	TRUMBULL COUNTY	14.0	0	0	4
5	TORNADO-F4	1520	PA	JAMESTOWN	56.0	23	125	7
6	TORNADO-F3	1523	PA	SARGEANTOWN	23.0	2	?	?
7	TORNADO-F4	1530	PA	WATTSBURG	18.0	0	?	?
8	TORNADO-F2	1535	OH	JEFFERSON	18.0	0	15	6
9	TORNADO-F4	1625	PA	TIONESTA	30.0	0	?	?
10	TORNADO-F3	1630	PA	TIDIGUTE	13.0	0	3	?
11	TORNADO-F5	1635	OH	NEUTON FALLS	41.0	17	310	8
12	TORNADO-F3	1721	OH	JOHNSTOWN	29.0	1	20	7
13	TORNADO-F4	1738	PA	PENFIELD	50.0	0	0	?
14	TORNADO-F2	1745	OH	SALEM	13.0	0	20	7
15	TORNADO-F2	1754	PA	EMLETON	6.0	0	1	?
16	TORNADO-F2	1755	PA	GRAND VALLEY	8.0	0	?	?
17	TORNADO-F4	1800	PA	AVIS	50.0	0	0	?
18	TORNADO-F3	1807	OH	FRAZEYBURG	11.0	0	5	6
19	TORNADO-F3	1810	PA	DARLINGTON	39.0	9	120	?
20	TORNADO-F4	1850	PA	SHEFFIELD	26.0	3	40	?
21	TORNADO-F2	1900	PA	LAMONT	17.0	0	?	?
22	TORNADO-F4	1925	PA	LYCOMING	20.0	6	60	?



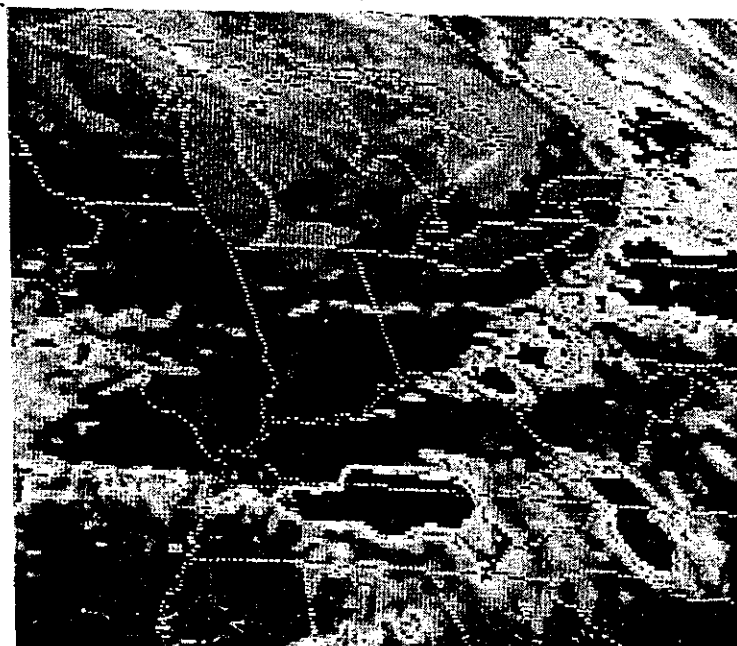
500 MB 6PM CST May 31, 1985



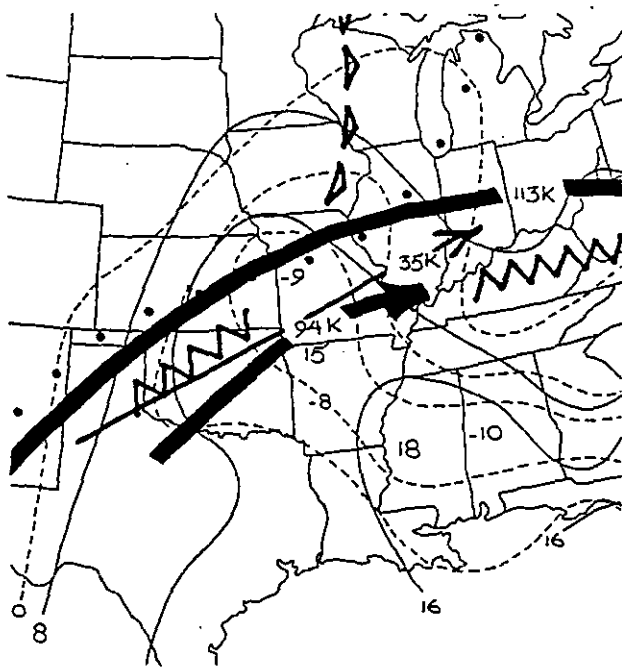
Surface 3PM CST May 31, 1935



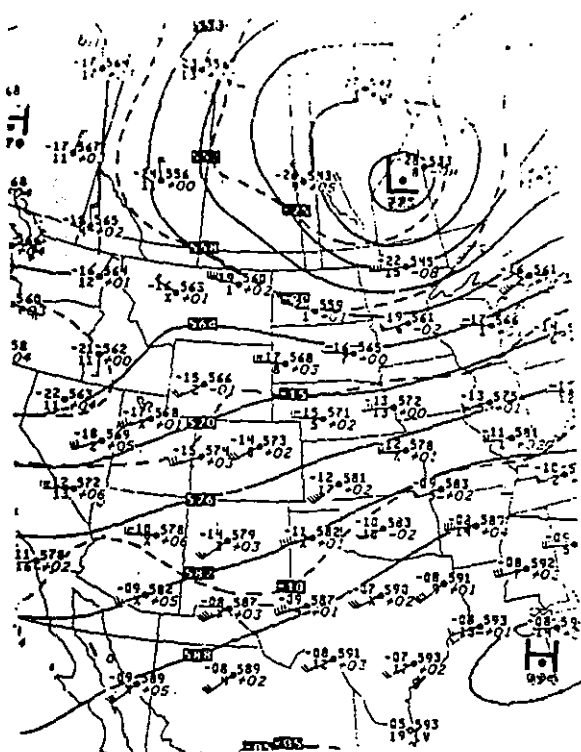
GOES 4PM CST May 31, 1935



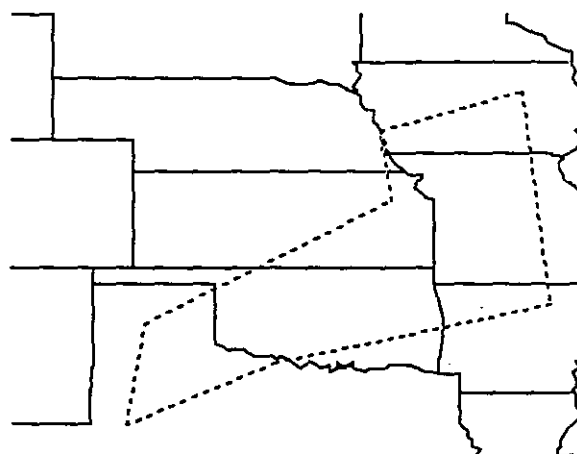
GOES 6PM CST May 31, 1935



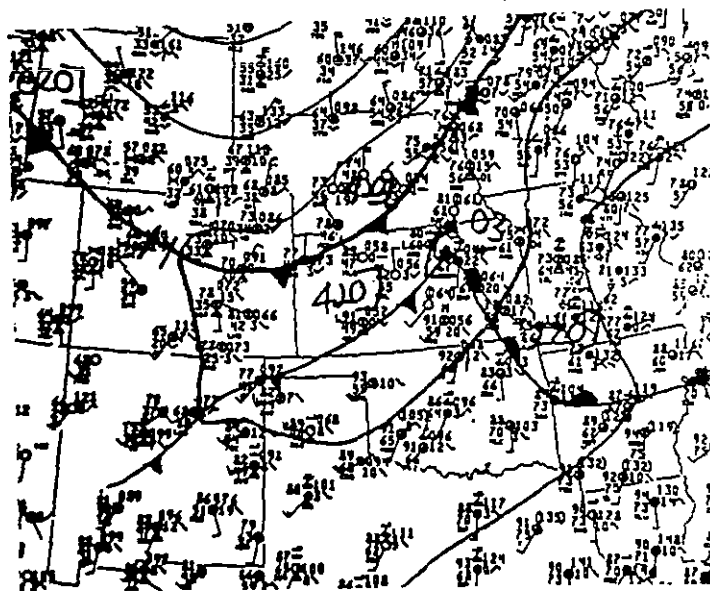
Composite 6PM CST June 1, 1985



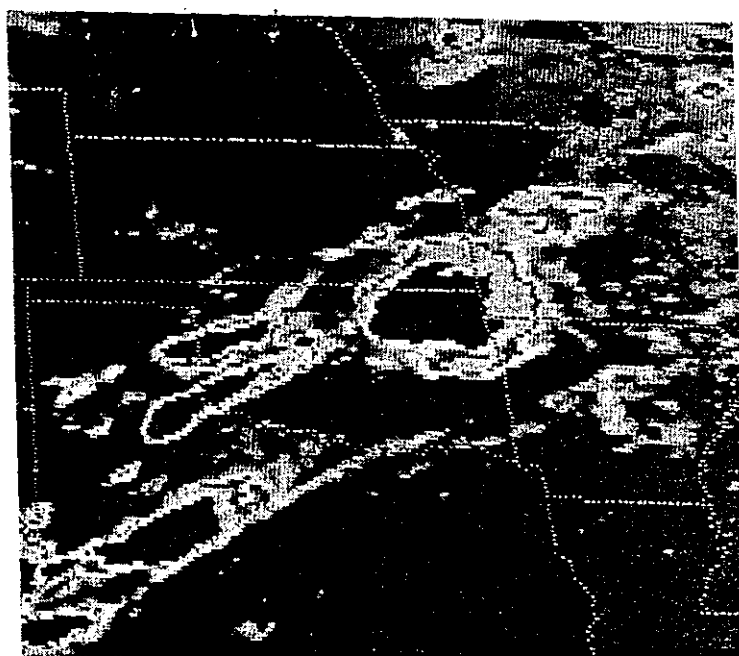
500 MB 6PM CST June 1, 1985



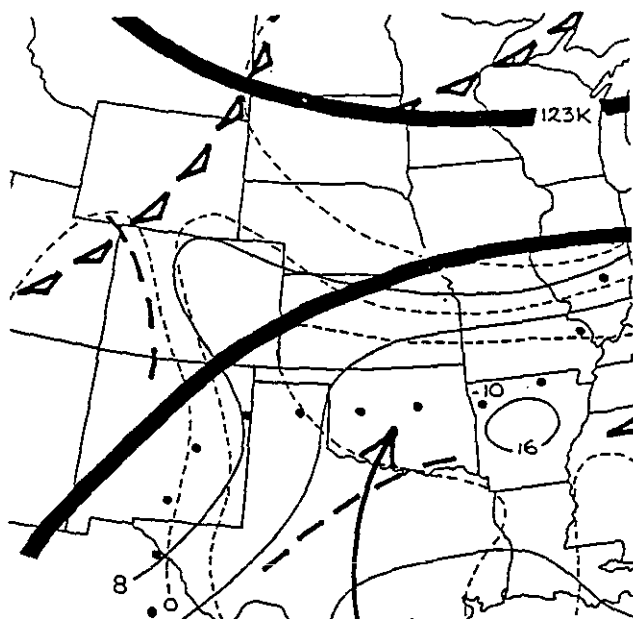
01JUN85 1500-2247 CST 65 REPORTS 1 TORNADO



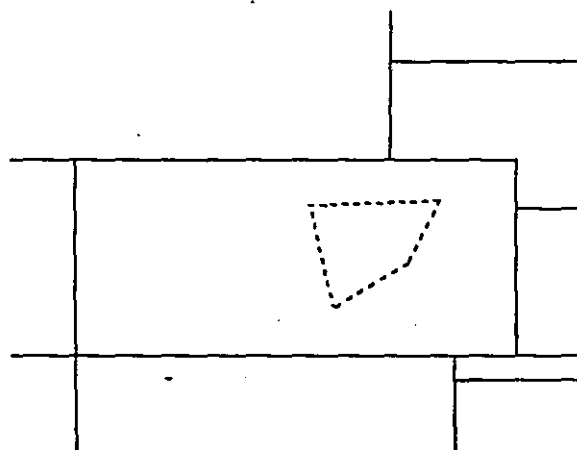
Surface 3PM CST June 1, 1985



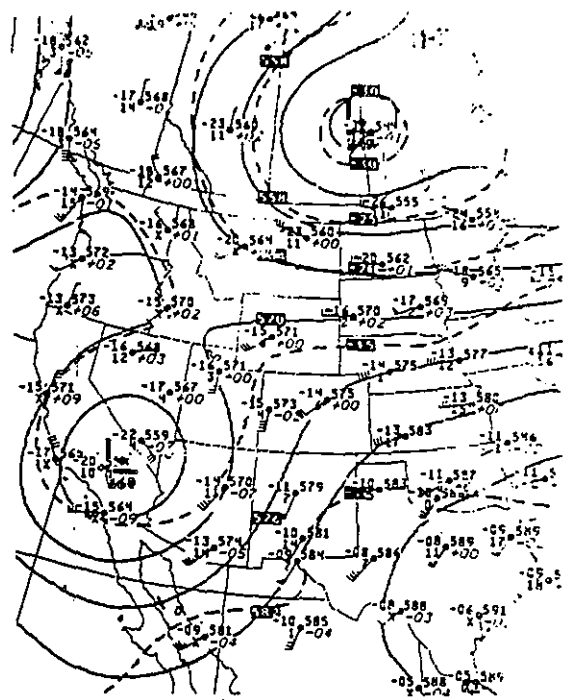
GOES 6PM CST June 1, 1985



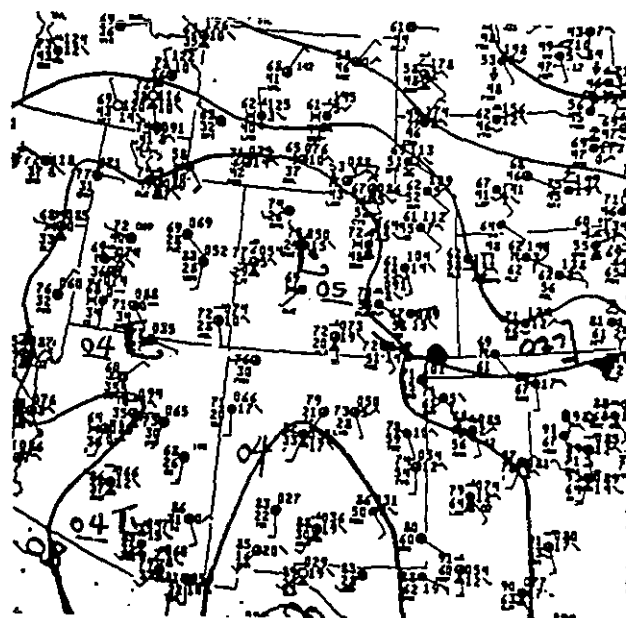
Composite 6AM June 3, 1985



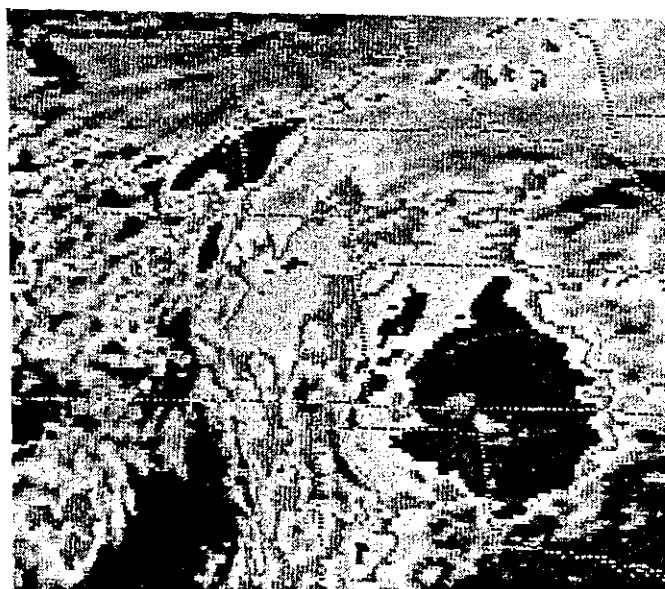
03JUN85 1445-2235 CST 11 REPORTS 4 TORNADOES



500 MB 6AM CST June 3, 1985

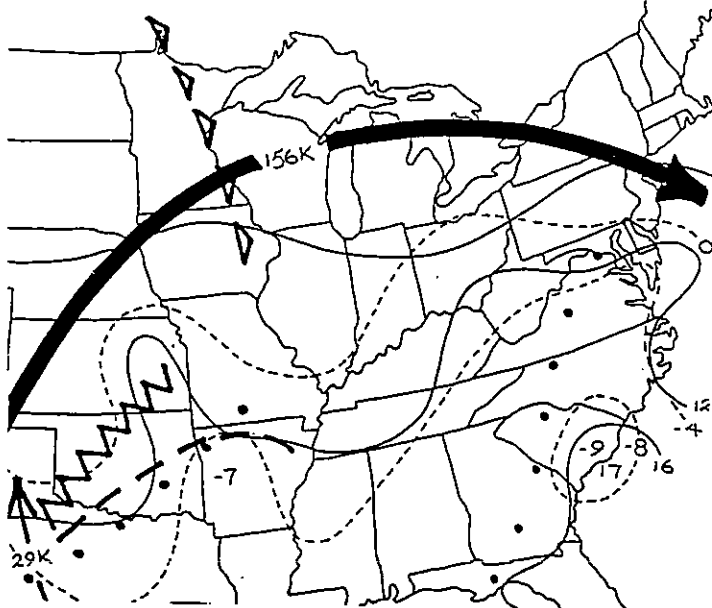


Surface 3PM CST June 3, 1985



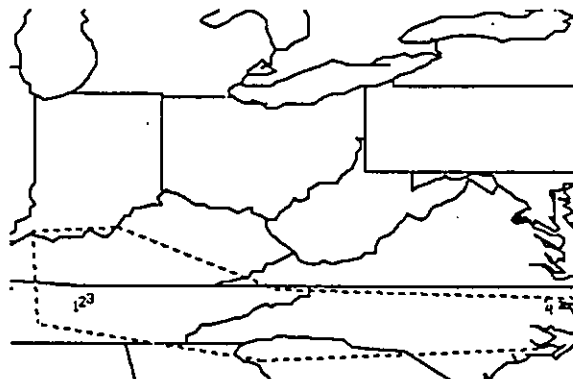
GOES 3PM CST June 3, 1985

No. 30 June 4, 1985

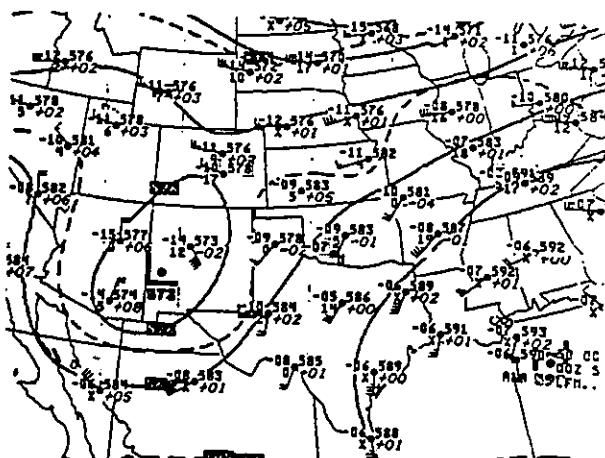


Composite 6PM CST June 4, 1985

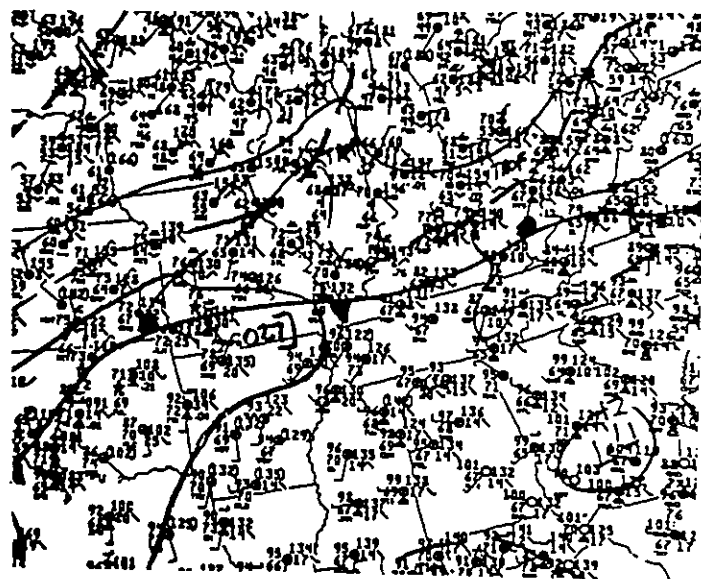
NO	EVENT	TIME	ST	LOCATION	PATH KIL	INJ	DHG
1	HAIL	4.00	TN	NASHVILLE	0	0	4
2	HAIL	4.30	TN	LAGUARD	0	0	4
3	TORNADO-F2	1630	TN	LAGUARD	5.0	0	4
4	6 100 MPH	1800	NC	ROCKYHOCK	0	0	5



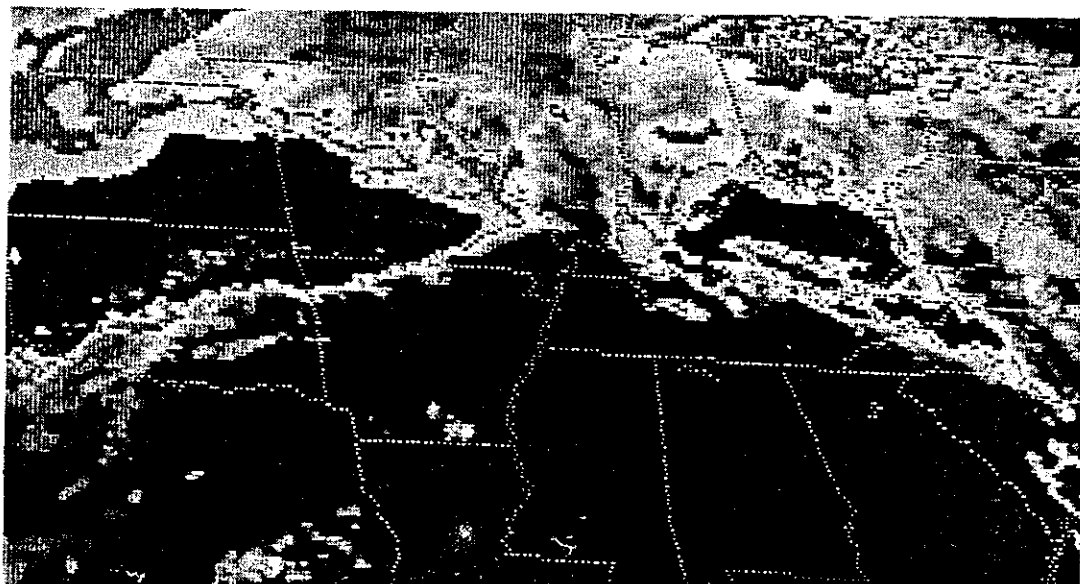
04JUN85 1400-2050 CST 37 REPORTS 1 TORNADO



500 MB 6PM CST June 4, 1985

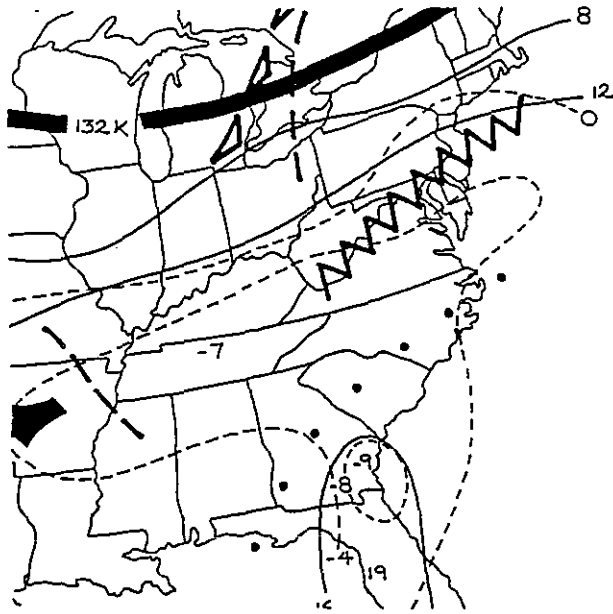


Surface 3PM CST June 4, 1985



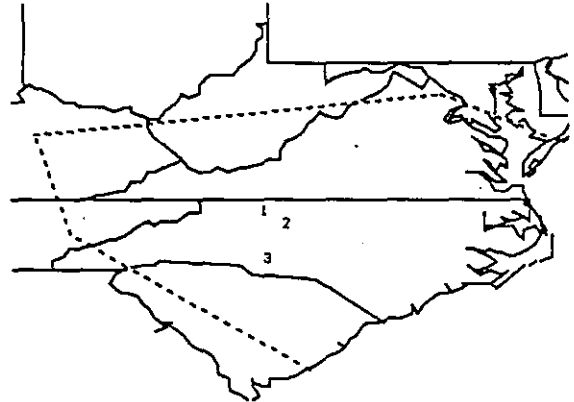
GOES 4PM CST June 4, 1985

No. 31 June 5, 1985

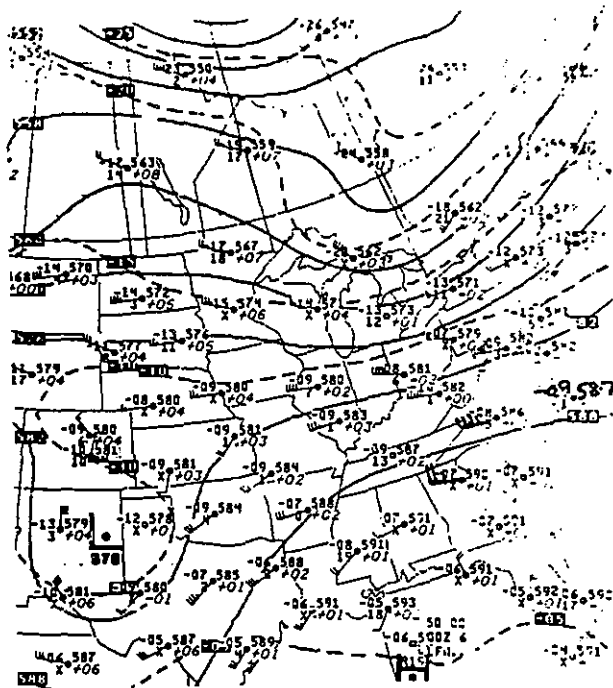


Composite 6PM CST June 5, 1985

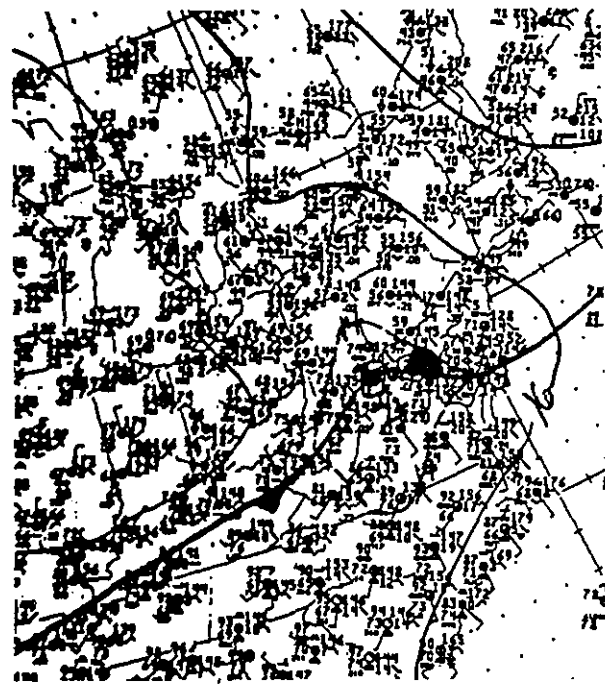
NO	EVENT	TIME	ST	LOCATION	PATH	KIL	INJ	DMG
1	HAIL	3:00	NC	LITTLE CANA				
2	6-83 MPH	1300	NC	WINSTON-SALEM				
3	HAIL	4:30	NC	CONCORD				



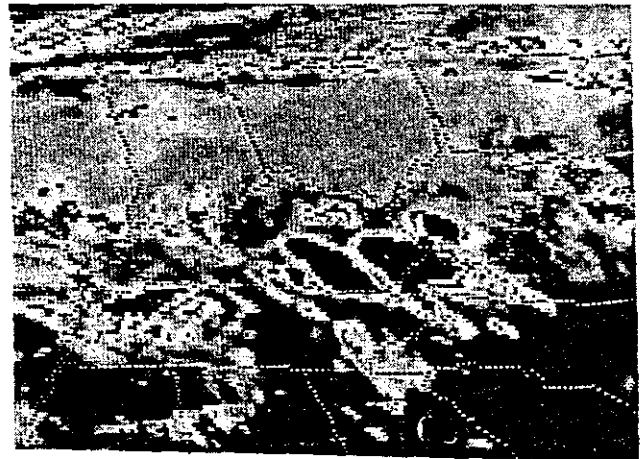
05JUN85 1205-2315 CST 71 REPORTS



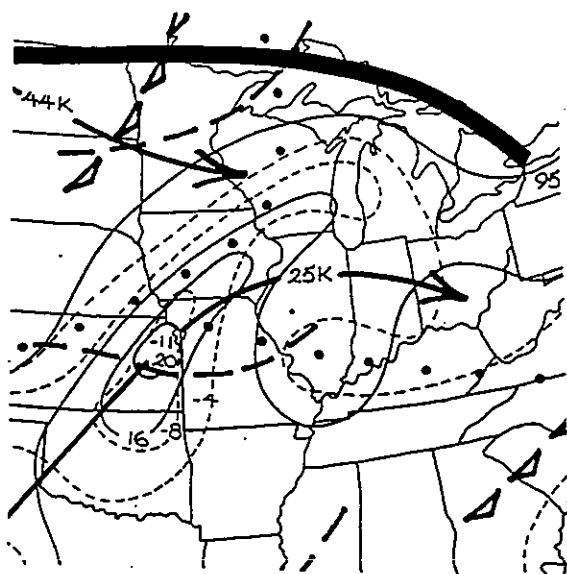
500 MB 6PM CST June 5, 1985



Surface Noon June 5, 1985

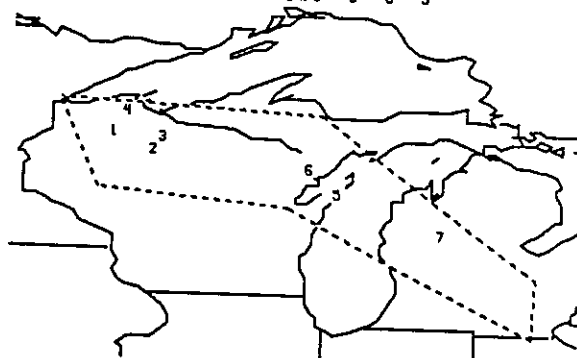


GOES 1PM CST June 5, 1985

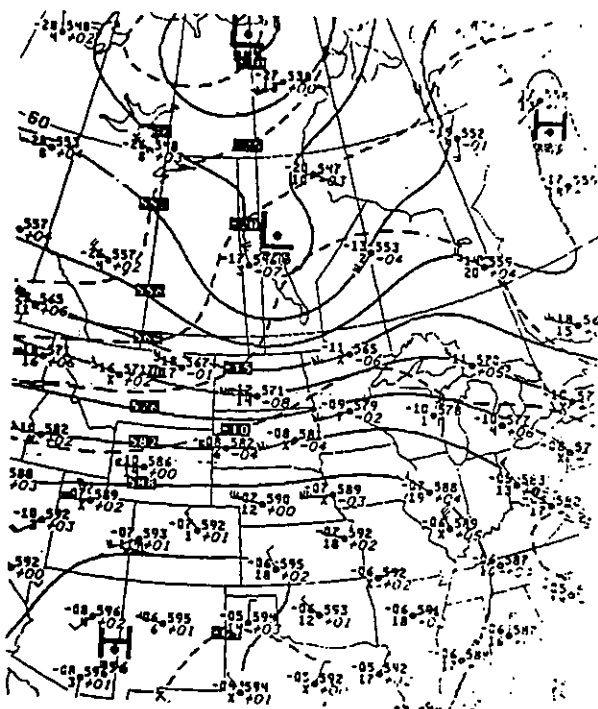


Composite 6 PM CST June 8, 1985

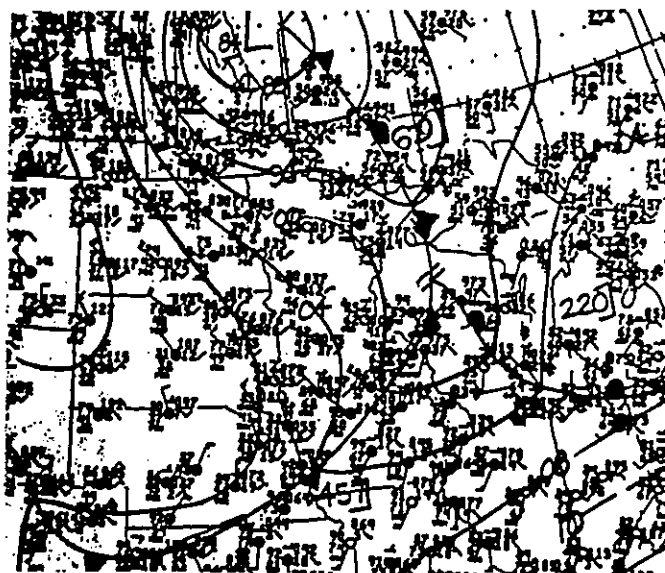
NO	EVENT	TIME	ST	LOCATION	PATH KIL	INJ	DMG
1	HAIL	3:30	MI	SEELY			
2	HAIL	3:00	MI	PARK FALLS			
3	TORNADO-F3	1813	MI	PARK FALLS	68.0	0	4
4	TORNADO-F2	2000	MI	SAND BAY	3.0	0	0
5	HAIL	5:00	MI	STURGEON BAY			
6	TORNADO-F1	2012	MI	IO M STEPHENSON	2.5	0	0
7	TORNADO-F2	2230	MI	REED CITY	24.0	0	0



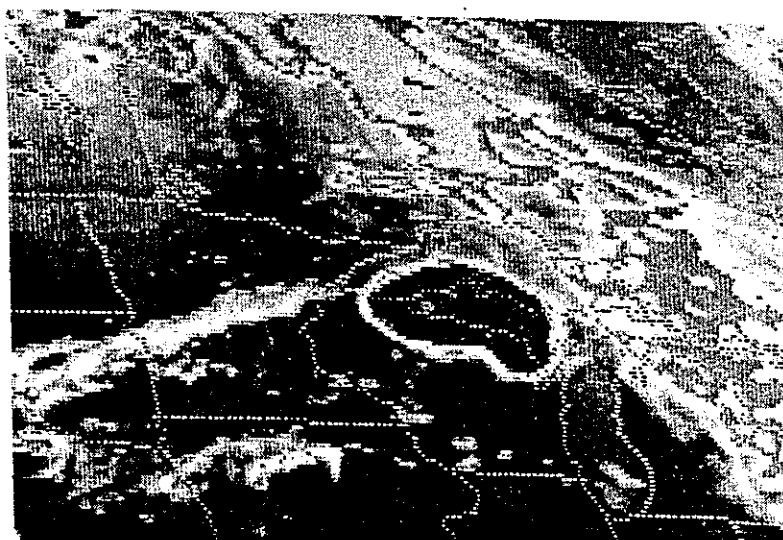
08JUN85-09JUN85 1630-0235 CST 46 REPORTS 7 TORNADOES



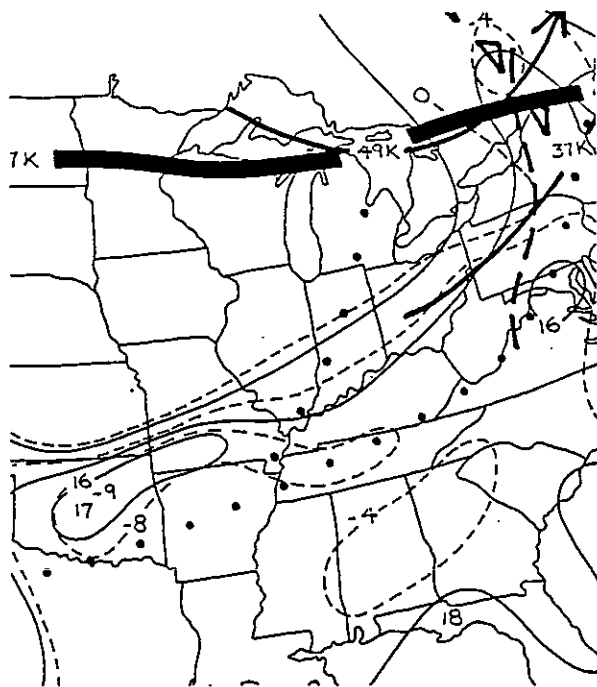
500 MB 6PM CST June 8, 1985



Surface 6 PM CST June 8, 1985

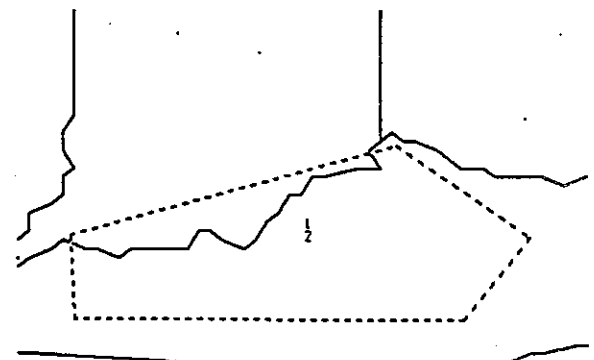


GOES 6 PM CST June 8, 1985

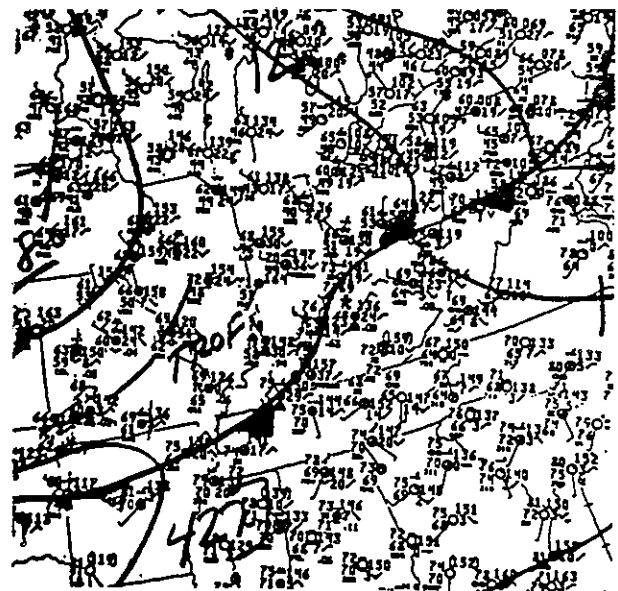


Composite 6PM CST June 9, 1985

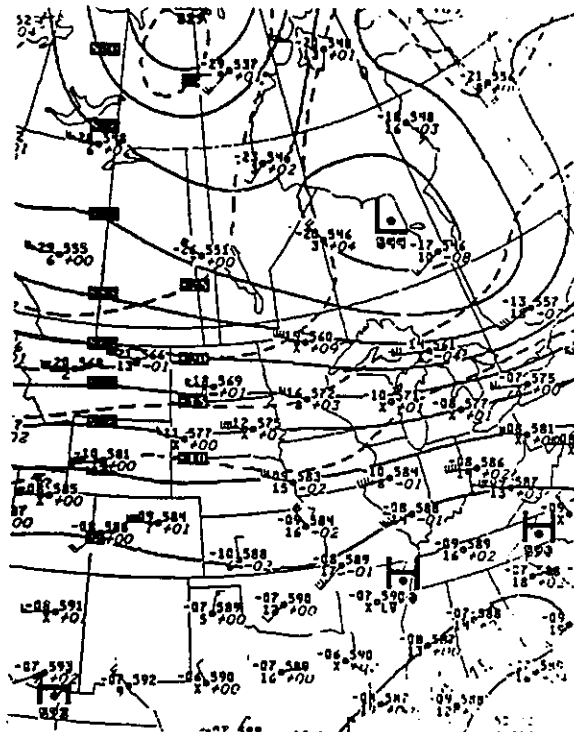
NO	EVENT	TIME	ST	LOCATION	PATH	KIL	INJ	DMG
1	TORNADO-F1	0000	KY	18 E LOUISVILLE	4.3	0	0	6
2	6 80 MPH	0030	KY	NE BULLITT CO		0	0	6



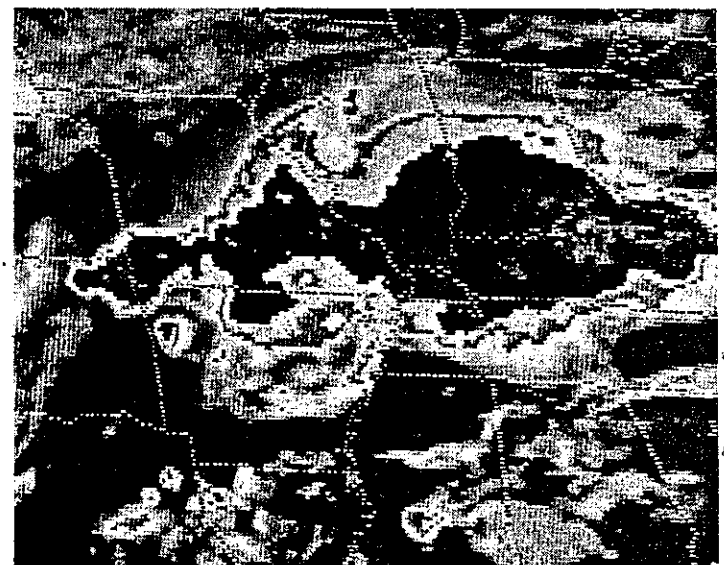
09JUN85-10JUN85 2210-0200 CST 22 REPORTS 1 TORNADO



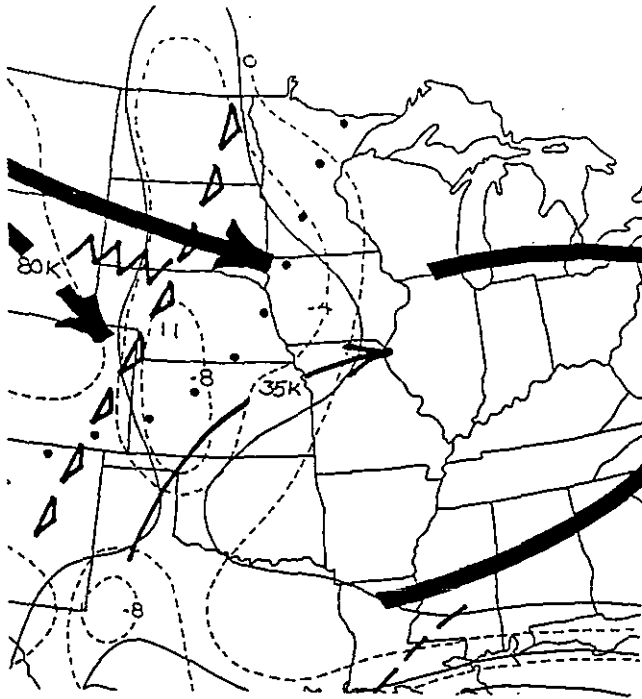
Surface Midnight June 9, 1985



500 MB 6PM CST June 9, 1985

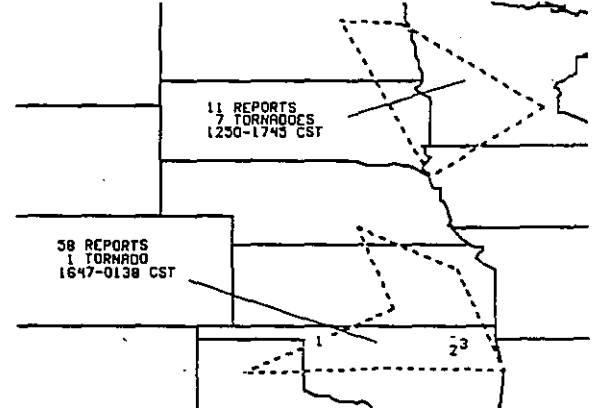


GOES Midnight June 9, 1985

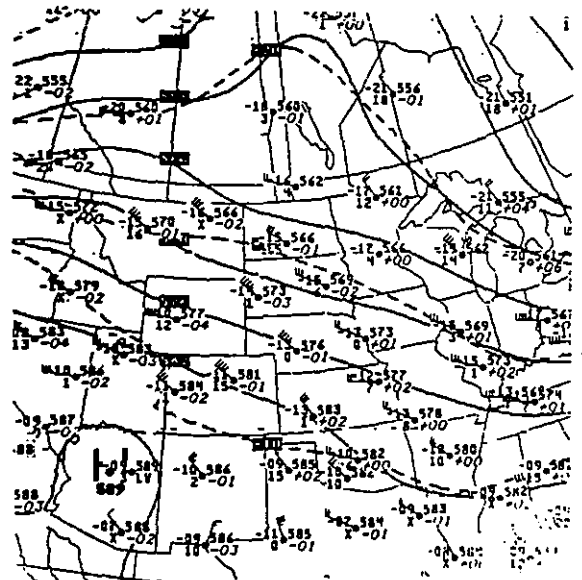


Composite 6AM CST June 14, 1985

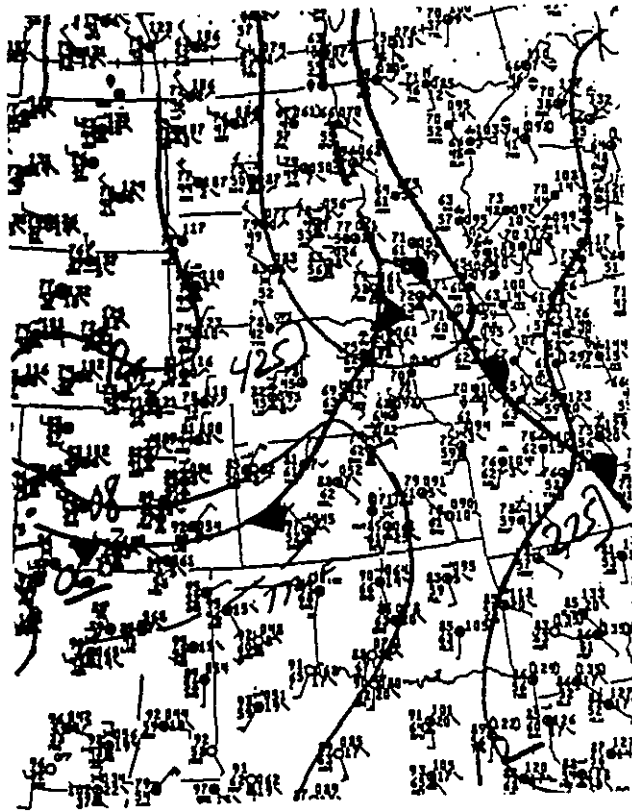
NO	EVENT	TIME	ST	LOCATION	PATH	KIL	INJ	DMS
1	6 77 MPH	2118	OK	FORT SUPPLY		0	1	3
2	HAIL	3:00	2230	OK	OMASSO			
3	TORNADO-F1	2235	OK	OMASSO		0	0	5



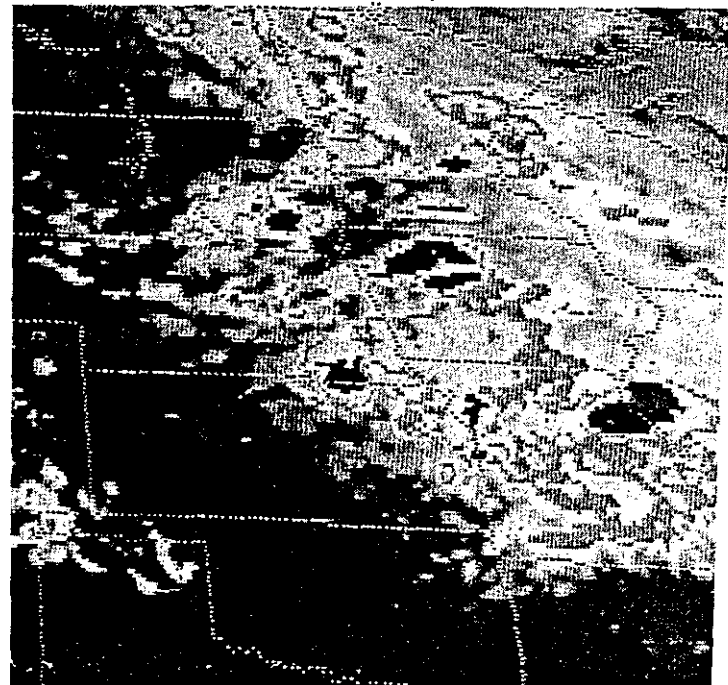
14JUN85-15JUN85 1250-0138 CST 69 REPORTS 8 TORNADOES



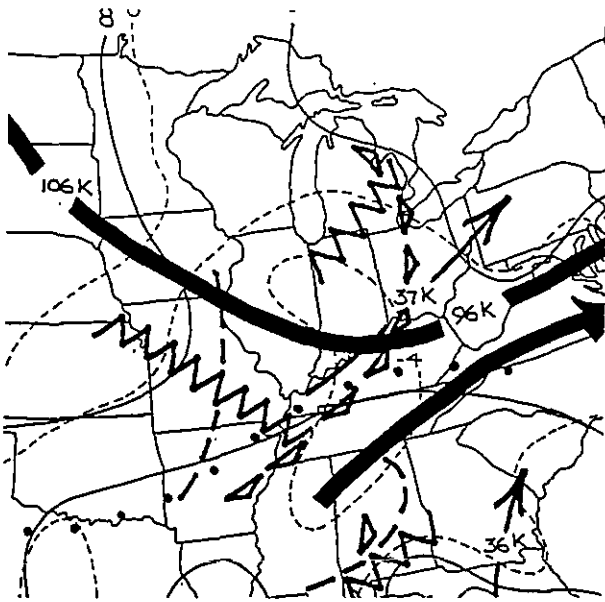
500 MB 6AM CST June 14, 1985



Surface 3PM CST June 14, 1985

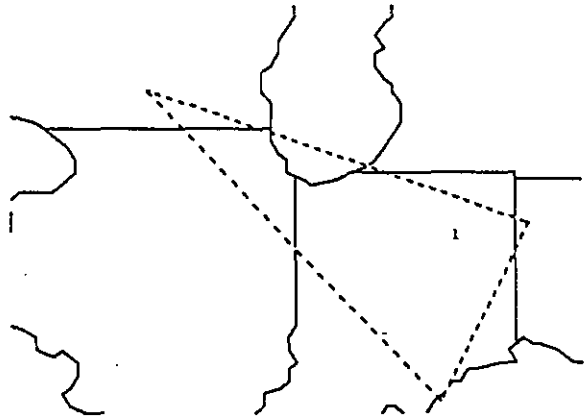


GOES 4PM CST June 14, 1985

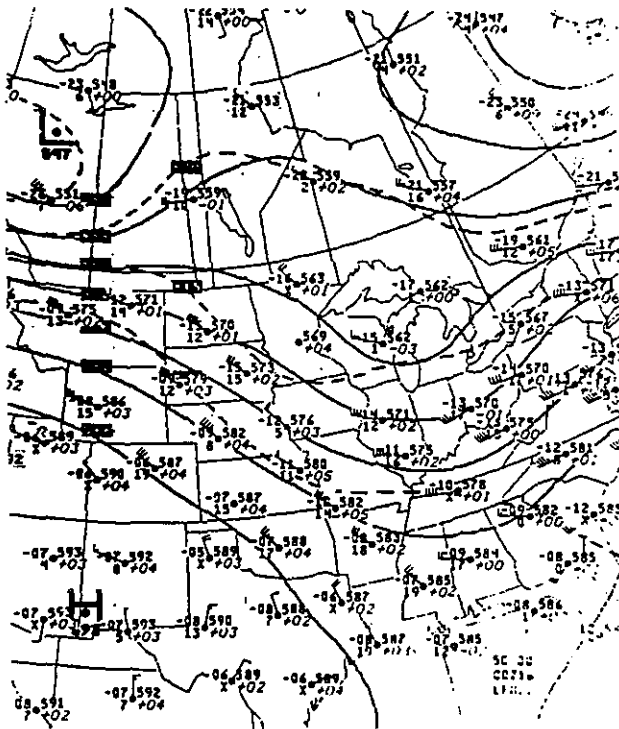


Composite 6PM CST June 15, 1985

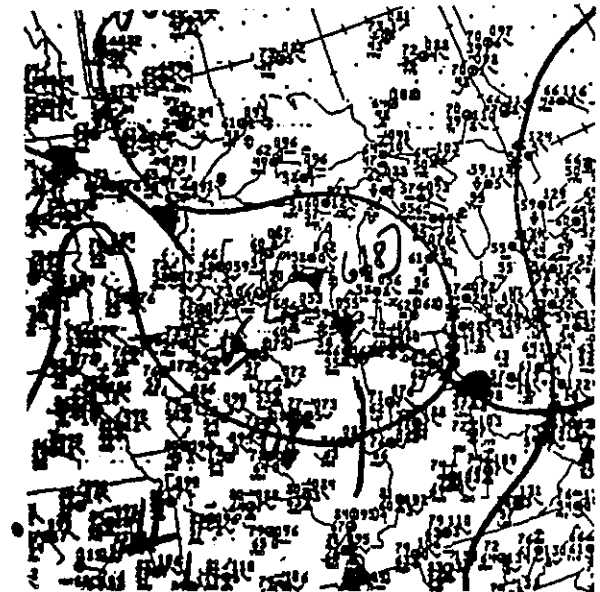
NO	EVNT	TIME	ST	LOCATION	PATH	KIL	INJ	OMG
1	TORNADO-F2	1910	IN	HUNTINGTON	0.3	0	0	4



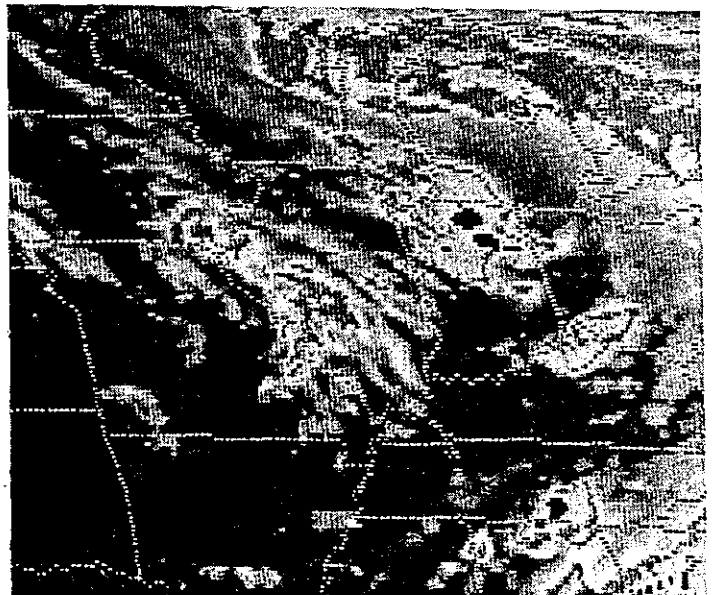
15JUN85 1415-2022 CST 11 REPORTS 2 TORNADOES



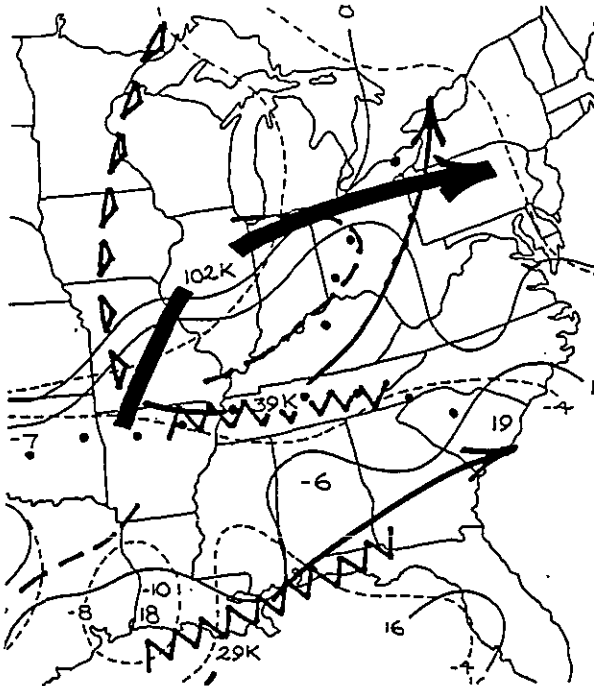
500 MB 6PM CST June 15, 1985



Surface 6PM CST June 15, 1985

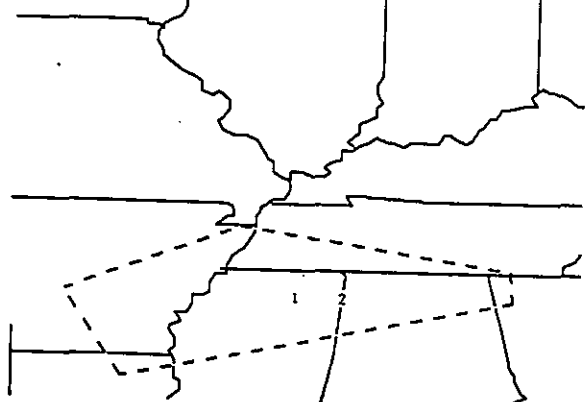


GOES 7PM CST June 15, 1985

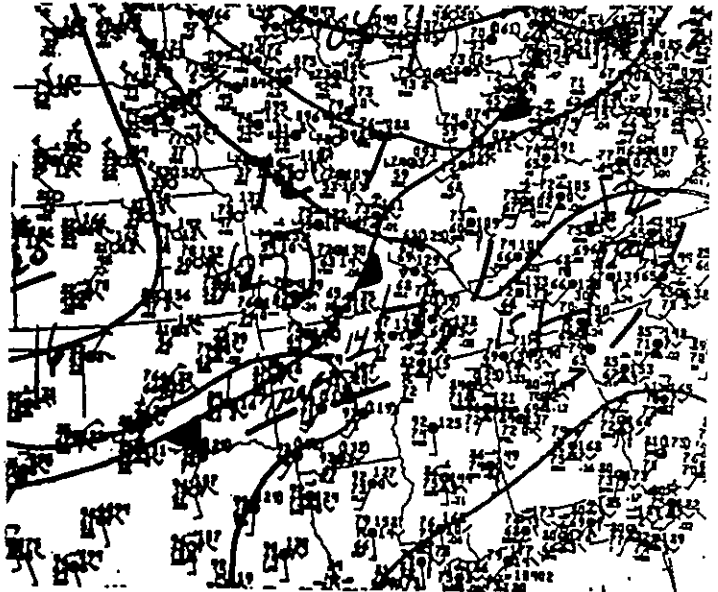


Composite 6PM CST June 17, 1985

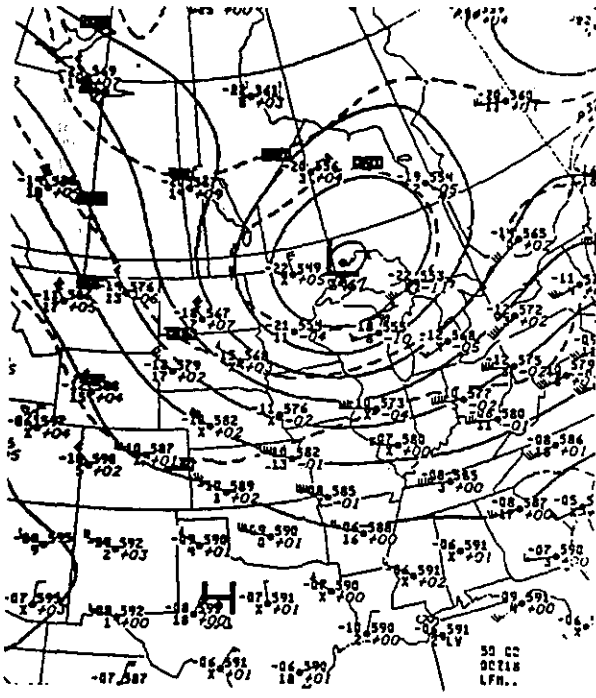
NO	EVENT	TIME	ST	LOCATION	PATH	KIL	INJ	DWG
1	G 97 MPH	1945	MS	NEW ALBANY				
2	TORNADO-F2	2045	MS	BELMONT	2.0	0	0	5



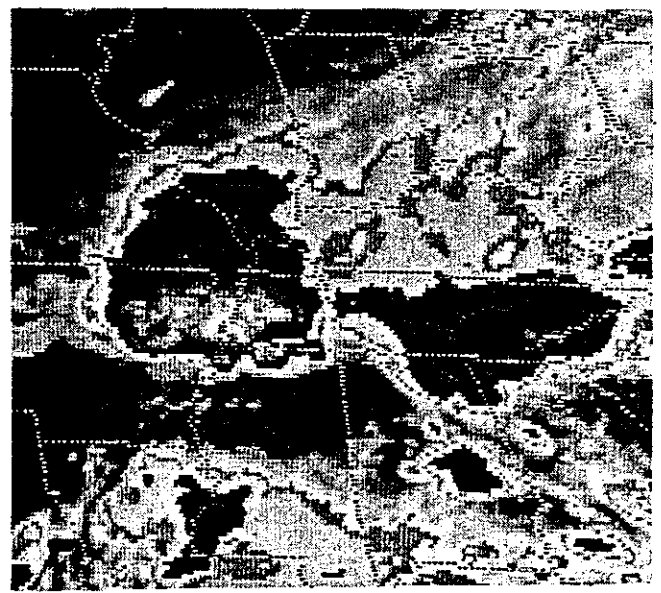
17JUN85 1515-2200 CST 23 REPORTS 2 TORNADOES



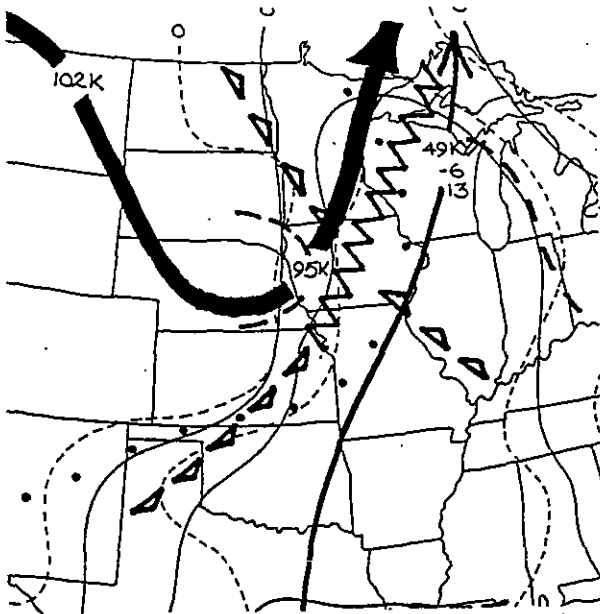
Surface 6PM CST June 17, 1985



500 MB 6PM CST June 17, 1985

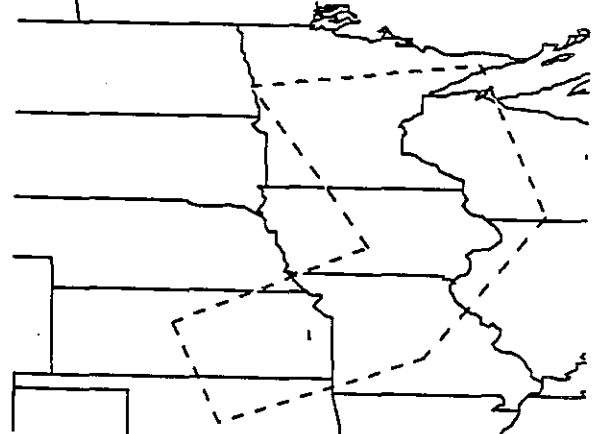


GOES 6PM CST June 17, 1985

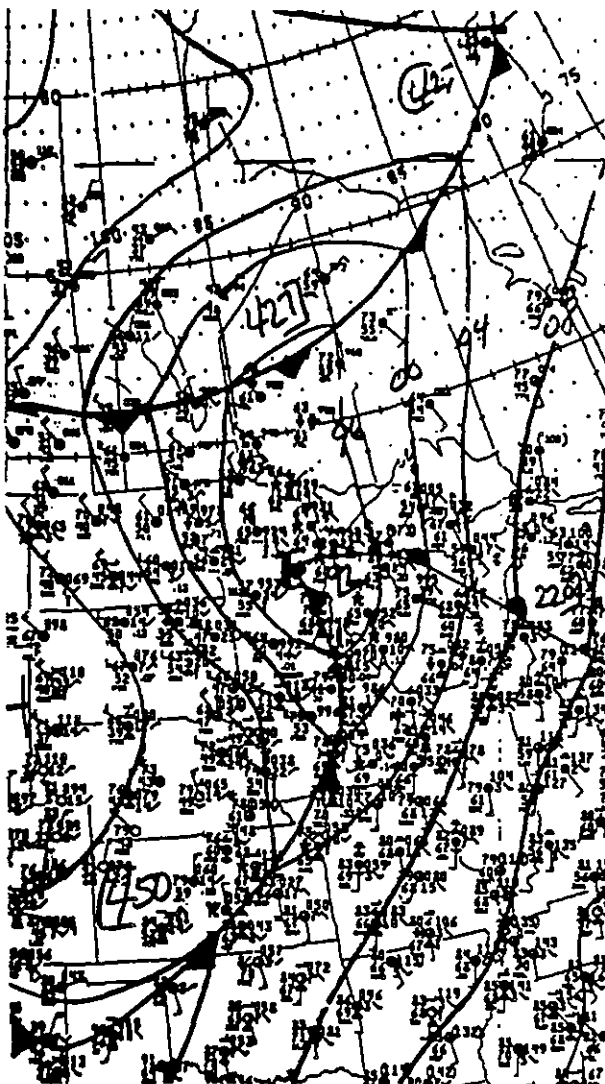


Composite 6PM CST June 21, 1985

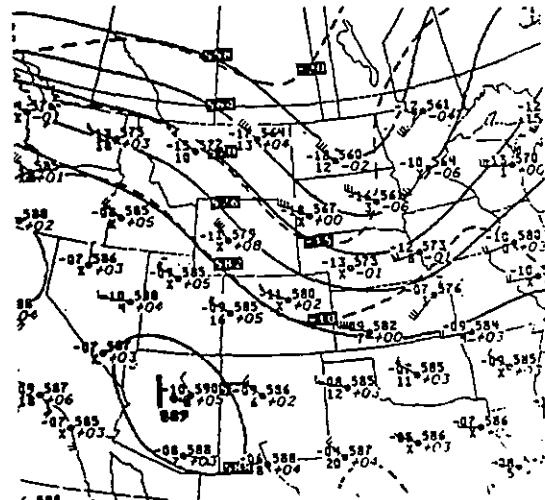
NO	EVENT	TIME	ST	LOCATION	PATH	KIL	INJ	DMG
1	5 80 MPH	1850	KS	OTTAWA		0	1	3



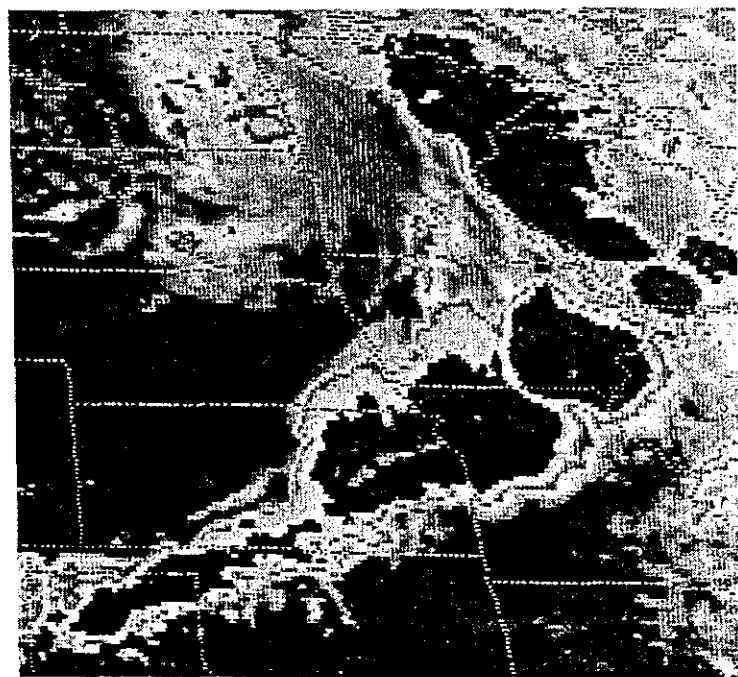
21JUN85-22JUN85 1035-0110 CST 49 REPORTS 2 TORNADOES



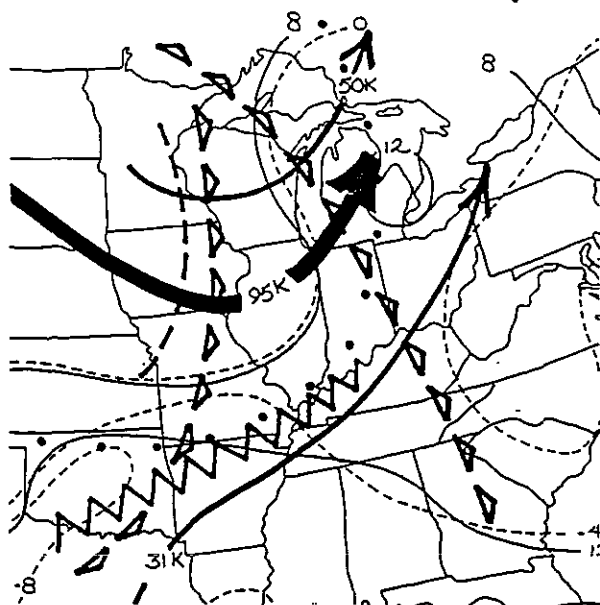
Surface 6PM CST June 21, 1985



500 MB 6 PM CST June 21, 1985

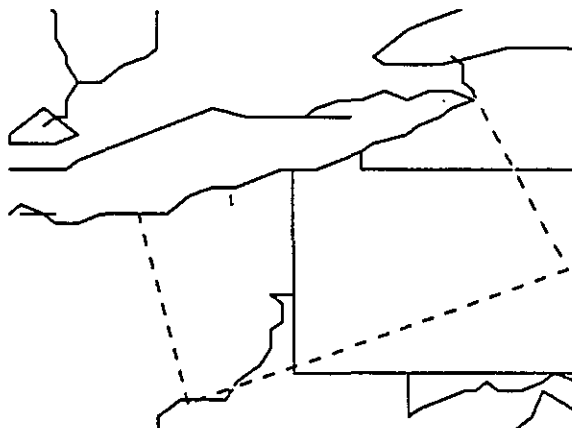


GOES 6PM CST June 21, 1985

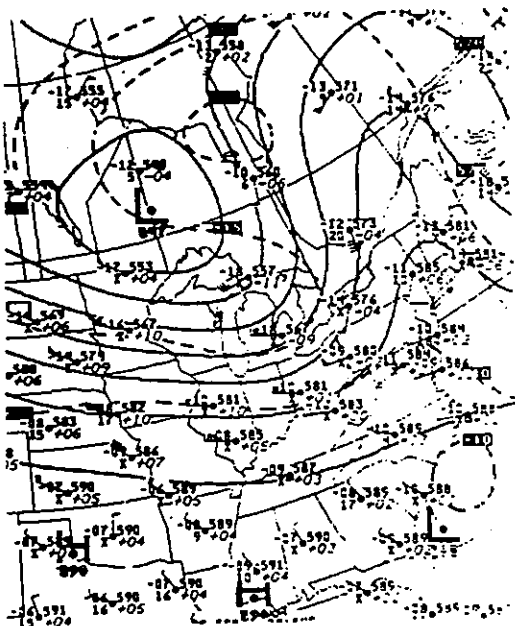


Composite 6PM CST June 22, 1985

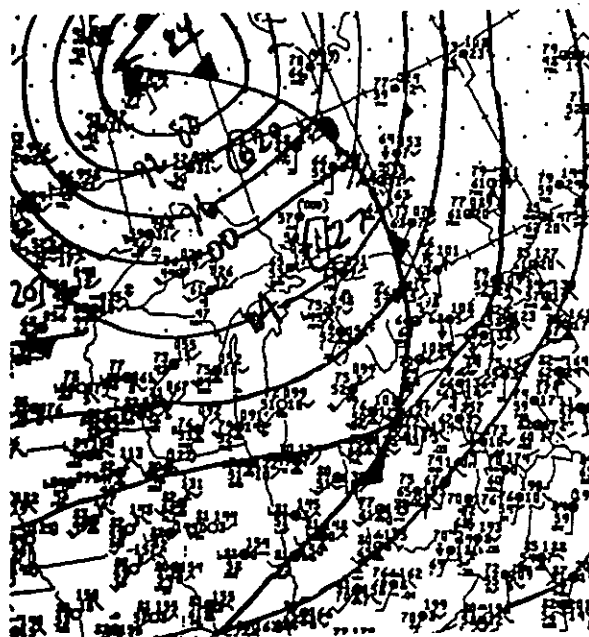
NO	EVENT	TIME	ST	LOCATION	PATH	KIL	INJ	DWG
1	TORNADO-F2	1530	OH	THOMPSON	43.4	0	2	5



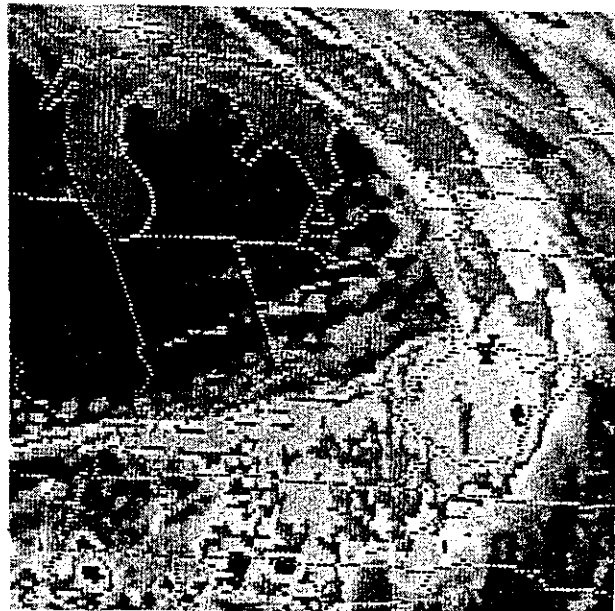
22JUN85 1555-2145 CST 15 REPORTS 6 TORNADOES



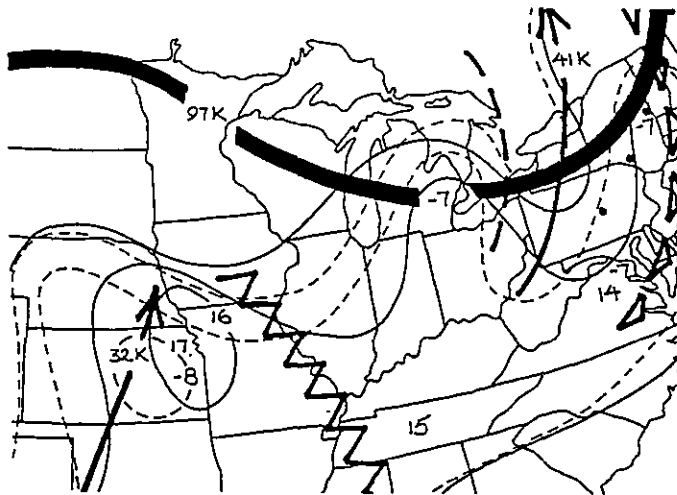
500 MB 6PM CST June 22, 1985



Surface 6PM CST June 22, 1985

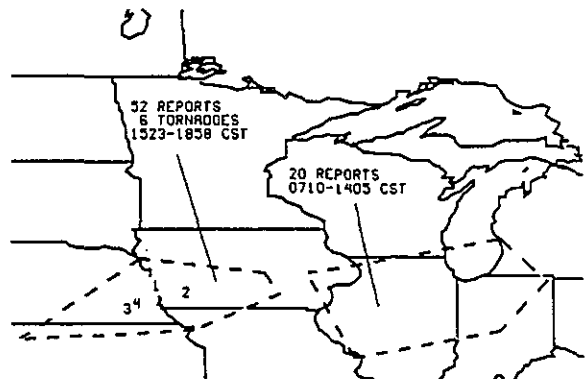


GOES 6PM CST June 22, 1985

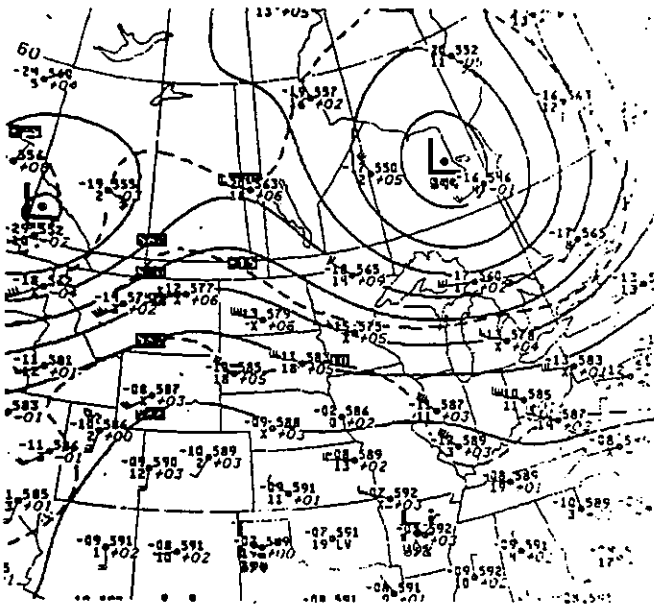


Composite 6PM CST June 23, 1985

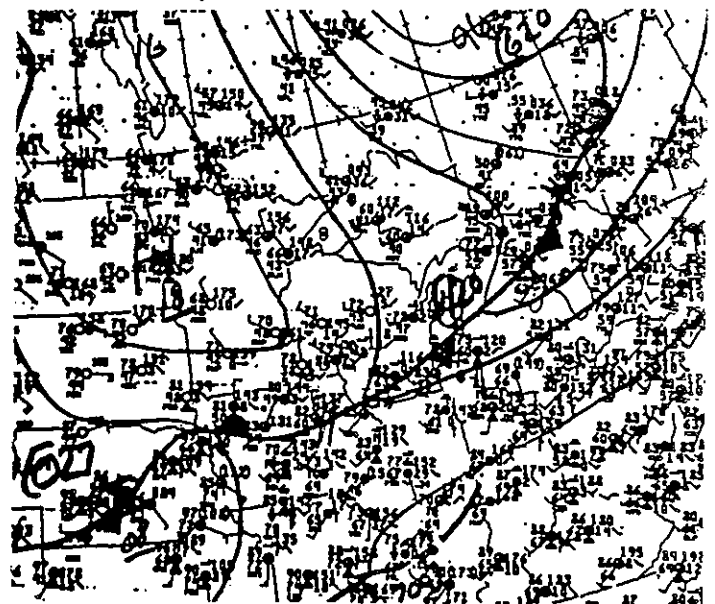
NO	EVENT	TIME	ST	LOCATION	PATH KIL	INJ	DMG
1	HAIL 4.00	1530	IA	HONEY CREEK		0	0
2	TORNADO-F1	1612	IA	GRISMOLD	1.5	0	1
3	6 84 MPH	1632	NE	LINCOLN		0	0
4	HAIL 3.00	1632	NE	LINCOLN		0	0



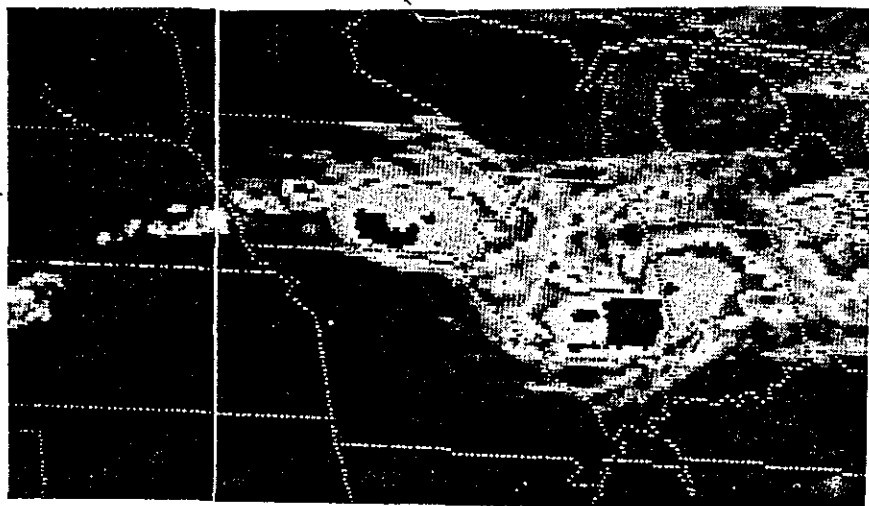
23JUN85 0710-1858 CST 72 REPORTS 6 TORNADOES



500 MB 6PM CST June 23, 1985



Surface 3PM CST June 23, 1985



COES 3PM CST June 23, 1985