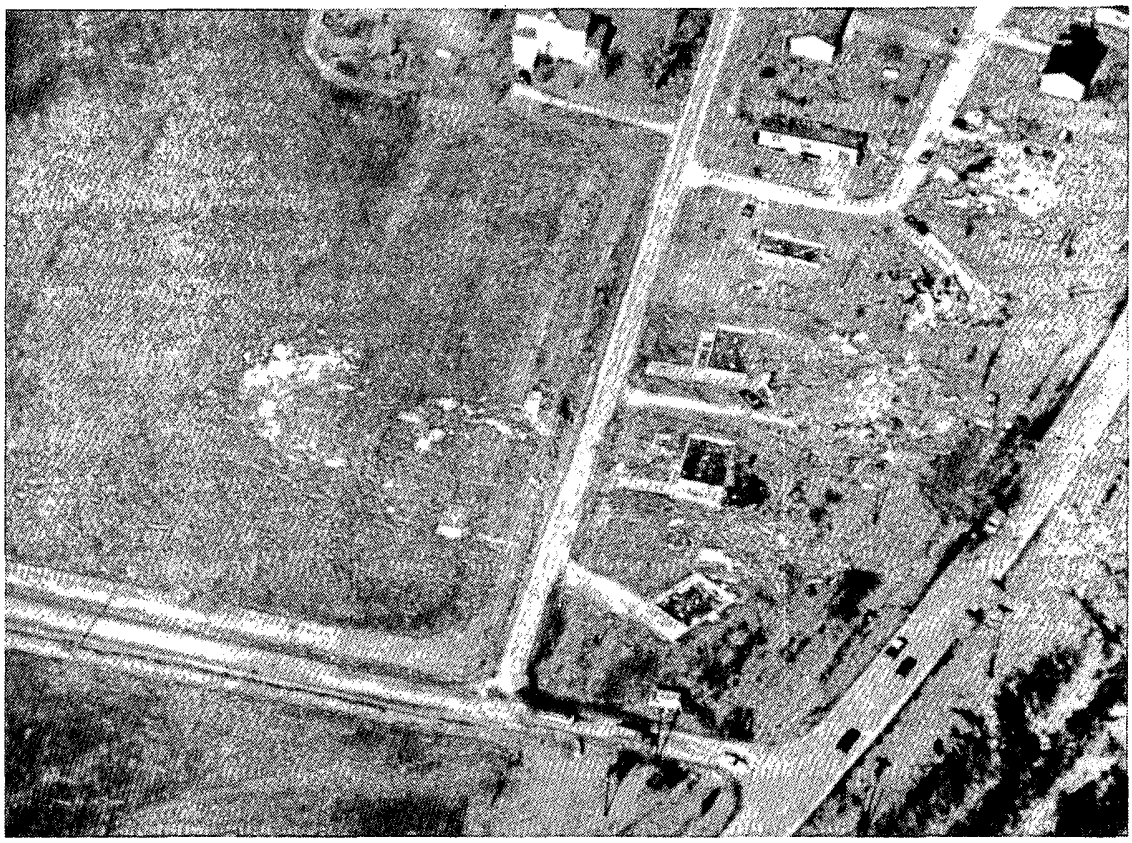
JANUARY 1989 VOLUME 31 NUMBER 1

STORM DATA

WITH LATE REPORTS/CORRECTIONS



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Kenneth D Hadeen

DIRECTOR
NATIONAL CLIMATIC DATA CENTER

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CONTENTS

Cover: Empty foundations are all that remain of four homes on the southwest end of Allendale, Illinois after an F4 tornado ripped into the town during the supper hour of January 7, 1989. The tornado was extremely unusual due to its strength and the fact that it occurred so far north during the middle of meteorological winter. Amazingly, no one was killed as the tornado devastated almost half of the town. (See pages 6 through 18.) ---Photo by Duane Stiegler, Wind Research Laboratory, The University of Chicago, Chicago, Illinois.

* CORRECTION:

From March 1987 through December 1988 many of the satellite images identified as being from the GOES 6 satellite were in fact from the newer GOES 7 satellite, especially those portraying a view from over the East Coast of the United States. We regret the error.

STORM DATA
(ISSN 0039-1972)

The section on Outstanding Storms of the Month is prepared by Professor T. Theodore Fujita, editor, and Duane J. Stiegler, associate editor, the University of Chicago, with funding by the U. S. Office of Naval Research. The Storm Data and Unusual Weather Phenomena narratives, and summaries of Hurricanes/Tropical Storms are prepared by the National Weather Service. The National Climatic Data Center compiles statistics on deaths, injuries, damage and prepares the annual summaries of tornadoes and Lightning. This publication contains our best information on storms, but due to the difficulties inherent in collection of this type of data it is not all-inclusive. Late reports and corrections will be carried quarterly. Maps of zones used in the Storm Data and Unusual Weather Phenomena will be published in all editions.

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Publication Staff

J. D. Ziemianski
Supervisory Meteorological Technician

S. C. Lackey
Editorial Clerk

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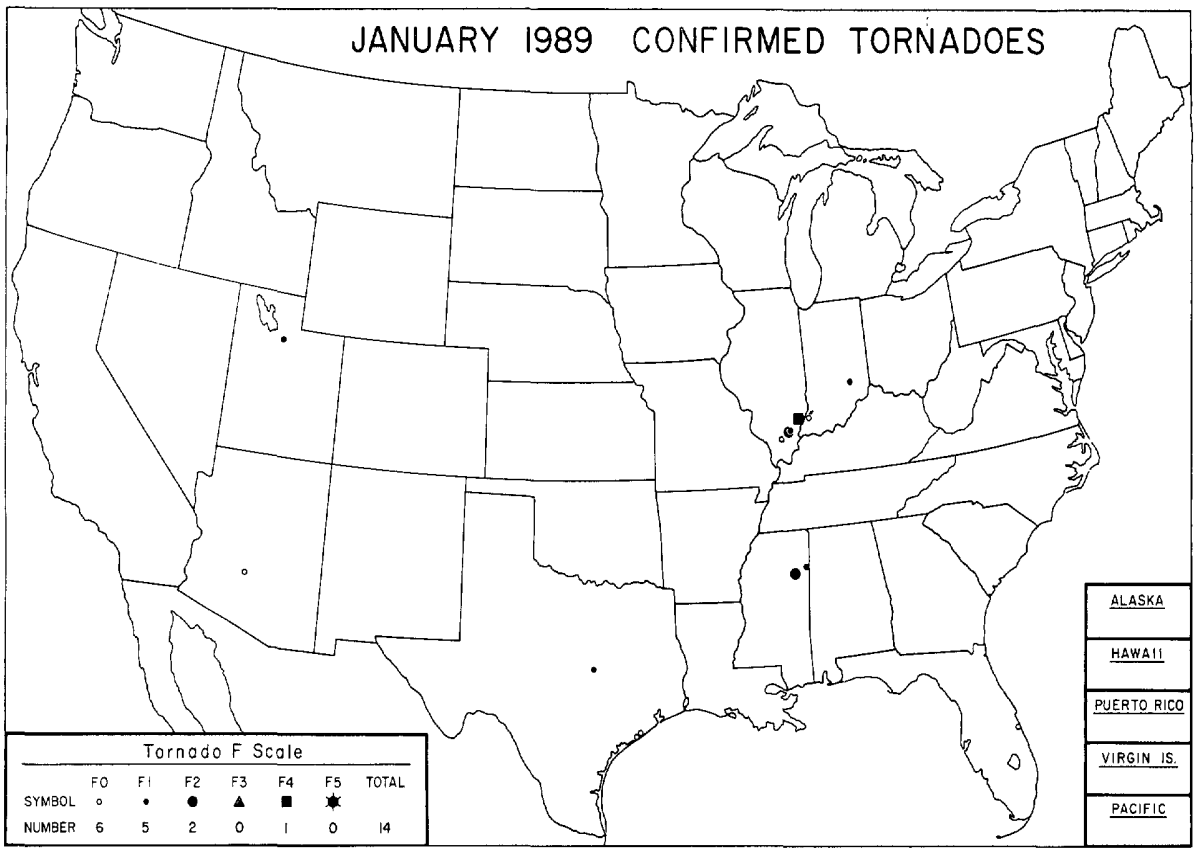
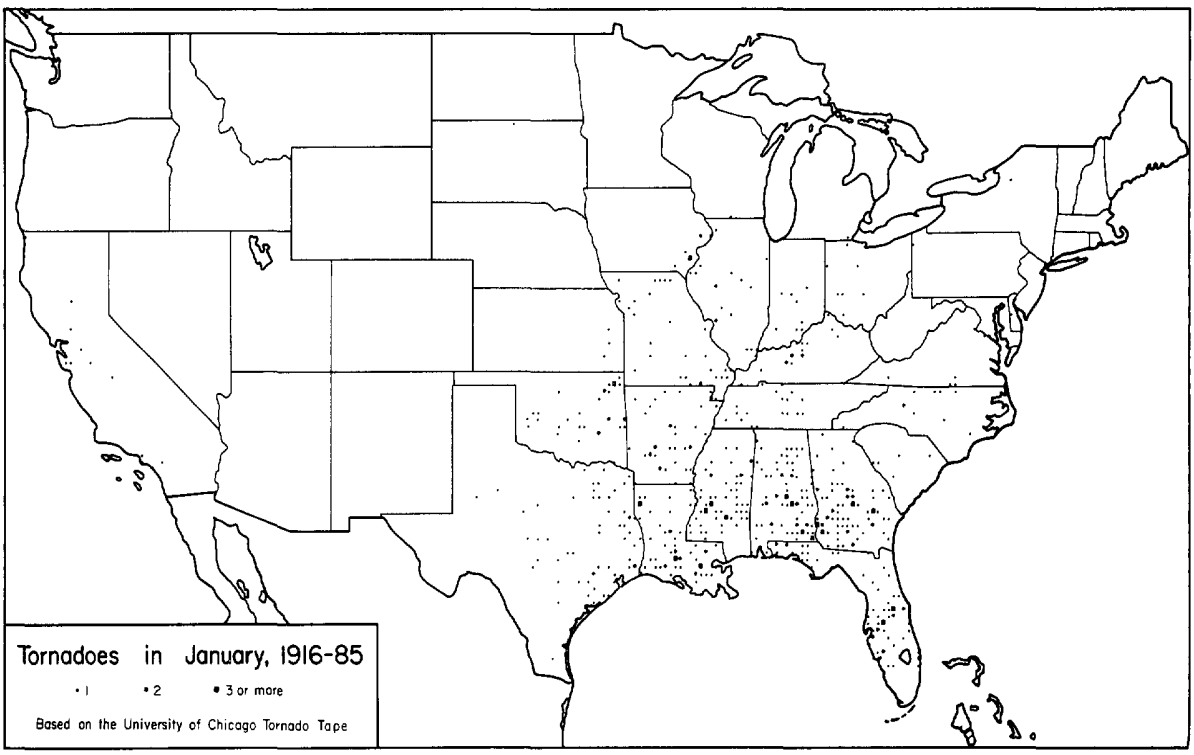
OUTSTANDING STORMS OF THE MONTH

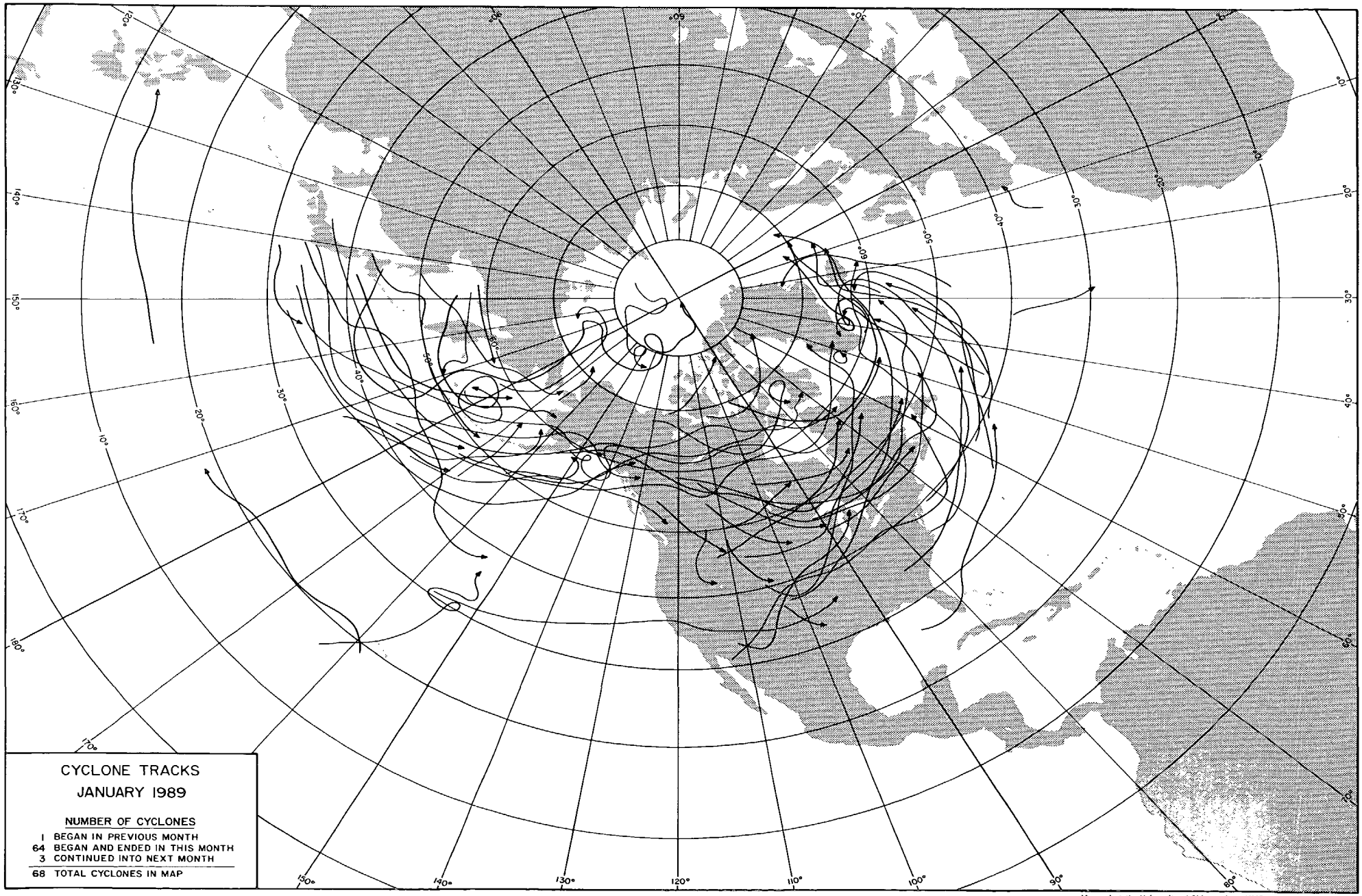


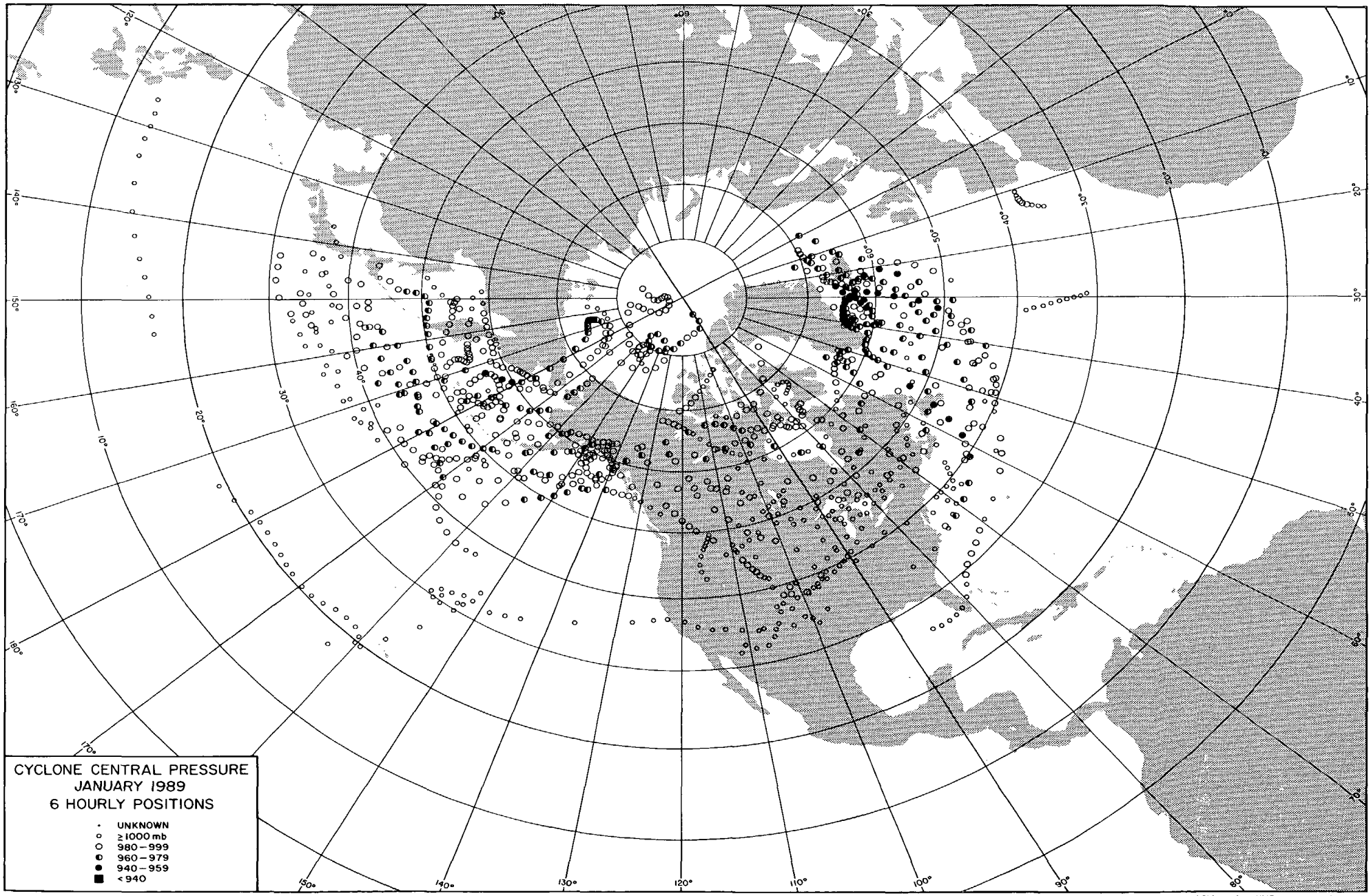
● COMPLETE REPORT RECEIVED
◑ PRELIMINARY REPORT RECEIVED
○ REPORT NOT RECEIVED

(N) northern (W) western
(S) southern (C) central
(E) eastern (O) coastal
(SE) southeastern

● 1AL	● 7DE	● 14KS	● 21MN	● 28NJ	● 33OH	● 39SD	● 44VA	● 49AK(SE)
● 2AZ	● 8FL	● 15KY	● 22MS	● 29NM	● 34OK	● 40TN	● 45WA	● 50HI
● 3AR	● 9GA	● 16LA	● 23MO	● 30NY(O)	● 35OR	● 41TX(N)	● 46WV	● 51PR
● 4CA(N)	● 10ID	● 17ME	● 24MT	● 30NY(C)	● 36PA(E)	● 41TX(S)	● 47WI	● 52VI
● 4CA(S)	● 11IL	● 18MD	● 25NE	● 30NY(W)	● 36PA(W)	● 41TX(W)	● 48WY	● 53PC
● 5CO	● 12IN	● 19MA	● 26NV	● 31NC	● 37RI	● 42UT	○ 49AK(N)	
● 6CT	● 13IA	● 20MI	● 27NH	● 32ND	● 38SC	● 43VT	● 49AK(S)	




CYCLONE TRACKS
JANUARY 1989
NUMBER OF CYCLONES
1 BEGAN IN PREVIOUS MONTH
64 BEGAN AND ENDED IN THIS MONTH
3 CONTINUED INTO NEXT MONTH
68 TOTAL CYCLONES IN MAP
Mapped at the University of Chicago from NMC, cyclone track data

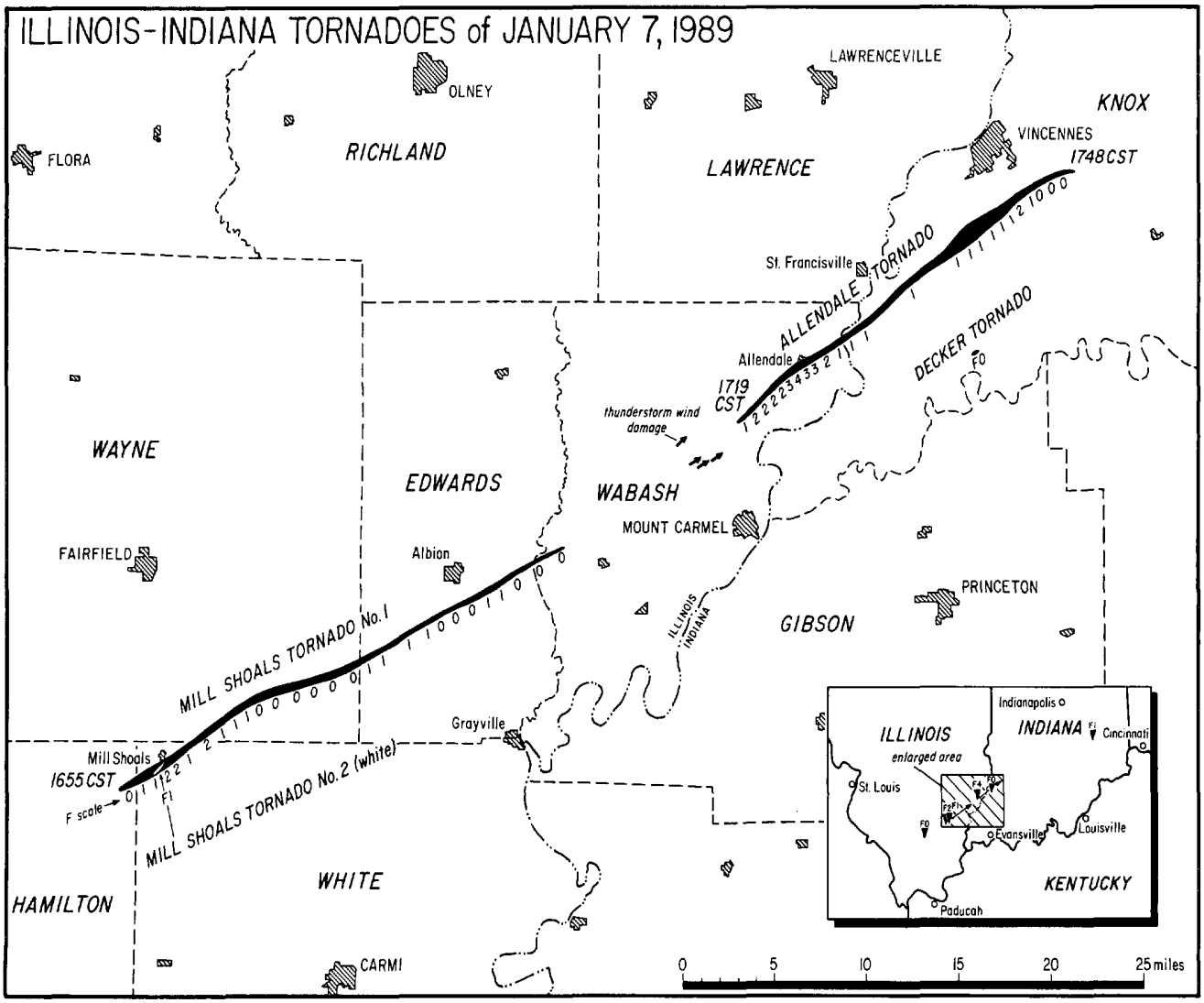

CYCLONE CENTRAL PRESSURE
JANUARY 1989
6 HOURLY POSITIONS
UNKNOWN
≥1000 mb
980–999
960–979
940–959
<940
Mapped at the University of Chicago from NMC, cyclone track data

1. TORNADO at ALLENDALE, ILLINOIS on January 7, 1989

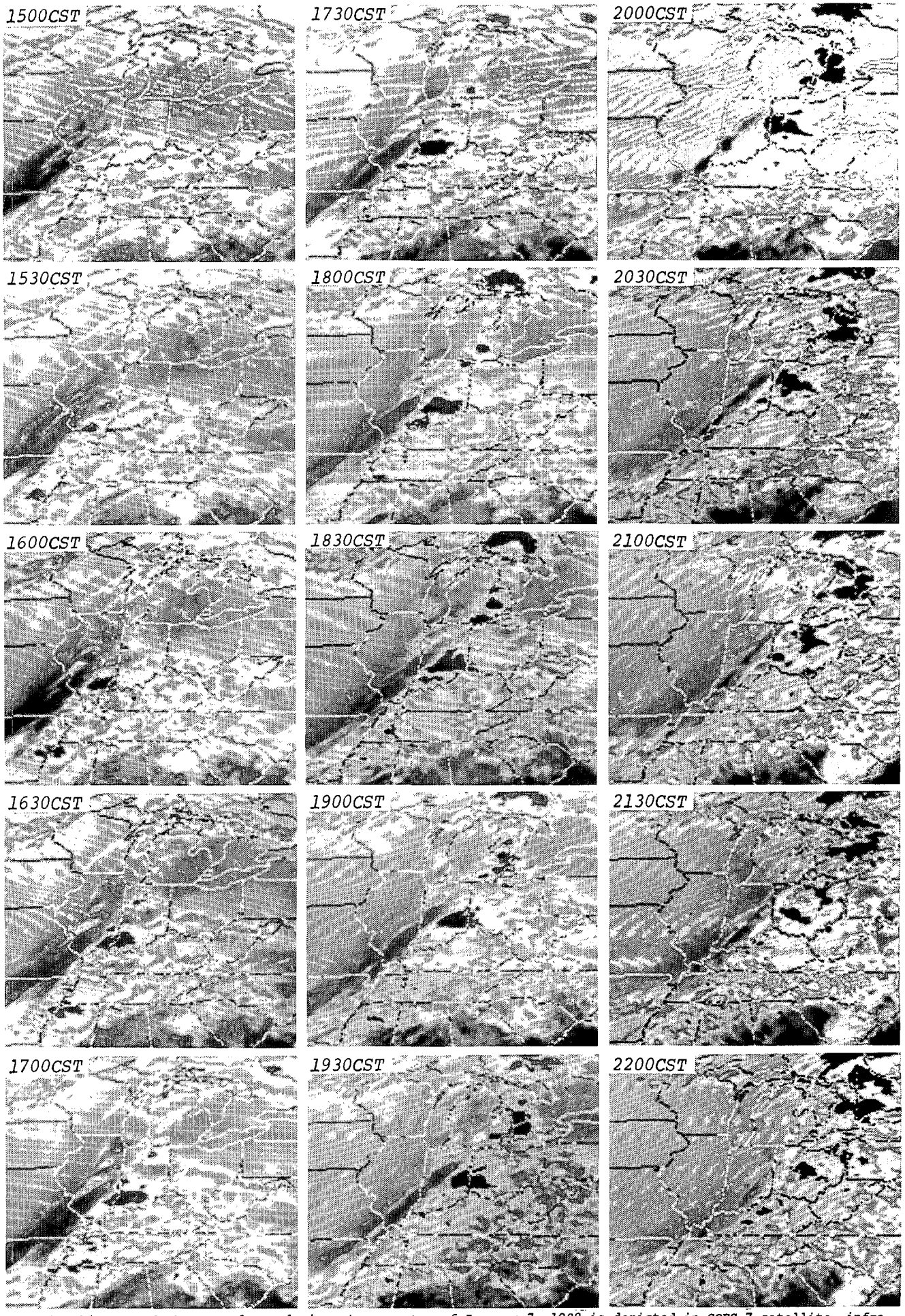
During the late afternoon and early evening of January 7th, thunderstorms produced a series of six tornadoes in southern Illinois and Indiana. One of these tornadoes, rare enough for having occurred so far north at near the middle of meteorological winter, attained F4 intensity as it traversed the southern half of Allendale, Illinois, a small town near the Indiana border about 15 miles southwest of Vincennes. With its population being only about 600 people, much of the town was obliterated by the tornado as 10 businesses, 47 homes and 54 vehicles were destroyed. A few public buildings including a school, post office and fire house were destroyed as well. Amazingly, no deaths occurred, although there were 50 injuries. A few homes at the southwest end of Allendale were completely swept from their foundations. It was found later during an aerial survey of the damage that the tornado had left a number of swath marks in farm fields just prior to entering the town, indicating that the devastating tornado was composed of multiple suction vorticies, numerous miniature but very intense tornadoes rotating about a common center. The tornado began just four miles southwest of Allendale and continued another three miles beyond the town before crossing the Wabash River and entering Indiana. There it continued another 15 miles northeast until ending about 5 miles east-southeast of Vincennes. In Indiana the tornado's intensity was mainly F1 and was never any stronger than F2. The F4 damage was restricted to the area in and just southwest of Allendale.

The other significant tornado of the six in Illinois and Indiana was an F2 that struck Mill Shoals, Illinois, destroying six houses and damaging 46 others there. The tornado occurred prior to the Allendale tornado and was produced by the same thunderstorm. The Mill Shoals and Allendale tornadoes were the only two of the six tornadoes with damage paths of significant length, 27 and 22 miles, respectively. Interestingly, Mill Shoals was visited by a second tornado only 15 minutes after the first. The short-lived second tornado touched down within the damage path of the first tornado on the south side of the town. Its confirmation was based on an eyewitness account as its damage was nondecernable from that of the previous tornado.

There were two more tornadoes that occurred on January 7th, an F2 and F1 that touched down in northeast Mississippi during the late evening hours, which made for a total of 8 for the day. The parent thunderstorms were triggered by an eastward-moving frontal system associated with a low pressure moving from Iowa to the Upper Michigan area during the period. The low pressure center was one of a few that contributed to a major 5-day snowstorm in the North-Central U.S. (see Item 2, page 19).

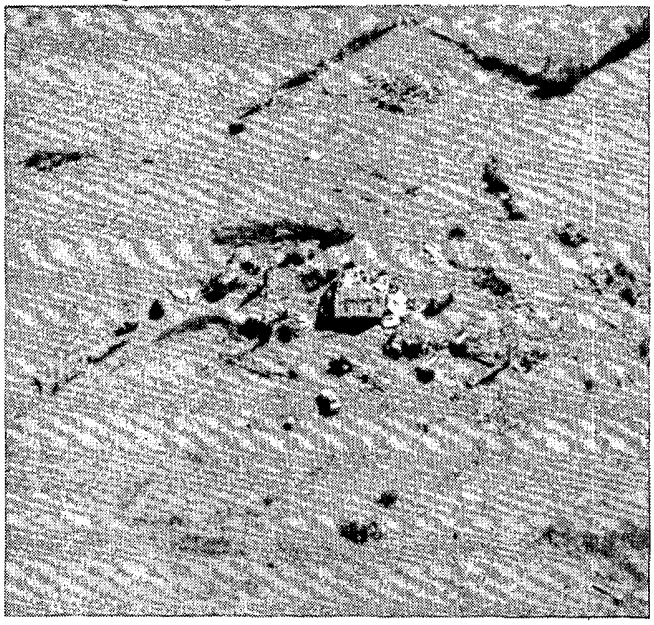


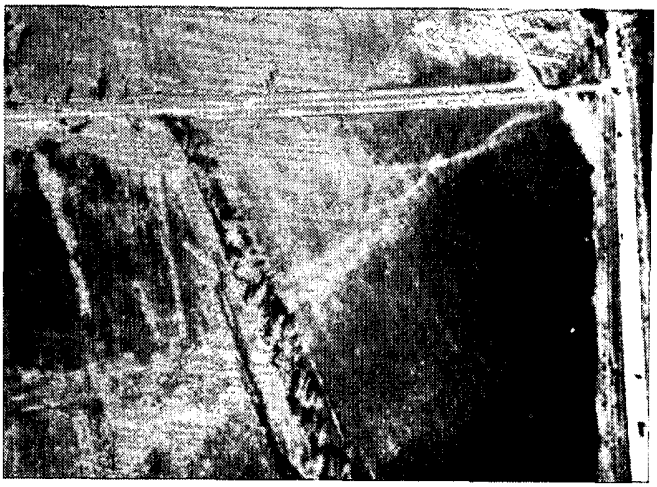
Damage paths of the Illinois and Indiana tornadoes of January 7, 1989, with F scale assessment along the path indicated. ---Mapping by the University of Chicago from aerial and ground surveys, and additional information supplied by NWSFO's at Chicago, Illinois and Indianapolis, Indiana.



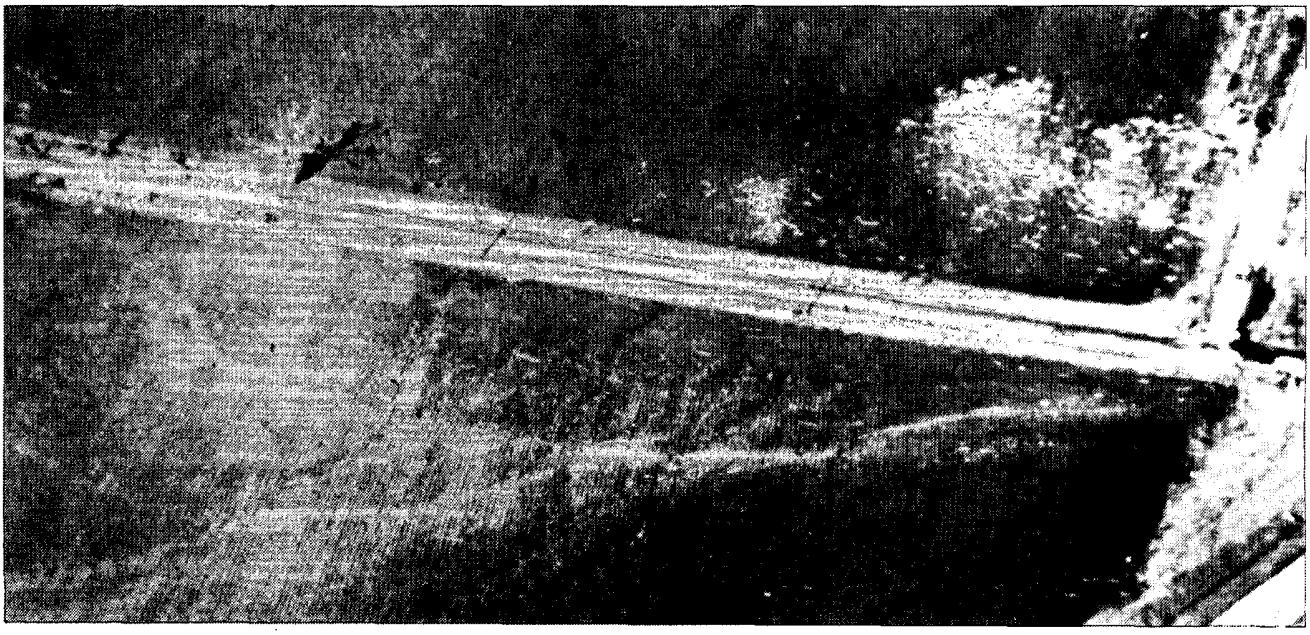
The life-history of the tornado-producing storm system of January 7, 1989 is depicted in GOES 7 satellite, infrared images taken every half hour between 1500 and 2200 CST, the end time being that at which the last two tornadoes occurred in Mississippi. ---Photos from NESDIS, Washington, DC.

Below is a farm house about one mile southwest of Allendale that was rotated on its foundation as the center of the Allendale tornado passed directly over it. The tornado's strongest wind at the time, F3, was just southeast of the house, in the area between the house and the top of the photo. ---(DS)

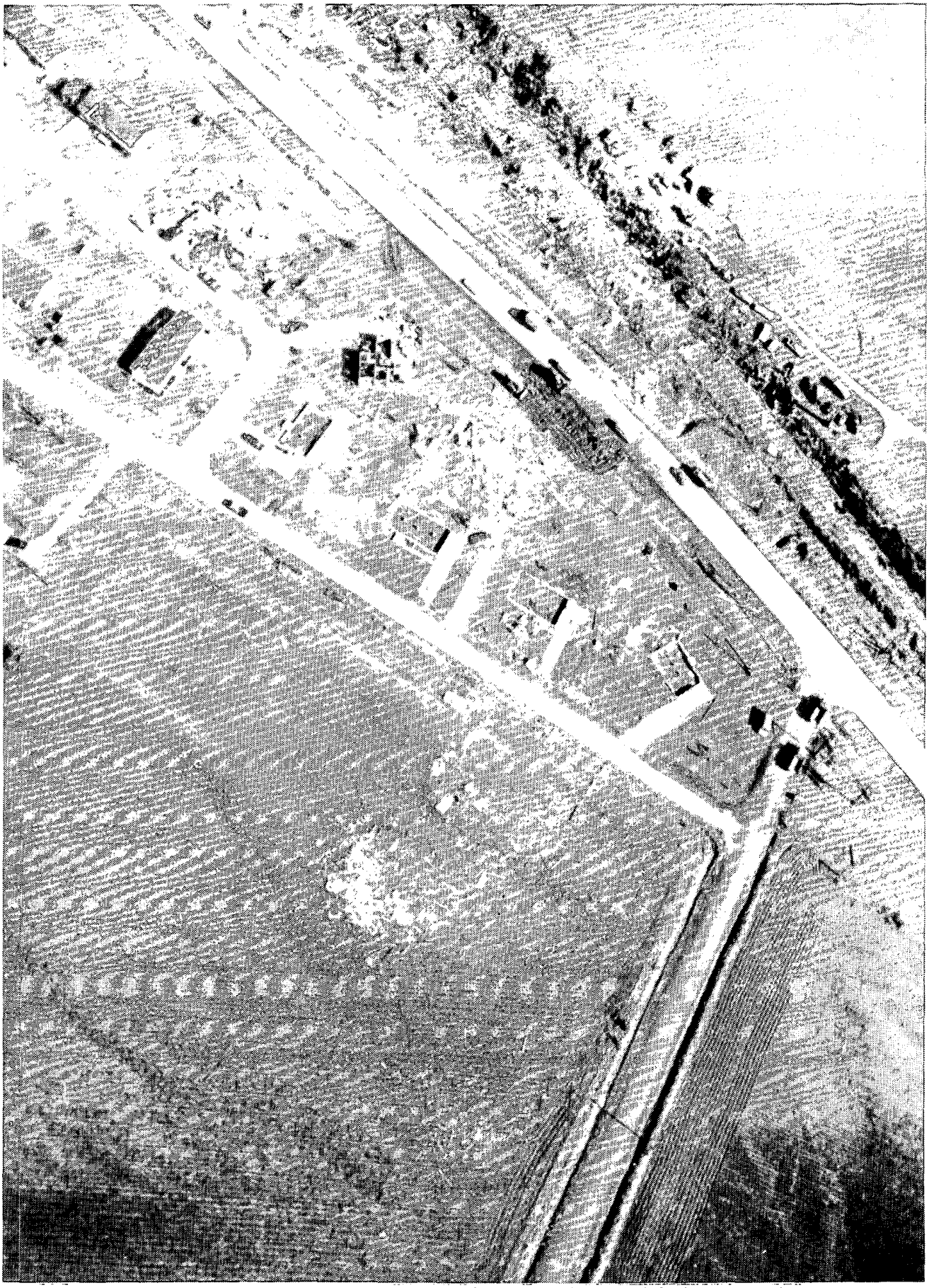




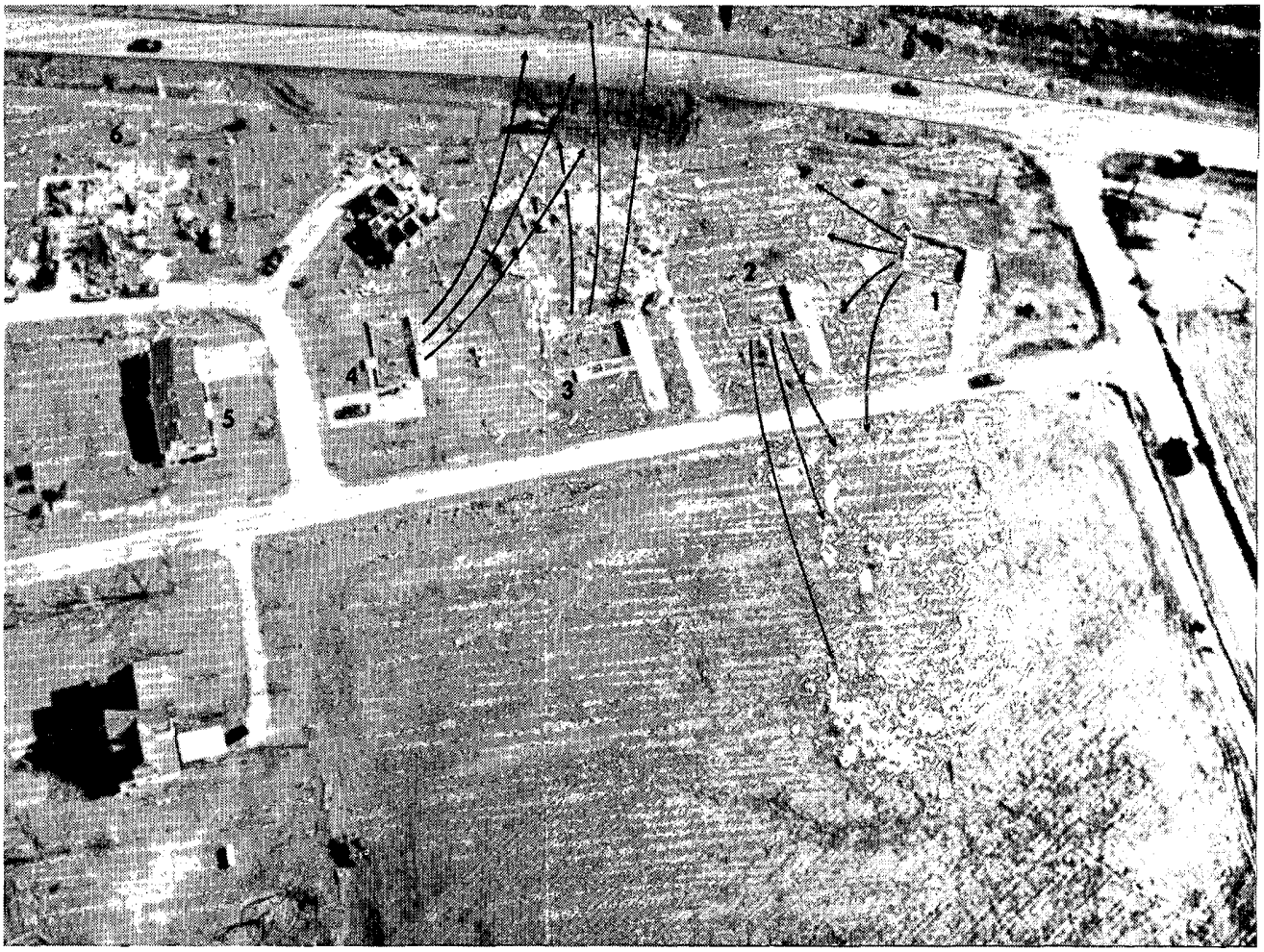
Above and below are swath marks made of crop stubble and other debris that were left in farm fields just southwest of Allendale, evidence of multiple suction vorticies within the wall of the tornado. The large open arc of the swaths indicate that the tornado was fast moving, about 45 mph, meaning that the tornado's translation contributed significantly to its maximum windspeed located on its right side along its direction of movement. In the photos the tornado's movement was from lower left to upper right (above) and left to right (below). ---Both (DS)



Above and at left are westward views from Illinois Highway 1 of damaged houses in the Galliatt addition on the southwest edge of Allendale; someone had partially propped up the highway sign announcing the town and its population of 600 after the sign had been flattened by the tornado. ---Both (UI)

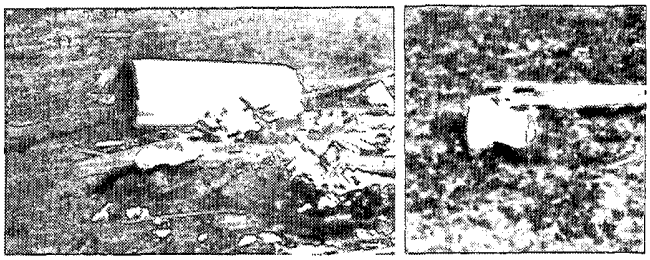


The first part of Allendale to be hit, the Galliatt addition is seen in an aerial view toward the northeast, along the direction of the tornado's movement. Four of the southernmost homes along Division Street just west of and parallel to Illinois Highway 1 were completely removed from their foundations. From south to north, right to left in the photo, the first home (empty) was lifted up and scattered mainly north, the second was carried west, the third east, and the fourth southeast. Debris of the second home ended up in the farm field at the bottom of the photo, while debris from the third and fourth was strewn across Highway 1 (see analysed photo on the following page). The numerous vehicles along the abandoned railroad bed paralleling Highway 1 (upper right) were being towed to that location from within Allendale during the cleanup, all having been damaged or destroyed by the tornado. ---(DS)



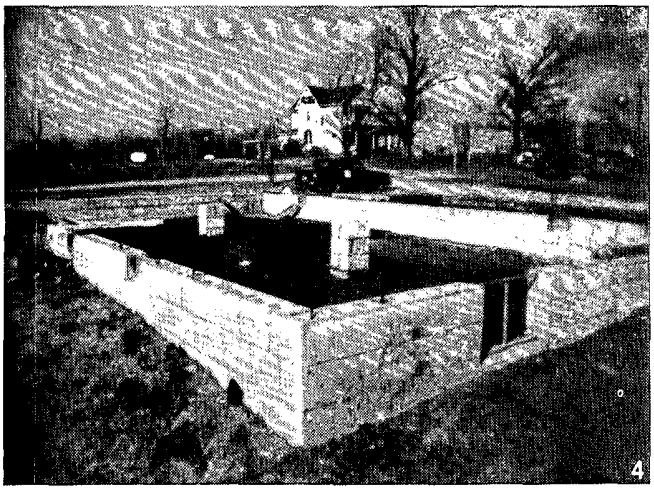
An eastward aerial view of the Galliatt addition with streamlines of the homes' motion drawn in. *Illinois Highway 1 parallels the top edge of the photo; Adams road runs along the right edge. Photos below and on the following two pages are all of damage in and around the addition. ---(DS)*

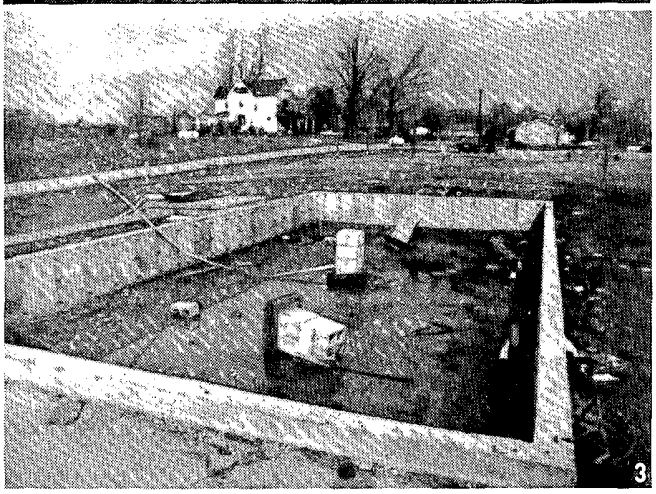
North (top) and west views of strewn debris that was created as the second home north along Division Street from Adams Road was flung into the farm field. Some of the house ended up in and along the ravine bordering Division Street. The homeowner had taken refuge in the ravine moments before the tornado struck and escaped with only minor injury. ---Both (JS)

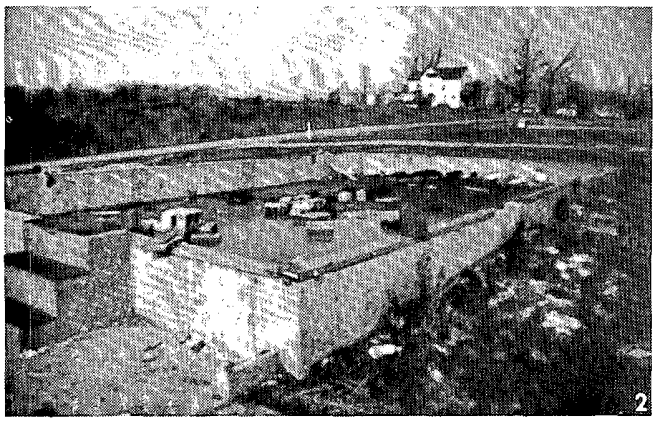


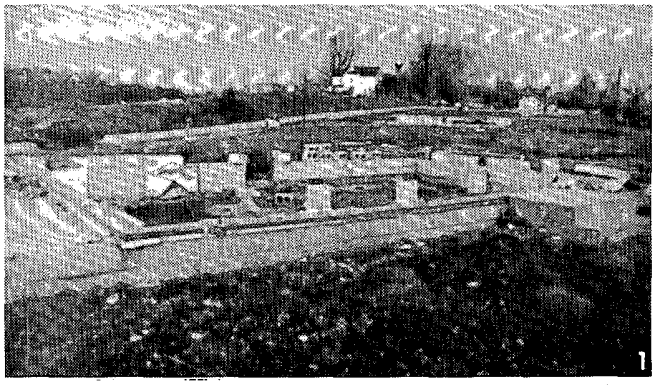
Above, some of the largest identifiable objects in the debris pictured in the photos at left were the hot water heater and toilet. ---Both (JS)

Debris along Highway 1 which originated from the third and fourth homes along Division Street north of Adams Road. A family of four in the third home was carried with the house; the wife ended up in the back yard and the husband and two children were deposited onto Highway 1, ending up against a car that had stopped in the tornado. Apparently missed by the suction vorticies, the car had not been swept off the road. All four family members survived but with varying degrees of injury. ---(UI)

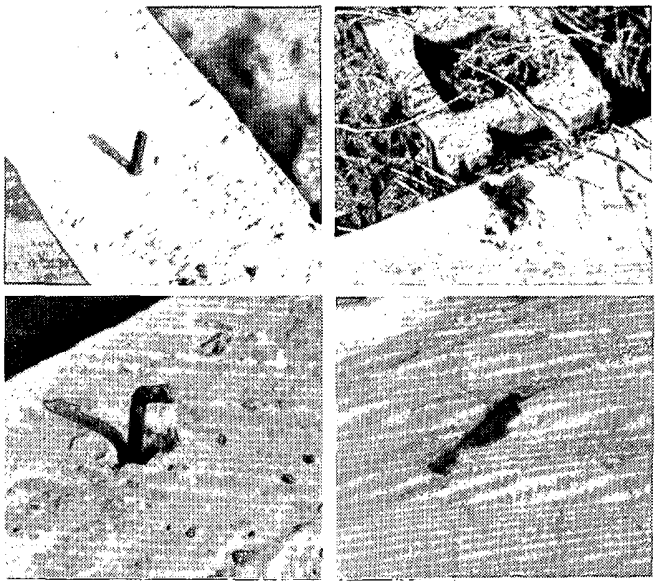




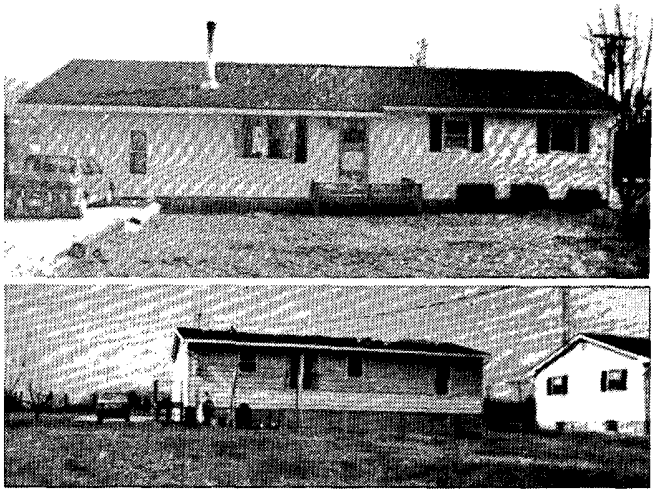




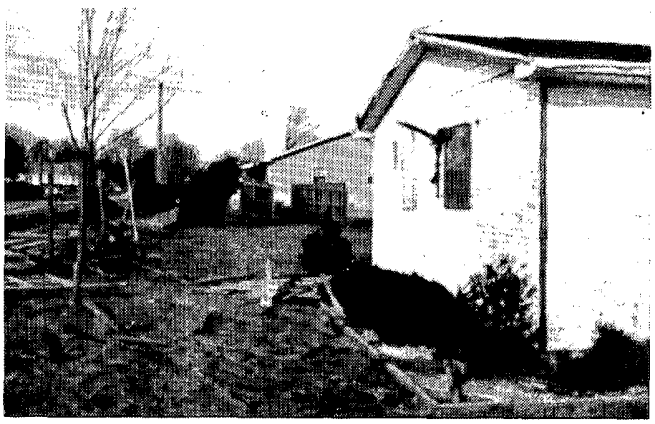
The foundations of the four homes that were ripped from their sites in the Galliatt addition, viewed toward the northwest from northernmost (top) to southernmost. Numbers correspond to those in the photo at the top of the previous page. As can be seen, some of the foundations were solid concrete while others were made of concrete block. Although all the homes had been fastened to their base in some manner, in all cases the manner proved to be questionable and obviously inadequate. ---All four (JS)



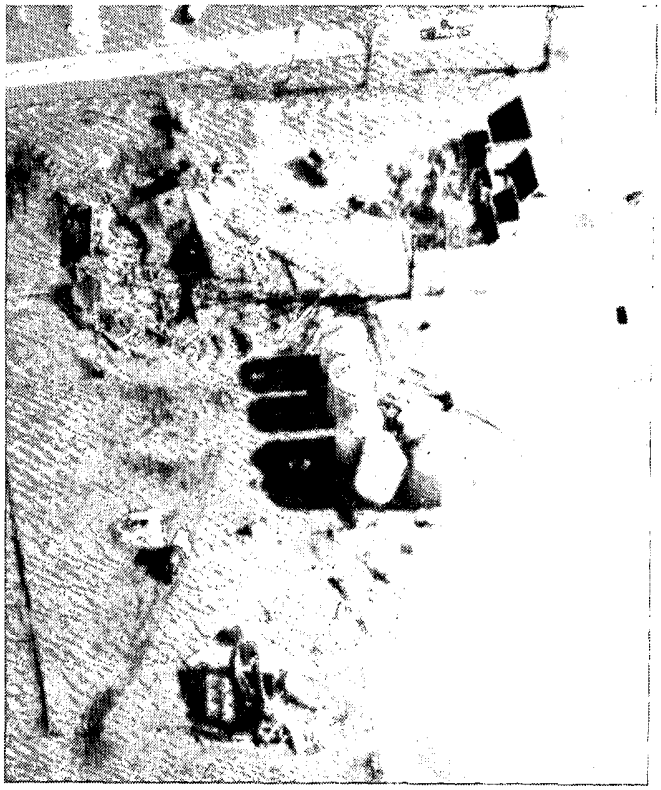
Clockwise from upper left, examples of the anchoring bolts used on the Galliatt homes included only the threaded anchor without a nut or washer, one with a nut and small washer that failed to hold and bent under the stress, a threaded anchor without a nut that was merely hammered over onto the bottom board of the wall frame during construction - the wall ripped away anyway, leaving the bottom board on the foundation - and a similarly hammered over anchor from which even the bottom board had been pulled away. ---All four (JS)



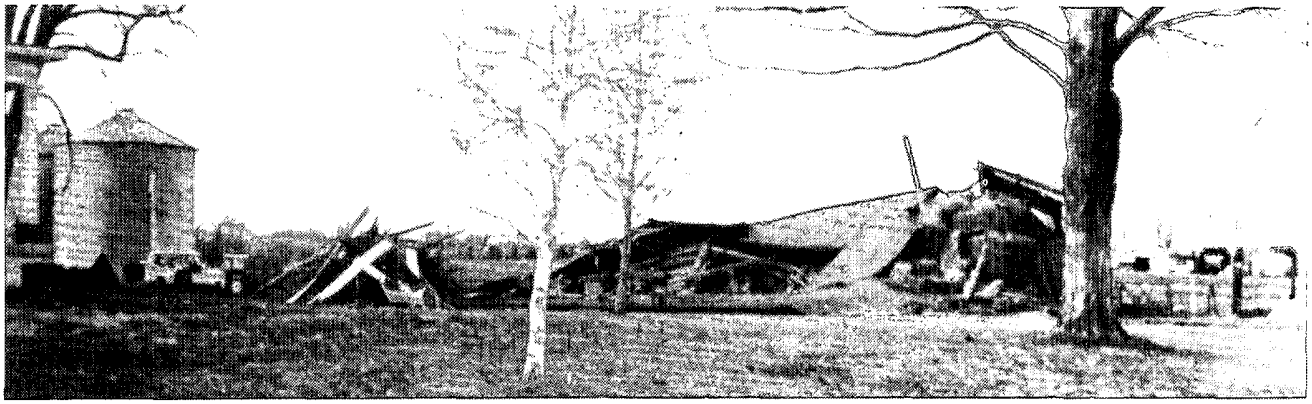
Examples of homes in the Galliatt addition that suffered little or no damage. ---(JS)

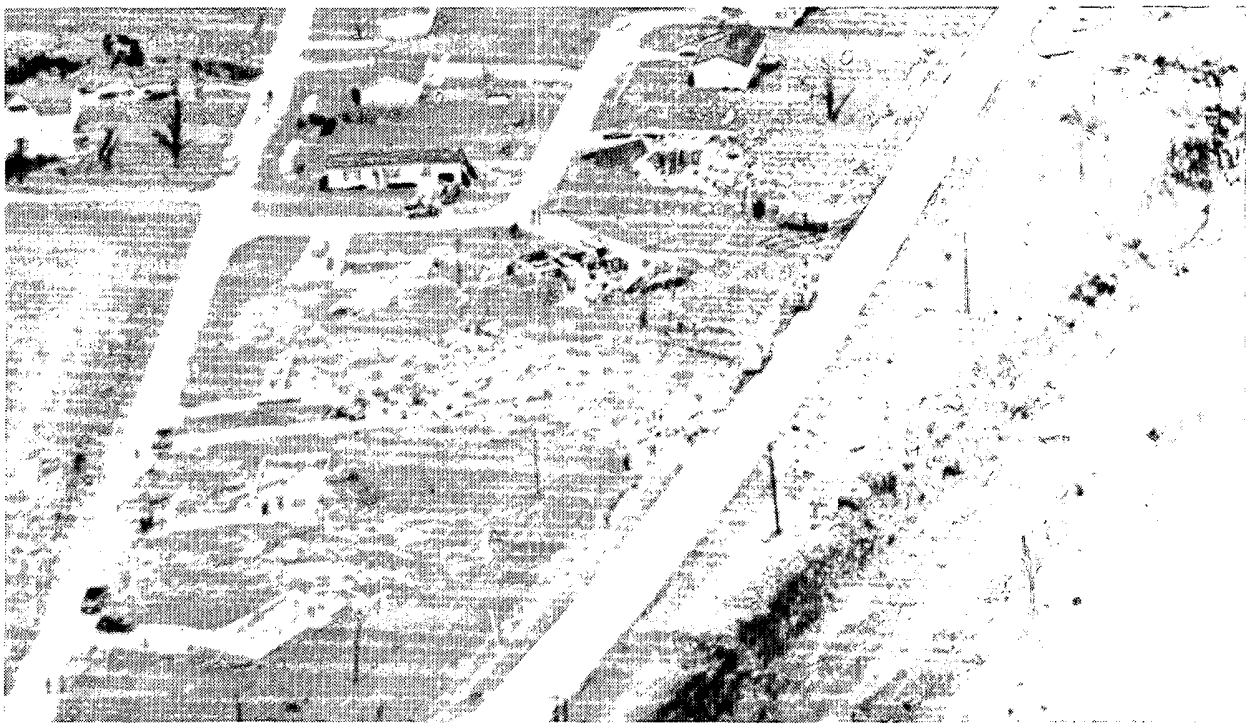


The west wall of this Galliatt home (Number 5) immediately north of the four leveled homes was penetrated by an airborne piece of wood from a barn across Division Street. The home's windows were broken and fencing around the yard was also torn apart. ---(UI)

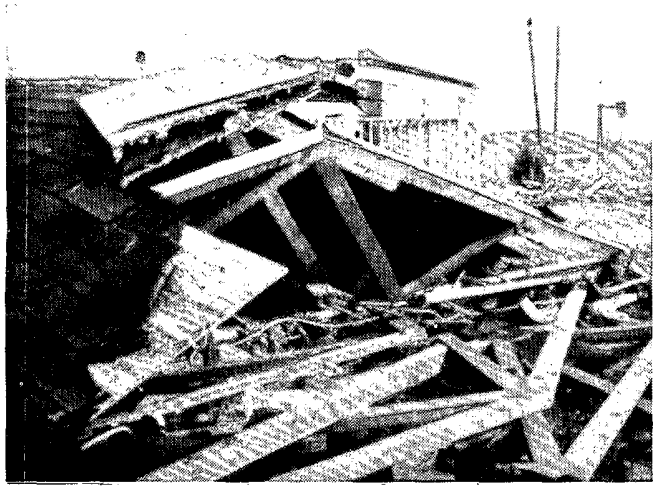


Above are homes in the Galliatt addition with varying degrees of damage, right and below in aerial and ground-level views respectively is a farm across Division Street from the addition that sustained the collapse of its barn. ---Above and right (DS), below (UI)





The Galliatt addition viewed toward the north as it appeared on the morning after the tornado, before any major cleanup was begun. At this time only Illinois Highway 1 had been cleared of debris. ---(BD)

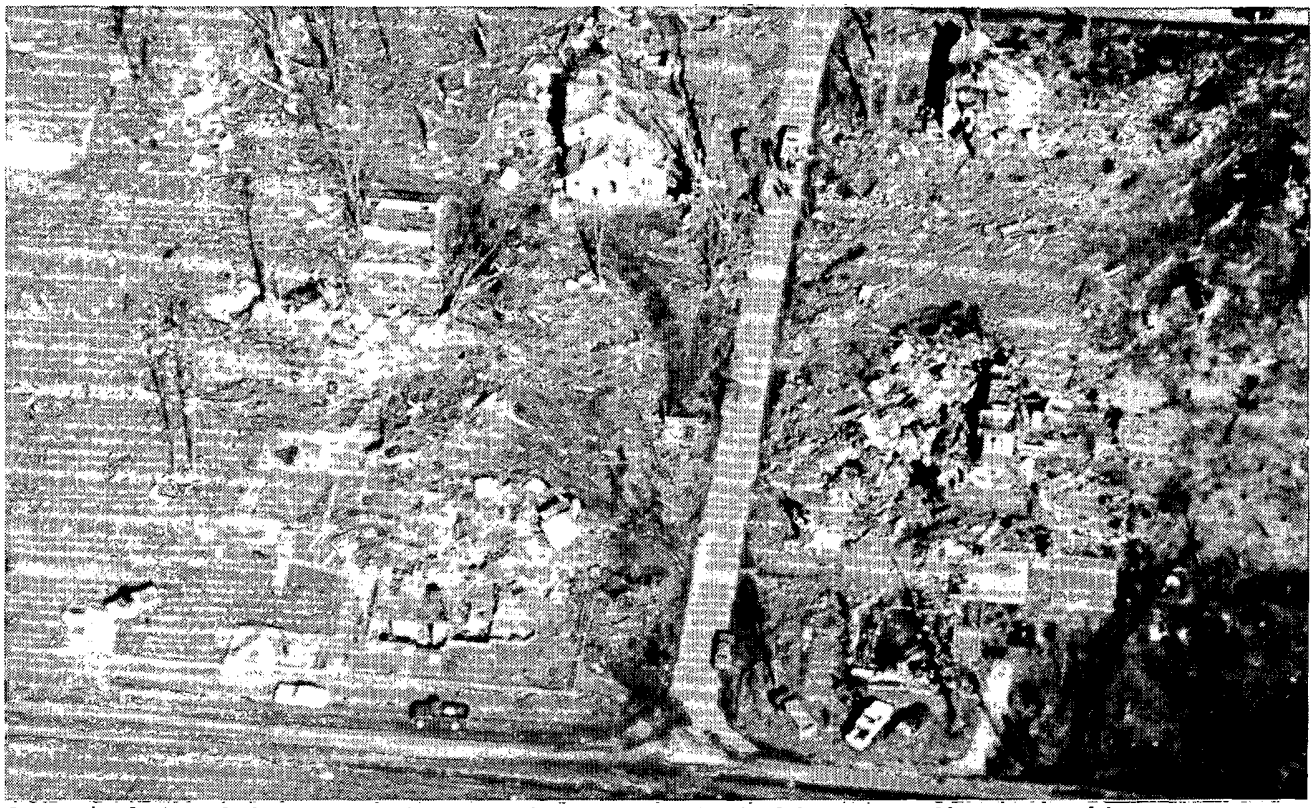


The roof of the home marked Number 6 in the photo on page 10. It was shifted westward off the house and ended up in the front yard. ---(UI)

An east-northeast view along and very near the centerline of the tornado's heaviest damage through the residential south end of Allendale. Imbedded in the trunk of the snapped off tree is a piece of metal from a mobile home or warehouse. ---(UI)

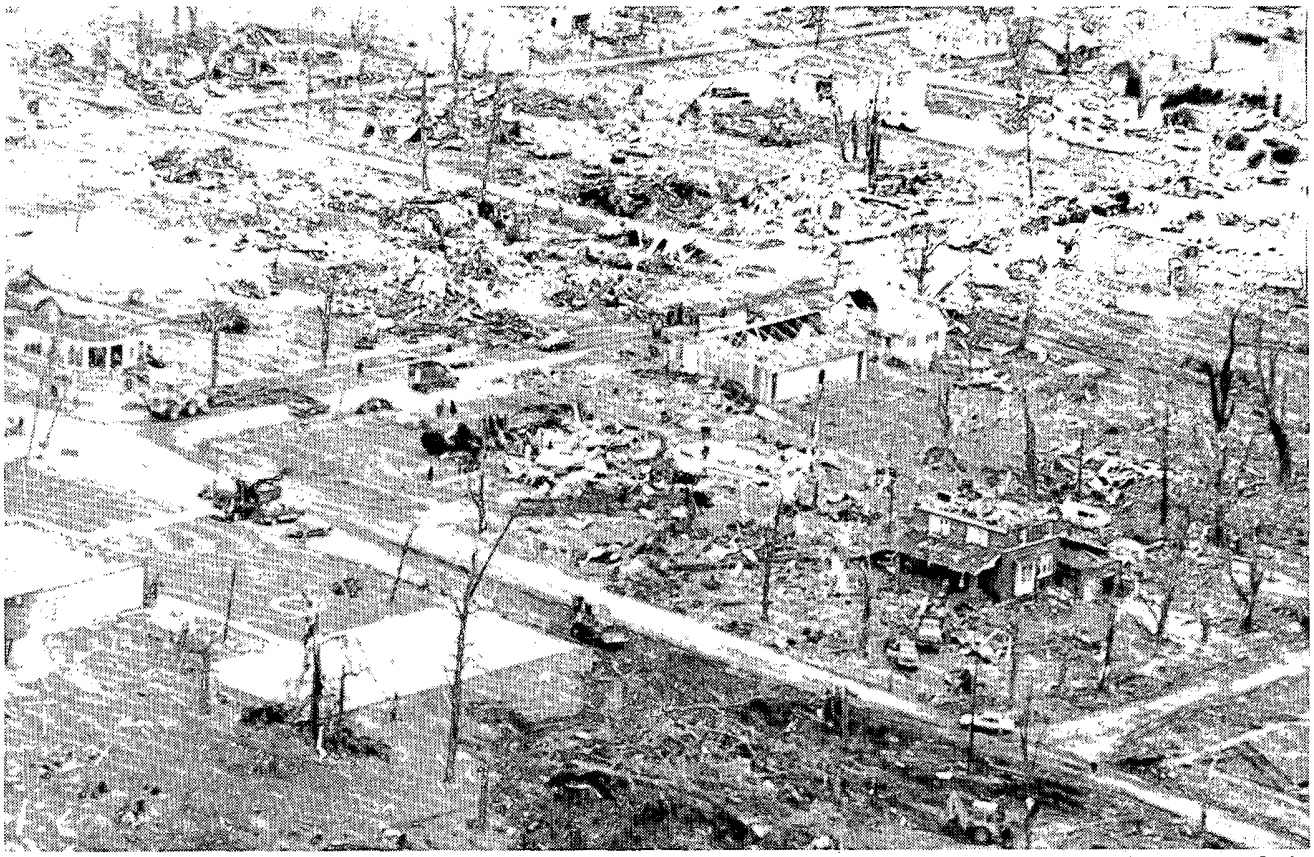
Remains of a community center along the north edge of the damage path near the center of Allendale, viewed toward the south. ---(UI)

A home across Main Street from the Allendale fire house that was heavily battered by flying debris. The fire house was completely destroyed. On the right in the background is the Allendale school, one block to the east. ---(UI)

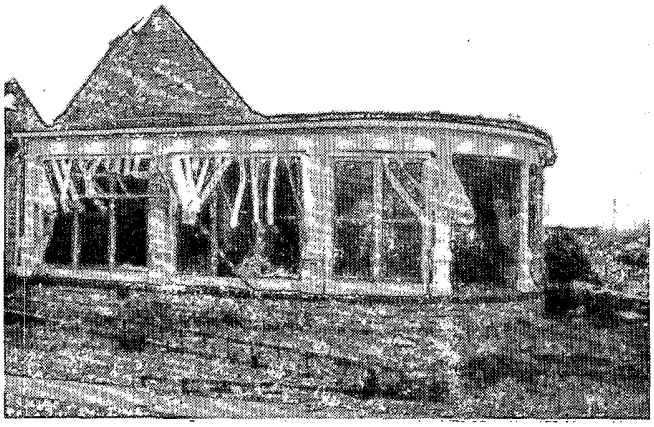


An overhead view of the strongest damage at the south end of Allendale. Some well-constructed homes were completely leveled. The tornado's area of strongest wind moved from the lower left to upper right corner of the photo. ---(DS)

The southeast corner of Allendale as seen in two aerial views toward the north taken from different elevation angles. Main Street, along which most of Allendale's business and public buildings were located, is seen cutting across the upper right corner of the photo. The Allendale school is located at the east end of Main Street, just out of frame off the right edge of the bottom photo. ---Top (DS), bottom (BD)



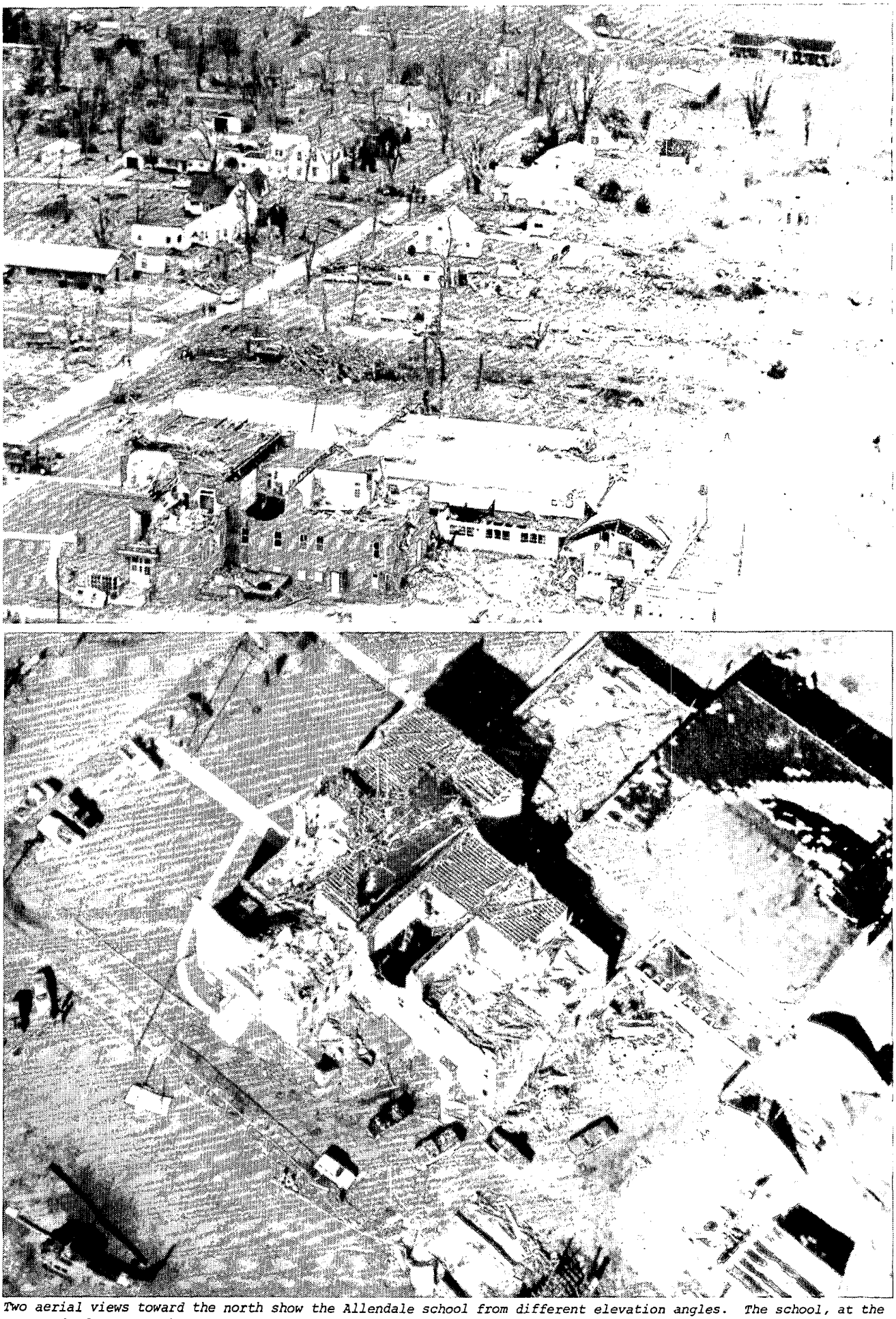
Looking southwest along the line of heaviest damage, this view shows Main Street cutting across the center of the photo, a portion of the town's business district appearing in the upper right corner and the Allendale school in the lower left. ---(BD)



Mangled awnings and a toppled TV antenna tower are part of the damage done to this house directly across the street from the Allendale school on the south side of Main. ---(UI)

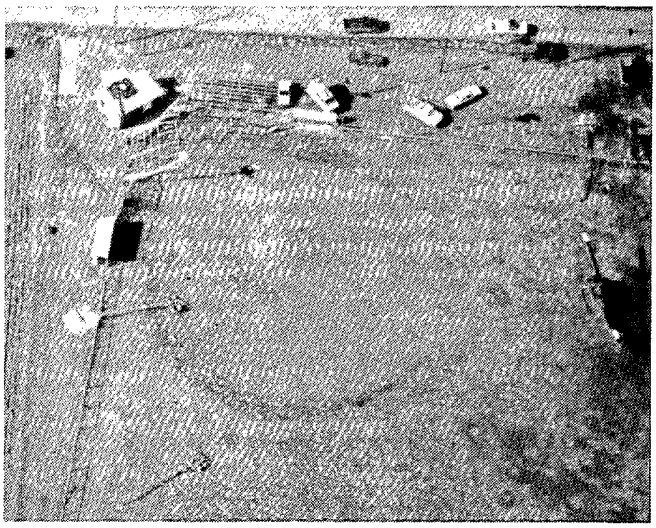
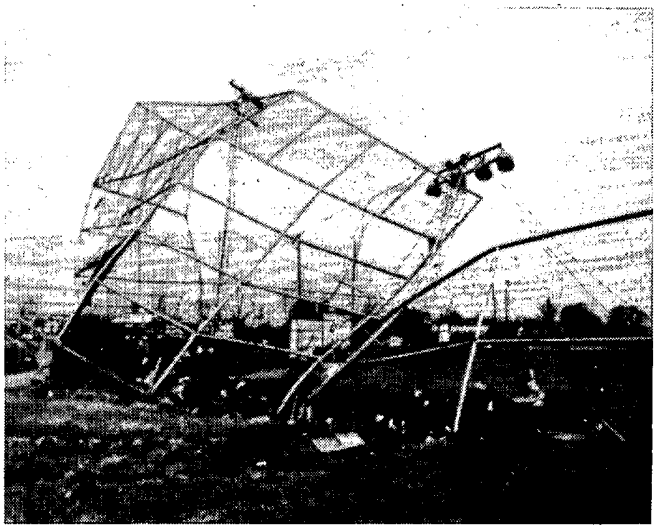
The scene along Main Street looking west toward the business district from the Allendale school. ---(UI)

A northward view of another house across the street from the school, this one on the north side of Main. It was demolished by the tornado. The next house to the north, the brick structure at the right edge of the photo, lost its roof. ---(UI)

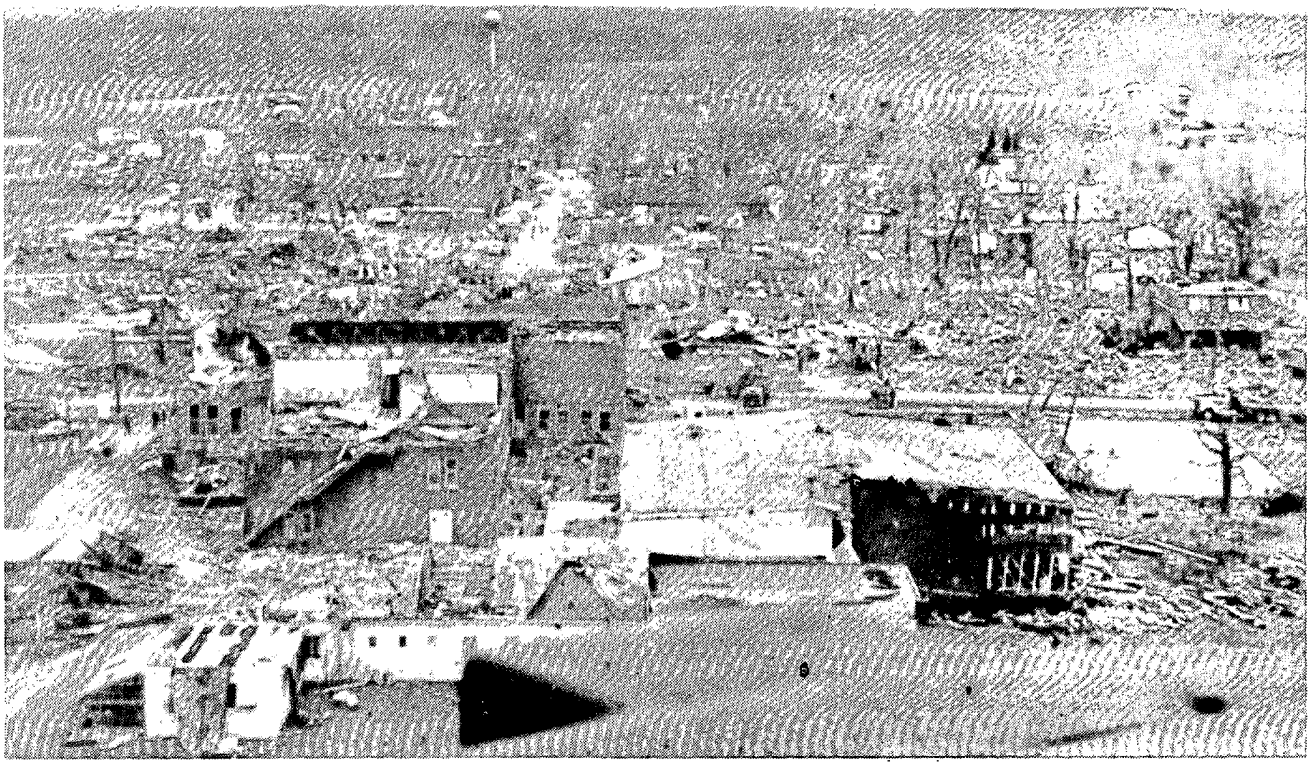


Two aerial views toward the north show the Allendale school from different elevation angles. The school, at the east end of town at the terminus of Main Street, was situated at the south edge of the line of heaviest damage. The building lost much of its roofing and a number of second-story walls. Most windows were broken and there was extensive damage done to the interior. ---Top (BD), bottom (DS)

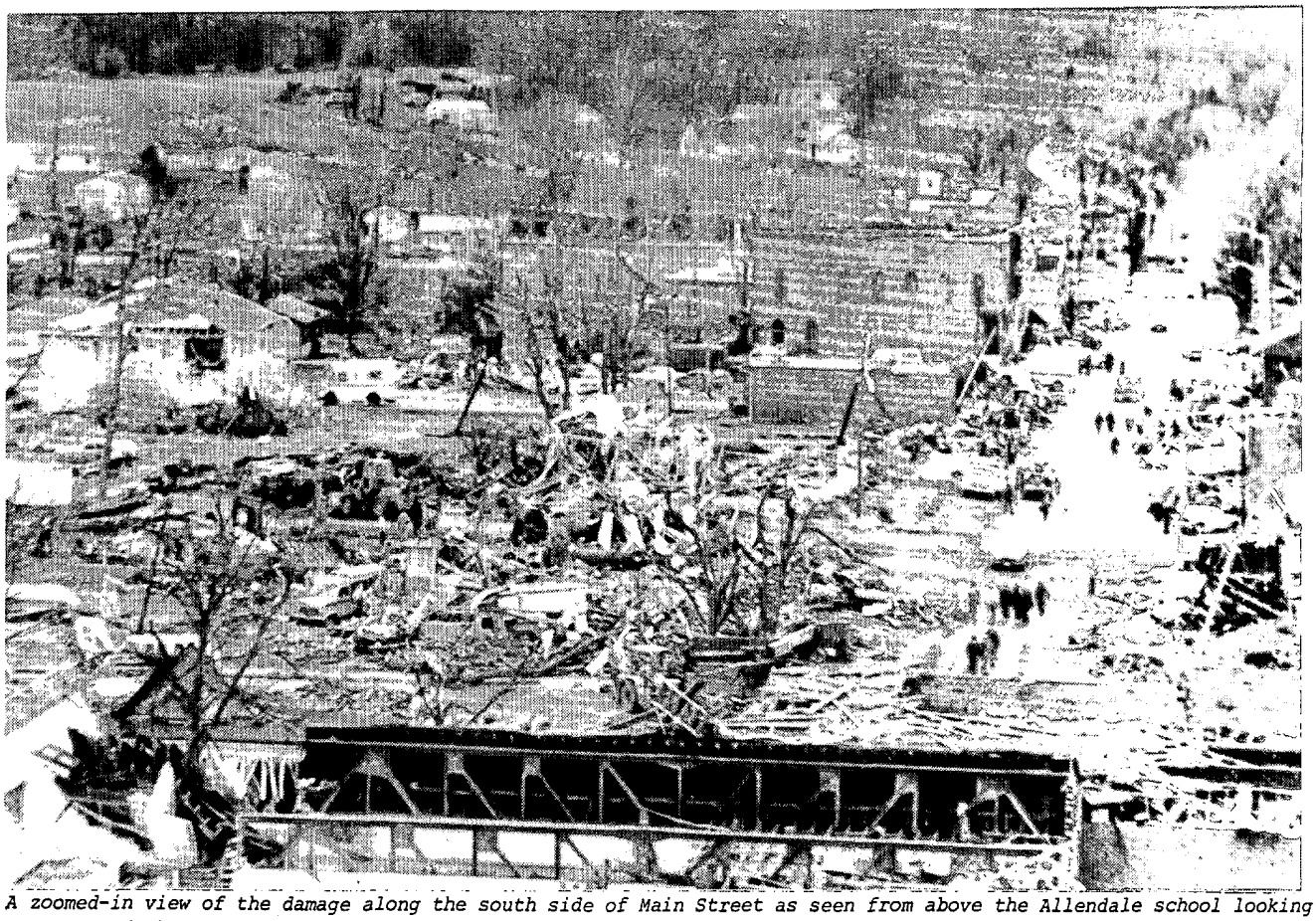

The front, west face of the Allendale school (left) and the north wall of the school's gymnasium (right), located on the north side of the school's main building. The gym's wall appeared to have been yanked off by the winds, whereas the roof stayed in place. ---Both (UI)

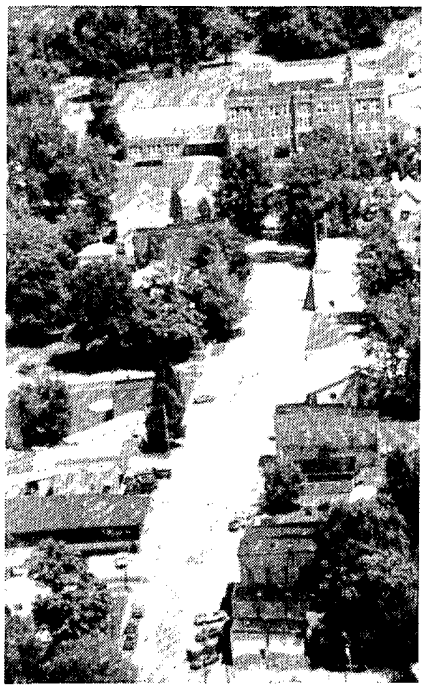
Damage to the school's baseball field on the south side of the building included the toppling of light standards and the mangling of the backstop made of "cyclone" fence. ---Left (DS), right (JS)



The rear of the Allendale school, viewed toward the west. ---(BD)



A zoomed-in view of the damage along the south side of Main Street as seen from above the Allendale school looking west toward the business district. ---(BD)



A summertime scene of Main Street and the Allendale school as they appeared before the tornado struck. ---(BD)

A wrecking ball finishes what the tornado could not as older buildings housing businesses on Main Street are leveled after having been damaged beyond repair by the tornado. ---(DS)

---Photo credits for pages 8 through 18 are as follows:

(BD) by Ben Dicus, The Daily Republican Register, Mount Carmel, Illinois; taken on the morning of January 8, 1989.

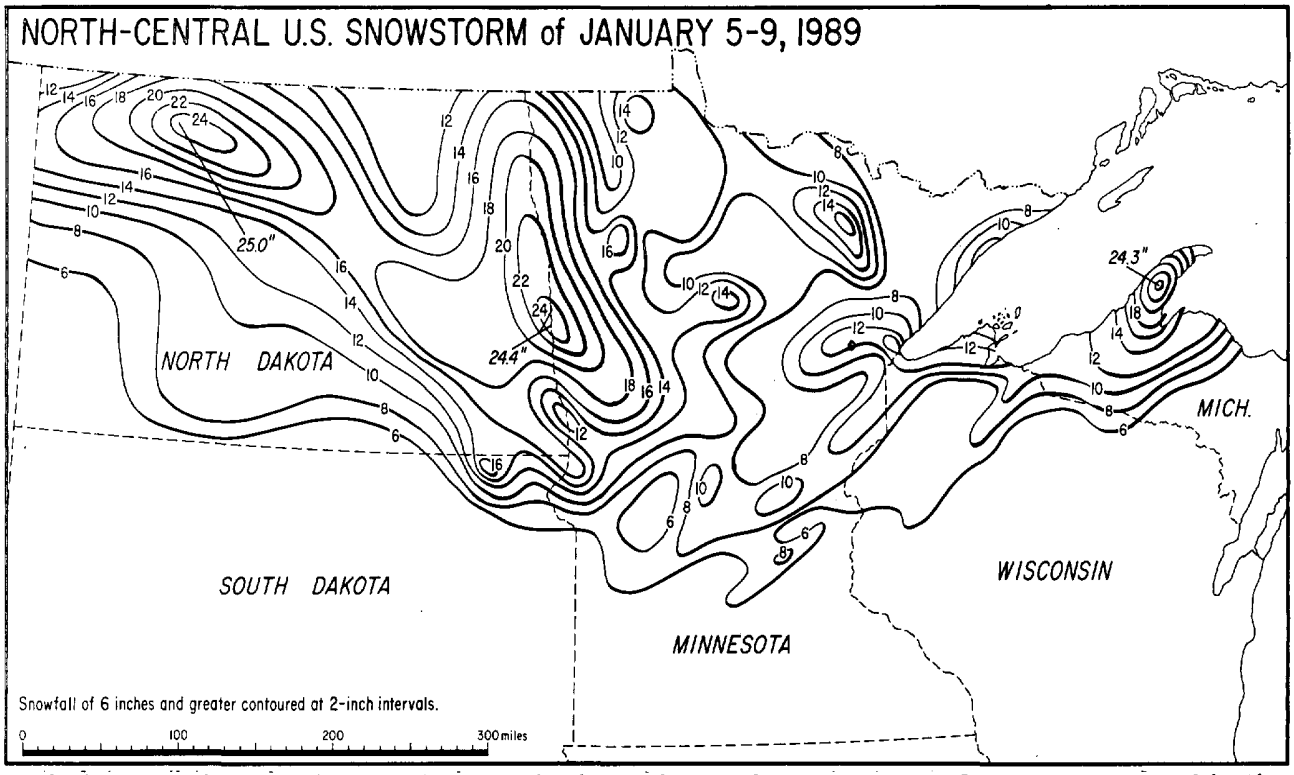
(UI) by Harold Brooks and Mike Shields, Department of Atmospheric Sciences, The University of Illinois at Urbana-Champaign; taken during a ground damage survey conducted on January 9, 1989.

(DS) by Duane Stiegler, Wind Research Laboratory, The University of Chicago; taken during an aerial survey conducted on January 10, 1989.

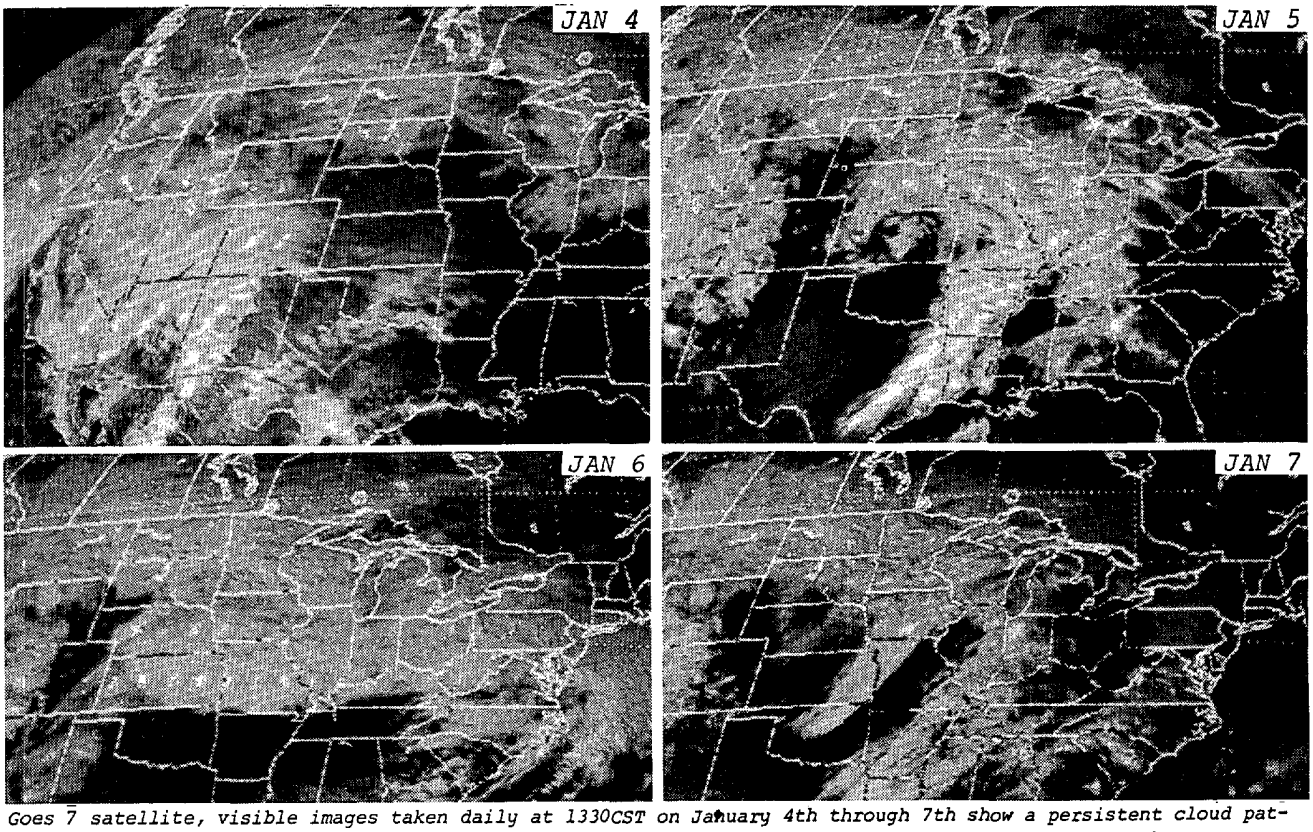
(JS) by Joseph Skowronek, Wind Research Laboratory, The University of Chicago; taken during a ground survey conducted on January 27-31, 1989.

2. SNOWSTORM in the NORTH-CENTRAL U.S. on January 5-9, 1989

Heavy snows fell over the North-Central U.S. on January 5th through 9th as a number of low pressure centers moved around the area, each making its contribution to the snowfall which alternately increased and decreased in intensity during the period. One low moved southward through western Montana and Idaho on the 4th through 6th, another moved northeast from Arizona to Ohio during the same period. A third low moved east across southern Saskatchewan and Manitoba in Canada on the 4th and 5th, and a fourth moved northeast from Kansas through the upper Great Lakes on the 6th through 8th. The snowfall's greatest impact was in the Red River Valley along the North Dakota-Minnesota border where the up to two foot amounts were quite unusual for a single event. The 24.4 inches measured at Fargo was a new single-storm record.



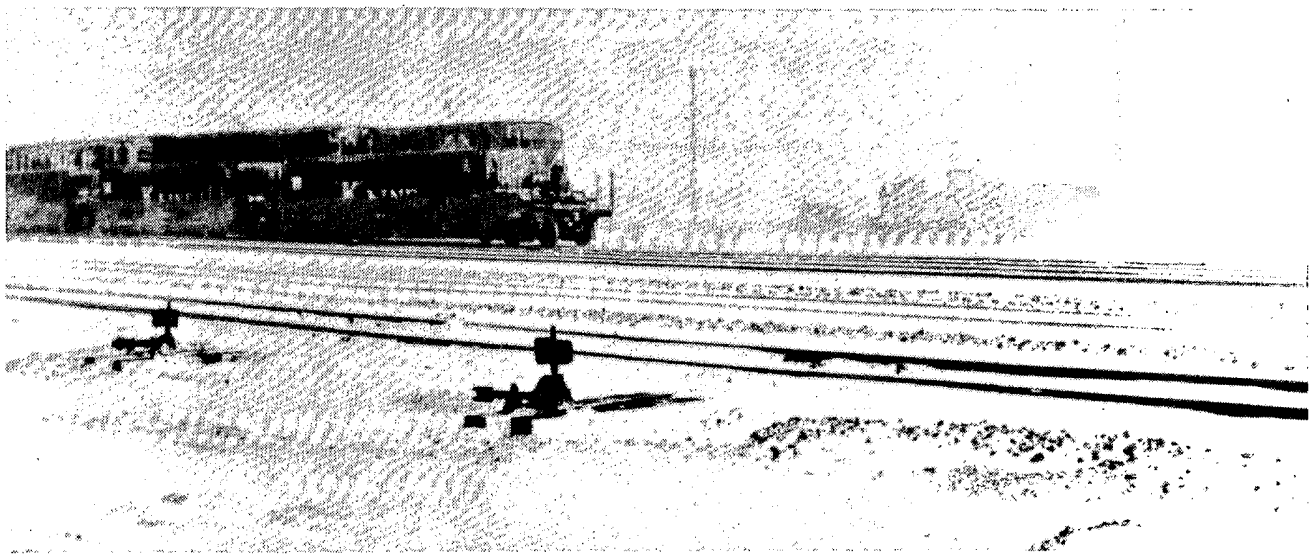
Analysis of snowfall of 6 inches and greater in the North-Central U.S. on January 5-9, 1989. ---Mapped by the University of Chicago from data supplied by NWSFO's at Ann Arbor, Michigan; Bismarck, North Dakota; Sioux Falls, South Dakota; and Milwaukee, Wisconsin; and the Minnesota State Climatology Office, St. Paul.



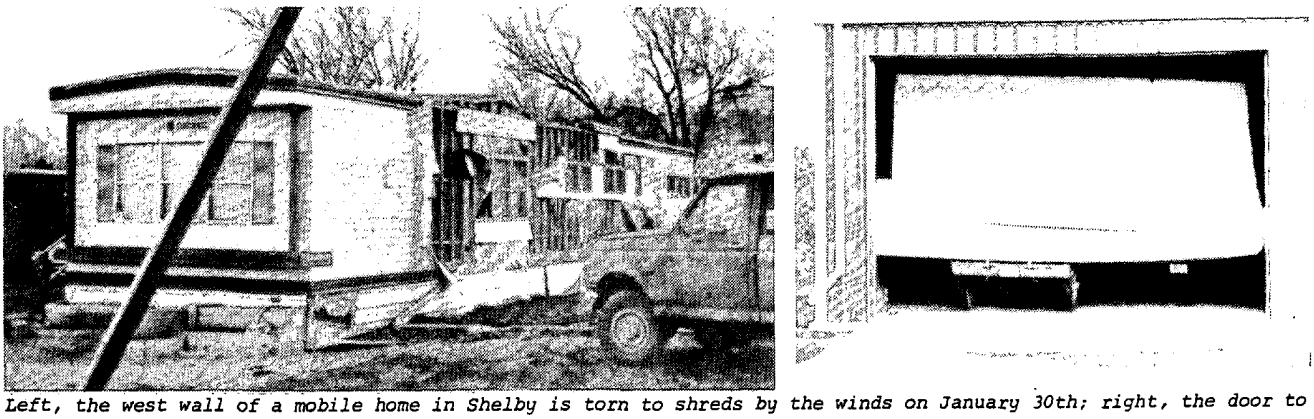
Goes 7 satellite, visible images taken daily at 1330CST on January 4th through 7th show a persistent cloud pattern over the North-Central U.S. that dumped the heavy snow as low pressure systems passed around the area. ---Photos from NESDIS, Washington, DC.

3. STRONG WINDS in NORTHWEST MONTANA on January 30, 1989

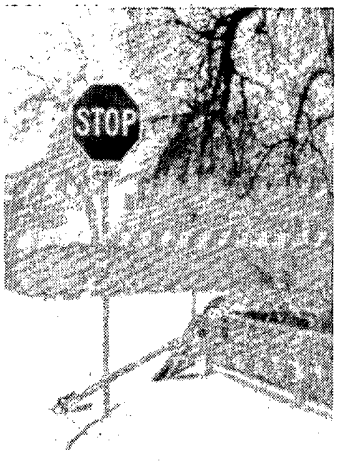
During the daylight hours of January 30th, strong but warm downslope winds swept off the east face of the Rockies and across the adjacent plains in northwest Montana. The southwesterly winds, at times having speeds well in excess of 100 mph, brought record-breaking warm temperatures in the 60's to the area. They also caused a wide variety of widespread damage that included the unroofing of several buildings and the rolling over of many trucks and mobile homes. Even railroad cars were blown over. The highest recorded wind was 124 mph at Choteau. The winds developed ahead of an advancing Arctic front that subsequently passed through the area on the 31st and brought a record-breaking cold spell that settled over the Western U.S. during the first week of February. The cold air had already caused a number of record-breaking low temperatures in Alaska during the last two weeks of January. Also during the period, a new record for the highest recorded pressure for the North American Continent was set at Northway, Alaska, 31.85 inches or 1078.4 mb.



With the mainline temporarily closed, freight cars on the Burlington Northern Railroad wait quietly on a siding in the Shelby, Montana switchyard. The -15°F temperature when this photo was taken on the 31st was in sharp contrast to the 50's and 60's experienced on the previous day when winds toppled twelve empty freight cars at Browning to the west.

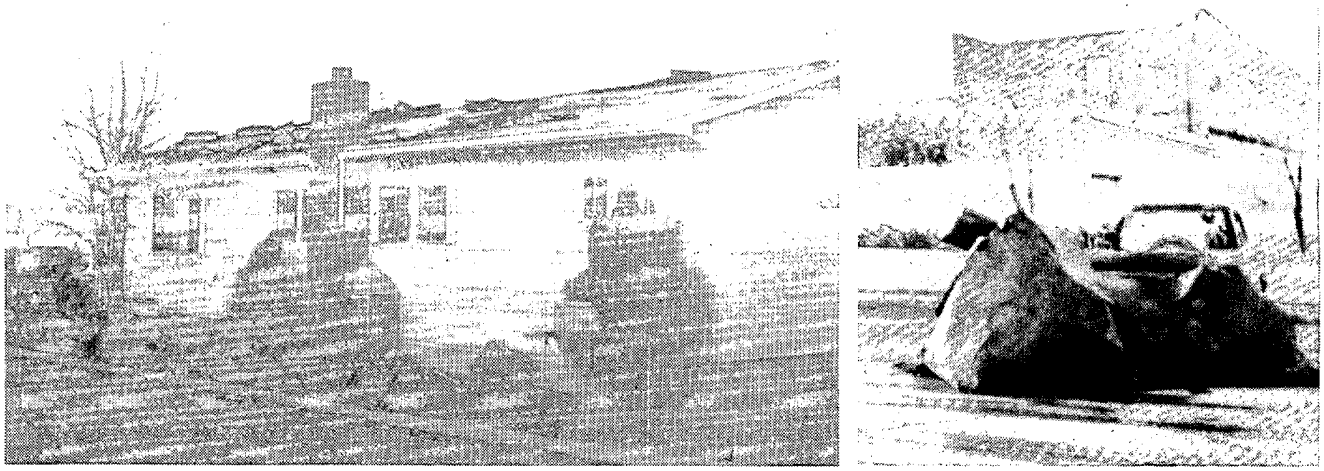


Left, the west wall of a mobile home in Shelby is torn to shreds by the winds on January 30th; right, the door to the Shelby fire hall is pushed in on two of the trucks inside.

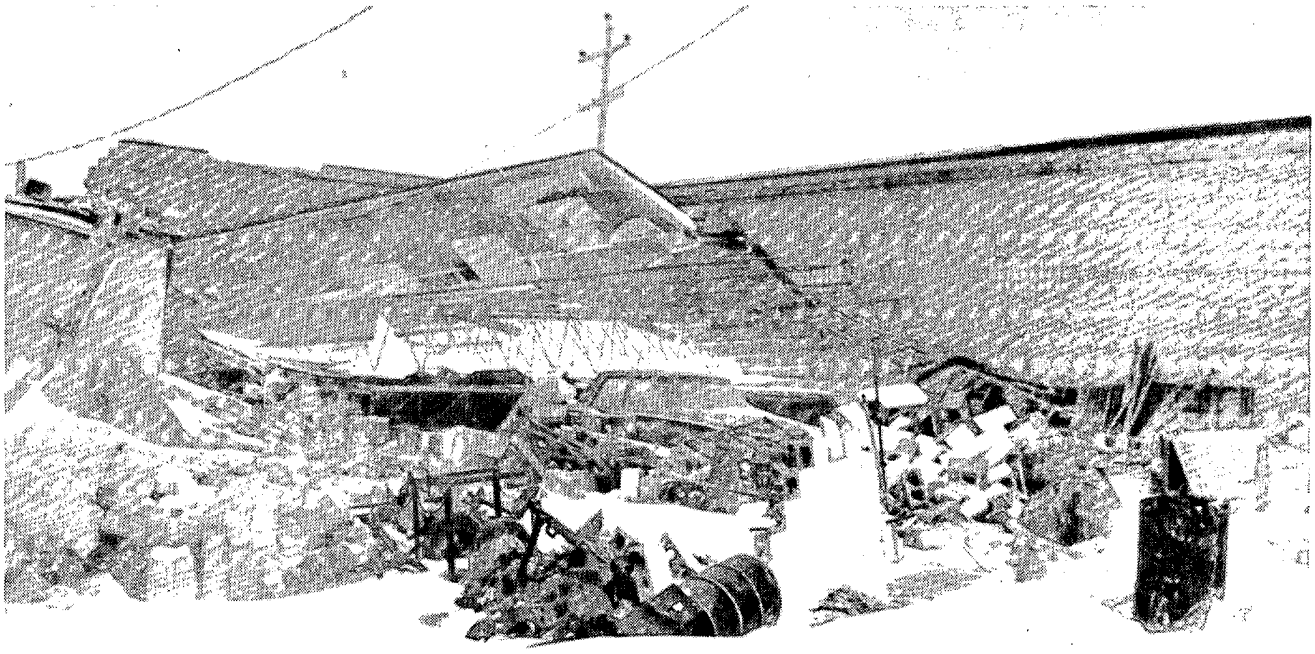


A couple of the many highway and commercial signs in the Shelby area that fell victim to the high winds.

Fallen onto a neighbor's garbage can stand is one of the many trees snapped by the high winds in Shelby.



Left, shingles are lifted and torn from a Shelby home by the 85 to 100 mph winds that struck the town; right, a piece of crumpled roofing litters a Shelby street.



Above are three views of the Hi-Line Masonry building in Shelby which collapsed in on itself during the strong winds on the 30th. According to witnesses, only a portion of the roof was blown off initially, then the remainder of the roof blew upward and the walls caved in a short while later.

---All photos on pages 20 and 21 are by Dick Crockford, The Shelby Promoter, Shelby, Montana.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS KILLED	NO. OF PERSONS INJURED	ESTIMATED† DAMAGE PROPERTY	ESTIMATED† DAMAGE CROPS	CHARACTER OF STORM
1 ALABAMA — NONE REPORTED									
2 ARIZONA									
Mohave County, Littlefield	01	0008 MST			0	0	4	0	Flash flooding
	An earthen dike in southwestern Utah failed just after midnight, sending a 12-foot high wall of water down the Virgin River, Utah. Flood waters moved into northern Arizona and eventually into the community of Littlefield at about 9 am. Many residents evacuated their homes during the night. A part of Interstate 15 was closed between St. George and Littlefield.								
Maricopa County, Phoenix 7W PHX	04	1100 MST	.5	20	0	0	4	0	Tornado (F0)
	The weak tornado was observed by National Weather Service personnel at Sky Harbor Airport. Movement was to the northeast. Some roof damage to businesses and a few homes near downtown Phoenix was reported.								
3 ARKANSAS									
Ouachita Co.	14	0030CST			2	0	0	0	Flash Flooding
	Two people were killed as the car in which they were traveling drove into a flooded creek which had washed out the bridge. The accident occurred on County Road 217, eight miles northeast of East Camden along the Ouachita-Calhoun county line. F17V, F17V								
4 CALIFORNIA, Northern — NONE REPORTED									
4 CALIFORNIA, Southern									
All Zones	5	morning			1	0	4	0	Winter Storm
	A weak cold front swept through Southern California, beginning Thursday morning, dropping rain over the area and snow in the higher elevations. Green Valley and Snowcrest received seven inches of new snow. A single-engine Piper 28 crashed during rain in the San Bernardino Mountains east of Interstate 15 near Devore, at the one-thousand foot level, according to Federal Aviation Administration officials. The pilot, the only soul on board, died in the crash. M41V.								
CAZ011-012-013-017	11	2000PST			0	0	7	0	Santa Ana Winds
	High winds with gusts of 80 to 100mph were generated by a large high pressure system over Nevada and Utah late Wednesday and early Thursday. The gusts peaked shortly before dawn Thursday, hammering hardest at the foothill communities in western San Bernardino County. The strong Santa Ana winds shredded a blimp, closed the runways at Ontario International Airport, ripped parts of the roofs from two buildings, knocked over trucks, toppled trees and power poles, and fanned two brush fires. Winds to 100mph destroyed a Pepsi Slice blimp parked at the Ontario Airport late Wednesday, causing the airport to shut down for ten hours while workers cleaned debris off the runway. The $6 million airship's engine was salvaged, however, much of the craft was completely destroyed. At the Ontario Airport, a 300-square-foot slab was torn from the roof of one of the service buildings. In nearby Rancho Cucamonga, the winds tore away a patch of roof at a San Bernardino County Sheriff's substation. Strong winds downed power lines, which in turn ignited a 100-acre blaze in Trabuco Canyon in Orange County. In the Romona area of San Diego County, downed power lines and 60mph gusts spread a fire rapidly through 160 acres of brush. Numerous trucks/big rigs were blown onto their sides along Interstates10 and 15 according to California Highway Patrol sources. There were no reports of deaths or serious injuries in the storm.								

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS KILLED	NO. OF PERSONS INJURED	ESTIMATED† DAMAGE PROPERTY	ESTIMATED† DAMAGE CROPS	CHARACTER OF STORM
5 COLORADO									
Northern Mtns, Northeast Fthls. COZ002-011-014	2				0	0	0	0	High winds
	High winds blew at many spots in the northeastern foothills and in the adjacent mountains. The winds lasted all day, from early morning to late afternoon. Peak gusts at lower elevations were 71 mph at 0743 MST just west of Colorado Springs (El Paso Co.), and also at 1816MST just southwest of Fort Collins (Larimer Co.). Gusts between 60 and 70 mph were also noted at Boulder, Longmont, Fort Collins, and the Air Force Academy, all between 1430 and 1830MST. In the mountains, gusts reached 80 to 90 mph above timberline at several spots. A couple of ski areas also had gusts of 60 mph or more.								
Northern, Southwestern Mtns. COZ002-008	4-5				0	0	0	0	Heavy snow
	8 to 13 inches of snow fell in the San Juan Mountains in 24 hours, and also at some spots in the northern Colorado Rockies. The heaviest amounts were 13 inches at Steamboat Springs and 11 inches at Mary Jane ski area.								
Northeast Fthls. COZ011-014	9				0	0	6	0	High winds
	Chinook winds howled along the eastern foothills from the Colorado Springs area north to the Wyoming border. The strongest winds blew between 0400 and 1100 MST, but gusts in excess of 60 mph continued until at least 1700MST. The peak gust noted was 115 mph at the Boulder airport at 1000MST. A light plane was severely damaged there when the wind flipped it over about 0700MST. In western Boulder, gusts reached 103 mph at 0500MST at Table Mesa; a 92 mph gust blew in the southeast part of town at 0739MST. Homes in the city suffered damage to roofs, gutters, and siding. Fences were blown down, and windows in both homes and cars were broken. Radio station KBCO was knocked off the air for 2½ hours when the winds blew the top 80 feet off of its 180 foot high transmission tower. A school roof was partially torn off, and a few traffic signals in town were downed. Near Colorado Springs at the Air Force Academy, gusts reached 113 mph. A hangar door was damaged, along with some sheds. In Colorado Springs, at least nine mobile homes were damaged; one was flipped on its top. Windows were blown out in homes, businesses, and vehicles and power lines were damaged in a few spots. Winds in the 60 to 80 mph range were also noted at Fort Collins, the Jefferson County Airport, Lakewood, and Longmont.								
Mountains, Eastern Foothills COZ002-004-008-011-014	11				0	0	0	0	Snow
	Snow fell over much of the state, but was relatively light in most areas. However, just an inch at Colorado Springs contributed to 69 traffic accidents in just 5 hours. 2 to 3 inches fell in the Denver area, causing near gridlock conditions during the morning rush hour and two-hour delays at Stapleton airport. 2 to 6 inches whitened Boulder, where there were many accidents. 5 to 10 inches fell at many eastern foothill locations. The heaviest snow was in Routt County at Steamboat Springs. 17 inches fell in 24 hours at the ski area. In Southwestern Colorado, 14 inches fell at Wolf Creek Pass.								
Northern Mtns, Northeast Fthls. COZ002-011	16				0	0	3	0	High winds
	Another high wind episode buffeted the northeastern foothills from midnight till about 0900 MST. Gusts reached 80 mph in southwest Boulder at 0228MST. Gusts of 60 to 80 mph also blew in the Fort Collins area and in the foothills to the west. The peak wind recorded was 100 mph at 0818MST in an exposed foothill location near Rollinsville in Gilpin County. At around 0200MST near Golder (Jefferson Co.) the wind blew a 25 foot trailer through a fence and flipped it over. The trailer was not damaged.								
Northern Mtns, Northeast Fthls. COZ002-011	17				0	2	4	0	High winds
	Winds gusted to 60 to 70 mph in Larimer County between 1230 and 1700 MST. Two men were slightly injured when their tractor-trailer was blown off Interstate 25 and rolled over 12 miles north of Wellington. The peak gust noted was again near Rollinsville, 90 mph at 0705MST.								
Southwestern Co. COZ003-007-008	24-25				0	0	0	0	Snow
	16 inches of snow fell in 24 hours at Wolf Creek Pass. Substantial snow also whitened lower elevations; 8 inches fell at Durango, and 6 inches at Grand Junction.								

STORM DATA AND UNUSUAL WEATHER PHENOMENA

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS KILLED	NO. OF PERSONS INJURED	ESTIMATED[1] DAMAGE PROPERTY	ESTIMATED[1] DAMAGE CROPS	CHARACTER OF STORM
COLORADO									
Northeast Fthls. COZ011-014	27-28				0	0	0	0	Heavy snow
	The heaviest snowstorm of the winter in the Denver metropolitan area dumped 9 to 15 inches on the city. Winds whipped the snow into two foot drifts in places. Similar amounts fell along the Front Range northward through Boulder and Fort Collins. Areas in the foothills to the west and southwest had up to 18 inches. Lighter snow fell in most other areas of the state. 5 to 9 inches fell along the Palmer Divide to the south of Denver, but the Colorado Springs area had only a couple of inches. 8 to 13 inches fell in the southern Rockies, with lesser amounts elsewhere in the high country. The snow fell on a weekend, so closures and other disruptions were minimal.								
6 **CONNECTICUT** — NONE REPORTED									
7 **DELAWARE**									
DEZ003 Northern Delaware	3	2230EST			0	0	?	0	Winter Storm
	Snow spread into the area late at night and ended by dawn. Accumulations averaged 1 to 2 inches.								
DEZ003 Northern Delaware	6	0345EST			0	0	?	0	Winter Storm
	Four to six inches of snow was reported in New Castle County. Areas further south averaged 1 to 2 inches, having received mixed snow, sleet and freezing rain.								
8 **FLORIDA**									
Brevard Co., Indialantic	22	0300EST	0.5	30	0	0	3	0	Tornado (F0)
	A tornado downed trees and damaged an abandoned motel.								
Brevard, Volusia, Flagler, St. Johns and Indian River Counties	21-22	2100EST-2300EST			0	0	6	0	High Wind
	A gale center which exhibited subtropical storm characteristics formed in the coastal waters east of Cape Canaveral then moved slowly northeast. Sustained winds of 40 to 50 mph with gusts near 75 mph downed numerous trees, signs and power lines, and did window and roof damage to several homes. High waves caused moderate beach erosion. Tens of thousands of homes were without electric power for up to 12 hours. Rainfall amounts of 4" to 6" caused ponding of water in low-lying areas, which damaged several homes and motels and caused numerous traffic accidents.								
9 **GEORGIA** — NONE REPORTED									
10 **IDAHO**									
IDZ002-003-004 Middle and Upper Snake River Valley, and Southeast Idaho	5-6	1800-1200MST			0	0	4	0	Blizzard
	A "bonafide blizzard" ripped through south-central and southeast Idaho. Two to eight inches of snow fell from the Magic Valley to the Wyoming border, while winds gusting up to 60 mph at the Fort Hall Indian Reservation, 53 mph at the Pocatello Airport, and 40 mph at Burley produced near-zero visibilities, 4 to 5 foot drifts in the Magic and Upper Snake River valleys, and windchills down to 35 degrees below zero. Several businesses and most schools closed in the Magic and Upper Snake River valleys, rural mail and newspaper deliveries were shut down, scattered power outages occurred, and several car accidents were reported. The Pocatello and Idaho Falls airports closed along with the I.N.E.L. near Idaho Falls where 550 workers were stranded. The city of Pocatello proclaimed its first ever "snow proclamation" and an Idaho Falls air traffic controller remarked, "the snow is blowing so hard you can't see the fog."								
IDZ006-007-010 Central Mountains	5-6	1800-1200MST			0	0	0	0	Heavy Snow
	The same storm that brought a blizzard to southeast Idaho brought heavy snow to the central Idaho mountains. Bogus Basin ski resort just north of Boise recorded 12 new inches of snow, Sun Valley 11 inches, and Gibbonsville, north of Salmon, 10 inches. Most other spots in these zones reported two to six new inches of snow.								
West Half of IDZ001, Lower Snake River Valley	5-6	2100-1200MST			0	0	4	0	Drifting Snow
	Drifting snow after a snowfall of 1 to 3 inches and a little freezing rain made travel extremely difficult in Canyon County and neighboring areas. Most schools in the area were closed and there were several car accidents.								
IDZ006-007-008-009 West-Central Mountains and Northern Idaho	8-10	1800-1200MST			0	0	2	0	Heavy Snow, Drifting Snow
	Heavy snow fell at different times over the two-day period but stacked up continuously in the northern sections of Zone 6. Dixie received two feet of snow on the night of January 9th to 10th and three feet over the two days. Elk City had 11 inches and 23 inches, respectively for the same two periods. Fifteen to seventeen inches of snow fell at Powell, Pierce and Headquarters. Six to eight inches of wet snow fell on the Palouse on the 9th and, along with drifting snow, closed most schools and several roads. Numerous trees were downed and several power outages also occurred. Bald Mountain at Sun Valley measured 12 inches of new snow, and 7 inches fell at Couer d'Alene and Idaho City.								
IDZ003-004-010 East-Central Mountains, Upper Snake River Valley, and Southeast Idaho	8-10	1800-1800MST			0	0	4	0	Heavy Snow, Blizzard
	Ten inches of new snow hit Island Park on the 9th accompanied by estimated winds of 50 to 60 mph. The Pocatello Airport reported 20 to 40 mph winds on the night of January 8th to 9th with extensive drifting snow. Five inches of snow fell on the 9th at Idaho Falls and Rexburg, and eight inches fell at Gibbonsville. A roof caved in at the Ashton Packaging Corporation at Ashton. Blizzard conditions were experienced at Driggs at around midnight on the 9th where wind gusts were unofficially measured to 52 mph. The snowfall total at Driggs was 17 inches. Other spots in Zone 4 reported 4 to 6 inches of snow with road closures due to extensive drifting. Most schools were shut down. Grand Targhee ski resort, just beyond the state line in Wyoming, received 18 inches of new snow which made for 60 new inches during the past six days.								
IDZ001 Lower Snake River Valley	8-9	1800-1200MST			0	0	3	0	Heavy Snow
	Four to six inches of new snow fell in the Mountain Home area and six inches fell at Homedale. Two to four inches fell in the Boise area. Many schools were closed and many roads were impassable.								
IDZ008-009 Northern Idaho	15-16	1200-1200PST			0	0	3	0	Heavy Snow
	A snow storm with widespread blowing and drifting of snow reduced visibilities to zero in portions of Northern Idaho, causing the closure of four highways. Rain and wet snow produced power failures in the Kellogg area. Three avalanches closed U.S. Highway 12, four miles east of Lowell. At the time, authorities estimated it would take two to three days to reopen the highway. Snow reports in inches were as follows: Headquarters 12, Pierce 11, Bovill 9, and Kellogg/Wallace 5 to 7.								
IDZ003 Upper Snake River Valley	16	0600-1200MST			0	1	4	0	Freezing Rain
	Freezing rain created icy roads and resulted in "numerous accidents and slide-offs" on Interstate 15.								
IDZ008 Clearwater River Valley	21-22	both days			0	0	0	0	Heavy Snow
	Twelve inches of snow fell at Grangeville, 5 inches on the 21st and 7 inches on the 22nd. Heavy snow also fell in neighboring communities and most schools were closed.								
IDZ003-010 Upper Snake River Valley and East-Central Mountains	22-23	0600-1200MST			0	0	0	0	Heavy Snow, Blowing Snow
	Two to four inches of snow in the Rexburg to Ashton area with winds estimated at up to 35 mph combined to produce widespread blowing and drifting snow. Schools were closed and so were most of the roads. Island Park recorded 16 inches of new snow.								
IDZ009 Northern Idaho	30-31	1600-0600PST			0	0	4	0	High Winds
	Winds of 25 to 50 mph (44 mph wind gusts were recorded at the Weather Service Office at Spokane, Washington) caused numerous power outages and downed many trees. In Bonner County, a three-sided aluminum building used to shelter road maintenance equipment was blown down.								

STORM DATA AND UNUSUAL WEATHER PHENOMENA

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS: KILLED	NO. OF PERSONS: INJURED	ESTIMATED† DAMAGE: PROPERTY	ESTIMATED† DAMAGE: CROPS	CHARACTER OF STORM
11 ILLINOIS									
Jackson Co, Gorham, Sand Ridge	07	1525CST			0	0	?	0	Hail (1.0)
Jackson Co, Carbondale, Murphysboro	07	1545CST			0	0	?	0	Hail (1.75)
Franklin Co, Christopher	07	1622CST			0	0	?	0	Hail (1.75)
Williamson Co, 17 E Carbondale	07	1630CST			0	0	?	0	Tstm.wind
	Strong thunderstorm winds blew down trees and power lines 17 miles east of Carbondale.								
Franklin Co, 3/4 NW Boothby	07	1632CST	0.5	20	0	0	?	0	Tornado (F0)
	A narrow weak tornado damaged trees and blew down telephone lines 10 miles northeast of West Frankfort or about 3/4 miles northwest of Boothby.								
Hamilton Co, McLeansboro	07	1655CST			0	0	?	0	Tstm.wind
	High winds blew down power lines and over 13 utility poles along a 29 mile section near and outside of McLeansboro.								
Hamilton,White,Wayne, Edwards,Wabash Cos.: 3SW Mill Shoals to 2WNW Bellmont	07	1655CST	27	100	0	6	6	0	Tornado (F2)
	A tornado first touched down 3 miles southwest of Mill Shoals just west of the Hamilton-White County line and then proceeded northeast passing just south of Mill Shoals in White County. The tornado crossed the Burnt Praire Blacktop Road and then traveled through the southeast side of Mill Shoals. The tornado then skipped across southeast Wayne County, southwest Edwards County and finally into Wabash County before lifting about 2 miles west-northwest of Bellmont. The tornado caused the most damage in White County. Six houses were destroyed and 46 other homes were damaged in Mill Shoals. Numerous barns and automobiles and 3 oil well tanks were damaged in White County. The tornado damaged 3 mobile homes near Ellery about 1 mile south of Highway 15 on the Wayne-Edwards county border. Damage occurred to some homes south of Albion in Edwards County.								
White Co, 1SW Mill Shoals	7	1710-1711CST	0.5	50	0	0	0	0	Tornado (F1)
	A tornado touched down about 1 mile southwest of Mill Shoals and moved northeast crossing Highway 45 and then lifted about 1/2 mile south of Mill Shoals. The tornado twisted off some tree tops as it moved through a wooded area.								
White Co, 10S Albion	7	1710CST			0	0	2	0	Hail (1.75)
	Golfball size hail damaged a barn roof.								
Wabash Co, 1NW Patton to 0.5S Allendale to 3NE Allendale-Wabash Rive	07	1719CST	7.0	200	0	50	7	0	Tornado (F4)
	A violent tornado initially touched down about 4 miles southwest of Allendale or 1 mile northwest of Patton and had a continuous damage track through the southern part of Allendale. The tornado then continued northeastward through rural Wabash County and crossed the Wabash River into Indiana where the tornado was last reported 5 miles southeast of Vincennes, Indiana or 1 1/2 miles southwest of Fritchton in Knox County before dissipating. The total path length across both states was about 22 miles (7 miles in Illinois and 15 miles in Indiana). The tornado started out at F2 intensity then intensified to the lower end of F4 intensity about 1/2 mile southwest of Allendale. The tornado reached its greatest intensity F4 as it passed through the southern part of Allendale. The tornado intensity dropped to F2 by the time it crossed the Wabash River and entered southwest Knox County Indiana. The tornado further weakened to the upper end of F1 intensity as it brushed St. Thomas, Indiana and then continued to about 5 miles southeast of Vincennes, Indiana near State Road 61. Two farm houses were first damaged about 1 mile southwest of Allendale. Four houses were completely swept away from their foundations at the far southwest corner of town. The damage path continued off to the northeast, across Highway 1 and the railroad roadbed that parallels the highway, and on up the hill into the main part of town. At the base of the hill, a well-built wood house had little damage, but on top of the hill, houses over a roughly 7 block area were leveled. Most of the houses in this part of town were two-story frame construction and the rubble of these houses was set on their foundations. Houses at the far southeast corner of town showed no significant damage. The City Hall on the north side of Main Street lost most of its walls. The Post Office across the street had its roof removed. An occupied mobile home 50 yards to the southwest of the Post Office was flipped onto an automobile and then onto a second occupied mobile home. Both mobile homes were almost completely destroyed but the occupants survived the ordeal. Portions of a church east of the Post Office remained standing while the concrete block firehouse further east was completely destroyed. North of the firehouse, the Masonic Lodge lost part of its roof, while the Old Brick Lodge immediately to the east was leveled. A three-story house just to the east was destroyed except for the lower portion of the brick fireplace. The brick Allendale School was extensively damaged and the upper floor was removed from the southern half of the school. The northern								

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS: KILLED	NO. OF PERSONS: INJURED	ESTIMATED† DAMAGE: PROPERTY	ESTIMATED† DAMAGE: CROPS	CHARACTER OF STORM
—— ILLINOIS									
	cinder block wall of the gymnasium (north side of the school) was destroyed. 10 businesses, 47 homes and 54 vehicles and mentioned public buildings were destroyed in Allendale.								
Lawrence Co, 1S Lawrenceville	7	1730CST			0	0	2	0	Tstm.Wind
	Numerous trees were blown down and utility poles damaged.								
12 INDIANA									
Miami County, 3S Peru	07	1803EST			0	0	0	0	Hail (1.0)
	One-inch diameter hail was reported by State Police.								
Miami County, 3NE Peru	07	1815EST			0	0	0	0	Hail (1.0)
	One-inch diameter hail was reported by the County Sheriff.								
Knox County, 12SW Vincennes to 5SE Vincennes	07	1830-1848EST	15.8	100	0	5	5	0	Tornado (F2)
	A tornado touched down about 4 miles southwest of Allendale (Wabash Co.) Illinois and carved a continuous path. The tornado moved northeast crossing the Wabash River into Indiana about 1830 EST and brushed St. Thomas Indiana about 1838 EST, and ended at 1848 EST about 5 miles southeast of Vincennes near State Road 61. Approximately $250 thousand damage was reported in Knox County, with 5 reported injuries. About 30 homes were damaged, mostly along Henry Seivers Road east of US 41. The tornado decreased to F2 intensity in Knox County after crossing the Wabash River. The total path length in both states was 22 miles; the maximum F scale (F4) occurred in Illinois.								
Knox County, 9S Vincennes	07	1900EST	0.1	30	0	0	3	0	Tornado (F0)
	A tornado touched downd briefly near Highway 41 and State Road 241 south of Vincennes. There was minor damage to a roof and a billboard.								
Daviess County, Washington	07	1915EST			0	0	0	0	Hail (0.75)
Martin County, Loogootee	07	1935EST			0	0	0	0	Hail (1.0)
White County, 2N Wolcott	07	2048EST			0	0	3	0	Tstm.Wind
	Strong thunderstorm winds blew down a barn.								
Bartholomew Co., Northern Part	07	2110EST			0	0	?	?	Tstm.Wind
	Several trees were blown down between Clifford and Hope.								
Decatur County, Waynesburg	07	2114EST			0	0	3	?	Tstm.Wind
	A porch was destroyed by strong thunderstorm winds.								
Decatur County, 1S Forest Hill	07	2115EST	4.5	50	0	0	4	?	Tornado (F1)
	A tornado touched down in western Decatur County about 3/4 mile south of the town of Forest Hill. Two barns and one garage were destroyed. Several trees were snapped off.								
Elkhart County, 2E Elkhart	07	2125EST			0	0	?	?	Tstm.Wind
	Strong winds downed trees and power lines.								

STORM DATA AND UNUSUAL WEATHER PHENOMENA

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS KILLED	NO. OF PERSONS INJURED	ESTIMATED† DAMAGE PROPERTY	ESTIMATED† DAMAGE CROPS	CHARACTER OF STORM
13 IOWA									
IAZ001-002-003-005-006-007-008 Northern Iowa	05	0900 to 2200 CST			0	0	3	0	Freezing Rain
	Freezing rain developed over Northern Iowa during the morning and continued into the evening. Driving quickly became very hazardous. Over Northeast Iowa, the freezing rain changed to snow in the evening. One to three inches of snow fell there.								
IAZ001 Northwest Iowa	07	1500 to 1900 CST			0	0	4	0	Blizzard
	One to three inches of snow were blown around by northwest winds of 30 to 40 MPH occasionally gusting to 55 MPH during the late afternoon hours. Driving was nearly impossible. Scattered power outages were reported. Wind chill indices dropped to 50 below or lower.								
IAZ002-003-005-006-007-008-009 Northern Iowa	11	1100 to 2100 CST			0	0	3	0	Freezing Rain
	Freezing precipitation developed over Northern Iowa during the late morning hours. It quickly made driving hazardous. By late afternoon, the freezing rain that had been confined to extreme Northern Iowa spread south to cover much of the north half of Iowa. All of the freezing rain ended during the evening.								
Woodbury County, Sioux City	31	Evening			1	0	0	0	Cold
	An elderly woman died of exposure during the evening. When she arrived at her home, she fell and was unable to open the door. She then died of exposure. F670								
14 KANSAS — NONE REPORTED									
15 KENTUCKY									
Adair Co.	07	2205CST			0	0	4	0	Thunderstorm Winds
	Winds gusting to around 60 mph blew the roof off a house in Sparksville 10 miles southwest of Columbia. The roof was blown across the road into a neighbor's yard. In addition several barns were damaged.								
Grayson Co.	07	2210CST			0	0	4	0	Thunderstorm Winds
	Winds gusting to 60 mph blew the Econo Lodge Motel sign off its post. In addition several thousand dollars worth of damage was done to a farm south of Leitchfield where a roof was blown off a barn and a roof was blown off a utility building.								
Larue Co.	07	2315EST			0	0	5	0	Thunderstorm Winds
	Winds gusting in excess of 70 mph destroyed two barns in the Roanoke area. In addition a trailer was overturned and a porch was damaged near Middle Creek.								
Simpson Co.	07	2221CST	2.0	660	0	1	7	0	Thunderstorm Winds
	Survey conducted by the Kentucky DES indicated the damage was the result of a thunderstorm downburst with winds in excess of 100 mph. Twenty-five homes were affected, and 7 destroyed. Sixteen business were damaged, and 6 destroyed. The 660 yd damage width indicated the widest section. The state highway garage sustained major damage. The damage path was located along the southeast edge of Franklin. The winds affected a small residential area, then crossed Highway 31 and moved into an industrial area and ended after crossing Highway 100. Only one minor injury was reported. A man fell and cracked his elbow as the roof of his house was blown away.								
Allen Co.	07	2300CST			0	0	3	0	Thunderstorm Winds
	Strong winds blew down trees and power lines near Scottsville.								
Warren Co.	07	2314CST			0	0	-	0	Thunderstorm Winds
	Numerous trees were reported down near Alvaton.								
Whitley Co.	12	1527EST			0	0	2	0	Flash Flood
	Watts Creek ran over its banks and flooded some low-lying areas. Little damage was reported.								
Bell Co.	12	1842EST			0	0	4	0	Flash Flood
	Middlesboro Police reported that Yellow Creek ran out of its banks. Several downtown streets were flooded.								

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS KILLED	NO. OF PERSONS INJURED	ESTIMATED† DAMAGE PROPERTY	ESTIMATED† DAMAGE CROPS	CHARACTER OF STORM
16 LOUISIANA — NONE REPORTED									
17 MAINE									
MEZALL Entire State	02				0	3	4	0	Snow
	A light snow of one to three inches in amount fell over the entire state. Some injuries were reported, but none were serious.								
MEZ003-004-007-008-010-011-013-014 Coastal and abutting Interior Zones	08				0	11	5	0	Freezing Rain
	Freezing rain occurred over the coastal areas of Maine and extended approximately 100 miles inland. Numerous accidents were reported in southwest Maine.								
MEZ001 Northeast	31				0	4	0	0	Freezing Rain
	A coating of ice on roadways due to freezing rain caused several accidents that resulted in some minor injuries.								
18 MARYLAND and D.C.									
MDZ005-007 North-Central Maryland	1	0930EST			0	0	?	0	Snow
	Snow began early in the day and spread southward. Montgomery County received 2 to 4 inches; 4 to 6 inches fell in Hagarstown.								
MDZ007-008-009 Western Maryland	3	1200EST			0	0	?	0	Snow
MDZ002-003-005-006 Northern and Eastern Maryland	3	1600EST			0	0	?	0	Snow
	Snow began in western Maryland and spread eastward during the afternoon. Mountain areas received up to 6 inches. Accumulations elsewhere were 1/2 to 2 inches.								
MDZ003-006-007-008-009 Northern and Western Maryland	6	0030EST			0	0	?	0	Winter Storm
	Snow began shortly after midnight, and spread eastward during the night. Snow accumulations averaged 2 to 4 inches, with isolated reports of 5 inches. Areas further south had a mixture of sleet, snow and freezing rain with no significant accumulations.								
19 MASSACHUSETTS — NONE REPORTED									
20 MICHIGAN									
MIZ001-002-003-004-011-013-014-015-022 Southern Lower Peninsula	05 06	2130EST to 0700EST			0	0	0		Snow
	Two to four inches of snow fell in the area south of a line through Hart-Saginaw-Lansing-Mt. Clemens and north of a line through Monroe-Hillsdale-Benton Harbor. There were local 4 inch amounts in the Sparta, Greenville and Ann Arbor areas. Freezing rain was reported southward to the state line. Twenty-one auto accidents resulted in 17 persons being injured.								
MIZ001-002-003-004-005-006-007-008-009-010-011-012-013-014-015-016-022 Lower Peninsula	07	1300EST to 1500EST			0	0	4		Wind
	Gusts were measured at up to 51 mph at Detroit and 64 mph on the Mackinac Bridge. The winds caused widespread power outages, and two cars in East Lansing were crushed by falling trees. Blowing snow restricted visibility in northern sections.								
MIZ003-005-007-016-017-020 South Shore of Lake Superior and East Shore of Northern Lake Michigan	08	all day			0	0	0		Snow
	Snow amounts were generally 3 to 6 inches, but 12 to 26 inches were received in the Keweenaw area.								

STORM DATA AND UNUSUAL WEATHER PHENOMENA

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED¹ DAMAGE		CHARACTER OF STORM
					KILLED	INJURED	PROPERTY	CROPS	

MICHIGAN

MIZ006-016 Northwest Lower Peninsula	10	0100EST to 0700EST			0	0	0		Freezing Rain and Snow
	Seven inches of snow fell at Pellston and 4.5 inches fell at Cadillac.								
MIZ001-016-022 Lower Penisula	11 12	2100EST to 0330EST			0	0	0		Snow
	There were 625 auto accidents; 25 persons were injured and 4 were killed.								
MIZ019-020 Extreme West Upper Peninsula	12	0700EST			0	0	0		Snow and Freezing Rain
	Eight inches of snow fell at Houghton.								
MIZ002-004-011-015-022 Southern Lower Peninsula	14	1830EST			0	0	0		Snow
	About 2 inches of snow fell south of Grand Rapids and Midland and north of Flint and Lansing. There was freezing rain south of Hillsdale and Detroit, and a mixture north of the snow area. Twenty-nine persons were injured in 589 auto accidents.								
MIZ001-002 Extreme Southern Lower Peninsula	20	morning			0	0	0		Snow
	One person was killed and 11 injured in 57 auto accidents.								
MIZ017-020 Western Upper Peninsula	20	0100EST to 1030EST			0	0	0		Snow
	Snow fell in amounts of 8 to 15 inches in Marquette County. Nine inches fell in western Gogebic County and 5 to 6 inches in Houghton and Keweenaw counties.								
MIZ010-011 Houghton Lake, Saginaw Bay	21				0	0	0		Thaw
	Eighteen ice fishermen were rescued from a drifting flow that had broken loose from shore. About a dozen vehicles fell through the ice.								
MIZ015 Devils Lake, Lenawee County	28				0	0	0		Thaw
	Two ice fishermen fell through thin ice; one drowned.								

21 MINNESOTA

MNZ001-002-003-004-005-006-007-008-009-010-011-012-013-014 Northern two-thirds	06-08	0900CST			0	0	0	0	Heavy Snow
	Snow storm packs a one-two punch to Minnesota. Heavy snow fell across the Red River Valley of the northwest. The region around the Fargo-Moorhead area recorded record snow fall amounts of 24-26 inches. Most of the northwest quarter of the state received 12 or more inches and the northern two-thirds had 8 or more inches. The heavy snow was followed by an intrusion of Arctic air brought in on northwest winds of 35-50 mph. This caused a virtual shutdown of the Red River Valley. Many interstates were barricaded to keep people from becoming stranded. Snow depths on some roads had reached 4-5 feet due to drifting and some areas had drifts in excess of 10 feet. These strong winds coupled with falling temperatures caused near-blizzard conditions with zero visibilities and -60 to -70 windchills.								

22 MISSISSIPPI

Monroe County, 1W Prairie to 3E Prairie	07	2200- 2206CST	4.0	100	0	0	5	0	Tornado (F2)
	A tornado touched down in the western portion of Prairie, traveled east through town, and dissipated just east of town. The tornado did extensive damage to several buildings in the business district. One newly built concrete building was completely destroyed. Several homes in town were also damaged.								
Monroe County, 13E Amory to 15E Amory	07	2205CST	2.0	60	0	0	4	0	Tornado (F1)
	A tornado touched down in the Splunge Community. One home received roof damage and the shutters and carport were blown away. Three outbuildings were completely destroyed. Through the community, trees were uprooted, TV antennas twisted and roofing materials from houses and barns scattered about.								

MISSISSIPPI

Hinds County, 15NW Jackson	11	2000CST			0	0	4	0	Flash Flood
	Rainfall amounts of 3 to 4 inches in a 2 hour period caused flooding in northwest Hinds County. A total of 5 homes and one business was flooded. The water depth reached 4 feet in the business.								
Hinds County, Raymond	12	1655CST			0	0	?	0	Hail (.75)
Hinds County, 10S Raymond	12	1705CST			0	0	0	0	Funnel Cloud

23 MISSOURI

St. Louis County, Bridgeton	07	1610CST			0	0	3	0	Hail (2.50)
	Hail of up to 2½ inch diameter caused some roof damage in and around Bridgeton. There were several reports of hail of up to golfball size in the same area.								
St. Louis County, Hazelwood	07	1620CST			0	0	3	0	TSTM Wind
	Wind damaged a roof near the airport. There was also hail reported in the area.								
St. Louis County, Florissant	07	1620CST			0	0	0	0	Hail (1.00)
	Hail of up to one inch in diameter fell in and around Florissant. Meteorologist Guy Tucker reported hail of ½ inch diameter with a few stones of disc-shaped hail of up to 3/4 inch diameter near Patterson and Greenway Chase in Florissant.								
St. Louis City	07	1625CST			0	0	0	0	Hail (1.00)
	Hail of up to one inch in diameter was reported on the north side of St. Louis. The hail was reported near Interstate 70 and Goodfellow.								
MOZ005-006-007-009-010-011-012-013-014-015-016-017 Southwest through East-Central Missouri	27	1400- 2200CST			0	0	0	0	Heavy Snow
	Heavy snow spread from Southwest Missouri north to just south of Kansas City and northeast to the St. Louis area. Most of the snow fell along and 100 miles north of Interstate 44. Most locations received from 4 to 6 inches. Republic and Iberia both reported 8 inches.								

24 MONTANA

MTZ003-007	01	1920MST			0	0	0	0	High Winds (G55)
	Strong gusty southwest winds blew along the east slopes of the Rockies.								
MTZ003 MTZ007	02 02	1944MST 2015MST			0 0	0 0	0 0	0 0	High Winds (G58) High Winds (G55)
	Strong gusty southwest winds blew along the east slopes of the Rockies.								
MTZ007	03	0828MST			0	0	0	0	High Winds (G65)
	Strong southwest winds blew from Livingston to Big Timber.								
MTZ003-004 MTZ005-007-008-009	05 06	all day all day			0 0	0 0	0 0	0 0	Winter Storm Winter Storm
	A very cold, Arctic air mass accompanied by strong northerly winds, 4 to 6 inches of snowfall, and bitter wind chill temperatures moved across Montana east of the Rockies. The storm struck along the east slopes on the 5th and Central and Eastern Montana on the 6th.								
MTZ007	08				0	0	0	0	High Winds (G62)
MTZ008	10	early morning			1	0	0	0	Cold
	A 59 year old male froze to death while walking home after his pickup slid off the road. M59O								
MTZ003 MTZ007	12 12	0631MST 1927MST			0 0	0 0	0 0	0 0	High Winds (G55) High Winds (G50)
	Gusty southwest winds blew along the east slopes of the Rockies.								
MTZ007	13	1217MST			0	0	0	0	High Winds (G55)

STORM DATA AND UNUSUAL WEATHER PHENOMENA

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MONTANA									
MTZ007	15	0920MST			0	0	0	0	High Winds (G56)
MTZ004	15	late afternoon			0	0	2	0	High Winds (G87)
	Bridger Bowl, north of Bozeman, had to close due to very strong winds.								
MTZ007	16	morning			0	0	0	0	High Winds (G57)
MTZ007	16	1638MST			0	0	0	0	High Winds (G58)
MTZ003	16	2118MST			0	0	0	0	High Winds (G52)
	Strong winds blew along the east slopes of the Rockies all day.								
MTZ007	17	0300MST			0	0	0	0	High Winds (G79)
	Very strong winds occurred between Livingston and Big Timber along Interstate 90.								
MTZ007	17	1130MST			0	2	5	0	High Winds (G82)
	A tractor-trailer rig was blown over on Interstate 90 at the Grey Cliff interchange north of Big Timber. Two drivers were injured.								
MTZ007	17	1600MST			0	0	3	0	High Winds (G88)
	Minor damage was done to roofs around Choteau.								
MTZ003-007	18	0638MST			0	0	0	0	High Winds (G78)
	Strong winds occurred along the east slopes of the Rockies.								
MTZ004-006	22	all day to 23 early morning			0	0	0	0	Heavy Snow
	Six to ten inches of snow fell across Central and Southwest Montana.								
MTZ003	29	0300MST			0	0	0	0	High Winds (G74)
	Conrad had *strong southwest winds during the morning.*								
MTZ003	30	0800-2100MST			0	?	6	4	High Winds (G108)
	Southwest winds of 100+ mph blew along the east slopes of the Rockies from south of Augusta to the Canadian border. Severe damage occurred at Augusta, Choteau, Browning, Valier, East Glacier, Cut Bank, Shelby, etc. Roofs were blown off, several trucks and mobile homes were rolled over or torn apart, trees and power poles were blown over, and several accidents were caused by poor visibility due to dust. Two people were injured north of Choteau when the wind blew the windows out of a truck, causing the driver to lose control which led to the truck hitting a car head on. Twelve *empty* railroad cars were blown off the tracks near Browning. Two grain elevators were blown over, one east of Browning and one in Shelby. A block building was destroyed also. In Shelby, Glacier Electric lost 31 power poles. Wind speeds in mph were as follows:								
	Choteau 124	Cut Bank 102							
	Browning 117	East Glacier 100+							
	Augusta 114	Shelby 100							
MTZ001-002-003-004-005-006	31	0100-2200MST			1	?	6	4	Blizzard
	A very strong, Arctic cold front moved into northern Montana during the early morning and by late evening had covered the state with sub-zero temperatures, strong northerly winds, bitter wind chills, and snow. This was the strongest Arctic front to strike the state in 5 years. Record high temperatures in the low 60's were observed during the afternoon of the 30th east of the Rockies, and 24 hours later the mercury had dropped well below zero. Great Falls went from 62 degrees on the 30th to 23 degrees below zero on the 31st. The effects of this blizzard were severe west of the Rockies. *As the Arctic air pushed through the passes,* the winds increased. At West Glacier over 400 trees were blown down. Trees were downed on six cars and 36 houses, and power outages occurred. East-West highways were closed due to reduced visibility. At 2200MST, a man driving a pickup on Interstate 90 east of Missoula ran into the back of a sanding truck and was killed. Visibility at the time was near zero due to blowing snow. During the morning an eastbound freight train ran into the rear of an Amtrak train at Essex, injuring 14 persons. The visibility was near zero due to blowing snow. Windchill temperatures during the day were 80 degrees below zero at many locations.								

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25 NEBRASKA									
NEZ012 Southwest Nebraska	28	0900CST -2100CST			0	0	1	1	Heavy Snow
	Snow accumulated to 6 inches at Ogallala and Hershey.								
NEZ005 Panhandle Nebraska	31	1100CST -1800CST			0	0	5	5	High Wind (56)
	West to northwest winds estimated to gust at times around 65 m.p.h. by a large grass fire, fanned the fire in an approximately 2 mile wide swath from around 14 miles east of Angora to 5 miles north of Lisco or a distance of about 12 miles. The fire storm burned 8000 acres of prairie including one home and a number of ranch outbuildings. Livestock were also killed.								
26 NEVADA									
NVZ003 Extreme Western Nevada	05	0030PST-0830PST			0	0	3	0	High Winds
	05	0730PST-1600PST			0	0	0	0	Heavy Snow
NVZ001 Northwest Nevada	05	1000PST-1600PST			0	0	0	0	Heavy Snow
NVZ002-005 Northeast and East-Central Nevada	05	1000PST-2000PST			0	0	0	0	Heavy Snow
	High winds developed along the lee side of the Sierra Nevada ahead of a strong Pacific cold front. Gusts to 80 MPH were reported in Stead, north of Reno. Sixty to 70 MPH gusts were common through the early morning hours of the 5th. As the front moved into the mountains of Western Nevada and crossed the state, heavy snow was reported in many areas. Along the east shore of Lake Tahoe, in the Sierra Nevada, 6 to 12 inches of new snow was measured. On the east side of the Sierra Nevada as much as 6 inches of new snow was measured along the foothills between Reno and Carson City. Parts of Northern Humbolt County received around 5 inches of snow and around 10 inches of snow fell on the Ruby Lake National Wildlife Refuge in Southern Elko County. Six to 8 inches fell in Eureka and around 5 inches fell on Ely.								
NVZ003 Extreme Western Nevada	10	0200PST-0700PST			0	0	0	0	High Winds
	High winds blew along the east slopes of the Sierra Nevada between Reno and Carson City. The strongest gust recorded was 70 MPH just south of Reno.								
NVZ003 Extreme Western Nevada	13	1500PST-1830PST			0	0	3	0	High Winds
	A Pacific cold front moved into Western Nevada and produced very high winds along the lee of the Sierra Nevada between Reno and Carson City. Winds gusting to more than 80 MPH were common in Southwest Reno. The strongest reported gust was 91 MPH. Only minor damage was reported.								
NVZ002 Northeast Nevada	24-26	0030PST-1200PST			0	0	3	0	Extreme Cold
	Extremely cold temperatures were recorded several mornings. On the morning of the 24th minus 30 degrees was recorded in Deeth. Minus 26 degrees was recorded at Wildhorse Reservoir State Park and Wells got down to 24 degrees below zero. The next morning Deeth got down to minus 33 degrees. Other cold readings the morning of the 25th included: Wildhorse Reservoir State Park with minus 24, Elko with minus 21 and Jackpot with minus 17. It was a little warmer the morning of the 26th with the coldest readings in the minus teens. Wildhorse Reservoir State Park reported minus 13 degrees and Elko minus 11 degrees.								
27 NEW HAMPSHIRE									
NHZ004-006 Central and Southeast	12				0	7	4	0	Light Freezing Rain
	Light freezing rain fell overnight as a result of a weak storm moving through central New York state.								

STORM DATA AND UNUSUAL WEATHER PHENOMENA

JANUARY 1989

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS KILLED	NO. OF PERSONS INJURED	ESTIMATED† DAMAGE PROPERTY	ESTIMATED† DAMAGE CROPS	CHARACTER OF STORM
28 NEW JERSEY, Northern									
NJZ005 Watchung-Raritan Area	06	2000EST			0	0	0	0	Heavy Snow
A low pressure system moving north-northeast along the Atlantic coast dumped up to 6 inches of snow across the Watchung-Raritan area. Most snowfall amounts ranged from 3 to 5 inches, with Jamesburg reporting the highest amount of 6 inches.									
28 NEW JERSEY, Southern									
NJZ002 Metropolitan Delaware Valley	06	1500EST			0	0	2	0	Heavy Snow
Snow began at around 0500EST and continued through the day, with 3 to 5 inches accumulating by 1500EST. The snow then mixed with or changed to sleet and freezing drizzle before ending in the evening. Slippery roadways resulted in many traffic accidents and the snow also caused some power lines to be downed.									
29 NEW MEXICO ——— NONE REPORTED									
30 NEW YORK, Coastal									
NYZ015 Metropolitan New York City	06	2000EST			0	0	0	0	Heavy Snow
A low pressure system moving north-northeast along the Atlantic coast dumped up to 6 inches of snow across the metropolitan area of New York City. Most snowfall amounts ranged from 3 to 5 inches, with LaGuardia Airport reporting the highest amount of 6 inches.									
30 NEW YORK, Central									
All of Eastern New York	01- 31	AM PM			0	0	?	?	Snow Drought
Eastern New York had a mild January. Temperatures were above normal and snowfall was below normal. The lack of snow cover has caused concern among many local water officials about the ability of water systems to recharge before peak summer demand. The Delaware River Commission declared a Drought Alert when some water storage areas dropped to 25% of capacity and no snow cover. The lack of snow cover also has farmers concerned about the ability of winter crops to survive the large temperature swings, since snowcover would normally act as insulation.									
NYZ-009 and N. Herkimer Co.	02- 03	1500EST- 0800EST			0	1	3	0	Snow
Lake-effect snow accumulated to nearly 9 inches. Wind chill temperatures were -30 to -40 degrees.									
NYZ-006 Susquehanna Region of New York	04	PM			1	3	4	0	Snow
Lake-effect snow covered portions of Rt. 357 in Otsego County. One women was killed and 3 injured in a car accident which was blamed on snowy roads and poor visibility.									
F-28-V Town of Franklin									
NYZ-006-007-008-009-010-011-012-013-019-020 Eastern New York	06- 07	2000EST- 1400EST			2	27	5	0	Winter Storm (Snow, Sleet, Freezing Rain and Rain)
Mixed precipitation fell over all of Eastern New York. Hundreds of car accidents were reported along with scattered power outages. Many roads had to be closed.									
M-85-V Town of Hyde Park F-28-V Town of Broome									
NEW YORK, Central									
NYZ-011 Champlain Valley of New York	08	0615EST			0	1	3	0	High Wind
High winds peeled two roofs off of buildings in the Village of Champlain. When one roof blew off it hit a propane tank and knocked it off its stand. Several trucks and ice fishing shanties out on Lake Champlain were moved by the strong winds. One fisherman was slightly injured when his shanty was blown over.									
NYZ-007-008-009-010-011-012-013-018-019 Eastern New York	12	0830EST- 1645EST			0	34	5	0	Winter Storm (Snow, Sleet, Freezing Rain and Rain)
Temperature fluctuations produced a combination of precipitation in Eastern New York. Many secondary roads and some Interstates had to be closed due to very poor driving conditions. Weather was blamed for one oil spill on I-87 in Warren County.									
NYZ-006-010-013 Catskills, Lower Hudson Valley, Susquehanna Region of New York	14- 15	2000EST- 0300EST			1	22	5	0	Freezing Rain
Freezing rain coated the Lower Hudson Valley and Catskills. Sullivan County banned all travel in the county on Saturday evening well into sunday morning. Motels in the county did a booming business that evening.									
F-4 months-0 City of Hudson									
NYZ-006-010-012-013-020	16	0430EST- 0900EST			2	12	5	?	Freezing Rain/Snow
Freezing rain and snow hampered driving in Eastern New York. Several car accidents were reported in all areas.									
M-71-V Town of Cambridge M-17-0 City of Binghamton									
NYZ-006-009-013-019 W. Mohawk Valley, Susquehanna Region of New York, Lower Hudson Valley, E. Mohawk Valley	19- 20	2300EST- 0100EST			5	12	5	0	Snow
Lake-effect snow fell in 2-6 inch amounts in Eastern New York. Two fatal car accidents occurred as a result of the snowfall and icy roads. Several other minor weather related accidents also occurred across Eastern New York.									
F-21-V Town of Bridgewater F-42-V Town of Croton Falls M-83-V Town of Bridgewater F-71-V Town of Bridgewater M-47-V Town of Florence									
NYZ-008-009-011-012-013-020	26	0400EST- 1530EST			2	14	6	0	Winter Storm (Snow, Sleet, Freezing Rain and Rain)
Warm moist air riding up over cold air produced a mixed bag of precipitation. Morning travelers had difficult times getting to work. Strong gusty winds were also reported in many northern counties, with some wind gusts reaching 45 mph. The combination of strong winds and snow also produced considerable drifting. As a result some roads, including Rt. 9B near Honeymooners Corners, had to be closed. Icy roads after the storm were list as the cause of a fatal accident in along the Broome-Delaware county line, near Deposit.									
F-17-V Town of Glen M-25-V Town of Deposit									
St. Lawrence County	28	1415EST			1	1	3	0	Snow Squall
One female was killed and a second injured in an automobile accident which occurred during a snow squall.									
F-17-V Town of Canton									

STORM DATA AND UNUSUAL WEATHER PHENOMENA

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30 NEW YORK, Western									
Lewis County Highmarket	02	evening			0	0	3	0	Snow
	Nine inches of snow fell at Highmarket.								
Niagara County Lockport	08	0200EST			0	0	3	0	Lightning
Erie County Buffalo	08	morning			0	0	3	0	High Winds
Niagara County Lockport and Niagara Falls	08	1900EST			0	0	4	0	High Winds
	Lightning during the early morning severed a power line in Lockport. Later in the evening, high winds downed trees and more power lines. In Niagara Falls, high winds broke windows in the Prospect Point observation tower. The tower had to be closed. A billboard on Fuhrmann Boulevard was blown over, forcing the closure of the skyway for a while.								
Wyoming County Portageville	08	1500EST			0	0	3	0	High Winds
	Strong winds damaged the roof of a house.								
Ontario County Geneva	08	1500EST			0	0	3	0	High Winds
Lewis County Lowville and Barnes Corners	09	0300EST			0	0	4	0	Snow
	Lowville and Barnes Corners each received 20 inches of snow.								
Erie County Springville	09	morning			0	0	4	0	Snow
	Springville received 13 inches of snow.								
Chautauqua County Dunkirk-Fredonia	12	0200EST			0	0	4	0	High Winds (48)
	Strong winds knocked down tree limbs and power lines.								
Erie County Amherst	15	evening			0	0	4	0	Freezing Rain
	Freezing rain during the night was blamed for the many vehicular accidents that occurred the following morning.								
Erie County Newstead	17	afternoon			0	0	3	0	High Winds (44)
	Strong winds downed power lines.								
31 NORTH CAROLINA									
NCZ0001-002-003 -005-006-007 -009-010-012 -016-017	03	1730EST			0	0	4	0	High Winds
	A strong low pressure system tracked from the Ohio Valley to the North Carolina coast producing high winds from the North Carolina mountains across the northern part of the state to the coast. The higher mountain peaks received winds near 100 MPH. As the storm tracked east wind gusts of 40 to 50 mph were recorded from the Northern Foothills to the Northern Coastal area. As the storm reached the coast and intensified during the early morning hours of the 4th, winds of 40 to 50 MPH were reported over most of the North Carolina coast.								
NCZ009 Ashe Co. Watauga Co. and Avery Co.	10	0400EST			0	0	0	0	Heavy Snow
	A snow of four inches or more fell in the Northern Mountains across Ashe, Watauga and Avery counties. The Central and Southern Mountains received one to two inches of snow.								

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS KILLED	NO. OF PERSONS INJURED	ESTIMATED† DAMAGE PROPERTY	ESTIMATED† DAMAGE CROPS	CHARACTER OF STORM
32 NORTH DAKOTA									
NDZ001-002-003-005-006-007-008-009-010-011-012-013-014-015-016-017-018 All but extreme southwestern North Dakota	05 to 08	1900CST 1200CST			0	0	?	0	Heavy Snow, Blizzard
	Snowfall became heavy over northwestern North Dakota the evening of the 5th and spread over the rest of the state by the morning of 6th. The snowfall intensity decreased during the afternoon and night of the 7th, but strong northwest winds developed with gusts to 45 mph. This created near-blizzard conditions with wind chill temperatures down to 60 below. On the night of the 7th, the storm intensified into a blizzard over eastern North Dakota, with near-blizzard conditions in the central and west. The winds diminished, with improving visibilities, from west to east the morning of the 8th. It was not until just before Noon on the 8th that the storm finally subsided over eastern North Dakota. It was a long-lasting storm over North Dakota, more than three days in duration. Over 20 inches of snow fell over some parts of northern and eastern North Dakota, and winds created snowdrifts up to 20 feet high. The National Weather Service Office in Fargo recorded 24.4 inches of snow from this storm, the greatest snowfall ever in Fargo from a single storm. The extreme southwest corner of North Dakota was the only part of the state to escape this storm. Activity in many areas was brought to a virtual standstill. The storm closed schools and businesses, shut down Interstates and highways, stranded motorists, caused many traffic accidents including chain-reaction vehicle pile-ups on Interstates. Authorities had to erect barricades on highways and pull motorists off. City and county road crews worked long hours on snow removal. Their efforts were severely hindered by high winds and blowing snow. As a benefit, the storm layed a thick snow cover on farms and fields, alleviating drought conditions. There were no weather-related deaths in North Dakota from this storm.								
NDZ003-004 Southwest North Dakota	23 to 24	0700CST 1900CST			0	0	0	0	Heavy Snow
	Moist northeast winds sloping up the higher terrain of southwestern North Dakota brought heavy snow to that area. Snowfall amounts of 7 inches, 9 inches, and 12 inches were reported at the towns of Beach, Bowman, and Hettinger, respectively.								
NDZ009-010-012-013-014-015-016-017-018 Eastern and North Central North Dakota	31	1200CST to 2330CST			0	0	0	0	Blizzard
	An Arctic outbreak brought blizzard conditions to eastern and north-central North Dakota during the afternoon and night of the 31st. Northwest winds of 25 to 45 mph, light snow, and considerable blowing snow caused zero visibilities in many areas. In addition, wind chill temperatures dropped to 45 below. This storm stranded motorists, closed schools and businesses, canceled airline flights and postponed sporting events.								
33 OHIO									
OHZ002-003 Central Lakeshore and East Lakeshore	03- 04	0800EST- 1200EST			0	0	?	0	Heavy Snow
	Four to eight inches of snow fell north and east of a line bounded by Lorain, Medina, Middlefield and Andover. The heaviest snow, of 8 inches, fell in Bedford Heights and Garfield Heights. The snow began at 0800 EST on the 3rd and ended at 1200 EST on the 4th.								
Mercer County	07	2145 EST			0	0	4	0	Thunderstorm Wind
Allen County	07	2155 EST			0	0	4	0	Thunderstorm Wind
Putnam County	07	2200 EST			0	0	4	0	Thunderstorm Wind
Hancock County	07	2220 EST			0	0	4	0	Thunderstorm Wind
	Thunderstorms raced through these counties blowing down trees and power lines in Celina, Mercer County; on the west side of Lima, Allen County; and across Hancock County. Trees and power lines were blown down in Ottawa and Pandora, and a car was crushed from a falling tree in Vaughnsville, all in Putnam County.								

STORM DATA AND UNUSUAL WEATHER PHENOMENA

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS KILLED	NO. OF PERSONS INJURED	ESTIMATED† DAMAGE PROPERTY	ESTIMATED† DAMAGE CROPS	CHARACTER OF STORM
OHIO									
OHZ001 Lucas County	09	0800 EST			0	0	?	0	Flood
	The Maumee River at Waterville flooded. It crested at 9.4 feet on the 9th at 1000 EST and caused only minor damage. Flood stage is 9 feet.								
OHZ001 Williams County	11	1900 EST			0	0	?	0	Flood
	The St. Joseph River at Montpelier flooded. It crested at 12.1 feet on the 12th at 0100 EST and caused only minor damage. Flood stage is 12.0 feet.								
OHZ001-009 Northwest and South-Central Ohio	Entire Month				0	0	0	C	Drought
	Precipitation for January was around normal for both Northwest and South-Central Ohio. The Northwest received two and four-hundredths (2.04") inches of precipitation, which was 94 percent of normal. South-Central Ohio had three and forty-six hundredths (3.46") inches of precipitation, which was 103 percent of normal. Improvement in the long term drought conditions continued during January over Northwest and South-Central Ohio. Northwest Ohio dropped from the Severe to the Moderate category of the Palmer Drought Severity Index. South-Central Ohio remained in the Moderate category. Precipitation needed to end the long term drought dropped to just over 5 inches in Northwest Ohio and to just under 7 inches for South-Central Ohio.								
34 OKLAHOMA									
OKZOC-OE Central and Eastern Oklahoma	05	1200CST 1800CST			0	2	?	?	Strong Winds
	Strong winds behind a developing storm system in Kansas overturned an oil derrick north of Pawnee, injuring one person. Strong winds also overturned a tractor-trailer on Interstate 35 north of Perry, slightly injuring the driver. Wind speeds were estimated at 50 to 60 mph.								
OKZOSW-OC Southwest and Central Oklahoma	13- 14	1800CST 0600CST			0	0	?	?	Heavy Snow
	Four to eight inches of snow fell in a narrow band from Lawton to Norman to Chandler. The heaviest snowfall occurred in Norman where 8.5 inches were reported. Most of the snow fell between 2100CST and 0100CST.								
35 OREGON									
ORZ006-013 Oregon Cascades	10	0300- 1800PST			3	?	?	0	Winter Storm
	Low pressure and a strong cold front moved inland during the early morning hours, followed by strong upslope conditions along the Cascades. The storm produced the heaviest snow of the month, 12 to 24 inches. A husband and wife died of exposure while cross country skiing near Bachelor Butte. A logger was killed when wind blew down a tree on heavy equipment, striking the man. M540, P450, M210								
ORZ001-002-003-006-013 Oregon Coast and Oregon Cascades	13	1300- 2200PST			3	1	?	0	Gale and Heavy Snow
	A strong cold front moved onto the coast during the evening. Winds of up to 40 knots were recorded along the coast, and very heavy seas caused rough bar conditions. A commercial fishing boat capsized while crossing the bar at the mouth of the Umpqua River near Reedsport, killing three persons and injuring one. Six to ten inches of snow fell in the Cascades. M630, M580, M500								

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS KILLED	NO. OF PERSONS INJURED	ESTIMATED† DAMAGE PROPERTY	ESTIMATED† DAMAGE CROPS	CHARACTER OF STORM
OREGON									
ORZ002-011 Central Oregon Coast and Northeast Mountains	14- 15	1700PST- 1500PST			1	2	?	0	Mud and Rock Slides, and Near-Blizzard
	A series of cold fronts moved into Oregon producing heavy rains along the coastal strip and up to 6 inches of snow in the north-eastern mountains. The heavy rain caused a rock and mud slide east of Coos Bay. An enormous boulder crushed a woman passenger in a car and injured her husband and daughter. The combination of snow and winds of up to 35 mph produced near-blizzard conditions on Interstate 84 near Lagrande, forcing the closure of the highway for most of the day. F24V								
ORZ001 North Oregon Coast	16	1500- 2000PST			0	?	?	0	High Wind
	The last of a series of strong cold fronts moved onto the coast during the early evening. Winds reached 51 mph at Astoria and 50 mph at Seaside.								
36 PENNSYLVANIA, Eastern									
PAZ009 PAZ012 Lower Susquehanna and Southeast Pennsylvania	06 06	1300EST 1500EST			0 0	0 0	2 2	0 0	Heavy Snow Heavy Snow
	Snow began over Eastern Pennsylvania between 3 AM and 5 AM and continued into the afternoon. Three to five inches of snow had accumulated by 1 PM over the Lower Susquehanna Zone and by 3 PM over the Southeast Zone. The accumulating snow had mostly ended by 4 PM, with only light snow or flurries continuing into the evening. In the Philadelphia area the snow changed to sleet and freezing drizzle before ending in the evening. Around 4 inches of snow accumulated over the East-Central Zone and only an inch or two over the remaining portions of Eastern Pennsylvania. Snow-covered roads resulted in many traffic accidents, causing at least one death. The snow resulted in downed power lines in some areas.								
36 PENNSYLVANIA, Western— NONE REPORTED									
37 RHODE ISLAND ———— NONE REPORTED									
38 SOUTH CAROLINA									
Statewide SCZ001-002-003-004-005-006-007-008	03	1700-2300EST			0	0	5	2	High wind
	High winds surged into South Carolina following the passage of a strong cold front. Winds were estimated as high as 60 mph in many communities during the late afternoon and evening. This wind event was a little more widespread and somewhat more significant than the similar event in early November 1988. Most damage seemed to result from trees falling onto houses and cars, and across power lines. Some houses also had shingles blown off or loosened. Damage was most noticeable in Spartanburg, Greenville, Horry and Charleston counties, but scattered damage was reported across the state.								
Greenville Co., Greenville	03	1801EST			0	0	2	0	High wind
Union County, Union	03	1830EST			0	0	3	0	High wind
Pickens Co., Pickens	03	2000EST			0	0	4	0	High wind
Anderson Co., Honea Path	03	2015EST			0	0	3	0	High wind
Spartanburg Co., Landrum	03	2015EST			0	0	4	0	High wind
York Co., Rock Hill	03	2015EST			0	0	3	0	High wind
Pickens Co., Easley	03	2015EST			0	0	3	0	High wind
Horry Co., N.Myrtle Beach	03	2130EST			0	0	2	0	High wind
Charleston Co., Charleston	03	2230EST			0	0	2	0	High wind
Northwest S.C. SCZ001-002-003	14	1500EST			0	0	2	0	Freezing drizzle
	Temperatures around the freezing mark and light drizzle produced a light glaze in some parts of northwestern and northern South Carolina. The glaze mostly affected bridges and was blamed for some accidents, particularly in Greenville County.								

STORM DATA AND UNUSUAL WEATHER PHENOMENA

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS: KILLED	NO. OF PERSONS: INJURED	ESTIMATED† DAMAGE: PROPERTY	ESTIMATED† DAMAGE: CROPS	CHARACTER OF STORM

39 SOUTH DAKOTA

Dewey County, Timber Lake	01	0300 MST			1	0	0	0	Cold
	A man died of exposure in Timber Lake. M230.								
SDZ001-002-003-004-005-006-010-015-016-017-018-019-020 Northern and Eastern South Dakota	06-07	2100 to 2100 CST			0	0	0	0	Winter Storm
	Five to nineteen inches of snow fell across northern and east-central South Dakota. Freezing drizzle and snow fell across the southeastern part of the state. Snow and blowing snow reduced visibilities to near zero in many locations. Winds gusted to near 50 mph in some areas. Interstate 29, from Sisseton to the North Dakota state line, was closed the night of the 7th. Many motorists were stranded. Icy roads contributed to a school bus accident which injured eight boys. Wind chills ranged from 30 to 60 below zero. Below is a list of snowfall amounts in inches:								
	Roberts and Marshall Counties				12 to 19				
	Ludlow				8 to 10				
	Sisseton				9				
	Lemmon				5				
SDZ001-002-003 Northwestern and North-Central South Dakota	24	0200 to 1400 MST			0	0	0	0	Winter Storm
	Six to ten inches of snow fell across northwestern South Dakota on the 24th. Some of the amounts reported were ten inches at Lemmon and seven inches at Timber Lake.								

40 TENNESSEE

Maury County, Columbia	07	2235 CST			0	0	5	0	Thunderstorm wind
	Damaging thunderstorm winds knocked down numerous trees, ripped roofing off of a storage building, blew a sixteen foot modular building for several hundred yards destroying it, destroyed one greenhouse and damaged another, and rolled one mobile home over, striking another at a mobile home sales location. Total estimated damage was $67,000.								
Unicoi County, Unicoi	12	1330EST			0	0	3	0	High wind
	High winds did minor damage in the Unicoi area during the afternoon. Part of the roof of a barn was blown off and a small outbuilding was destroyed. The estimated damage was $700.								
TNZ007-008-009-010-011-012-013-014-015	12-16				0	0	4	0	Flood
	Heavy rains fell in amounts of up to seven and a half inches in two to three days over western and middle parts of Tennessee. This caused widespread low land flooding that blocked numerous county roads and washed out several small bridges. A number of rivers in Tennessee went above flood stage during this time. They included: the North Fork of the Forked Deer at Dyersburg, Buffalo River at Lobelville, Elk River near Prospect, Harpeth River at Kingston Springs, Tennessee River at Savannah and Florence and The Duck River at Columbia. The Hatchie River at Rialto was above flood stage the entire month with the worst flooding during this time. It reached crest on the 19th.								

41 TEXAS, Northern

Bell County:									
Belton	25	1230CST			0	0	4	?	TSTM Wind
8 WNW Temple	25	1230CST			0	0	?	?	Hail (0.75)
4 N Belton	25	1246CST			0	0	?	?	TSTM Wind (60)
Troy	25	1300CST	0.5	75	0	3	5	?	Tornado (F1)
Temple	25	1312CST			0	0	?	?	TSTM Wind (52)
McLennan County:	25	1344CST			0	0	4	?	TSTM Wind
Eddy									
	An intense thunderstorm moved through Belton at 1230CST and produced a downburst which uprooted several trees and stripped other trees of limbs along a path about a half mile long. A car on the Mary Hardin-Baylor campus in Belton was overturned by the wind and shingles were ripped from several nearby homes. Winds up to 69 miles an hour were reported four miles north of Belton from the thunderstorm.								

41 TEXAS, Northern

	The thunderstorm moved north-northeastward where it produced a tornado at Troy. The tornado overturned a construction trailer at the First Baptist Church in Troy, injuring two workers who were inside. The tornado then moved across Interstate 35, overturning a semi-truck and trailer. The driver was injured. The tornado moved two blocks to the east of Interstate 35 damaging roofs, trees, storage buildings, automobiles, and two mobile homes.								
	Winds up to 60 miles an hour were reported in Temple at 1312 CST. A downburst ripped the front porch and part of the roof from a house in Eddy at 1344CST.								
Nacogdoches County: Nacogdoches	29	1200CST-1600CST			0	0	?	?	Flash Flooding
	Rainfall of up to four inches produced minor flooding along the Banita and Lanana Creeks in Nacogdoches.								

41 TEXAS, Southern

Harris County	18	0730CST			0	1	0	0	Lightning
	A 9 year old boy was knocked to the ground by a bolt of lightning outside of his home in the southeast part of Houston. He was taken to a local hospital for observation. It was determined that he had suffered only a superficial injury (slight burn on his chest). He was treated and released.								
Travis County	29	0600CST			0	0	0	0	Hail (0.75)
	Three-quarter inch hail fell in the western part of the county near lake Travis.								
Matagorda County	29	1200CST			0	0	0	0	Flooding
	Local flooding from over 6 inches of rain inundated sections of the town of Bay City.								
Brazoria County	29	1353CST	short	narrow	0	0	4	0	Tornado (F0)
	A tornado touched down briefly in the southern part of the county, 6 miles south of Jones Creek. Barns and trees were downed.								
Brazoria County	29	1420CST	short	narrow	0	0	4	0	Tornado (F0)
	A tornado touched down briefly near Freeport. The tornado unroofed two homes. Power lines and trees were also downed.								

41 TEXAS, Western

Culberson County	5	0740 MST			0	0	0	0	High Wind (55)
	A west wind gusted to 55 knots through Guadalupe Pass, in the northwest corner of the county. No damage was inflicted at the remotely located site.								
Culberson County	11	1415 MST			0	0	0	0	High Wind (53)
	A sustained west wind of 42 knots gusted to 53 knots through Guadalupe Pass. No damage was reported.								
Culberson County	28	0925 MST			0	0	0	0	High Wind (51)
	A sustained west wind of 40 knots gusted as high as 51 knots at 0925 MST through Guadalupe Pass. No damage was reported.								

42 UTAH

Washington County, St. George	01	0008MST			0	0	6	0	Flash Flood
	A dike failed on the Quail Creek Reservoir shortly after midnight on this Sunday. A 200 foot breach opened up in the dike allowing water, initially 20 feet deep, to pour into the Virgin River. A flow of 8 to 12 feet persisted for four hours. More than 1500 people were forced from their homes in the downstream communities of Washington City, St. George, Bloomington, Littlefield AZ, and Mesquite NV. Floodwaters damaged 50 to 60 homes and an apartment house near St. George. It also buried farm fields along the Virgin River under two feet of silt and mud, caused the deaths of an unknown number of cattle, horses, and pigs, and damaged scores of farm buildings. The dike failure closed Interstate 15 for 14 hours because of massive debris carried into the narrow Virgin River canyon, which is traversed by the freeway. Later damage estimates were near $12 million.								

STORM DATA AND UNUSUAL WEATHER PHENOMENA

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS KILLED	NO. OF PERSONS INJURED	ESTIMATED† DAMAGE PROPERTY	ESTIMATED† DAMAGE CROPS	CHARACTER OF STORM
UTAH									
UTZ008	04	1050MST			0	0	1	0	Heavy Snow
UTZ008	04	1400MST			0	0	1	0	Heavy Snow
UTZ007	04	1193OST			0	0	1	0	Heavy Snow
UTZ007 Southeast Valleys, Sevier Valley	05	0645OST			0	0	1	0	Heavy Snow
	From 4 to 6 inches of snow fell between Kanab and Big Water between 8 and 10 a.m., and by 2 p.m. the total had risen to 8 to 10 inches. Between 2 p.m. and 7:30 p.m. the Sevier Valley received an estimated 6 to 8 inches of new snow. An additional 6 inches fell overnight in some spots of the Sevier Valley, producing localized totals of 16 and 17 inches at Elsinore and Joseph, respectively, by the morning of the 5th.								
UTZ010	06	0300MST			0	0	1	0	Heavy Snow
UTZ003	06	0430MST			0	0	1	0	Heavy Snow
UTZ006	06	0635MST			0	0	1	0	Heavy Snow
UTZ001	06	0655MST			0	0	1	0	Heavy Snow
UTZ010 Northern Mountains, Wasatch Front, Southwest Valleys, and the Cache Valley	06	1532MST			0	0	1	0	Heavy Snow
	From 6 to 8 inches of snow fell overnight along the Wasatch Front, 6 to 10 inches in the Southwest, 8 inches in the Cache Valley, and 11 to 16 inches in the northern Wasatch ski resorts. By mid afternoon the Little Cottonwood Canyon areas had received an additional 9 to 15 inches of snow.								
Salt Lake County	10	0910MST	1/4	25	0	0	4	0	Tornado (F1)
	A tornado produced a fair amount of damage to a south Sandy neighborhood during the morning hours on this Tuesday. The tornado path began at about 11683 South and 1400 East to near 11400 South and 1380 East. Significant structural damage occurred to three roofs with minor damage to three others. The tornado tore a gapping hole in one roof. A camper that was bolted down at all four corners was lifted and thrown upside down into the street. Several fences were sheared off and fence material was strewn about the neighborhood. Asphalt shingles were driven 1/2 inch deep into both sides of one piece of the fence. An eyewitness observed the tornado skipping down the street with debris blowing in a circular motion. The whole house vibrated and it sounded like a train according to one witness.								
UTZ003 Wasatch Front	11	0500MST			0	0	1	0	Heavy Snow
	From 4 to 6 inches of snow fell along the Wasatch Front overnight.								
UTZ001 Cache Valley	23	1425MST			0	0	1	0	Heavy Snow
	Smithfield received 4 inches of snow overnight.								
43 VERMONT									
Statewide	12	0600EST			0	0	4	0	Freezing Rain
Franklin County: St.Albins	12	0933EST			0	0	?	0	High Wind (G69)
St.Albins	12	1205EST			0	0	3	0	High Wind (G63)
	Freezing rain spread over the entire state, resulting in slippery roads and downed power lines and trees. High winds were reported to exceed 70 mph in St.Albins. These strong winds were responsible for blowing one ice fisherman's truck several hundred feet across Lake Champlain.								
VTZ-003 Northeast Vermont	12	1930EST-2300EST			0	0	4	3	High Wind
	Winds in excess of 45 mph blew down trees, powerlines, and a secondary radio transmitter tower.								
Statewide	26	0130EST-2000EST			0	0	5	3	Winter Storm
Grand Isle County	26	0300EST-1800EST			0	0	3	0	Snow
Grand Isle County	26	1000EST			0	1	4	0	High Wind (G48)
Franklin County	26	0300EST-1900EST			0	7	5	0	Blowing Snow
Franklin County, St. Albins	26	1000EST			0	0	4	0	High Wind (G76)
Franklin County	26	0300EST-1800EST			1	1	3	0	Snow
	Snow and wind produced blizzard-like conditions in northwest Vermont. Wind gusts were measured at St.Albins at 88 mph. Heavy snow (4-6 inches) fell in Grand Isle while light snow (1-3 inches) fell elsewhere, in northern Vermont. Blowing snow forced the closing of many bridges over Lake Champlain. On I-89 near St.Albins, the wind ripped an open door off a parked car. Central Vermont also reported several trees and power lines down. High winds also forced a 737 scheduled to land at Burlington to divert to Albany, New York. F-17-V								
44 VIRGINIA									
Entire state	3	2100EST			0	0	?	0	High Winds
	Moderately strong winds behind a cold front produced gusts of 40 to 50 mph, diminishing by sunrise on the 4th. The winds knocked down tree limbs and some power lines; a house was reported damaged in Covington. The winds were accompanied by snow, sleet and rain, but no significant accumulations were reported.								
VAZ005-011-012 Far northern Virginia	6	0200EST			0	0	?	0	Winter Storm
	Snow, occasionally mixed with freezing rain, accumulated 1 to 3 inches in amount in the far northern part of the state, and ended in the early afternoon.								
VAZ016 Extreme western Virginia	14	0815EST			0	0	?	0	Winter Storm
VAZ010-011-012 -013 Northwestern Virginia	14	1500EST			0	0	?	0	Winter Storm
	Mixed snow, sleet and freezing rain began in southwestern Virginia in the morning, then spread up through the mountains in the northern and western parts of the state, and ended Saturday night. Widespread automobile accidents were reported.								
45 WASHINGTON									
North King County and South Snohomish County	06	0030PST			0	0		0	Heavy Snow
	Cold air at upper levels moved over Western Washington from British Columbia and destabilized a moist air mass in place over the area. Thunder-snow-storms developed with heavy snowfall from Everett to North Seattle. Snow depths ranged from 4 to 8 inches. Snow-laden trees fell across power lines and some streets, causing scattered power outages and temporary road closures.								
Skagit County and North Snohomish County	13	1700PST			0	0	4	0	Thunderstorm Wind
	An intense series of thunderstorms developed around dusk with a combination of snow, hail, brief heavy rain, and gusty winds. A thunderstorm downburst in Mt. Vernon severely damaged a shingle roof and a nearby fence. Power outages were also scattered over the area.								
Northwestern Washington	16	afternoon			0	0	4	0	High Wind
North-Central Washington	17	0100PST			0	0	5	0	High Wind
	A low pressure center made landfall over Southern British Columbia on the afternoon of the 16th and moved inland overnight. Strong winds blew over the interior of Western Washington through the afternoon. The highest reported gusts were to 64 mph at the Hood Canal Bridge. The Hood Canal Bridge was closed to traffic for nearly six hours while sustained winds were stronger than 45 mph. Up to 57,000 customers lost electrical service during the storm, and ferry service to Whidbey Island was disrupted. Winds increased in North-Central Washington during the early morning hours of the 17th with gusts to 62 mph at the Wenatchee Airport. Near Wenatchee one mobile home was completely destroyed and two others were knocked off their foundations. Near Lake Chelan, a "showcase" home had its roof blown off by strong wind gusts which came off of the lake.								
46 WEST VIRGINIA ——— NONE REPORTED									
47 WISCONSIN									
WIZ001-002-003 Far Northwest Wisconsin	07 08	Midday into Mid-Morning			0	0	0	0	Heavy Snow
	A winter storm deposited from 6 to 10 inches of snow across far northwest Wisconsin. In addition, heavy lake effect snow squalls in the Lake Superior snow belt caused some areas to pick up a total of 10 to 13 inches of snow. Snow amounts included 13 inches at Washburn (Bayfield County), and 10 inches at both Mellen (Ashland County) and Hurley (Iron County).								

STORM DATA AND UNUSUAL WEATHER PHENOMENA

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS: KILLED	NO. OF PERSONS: INJURED	ESTIMATED[1] DAMAGE: PROPERTY	ESTIMATED[1] DAMAGE: CROPS	CHARACTER OF STORM
48 WYOMING									
WYZ002 NORTHWEST CHINOOK	01	1800 TO 2200MST			0	0	0	0	HIGH WIND
	DURING THE EVENING OF THE 1ST, HIGH WINDS WERE REPORTED IN THE CITY OF CODY. SUSTAINED WEST WINDS FROM 35 TO 45 MPH WITH NUMEROUS GUSTS AT OR ABOVE 58 MPH WERE LOGGED.								
WYZ002-011-012-016-017 NORTHWEST CHINOOK, CENTRAL PLAINS, EASTERN PLAINS, LARAMIE VALLEY, SOUTHEAST PLAINS	02	0300 TO 2300MST			0	0	3	0	HIGH WIND
	DURING THE 2ND, A WIDESPREAD WINDSTORM OCCURRED ACROSS THE COWBOY STATE. IN THE EARLY MORNING, VEDAUWOO, ABOUT 25 MILES WEST OF CHEYENNE, RECORDED WIND GUSTS TO 63 MPH. DURING THE AFTERNOON AND EVENING, SEVERAL REPORTS OF SUSTAINED WINDS BETWEEN 40 AND 55 MPH WITH GUSTS IN EXCESS OF 70 MPH CAME FROM EXTREME NORTHWESTERN, CENTRAL AND SOUTHEASTERN WYOMING. WHEATLAND, LOCATED OVER FAR SOUTHEASTERN WYOMING, HAD A WIND GUST OF 72 MPH, LARAMIE LOGGED 59 MPH, AND WESTERN CHEYENNE RECORDED 69 MPH. THE CITY OF CASPER LOGGED 65 TO 70 MPH WIND GUSTS THAT CAUSED A FEW POWER OUTAGES. FINALLY, AT 1516 MST A SINGLE-ENGINE CESSNA AIRPLANE WAS FLIPPED UPSIDE-DOWN BY THE STRONG WINDS AS IT TAXIED FOR TAKEOFF AT THE CHEYENNE AIRPORT.								
WYZ001-007-013 NORTHWEST MOUNTAINS, WESTERN MOUNTAINS, SOUTHWEST	05-06	1200 TO 1200MST			0	0	0	0	SNOW
	A MOIST PACIFIC WEATHER SYSTEM SPREAD SNOW INTO THE WESTERN MOUNTAINS AND VALLEYS OF WYOMING. MOST LOCATIONS, INCLUDING YELLOWSTONE PARK, MEASURED 3 TO 6 INCHES OF NEW SNOW. THE TOWN OF EVANSTON ACCUMULATED 6 TO 8 INCHES OF SNOWFALL. THERE WAS A LOCALIZED AMOUNT OF 12 INCHES REPORTED AT THE TOWN OF ALPINE, IN FAR WESTERN WYOMING.								
WYZ002 NORTHWEST CHINOOK	08	1800 TO 2359MST			0	0	0	0	HIGH WIND
	DURING THE EVENING OF THE 8TH, SUSTAINED WINDS OF 40 MPH WITH GUSTS TO 60 MPH WERE REPORTED IN THE TOWN OF CODY.								
WYZ002-011-012-014-016-017 NORTHWEST CHINOOK, CENTRAL PLAINS, EASTERN PLAINS, RED DESERT, LARAMIE VALLEY, SOUTHEAST PLAINS	09	0001 TO 1800MST			0	0	?	0	HIGH WIND
	FOR ABOUT AN 18-HOUR PERIOD, HIGH WINDS RAKED A LARGE PORTION OF WYOMING. DURING THE EARLY MORNING OF THE 9TH, CODY LOGGED SUSTAINED WINDS BETWEEN 40 AND 50 MPH WITH GUSTS TO 61 MPH. FROM THE EARLY MORNING THROUGH THE AFTERNOON OF THE 9TH, NUMEROUS REPORTS OF STRONG WINDS WERE RECEIVED FROM CENTRAL AND SOUTHEASTERN WYOMING. RAWLINS HAD SEVERAL GUSTS GREATER THAN 58 MPH, INCLUDING ONE TO 64 MPH. CASPER LOGGED A 63 MPH WIND GUST, LARAMIE 59 MPH AND SEVERAL LOCATIONS AROUND CHEYENNE HAD PEAK WINDS AROUND 60 MPH.								
WYZ001 NORTHWEST MOUNTAINS	09-10	1800 TO 1200MST			0	0	0	0	HEAVY SNOW
	HEAVY SNOW WAS WIDESPREAD THROUGHOUT THE MOUNTAINS OF NORTHWEST WYOMING FROM THE EVENING OF THE 9TH THROUGH THE MORNING OF THE 10TH. BRIDGER-TETON NATIONAL FOREST MEASURED 13 INCHES OF SNOWFALL AND THE TOWN OF JACKSON PILED UP AT LEAST 8 INCHES.								

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS: KILLED	NO. OF PERSONS: INJURED	ESTIMATED[1] DAMAGE: PROPERTY	ESTIMATED[1] DAMAGE: CROPS	CHARACTER OF STORM
—— WYOMING									
WYZ016 LARAMIE VALLEY	14	0030 TO 0400MST			0	0	0	0	HIGH WIND
	DURING THE EARLY MORNING OF THE 14TH, STRONG WINDS WERE REPORTED ON THE SUMMIT OF INTERSTATE 80 ABOUT 25 MILES WEST OF CHEYENNE. SUSTAINED WINDS OF 45 TO 55 MPH WITH A PEAK GUST OF 71 MPH WERE LOGGED.								
WYZ002-012-016 NORTHWEST CHINOOK, EASTERN PLAINS, LARAMIE VALLEY	15	0600 TO 1800MST			0	0	0	0	HIGH WIND
	FROM THE MORNING THROUGH THE LATE AFTERNOON OF THE 15TH, HIGH WINDS WERE EXPERIENCED AT THE TOWN OF CODY, LOCATED IN EXTREME NORTHWEST WYOMING, AND VEDAUWOO, ABOUT 25 MILES WEST OF CHEYENNE. BOTH LOCATIONS HAD SUSTAINED WIND SPEEDS OF 40 TO 60 MPH WITH GUSTS UP TO 75 MPH. ALSO, AT A LOCATION NEAR THE TOWN OF WHEATLAND, LOCATED OVER FAR EASTERN WYOMING, A WIND GUST OF 60 MPH WAS LOGGED AT 1530 MST.								
WYZ011 CENTRAL PLAINS	15	2100 TO 2359MST			0	0	0	0	HIGH WIND
	ON THE LATE EVENING OF THE 15TH, WIND GUSTS NEAR 70 MPH WERE REPORTED AROUND THE TOWN OF CASPER.								
WYZ002-011-012-016-017 NORTHWEST CHINOOK, CENTRAL PLAINS, EASTERN PLAINS, LARAMIE VALLEY, SOUTHEAST PLAINS	16	0001 TO 2100MST			0	0	5	0	HIGH WIND
	AS STRONG WESTERLY FLOW ALOFT MIXED DOWN TO THE SURFACE, A SEVERE WINDSTORM BLEW ACROSS A CONSIDERABLE PORTION OF THE COWBOY STATE. CODY HAD SUSTAINED WINDS OF 35 TO 50 MPH WITH SEVERAL GUSTS GREATER THAN 60 MPH AND AT LEAST ONE GUST TO 80 MPH. CASPER LOGGED PEAK GUSTS OVER 70 MPH. NUMEROUS WIND GUSTS IN EXCESS OF 75 MPH WERE EXPERIENCED OVER FAR SOUTHEASTERN WYOMING, WITH MOST OF THE REPORTS COMING FROM LOCATIONS 15 TO 30 MILES WEST AND NORTH OF THE CITY OF CHEYENNE. THERE WERE EVEN SOME UNOFFICIAL 100 MPH WIND GUST REPORTS RECEIVED FROM THE FAR NORTHWEST AND EASTERN SECTIONS OF THE STATE. CONSIDERABLE PROPERTY DAMAGE WAS CAUSED BY THESE CHINOOK WINDS. ADDITIONALLY, TRUCKS WERE BLOWN OVER AND OFF OF INTERSTATE 25, NORTH OF CHEYENNE. DAMAGE REPORTS INCLUDED ABOUT 10 SATELLITE DISHES BEING BLOWN OVER AND A HOUSE UNDER CONSTRUCTION THAT WAS DESTROYED ABOUT 15 MILES WEST OF CHEYENNE. FINALLY, SEVERAL POWER POLES WERE TOPPLED JUST WEST OF CHEYENNE CAUSING POWER OUTAGES IN THAT CITY.								
WYZ002-011--016-017 NORTHWEST CHINOOK, CENTRAL PLAINS, LARAMIE VALLEY, SOUTHEAST PLAINS	17	0030 TO 2000MST			0	0	?	0	HIGH WIND
WYZ010-014 WIND RIVER BASIN, RED DESERT	17	0930 TO 2000MST			0	0	0	0	WIND
	FOR THE SECOND DAY IN A ROW, FIERCE CHINOOK WINDS GREETED THE COWBOY STATE. IN GENERAL, THIS EVENT WAS NOT AS SEVERE AS THE 16TH. CODY AND VEDAUWOO (25 MILES WEST OF CHEYENNE) HAD SEVERAL WIND GUSTS IN EXCESS OF 60 MPH. THE HIGHEST WIND AT CHEYENNE WAS 62 MPH AT 1257 MST. THE TOWN OF CASPER RECEIVED SEVERAL GUSTS OVER 60 MPH ON THE MORNING OF THE 17TH. OTHER LOCATIONS THAT FELT THE WIND BLOW INCLUDED RAWLINS AND ROCK SPRINGS, WHERE GUSTS BETWEEN 50 AND 58 MPH WERE COMMON DURING THE LATE MORNING AND AFTERNOON OF THE 17TH.								

STORM DATA AND UNUSUAL WEATHER PHENOMENA

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS KILLED	NO. OF PERSONS INJURED	ESTIMATED† DAMAGE PROPERTY	ESTIMATED† DAMAGE CROPS	CHARACTER OF STORM
WYOMING									
WYZ001 NORTHWEST MOUNTAINS	22-23	0900MST-1200MST			0	0	0	0	HEAVY SNOW
	AN UPPER-LEVEL DISTURBANCE COMBINED WITH MOIST WESTERLY UPSLOPE FLOW TRIGGERED COPIOUS AMOUNTS OF SNOW OVER EXTREME NORTHWESTERN WYOMING DURING THE 22ND AND 23RD. PORTIONS OF YELLOWSTONE PARK PILED UP 17 INCHES OF SNOWFALL WHILE SHOSHONE NATIONAL FOREST ACCUMULATED 18 INCHES. EIGHT INCHES OF NEW SNOW FELL IN THE TOWN OF JACKSON.								
WYZ015-016-017 SOUTHERN MOUNTAINS, LARAMIE VALLEY, SOUTHEAST PLAINS	28	0500 TO 1800MST			0	0	0	0	SNOW
	AS A DEEP AND INTENSE UPPER-LEVEL LOW MOVED NORTHEASTWARD THROUGH CENTRAL COLORADO, EXTREME SOUTHERN WYOMING WAS CLIPPED BY THE NORTHERN EDGE OF AN AREA OF VERY HEAVY SNOWFALL. THE SNOWY RANGE SKI AREA ACCUMULATED UP TO 6 INCHES OF NEW SNOW, WHILE LARAMIE AND CHEYENNE GOT 3 INCHES.								
WYZ002 NORTHWEST CHINOOK	31	0100 TO 0500MST			0	0	0	0	HIGH WIND
	ON THE EARLY MORNING OF THE 31ST, THE TOWN OF CODY HAD SUSTAINED WINDS OF 40 TO 45 MPH WITH PEAK GUSTS TO 59 MPH.								
WYZ010-011-012-016 WIND RIVER BASIN, CENTRAL PLAINS, EASTERN PLAINS, LARAMIE VALLEY	31	0900 TO 2000MST			0	0	6	0	HIGH WIND
	AS PART OF AN EPISODIC EVENT INVOLVING A SEVERE ARCTIC COLD AIR OUTBREAK, A SEVERE WINDSTORM RAVAGED A GOOD PORTION OF CENTRAL AND SOUTHEAST WYOMING JUST AHEAD OF THE SOUTHWARD-MOVING ARCTIC COLD FRONT. DURING THE LATE MORNING AND AFTERNOON OF THE 31ST, THE TOWN OF LANDER EXPERIENCED SUSTAINED WINDS OF 45 TO 55 MPH WITH FREQUENT GUSTS OVER 70 MPH. A GUST OF 86 MPH WAS LOGGED AT THE LANDER AIRPORT AT 1850MST. THESE WERE THE STRONGEST WINDS EXPERIENCED AT LANDER IN 17 YEARS. CASPER HAD A WIND GUST TO 61 MPH WHILE WHEATLAND, ABOUT 100 MILES NORTH OF CHEYENNE, RECORDED SUSTAINED WINDS FROM 50 TO 65 MPH AND A PEAK GUST OF 82 MPH. VEDAUWOO, 25 MILES WEST OF CHEYENNE, HAD STEADY WINDS OF 45 MPH WITH GUSTS TO 58 MPH ON THE 31ST.								
	EXTENSIVE PROPERTY DAMAGE OCCURRED IN THE LANDER AND SURROUNDING AREAS BECAUSE OF THE SEVERE WINDS. THIS INCLUDED OVERTURNED TRAVEL-TRAILERS, DOWNED TREES ON CARS AND HOUSES, STORAGE SHEDS BEING BLOWN AWAY, AND NUMEROUS REPORTS OF ROOF DAMAGE. LOCAL OFFICIALS DESCRIBED PARTS OF THE TOWN OF LANDER AS THOUGH "A TORNADO WENT THROUGH."								
49 ALASKA, Northern ——— NO REPORT RECEIVED									
49 ALASKA, Southern									
Alaska Peninsula	5	1600AST			0	0	2		High Winds
	A moderate 988 mb low south of Cold Bay on the Alaska Peninsula moved north through the eastern Aleutians producing winds to 60 mph over the Peninsula.								

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS KILLED	NO. OF PERSONS INJURED	ESTIMATED† DAMAGE PROPERTY	ESTIMATED† DAMAGE CROPS	CHARACTER OF STORM
ALASKA, Southern									
Aleutians, Alaska Peninsula, Yukon-Kuskokwim Delta, and South-Central Alaska	10-11				3	7	7		High Winds/Seas Blizzard
	A strong 968 mb low moved northward through the eastern Aleutians west of Cold Bay into western Alaska. The storm produced strong winds 50-65 mph over the eastern Aleutians and western Alaska Peninsula. The winds were accompanied by high seas. Gusts to above 70 mph were recorded on the hillside above the Anchorage Bowl. Blizzard conditions were observed over the eastern Aleutians and portions of western Alaska.								
Southern Alaska: South-Central, Aleutians, North Gulf Coast, Kodiak Island, Alaska Peninsula, Cook Inlet, and Susitna Valley	15-31				6	?	7		Severe Cold, High Winds, Blizzard
	An extreme cold spell settled over mainland Alaska beginning around the middle of January. It continued through the end of the month. The coldest period during the second half of the month was from about the 24th to 29th when nearly 30 all-time record low temperatures were officially set at that many locations around the state. In addition, the highest recorded pressure for the North American Continent was broken at Northway with a reading of 31.85 inches/1078.4 MB. Wind chills were frequently recorded below -100 at several locations around the state. Wind gusts to 60 mph were recorded over a large portion of southern Alaska and occasionally reduced visibilities to less than 1/4 mile, especially over southwest Alaska.								
49 ALASKA, Southeastern									
Southern SE Alaska	26	Early morning			0	0	4	0	High Winds
	A strong low pressure system crossed the Southeast Panhandle around midnight bringing gusts of up to 81 mph in the Ketchikan area. Trees of up to 1 ½ feet in diameter were toppled causing damage to houses, power outages, and blocked streets. Several truck canopies were blown off and a 21 foot boat was sunk at the Ketchikan harbor.								
50 HAWAII									
Island of Hawaii	8-11				0	0	5	0	Surf
	A large high pressure cell, much like the one that was present to the northeast of the Islands over the New Year's holidays, caused a large easterly swell which produced surf damage to a number of vacation homes and roads in the Puna and Kau districts.								
All Islands	10-12				0	0	6	0	Flash Flooding
	A tropical disturbance which may have been a weak tropical cyclone made a highly unusual appearance over the waters south of the Hawaiian Islands. Heavy rains which especially affected Kauai produced localized flash flooding. This tropical system later moved south of Wake Island on the 16th and across Saipan in the Marianas as Tropical Storm WINONA on the 18th at 2300UTC.								
51 PUERTO RICO ——— NONE REPORTED									
52 VIRGIN ISLANDS ——— NONE REPORTED									
53 PACIFIC									
American Samoa	3-8				0	0	?	?	Wind and Flooding
	An active monsoon trough was stationary across the Samoa region, oriented northwest-southeast with several small tropical disturbances moving southeastward through the area accompanied by strong gusty winds and heavy rains.								

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STORM SUMMARY

JANUARY 1989

TYPE	ALABAMA	ARIZONA	ARKANSAS	CALIFORNIA	COLORADO	CONNECTICUT	DELAWARE	FLORIDA	GEORGIA	IDAHO	ILLINOIS	INDIANA	IOWA	KANSAS	KENTUCKY	LOUISIANA	MAINE	MARYLAND & DC	MASSACHUSETTS	MICHIGAN	MINNESOTA	MISSISSIPPI	MISSOURI	MONTANA	NEBRASKA	NEVADA	NEW HAMPSHIRE
TORNADOES	0					0			0					0		0			0		0						
Number		1						1			4	3										2					
Days		1						1			1	1										1					
Deaths		0						0			0	0										0					
Injuries		0						0			56	5										0					
Property Damage		4						3			7	5										5					
xz Crop Damage		0						0			0	?										0					
HAIL																											
Deaths											0												0				
Injuries											0												0				
Property Damage											?												3				
Crop Damage											0												0				
THUNDERSTORM WINDS																											
Deaths											0	0			0												
Injuries											0	0			1												
Property Damage											?	4			7												
Crop Damage											0	?			0												
HIGH WINDS																											
Deaths				0	0			0		0										0				1	0	0	
Injuries				0	2			0		0										0				2	0	0	
Property Damage				7	6			6		4										4				6	5	3	
Crop Damage				0	0			0		0										0				4	5	0	
LIGHTNING																											
Deaths																											
Injuries																											
Property Damage																											
Crop Damage																											
FLASH FLOODS																											
Deaths		0	2												0							0					
Injuries		0	0												0							0					
Property Damage		4	0												4							4					
Crop Damage		0	0												0							0					
FLOODS																											
Deaths																											
Injuries																											
Property Damage																											
Crop Damage																											
HEAVY SNOWSTORMS AND BLIZZARDS @																											
Deaths										0			0											0	0		
Injuries										0			0											?	0		
Property Damage										5			4											6	1		
Crop Damage										0			0											4	1		
ICE STORMS #																											
Deaths										0			0				0										0
Injuries										0			0				0										0
Property Damage										4			4				5										4
Crop Damage										0			0				0										0
HURRICANES AND TROPICAL STORMS																											
Deaths																											
Injuries																											
Property Damage																											
Crop Damage																											
ALL OTHERS																											
Deaths				0			0			0			1				0	0						1		0	
Injuries				0			0			0			0				0	0						0		0	
Property Damage				4			?			4			0				4	?						0		3	
Crop Damage				0			0			0			0				0	0						0		0	

SEE REFERENCE NOTES FOR STORM DAMAGE CATEGORIES

STORM SUMMARY

JANUARY 1989

TYPE	NEW JERSEY	NEW MEXICO	NEW YORK	NORTH CAROLINA	NORTH DAKOTA	OHIO	OKLAHOMA	OREGON	PENNSYLVANIA	RHODE ISLAND	SOUTH CAROLINA	SOUTH DAKOTA	TENNESSEE	TEXAS	UTAH	VERMONT	VIRGINIA	WASHINGTON	WEST VIRGINIA	WISCONSIN	WYOMING	ALASKA	HAWAII	PACIFIC	PUERTO RICO	VIRGIN ISLANDS	NATIONAL DEATH & INJURY TOTALS
TORNADOES		0								0									0	0		≠			0	0	
Number														3	1												
Days														2	1												
Deaths														0	0												0
Injuries														3	0												64
Property Damage														5	4												
Crop Damage														0	0												
HAIL																											
Deaths														0													
Injuries														0													
Property Damage														?													
Crop Damage														?													
THUNDERSTORM WINDS																											
Deaths						0		3					0	0				0									3
Injuries						0		1					0	0				0									2
Property Damage						4		?					5	4				4									
Crop Damage						0		0					0	?				0									
HIGH WINDS																											
Deaths			0	0			0				0		0			0	0	0			0			0			1
Injuries			1	0			2				0		0			1	0	0			0			0			8
Property Damage			5	4			?				5		3			6	?	6			6			?			
Crop Damage			0	0			?				2		0			3	0	0			0			?			
LIGHTNING																											
Deaths			0											0													0
Injuries			0											1													1
Property Damage			3											0													
Crop Damage			0											0													
FLASH FLOODS																											
Deaths														0	0								0	0			2
Injuries														0	0								0	0			0
Property Damage														?	7								6	?			
Crop Damage														?	0								0	?			
FLOODS																											
Deaths						0							0														
Injuries						0							0														
Property Damage						?							4														
Crop Damage						0							0														
HEAVY SNOWSTORMS AND BLIZZARDS @																											
Deaths	0		0		0	0	0	0	0						0	0											0
Injuries	0		0		0	0	0	0	0						0	0											?
Property Damage	2		5		?	?	?	?	2						1	6											
Crop Damage	0		0		0	0	?	0	0						0	3											
ICE STORMS #																											
Deaths			0								0					0											
Injuries			0								0					0											
Property Damage			7								2					4											
Crop Damage			?								0					0											
HURRICANES AND TROPICAL STORMS																											
Deaths																											
Injuries																											
Property Damage																											
Crop Damage																											
ALL OTHERS																											
Deaths			0			0		4				1					0						0				7
Injuries			0			0		2				0					0						0				2
Property Damage			?			0		?				0					?						5				
Crop Damage			?			?		0				0					0						0				

SEE REFERENCE NOTES FOR STORM DAMAGE CATEGORIES

LATE REPORTS

NONE

CORRECTIONS

NONE

STORM DAMAGE CATAGORIES

1 Less than $50
2 $50 to $500
3 $500 to $5,000
4 $5,000 to $50,000
5 $50,000 to $500,000
6 $500,000 to $5 Million
7 $5 Million to $50 Million
8 $50 Million to $500 Million
9 $500 Million to $5 Billion

REFERENCE NOTES

0/Blank	None reported.
*	Miles instead of yards.
**	Yards instead of miles.
@	Includes heavy sleet storm.
#	Freezing drizzle and freezing rain, commonly known as glaze.
≠	Report incomplete.
≠≠	Report not received.
o/c	Indicates Crop Damage amount is included in the value given for property damage.

When reports are not received or are incomplete, the Storm Summary National Death and Injury totals may also be incomplete.

Definition of Fujita Tornado Scale (F scale)

(F0) Gale tornado (40-72 mph): Light damage
Some damage to chimneys; break branches off trees; push over shallow-rooted trees; damage sign boards.

(F1) Moderate tornado (73-112 mph): Moderate damage
The lower limit (73 mph) is the beginning of hurricane wind speed; peel surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads.

(F2) Significant tornado (113-157 mph): Considerable damage
Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light-object missiles generated.

(F3) Severe tornado (158-206 mph): Severe damage
Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off ground and thrown.

(F4) Devastating tornado (207-260 mph): Devastating damage
Well-constructed houses leveled; structure with weak foundation blown off some distance; cars thrown and large missiles generated.

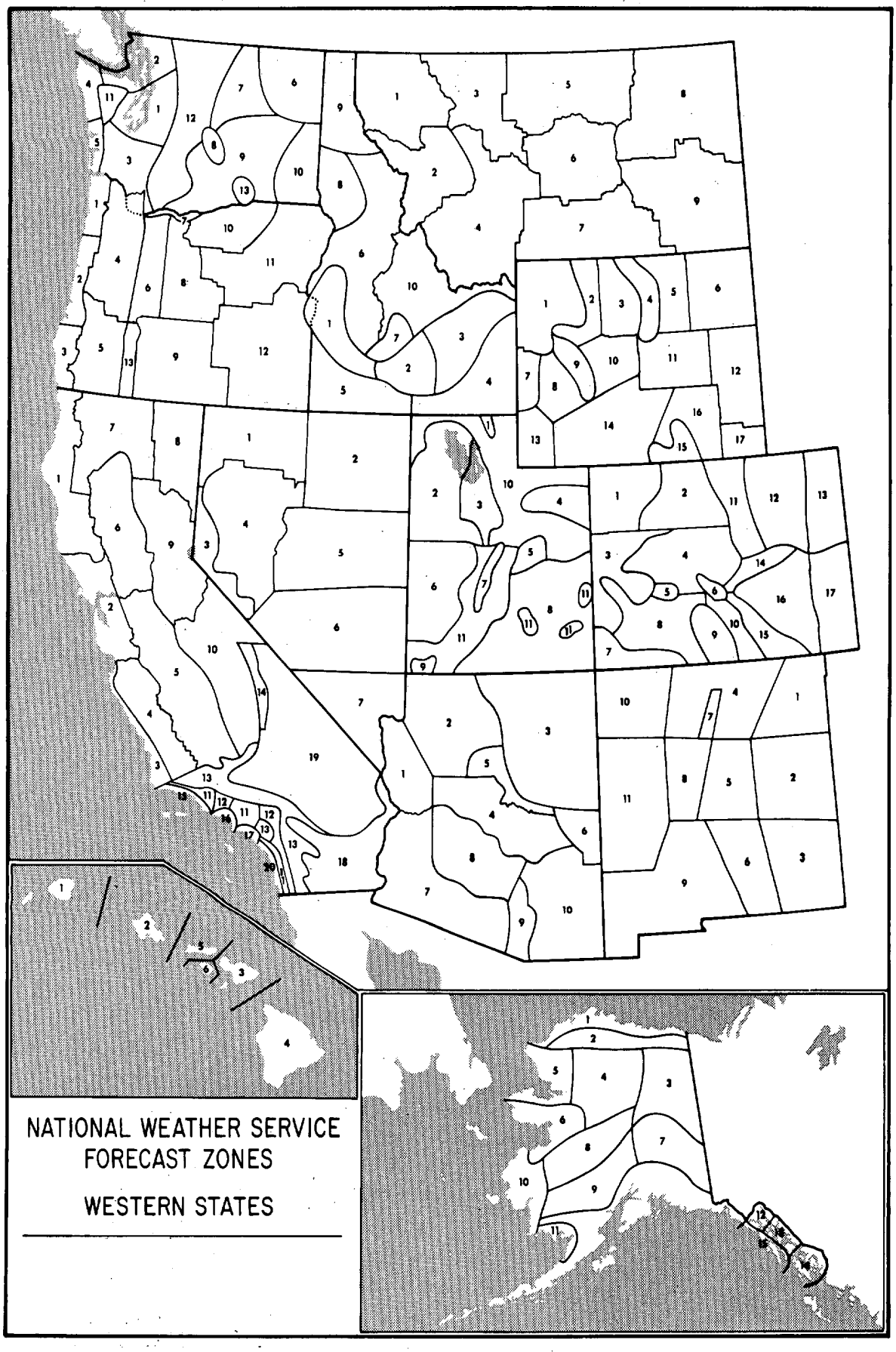
(F5) Incredible tornado (261-318 mph): Incredible damage
Strong frame houses lifted off foundations and carried considerable distance to disintegrate; automobile-sized missiles fly through the air in excess of 100 m; trees debarked; incredible phenomena will occur.

(F6-F12) (319 mph to Mach 1, the speed of sound): The maximum wind speeds of tornadoes are not expected to reach the F6 wind speeds.

(F0+F1) Weak Tornado
(F2+F3) Strong Tornado
(F4+F5) Violent Tornado

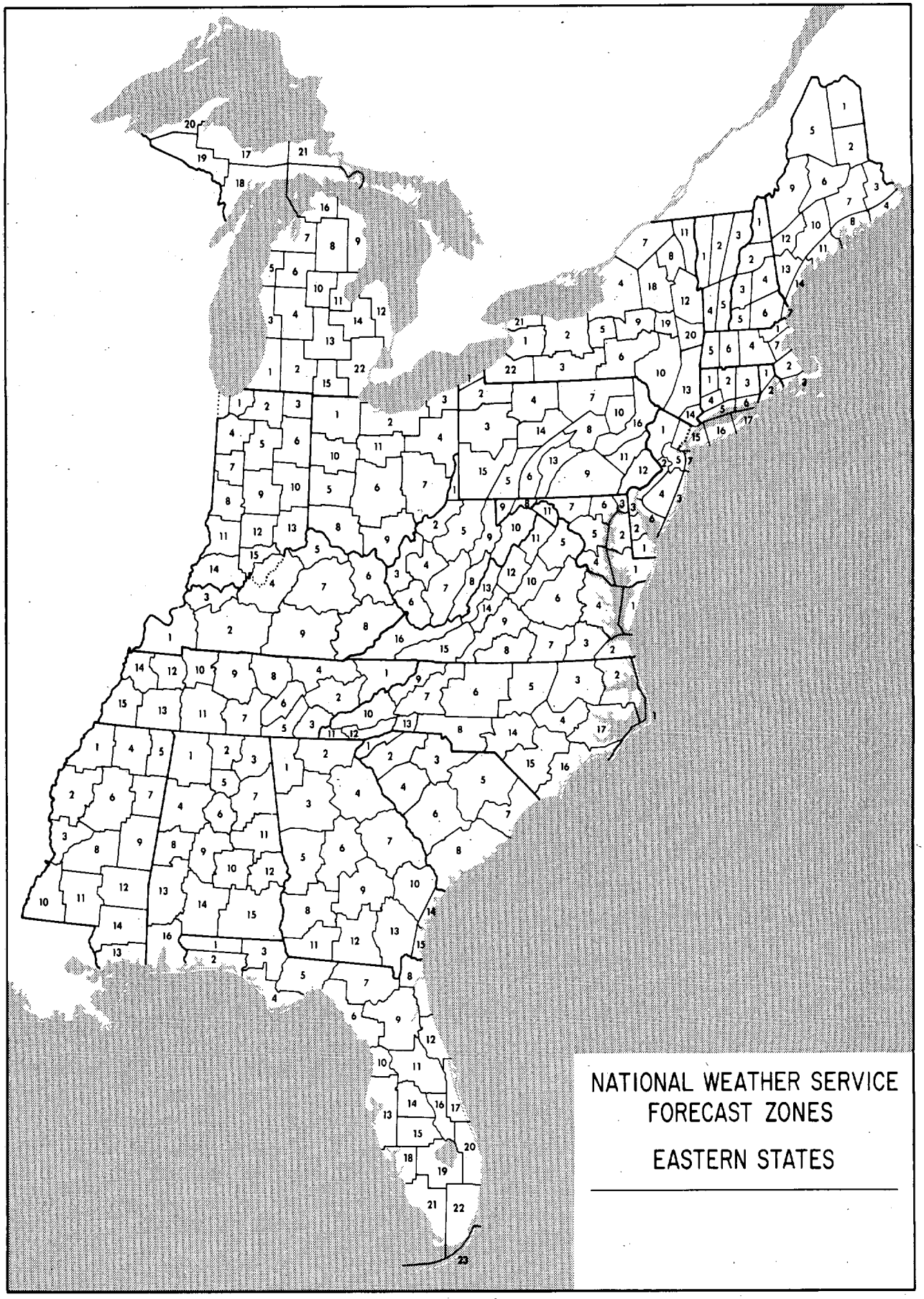
From J. Atmos. Sci., August 1981, p. 1517-1519

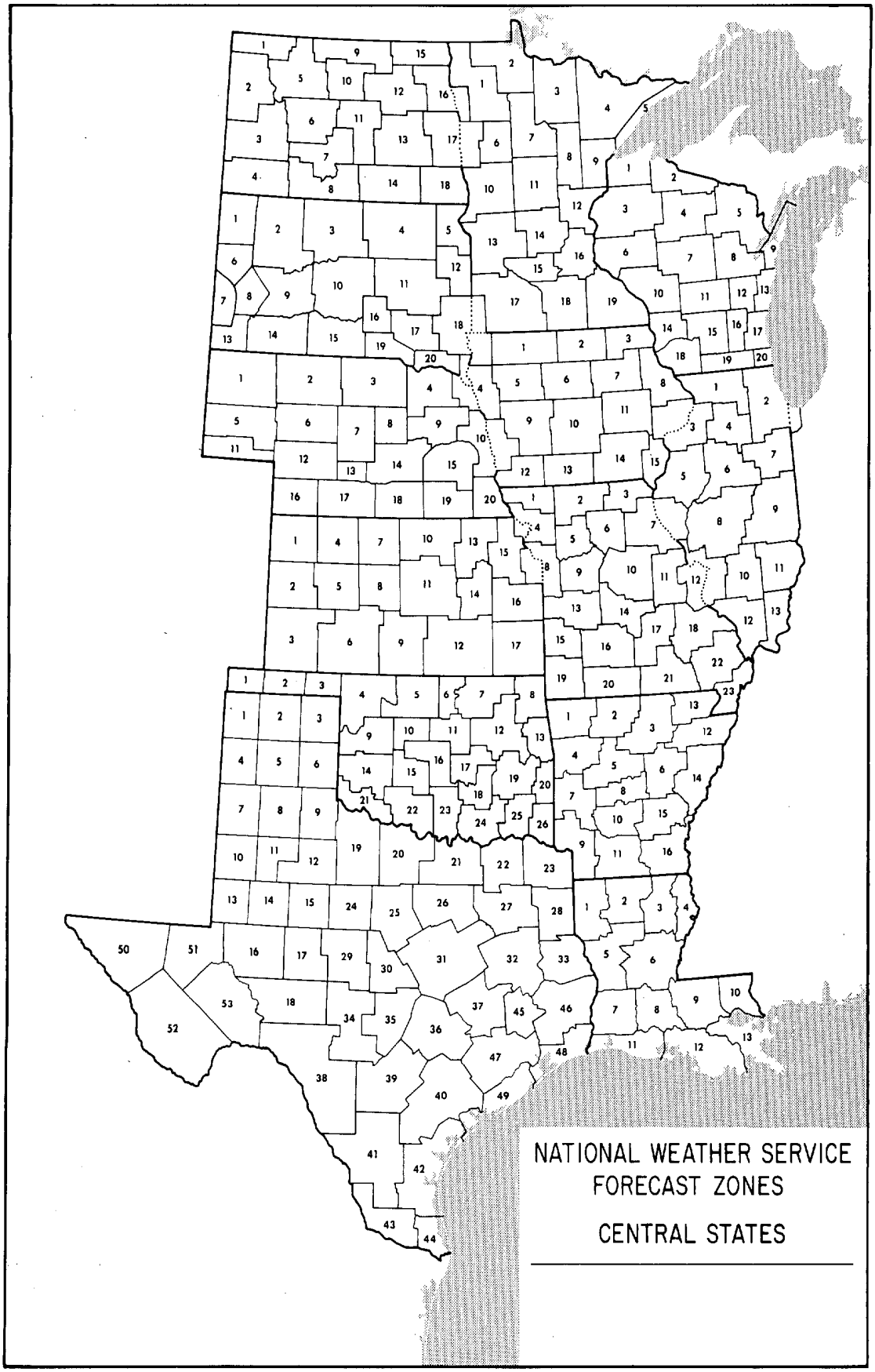
USCOMM-NOAA-ASHEVILLE, N.C. 1988-1800



NATIONAL WEATHER SERVICE
FORECAST ZONES

WESTERN STATES


NATIONAL WEATHER SERVICE
FORECAST ZONES
EASTERN STATES


NATIONAL WEATHER SERVICE
FORECAST ZONES
CENTRAL STATES

TEMPERATURE EXTREMES JANUARY 1989

STATE	Highest	Date	STATION	Lowest	Date	STATION
Alabama	80	6	Demopolis Lock and Dam	19	17	Saint Bernard
		6	Jackson		17	Valley Head
		8	Headland		23	Scottsboro
		8	Robertsdale 5 NE			
Alaska	59?	28	Little Port Walter	-76	27	Tanana FAA AP
	47	25	Hollis			
Arizona	80	19	Wikieup	-24	9	Flagstaff 4 SW
		22	Yuma Proving Ground			
		22	Yuma Valley			
		23	Yuma WSO AP			
Arkansas	78	6	Crossett 2 SSE	13	22	Gilbert
		6	Eudora		22	Yellville
		6	Portland			
California	85	18	Pomona Cal Poly	-25	8	Bridgeport
		19	Palm Springs			
Colorado	80	31	Campo 7 S	-56	13	Taylor Park
Connecticut	60	24	Mount Carmel	- 4	5	Norfolk 2 SW
Delaware	63	24	Dover	11	5	Dover
		29	Georgetown 5 SW			
		29	Greenwood 2 NE			
Florida	89	12	Fort Drum 5 NW	27	5	Fountain 3 SSE
					5	Tallahassee WSO AP
Georgia	83	8	Camilla	16	21	Blairsville Exp Stn
		15	Folkston 9 SW			
		15	Waycross 4 NE			
Hawaii	89	19	Waikiki 717.2	24	5	Mauna Loa Slope Obs
		28	Puukohola Heiau 98.1			
Idaho	60	31	Bruneau	-34	24	Stanley
Illinois	75	31	Cahokia	- 6	9	Marengo
Indiana	70	25	Charlestown Ord Plant	3	5	Bluffton
		25	English			
Iowa	72	31	Keokuk Lock and Dam 19	-13	8	Hawarden
Kansas	85	31	Cedar Bluff Dam	- 5	9	Brewster 4 W
		31	Ness City			
		31	Ulysses 1 SE			
Kentucky	75	25	Paintsville 1 E	11	24	Grayson 3 SW
Louisiana	85	3	Franklinton 3 SW	20	22	Ashland
					22	Logansport 4 ENE
Maine	52	24	Sanford 2 NNW	-29	4	Allagash
					6	Van Buren 2
Maryland	66	24	Baltimore WSO CI	3	22	Oakland 1 SE
Massachusetts	58	24	New Bedford	- 9	21	Borden Brook Reservoir
		24	West Medway			
Michigan	64	31	Benton Harbor AP	-26	4	Trout Lake
		31	Bloomingdale			
Minnesota	57	27	Lamberton SW Exp Sta	-45	10	Roseau 1 E
		30	Springfield 1 NW			
Mississippi	82	12	Columbia	22	22	Holly Springs 4 N
					22	Independence 1 W
					22	Lexington 2 NNW
					23	Merrill
					23	Winona 5 E
Missouri	77	31	Jefferson City Wtr Plt	0	9	Grant City
		31	Waynesville 2 W			
Montana	66	30	Geraldine	-41	9	Redstone
Nebraska	80	31	Beaver City	-15	9	Lynch
Nevada	79	30	Amargosa Farms - Garey	-33	25	Deeth
New Hampshire	58	24	Massabesic Lake	-33	4	Mount Washington
New Jersey	64	24	Moorestown	- 2	23	Newton St Pauls Abbey
		24	Woodstown			
New Mexico	79	31	Clayton WSO AP	-27	8	Dulce
		31	Hope		13	Eagle Nest
New York	64	24	NY Westerleigh Stat Is	-25	5	Gouverneur 3 NW
North Carolina	78	8	Hofmann Forest	6	4	Mount Mitchell
		8	New Bern FAA AP			
North Dakota	53	21	Mott	-43	10	Willow City
		30	Brien			
		30	Fort Yates			
Ohio	68	31	Cincinnati - Fernbank	- 3	5	Dorset
Oklahoma	84	31	Mangum Research Stn	1	13	Kenton
Oregon	73	29	Brookings	-34	24	Seneca
Pennsylvania	65	24	Neshaminy Falls	- 8	5	Linesville 1 S
Rhode Island	61	24	Kingston	1	5	North Foster 1 E
South Carolina	81	8	Yemassee	17	5	Ninety Nine Islands
South Dakota	72	30	Rapid City WSO AP	-31	10	Columbia 8 N
					10	Pollock
Tennessee	75	25	Cheatham Lock and Dam	5	20*	Mt LeConte
Texas	93	7	Mc Allen FAA AP	2	9	Boys Ranch
		7	Mission 4 W			
Utah	68	30	Lytle Ranch	-30	26	Logan 5 SW Exp Farm
Vermont	50	8	Rutland	-29	6	West Burke
		23	South Lincoln			
		29	Bellows Falls			
		29	Vernon			
Virginia	72	29*	Rocky Mount	3	5	Big Meadows
		29	South Boston		5	Mount Weather
		29*	Back Bay WL Ref			
Washington	66	30	Smyrna	- 6	8	Republic
		30	Sunnyside			
West Virginia	72	25	Williamson	3	22	Snowshoe
Wisconsin	63	31	Kenosha	-35	11	Foxboro
Wyoming	68	31	La Grange	-41	25	Bondurant

Summaries of Temperature and Precipitation Extremes were compiled by Vincent Miller of the WEATHER CHANNEL, Atlanta, Georgia.

The low of -76 at Tanana FAA AP, Alaska was 4 degrees shy of the all-time record low for the U.S. of -80 set at Prospect Creek, AK, on 1/23/71.
The daily high was -66 at Chandalar Lake, AK (22nd), and at Ambler West, AK (26th).

NOTE: Due to differences in observing times and methods, and quality control problems, data in the temperature table may differ (primarily on dates) from those published in individual state Climatological Data (CD).

\+ And on previous date or dates.

? Published as monthly extreme in CD, but appears to be in error.

* Date changed (usually by 1 day) from published date in CD to reflect likely correct calendar date.

\# Date may be 1 day too early.

PRECIPITATION EXTREMES

JANUARY 1989

STATE	Greatest Monthly	STATION	Least Monthly	STATION	Greatest Daily	Date	STATION	Greatest Monthly Snowfall	STATION	Greatest Depth	Date	STATION
Alabama	10.26	Fayette	.82	Dauphin Island 2	3.38	1	Geneva No 2	2.0	Bridgeport 5 NW	1	9	Bridgeport 5 NW
Alaska	33.60	Little Port Walter	.01	Barrow WSO AP	4.21	25	Beaver Falls	170.9M	Hollis	107	25	Main Bay
Arizona	4.71	Crown King	.00	Dateland Whitewing Ranch	2.23	4	Aguila	30.5	Bright Angel Ranger Station	38	25	Bright Angel Rng Station
Arkansas	10.36	Eudora	2.01	Harrison FAA Airport	4.34	26	Mountainburg 2 NE	6.0	2 stations	6	13	Odell 2 N
California	9.84	Gasquet Ranger Station	.00	Deep Springs College	3.04	10	Gasquet Ranger Station	46.5	Lake Spaulding	63	7	Echo Summit Sierra Ski
			T .00	Death Valley								
Colorado	5.25M	Wolf Creek Pass 1 E	.02	Kit Carson 6 SE	1.60	10	Wolf Creek Pass 1 E	79.0	Wolf Creek Pass 1 E	64	6	Bonham Reservoir
Connecticut	2.67	Round Pond	.67	Hartford-Brainard Fld	.81	16	Stafford Springs 2	11.4	Norfolk 2 SW	4	28	Norfolk 2 SW
Delaware	3.35	Dover	2.48	Wilmington WSO AP	.82	15	Dover	6.7	Wilmington WSO AP	4	7	3 stations
Florida	6.82	Daytona Beach WSO AP	.17	Miami Beach	5.67	22	Daytona Beach WSO AP					
Georgia	7.31	Ellijay	.25	Thomasville 3 NE	2.00	14	Helen					
Hawaii	46.04	S Glenwood	.05	Kaunakakai 536	10.12	13	Princeville Ranch 1117					
Idaho	7.00	Powell	.03	Blackfoot 2 SSW	1.80	10	Powell	81.3	Dixie	83	10	Dixie
Illinois	5.34	Smithland Lock & Dam	.21	Marengo	2.25	8	Benton Forest Service	4.5	2 stations	6	2	8 stations
Indiana	5.44	Crane Naval Depot	.49	Hobart	1.83	14	Madison Sewage Plant	3.8	Goshen College	7	1	Rockville
Iowa	1.65	Toledo	.09	Lake Park	1.10	6	Buckeye	5.0	3 stations	3	29	9 stations
Kansas	2.56	Pittsburg	.04	Brewster 4 W	1.32	26	Pittsburg	6.0	Lenora	4	25	2 stations
				Catharine 1 NW								
Kentucky	7.57	Mayfield Radio WNGO	2.50	Salyersville 2 SE	2.74	12	Columbus	4.2	Meta 4 SE	2	9	4 stations
Louisiana	13.33	Columbia Locks	.96	New Orleans D P S 14	4.60	13	Coushatta 5 S					
Maine	2.61	Machias	.90	Long Falls Dam	.68	27	Jonesboro	28.9	Eustis	25	31	Van Buren 2
Maryland	4.94	Mc Henry 2 NW	1.80	Snow Hill 4 N	1.12	12	Towson	24.2	Frostburg 2	12	8	Frostburg 2
Massachusetts	2.22	New Bedford	.32	Newburyport	.87	15	New Bedford	10.0	Lanesboro	3	26	Amherst
Michigan	4.52	Houghton FAA AP	.47	Hart	1.15	12	Houghton FAA AP	78.7	Houghton FAA AP	40	12	Houghton FAA AP
Minnesota	3.14M	Lutsen 3 NNE	.07	Luverne	1.14	8	Tamarac Wildlife Refuge	47.0	Lutsen 3 NNE	53	25	Tower 3 S
Mississippi	11.77	Ellistown	1.20	Waveland	4.55	12	Ellistown	1.5	2 stations	2	9	Hickory Flat
Missouri	6.03	New Madrid	.48	Seneca	1.92	12	New Madrid	5.0	Valley Park	5	1	Valley Park
Montana	5.19	Haugan 3 E (Deborgia)	.11	Del Bonita	2.90	15	Haugan 3 E (Deborgia)	57.0	Hebgen Dam	48	4	West Yellowstone
Nebraska	2.25	Falls City 2 NE	.00	20 stations	1.46	29	Falls City 3 NE	9.0	Oconto	6	29	2 stations
Nevada	2.59	Eureka	T .00	Beatty 8 N	1.53	4	Bunkerville	26.0	Dagget Pass	53	6	Dagget Pass
			T .00?	Currie Highway Station								
			T .00?	Fallon Experiment Station								
New Hampshire	6.20	Mount Washington	.48	Berlin	1.54	20	Mount Washington	44.0	Mount Washington	24	30	First Conn Lake
New Jersey	2.79	Belleplain State Forest	.73	Midland Park	.89	15	Woodstown	7.0	Woodstown	6	6	Audubon
New Mexico	2.32M	Wolf Canyon	.00	Carlsbad Caverns	1.02	24	Chaco Canyon Nat Mon	30.0	Black Lake	25	28	Chama
			.00	Ochoa								
			.00	Yeso 2 S								
New York	5.68	Rectors Corners	.11	Valatie 1 N	1.98	26	Westchester County AP	69.0	Rectors Corners	37	10	Barnes Corners
North Carolina	6.97	Andrews	.85	Dunn 4 NW	1.29	12	Cedar Island	5.0	Mount Mitchell	4	10	2 stations
North Dakota	2.98	Velva 1 S	.12	Keene 3 S	2.83	8	Velva 1 S	41.2	Park River	42	11	Grand Forks University
			.12	Moffit 3 SE								
Ohio	3.87	Marietta Lock 1	1.11	Mineral Ridge Water Works	2.40	8	Delaware	10.0	Andover 2 NE	8	4	Andover 2 NE
Oklahoma	5.92	Madill	.00?	Cheyenne	3.99	26	Madill	7.0	2 stations	6	14	2 stations
			.12	Laverne								

PRECIPITATION EXTREMES

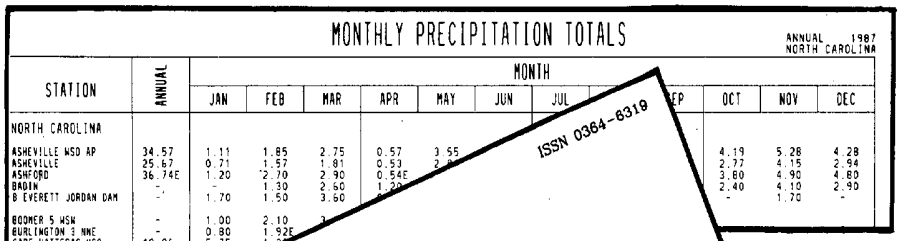
JANUARY 1989

STATE	Greatest Monthly	STATION	Least Monthly	STATION	Greatest Daily	Date	STATION	Greatest Monthly Snowfall	STATION	Greatest Daily Snowfall	Date	STATION
Oregon	17.38	Nehalem 9 NE	.05	Whitehorse Ranch	4.24	10	Detroit Dam	115.0	Crater Lake NPS HQ	120	16	Crater Lake NPS HQ
Pennsylvania	5.24	Derry 4 SW	.38	Covington 2 WSW	1.53	15	Derry 4 SW	24.0	Seven Springs	11	5	Seven Springs
Rhode Island	1.92	Newport	.95	Woonsocket	.72	15	Kingston	.8	North Foster 1 E			
South Carolina	4.48	Salem 1 SW	.61	Beaufort 7 SW	1.47	12	Cleveland 4 S					
South Dakota	1.70	Britton	.00	23 stations	.95	7	Britton	23.0M	Britton	31	11	Britton
Tennessee	10.97M	Waynesboro	3.41	Mountain City 2	3.20	14	Jackson FCWOS AP	8.0	Mt LeConte	8	10	Mt LeConte
Texas	11.63	Angleton 2 W	.00	Plains	6.24	29	Bay City Waterworks	4.0	Seymour	2	14	2 stations
			.00	Valentine								
			T .00	Muleshoe National WLR								
			T .00	Olton								
Utah	5.23	Helper Carbon U P & L	.00	Eskdale	1.87	6	Alta	62.0	Alta	87	11	Alta
			T .00?	Garrison								
			T .00	Partoun								
			T .00	Wah Wah Ranch								
Vermont	3.50M	Mount Mansfield	.19	Salisbury 2 N	1.22	15	West Wardsboro	34.5M	Mount Mansfield	64	28	Mount Mansfield
Virginia	5.38	Pennington Gap	.89	Buena Vista	1.90	13	Pennington Gap	13.0	Monterey	6	6	Lincoln
Washington	21.54	Rainier Paradise R S	T .00	Tonasket 4 NNE	3.20	9	Rainier Paradise R S	166.3	Rainier Paradise R S	160	18	Rainier Paradise R S
West Virginia	6.05	Rowlesburg 1	1.00	Upper Tract	2.00	26	Cairo 3 NW	28.6	Snowshoe	13	5	Snowshoe
Wisconsin	2.39	Bayfield 6 N	.10	Richland Center	1.17	6	Platteville	38.1M	Hurley	45	9	Hurley
Wyoming	3.95	Moran 5 WNW	.00	30 stations	1.20	9	South Pass City 2 NW	71.0	Snake River	65	23	Snake River

See NOTE and definitions following the temperature table. The precipitation data is compiled from the monthly precipitation extremes listed in the individual state Climatological Data. Dates apply to the 24 hours prior to the time of observation. In some cases, the actual occurrence was on the date preceding that shown. Precipitation amounts are measured in inches.

M Missing. 1-9 Daily Values

T Trace. An amount too small to measure.



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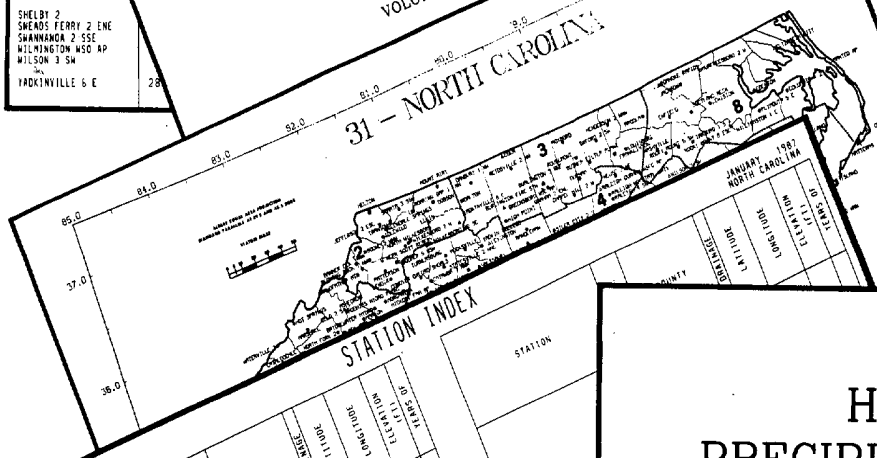

STATION INDEX

MONTHLY PRECIPITATION MAXIMA

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HOURLY PRECIPITATION DATA

NORTH CAROLINA

JANUARY 1987

VOLUME 37 NUMBER 1

HOURLY PRECIPITATION DATA is published monthly and presents daily, hourly, and maximum short duration data for recording rain gage stations in each state except Alaska. Also included are a published station index and a locator map for the state. In addition to the regularly published data, the December publication contains a tabulation of monthly and annual total precipitation amounts as an annual supplement.

SHELF STOCK of the printed publication is maintained only for the most recent three years. Earlier years are available on microfiche or paper copies reproduced from microfiche. The data are also available in digital form - on magnetic tape and diskette.

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CHALLENGES AHEAD: FLOOD LOSS REDUCTION STRATEGIES FOR THE '90s

This year's conference theme focuses on the challenges we face in the advent of the 21st century, and the strategies needed to further reduce flood hazards over the next decade. Papers are invited for, but not limited to, the following issues and subjects:

Mapping Issues: Delineation of floodplains in rapidly growing areas to account for the effects of future watershed development; new methods and techniques for assessing and evaluating flooding risks; dealing with floodplains not identified through the National Flood Insurance Program or where flood data does not exist.

Managing Stormwater: Linking floodplain and stormwater management programs; designing stormwater management facilities to reduce future flood losses while providing other environmental and community benefits; effective funding and maintenance arrangements.

The Floodplain and Beyond: Approaches for balancing the need to protect wetlands while allowing for appropriate development of floodplains; special partnerships which further multi-objective management; innovative land use strategies for river corridor management; basinwide approaches to stormwater management.

Floodplain Management for Tomorrow: Successful ways to encourage and promote flood preparedness and response; innovative floodplain management programs; effectiveness of Executive Order 11988 in the '90s.; new tools for floodplain managers; noteworthy local regulatory programs; key flood loss reduction issues for the decade ahead and alternatives for resolving them.

Flood Control: Designing flood control projects for multi-objective benefits; responding to the growing transfer of flood control project costs from federal to state and local governments.

Mitigation: Gaining greater support for state and local flood hazard mitigation activities; practical alternatives for mitigating flood losses to existing structures; exemplary mitigation projects.

Unique Flood Hazards: Defining the hazards; new mapping methodologies; effective management standards.

In addition to specific papers, the ASFPM also welcomes proposals for short course presentations at the conference and any special exhibits or demonstrations that may be of particular interest to conference attendees.

Submission of Abstracts

Prospective authors must submit three copies of the following items to Tim Keptner, Program Chair, by October 31, 1989:

- A one page abstract including the paper's title, all authors' names and their affiliations and the kinds of visual aids which will be used in the presentation.
- Concise biographies of all authors not to exceed 100 words per individual including current titles and positions, other background information directly relevant to the paper and complete mailing addresses and telephone numbers.

Authors will receive timely notification of the status of their papers. All papers selected must be submitted by May 15, 1990 for inclusion in the conference proceedings. All attendees, including authors, are expected to pay the conference registration fee.

About the Conference

The conference program will run Tuesday, June 12 through Thursday, June 14, including technical field trips in the Asheville area. The ASFPM will conduct its committee and general membership meetings on Monday, June 11. All members and conference participants are encouraged to attend.

The conference will be held at the Inn on the Plaza, in the heart of Asheville. Conference room rates are $62 for a single and $68 for a double. Hemispheric Travel, Inc. of Madison, Wisconsin will serve as the official conference travel agency.

Registration rates prior to May 1, 1990 will be $180 for members, $195 for non-members, and $95 for students.

Exhibit Space

Exhibit space will be made available for a fee to individuals or organizations who wish to display a product or service to attendees. Further information can be obtained from Dan Accurti, Exhibits Chair.

Deadlines

OCTOBER 31, 1989 - final day for the receipt of abstracts and biographies.

MAY 15, 1990 - final day for the receipt of completed papers for inclusion in conference proceedings.

ASSOCIATION OF STATE FLOODPLAIN MANAGERS
14TH ANNUAL CONFERENCE
ASHEVILLE, NORTH CAROLINA
JUNE 11-14, 1990

About Asheville

Located at the junction of the French Broad and Swannanoa Rivers, Asheville is the gateway to the Blue Ridge Parkway, Great Smoky Mountains National Park and Mt. Mitchell, the highest peak in the Eastern United States. This mountain region offers a unique blend of cultural and recreational opportunities from white water rafting to Appalachian arts and crafts; from raw natural beauty and scenic attractions to premier mountain resorts and from the simplicity of the Thomas Wolfe Memorial to the grandeur of 7,500 acre Biltmore Estate. Come join us for a breath of fresh air in the North Carolina mountains!

Conference Host:

NORTH CAROLINA DIVISION OF EMERGENCY MANAGEMENT

Conference Director - Berry Williams
NC Div. of Emergency Management
116 West Jones Street
Raleigh, NC 27603-1335
Tele. (919) 733-3867

Program Chair - Tim Keptner
PA Dept. of Community Affairs
551 Forum Building
Harrisburg, PA 17120
Tele. (717) 787-7403

Exhibits Chair - Dan Accurti
PA Dept. of Community Affairs
551 Forum Building
Harrisburg, PA 17120
Tele. (717) 787-7403

CALL FOR PAPERS

ASSOCIATION OF STATE FLOODPLAIN MANAGERS 14TH ANNUAL CONFERENCE ASHEVILLE, NORTH CAROLINA JUNE 11-14, 1990

CHALLENGES AHEAD:

FLOOD LOSS REDUCTION STRATEGIES FOR THE '90s

The Association of State Floodplain Managers (ASFPM) invites all persons interested in presenting papers at the 14th annual conference in Asheville, North Carolina to submit abstracts for consideration by the program review committee. As the major floodplain management conference in the country, this yearly event attracts a broad audience including local, state, and federal officials, consultants, engineers, planners, representatives from non-profit organizations, researchers, educators, and involved citizens--all of whom have an interest or role in flood hazard reduction activities.

* * * DETAILS ON PAGE REVERSE * * *

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