

JANUARY 1993  
VOLUME 35  
NUMBER 1

# STORM DATA



AND UNUSUAL WEATHER PHENOMENA  
WITH LATE REPORTS AND CORRECTIONS



**noaa** NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION / NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE / NATIONAL CLIMATIC DATA CENTER ASHEVILLE, N.C.

Cover: A series of major winter storms hit southern California for about two weeks. These storms brought a variety of weather - thunderstorms, heavy rains, weak tornadoes, mountain snows, rock and mud slides. Ten deaths and 17 injuries were directly attributed to the storms. The ice-covered Call Box, located on Antelope Valley Freeway (Highway 14) depicts some of the winter weather that struck the area. (Photo courtesy: Gary Thornhill, Canyon Country, CA; photo supplied by Nicholas Leiver, WPM, NWSFO Los Angeles, CA.)

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### STORM DATA

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National Climatic Data Center

Editor: Grant W. Goodge

Publication Staff: William Angel, Greg Hammer, Jay Hollifield, and Sharon Weaver

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STORM DATA contains all confirmed information on storms available to our staff at the time of publication. However, due to difficulties inherent in the collection of this type of data, it is not all-inclusive. Late reports and corrections are printed in each edition.

Maps of the National Weather Service Forecast Zones which are used in the Storm Data and Unusual Weather Phenomena section will be printed in all editions.

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National Climatic Data Center  
37 Battery Park Avenue  
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(704) 271-4800 or (704) CLIMATE

The editor of STORM DATA solicits your help in acquiring photographs (prints or slides; black and white, or color), maps, clippings, etc. of significant or unusual weather events (past or present). These could be for use in the "Outstanding Storms of the Month" or "Et Cetera" sections of STORM DATA. We request our subscribers or other interested persons to mail such items to:

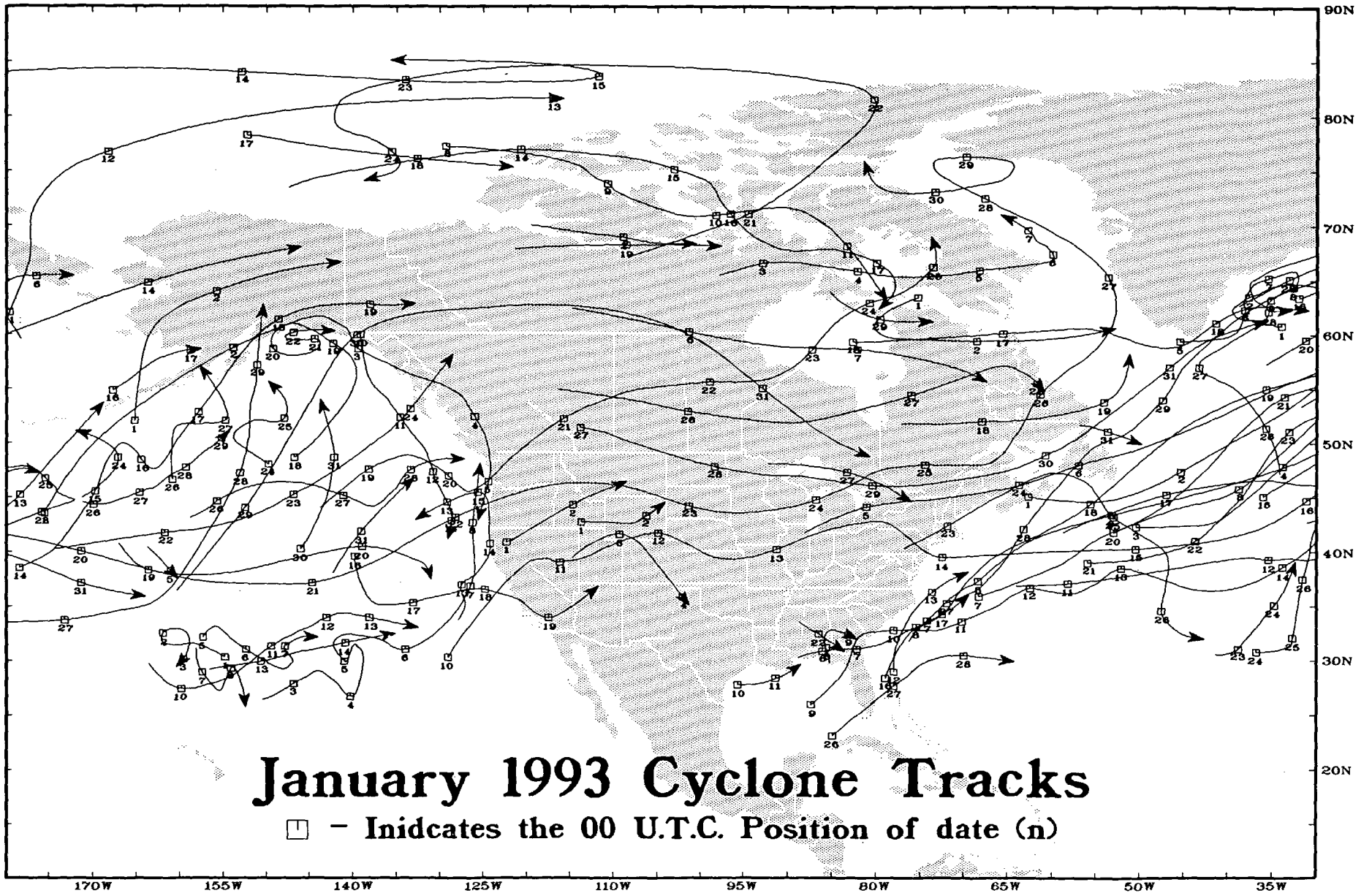
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National Climatic Data Center  
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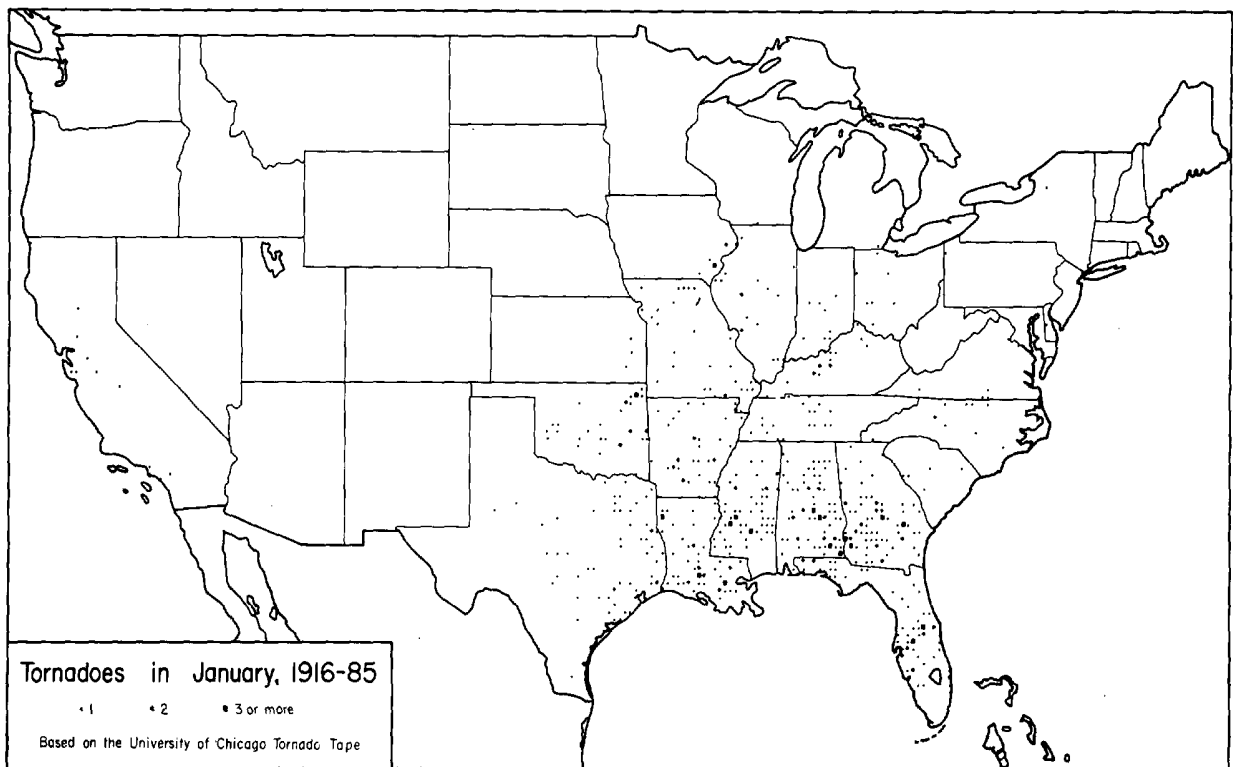
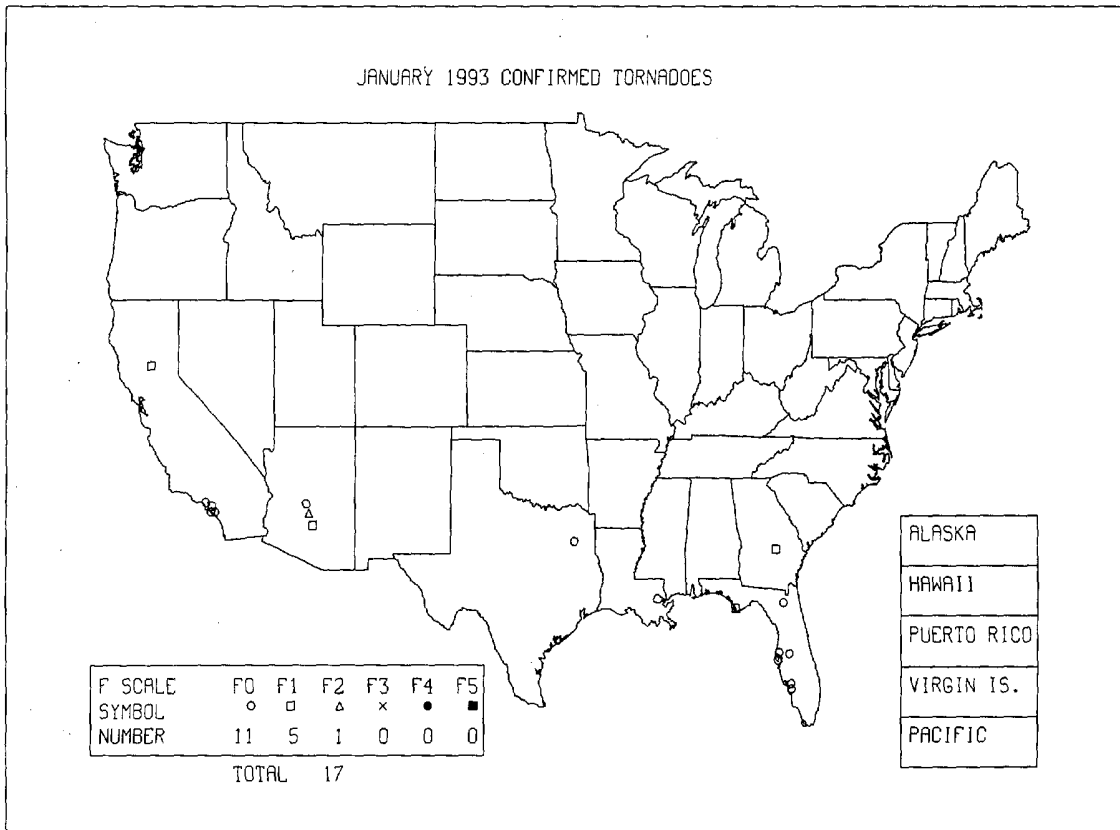
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Director,  
National Climatic Data Center



JANUARY 1993 CONFIRMED TORNADOES



**!! ATTENTION !!**

The Outstanding Storms of the Month section for all 1993 "STORM DATA" issues will appear in a separate special edition distributed in the summer of 1994. All monthly issues for 1993 will also be distributed by summer of 1994. The 1994 "STORM DATA" publications will be printed in the traditional format and mailed within 110 days after the data month. Inquiries: William Angel (704) 271-4459.

**!! ATTENTION !!**

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
<b>ALABAMA</b>									
Houston County	12	0345CST			0	0	0	0	Hail (0.75)
									Dime-size hail fell at Madrid.
Jefferson County	12	0850CST			0	0	0	0	Flash Flood
									Heavy rain from thunderstorms caused street flooding in the Birmingham area.
Jefferson County	24	0500CST			0	0	?	0	Thunderstorm Winds
									A forty to fifty-foot high light tower was blown onto a stadium press box at Gardendale.
Mobile County	21	0630CST			0	0	?	0	Flash Flood
									Several streets were flooded with two feet of water in Mobile.
<b>ARIZONA</b>									
Pima County Tucson	07- 19	0800MST- 1300MST			0	7	6	?	Flood
									Roads, bridges, homes and businesses suffered considerable damage in Pima County beginning on the 7th. A new all-time record of 4.81 inches fell in Tucson, eclipsing the 4.00 inches in 1916. Numerous rescues were made throughout the county as motorists tried to drive vehicles through creeks, or low spots. Several thousand people were isolated in their homes as flood waters from the Rillito River cut off all roads. A weather-related crash in Tucson left 7 people hospitalized. Phone service in parts of Tucson was interrupted on the 8th. There were at least 15 road closures around Tucson. Two major bridges over the Santa Cruz River were closed.
Santa Cruz County Cochise County	09- 12				0	0	4	0	Flood
									Roads and structures flooded.
Yuma County Yuma	07	Afternoon			0	0	0	0	Flash Flood
									Streets and intersections flooded after almost an inch of rain.
Greenlee and Graham County	08- 12				0	0	6	?	Flood
									Many roads closed in both counties due to flooding. Duncan was the hardest hit. Half of the town was under water when a dike broke and later left at least 150 people homeless. The San Francisco River and Gila River flooded some farmland near Safford.
Gila and Pinal County Winkelman	07 20	1900MST 1900MST			0	0	6	0	Flood
					0	0	6	0	Flood
									Major damage to homes and businesses in Winkelman. Gila River reached peak stage on the 20th. The Santa Cruz River in the Avra Valley area was running extremely high in Marana. Water forced the closure of the Trico Road bridge.
Yavapai County Prescott	07- 17	2100MST- 0800MST			0	0	6	0	Flash Flood
									All creeks, streams and rivers began rising after very heavy rains. Rockslides in the Jerome area closed Highway 89A. Evacuations were ordered for persons along the Oak Creek, and a trailer park in Mayer was flooded. Large boulders slid down hills and blocked I-17 near Black Canyon City. A bridge was washed out at Lake Montezuma. Camp Verde flooded.
Mohave County Bullhead City	08	0500MST			0	0	5	0	Flash Flood



# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
<b>ARIZONA Cont'd</b>									
			north Scottsdale residential area.						
Chandler	17	1410MST			0	0	0	0	Funnel Cloud
			Numerous reports from observers near Dobson and Chandler Blvd as well as pilots nearby.						
Pinal County 20 N Florence	18	1146MST			0	0	0	0	Funnel Cloud
			Helicopter pilot spotted stationary funnel cloud.						
Maricopa County Desert Hills	18	1235MST			0	0	0	0	Funnel Cloud
			Movement north at about 25 mph.						
Pinal County 30 SE Phoenix to 32 SE Phoenix	18	1318MST- 1330MST	2.0	20	0	0	0	0	Tornado (F1)
			Sheriffs Office reported tornado moving through open land.						
Maricopa County 30 N Phoenix	18	1325MST	0.5	10	0	0	0	0	Tornado (F0)
			New River area residents watched this weak tornado move north.						
Cochise County 12 NE Douglas	19	0942MST			0	0	0	0	Funnel Cloud
Maricopa County New River	20	1000MST			1	0	0	0	Flash Flood
			While attempting to cross the swollen Agua Fria River, a man fell off his horse and drowned. His body was found 3 miles downstream.(M210)						
<b>ARKANSAS</b>									
Yell County	04	0725CST			0	0	5	0	Flash Flood
			Between three and four inches of rain produced flash flooding at several locations in Yell County. Several roads were flooded in Dardanelle and near Danville.						
Miller County 4 SW Boggy	04	0809CST			0	0	3	0	Thunderstorm Winds
			Thunderstorm winds blew down several trees.						
Van Buren County	04	0810CST			0	0	5	0	Flash Flood
			Heavy rains caused flash flooding in Van Buren County. Portions of Highway 16 were under water for a time. A number of other county roads received damage.						
Newton County	04	0810CST			0	0	5	0	Flash Flood
			Heavy rains resulted in flash flooding across Newton County. Several bridges were washed out and several other county roads and bridges sustained damage.						
Hempstead County Guernsey	04	0838CST			0	0	3	0	Thunderstorm Winds
			Thunderstorm winds knocked down some trees and a few signs.						
Nevada County 4 E Emmett	04	0859CST			0	0	3	0	Thunderstorm Winds
			Several trees were blown down.						
Pike County Langley	04	0910CST- 1100CST			0	0	4	0	Flash Flood



# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed Injured	Estimated Damage Property Crops	Character of Storm
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## ARKANSAS Cont'd

Heavy rains caused flooding near Langley. Several roads were under water.

Little River County Wilton	04	0920CST- 1200CST			0 0	4 0	Flash Flood
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Heavy rains resulted in flash flooding in and around Wilton. Several roadways were under water.

Sevier County 2 SE DeQueen	04	0925CST- 1130CST			0 0	4 0	Flash Flood
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Heavy rains resulted in several roads being covered by water.

ARZ001 > 008- 010-012 > 014- Northern and Central Arkansas	18- 19				0 0	5 0	Ice Storm
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Freezing rain fell over northern and central Arkansas on the 18th and 19th. Many bridges and overpasses around the area became ice covered as well as a number of secondary roads. A large number of traffic accidents also occurred. Ice accumulation on trees and power lines resulted in power outages across parts of north central and northeast Arkansas. Approximately 8,000 customers were affected by the fallen power lines.

Little River County 3 E Foreman	23	2000CST			0 0	0 0	Hail (1.50)
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Hot Spring County 1 N Malvern	23	2010CST			0 0	0 0	Hail (0.75)
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Sevier County DeQueen	23	2030CST			0 0	4 0	Lightning
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Lightning was the cause of a fire that destroyed a mobile home in De Queen.

Sevier County 3 E Central	23	2040CST			0 0	4 0	Thunderstorm Winds
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Thunderstorm winds blew down several trees and damaged a chicken barn.

Howard County Tollette	23	2045CST			0 0	0 0	Hail (1.00)
Tollette	23	2045CST			0 0	3 0	Thunderstorm Winds

Thunderstorm winds knocked down several trees.

Howard County Okay	23	2045CST					Funnel Cloud
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Law enforcement officials reported a funnel cloud.

Saline County 5 N Tull	23	2045CST			0 0	0 0	Hail (1.00)
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Miller County 3 W Doddridge	23	2045CST			0 0	0 0	Hail (1.00)
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3 W Doddridge	23	2045CST			0 0	3 0	Thunderstorm Winds
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Thunderstorm winds downed several trees.

Miller County 5 NE Doddridge	23	2050CST			0 0	0 0	Hail (1.00)
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Hot Spring County 1 S Malvern	23	2055CST			0 0	0 0	Hail (0.75)
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Grant County Sheridan	23	2106CST			0 0	0 0	Hail (0.75)
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Sheridan	23	2117CST			0 0	0 0	Hail (1.00)
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# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
<b>ARKANSAS Cont'd</b>									
Pulaski County 2 SW Woodson	23	2115CST			0	0	0	0	Hail (0.75)
Howard County 5 W Nashville	23	2115CST							Funnel Cloud
The public reported a funnel cloud 5 miles west of Nashville.									
Clark County 6 N Arkadelphia	23	2125CST			0	0	0	0	Hail (0.75)
Hot Spring County Donaldson	23	2130CST			0	0	0	0	Hail (0.88)
Jefferson County Sherrill	23	2136CST			0	0	0	0	Hail (0.75)
Jefferson	23	2140CST			0	0	0	0	Hail (1.75)
Wright	23	2145CST			0	0	0	0	Hail (0.75)
Grant County Sheridan	23	2148CST			0	0	4	0	Lightning
Lightning sparked a fire at a home, resulting in minor damage.									
Hempstead County 1 S Blevins	23	2150CST			0	0	4	0	Thunderstorm Winds
Thunderstorm winds blew down numerous trees.									
Columbia County 3 SW Magnolia	23	2206CST			0	0	0	0	Hail (0.88)
Lonoke County Humnoke	23	2230CST			0	0	0	0	Hail (0.75)
Prairie County Ulm	23	2230CST			0	0	0	0	Hail (0.75)
Arkansas County Stuttgart	23	2230CST			0	0	4	0	Thunderstorm Winds
Thunderstorm winds knocked down some trees and power lines.									
Monroe County Clarendon	23	2240CST			0	0	0	0	Hail (0.75)
Clarendon	23	2240CST			0	0	3	0	Thunderstorm Winds
Thunderstorm winds downed some trees and power lines.									
Crittenden County West Memphis	23	2300CST			0	0	0	0	Hail (0.75)
Arkansas County DeWitt	23	2310CST			0	0	4	0	Thunderstorm Winds
Some trees and power lines were blown down.									
<b>CALIFORNIA, Northern</b>									
Sierra Nevada	06	1500PST-							
Shasta/Siskiyou	07	1500PST			0	0	6	0	Winter Storm
Central Coast CA02-03-07-09-10 NV01-02									
A storm brought one to three feet of snow to higher elevations in northern and central California. At lower elevations significant rainfall produced extensive urban and small stream flooding. At Three Peaks in the coastal range near Big Sur a total of 6.42 inches of rain fell.									
Butte County Biggs	07	1500PST	?	?	0	0	4	0	Tornado (F1)
A barn roof was tossed 75 feet and 2 vehicles were damaged by the tornado.									
Madera, Merced and Fresno Counties	07	1800PST- 1900PST			0	0	3	3	Thunderstorms

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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## CALIFORNIA, Northern Cont'd

Gusts up to 50 mph in thunderstorms toppled trees in the Madera, Merced and Academy areas. A roof was blown off a shed in Academy (Fresno County). Pea sized hail damaged some crops in Madera and Fresno Counties.

**Northwest CA  
Shasta/Siskiyou  
Sierra Nevada  
CA01-07-09-10  
NV01-02**

08	1200PST-								
10	0800PST			0	0	5	0		Winter Storm

A storm brought one to two feet of snow to the higher terrain over northern and eastern portions of the state.

**San Luis Obispo  
10 N Morro Bay**

09	1505PST								
				0	0	0	0		Waterspout

A fisherman spotted the waterspout near Estero Point.

**Marin County  
E of Mount  
Tamalpais**

10	1400PST								
				0	0	0	0		Funnel Cloud

A storm spotter reported the funnel cloud.

**Monterey County  
5 E Salinas**

10	1615PST								
				0	0	0	0		Funnel Cloud

Another funnel cloud was reported by the public. These funnel clouds and the waterspout on the 9th formed in the cold, unstable air behind the storm.

**Solano County  
Benicia  
Skaggs Island**

11	0600PST								
				0	0	0	0		Ice

A particularly widespread occurrence of ice led to 2 accidents with a total of 2 fatalities and 6 injuries.(M56V)(M18V)

**San Luis, Obispo,  
Santa Barbara,  
and Kern Counties**

12	1000PST- 2000PST								
				0	0	5	0		High Wind

Gusts up to 90 mph were recorded on an oil platform just offshore. Gusts up to 80 mph were recorded at Wheeler Ridge in Kern County and to 70 mph at lower elevations. Numerous trees and power lines were toppled, especially in Orcutt and Lompoc in Santa Barbara Counties.

**Marin, Contra  
Costa, Alameda  
San Mateo, Santa  
Clara, Butte,  
Monterey, Fresno and  
Tulare Counties**

13	0500PST- 0930PST								
				0	0	6	6		Flash Flood

Heavy rains produced flooding on a number of creeks in the San Francisco Bay area. The Arroyo De La Laguna and the San Lorenzo Creek flooded in Alameda County. In Marin County, the Corte Madera creek flooded in Ross. In Contra Costa County, a portion of Interstate 680 was flooded. A trailer park in Redwood City (San Mateo County) was flooded. The Llagas Creek flooded in Santa Clara County. San Lorenzo Creek in King City flooded. The communities of Palermo and Honcut in Butte County were flooded. In Fresno County many fields were flooded, particularly near Huron and Mendota. Lettuce, broccoli and melon plantings were harmed, as were fields prepared for cotton planting. A subdivision between Fresno and Madera, built in a floodplain, had water two to three feet deep causing damage to dozens of homes. Flood control ponds in the city of Fresno overflowed, causing damage to about a dozen homes. A levee northeast of Orosi collapsed causing minor flooding. Widespread, extensive damage to roads was reported due to standing water.

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
<b>CALIFORNIA, Northern Cont'd</b>									
Northern CA CA01 > 10 NV01-02	13 14	0500PST- 1500PST			0	4	7	0	Winter Storm
<p>Another in a series of winter storms brought heavy rain to low elevations and two to four feet of snow at higher elevations in the northern and eastern mountains of the state. In El Dorado County numerous auto accidents were reported in white-out conditions. In Amador County two drivers were rescued after their cars were buried in an avalanche. A tree in Alpine Meadows (Placer County) was blown onto a pick-up truck, injuring the two occupants. A mud slide was reported on Highway 33 near Coalinga (Fresno County). Two hundred trees were felled by wind near Paso Robles (San Luis Obispo County). In nearby Cambria more trees fell on houses and power lines. In Alameda County, trees and power lines were felled, and numerous rock slides and mud slides were reported.</p>									
Shasta, Lassen and Plumas Counties	13	1100PST			0	0	6	0	Heavy Snowpack
<p>Heavy wet snow from a series of storms accumulated on rooftops in the Sierra Nevada. These storms began in December and continued into February. Damage was reported to more than 20 buildings from collapsing roofs. The roof of an auto body shop in King's Beach in Placer County collapsed. In Plumas County, an auto dealership and motel in Quincy, a senior citizen center in Westwood, a supermarket in Portola, and a storage facility in Greenville were damaged.</p>									
Southern Central Monterey County	14	0300PST- 1600PST			0	0	5	0	Flash Flood Flood
<p>More flooding was reported in Monterey County. Included were flash flooding on the San Lorenzo Creek in King City (requiring evacuation of 150 homes), and Arroyo Seco Creek near Greenfield. Flooding was reported on the Salinas River from Bradley to Soledad. Sixteen cars of a freight train were derailed by a mud slide near King City.</p>									
South Central Coast, Salinas Valley, Sierra Nevada CA03-04-05-09-10 NV01-02	15 18	0900PST- 1200PST			0	0	6	6	Winter Storm
<p>A large storm sent a series of precipitation surges into the central portion of the state and into the Sierra Nevada. Two to four additional feet of snow fell in the Sierra while rain again soaked the lower elevations. The San Lorenzo River exceeded flood stage at Hollister in San Benito County. Levees in Tulare County weakened by the previous storm were breached north of Orosi, and near Sultana, Dinuba and Cutler. Many roads were closed, and many fields and groves were flooded.</p>									
Santa Barbara 2 W Summerland	18	1130PST			0	0	0	0	Waterspout
<p>The waterspout was reported by a storm spotter.</p>									
Kern County 15 ESE Delano	18	1645PST			0	0	0	0	Funnel Cloud
<p>The funnel cloud was reported by a storm spotter. The funnel cloud and the waterspout formed in the cold, unstable air behind the storm.</p>									
Northern CA CA01-02-06-07- 08-09 NV01-02	19 22	2100PST- 0300PST			3	5	6	6	Winter Storm High Wind
<p>Another major winter storm affected mainly the northern portion of the state. The storm will be best remembered for the high winds which occurred. Winds on the coast were measured at 65 mph at Eureka and 80 mph at Trinidad. Widespread power outages were reported, and there were widespread road closures due to slides and flooding in the northwestern corner of the state. An oak tree estimated to be between 300 and 400 years old toppled in Pleasant Hill in Contra Costa County. Highway 99 in Glenn County was blocked by falling trees. In Grass Valley (Nevada County) 70</p>									

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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## CALIFORNIA, Northern Cont'd

mph winds knocked trees over onto an apartment complex. A large radio astronomy facility at Hat Creek (Shasta County) was destroyed. A 110 foot radio telescope was blown over, and total damage exceeded \$2.5 million. In Amador County 79 mph winds at River Pines felled a tree which landed on a truck. At Twaine Harte in Tuolumne County a falling tree crashed through a roof and killed a man in his bed. Snowfall added another two to four feet to higher elevations. At this point in the winter the snowpack exceeded 25 feet at a number of locations. The state of California declared 16 counties as disaster areas. An avalanche on Interstate 80, 5 miles west of the Nevada line caught two vehicles and caused three injuries. At the Kirkwood ski resort in Alpine County the weight of the snow caused damage to propane lines, and the resultant explosion killed a man and his daughter and injured 3 others. Other fires and explosions were reported in the Sierra around this period, all due to the effect of the heavy snowpack. (M71P)(M36P)(F7P)

**Sonoma, Marin, Napa, Mendocino and Contra Costa Counties**

20	0715PST-1500PST				0	0	5	0	Flash Flood/ Flood
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Flooding was reported on the entire length of the Russian River requiring the evacuation of 30 homes in Guerneville. Damage was minor. The Napa River also flooded. Flash flooding was reported in Petaluma where 100 homes were evacuated. Additional flash flooding occurred at Santa Rosa, Healdsburg, Sebastopol and Forestville in Sonoma County, and in Novato, Kentfield and Marin City in Marin County. Also, the Alhambra Creek flooded a portion of Martinez in Contra Costa County. In all of these instances, no major damage was reported. The rain gages at Venado and Healdsburg in Sonoma County both reported more than six inches of rain in an 18-hour period.

**Merced County  
Merced  
Atwater**

26	0300PST-0900PST				0	4	0	0	Dense Fog
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In Merced 5 big rigs were involved in an accident in dense fog injuring 3 drivers. In Atwater, a car rear ended a truck in dense fog seriously injuring the driver of the car.

**Butte County  
Oroville  
Tehama County  
Corning**

27	2230PST-								
28	0800PST				2	0	4	0	Dense Fog

In fog described by a sheriff as the densest he'd seen in many years, a driver was killed after an accident. In Corning, a man walking on the side of the road was struck by a hit-and-run driver.(M23V)(M37O)

**Santa Clara, Santa Cruz, Alameda, Amador, and El Dorado Counties  
CA02-09**

29-30	1800PST-0600PST				0	0	5	0	High Wind
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Gusts as high as 60-70 mph were reported on the west slopes of the Sierra Nevada, the East Bay hills of the San Francisco Bay area, and the Santa Cruz mountains. Trees and power lines were felled with damage to structures. The city of Oakland reported eighty trees down.

## CALIFORNIA, Southern

CAZALL	06-18 All Day				10	17	8	5	Winter Storms
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A very wet series of major winter storms, hit southern California for about two weeks. The storms brought heavy rain, mountain snows, gusty winds, thunderstorms, small tornadoes, rock slides, mud slides, flooding and local flash flooding. The Los Angeles Civic Center had 11.77 inches of rain for the month, which was the third wettest January on record, with many mountain areas receiving between 20 to 50 inches of rain. The storms brought many rivers and streams to bankfull and flooded many low spots. The series of storms produced the second longest number of consecutive days of rain (13 days), in many parts of southern California. The following is a breakdown of related storm damage, storm type and weather related deaths:

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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## CALIFORNIA, Southern Cont'd

Man swept down a rushing creek in the western part of the Antelope Valley. (M220) Man caught in flood waters as he was walking down a street in Upland. (M460) A man drowned after falling into the rain-swollen Coyote Creek in Long Beach. (M430) A man drowned as he tried to cross a rain-swollen wash in Riverside. (M660) Boy swept down Escondido Creek in San Diego County. (M140) Five people died when their truck was swept down a creek in the Temecula area after trying to ford it. (M31V)(F20V)(F03V)(M26V)(3 1/2 week-old baby boy). The damage estimate listed above, is for all flooding events during period of winter storms.

Santa Barbara County	06	1000PST			0	0	?	?	Urban/Small Stream Flooding
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Minor mud and rock slide in Goleta which knocked down a fence and spread mud into a few houses. There was local flooding of some roads.

CAZ011-012 018-020	07	0200PST			0	0	?	?	Urban/Small Stream Flooding
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Homes inundated with mud and water in Rubidoux, in Riverside County. Minor flooding in Imperial County, El Centro and Calexico. A road was washed out near Palmdale in Los Angeles County. Normally, dry lake beds are flooded in Riverside County. San Juan Creek, near San Juan Capistrano, overflowed and wiped out a road. Desert Hot Springs, in Riverside County, was isolated due to high water on many roads.

CAZ012- 013-018- 019	08- 10	0000PST			0	0	?	?	Urban/Small Stream Flooding
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A dike failure in White Water, in Riverside County, caused flooding and closed several roads in the area, with numerous mud and rock slides. Storm waters cut off remote desert communities and inundated cars left abandoned along the flooded streets. Flooding in Little Morango Wash. The Santa Ana River flooded parts of Norco, in Riverside County. The airport in Corona was flooded. The Santa Ana River overflowed onto farmland submerging several farm vehicles and flooded a dozen structures, as water from Prado Dam was released. In the town of Redley, in Riverside County, mud swept into 12 houses. A bridge over the San Gorgonio River, near Banning, was washed away. In Victorville, San Bernardino County, 22 homes were flooded after the Mojave River overflowed its banks. Five homes were flooded in Hesperia. In Imperial County, some homes had minor flooding, in the southern Coachella Valley.

San Diego County	12	1545PST			0	0	?	?	Flooding
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Heavy rain caused some flooding of small streams and flooded numerous roads and intersections.

Santa Barbara County Goleta 2W	13	0315PST			0	0	?	0	Flash Flooding
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Santa Barbara County flood control reported Hospital Creek flooded Frazier and Avalon streets, with 2 to 3 feet of water. Rainfall amounts of from 0.75 to 1.50 inches fell in the coastal areas and up to 3 inches in the mountains, within a few hours. Minor flooding of some buildings along several streets in Santa Barbara.

CAZALL	13- 14	All Day			0	0	?	?	Flooding
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Rainfall in 24 hours of between 4 and 7 inches was reported in the Santa Ynez Mountains, north of Santa Barbara, also in the mountains of Ventura and Los Angeles counties. Over 7 inches of rain (7.93 in) fell at Crystal Lake, in the San Gabriel Mountains. Amounts along the coast were from 1 to 3 inches. Some mountain locations had between 1 to 1.50 inches of rain in 6 hours. The Sierra Highway partly washed out in the Antelope Valley, in Los Angeles County. The Ventura River overflowed its banks and onto a field of crops, at Taylor Ranch. In the San Fernando Valley, in Los Angeles, runoff closed streets through the Sepulveda Dam flood plain basin. Many roads in

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

## CALIFORNIA, Southern Cont'd

the area were closed by rock and mud slides. Flooding occurred along the Santa Clara River, near Acton, where twenty-five families were evacuated from an Agua Dulce RV park. Trains were delayed when an embankment threatened to give way and cut the main track, near Hesperia. Minor flooding along the San Gabriel River, near El Monte. A dike protecting a waste water plant was eroded by heavy rains, in Fillmore.

Ventura County	13- 14	2110PST			0	0	?	?	Flooding
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Ventura County flood control reported bankfull conditions along the Ventura River, at Ventura. An RV park at the mouth of the river was evacuated, due to minor flooding.

Orange County Buena Park	14	0140PST	2.0	33	0	0	5	0	Tornado (F1)
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A tornado moved through the city of Buena Park. The damage consisted of trees, fences and signs blown down. Windows were blown out. Power was knocked out for a brief time in the northern half of the city. A forty-foot cypress tree was blown down onto a house.

Los Angeles County Pomona	14	0150PST			0	0	4	0	High Winds
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A strong wind in association with an intense rain storm, ripped through a small section of the city. At least 50 trees were uprooted. Three houses and two cars were damaged.

Riverside County, Canyon Lake, Murrieta, Temecula	17	1405PST 1800PST			0	0	?	?	Flooding
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Flooding of the town of Canyon Lake, in Riverside County, which was isolated with many people evacuated. Highways into the Lake Elsinore area, in Riverside County, were flooded. There was extensive flooding of Murrieta Creek in the city of Temecula. Some 500 people were stranded or evacuated in Murrieta.

Lake Forest, Orange County	17	1930PST	?	?	0	1	6	0	Tornado (F0)
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A tornado ripped through a residential section, tearing shingles from roofs, uprooting trees and scattering debris over a several block area. There was damage to 31 homes.

Los Angeles County, 4W Downtown Los Angeles	17	2345PST	0.75	50	0	0	4	0	Tornado (F0)
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A small tornado caused minor damage to fences, powerlines and small trees.

Riverside County Hemet	18	0330PST			0	0	?	0	Hail (0.50)
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Sheriff officer reported winds and some marble size hail from a thunderstorm.

San Diego County Vista	18	0820PST			0	0	0	0	Funnel Cloud
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Riverside County Hemet, Canyon	18	0830PST- 1200PST			0	0	?	?	Flooding
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# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed Injured	Estimated Damage Property Crops	Character of Storm
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## CALIFORNIA, Southern Cont'd

Lake, Murrieta,  
Temecula

Heavy rain fell in Riverside County again, where creek levels increased eight feet in just a few hours. Many creeks and streams in western Riverside County were at bankfull, and numerous roads were closed.

Los Angeles  
Orange, Ventura  
San Diego, Riverside  
Counties

18	0940PST 1600PST				0	0	?	?	Flooding
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The Ventura River, in Ventura County, rose about a foot in three hours, as more than 2 inches of rain fell in one day. In the Antelope Valley, west of Lancaster, the wall of a catch basin broke, sending some 500,000 gallons of water down several streets. In San Diego County, flooding and mud slides cut several roads and washed out part of a rail line. Flooding along the San Luis Rey River, in north San Diego County, wiped out an Oceanside mobile home park. Roads and homes flooded by a levee break in Cabazon and the San Geronio Pass area. Camp Pendleton, in San Diego County, was shut down as some 4 to 10 feet of water covered the main airstrip, from an overflowing stream. The Los Angeles Civic Center reported almost one and a half inches of rain in one hour. The U.S. Army Corps of Engineers reported water was continuing to rise behind Sepulveda Dam, in the San Fernando Valley. In Orange county there was flooding, mud and rock slides in Laguna Beach, San Clemente and Anaheim, where some 61 homes were evacuated.

Santa Barbara  
County  
2 miles off coast

18	1145PST				0	0	0	0	Waterspout
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San Diego  
County,  
Chula Vista

18	1230PST				1	0	0	0	Lightning
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A man was killed by lightning, as he was digging a trench. (M310)

Orange County  
Huntington Beach

18	1405PST	?	?		0	0	4	0	Tornado (F0)
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A tornado hit six mobile homes and caused slight damage.

## COLORADO

COZ002-004  
Northern and  
Central  
Mountains

02- 03	0600MST- 0900MST				0	0	?	?	Snow Blowing Snow
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A storm system moved across the northern and central mountains, dropping up to a foot of snow on many of the ski areas. The storm was accompanied by winds of 20 to 40 mph. A gust to 60 mph (52 kts) was reported at Berthoud Pass, while a gust to 58 mph (48 kts) occurred at Rand (West of Fort Collins). The gusty winds and snow greatly reduced visibilities and caused problems for holiday travelers.

COZ001-002-003-  
004-005-006-007-  
008-009-010-011-  
012-013-014-015-  
016-017  
Statewide

06- 09	0200MST- 0800MST				0	0	?	?	Heavy Snow
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An upper level storm moved across Colorado and combined with abundant moisture to produce heavy snow for much of the state. Snow began early on the 6th over the mountains and west. The snow began falling over the eastern plains on the 8th, and continued until the early morning hours of the 9th. The snow dumped up to 3 feet of snow over the mountains, and nearly a foot over the lower elevations. Mountain snowfall totals included 37 inches at Gothic; 30.5 inches at Irwin ski area; 26.5 inches at Wolf Creek Pass; 24.5 inches at Purgatory ski area; 21 inches at Red Mountain Pass; 20 inches at both Steamboat and Powderhorn ski areas; 19.5 inches at Mary Jane ski area; 15.5 inches at Loveland ski area; 15 inches at Winter Park; 13 inches at Monarch ski area; and 12



# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed Injured	Estimated Damage Property Crops	Character of Storm
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## COLORADO Cont'd

inches at both the Beaver Creek and Sunlight ski areas. Snowfall totals at the lower elevations included 20 inches at Bayfield (near Durango); 17 inches at Durango; 11 inches at Craig; Cortez and Eckert; 7 inches at Fort Collins and Mesa Verde; 6 inches at Nathrop; and 5 inches at Loveland (south of Fort Collins).

COZ004-007-008 Southwest and Central Mountains and Four Corners	10-	0100MST-					
	11	1000MST			0	0	5 ? Heavy Snow

A Pacific storm system moved over southwest Colorado, dumping heavy snow over the central and southwest mountains and also the Four Corners area. Snowfall amounts included 16 inches at both the Purgatory and the Powderhorn ski areas; 14 inches at Telluride; 12 inches at Wolf Creek Pass; 11.5 inches at Gothic; 11 inches at Cedaredge; 10 inches at Irwin ski area; 9 inches at Steamboat Springs and the Sunlight ski areas; 8 inches at Mesa Verde; 7.5 inches at Snowmass ski area; 6.5 inches at Mary Jane ski area; and 6 inches at Aspen Highlands ski area, Vail, Crested Butte and Durango.

The heavy snow collapsed two roofs of Durango businesses on the 11th. One was over a business complex, the other was over gas pumps at a convenience store. There were no injuries reported.

COZ002-004 Northern and Central Mountains	13-	0230MST-					
	14	2100MST			0	0	? ? Heavy Snow

An upper level storm moved across the northern portion of the state, dumping over a foot of snow over parts of the northern and central mountains. Snow amounts included 26 inches at Gothic; 15 inches at Irwin ski area; 9.5 inches at Powderhorn ski area; 8 inches at Arapahoe Basin ski area (near Aspen); 7.5 inches at Berthoud Pass; 7 inches at both Steamboat Springs and Crested Butte; 6.5 inches at Mary Jane ski area (near Winter Park); and 6 inches at Sunlight ski area.

COZ002-004-007-008 Northern, Central and Southwest Mountains and Four Corners	16-	0100MST-					
	19	1500MST			0	0	? ? Heavy Snow

An upper level storm moved over the Great Basin into southwestern Colorado on the 16th. Snow continued across the mountains and the Four Corners until the storm weakened and moved away from the state by the mid-afternoon of the 19th. Nearly a foot and a half of new snow fell over the area. Snowfall totals included 35 inches at Purgatory ski area; 30 inches at Red Mountain Pass; 24 inches at Gothic; 23 inches at Irwin ski area; 17 inches at Steamboat Springs; 16 inches at Copper Mountain ski area; 15 inches at both Telluride and Mary Jane ski areas (near Winter Park); 13 inches at Crested Butte; 12.5 inches at Loveland ski area; 12 inches at Monarch ski area; and 11 inches at Beaver Creek ski area.

COZ002-004 Northern and Central Mountains	22	1130MST- 2000MST			0	0	? ? Heavy Snow High Winds
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A Pacific storm moved across the northern and central mountains, dumping up to a foot of snow and producing winds in excess of 50 mph. Some snowfall amounts included 10.5 inches at Aspen ski area; 10 inches at Steamboat Springs; and 8 inches at both the Irwin and Copper Mountain ski areas. Many ski areas recorded sustained winds of 30 to 40 mph. Some of the stronger wind gusts included 90 mph (78 kts) at Copper Mountain ski area; 71 mph (62 kts) at Snowmass ski area; 70 mph (61 kts) at Ski Cooper; 69 mph (60 kts) at Keystone and Aspen Highlands ski areas; and 65 mph (56 kts) at Aspen Mountain ski area. The winds combined with the snow to produce nearly white-out conditions at the ski areas and several ski lifts had to be closed.

COZ011-012 Front Range and Northeast Plains	20-	0400MST-					
	22	2000MST			0	0	? ? High Winds

## Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons	Estimated Damage	Character of Storm	
					Killed	Injured	Property	Crops

### COLORADO Cont'd

Sporadic high winds developed along the east slopes of the central mountains during the early morning hours of the 20th, moving onto the foothills and northeast plains by the 22nd. Wind gusts of 55 to 65 mph were common over much of the area. Some significant wind gusts included 82 mph (72 kts) at Rollinsville and Squaw Mountain (near Idaho Springs); 75 mph (65 kts) at the U.S. Atomic Energy Commission's Rocky Flats facility (south of Boulder); and 71 mph (62 kts) at Nunn. An observer northwest of Fort Collins reported his wind equipment damaged by the winds during the night of the 20th.

### CONNECTICUT

CTZ001	13	0400EST- 2200EST			0	0	0	0	Heavy Snow
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Two periods of snow fell across the northwest hills and snowfall reached six inches along the Massachusetts border. The first period of snow started around 4 a.m. and lasted several hours coinciding with the morning rush hours and slippery roads resulted in numerous skidding accidents. The second snowfall started during the late afternoon and lasted into the evening hours. North Canaan had six inches.

### DELAWARE

DEZ001 > 003	09- 10	0030EST- 2230EST			0	0	0	0	Winter Weather
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A mixture of light snow, rain, sleet, freezing rain and drizzle made roads slick, especially Saturday when precipitation was mainly snow.

### FLORIDA

Polk County Lakeland	04	1725EST	short		0	0	3	0	Tornado
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A small tornado tipped a trailer over at Rockridge Road.

Polk County 5 NW Bartow	04	1730EST			0	0	0	0	Funnel Clouds
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Several funnel clouds were reported near Bartow.

Union County Lake Butler	08	1120EST			0	0	3	0	Thunderstorm Winds
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Strong thunderstorm winds blew the roof off a house and downed trees and power lines.

Union County 24 N Gainesville	08	1130EST	short		0	0	3	0	Tornado (F0)
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A small tornado touched down at the North Florida Prison Reception Center damaging the building before dissipating.

Levy County Inglis	08	1210EST			0	0	3	0	Thunderstorm Winds
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Thunderstorm winds downed trees and power lines.

Citrus County Dunnellon	08	1245EST			0	0	3	0	Thunderstorm Winds
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Thunderstorm winds downed trees and power lines south of Dunnellon.

Marion County W Portion	08	1325EST			0	0	3	0	Thunderstorm Winds
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Strong thunderstorm winds downed trees and power lines in western Marion County.

Marion County Citra	08	1350EST			0	0	3	0	Thunderstorm Winds
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## Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
<b>FLORIDA Cont'd</b>									
			Strong thunderstorm winds downed trees and power lines.						
Hillsborough County Citrus Park	08	1400EST	short		0	0	4	0	Tornado (F0)
			A small tornado touched down briefly blowing a 25-foot section of metal roof off a storage building.						
Putnam County Interlachen	08	1415EST			0	0	2	0	Thunderstorm Winds
			Strong thunderstorm winds downed trees and power lines.						
Charlotte County Port Charlotte	08	2000EST			0	0	0	0	Thunderstorm Winds
			Strong thunderstorm winds blew over several trees.						
Lee County Fort Myers	08	2015EST			0	0	0	0	Thunderstorm Winds
			Strong thunderstorm winds downed trees in North Fort Myers.						
Volusia County Edgewater	11	1750EST- 1820EST			0	0	4	0	Thunderstorm Winds Hail (1.50)
			Strong downburst winds damaged 9 mobile homes. Most had aluminum awnings, carports, and family rooms ripped away. Trees and power lines were downed. Up to golf ball-size hail also fell.						
Monroe County Sugarloaf Key	13	1225EST			0	0	0	0	Waterspout
			A pilot reported a waterspout just south of Sugarloaf Key.						
Monroe County Indian Key	13	1425EST			0	0	0	0	Waterspout
			A waterspout was sighted 1 mile south of Indian Key.						
Pinellas County Indian Rocks Beach	16	0520EST			0	0	4	0	Thunderstorm Winds
			Strong thunderstorm winds destroyed a patio covering.						
Pinellas County N St Petersburg	16	0520EST	short		0	0	4	0	Tornado (F0)
			A small tornado touched down briefly at a shopping mall damaging roofs and downing trees.						
Hillsborough County Valrico	16	0540EST			0	0	3	0	Thunderstorm Winds
			Strong thunderstorm winds ripped siding off a house.						
Pinellas County St. Petersburg Beach	16	0545EST			0	0	3	0	Thunderstorm Winds
			Strong thunderstorm winds downed trees and power lines.						
Hillsborough County Ruskin	16	0545EST			0	0	4	0	Thunderstorm Winds
			Strong thunderstorm winds blew down trees and blew a carport into power lines.						
Manatee County Palmetto	16	0600EST			0	0	4	0	Thunderstorm Winds

## Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
<b>FLORIDA Cont'd</b>									
Strong thunderstorm winds downed trees and traffic signs, ripped the roof off a mobile home, damaged 3 other mobile homes, and destroyed 2 carports.									
Sarasota County Sarasota	16	0600EST			0	0	0	0	Thunderstorm Winds
Strong thunderstorm winds blew down trees and moved a jet aircraft 20 feet.									
Polk County Many parts	16	0605EST			0	0	0	0	Hail (0.75)
Dime-size hail fell.									
Hillsborough County Keyville	16	0620EST			0	0	3	0	Thunderstorm Winds
Strong thunderstorm winds downed trees and power lines.									
Polk County Winter Haven	16	0630EST			0	0	3	0	Thunderstorm Winds
Strong thunderstorm winds blew a large tree into a house.									
Hardee County Wauchula	16	0630EST			0	0	4	0	Thunderstorm Winds
Strong thunderstorm winds downed numerous trees, did minor damage to parked aircraft at local airports, and blew a car off the road.									
Charlotte County Port Charlotte	16	0704EST			0	0	3	0	Thunderstorm Winds
Strong thunderstorm winds downed trees and power lines.									
Desoto County Arcadia	16	0715EST			0	0	2	0	Thunderstorm Winds (G52)
60 mph thunderstorm gusts leveled trees.									
Brevard County Melbourne	16	0715EST			0	0	0	0	Thunderstorm Winds
A severe thunderstorm blew down power lines, numerous large branches and small trees in Melbourne.									
Highlands County Sebring	16	0730EST			0	0	3	0	Thunderstorm Winds
Strong thunderstorm gusts downed trees and power lines.									
Lee County Cape Coral	16	0745EST			0	0	2	0	Thunderstorm Winds
Strong thunderstorm gusts uprooted a large tree.									
Brevard County Sebastian	16	0750EST			0	0	0	0	Funnel Cloud
A funnel cloud was sighted by rangers at Sebastian Inlet State Park.									
Charlotte County 13 N Fort Myers	16	0809EST	short		0	0	0	0	Tornado (F0)
A pilot reported a tornado. No damage was noted.									
Lee County Fort Myers	16	0810EST	0.4	40	0	0	3	0	Waterspout- Tornado (F0)

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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## FLORIDA Cont'd

A funnel cloud touched down as a waterspout in the Caloosahatchee River then moved on shore to the southeast. Trees and power lines were downed northeast of Fort Myers.

Okeechobee County NE part	16	0800EST			0	0	0	0	Hail (1.00)
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Quarter-size hail was reported.

Broward County Deerfield Beach	16	1127EST			0	0	2	0	Thunderstorm Winds
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Strong thunderstorm winds knocked down trees and power lines.

Palm Beach County Boca Raton	16	1200EST			0	0	2	0	Thunderstorm Winds
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Strong thunderstorm winds blew shingles off a roof.

Palm Beach County Boca Raton	16	1220EST			0	0	3	0	Thunderstorm Winds
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Strong thunderstorm winds tore a large awning off a house.

Martin County Many sections	22	1730EST			0	0	0	0	Funnel Clouds
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Numerous funnel clouds were reported by the public.

Gulf County Port St. Joe	24	1230EST	0.5	50	0	2	4	0	Tornado (F1)
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A small tornado touched down in an open field, then overturned a mobile home with two occupants and an unoccupied trailer, skipped across a road then dissipated. The two people in the mobile home suffered cuts and bruises but were otherwise fine.

Monroe County 5 ESE Key West	26	1306EST			0	0	0	0	Waterspout
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A waterspout was observed off Key West.

## GEORGIA

Wheeler County Alamo	08	0400EST	1.5	75	0	0	6	?	Tornado (F1)
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A small tornado developed at Alamo and moved east-northeast across Wheeler County. Several homes, businesses, and other properties were damaged; 2 mobile homes were destroyed. Several county maintenance and storage buildings were heavily damaged.

A school complex had extensive damages, including considerable roof damage to one section. Heavy rain fell through the open roof and damaged the carpets, desks, and other properties.

Numerous trees, limbs, and power lines were downed by the tornado. Scattered outages resulted. Residential damage costs were estimated at over \$500,000.

By 0410EST, the tornado had dissipated and the parent storm moved into Montgomery County.

Montgomery County Mount Vernon to .5SW Ailey	08	0430EST	1.5		0	0	4	?	Thunderstorm Winds
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The thunderstorm that spawned the small tornado in Wheeler County produced a short path of damage in Montgomery County. Thunderstorm winds uprooted trees and caused minor property damage from Mount Vernon to near Ailey.

The storm ripped the siding off a mobile home at Mount Vernon. Power outages developed after utility lines were damaged.

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
<b>GEORGIA Cont'd</b>									
Toombs County Northwestern	08	0500EST			0	0	3	?	Thunderstorm Winds
The strong thunderstorm that caused damages in Wheeler and Montgomery Counties continued into Toombs County. Scattered trees were blown onto power lines in northwestern Toombs County near the Toombs-Montgomery county line. Isolated utility outages resulted.									
Turner County Countywide	12	0845EST			0	0	5	?	Flash Flood
Irwin County Countywide	12	0845EST			0	0	5	?	Flash Flood
State highways were flooded in Turner and Irwin Counties after heavy rainfall developed over central Georgia. Some dirt roads were washed out. In Irwin County, about forty roads were damaged. Damages in Irwin County were estimated to cost almost \$500,000.									
Ben Hill County Fitzgerald 12 NNW Fitzgerald	12	1528EST			0	2	5	?	Flash Flood
Heavy rainfall produced flash flooding that washed away a section of a road outside of Fitzgerald. In Fitzgerald, a woman and child were swept from a street into a water-filled ditch by flood waters. Both were treated for minor injuries. Across Ben Hill County, major culvert damages developed. The repairs were estimated to cost \$300,000. A home and a church had minor flood damage. A truck was damaged when a small tree was pushed over by the winds after the soils became totally saturated.									
Wilcox County Countywide	12	1710EST- 2100EST			0	0	5	?	Flash Flood
Worth County Countywide	12	1710EST- 2100EST			0	0	6	?	Flash Flood
Colquitt County Countywide	12	1710EST- 2100EST			0	0	4	?	Flash Flood
Moultrie	12	1710EST- 2100EST			0	0	5	?	Flash Flood
Numerous county roads were damaged in Wilcox, Worth, and Colquitt Counties by flash floods. Heavy rainfall persisted over south-central Georgia throughout the day. Low-lying areas, creeks, and streams flooded after the soil became saturated.									
The flooding damaged bridges, pipes, and dirt roads over the three-county area. Damages in Worth County were estimated to cost near \$750,000. Damage costs to 36 roads in Wilcox County were estimated at \$400,000. Schools in Wilcox County were closed due to the road damages.									
In Colquitt County, only a few roads were extensively damaged. At Moultrie, over 3 inches of rain fell in one half-hour period, resulting in flooding in several sections of the city. Only 2 apartment homes were evacuated, although several other homes and business were flooded. About 15 cars were stranded and damaged by flood waters.									
Bulloch County Countywide	12- 13	1845EST- 0100EST			0	0	5	?	Flash Flood
Candler County Countywide	12- 13	1845EST- 0100EST			0	0	5	3	Flash Flood
Metter and Aline	12- 13	1845EST- 0100EST			0	0	5	?	Flash Flood
Bacon County Countywide	12- 13	1845EST- 0100EST			0	0	5	?	Flash Flood

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

## GEORGIA Cont'd

Jeff Davis County Countywide	12- 13	1845EST- 0100EST			0	0	5	?	Flash Flood
Tattnall County Countywide	12- 13	1845EST- 0100EST			0	0	5	?	Flash Flood
Toombs County Countywide	12- 13	1845EST- 0100EST			0	0	5	?	Flash Flood
Evans County Countywide	12- 13	1845EST- 0100EST			0	0	5	?	Flash Flood

Heavy rainfall persisted over southeastern Georgia throughout the day. By afternoon, the soils were totally saturated and flash flooding began to develop in low-lying areas.

By 1845EST, rainfall totals over the area ranged from two inches to around 6.50 inches at Nevils, Metter, and Statesboro. As the heavy rain continued, roads were flooded over the entire seven-county area.

Ponds overflowed in several areas of Bulloch and Candler Counties. At Aline in Candler County, an earthen pond dam gave way; Paradise Lake overflowed near Metter. In Bulloch County, flooded ponds isolated residents and inundated roads. Aline and Metter had many areas underwater; over 70 roads were inundated. Residents were evacuated from homes in Metter.

Across Candler County, the weather caused considerable damage to the Vidalia onion crop. In Toombs County, five families were evacuated.

Screven County Countywide	12	19900EST			0	0	4	?	Flash Flood
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Several dirt roads were washed out after heavy rainfall developed over eastern Georgia.

Toombs County 4 N Vidalia 2 N Lyons Northeastern Toombs County	13	0230EST			0	0	5	?	Flash Flood
	13	0245EST			0	0	3	?	Flash Flood

At 0230EST, three families living along the Swift Creek were being evacuated from their flooded homes. Numerous homes and 2 churches were flooded along the Swift Creek. By 0245EST, major flooding had developed around Vidalia and Lyons. In all, 10 families were evacuated from their homes along the creek. Property damages were extensive.

Considerable flooding developed along the Ochoopee River in northeastern Toombs County. Several roads, including Georgia Highway 292, were closed.

Troup County Hogansville	24	0943EST			0	0	?	?	Small Hail
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Chatham County Tybee Island	26	0910EST			0	0	3	?	High Wind
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Strong winds developed on Tybee Island, with gusts estimated to 60 miles an hour. A hardwood tree was split by the winds and damaged a parked car. Debris was blown across the area.

## IDAHO

IDZ002 Jerome County	01- 31				0	0	?	?	Snow
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Jerome County received roughly 400 percent of its normal snowfall for the month. This area was subject to frequent winds in excess of twenty miles an hour, resulting in widespread drifting of the snow. Local snow removal personnel and equipment had a difficult time keeping up with the snow drifts that attained heights of ten to fifteen feet and reached widths of a quarter mile. Shortly after roadways were cleared, the snow would drift over them again. On the 25th of the month, the

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
<b>IDAHO Cont'd</b>									
	Governor declared an emergency in Jerome County and authorized the National Guard to help with snow removal.								
IDZ001-006-007-011	01	0000MST- 1950MST			0	0	0	0	Heavy Snow
	A moist Pacific storm brought widespread heavy snow to the mountains of Idaho. Snowfall amounts included 16 inches at Grangeville, 14 inches at Bald Mountain three miles southwest of Ketchum, 12 inches at McCall, 11 inches at Idaho City, and 10 inches at Council.								
IDZ010	01	PM			0	0	0	0	Avalanche
	An avalanche 8 feet high and 75 feet long closed State Highway 21 near Banner Summit between Lowman and Stanley.								
IDZ007	01	1517MST			0	0	0	0	Avalanche
	An avalanche briefly closed State Highway 75 near Ketchum.								
IDZ007	01	1527MST			0	0	0	0	Avalanche
	A second avalanche again closed State Highway 75 one mile north of the previously mentioned avalanche.								
IDZ006 West Central Mountains	01	2205MST			0	0	0	0	High Winds
	High winds created by a strong pressure gradient blew down a total of 5 trees along U.S. Highway 95 between Payette and New Meadows.								
IDZ008-009 Northern Idaho	02- 04	2000PST- 0630PST			0	0	0	0	Heavy Snow
	A storm originating in the Gulf of Alaska dropped 14 inches of snow at Sandpoint, 7 inches at Moscow, and five to six inches at Coeur d'Alene.								
IDZ009 Northern Idaho	07	1630PST			0	0	5	0	Snow
	In the town of Rathdrum, a four foot snow drift atop the roof of a pharmacy caused the roof to collapse. The roof sustained \$150,000 in damage and another \$150,000 worth of merchandise was destroyed.								
IDZ001-006	07- 08	2200MST- 1630MST			0	0	0	0	Heavy Snow
	A storm system in eastern Oregon produced 9 inches of new snow at Ontario, OR on the Idaho-Oregon border. Other snowfall amounts included six to seven inches at Weiser, and four to five inches in 5 hours at Nyssa, Oregon, also along the Idaho-Oregon border. Four inches of new snow fell overnight 25 miles northwest of Council. The storm also produced gusty winds and occasional visibilities at or below one-quarter mile in blowing snow.								
IDZ012 Upper Snake River Highlands	09	0745MST			0	0	0	0	Blowing Snow
	Interstate 15 north of Dubois, and State Highway 22 going west from Dubois were closed due to blowing and drifting snow.								
IDZ004 Southeast Idaho	10	1030MST- 1300MST			0	0	0	0	High Winds
	High pressure over Wyoming coupled with low pressure over Nevada combined to cause 40 mph winds in the Bear River valley.								
IDZ003-004 Southeast Idaho	10- 11	2300MST- 1145MST			0	0	0	0	Heavy Snow





# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

## IDAHO Cont'd

Interstate 86 between Burley and Pocatello was closed due to blowing and drifting snow.

<b>IDZ002-003-012</b> South Central Idaho, Upper Snake River Valley, and Upper Snake River High- lands	22	0445MST- 2200MST			0	0	?	0	High Winds
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A major storm system from the Pacific moved into Idaho bringing with it high winds and blowing snow. Winds gusts to 62 miles an hour in Burley, 51 miles an hour at Pocatello, 48 miles an hour at Twin Falls, and 47 miles an hour in Idaho Falls. Two hundred and fifty vehicles were stranded in Dubois 50 miles north of Idaho Falls. Many people spent the night in the Dubois community hall. One hundred and fifty people in the Canyon Creek area were without power for 17 hours and 30 minutes. Extended power outages also occurred in the areas of Clements, Green Canyon, Canyon Creek, Packsaddle, and portions of Driggs and Rexburg. The wind was strong enough to blow down a tree 18 inches in diameter in Pocatello. The tree landed on top of an unoccupied car.

<b>IDZ007</b> South Central Mountains	22	0610MST			0	0	3	0	Avalanche
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An avalanche rushed down Carbonate Mountain, one mile northeast of Hailey, and collided with a house, breaking windows and spilling snow inside. The main brunt of the avalanche's energy was absorbed by a prow-shaped wall at one corner of the house specifically built for avalanche protection. The wall sustained some damage, but reportedly worked quite well.

<b>IDZ007</b>	22	0700MST			0	0	6	0	Snow
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The weight of accumulated snow caused the collapse of a recreational vehicle and boat storage facility in Bellevue 60 miles north of Twin Falls. Over 100 cars, campers, motorhomes, and boats were "flattened" when the 65 foot by 500 foot structure succumbed to the weight. Another structure in Bellevue, an indoor riding arena, also collapsed.

<b>IDZ004</b> Southeastern Idaho	22- 23	0900MST- 0300MST			0	0	?	0	Blizzard
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<b>IDZ005-007</b> Southwestern Idaho and South Central Mountains	22	1209MST- 2200MST			0	0	?	0	Blizzard
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<b>IDZ004</b>	22	1500MST- 2000MST			0	0	?	0	High Wind
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Winds gusts up to over 50 miles an hour coupled with snow, reduced visibilities to near zero. The State Highway Department closed all highways in southeastern Idaho. This included two interstates, 5 U.S. Highways, and 16 state highways. Many motorists were stranded until the following morning. Even a State Highway Department snow plow that was sent to help, became mired in the drifts. The reduced visibilities helped cause several traffic accidents on Interstate 15 from Pocatello to the Utah border. This prompted the Idaho State Police to close the interstate for about two hours shortly after 1500MST. The interstate was closed off and on throughout the night. Many area school buses were up to five hours late in delivering students from school to their homes. The entire Blaine school district was closed. Winds, gusts up to an estimated 70 miles an hour, snapped about three and a half miles of power lines off their insulators and pins in the Pleasant Valley of southeastern Idaho. This created power outages for about 300 people.

## ILLINOIS

<b>Madison County</b> Fosterburg	04	0350CST			0	0	4	0	Thunderstorm Wind
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A line of showers and thunderstorms produced wind damage to single house, blowing off part of the roof. Wind estimates were 40 to 50 mph.

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

## ILLINOIS Cont'd

Randolph County	04	0930CST- 1200CST			0	0	3	0	Flood/ Flash Flood
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Heavy, steady rains filled many creeks bringing them out of their banks. Some low water bridges were also flooded out due to high river levels.

Zones 1,2,4	20	1150CST- 1710CST			0	?	4	0	Ice Storm
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Freezing rain developed and moved into northwest and north central Illinois around midday. Temperatures climbed throughout the day and did eventually get above the freezing mark, but the cold ground caused the rain to freeze immediately on contact. This in turn caused all sidewalks and roadways to become ice coated in a very short time span. Numerous injuries were reported due to falls on slippery sidewalks. Many fender benders and minor accidents were reported across the area but none serious. County gravel roads remained very icy during the next several days but all main highways were clear of ice shortly after 5 p.m.

## INDIANA

INZ001 > 008-011- Northern and West Central IN	01- 07				0	0	6	?	Flood
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Near major flooding developed during early January in northern Indiana. Extensive flooding occurred along the Kankakee, Elkhart, Tippecanoe, Yellow, both St. Joseph Rivers, and numerous lakes in northeast Indiana. At least 1000 residential units were affected by the flooding and over 20 evacuations resulted.

The antecedent conditions for this flood were reminiscent of the late December 1990 and early January 1991 major flood. Cold weather arrived Christmas Eve and froze the ground. Snow cover of three to seven inches in northern Indiana melted quickly at the end of December, with rain of two to three inches occurring on the 30th and 31st. Significant flooding developed along northern Indiana rivers by January 1. Just as the rivers were beginning to fall, an additional 1.5 to 2.5 inches of rain fell across the entire state on the 3rd and 4th. This produced near major flooding in northern Indiana, and significant widespread flooding across central and western Indiana.

The hardest hit counties were LaGrange, Steuben and Noble. Three to four hundred lake side homes were flooded in these counties because of rises in lake levels. Rome City in northern Noble County was especially hard hit. Damage caused by the flooded lakes was estimated at 2 million dollars. Nearly 150 homes at Sumava Resorts in northern Newton County were threatened by a weakened dike. Local officials sandbagged business districts in Plymouth and South Bend to prevent flood damage. Nine families were evacuated in Pulaski County because of flooding. The Tippecanoe River flooded nearly 200 homes in Carroll County. The Wabash River isolated about 60 families near Lodi in northern Parke County. The flooding affected numerous local and several state roads.

Flooding along portions of the Kankakee and both St. Joseph Rivers was the highest since 1985. Flooding along other streams in northern Indiana and the Wabash River in western Indiana was the highest since the flood of December 1990-January 1991.

INZ005-006-008- West Central to Northeast IN	09- 10	2000EST- 1000EST			0	0	0	0	Heavy Snow
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Snow of four to six inches fell in a band from Terre Haute to Fort Wayne. Six inches of snow was reported at Fort Wayne, Marshall, and Royal Center, with 5 inches being reported at Lafayette and Terre Haute. Far northern Indiana generally received 4 inches or less. One to two inches of snow fell from Sullivan, through the Indianapolis area, to Union City. Sleet and freezing rain also occurred over parts of central, east central, and southeast Indiana.

## IOWA

ILZ00402 East Central Iowa	01- 14	0600CST- 1800CST			0	0	3	0	Flooding
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# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed Injured	Estimated Damage Property Crops	Character of Storm
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## IOWA Cont'd

Precipitation fell mainly in the form of snow during the month. Due to the cold temperatures, much of the flooding that occurred was ice related. There were occasional fluctuations due to ice action, but the flooding was minor and brief. The exception was over the lower portion of the Wapsipinicon River near De Witt, which was above flood stage for about the first half of the month. Flooding there was moderate with the river cresting as much as 2 feet above flood stage.

IAZ002 > 011-  
013 > 052-  
056 > 062-  
070 > 073-080 >  
083-091-SDZ018-  
NEZ010  
Northwest three  
quarters of Iowa

11	0900CST-							
13	0800CST			0	0	4	0	Snow and Heavy Snow

A storm system moved across the Rockies and onto the Plains. As it did, a considerable amount of warm and moist air was drawn north across a cold dome of arctic air at the surface. The storm was quite prolonged, however the bulk of the snow fell during the afternoon of the 11th into the morning of the 12th. A secondary snowfall, and most of what eastern Iowa received, occurred during the night hours of the 12th into the morning of the 13th. Snowfall was generally in the five to eight inch range. There was two areas of heavier snowfall. One was in a 60-mile wide band extending from Storm Lake to Lake Mills of northwest and north central Iowa. Eight to twelve inches were common in that area. Lake Mills received the most with just over 12 inches. Another band, about 50 miles wide, was over the northeastern counties. It extended from Tripoli to the northeast corner of the state. Eight to eleven inches of snow fell in this second band, with Postville receiving the most with 11 inches of new snow. Some freezing rain and ice pellets mixed with the snow at times, but amounts were not that significant. Many schools were closed because of the storm on the 12th. Travel was disrupted, but due to the lack of significant winds major disruption did not occur.

IAZ053-054-063-064-  
074 > 078-084 > 089  
-092 > 12  
099-ILZ004  
Southeast quarter  
of Iowa

11	1800CST-							
	2100CST			0	0	4	0	Freezing Rain

As the storm mentioned above tracked across the southeast corner of Iowa, light snow changed quickly over to freezing rain and ice pellets over the southeast counties. Ice accumulations of up to one quarter to one half inch were reported. Once again, damage and disruption due to the storm was limited because of the lack of wind. Spotty tree and power line damage occurred. Roads became hazardous, but not impassible.

IAZ002 > 011-  
013 > 054-  
056 > 064-  
070 > 078-080 >  
099-NEZ010-SDZ018-  
ILZ004  
All of Iowa

20	0430CST-							
	2200CST			0	0	4	0	Ice Storm

An unorganized storm at the surface, but well developed in the upper levels moved into Iowa. A large pool of warm and moist air was positioned to the south of Iowa and as the upper level winds turned south, the warm and moist air was drawn north over a dome of arctic air at the surface. The result of this was a widespread freezing rain event. The rain began in southwest and central Iowa before the morning rush. Temperatures were in the teens and lower 20s at the onset causing strong adherence and glazing of road surfaces. Accidents around the state were numerous and numbered in the hundreds if not the thousands. Interstate highway and several major highways were closed for periods of time due to the accidents. One of the larger accidents occurred south of Des Moines in Interstate 35 as up to seventy five trucks slid off the highway blocking both north and south bound lanes. The storm, as far as travel was concerned, was described as the worst in several decades in the southwest half of the state. Numerous schools were closed, in fact, it was estimated that 90 percent of the school districts in the state canceled classes. Numerous injuries were reported due to falls in icy sidewalks and fender benders. The accretion of ice was generally around one quarter of an inch or less. Tree and power line damage was minimal since there was not a large accumulation of ice. As the storm progressed, freezing rain spread over virtually all of the state. The freezing rain was mixed with ice pellets and snow at times over about the west half. The only area to receive any significant snow accumulation was over the far northwest where two or three

## Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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### IOWA Cont'd

inches of snow fell. In these areas the snow was mixed with ice pellets and freezing rain, but the snow was the predominant precipitation. During the afternoon hours, temperatures warmed into the lower to middle 30s over much of the south half of the state. The freezing rain changed over to rain over the far southeast and east central counties around mid afternoon. Elsewhere a mixture of light precipitation continued. Amounts were kept at bay as the "dry slot" moved over Iowa, taking the deep moisture north and east of the state. By evening, all that was left was freezing drizzle and occasional light snow. For all practical purposes the storm had ended by mid to late evening, though freezing drizzle did continue intermittently into the next morning. Main highways were generally ice free by the evening hours, however county and gravel roads remained ice covered for several days after the storm.

### KANSAS

**Southern Kansas County**  
KSZ009,11,12,17

01	1500CST- 2400CST	0	0	0	0	0	0	Ice Storm
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Freezing rain iced down streets and highways across southcentral and southeast Kansas causing numerous accidents and hazardous travel conditions. Total precipitation amounts were under quarter-inch, and no damage occurred to trees or power lines.

**Northeast  
Kansas County**  
KSZ013>016

01	2000CST- 0600CST	0	0	5	0	0	0	Ice Storm
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Freezing rain overspread northeast and eastcentral Kansas during the late evening of January 1st and continued until about sunrise January 2nd. The freezing rain coated streets and highways making travel in many areas impossible. Numerous accidents were reported with even salt and sand trucks sliding off roads. Mail delivery was cancelled in many areas on January 2nd due to the slippery and hazardous street and road conditions. Temperatures rose above freezing during the afternoon hours of the 2nd melting the ice. Only minimal damage was reported to trees and power lines.

**Southwest Kansas County**  
KSZ003,006,009

08	1430CST	0	0	0	0	0	0	Heavy Snow
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An area of heavy snow moved into the southwest Kansas area from the Oklahoma panhandle area. Heavy snow began across southwest Kansas late Friday afternoon and continued into Saturday morning. Snowfall of 10 to 12 inches was reported in Stafford, Pratt, and Barber Counties. Other snowfall amounts included 10 inches at Larned; 8 inches in Dodge City, Garden City, and Syracuse; and eight to nine inches in Edwards, Kiowa, and Comanche Counties.

**Northwest Kansas County**  
KSZ001,002,  
004,000

08	1800CST	0	0	0	0	0	0	Heavy Snow
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Heavy snow of six to twelve inches covered all of northwest Kansas. The snow began Friday afternoon, the 8th, and ended Saturday afternoon. Blowing and drifting snow closed some roads in the area.

**Northeast Kansas County**  
KSZ013>016

09	0000CST- 2100CST	0	0	0	0	0	0	Heavy Snow
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Snow began during the late evening of January 8th, increased after midnight of January 9th and continued heavy during the daylight hours before ending during the late evening of the 9th. Snowfall amounts of eight to fifteen inches were common over northeast and eastcentral Kansas with the 2nd highest 24 hour total ever at Topeka with 17.2 inches. Highest actual snow depth was 14 inches at Topeka. The snow bogged down traffic in all areas but did not cause any major problems. This was the heaviest snowfall in many areas in nearly a decade.

**Southern Kansas County**  
KSZ009,011,  
012,01

09	0000CST- 1200CST	0	0	0	0	0	0	Heavy Snow
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Snow began falling a little before noon on the 8th and continued until about sunset on the 9th. The majority fell between 0000CST and 1200CST on the 9th. A total of 7 inches was measured at

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons	Estimated Damage	Character of Storm	
					Killed	Injured	Property	Crops

## KANSAS Cont'd

Wichita with six to eight inches common throughout southcentral and southeast Kansas.

**Central Kansas County**  
KSZ007,008,  
010,01

09	0100CST- 1800CST								
		0	0	3	0	Heavy Snow			

A strong winter storm dumped from 8 to 12 inches of snow across central and northcentral Kansas. Travel across the area was greatly reduced and there were numerous accidents plus stalled and/or stuck vehicles. Temperatures remained so cold that the snow did not melt, and it took several days for highway crews to get around to cleaning secondary roads and less travelled roads. Snow began Friday evening, the 8th, became heavy Saturday morning and ended Saturday evening.

**Southern Kansas County**  
KSZ009, 011, 012

11	0800CST- 1700CST								
		0	0	0	0	Ice Storm			

A mixture of freezing drizzle and light freezing rain iced streets and highways across nearly all of south central Kansas. Total precipitation amounted to around one tenth inch, and no damage was done to trees or power lines.

**Northeast Kansas County**  
KSZ013 > 016

11	2100CST- 1100CST								
		0	0	0	0	Ice Storm			

Freezing drizzle and some freezing rain began during the evening of January 11th and continued until about midday of the 12th. The precipitation iced over streets and highways making travel extremely hazardous. Many schools and other business or meetings were cancelled. The area had only dug out from record snowfall 2 days earlier with many secondary roads still in poor driving condition.

**Southwest Kansas County**  
KSZ003  
KSZ006

17	1520CST								
		0	0	0	0	Heavy Snow			

A band of convective snow showers moved to the north across Kansas Zones 3 and 6. The showers became stationary across the northern portion of the zones during the early evening. Snowfall reports of four to seven inches were reported from Kinsley to Jetmore to Garden City.

**Northwest Kansas County**  
KSZ005,00

17	1600CST								
		0	0	0	0	Heavy Snow			

Snowfall of one to four inches fell across northwest Kansas except in the Phillips and Ellis county areas where around six inches was reported.

**Central Kansas County**  
KSZ007,008,010

19	0800CST- 2200CST								
		0	0	3	0	Heavy Snow			

Another winter storm dumped from six to ten inches of snow across Central and Northcentral Kansas. Travel was again reduced and there were more traffic accidents. It took highway crews several days to clean secondary and less travelled roads.

**Southwest Kansas County**  
KSZ003  
KSZ006

19	1008CST								
		0	0	0	0	Heavy Snow			

A strong storm system moved out of the southern Rockies into the southwest Kansas area. Snowfall amounts of 6 inches were reported in Haskell, Gray, Seward, and Meade Counties.

**Northeast Kansas County**  
KSZ013 > 016

19	1900CST- 1300CST								
		0	0	0	0	Ice Storm			

Freezing drizzle in combination with one to five inches of snowfall caused very hazardous travel conditions across northeast and eastcentral Kansas from the evening hours of the 19th through midday of January 20th. Many schools in the area cancelled classes. This latest storm on top of several others over the last several weeks had depleted salt and sand supplies for road and highway crews.

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Number of Persons Injured	Estimated Damage Property	Estimated Damage Crops	Character of Storm
<b>KENTUCKY</b>									
None reported.									
<b>LOUISIANA</b>									
Caddo Parish 2 W Mira	04	0942CST			0	0	?	?	Thunderstorm Winds
Bossier Parish 4 SW Plain Dealing	04	0945CST			0	0	?	?	Thunderstorm Winds (G53) Hail (0.75)
A cluster of thunderstorms moving northeast about 30 mph blew down several trees and damaged a fire tower 2 miles west of Mira at 0942CST. A 63 mph winds and penny-size hail was observed 4 miles southwest of Plain Dealing around 0945CST.									
St Tammany Parish Slidell	11	0300CST- 0730CST			0	0	5	0	Flash Flood
A 6.92 inches of rain fell at the Weather Service Forecast Office in Slidell over a 24 hour period ending at 0600CST. Included in this total was a deluge of 4.06 inches which fell between 0000-0400CST. The Slidell city engineer reported that 9 homes were flooded in the south part of town.									
Lafayette Parish	20- 21	0930CST- 0000CST			0	0	6	?	Flash Flood
W Baton Rouge Parish	20	0930CST- 1800CST			0	0	?	?	Flash Flood
E Baton Rouge Parish	20	0930CST- 1800CST			0	0	5	?	Flash Flood
E Feliciana Parish	20	0930CST- 1800CST			0	0	?	?	Flash Flood
Livingston Parish	20	0930CST- 1800CST			0	0	?	?	Flash Flood
St Tammany Parish Slidell	20	1030CST			0	0	4	0	Thunderstorm Lightning
St Martin Parish	20	1100CST- 1830CST			0	0	?	?	Flash Flood
Iberville Parish	20	1100CST- 1830CST			0	0	?	?	Flash Flood
Pointe Coupee Parish	20	1100CST- 1830CST			0	0	?	?	Flash Flood
Ascension Parish	20	1100CST- 1830CST			0	0	?	?	Flash Flood
Vermilion Parish	20	1400CST- 1930CST			0	0	?	?	Flash Flood
Tangipahoa Parish	20- 21	1530CST- 0000CST			0	0	?	?	Flash Flood
Washington Parish	20- 21	1530CST- 0000CST			0	0	?	?	Flash Flood
St Tammany Parish	20- 21	1745CST- 0000CST			0	0	?	?	Flash Flood
E Baton Rouge Parish	20- 23	1800CST- 2400CST			0	0	5	?	Flood
Livingston Parish	20- 23	1800CST- 2400CST			0	1	5	?	Flood
Ascension Parish	20- 23	1830CST- 2400CST			0	0	?	?	Flood
Tangipahoa Parish	21- 23	0000CST- 2400CST			0	1	?	?	Flood
Washington Parish	21- 23	0000CST- 2400CST			0	1	?	?	Flood
St Tammany Parish	21- 23	0000CST- 2400CST			0	0	?	?	Flood

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed Injured	Estimated Damage Property Crops	Character of Storm
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## LOUISIANA Cont'd

A persistent band of numerous thunderstorms produced an area of eight to eleven inches of rain from near Lafayette to Baton Rouge east to the Pearl River. These torrential rains fell during a 20 hour period on soil which had been saturated from prior heavy rains. In addition, strong on shore flow prevented rivers from discharging the runoff into the Gulf of Mexico. These factors combined to produce widespread flash flooding and river flooding which inundated over 2,100 homes. The majority of these structures were located in Lafayette, St Martin, East Baton Rouge, Livingston, and Washington Parishes. Damage survey figures were obtained from the American Red Cross unless otherwise indicated.

Vermilion Parish: Civil Defense reports that 12 homes and 5 businesses were flooded in Maurice and Gueydan.

Lafayette Parish: 191 homes were inundated. 35 of these homes suffered major damage; 156 homes had minor damage. Most of these homes were in the city of Lafayette. However, flooding was reported in Scott and Duson. In Lafayette the Vermilion River crested at 15.8 feet around 1345CST on January 20th. Several Lafayette schools were flooded with ankle deep water and were forced to close by 1200CST. Many students were left stranded for hours due to severe street flooding. Several hundred cars were flooded. Property damage was estimated to be around \$1,000,000.

St Martin Parish: 131 homes from Breaux Bridge to Parks were flooded. Of this total 2 homes suffered major damage; 129 homes had minor damage. The Breaux Bridge Instructional Institute was inundated with three inches of water.

Iberville Parish: Seventy-two homes from Bayou Sorrel to Pigeon were inundated. Two of these homes suffered major damage; the remainder escaped with minor losses.

Pointe Coupee Parish: Twenty-one homes suffered minor flood damage along the False River in the New Roads area.

West Baton Rouge Parish: Thirteen homes received minor flood damage in Port Allen.

East Feliciana Parish: Seven homes had minor flash flood damage in Slaughter, Jackson, and Clinton.

East Baton Rouge Parish: 1,167 homes were inundated. Of this total 8 homes were destroyed; 531 homes suffered major damage; 623 homes received minor damage. Flash flooding along the Amite, Comite Rivers and their tributaries were responsible for the widespread flooding which occurred in Baton Rouge, Zachary, Baker, Central, and Comite. The Comite River at Comite crested at 27.4 feet around 1800CST on January 21st.

Livingston Parish: 250 homes were damaged by flood waters. Of this total, one home was destroyed; 104 homes received major damage; and 145 homes had minor damage. The widespread flooding occurred along the Amite, Tickfaw Rivers and their tributaries. Flooding was reported in Denham Springs, Port Vincent, French Settlement, Satsuma, Holden, and Springfield. The Amite River crested at 38.1 feet at 0300CST at Denham Springs on January 22nd. The Amite crested at 11.8 feet at 0600CST at Port Vincent on January 23rd. The Tickfaw River crested at 20.1 feet at 0600CST at Holden on January 22nd. An 11 year old boy was swept into the Natalbany River as he tried to cross a flooded bridge just east of Albany. The boy was rescued and treated for hypothermia at a local hospital.

Ascension Parish: Seventy-nine homes were damaged by flood waters. 7 of these homes were destroyed; 45 suffered major damage; 27, minor damage. Most of the flooding was confined to the northern part of the parish along LA Highway 42 between Hobart and Oak Grove when Bayou Manchac overflowed. Bayou Manchac crested at 16.7 feet at 0100CST on January 23rd.

Tangipahoa Parish: Thirty-five homes were inundated. Two of these homes were destroyed; 9 suffered major damage; 24 had minor damage. The majority of these homes were in the Robert area where the Tangipahoa River crested at 22.5 feet at 1000CST on January 22nd. A few roads were partially washed away near Robert. A woman was rescued after flood waters pushed her car into a swollen creek near Loranger. Washington Parish: 106 homes were flooded. 50 of these homes received major damage and 56 had minor damage. Most of the flooding occurred when the Pearl and Bogue Chitto Rivers overflowed their banks and inundated parts of Bogalusa and Franklinton. Flood waters washed a 40 foot section of a highway out in Bogalusa. A Bogalusa woman was rescued after flood waters swept her car into a creek. The lower level of the sheriff's office in Franklinton was inundated with about a foot of water. The Pearl River at Bogalusa crested



## Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

### LOUISIANA Cont'd

at 20.9 feet at 2100CST on January 21st. The Bogue Chitto River at Franklinton crested at 18.0 feet at 1200CST on January 21st.

St Tammany Parish: Fourty homes were damaged by flood waters. Fourteen of these homes suffered major damage and 26 had minor damage. Most of the flooding was due to the overflow of the Tchefuncte, Bogue Falaya, and Pearl Rivers. The Goodbee, Covington, and River Garden subdivision east of Slidell received most of the flood damage. Christ Episcopal Church Elementary School in Covington was inundated by 5 feet of flood water. The Tchefuncte River at Folsom crested at 21.5 feet at 0800CST and at Covington the river crested at 22.6 feet at 0900CST on January 21st. The Pearl River at Pearl River crested at 18.3 feet at 1000CST on January 21st.

Lightning struck a Slidell home about 1030CST on January 20th. The resulting fire heavily damaged the roof, attic, and electrical system of the residence.

Caddo Parish 2 N Blanchard	23	2130CST			0	0	?	?	Thunderstorm Hail (1.00)
Bossier Parish Alden Bridge	23	2140CST			0	0	?	?	Thunderstorm Winds
2 N Benton	23	2205CST			0	0	?	?	Thunderstorm Winds (G53)
Caddo Parish Dixie	23	2218CST			0	0	?	?	Thunderstorm Winds (G54)
Bossier Parish Bossier City	23	2220CST			0	0	3	?	Thunderstorm Winds (G50)
Caddo Parish Spring Ridge	23	2245CST			0	0	4	?	Thunderstorm Winds
Webster Parish 5 N Dixie Inn	23	2315CST			0	0	?	?	Thunderstorm Winds
Claiborne Parish 5 SW Homer	23	2326CST			0	0	?	?	Thunderstorm Winds
Bienville Parish 2 S Bryceland	23	2340CST			0	0	?	?	Thunderstorm Winds

Two lines of thunderstorms moving east 30 to 40 mph across northwest LA produced one inch hail a couple of miles north of Blanchard at 2130CST. Numerous trees were blown down in Alden Bridge and 2 miles north of Benton between 2140-2205CST. 59 to 65 mph winds were measured in Dixie and Bossier City between 2218-2220CST. Plate glass windows were blown out of two Bossier City businesses around 2220CST. Thunderstorm winds rolled over a mobile home in Spring Ridge about 2245CST. Numerous trees were blown down 5 miles north of Dixie Inn, 5 miles southwest of Homer, and 2 miles south of Bryceland between 2315-2340CST.

### MAINE

MEZ008-009-010	13-	0600EST-			0	0	?	0	Heavy Snow
011-012-013-014	14	0830EST			0	0	?	0	
Southeastern ME									

A low pressure system centered over the Great Lakes spread snow into the area on the morning of the 13th. As this system moved east the energy transferred to an ocean low just off the New Jersey coast. Six to eleven inches of snow fell on southwestern Maine as this secondary low intensified and moved across the southern Gulf of Maine. There were numerous traffic accidents and school closures due to the snow fall.

MEZ012	25-	0715EST-			0	0	?	0	High wind
West Central ME	26	0900EST			0	0	?	0	

High wind downed trees along power lines that resulted in power outages in northern Franklin County. Schools classes were delayed or canceled as some 1,500 electrical customers were without power. Portland had a 41 mile per hour maximum wind gust on the 25th.

MEZ002-003-004	31	0230EST			0	0	?	0	Heavy Snow
006-007-008-009									
010-011-012-013-014									
Central and Southern ME									

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

## MAINE Cont'd

A low pressure system just north of the Great Lakes on the 31st moved southeast across western New England. It intensified over the waters of the Gulf of Maine on the 1st. Snowfall amounts were up to 23 inches in portions of southwestern Maine. Six inches or more of snowfall occurred over all but northern Maine. There were numerous traffic accidents and school closures. Also, many communities experienced electrical power failures.

## MARYLAND

MDZ005 > 009	09-10	0030EST- 2230EST			0	0	0	0	Winter Weather
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Rain Friday night changed to sleet, freezing rain and drizzle then to snow early Saturday. Snow continued to fall across much of central and western Maryland, accumulating one to three inches by Saturday afternoon. Patchy areas of light snow, freezing drizzle and sleet continued in much of the area into Sunday night. This caused numerous automobile accidents.

MDZ005 > 008	21	0930EST- 2200EST			0	0	0	0	Freezing Rain Sleet/Snow
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Wintery weather across the area affected travel conditions throughout. Light snow fell in western parts of the area while sleet and freezing rain and drizzle fell in central Maryland.

## DISTRICT OF COLUMBIA

District of Columbia	09-10	0030EST- 2230EST			0	0	0	0	Winter Weather
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Rain Friday night changed to sleet, freezing rain and drizzle then to snow early Saturday and accumulated up to one inch by afternoon. Patchy areas of light snow, freezing drizzle and sleet continued in much of the area into Sunday night. This caused numerous automobile accidents.

District of Columbia	21	0930EST- 2200EST			0	0	0	0	Freezing Rain Sleet/Snow
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Wintery weather across the area affected travel conditions throughout. Sleet and freezing rain and drizzle fell in central Maryland.

## MASSACHUSETTS

MAZ005-006-010	13	0400EST- 2200EST			0	0	0	0	Heavy Snow
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Two periods of snow fell across the western portion of the state leaving snow totals of six to ten inches. Each snowfall lasted several hours. The first started during the early morning hours and the second during the late afternoon. Thunder accompanied the second snowfall in parts of the Connecticut Valley. Some totals included: Florida 10 inches, North Adams 8.50 inches and Pittsfield 8.00 inches.

MAZ001-004-007-008	13-14	0600EST- 0300EST			0	0	0	0	Heavy Snow
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Two periods of snow fell across the central and eastern portion of the state with totals reaching six to eight inches in many places. The first period of snow started around 6 a.m. and lasted several hours coinciding with the morning rush hour. Slippery roads resulted in numerous skidding accidents. The second snowfall started during the early evening and lasted into the early morning hours the next day. Some totals included: Newburyport and Dracut 9.00 inches each, Worcester 8.20 inches, Westboro 8.00 inches, Boston and Blue Hill 7.30 inches, Framingham 7.00 inches and Peabody 6.00 inches.

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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## MICHIGAN

<b>MIZ001 &gt; 040-042-044</b>	03-05	2300EST-0100EST			0	0	3	0	Flooding
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**Southern Lower Michigan**

Rainfalls of 1.5 to 2.5 inches fell in about 26 hours. This caused most of the major rivers and creeks over southern third of Lower Michigan to flood. The River Raisin in southeast Lower Michigan rose above the flood stage during the afternoon hours of the 4th and crested about 3 feet above flood stage on the 5th and 6th. The Middle Rouge, Lower Rouge, and Rouge rivers in the Detroit Metro area all crested during the morning hours of the 5th about 1 to 2 feet above flood stage. The Joseph river at Niles in southwest Lower Michigan crested during the evening of the 5th nearly 4 feet above flood stage. Most of the other rivers in southern Lower Michigan crested at or slightly above flood stage. Many roads were damaged by the runoff and high water levels from river flooding. In addition to damaged roads, some basements were also flooded. The hardest hit areas were in Hillsdale, Lenawee and Monroe counties along the River Raisin in southeast Lower Michigan. This was the same area that had two to three inches of rain four days prior to this rainfall event. The rain fell in two periods, the first period of heavy rain began over southwest Lower Michigan just before Midnight on Sunday the third. Rain, heavy at times fell from then until around noon on Monday, the 4th. During this time, southwest Lower Michigan had between one to two inches of rain, while southeast Lower had between one half and three quarters of an inch of rain. The second period of heavy rain began during the late afternoon over the southern quarter of Lower Michigan, the rain then spread northeastward giving southeast Lower its heaviest rainfall. It was this second period of heavy rain that caused most of the rivers to spill there banks over southeast Lower Michigan.

<b>MIZ075 &gt; 077</b>	06-07	0000EST-1900EST			0	0	0	0	Heavy Lake Snow
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**Northwest Upper Michigan**

Snow began at Midnight on the 6th and continued locally heavy until the early evening hours of the 7th. The heaviest snow fell in the north half of the Keweenaw Peninsula and north central Ontonagon County near Lake Superior. In Ontonagon county the heavy snow was limited to the Silver city area where eight inches of snow fell. Over the north half of the Keweenaw county, the heavy snowfall was more general covering all of Keweenaw county and the north third of Houghton county. Snowfall totals ranged from six to twelve inches in these areas with Houghton reporting nine inches and Ahmeek reporting twelve inches, which was the maximum snowfall. Temperatures during the snowfall were in the 5 to 10 degree range with winds less than 10 knots. No significant property damage was reported from this storm.

<b>MIZ018-021-024-028 &gt; 030-035</b>	10	0400EST-1800EST			0	0	0	0	Heavy Snow
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**Southeast Lower Michigan**

Snow began during the early morning hours of the 10th over southwest Lower Michigan and spread east to Flint and the Detroit Metropolitan area by 400 am EST. Snow continued over southern Lower Michigan during the day on the 10th with the heaviest snow falling during the mid morning and late afternoon hours. The heaviest snow fell over southeast Lower Michigan with a general four to nine inch snowfall. The northern suburbs of Detroit including Oakland and Macomb counties were particularly hard hit with seven to nine inches reported. These areas had numerous traffic accidents and disabled vehicles. It took until late in the evening on Monday the 11th to clear all main roads in Macomb and Oakland counties. At least seven people fell through thin ice on Oakland county lakes. No one was injured seriously. This was the greatest snowfall in southeast Lower Michigan since the January 14th snowstorm of 1992. Across southwest, south central and east central Lower Michigan, snow falls of two to four inches were common.

<b>MIZ071 &gt; 082</b>	12-13	1200EST-1800EST			0	0	0	0	Heavy Snow
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**Western and Central Upper Michigan**

Snow started at noon on the 12th and continued to the early evening hours on the 13th as a low pressure system tracked northeastward from northern Missouri on the 12th. As the low tracked to southern Lower Michigan the 13th, strong northeasterly winds off Lake Superior led to lake enhanced heavy snow over western and central Upper Michigan. Snowfall totals ranged from six

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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## MICHIGAN Cont'd

to twelve inches with the heaviest amounts reported at Negaunee and Ishpeming with around a foot. Less snow fell at Marquette with about 7 inches. The heaviest snow fell during the daylight hours on the 13th. Numerous traffic accidents were reported in the Ishpeming, Negaunee and Marquette areas. There was one serious injury reported. This was the heaviest snowfall so far of the 1992-1993 winter season in these areas. Temperatures were around 20 degrees during this storm with northeast winds of 10 to 20 mph gust were up to 30 mph at times causing considerable drifting snow. This resulted in wind chill readings in the zero to minus 10 degree range.

<b>MIZ008 &gt; 012-018 &gt; 024-026 &gt; 032-035-036</b> Southeast and South Central Lower Michigan	12-	1800EST-							
	13	0800EST			0	0	4	0	Ice Storm

The same storm that brought the heavy snow to Upper Michigan spread freezing rain to southern Lower Michigan during the early evening hours of the 12th. Freezing rain continued heavy at times through the early morning hours of Wednesday the 13th. The freezing rain then changed to snow during the mid morning hours of Wednesday and accumulated from one to three inches on top of the ice by Wednesday evening. About a 1/2 inch of ice accumulated across southern Lower Michigan, knocking down numerous trees, tree limbs and power lines across the area. In southeast and south central Lower Michigan, 44,000 people were without power as a result of the ice storm. Numerous traffic accidents occurred on the ice-covered roads. Three people died as a result of these accidents. Over two hundred schools were closed (which is most of the schools in the area) on Wednesday.

<b>MIZ004 &gt; 006-013 &gt; 017-022-023-025-026- 032 &gt; 034-037 &gt; 051- 058 &gt; 068</b> Central and Northern Lower Michigan	12-	2300EST-							
	13	1800EST			0	0	4	0	Heavy Snow

The same storm that brought the freezing rain to southern Lower Michigan and heavy snow to Upper Michigan left its mark on central and northern Lower Michigan with heavy snow. Snow began across central Lower Michigan late in the evening of the 12th and quickly spread north across northern Lower Michigan during the early morning hours of the Wednesday the 13th. The combination of heavy snow, northeast winds of 15 to 25 mph and temperatures in the lower to mid 20s created near blizzard conditions at times most of Wednesday. The snow tapered to flurries by early evening hours of Wednesday with total snowfall ranging from six to twelve inches. The heaviest snow amounts were reported in central Lower Michigan with a foot at Saginaw and Alma. The heavy snow led to downed power, telephone and cable T.V lines across this area. Almost 20,000 people lost power from the heavy snow. Numerous traffic accidents occurred with one serious injury. Most of the schools were closed over central Lower Michigan due to the heavy snowfall.

<b>MIZ001 &gt; 073- 080 &gt; 083</b> Lower Michigan and Central and Eastern Upper Michigan	21	0000EST- 1800EST							
					0	0	0	0	Ice Storm

Freezing rain began shortly after midnight on the 12th across far southwest Lower Michigan and spread across all of Lower Michigan by 7 am. The freezing rain spread across central and eastern Upper Michigan between 4 am and 9 am. Between 0.3 and 0.4 inches of ice accumulated on exposed surfaces across northwest Lower Michigan and Upper Michigan with lesser amounts of ice across southern and far eastern Lower Michigan. The ice caused treacherous road conditions across northern Lower Michigan and Upper Michigan resulting in numerous traffic accidents. Dozens of motorists were stranded in their vehicles with several large trucks overturning on highways. Virtually all schools and universities were closed on the 21st over central and eastern Upper and northern Lower Michigan. Many businesses were also closed in these areas. Damages were limited to vehicles in fender bender type accidents.

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

## MICHIGAN Cont'd

<b>MIZ073 &gt; 079</b> Western and Central Upper Michigan	23- 25	0400EST- 0100EST			0	0	0	0	Heavy Snow
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Low pressure tracked across Wisconsin during the day on the 23rd and reached Sault Ste. Marie during the early morning hours of the 24th. This system spread snow, which was heavy at times, to western and central Upper Michigan from the predawn hours of the 23rd to around midnight of the 24th. A general four to eight inch snowfall occurred across most of western and central Upper Michigan. Ontonagon and Gogebic counties received from eight to twelve inches of snow as winds of Lake Superior enhanced snowfall amounts.

<b>MIZ050-052-054 &gt; 059</b> Northwestern Lower Michigan	28- 29	2300EST- 0500EST			0	0	0	0	Heavy Lake Snow
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Heavy lake effect snow with considerable blowing and drifting developed late in day on Thursday, the 28th, across Upper Michigan and northwest Lower Michigan. Strong northwesterly wind gusts were reported to be over 40 mph at times, combined with the heavy snow, created near blizzard conditions across much of the area on Thursday night and Friday. The snow continued through most of the early morning hours of Friday, the 29th. Snowfalls of four to eight inches were common across eastern Upper Michigan and northwest Lower Michigan. The heaviest snowfall was reported in Kalkaska, Grand Traverse, Wexford and Missaukee counties of northwest Lower Michigan and Alger county of eastern Upper Michigan where close to 8 inches fell. The heaviest snowfall was ten inches eight miles northwest of Cadillac in east central Wexford County.

## MINNESOTA

<b>MNZ004-005-008 &gt; 019</b> Northeast- Central and Southern MN	12- 13	0200CST- 2300CST			0	0	?	?	Heavy Snow
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A major winter storm moved from the Rockies east towards the Central Plains and the Great Lakes from early in the morning on the 12th through late in the day on the 13th. Snow fell heavily at times across the southeast and northeast sections of the state where snowfall totals exceeded one foot. Many schools were closed and numerous traffic accidents occurred during the two day event.

Snowfall amounts in excess of 6 inches fell south and east of a line from Ely (St Louis County) to near Long Prairie (Todd County) to Wolverton (Wilkin County). An area of snowfall in excess of 12 inches fell south of a line from Hutchinson (McLeod County) to Red Wing (Goodhue County) south to the Minnesota/Iowa border near Albert Lea (Freeborn County) and Elmore (Faribault County). Heavy snow in excess of 12 inches fell along the higher terrain area near Lake Superior near Isabella (Lake County). The greatest snowfall total occurred at Red Wing (Goodhue County) with 14 inches reported.

<b>MNZ006 &gt; 019</b> Southern two- thirds of MN	20	1000CST- 2200CST			0	0	?	?	Ice Storm
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Freezing rain developed over most of southern Minnesota during the late morning and lasted through most of the evening. At least half of an inch of ice coated area roads and power lines caused treacherous driving conditions and numerous power outages. Approximately 1200 people were without power for a time in the Austin area. Several hundred car accidents resulted and many roads became impassable. The National Guard Armory in Faribault was opened for stranded motorists and several students spent the night at area schools in Goodhue County due to the very poor road conditions within the county. The Minneapolis International Airport was closed for 2 hours at the height of the storm and over 150 schools closed early.

## MISSISSIPPI

<b>Walthall County</b> Tylertown	11	1930CST			0	0	0	0	Hail (1.75)
<b>Marion County</b> Columbia	11	1950CST			0	0	0	0	Hail (1.75)

## Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
<b>MISSISSIPPI Cont'd</b>									
Lamar County 2 S Sumrall	11	2010CST			0	0	0	0	Hail (1.00)
Jones County Laurel	11	2115CST			0	0	0	0	Hail (1.75)
Clarke County 15 E Quitman	11	2158CST			0	0	0	0	Hail (0.80)
Copiah County 2 NW Barlow	11	2300CST			0	0	2	0	Thunderstorm Winds
Several trees were blown down.									
Lauderdale County 5 SW Meridian	12	0600CST- 2000CST			0	0	0	0	Flood/ Flash Flood
Okatibbee creek rose very rapidly and exceeded the flood stage of 18 feet. The creek crested at 18.54. Several roads were flooded before the creek went below flood stage.									
Forrest County and Lamar County	20	0930CST			0	0	0	0	Flood/ Flash Flood
Heavy rainfall caused flooding of numerous roads and streets across Lamar and Forrest counties.									
Wilkinson and Amite Counties	20	1630CST- 2230CST			0	0	4	0	Flood/ Flash Flood
Many creeks and small streams spilled over their banks and flooded numerous county roads in both counties. Three bridges were washed out in Amite county.									
Pike County	20	1630CST- 2330CST			0	0	5	0	Flood/ Flash Flood
Numerous roads were flooded throughout the county. Two bridges were heavily damaged. Several homes in Osyka were flooded.									
Walthall, Marion and Lamar Counties	20	1630CST- 2400CST			0	0	4	0	Flood/ Flash Flood
Heavy rainfall caused widespread flooding across these three counties. Many road were flooded and had to be closed. A motel in Columbia in Marion county had three inches of water in 21 rooms.									
Forrest County	20 21	2300CST- 0200CST			0	0	5	0	Flood/ Flash Flood
Heavy rainfall caused flooding of low lying areas and many roads and streets across the county. Twenty-four homes were flooded in the Brooklyn, Petal and Black Creek areas.									
Lauderdale County 5 SW Meridian	20	1900CST- 2400CST			0	0	0	0	Flood/ Flash Flood
Okatibbee creek was above flood stage of 18 feet for several hours. A couple of roads were flooded.									

## Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
<b>MISSISSIPPI Cont'd</b>									
Clarke County Stonewall	20	2330CST			0	0	0	0	Flood/ Flash Flood
Heavy rainfall for 6 to 12 hours caused the Chickasway River to spill over its banks. Water was across several roads in Stonewall.									
Pearl River County	20- 21				0	0	5	0	Flood
There were at least 130 homes flooded and widespread damage to roads, bridges and culverts throughout the county.									
Stone County	20- 21				0	0	5	0	Flood
Even bridges were damaged in the county. Five mobile homes suffered major damage and ten had minor damage. One business had major damage and two others had minor damage.									
Harrison County	20- 23				0	0	6	0	Flood
Over seven inches of rain caused flooding to wash out roads and bridges. A total of 171 homes had water damage.									
Jackson County Escatawpa	20- 24				0	0	4	0	Flood
Two homes had water damage from flood waters.									
Sunflower County Rome	24	0205CST			0	0	4	0	Thunderstorm Winds
A few houses had minor roof damage, mainly shingles blown off.									
Sunflower County Ruleville	24	0205CST			0	0	2	0	Thunderstorm Winds
Several trees were uprooted due to strong thunderstorms wind.									
Leflore County 3 E Greenwood	24	0215CST			0	0	4	0	Thunderstorm Winds
At least three houses had minor roof damage and shingles blown off.									
Yazoo County Yazoo City	24	0240CST			0	0	0	0	Hail (1.00)
Washington County Greenville	24	0426CST			0	0	0	0	High Winds (G50)
Wind gusts up to 58 mph from gradient wind were recorded by a TV station. No thunderstorms were in the area.									
<b>MISSOURI</b>									
ZONES 03 > 10, 13, 14	01- 02	2100CST- 1300CST			0	0	6	0	Ice Storm
Freezing rain left a layer of glaze ice over parts of west, central, and northeast Missouri. The worst ice storm to hit in nine years dropped heaviest accumulations in the Kansas City, St. Joseph, and central Missouri areas. Interstate travel was severely affected as major highways were ice-covered for parts of two days. Numerous accidents were reported and dozens of vehicles were abandoned.									
Webster County 25 NE Springfield	04	0400CST- 0800CST			0	0	4	0	Flash Flood

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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## MISSOURI Cont'd

A woman's car was swept off a low water bridge into the Niangua River, but she escaped through a window.

**Howell County**  
2 W West  
Plains

04	0600CST-0930CST				1	2	4	0	Flash Flood
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A woman was killed after she drove into water over a low water bridge. Two people were injured in a fire caused by a propane leak after high water caused a break in the line. The campground at Dogs Bluff was also flooded. (F45V)

**Ripley County**

04	0845CST-1300CST				0	0	3	0	Flash Flood
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Highway 160 and 142 flooded near Doniphan.

**Perry County**

04	0845CST-1200CST				0	0	2	0	Flood/ Flash Flood
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Several rivers and creeks rose over flood stage spilling on to roads and flooding bridges.

**Ste. Genevieve County**

04	0850CST-1200CST				0	0	3	0	Flood/ Flash Flood
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Creeks rose out of their banks trapping residents in several different locations. Many streets were flooded in the city of Ste Genevieve.

**Ozark County**

04	0900CST-1230CST				0	0	3	0	Flood/ Flash Flood
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Numerous roads were closed due to high water after 3-4 inches of rain fell in a 2-3 hour period. Some schools were also closed due to high water.

**Wayne County**

04	0943CST-1210CST				0	0	3	0	Flood/ Flash Flood
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McKenzie Creek in and within 1 mile of Piedmont rose out of its banks due to heavy rains. Some people were evacuated after one bridge in Piedmont was closed due to high water. The Pump House Road bridge, which was concrete, collapsed due to flood waters. By 1136CST many streams across the county overflowed their banks. Between 1145CST and 1210CST, Clark Creek overflowed onto Highway 34 in Patterson. Several roads in Greenville were also impassable. Area residents estimated 5 inches of rain fell.

**St. Francois County**

04	0940CST-1230CST				0	0	4	0	Flood/ Flash Flood
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Water rose out of the banks of many creeks flooding some roads and St. Joseph Park. Numerous low water bridges were also flooded.

**Iron County**

04	0945CST-1230CST				0	0	3	0	Flood/ Flash Flood
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Many creeks rose out of their banks due to steady heavy rain. Some low water bridges flooded in the Annapolis area. Stouts Creek became a roaring river near Killarney Shut-Ins and Highway 72.

**Madison County**

04	1000CST-1215CST				0	0	3	0	Flood/ Flash Flood
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Area rivers and creeks were full or overflowing due to heavy rains. Many small bridges were under water closing some roads.



# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
<b>MISSOURI Cont'd</b>									
Shannon County	04	1010CST- 1230CST			0	0	3	0	Flash Flood
			Numerous roads were under water across the county.						
Butler County	04	1029CST- 1255CST			0	0	3	0	Flood/ Flash Flood
			Butler County DES reported many roads under 2 feet of water near creeks. Some bridges were impassable. In Poplar Bluff, Hog Creek overflowed and trapped some people in their homes.						
Stoddard County	04	1030CST- 1350CST			0	0	2	0	Flood/ Flash Flood
			Lick Creek overflowed onto Highway 60 in Dudley. At Dexter water crossed Highway 25.						
Bollinger County	04	1110CST- 1330CST			0	0	2	0	Flood/ Flash Flood
			Crooked Creek rose out of its banks at Bessville. Some bridges and roads in the Bessville area were impassable.						
Cape Girardeau County	04	1140CST- 1355CST			0	0	3	0	Flood/ Flash Flood
			Cape Girardeau Department of Emergency Service reported Williams Creek at the west end of Cape Girardeau out of its banks. Birds Creek, 1 mile west of Jackson, rose of its banks, along with Coster Creek 1/2 mile west of Delta. Across the county many small creeks had water flowing across nearby roads. Over 2 1/2 inches of rain fell at the Municipal Airport that day.						
<b>ZONES</b>	<b>09</b>	<b>0900CST-</b>							
<b>001 &gt; 014-017</b>	<b>10</b>	<b>0100CST</b>			0	0	5	0	Heavy Snow
			A major winter storm moved across Missouri producing as much as 11 inches of snow. The heaviest snow fell along a Kansas City-Boonville-Hannibal line with 11 inches recorded at Kansas City International Airport. Other amounts included 11 inches at Boonville, 7 inches at St. Joseph, 6 inches at Columbia, and 5 inches around St. Louis. Somewhat lesser amounts fell across extreme northern Missouri and only a dusting across the south. The heavy snow resulted in many traffic accidents and stranded motorists.						
<b>ZONE 10</b>	<b>12</b>	<b>0300CST- 1330CST</b>			0	0	5	0	Ice Storm
			Another ice storm crippled parts of central Missouri causing area schools to close and producing numerous traffic accidents. A chain reaction accident on Interstate 70 at the eastern city limits of Columbia, involved 10 vehicles. Another multiple car accident occurred at Kingdom City in Callaway County, which involved 15 vehicles.						
<b>MONTANA</b>									
<b>MTZ001</b>	<b>03- 04</b>	<b>1700MST- 1100MST</b>			0	0	4	0	Heavy Snow
			Six to fifteen inches of snow fell across the zone.						
<b>MTZ001</b>	<b>04</b>	<b>1400MST- 200MST</b>			0	0	4	0	Blizzard
			Traffic was stalled across the southern portion of the Flathead Valley.						
<b>Missoula County 4 E Missoula</b>	<b>09</b>	<b>1300MST</b>			1	0	0	0	Avalanche

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

## MONTANA Cont'd

Four boys were hiking on Mount Jumbo. They triggered an avalanche and one boy was killed. (M130)

MTZ007	11- 12	1700MST- 2300MST			0	0	0	0	Heavy Snow
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Four to eight inches of snow fell across the zone.

MTZ003	15	0400MST- 1200MST			0	0	3	0	High Winds (G76)
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Strong southwest winds created 16-20 foot snow drifts West of Dupuyer. Winds hit 88 mph 11 West of Dupuyer and 61 mph at Browning.

MTZ002	20	0600MST- 1400MST			0	0	4	0	Freezing Rain
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There were many automobile accidents along highway 200 in Sanders County.

MTZ001,003,006	22	0400MST- 2000MST			0	0	3	0	Heavy Snow
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Four to six inches of snow fell.

MTZ007	22- 25	2000MST- 1700MST			0	0	3	0	Ice Jam
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The Yellowstone River near Hardin jammed with ice flooding some farm land, shed and barns. Cattle had to be moved away from the river.

MTZ002	24	1400MST- 2000MST			0	0	4	0	Freezing Rain
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Lots of automobile accidents along I-90 in Sanders County.

MTZ001	24- 25	2000MST- 0400MST			0	0	3	0	Heavy Snow
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Four to ten inches of snow fell overnight.

MTZ003	25	0500MST- 1500MST			0	0	0	0	High Winds (G82)
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Strong winds blew along the East Slopes of the Rockies. The wind 11 miles West of Dupuyer hit 90 mph and 74 mph at Browning.

## NEBRASKA

NEZ007-008- 012 > 020 Southern Nebraska	08- 10	0600CST- 1200CST			0	0	?	?	Heavy Snow
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Eight to fifteen inches of snow fell over much of southern Nebraska. Several locations around McCook in southwest Nebraska received 18 inches.

NEZ008-009-014- 015-018-019 South Central Nebraska	19 20	2200CST- 2200CST			0	0	?	?	Heavy Snow
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Six to ten inches of snow fell over south central Nebraska. Fairmont recorded a foot of snow.

## NEVADA

NVZ003 Extreme Western Nevada	01	0000PST- 0600PST			0	0	0	0	High Wind
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# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

## NEVADA Cont'd

Strong winds were reported in the Reno area. Sustained winds were 45 to 55 mph with several gusts over 65 mph. Winds gusts were to 100 mph in Stead and 99 mph on Windy Hill in southwest Reno.

NVZ001-003-004- 005-006-007 Northern Nevada	06 07	1200PST- 2100PST	0	?	5	0	0	0	Heavy Snow
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Heavy snow fell across northern Nevada. Storm totals on the valley floors were generally 10 to 16 inches. The snow from this storm, combined with the snow from storms in December and early January, created dangerous snow loads on structures throughout the region. During the following few days, many weaker structures collapsed under the increased weight. A hanger at the Douglas County Airport collapsed causing major damage to the aircraft inside. Damage was estimated to be \$150,000.

Clark County Las Vegas	17	1530PST			0	0	0	0	Flash Flood
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One to one and half inches of rain fell in an hour and a half. Local areas of flooding were reported throughout the Las Vegas Valley.

NVZ001-003-004- 005-006 Northern and Western Nevada	21 22	1900PST- 0400PST			0	0	?	0	High Wind
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An intense low pressure system produced high winds in western and northern Nevada. Sustained winds of 40 to 50 mph were common. Unofficial observations on Sierra mountaintops around Lake Tahoe indicated wind speeds of 100 to 150 mph with gusts to 180 mph. Numerous gusts over 60 mph were reported at lower elevations from Reno to Winnemucca to Battle Mountain. Winds gusts were to 80 mph in southwest Reno, 74 mph in Stagecoach, and 67 mph in Battle Mountain. Estimated winds of 70 to 80 mph in Stateline and Incline Village caused power outages to about 10,000 customers. Houses throughout the area received minor damage and a roof was blown off of a house in Gardnerville.

## NEW HAMPSHIRE

NHZ001-002-003 004-005-006-007 Statewide	13 14	0500EST- 0730EST			0	0	?	0	Heavy Snow
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A low pressure system centered over the Great Lakes spread snow into the area on the morning of the 13th. As this system moved east the energy transferred to an ocean low just off the New Jersey coast. Six to eleven inches of snow fell across the state as this secondary low intensified and moved across the southern Gulf of Maine. There were numerous traffic accidents and school closures due to the snowfall.

NHZ006 Southeast NH	25 25	0415EST- 0700EST			0	0	?	0	High wind
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High wind knocked trees over onto electrical power lines causing power outages in several Seacoast towns during the early morning hours. Winds sent a sign through a store window in Rochester. In Dover, the wind hurled a business sign through the front window of Ye Old Peddler's Shop at 41 North Main St shortly after 0630EST. Winds in the Seacoast were gusting from 25 to 35 miles per hour with a gust to 38 miles per hour that occurred at 0530EST.

NHZ001-002-003 004-006	31	0100EST			0	0	?	0	Heavy Snow
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A low pressure system just north of the Great Lakes on the 31st moved southeast across western New England. It intensified over the waters of the Gulf of Main on the 1st. Up to 13 inches of snow fell across the area. There were numerous traffic accidents and school closures. Also, many communities experienced electrical power failures.

## NEW JERSEY, Northern

NJZ005-007 Coastal New Jersey	09 10	1800EST- 1200EST			0	0	?	0	Coastal Flood
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# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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## NEW JERSEY, Northern Cont'd

The combination of a strong high pressure system over the northeastern states and a nearly stationary front lying well offshore, produced a strong northeasterly flow across the area. These on shore winds piled up the Atlantic waters along the coast generating tides about 2 feet above normal. Since many protective barriers were damaged or destroyed in last months big Nor'easter, the coastal flooding that resulted was a bit more widespread than it would have been normally. Most areas experienced some minor coastal flooding with only a couple of the normally more vulnerable location witnessing anything substantial.

## NEW JERSEY, Southern

NJZ003-	09	2300EST-							
	10	1400EST			0	0	5	0	Coastal Flood

A storm moving north along the coast caused very high tides and tidal flooding along the coast and along the back bays. Moderate flooding of beaches and roadways occurred with some buildings also flooded. There also was moderate beach erosion. The tide at North Wildwood reached 7.1 ft above Mean Low Low Water on the 9th and at Atlantic City the tide reached 7.5 ft above Mean Low Low Water on the 10th.

## NEW MEXICO

NMZ002	03	0400MST-							
		1500MST			0	0	0	0	Heavy Snow

A winter storm moved from southern Nevada across northwest New Mexico. Although it weakened as it passed through the state, it dumped heavy snow over parts of the Northcentral Mountains. Seven to twelve inches fell in Santa Fe, with 15 inches at Santa Fe Ski Basin and 9 inches at Taos Ski Valley.

NMZ002	08	0600MST-							
		2100MST			0	0	0	0	Heavy Snow
Grant County	08	1800MST-							
		2300MST			0	0	4	0	Flood

A combination of a storm moving in from the west and arctic air moving in from the east caused heavy snow across most of the Northcentral Mountains. Snowfall reports included 14 inches at Chama and Santa Fe Ski Basin; six to twelve inches at Los Alamos, Taos Ski Valley, Red River, Angel Fire, Glorietta, Lindrith and Wolf Canyon; and 4 inches at Jemez Springs.

In the warmer air to the south, rains and runoff from melting snows in the mountains flooded the Gila River and some of its tributaries in Grant County. The Bear Creek Bridge in the town of Gila was washed out, and the river was out of its banks in Red Rock at 1800MST.

McKinley County	08	1200MST							
					0	0	0	0	Heavy Rain

The state Governor's Office declared McKinley County a disaster area due to mud-bogged roads. Unusually frequent periods of rain and wet snow in the previous few weeks, plus snow melt, left McKinley County's many dirt roads too muddy for local traffic. The New Mexico Army National Guard was called out to fly in food and medical supplies to some areas outside of Gallup, and to evacuate several people in need medical attention.

Luna County DMN	08	1200MST							
					0	0	3	0	Thunderstorm Winds (G65)

The Deming Flight Service Station reported a gust to 65 knots (75 mph) at noon at the airport. The winds blew over an empty 300 gallon fuel tank and blew out several windows at the airport.

NMZ002	10	2300MST-							
		1100MST			0	0	0	0	Heavy Snow
NMZ013	11	0800MST							
					0	0	0	0	Freezing Rain
Grant County	11	1300MST-							
		2000MST			0	0	0	0	Flood

A broad low pressure system over the Southwest U.S. moved across northwestern New Mexico early on the 11th. Most mountain areas received two to four inches of snow, but heavy snow was limited to the higher elevations of the Northcentral Mountains. A foot of snow fell at Santa Fe Ski Basin, with 9 inches Dulce, 7 in Chama, 6 at Tierra Amaila, and four to eight inches in Los

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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## NEW MEXICO Cont'd

Alamos.

This storm caused warm, moist air to override an arctic airmass entrenched in eastern New Mexico. This resulted in widespread freezing rain in the Southeast Plains. Roads in Roswell, Carlsbad and Hobbs were glazed with ice. Many accidents were reported, one of which resulted in an indirect fatality in Maljamar.

Runoff from the heavy precipitation and melting mountain snows flooded the Gila and Mimbres Rivers and some of their tributaries. At 1300 MST, the Gila was out of its banks near Red Rock.

**Bernalillo County  
Albuquerque**

13	0400MST-0900MST				0	0	0	0	Snow
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**Sandoval County  
Rio Rancho**

13	0400MST-0900MST				0	0	0	0	Snow
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A short burst of early morning snow left one half to one inch and one half inches of snow throughout the Albuquerque area. Temperatures in the mid- to upper-20s allowed the snow to become packed on area streets, causing severe problems during the morning rush hour. Traffic barely crept along, and over 70 fender-bender accidents occurred. The largest accident involved 48 cars on Interstate 25 in downtown Albuquerque.

**NMZ002-004-006-010**

18	1900MST-0800MST				0	0	0	0	Heavy Snow
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**Grant County**

18	2055MST-19				0	0	3	0	Flash Flood
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**Grant County  
Tyrone**

18	2100MST				0	0	4	0	Thunderstorm Wind
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**Grant County**

19	0730MST-2000MST				0	0	3	0	Flood
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A winter storm moved through the Southwest U.S. and across New Mexico late on the 18th into the 19th, Causing heavy snow, flash flooding and even some severe weather.

The heavy snow fell in the western and northern mountains. Some reports included up to 10 inches in Los Alamos; 8 inches at Wolf Canyon (Rio Arriba County), Pinos Altos (Grant County), Luna and McGaffey; 5 inches at Quemado; and four to five inches at Las Vegas, Ocate, Zuni, El Morro National Monument (Cibola County) and Lindrieth. Slightly greater amounts fell on ski areas in the Northcentral Mountains.

Flash flooding and severe weather occurred in Grant County. Rock and mudslides were reported on Route 180 just west of Silver City at 2055 MST by the county sheriff's office. They also reported several streams flowing across roads in Silver City at 2200 MST. Just after midnight, new mudslides were reported on Route 180 several miles west of Silver City, water was running across NM 35 near Lake Roberts (20 miles north of Bayard). Earlier in the evening (2100 MST), severe thunderstorm winds hit Tyrone, about 4 miles south of Silver City. A mobile home rolled over and hit another mobile home; a third one had its roof torn off. Several large trees were also knocked down near the mobile home park.

## NEW YORK, Central

**NYZ019-020**

01	0830EST-1100EST				0	0	4	0	High Winds
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A strong pressure gradient between a cold front off the Atlantic Coast and a large area of high pressure over the western Great Lakes resulted in high winds across parts of eastern New York. The high winds downed utility poles in the Town of Amsterdam and also caused scattered outages in Albany and Vorheesville as trees fell on wires.

**Areawide**

03	1100EST-2200EST				0	0	6	0	Freezing Rain
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A combination of a cold surface and warm moist air aloft created freezing rain and freezing drizzle which resulted in over a thousand traffic accidents throughout the area. Since the freezing precipitation was very light many motorists were unaware that the roadways were covered with a thin sheet of ice until it was too late to slow down.

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

## NEW YORK, Central Cont'd

### Clinton and Essex Counties

05	1243EST- 1800EST				0	0	3	0	Flash Flood
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An ice jam caused flooding along the East Branch of the Ausable River between Ausable Forks, Clintonville and Keesville. Damage was relatively minor with County Route 21/River Road in Essex County closed for a time due to water and ice over the roadway.

### NYZ007 > 012 -018 > 020

13- 14	0100EST- 0400EST				0	0	5	0	Heavy Snow
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A low pressure system which moved east from the eastern Great Lakes and a second low pressure system which formed along the Middle Atlantic Coast and moved northeast brought heavy snow to much of eastern New York. The snow mixed with sleet and freezing rain from the Mohawk Valley south during the day on the 13th before changing back to snow during the late afternoon and evening. Snowfall amounts ranged from five to fourteen inches; with 14 inches reported at Ellenburg Depot, 13.5 inches at Warrensburg, 13.0 inches at Johnstown and 11.0 inches at Glens Falls. At Albany, 10.9 inches of snow fell making it the largest snow storm at Albany since February 12-13, 1988. Many accidents were reported across the area with over 6,000 customers left without power as the heavy snow and mixed precipitation downed powerlines. There were also reports of thunder from the Mohawk Valley south on the afternoon of the 13th as the intense storm moved into the region.

### NYZ007-008- 011-012-018

31	0000EST- 2100EST				0	0	4	0	Heavy Snow
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An Alberta Clipper moved across northern New York on the 31st of January as another low pressure formed along the New England Coast. Heavy snow fell across much of northern New York on the 31st with amounts ranging from 6 to 14 inches. Some snowfall totals included 14 inches at Long Lake, 10 inches at Ray Brook, 9 inches at Malone, 7 inches at Indian Lake and 6 inches at Queensbury. Many accidents were reported across the area as a result of the heavy snow.

## NEW YORK, Coastal

### NYZ016-017 Suffolk County

09- 10	1800EST- 1200EST				0	0	?	0	Coastal Flood
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The combination of a strong High pressure system over the northeastern states and a nearly stationary front lying well offshore, produced a strong northeasterly flow across the area. These on shore winds piled up the Atlantic waters along the coast generating tides about 2 feet above normal. Since many protective barriers were damaged or destroyed in last months big Nor'easter, the coastal flooding that resulted was a bit more widespread than it would have been normally. Most areas experienced some minor coastal flooding with only a couple of the normally more vulnerable location witnessing anything substantial. In Westhampton a few homes badly weakened from last months storm collapsed as their foundations were further undermined.

## NEW YORK, Western

### NYZ001-022

13	0100EST				0	0	4	0	Ice Storm
NYZ021	13 0100EST				0	0	4	0	Snow/Ice Storm
NYZ002	13 0200EST				0	0	4	0	Snow/Ice Storm
NYZ003	13 0200EST				0	0	4	0	Ice Storm
NYZ005	13 0300EST				0	0	4	0	Ice Storm
NYZ004	13 1500EST				0	0	4	0	Heavy Snow

A large low pressure system covered the Great Lakes region late on the 12th and early on the 13th. As the low moved east to the Atlantic Coast, a mix of snow and freezing rain fell across the area. Freezing rain coated trees and power lines with up to one-half inch of ice. Most schools were closed throughout the Finger Lakes Region. Residents were without power as limbs laden with ice downed electric and phone lines. Along the south shore of Lake Ontario, the freezing rain combined with two to four inch snowfalls. East of Lake Ontario the precipitation remained mainly snow with accumulations reaching eight to ten inches near Watertown.

NYZ001	15 1500EST				0	0	4	0	Heavy Snow
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# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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## NEW YORK, Western Cont'd

A southwest flow of cold air across the open waters of Lake Erie produced localized snow squalls over parts of the Central Western Counties just south and east of Metro Buffalo. Six to eight inches of snow fell in 6 hours over parts of West Seneca, Orchard Park, Lancaster and Alden.

NYZ004-005	25	1200EST			0	0	4	0	Heavy Snow
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Following the passage of a cold front, a brisk northwest flow of arctic air across Lake Ontario produced snow squalls over parts of the Eastern Lake Ontario counties and the Eastern Finger Lakes Region. Seven inches of snow was recorded at Hancock Airport in Syracuse and at Pulaski in Oswego County.

NYZ004	29	1200EST			0	0	4	0	Heavy Snow
NYZ005	29	1400EST			0	0	4	0	Heavy Snow

A west to northwest flow of very cold air across the open waters of Lake Ontario again produced lake effect snow showers and squalls. Snowfalls of 6 inches were recorded in Syracuse while to the north, up to 17 inches of snow fell at Boonville and over portions of the Eastern Lake Ontario Counties. In addition to the snowfall, the gusty winds caused considerable blowing and drifting, lowering visibilities to near zero at times.

NYZ001-022	30	1600EST			0	0	4	0	Heavy Snow
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An east-west cold front remained nearly stationary across the Niagara Peninsula for most of the day. A southwest flow across Lake Erie to the south of the front concentrated heavy snowfalls across the Central Western Counties and portions of the Western Southern Tier. Snowfall amounts ranged from 4 inches at the Buffalo Airport to 17 inches in East Otto. Snowfalls of 9 inches in Portageville and Warsaw and 10 inches in Colden and Orchard Park were reported.

NYZ001	31	0800EST			0	0	4	0	High Wind
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Circulation around low pressure centered near Georgian Bay produced strong winds across extreme Western New York. The southwest winds which were funnelled up Lake Erie often reached 40 mph. The peak gust at the Buffalo Airport was 56 mph at 2 a.m.

## NORTH CAROLINA

NCZ015-016-017	08	0800EST-							
Southeastern North Carolina	15	1215EST			0	0	5	4	Floods

Heavy rainfall in the headwaters of rivers and streams in southeast North Carolina on the 5th through the 12th caused the channels to overflow. Hardest hit was Pender County with an estimated \$125,000 in property and crop damage. The Lumber River at Lumberton in Robeson County reached its highest level since March 1971. In neighboring Bladen, Sampson and Duplin Counties, the main problems concerned the closing of highways caused by flooding.

Gaston County Dallas	24	1300EST			0	0	3	0	Lightning
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The impact of lightning blew a hole through a brick exterior wall and sheetrock off interior walls of a house. Extensive damage also occurred to the electrical system.

Anson County Wadesboro	24	1355EST			0	0	0	0	Thunderstorm Winds
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A strong cold front swept across the state spawning severe thunderstorms across the Southern Piedmont, Sandhills and Coastal Plain of North Carolina. Most of the damage was to trees being blown down and atop power lines.

Richmond County Hoffman	24	1430EST			0	0	0	0	Thunderstorm Winds
Roberdell	24	1430EST			0	0	0	0	Thunderstorm Winds
Moore County 10 SW Carthage	24	1445EST			0	0	0	0	Thunderstorm Winds
Harnett County 12 W Lillington	24	1500EST			0	0	0	0	Thunderstorm Winds

## Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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### NORTH CAROLINA Cont'd

Johnston County Northern and Western	24	1603EST			0	0	4	0	Thunderstorm Winds
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In addition to tree damage in scattered locations, a steeple was blown down and structural damage occurred a church in Clayton.

Nash County 4 NW Nashville	24	1605EST			0	0	0	0	Thunderstorm Winds
7 NE Nashville	24	1612EST			0	0	0	0	Thunderstorm Winds
Wilson County 3 NW Wilson	24	1625EST			0	0	3	0	Thunderstorm Winds

An outbuilding sustained structural damage

5N-7NE Wilson	24	1630EST			0	0	0	0	Thunderstorm Winds
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### NORTH DAKOTA

NDZ004-014-017- 018 parts of southern North Dakota	22- 23	1700CST- 0500CST			0	0	0	0	Heavy Snow
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Six to eight inches of snow fell over parts of southern North Dakota. Six inches of snow was reported at Bowman, in the southwest corner of the state. Meanwhile, in southeastern North Dakota, six to eight inches fell the same night.

### OHIO

Sandusky County Woodville	04 06	1400EST- 2000EST			0	0	5	?	Flood
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The Portage River exceeded the flood stage of 9 feet at Woodville. Crest stage was 11.8 feet and occurred at 1800EST on January 5.

Defiance County Defiance	04 08	1600EST- 2000EST			0	0	4	?	Flood
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The Maumee River exceeded the flood stage of 10 feet at Defiance. Crest stage was 13.9 feet on January 6. Some homes were evacuated.

Lucas County Waterville	04 09	1600EST- 1200EST			0	0	5	?	Flood
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The Maumee River exceeded the flood stage of 9.0 feet at Waterville. Crest stage was 12.7 feet and occurred at 0600EST on January 6.

Ashland County County Wide	04 05	2130EST- 0030EST			0	0	5	?	Flash Flood
Crawford County County Wide	04 05	2130EST- 0030EST			0	0	5	?	Flash Flood
Knox County County Wide	04 05	2130EST- 0030EST			0	0	5	?	Flash Flood
Morrow County County Wide	04 05	2130EST- 0030EST			0	0	5	?	Flash Flood
Richland County County Wide	04 05	2130EST- 0030EST			0	0	5	?	Flash Flood

Heavy rains caused widespread flooding of basements, roads, and small streams.

Erie County County Wide	04 05	2245EST- 0145EST			0	0	5	?	Flash Flood
Huron County County Wide	04 05	2245EST- 0145EST			0	0	5	?	Flash Flood



# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons	Estimated Damage	Character of Storm
					Killed	Injured	Property Crops
<b>OHIO Cont'd</b>							
Cuyahoga County	04	2245EST-					
County Wide	05	0145EST			0	0	5 ? Flash Flood
Lorain County	04	2245EST-					
County Wide	05	0145EST			0	0	5 ? Flash Flood
Medina County	04	2245EST-					
County Wide	05	0145EST			0	0	5 ? Flash Flood
Heavy rains caused widespread flooding of basements, roads, and small streams.							
Cuyahoga County	05	0000EST-					
Old Portage	05	0600EST			0	0	5 ? Flood
The Cuyahoga River exceeded flood stage of 9 feet at Old Portage. Crest stage was 9.4 feet and occurred at 0400EST on January 5.							
Delaware County	05	0016EST-					
County Wide	05	0415EST			0	0	5 ? Flash Flood
Madison County	05	0016EST-					
County Wide	05	0415EST			0	0	5 ? Flash Flood
Marion County	05	0016EST-					
County Wide	05	0415EST			0	0	5 ? Flash Flood
Union County	05	0016EST-					
County Wide	05	0415EST			0	0	5 ? Flash Flood
Heavy rain caused widespread flooding of basements, roads and small streams.							
Huron County	05	0400EST-					
Milan	06	0600EST			0	0	5 ? Flood
The Huron River exceeded the flood stage of 14.0 feet at Milan. Crest stage was 17.8 feet and occurred at 1000EST on January 5.							
Cuyahoga County	05	0400EST-					
Independence	05	0600EST			0	0	5 ? Flood
The Cuyahoga River exceeded flood stage of 16 feet at Independence. Crest stage was 16.2 feet and occurred at 0530EST on January 5.							
Marion County	05	0500EST-					
LaRue	06	1530EST			0	0	5 ? Flood
The Scioto River exceeded the flood stage of 11 feet at LaRue. Crest stage was 12.3 feet and occurred at 2045EST on January 5.							
Henry County	05	0600EST-					
Napoleon	07	1400EST			0	0	5 ? Flood
The Maumee River exceeded the flood stage of 12 feet at Napoleon. Crest stage was 13.8 feet and occurred at 0700EST on January 6.							
Wood County	05	0600EST-					
Grand Rapids	07	1100EST			0	0	5 ? Flood
The Maumee River exceeded the flood stage of 15.0 feet at Grand Rapids. Crest stage was 16.3 feet and occurred at 0700EST on January 6.							
Marion County	06	0500EST-					
Prospect	08	1130EST			0	0	5 ? Flood
The Scioto River exceeded the flood stage of 9.0 feet at Prospect. Crest stage was 10.3 feet and occurred at 0700EST on January 6.							
Pickaway County	06	0700EST-					
Circleville	07	0700EST			0	0	5 ? Flood
The Scioto River exceeded the flood stage of 14.0 feet at Circleville. Crest stage was 14.7 feet and occurred at 1400EST on January 6.							

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

## OHIO Cont'd

### OHZ005

West Central  
Counties

10	0300EST-								
10	1200EST				0	0	4	?	Heavy Snow

Three to five inches of snow fell north of I70. South of Interstate 70 snow and ice were common.

## OKLAHOMA

Most of  
Oklahoma  
Zones 4 > 20-  
26 > 33

01-	0000CST-								
02	1000CST				0	0	?	?	Ice

An upper level storm system brought sleet and freezing rain to much of Oklahoma on the 1st. Surface air temperatures were well below freezing so roads quickly became ice covered and dangerous. Roads remained ice covered until temperatures rose above freezing late in the morning on the 2nd. Numerous traffic accidents occurred and a few power outages were reported. In Oklahoma City, a 35-car pileup occurred around 2 a.m. on the 1st. A man was killed just west of Guymon when he lost control of his pickup and it collided with another vehicle. Near Durant, a woman lost her life when her vehicle slid off the road and hit a tree. Another woman lost her life in Oklahoma City when the car she was riding hit a semi-trailer. The car was then hit by another vehicle and burst into flames. In Pontotoc County, a man died after his car slid off the road and hit a tree. The storm also caused problems for those flying as two 737s slid off icy runways at Will Rogers Airport. Many other flights were either delayed or canceled.

Garfield County  
3 E Waukomis

03	1435CST								
					0	0	4	0	Lightning

Lightning struck an oil well tank battery 3 miles east of Waukomis. The fire spread to a nearby 18 foot wood and steel bridge. The well tank battery sustained considerable damage, while the bridge was completely destroyed. Cost of replacing the bridge was around \$11,000.

Northern  
Oklahoma  
Zones 1 > 10-26

08-	2000CST-								
10	1400CST				0	0	?	?	Heavy Snow Ice

Heavy snow, sleet and freezing rain fell on the 9th and 10th across the Oklahoma panhandle and in portions of northwest and north-central Oklahoma. Snow amounts of up to 8 inches occurred in the panhandle with snow amounts of up to six inches reported across portions of northwest and north-central Oklahoma. The snow and ice caused travel problems and resulted in several school closings. A man died just north of Turpin in the panhandle when his car slid across the road and was hit by another vehicle.

Northern and  
Central  
Oklahoma,  
Zones 4 > 11-14 > 16-  
26 > 32

11	0400CST-								
	1600CST				0	0	?	?	Ice

Sleet and freezing rain fell across northern Oklahoma and portions of central Oklahoma resulting in numerous minor traffic accidents.

Southwest, Central  
and Eastern  
Oklahoma  
Zones 12 > 16-18-  
27 > 32

14	0000CST-								
	1300CST				0	0	?	?	Snow

A relatively narrow band of light to moderate snow developed in southwest Oklahoma. The snow quickly spread northeast and accumulated up to three inches in places. Numerous minor traffic accidents were reported.

Northern and  
Central  
Oklahoma,  
Zones 4 > 11-14 > 16-  
26 > 30

17-	1800CST-								
18	1000CST				0	0	?	?	Snow and Ice

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed Injured	Estimated Damage Property Crops	Character of Storm
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## OKLAHOMA Cont'd

A major storm brought a wide variety of weather to northern Oklahoma. Precipitation started in the form of snow across northern Oklahoma and then ended as a period of sleet, freezing rain and freezing drizzle in north-central, northeast and central sections. Ice covered and hazardous roads resulted in numerous traffic accidents, especially in northwest and north-central Oklahoma. Some school closings were also reported. In Ponca City, a teenager died after his car slid into another vehicle.

North, West,  
and Central  
Oklahoma  
Zones 1 > 16-18-26 > 30

19- 0600CST-	20 0200CST				0 0	? ?	Snow and Ice
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A strong upper level storm brought snow and freezing rain to the panhandle and freezing rain and some sleet to most of northern, western and central Oklahoma. Up to five inches of snow fell in portions of the panhandle which resulted in some school closings. Accumulations of ice on trees and power line produced some power outages. Ice covered and hazardous roads resulted in numerous traffic accidents in the panhandle and in portions of northwest Oklahoma. A couple was killed near Watonga when their car slid into a pickup truck. In central and northeast Oklahoma, ice covered bridges and overpasses resulted in some minor traffic accidents.

McCurtain County  
10 N Broken  
Bow

23 1925CST					0 0 0	? ?	Hail (1.00)
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## OREGON

ZONES 01, 06,  
08-13

03- 1500PST-	04 1400PST						Heavy Snow
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The first of many heavy January snowstorms left up to 2 feet of snow in the Cascade Mountains, eight inches in Coastal Mountain passes and three to ten inches of snow east of the Cascades.

ZONES 01, 04,  
05-08, 13

04- 2200PST-	05 1200PST						Heavy Snow
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The Cascades were blanketed with up to 2 feet of snow, the coastal mountains received six inches, and Southwestern and North Central Oregon got one to six inches of new snow. Up to four inches of snow fell in the Portland area hills.

ZONE 07

06- 1600PST-	07 2100PST						High Wind
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Persistent surface high pressure east of the Cascades combined with a parade of storms moving out of the Gulf of Alaska along the Pacific coast created a very strong east to west pressure difference across the Cascades that resulted in east winds of up to 81 mph at Multnomah Falls in the Columbia River Gorge. The Columbia Gorge is the only sea level passage through the Cascades in Oregon and produces a venturi effect when cold air east of the Cascades is forced westward through the narrow Gorge towards lower pressure offshore. Extremely high east winds blew throughout almost all of January from near the eastern end of the Gorge into the Portland area at the western entrance to the Gorge.

ZONE 01, 04,  
06, 08-13

08- 0500PST-	09 0400PST						Heavy Snow
--------------	------------	--	--	--	--	--	------------

Another large storm from the Gulf of Alaska left 6 to 12 inches of snow in the Cascades and two to eight inches of snow in most of northern and eastern Oregon. The heavily populated Willamette Valley received two to five inches of snow, mostly in the south portion. The population center of Portland, however, was spared.

ZONE 07

12- 1400PST-	14 1900PST						High Wind
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Continued cold surface high pressure east of the Cascades and low pressure systems offshore resulted in east winds frequently gusting above 65 mph at Multnomah Falls in the Columbia Gorge and somewhat weaker east winds in much of northwestern Oregon.

ZONE 01,02,04,  
06-12

13- 2000PST-	14 2000PST						Snow Freezing Rain
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# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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## OREGON Cont'd

Freezing rain preceded snowfall in the central and southern Willamette Valley and high winds accompanying blowing snow in the Northeastern Mountains characterized this latest winter storm. Snowfall amounts were not as high as in previous storms (only about six inches) but two to six inches fell over most of the rest of the state.

ZONE 01-03, 10-11	19- 2200PST- 20 1300PST				0	6	0	6	High Wind
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A very powerful Pacific storm roared across Oregon with extremely high winds. The low pressure center moved northward just inland of the coast producing winds of up to 100 mph, blowing down thousands of trees and causing widespread power outages. One northwestern Oregon power company reported damages in excess of one million dollars from the storm. The Nehalem River valley in the northern Coast Range was hardest hit and strongest winds may have occurred in the mountains where there are no wind measuring instruments. Numerous homes and vehicles were damaged or destroyed by falling trees and an estimated 3 million dollars worth of trees, many old growth, were blown down on State Forest land. Gusts over 60 mph were common all along the coast and the highest reported gust was 98 mph near Tillamook. After the storm center moved northeastward into Washington State winds gusts were to 70 mph in Northeastern Oregon and up to a foot of snow fell in the Cascades.

ZONE 02, 03	21- 2200PST- 22 1000PST								High Wind
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The next Pacific storm caused sustained winds over 40 mph and gusts in excess of 60 mph along the Central and Southern Coast.

ZONE 01, 06-13	21- 2200PST- 22 2200PST								Heavy Snow
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Heavy winter snow storms continued with a foot and a half of new snow in the Cascades and three to ten inches in Eastern Oregon.

ZONE 06-12	23- 2200PST- 24 2200PST								Heavy Snow
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This was the last major snowstorm of a very snowy January. Snowfall amounts were generally three to six inches. The resulting mountain snowpack at the end of January was well above normal, especially east of the Cascades. Klamath Falls had just over 36 inches of snow for the month, making it the snowiest January since records began in 1949.

ZONE 07	30- 1000PST- 31 2400PST								High Wind
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After letting up late in the month, the east wind returned to the Columbia Gorge area. Frequent gusts above 60 mph were reported at Multnomah Falls.

## PENNSYLVANIA, Eastern

Lackawanna County Eynon	13 1430EST				0	1	4	0	Lightning
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Lightning struck in the yard of a house breaking an underground water main then traveling through the cellar and out the front of the house. Chunks of sod were blown all over the place with some on the house roof 80 feet away. The foundation of the house and garage were damaged and a wall was blown off the garage. The electric meter was found 100 feet from the house. The cover from the electrical service box was blown 20 ft of the basement and the rest of the box was disintegrated. The house and garage sustained considerable structural damage, including destruction of the electrical system. A metal fence in the back yard was cut in half. Windows and other parts of neighboring homes were damaged. A trailer in the rear of a neighbor's house had lights blown off the walls and pictures knocked to the floor. Electrical power was knocked out throughout the neighborhood. A next-door neighbor had all the circuit breakers fused in the main circuit breaker box. A 5-year-old boy who was in the garage workshop suffer minor injuries. He suffer burns on his neck as well as some slivers in his neck.

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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## PENNSYLVANIA, Western

<b>PAZ003-015</b> Western and Southwest	21	0800EST- 1100EST			0	0	?	0	Ice
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Icy roads created widespread accidents. Two people were killed in Allegheny County, attributed to the ice covered roads.

<b>PAZ004-005</b> <b>006-013-014</b> Northern North Central South Central and Laurel Mountains, and South Central	21- 22	1000EST- 0400EST			0	0	?	0	Ice
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Icy roads were widespread for several hours. Numerous vehicle accidents occurred. One person was killed in Franklin County, attributed to the ice covered roads. In northeast Somerset County, near Ogletown, trees were downed from the weight of the ice.

<b>PAZ002</b> Northwestern	25	0700EST			0	0	0	0	Heavy Snow
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Seven inches of snow at Conneautville.

## RHODE ISLAND

None reported.

## SOUTH CAROLINA

<b>SCZ001-002-003</b> <b>004-005-006-007</b> <b>008</b> Statewide	01- 31				0	0	6	7	Flooding
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The wetter than normal trend established earlier in the winter continued through January statewide. Charleston's monthly rainfall, 8.92 inches, was the largest on record for January since records began in 1738. Wet conditions interfered with soil preparation and other winter farm activities, construction and other outdoor businesses. Flooding was widespread across eastern South Carolina throughout the month. The Lower Santee River was above flood stage at Jamestown as the month began. The Little Pee Dee River reached flood stage at Gallivants Ferry on the 2nd, the Edisto River at Givhans Ferry on the 8th, the Pee Dee River at Pee Dee on the 8th, the Waccamaw River at Conway on the 10th, and remained above flood stage through the end of the month. Wet swamplands prevented the harvesting of timber with losses estimated to be more than 10 million dollars. In Colleton 188 residences were flooded with damages estimated 1.2 million dollars, in Dorchester County 7 mobile homes and 19 other homes were flooded. Other areas with substantial flooding damage was along the Edisto River from Orangeburg County southeastward; along the Waccamaw river in Horry and Georgetown Counties, along the Pee Dee and Little Pee Dee Rivers in northeastern South Carolina.

<b>Aiken County</b> Aiken	08	Morning			0	0	?	?	Flooding
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Flooding from a period of heavy rains closed nine area roads near Aiken. All Aiken County Schools closed early due to flooding.

<b>Oconee County</b> South of Mountains	11 12	1300EST- 0600EST			0	0	?	?	Flooding
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Prolonged moderate to heavy rains caused flooding primarily in Oconee County. Some small streams flooded yards and a few roads were closed. There was little if any significant damage. Water levels were very high in Greenville, Pickens and Spartanburg Counties but little flooding occurred. Reedy River in Greenville, Saluda River at Pelzer and Chappels crested near flood stage on the 12th.

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

## SOUTH CAROLINA Cont'd

Chester County Chester	21	Afternoon		0	0	?	?		Flooding
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Some streets in downtown Chester flooded. Several homes flooded and 1 family evacuated.

Orangeburg County Canaan Community Harleyville	24	1530EST			0	0	3	0	Hail (1.00) Thunderstorm Winds
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Thunderstorm accompanied by dime-size to quarter-size hail and strong winds blew roof off garage and damaged several roofs in the Canaan Community, trees downed near Providence.

Clarendon County 7 mi SSW Manning	24	1630EST			0	0	?	?	Hail (1.75)
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Golf-ball size hail reported in the Davis Station area.

## SOUTH DAKOTA

SDZ001 > 010 Northern SD	02- 03	0600CST- 1200CST			0	0	0	0	Heavy Snow
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Two to six inches of snow fell across northern South Dakota with an isolated report of nine inches at Faith.

SDZ001-002-006 > 009-013 > 015 Southwest half of SD	08- 09	0600MST- 2400MST			0	?	?	0	Heavy Snow
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A significant accumulation of fluffy snow fell on southwest South Dakota west of the Missouri River with accumulations of four to thirteen inches. Very icy roads, blowing snow, and severe cold contributed to more than 75 accidents in Rapid City alone where one foot of snow fell. Traffic accidents resulted in hospitalization of at least three people in the Rapid City, Sturgis, and Deadwood areas. Snowfall amounts included 14 inches at Keystone, 13.30 inches at Custer, 12 inches at Rapid City and Oelrichs, 10.80 inches at Mission, and 9 inches at Usta.

SDZ001 > 020 All of SD	11- 12	0900CST- 2400CST			0	?	?	0	Heavy Snow
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Widespread snow fell on South Dakota with the heaviest amounts of six inches or more in the north and east parts of the state. Snow, blowing snow, and icy roads caused hazardous travel and numerous traffic accidents resulting in several serious injuries. The combination of the cold and dampness was blamed for the derailment of a train near Beresford when the brakes of the train locked up resulting in three grain cars overturning and spilling 10,000 bushels of grain. Numerous public and sporting events were canceled and schools and offices closed in the state. Some heavy snow amounts included 12 inches at Bryant, 11 inches near Sisseton and Summit, 10 inches near Columbia, Gettysburg, and Clear Lake, and 8 inches at Chester, McLaughlin, and Eureka.

SDZ001 > 012 Northern SD and Northern Black Hills	22- 23	1800CST- 0900CST			0	0	0	0	Blizzard
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Snow and strong winds were reported up to 50 mph brought blizzard conditions to the northern half of South Dakota. Snowfall amounts were in the two to six inch range except for the northern Black Hills which received up to a foot of snow.

## TENNESSEE

Shelby County Memphis	24	0000CST			0	0	2	0	Thunderstorm Winds
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A few trees were knocked down.

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Property Damage	Crops	Character of Storm
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## TENNESSEE Cont'd

Fayette County La Grange	24	0100CST			0	0	2	0	Thunderstorm Winds
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Several trees were knocked down.

Hamilton County Chattanooga	24	0830CST			0	0	2	0	High Winds (G36)
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A few trees and power lines were knocked down.

Anderson County Oak Ridge	24	0900CST			0	0	2	0	Thunderstorm Winds
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Some trees fell on a few power lines.

Campbell County La Follette	24	0900CST			0	0	2	0	Thunderstorm Winds
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A few trees fell on power lines.

Loudon County Loudon City	24	0900CST			0	0	2	0	Thunderstorm Winds
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Some trees fell on a few power lines.

Roane County Eastern Roane County	24	0900CST			0	0	2	0	Thunderstorm Winds
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A few trees fell on some power lines.

## TEXAS, Panhandle

Zones 01, 03, 05, 06	01	0000CST- 1500CST			0	0	0	0	Ice Storm
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An ice storm crossed the Texas Panhandle on the first day of the year. Freezing rain and sleet accompanied the storm. Ice accumulated to thicknesses of one-quarter to one inch making travelling conditions extremely hazardous. Three persons were killed during the mid-morning hour in vehicle related accidents. A man and a woman were killed in Amarillo when they lost control of their vehicle on an ice covered overpass. Another man was killed in Hartley county when he lost control of his vehicle on an ice covered highway. Several persons were injured near Dalhart as a bus overturned on icy roads.

Zones 01 > 03	08- 09	2000CST- 0700CST			0	0	0	0	Heavy Snow
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A series of weather disturbance moved across the Texas Panhandle. Each disturbance produced an accumulation of snow across the region. Four to six inches of snow fell across the extreme northern Texas Panhandle. The snow made travel across the region extremely hazardous.

Zones 01 > 06	19	0600CST- 1500CST			0	0	0	0	Heavy Snow
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A Pacific winter storm system moved across the Southwest U.S. and into the Texas Panhandle. The system produced freezing rain and snow across the region. Ice accumulations of one-quarter to one-half inch were produced across the southern Texas Panhandle. These accumulations were followed by four to five inches of snow. Snowfall amounts of four to five inches were also observed across the northern Texas Panhandle. The snow and ice caused numerous traffic accidents and forced the closing of some schools.

## TEXAS, Northern

North Central Texas	31- 01	2100CST- 1030CST			2	1	0	0	Ice storm
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Light freezing rain and light freezing drizzle produced icing of bridges and overpasses from Abilene to Tyler. Two persons were killed and one other seriously injured in traffic related accidents.

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
<b>TEXAS, Northern Cont'd</b>									
Hundreds of cars were damaged.									
Western North Texas Zones 76-77-	01- 02	0000CST- 0700CST			0	0	?	?	Ice
									An upper level storm system brought freezing rain and some sleet to western portions of north Texas on the 1st. Surface air temperatures were well below freezing so roads quickly became ice covered and dangerous. Roads remained ice covered until temperatures rose above freezing early in the morning on the 2nd. Several traffic accidents occurred as a result of the storm.
Bowie County	04	0330CST- 1045CST			0	0	2	0	Flash Flooding
									General rainfall of 3-4 inches caused minor flooding with damage to washed out roads.
Smith County	04	0410CST	Short 50-100		0	0	5	0	Tornado
									Numerous trees and power lines were downed. One mobile home and three houses were near Sand Flat.
Smith, Anderson Henderson, Wood Wood, Upshur, Camp Counties	04	0645CST- 1400CST			0	0	3	0	Flash Flooding
									Numerous county roads were closed due to high water.
Western North Texas Zones 76-77	19	1100CST- 2200CST			0	0	?	?	Ice
									A strong upper level storm brought freezing rain and some sleet to western portions of north Texas. Ice on bridges and overpasses resulted in several traffic accidents.
Panola, Rusk Shelby Counties	19- 20	2312CST- 0315CST			0	0	3	0	Flash Flooding
									General rain in the 2-3 inch range caused secondary roads to be closed due to high water.
North Central Texas									On the evening of the 23rd a line of thunderstorms developed across the Dallas/Fort Worth metroplex ahead of a cold front. The storms intensified and became severe across east and southeast parts of the metroplex eastward across northeast Texas. Widespread wind damage was reported across these areas...with sporadic hail reports.
Lamar Counties 11 SE Paris	23	1830CST			0	0	3	0	Thunderstorm Winds
									Power lines were downed by high wind.
Red River County Negley	23	1845CST			0	0	0	0	Hail (0.75)
Hunt County Greenville	23	1845CST			0	0	0	0	Thunderstorm Winds (G63)
Ellis County Waxahachie	23	1900CST			0	0	1	0	Thunderstorm Winds
									Trees and one awning were blown down.
Hunt County	23	1915CST			0	0	3	0	Thunderstorm Winds
									Roof damage occurred in the southwest part of county.
Kaufman County	23	1915CST			0	0	3	0	Thunderstorm Winds
									A barn was damaged near the Hunt county line.



## Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
<b>TEXAS, Northern Cont'd</b>									
<b>Rockwall County</b>									
<b>Rockwall</b>	23	1915CST			0	0	3	0	Thunderstorm Winds
									Road signs were blown down.
<b>Navarro County</b>									
<b>12 W Corsicana</b>	23	1930CST			0	0	1	0	Thunderstorm Winds
									A utility pole was blown down.
<b>7 E Corsicana</b>	23	1945CST			0	0	3	0	Thunderstorm Winds
									Large tree limbs down damaged roofs.
<b>Hopkins County</b>									
<b>Peerless</b>	23	1950CST			0	0	3	0	Thunderstorm Winds
									Power lines were downed.
<b>Titus County</b>									
	23	2000CST			0	0	4	0	Thunderstorm Winds
									Three mobile homes were blown over on FM 1000.
<b>Morris County</b>									
	23	2000CST			0	0	2	0	Thunderstorm Winds
									Trees were blown down across the county.
<b>Franklin County</b>									
	23	2005CST			0	0	2	0	Thunderstorm Winds Hail (0.75)
									Three quarter inch hail was reported from various sections across the county. Extensive tree damage occurred from high thunderstorm wind.
<b>Camp County</b>									
<b>Pittsburg</b>	23	2010CST			0	0	2	0	Thunderstorm Winds
									Power lines were downed.
<b>Wood County</b>									
<b>Yantis</b>	23	2015CST			0	0	2	0	Thunderstorm Winds
									Trees were downed.
<b>Upshur County</b>									
<b>18 E Quitman</b>	23	2030CST			0	0	2	0	Thunderstorm Winds
									Trees were downed.
<b>Cass County</b>									
<b>Linden</b>	23	2030CST			0	0	3	0	Thunderstorm Winds
									Trees and power lines were downed.
<b>Douglasville County</b>									
<b>Marion</b>	23	2048CST			0	0	?	?	Hail (1.00)
<b>5 E Jefferson</b>	23	2100CST			0	0	3	0	Thunderstorm Winds
									Trees and power lines were downed on highway 47.
<b>Bowie County</b>									
<b>2 S Hooks</b>	23	2103CST			0	0	?	?	Hail (0.75)
<b>3 SW Red Water</b>	23	2130CST			0	0	?	?	Hail (1.75)
<b>Rusk County</b>									
	23	2140CST			0	0	3	0	Thunderstorm Winds
									Trees and power lines were downed between Henderson and Overton.
<b>Panola County</b>									
<b>Murval Lake</b>	23	2210CST			0	0	2	0	Thunderstorm Winds

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

## TEXAS, Northern Cont'd

Trees were downed on Highway 333.

Shelby County 3 SW Shelbyville	23	2301CST			0	0	?	?	Hail (1.75)
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Car windows were broken out.

8 SW Center	23	2312CST			0	0	?	?	Hail (1.00)
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## TEXAS, Southern

Cameron County Brownsville	22	1202CST			0	0	0	0	Hail (1.00)
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Pea to quarter-size hail was reported in Brownsville near the Airport.

Fayette County Cistern	23	2240CST			0	0	0	0	Hail (0.75)
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Dime-size hail was reported by a rainfall observer.

## TEXAS, Western

South Plains TXZ007>012	01	0000CST- 0830CST			0	0	4	0	Ice Storm
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The ice storm which began on the evening of December 31 continued through the early morning of January 1. Ice accumulations were over 1/2 inch on exposed surfaces. The weight of the ice broke tree branches and power lines in Lubbock, Hale Center, Levelland, and Littlefield. Numerous traffic accidents resulted, but no casualties were directly attributable to the storm.

South Plains and Permian Basin TXZ007>016	10- 11	1330CST- 0900CST			0	0	3	0	Freezing Rain
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Widespread light freezing rain fell across the South Plains and Permian Basin from the afternoon of the 10th through the morning of the 11th. While the freezing rain itself did little damage, the slick roads resulting from the ice caused nearly 150 minor traffic accidents in the Lubbock and Midland/Odessa areas.

## UTAH

UTZ010	02- 03	0200MST- 0500MST			0	0	0	0	Heavy Snow
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UTZ001-002- 003	02- 03	0530MST- 0000MST			0	0	0	0	Heavy Snow
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UTZ011	02- 03	1100MST- 0500MST			0	0	0	0	Heavy Snow
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UTZ006-007	02- 03	1200MST- 0000MST			0	0	0	0	Heavy Snow
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UTZ004-005	02- 03	1300MST- 0200MST			0	0	0	0	Heavy Snow
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A strong, cold Pacific storm system brought heavy snow to all of Utah's mountains and to valley locations in the western and northeastern portions of the state. The cold front that ushered in the heavy snow moved into northwest Utah during the early morning hours of the 2nd. The northern mountains received twelve to thirty-three inches while the southern mountains picked up nine to seventeen inches. The northwest valleys had a wide range of amounts. This range was from five to twenty-one inches. Southwest valley locations had five to nine inches. Valley locations in the northeast received four to five inches. In the urban areas of the northwest, there were numerous minor accidents or fender benders. Bus and mail service was also disrupted.

## Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
<b>UTAH Cont'd</b>									
UTZ011	06-08	1600MST-1500MST			0	0	0	0	Heavy Snow
UTZ002	06-08	1800MST-0800MST			0	0	0	0	Heavy Snow
UTZ003	06-10	1800MST-0800MST			1	18	7	0	Heavy Snow
UTZ010	07-08	0500MST-0500MST			0	0	2	0	Heavy Snow
UTZ003	07-07	1800MST-2200MST			0	0	0	0	Ice Storm

Disturbances embedded in a moist west to southwest flow aloft brought snow to most of Utah. The heaviest amounts occurred in the mountains and northwest valleys. The southern mountains received one to two feet while the northern mountains received up to sixteen inches. Zone two picked up six inches. The amounts in zone three ranged from a foot to around two and a half feet. During the evening of the 7th, freezing rain fell in Utah County. Ice accumulation reached up to a half inch. No damage occurred as a result of the freezing rain.

However, that was not the case with the heavy snow. The snowfall and the resulting slick roads caused numerous problems and a great deal of damage. The heavy snowfall caused many avalanches. Most of the avalanches were not very large, and caused little damage. Their main effect was to close roads and strand people in mountain locations. Hundreds of accidents occurred in the urban areas of northwest Utah. Most accidents were minor, but several accidents caused numerous injuries and a single death. Most of the injuries were minor. The age of the man killed was not available. The Utah Highway Patrol had 17 patrol cars damaged by accidents. The weight of the snow caused roofs and carports of numerous homes, businesses, and apartment complexes to collapse. Cars were also damaged when the carports gave way. One person received minor injuries when a roof collapsed. The snowfall only caused spotty and minor power outages. The heavy snowfall and blowing snow closed many roads. Bus and mail service was also disrupted. Damage estimates have been in the millions of dollars. Most of the damage was due to the collapse of roofs. (MNAV)

UTZ010	09-11	0500MST-1800MST			0	0	0	0	Heavy Snow
UTZ008-011	10-11	0500MST-1000MST			0	0	0	0	Heavy Snow
UTZ001-002-003-005-006-013	11-11	0200MST-1400MST			0	1	2	0	Heavy Snow

The moist westerly flow mentioned in the previous entry continued to bring snow to most of the state. The snowfall that began on the 6th was nearly continuous through the 11th. However, the snowfall was not heavy the entire period. Many locations experienced the heavy snowfall at different times due to local terrain effects. That is the reason there were two separate entries made. This last period of heavy snowfall was ushered in by a cold front. The northern mountains received forty-five to sixty inches while the southern mountains picked up sixteen to twenty-seven inches. Valley locations received five to twelve inches. The snowfall aggravated an already serious situation in the northwest portion of the state. The additional snowfall caused more avalanches. No damage was caused by the avalanches. The avalanches, snowfall, and blowing snow closed many roads in the area. Numerous minor accidents occurred in the urban areas of the northwest portion. However, only one injury was caused. No additional roof collapses were reported. This last round of heavy snowfall brought all of northwest Utah to a standstill. City, county, and state governments were forced to shut down on the 11th. A majority of the schools and businesses also closed. The governor declared a state of emergency in Salt Lake County, and he activated the Utah National Guard to assist in snow removal.

UTZ006-007-010	13	0500MST-1200MST			0	0	0	0	Heavy Snow
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A disturbance moving through in a moist southwest flow brought heavy snow to portions of the northern mountains and southwest valleys. Mountain locations that favor a southwest flow received up to eight inches while valley areas picked up four to five inches.

## Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
<b>UTAH Cont'd</b>									
UTZ003	13-14	2100MST-0000MST			0	0	0	0	Ice Storm
									Freezing rain developed in Utah County during the evening hours. This caused numerous accidents involving 200 vehicles. One major accident included 52 vehicles on Interstate 15. The accidents were minor, and resulted in no serious damage.
UTZ001-002-003	14-15	2200MST-0000MST			0	0	0	0	Ice Storm
									Freezing rain developed over many locations in the northwest valleys. Even though the freezing rain was widespread, accumulations were light. Many minor accidents did occur.
UTZ010	16	0500MST-1800MST			0	0	0	0	Heavy Snow
									A moist southwest flow brought rain and snow to the entire state. The northern mountains received a foot.
UTZ011	18-19	1100MST-0900MST			0	0	0	0	Heavy Snow
									A moist southerly flow brought rain and snow to all of Utah. The heaviest snowfall was in the southern mountains. Amounts were in the eight to sixteen inch range.
Washington County	18	1200MST-2100MST			0	0	5	0	Flash Flood
									Heavy rainfall caused flash flooding of the Santa Clara River below the Gunlock dam. The town of Santa Clara, downstream from the dam, had to do some sandbagging. Roads close to the river were flooded. The flash flooding damaged a golf course and the sewer line. Sixty thousand dollars of damage was done to the golf course and sewer line.
UTZ003-010	22	0800MST-2000MST			0	0	0	0	High Winds
									Very strong and gusty winds preceded and followed a cold front that moved through northern Utah. Gusts in the valley locations were in the 60s. In the northwest mountains, gusts ranged from 80 to 100 mph. Even though no damage was caused in the northwest mountains, the winds did create blizzard conditions.
UTZ010	24	0500MST-1200MST			0	0	0	0	Heavy Snow
									An upper level disturbance embedded in a moist northwest flow caused a short, intense period of heavy snowfall in the northwest mountains. Amounts received were nine to ten inches.
UTZ011	29	2000MST-2400MST			0	0	0	0	Heavy Snow
UTZ013	29	2100MST-2400MST			0	0	0	0	Heavy Snow
UTZ009	30-31	0800MST-0800MST			0	0	0	0	Heavy Snow
UTZ003	30	0830MST-1300MST			0	0	0	0	High Winds
UTZ006	30	1100MST-2400MST			0	0	0	0	Heavy Snow
UTZ005	31	1000MST-2400MST			0	0	0	0	Heavy Snow
									A moist, upper low over the southern Great Basin brought heavy snow to most of southern and eastern Utah. The heaviest amounts were in the southern mountains and south central valleys because of a favorable southerly flow and slow movement of the upper low. The southern mountains received nineteen to thirty-seven inches while the south central valleys picked up sixteen to thirty-four inches. The south central valley locations that did not snow as long as the locations previously mentioned received up to a foot. The higher valleys of southwest Utah in zone six received seven to fifteen inches. The higher elevations of zone nine in extreme southwest Utah

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Number of Persons Injured	Estimated Damage Property	Estimated Damage Crops	Character of Storm
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## UTAH Cont'd

received nine to twelve inches. No damage occurred in all of the above mentioned locations, but most of the area was brought to a standstill. In fact, counties in the south central portion of the state did not have the resources to remove so much snow. Zone five in the east central portion received seven to ten inches. The heavy snow continued into the first of February in all locations except for zone nine. Therefore, the end of this storm will be continued in the next report. Because of the location of the upper low, gusty easterly canyon winds developed along the Wasatch Front. Gusts were in the 60 to 70 mph range. These winds caused blowing and drifting snow near the canyons.

## VERMONT

Statewide

03	1300EST- 2200EST				0	0	5	0	Freezing Rain
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A combination of a cold surface and warm moist air aloft created freezing rain and freezing drizzle which resulted in numerous traffic accidents across the state. Since the freezing precipitation was very light many motorists were unaware that the roadways were covered with a thin sheet of ice until it was too late to slow down.

Orleans County

05	1800EST- 2030EST				0	0	5	0	Flash Flood
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An ice jam caused flooding along the Black River in Coventry. Damage was confined to 6 homes and a business and forced the closure of the old section of Route 5 leading into the village.

Statewide

13 14	0100EST- 0400EST				0	0	5	0	Heavy Snow
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A low pressure system which moved east from the eastern Great Lakes and a second low pressure system which formed along the Middle Atlantic Coast and moved northeast brought heavy snow to much of Vermont. Snowfall amounts across the state ranged from six to sixteen inches; with 16 inches at Island Pond, 12 inches at Rochester, 11 inches in Danville, 10 inches at Newport and Montpelier and 9 inches at Burlington. Many traffic accidents occurred across the state.

VTZ004-005

24	0545EST- 0800EST				1	0	4	0	High Winds
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A strong pressure gradient developed across eastern Vermont on the morning of January 24th resulting in high winds in the Connecticut River Valley. In the Northeast Kingdom of Vermont around 100 customers were left without power as trees fell on powerlines. In Springfield a man died when the car he was riding in was pushed off the road by the high winds. (M31V)

VTZ001-002-  
003-005

31	0000EST- 2100EST				0	0	4	0	Heavy Snow
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An Alberta Clipper moved across northern Vermont on the 31st of January as a second low pressure system developed along the New England Coast. As a result heavy snow fell across much of Vermont with amounts ranging from six to sixteen inches. Some snowfall amounts included 15.5 inches at Bethel, 13.0 inches at Brookfield, 11.5 inches at Ludlow, and 8.5 inches at Marshfield.

## VIRGINIA

Henry County

04 05	2330EST- 0300EST				0	0	0	0	Heavy Rain
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Between two and forth to two and one half inches of rain fell in the county and caused many creeks and streams to become full.

VAZ003,004,006  
007

05	0700EST- 1000EST				0	0	0	0	Heavy Rain
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Heavy rain during the early morning dumped around 1.50 inches of rain. This caused water to pond on roads and highways and lead to several automobile accidents.

VAZ005,008 > 012,  
017,018

09 10	0030EST- 2230EST				0	0	0	0	Freezing Rain
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Two to three inches of snow fell in Clarke and Western Loudoun counties. Sleet and freezing rain caused a number of traffic accidents throughout the area including a 10 car pileup in

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
<b>VIRGINIA Cont'd</b>									
									Fredericksburg. Ice buildup on power and phone lines caused some outages in Stuart.
VAZ002,003,007 008	10 11	0100EST- 1300EST			0	0	0	0	Minor Flooding
									Several days of rain lead to minor flooding of some rivers and streams which closed several roads in the South Boston and Portsmouth areas.
VAZ013,014	13	1300EST			0	0	4	0	Wind
									A cold front moved through the area and was followed by strong gusty winds. The winds did mostly minor damage in the area. However, a building under construction collapsed in Roanoke due to the winds and the building being weakened due to the construction.
VAZ011 > 013	21	0500EST- 1400EST			0	0	0	0	Freezing Rain
									Freezing rain made slick driving conditions and caused numerous vehicle accidents. One woman was killed and 13 other people were injured in a 7 car pileup on Interstate 64 near Waynesboro.
VAZ005,017	21	0900EST- 1800EST			0	0	0	0	Freezing Rain Sleet
									Light freezing rain and sleet caused slick roads and a number of accidents in the area.
Western VA	31	1500EST- 2400EST			0	0	4	0	Wind
									Strong winds whipped the area doing little or no damage in most areas. However, in Bedford County part of the roof of a school gymnasium was ripped off.
<b>WASHINGTON</b>									
Whatcom County	02 04	2000PST- 0800PST			0	0	?	0	Heavy Snow
									Heavy snow fell across Whatcom county. In a 36 hour period Maple Falls received 19 inches of snow, Glacier 15 inches, Acme and Lynden 10 inches and Bellingham 6 inches. Eight hundred homes in mainly the eastern and southern parts of the county experienced power outages.
Spokane County	03 04	1000PST- 0600PST			0	0	0	0	Heavy Snow
									Eight inches of snow fell at Spokane.
Okanogan County	06	Early Morning			1	0	0	0	Cold
									An elderly man died of hypothermia outside his home in Tonasket as nighttime temperatures in the area fell to a minus 15 degrees Fahrenheit.(M87O)
Benton County	08	0300-Midnight			0	0	0	0	Heavy Snow
									Seven inches of snow fell at Hanford.
Douglas County	08	Evening			0	0	5	0	Heavy Snow
									Five inches of snow fell during the day and evening causing the roof of the Appleatchee Riders Arena in East Wenatchee to collapse.
Chelan and Douglas Counties	18 19	Afternoon- Morning	0		4	5	0		Heavy Snow
									Twenty-two accidents were reported in Wenatchee Valley due snow.
Puget Sound WAZ001	19	0420PST- 0830PST			2	5	5	0	Freezing Rain

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed Injured	Estimated Damage Property Crops	Character of Storm
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## WASHINGTON Cont'd

Intermittent freezing rain fell in mainly the Puget Sound region resulting in over 30 traffic accidents in Pierce, King and Thurston counties. Two people were killed in two separate accidents due to the icy conditions.(M30V)(M41V)

Western Wa. WAZ001-005,011	20	0430PST- 1300PST			5 31	8 3	High Wind
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The most damaging storm in over a decade hit western Washington the morning of the 20th. The 978 mb low pressure center moved onto the southern Washington coast between 0600PST and 0700PST, then inland across Puget Sound and the northwest interior before exiting into British Columbia by afternoon. Near the mouth of the Columbia River wind gusts 75 to 85 mph were recorded between 0430 and 0630 with gusts reaching 98 mph at Cape Disappointment. As the storm moved northeast very strong south winds developed in the Puget Sound region between 0800PST and 1100PST with most locations reporting peak wind gusts between 60 and 70 mph. Five people were killed in King county because of the storm. Three people were killed by falling trees, one man died when a tree hit a power line which fell and electrocuted him and a man died of a heart attack while clearing downed trees. There was extensive damage with trees being blown down, downed power and telephone lines, damaged residences and businesses, streets and roads being blocked by fallen trees. Both floating bridges across Lake Washington were closed temporarily because of unusually high waves and the Evergreen Point Floating Bridge sustained 500,000 dollars damage. States of emergency were declared by Seattle, Bellevue, Auburn, Renton, Normandy Park and the counties of King, Lewis, Thurston, Wahkiakum and Snohomish. Outages were widespread with over 750,000 customers in Puget Sound losing power. Seventy-nine homes were destroyed, 581 homes suffered major damage and 1702 had minor damage in mainly King, Snohomish, Kitsap and Pierce counties. Total damage for the storm was estimated at 130 million dollars. (M04O)(F53O)(M36O)(M19V) (M32O)

Spokane County	20	0800PST			0 0	4 0	Heavy Snow
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A weather spotter reported his carport and garage had collapsed due to heavy snow.

Puget Sound NW Interior WAZ001,002	25	All Day			0 0	4 0	Flood
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Rainfall amounts of three to five inches were reported from around Snoqualmie Pass northward along the west slopes of the Cascades. Heavy rains combined with warming caused melting of the low level snow pack resulting in rapid rises in river levels in the western Washington interior.

Snohomish County	25	1700PST-			0 0	4 0	Flood
	26	1100PST			0 0	4 0	Flood

The Snohomish River at Snohomish crested at 26.9 feet at midnight. This is 1.9 feet above flood stage.

King County	25	1800PST-			0 0	4 0	Flood
	26	1300PST			0 0	4 0	Flood

The Snoqualmie River at Carnation crested at 55.4 feet at 0700CST on the 26th. This is 1.4 feet above flood stage.

## WEST VIRGINIA

WVZ002-004-007	04	1300EST- 1600EST			0 0	0 0	Record Heat
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Afternoon temperatures rose into the mid 60s over the southern mountains. Reading of 70 to 75 degrees were registered in the western river valleys.

WVZ001-005- 008-009	21	0600EST- 0900EST			0 0	4 0	Freezing Rain
WVZ010-11	21	0800EST- 1500EST			0 0	0 0	Freezing Rain

Freezing rain fell in the valleys of the northern lowlands and across sheltered mountain valleys. The precipitation began just as the early morning commute was starting. Numerous accidents occurred and schools were closed. The freezing rain affected the eastern panhandle later in the day.

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

## WEST VIRGINIA Cont'd

WVZ010 Potomac Highlands	31	1000EST- 1400EST			0	0	3	0	High Wind
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Wind gusts of 50 to 60 MPH were reported around Petersburg. Several camper trailers were overturned and damaged.

WVZALL  
Statewide

01- 31					0	0	0	0	Below normal snowfall and above normal temperature
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Less than an inch of snow fell the entire month for most of the lowlands. Even over the northern mountains, snow totals were mostly 6 inches or less. Beckley had their least amount of January snow since 1950, with only 0.4 inches measured.

Monthly average temperatures were 7 to 9 degrees warmer than normal. One state ski resort was closed from the 8th to the 15th.

## WISCONSIN

WIZ009-013- Kewaunee and Manitowoc Counties	09	Morning- Late Evening			0	0	0	0	Heavy Snow
---	----	--------------------------	--	--	---	---	---	---	------------

Intense snow squalls along the Lake Michigan shoreline dumped up to a foot of snow over southern Kewaunee and northern Manitowoc counties. A foot snow was measured at Tisch Mills (Kewaunee County) as well as Mishicot and Kellnersville (Manitowoc County) and 6 inches fell at Kewaunee (Kewaunee County).

WIZALL-  
Statewide

13- 14	Morning- Afternoon				0	0	?	0	Heavy Snow
-----------	-----------------------	--	--	--	---	---	---	---	------------

A storm system deposited from six to thirteen inches of snow over the entire state. In the far south, the snow mixed with sleet and freezing rain. Numerous schools were closed and sport activities canceled. Many traffic accidents occurred as well. Snow amounts included 13 inches at Ettrick (Trempealeau County), 12 inches at Prairie du Chien (Crawford County), Melrose and Black River Falls (Jackson County) and Alma (Buffalo County) and 11 inches at Fond du Lac (Fond du Lac County), Victory and Viroqua (Vernon County), Sparta (Monroe County), Baldwin (Pierce County) and Kiel (Manitowoc County).

WIZ001-002-003-  
004-  
Northwest  
Wisconsin

23	Morning- Evening				0	0	?	0	Heavy Snow
----	---------------------	--	--	--	---	---	---	---	------------

A snowstorm dropped between six and ten inches of snow across northwest Wisconsin. Ten inches of snow fell at Superior and Poplar (Douglas County) and Washburn (Bayfield County) with 9 inches being measured at Drummond (Washburn County).

## WYOMING

WYZ01-02	01	1600MST- 0600MST			0	0	0	0	Heavy Snow
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Up to sixteen inches of new snow was reported at the west entrance to Yellowstone Park during the night. The snow ranged down to five inches at the south entrance.

WYZ63 > 65	02	0500MST- 1000MST			0	0	0	0	High Winds
------------	----	---------------------	--	--	---	---	---	---	------------

High winds of 40 to 50 miles an hour were common to south central Wyoming during the morning. The winds at Arlington gusts were up to 74 miles an hour.

WYZ08-09	08	0600MST- 2000MST			0	0	0	0	Heavy Snow
----------	----	---------------------	--	--	---	---	---	---	------------

Residents of Jackson awoke to six inches of new snow. More snow was noted in nearby mountains.



# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
<b>WYOMING Cont'd</b>									
WYZ29-30	09	0800MST- 0700MST			0	0	0	0	Heavy Snow
A strong winter storm moved into the southwest corner of the state and brought up to a foot of snow to Evanston.									
WYZ29 > 35	10	0700MST- 0700MST			0	0	0	0	Heavy Snow
A moist winter storm continued to engulf southwest Wyoming during the day and night. Snow amounts included ten inches in Rock Springs and six to eight inches additional snow in the Evanston area. South Pass City collected 4.50 inches of new snow. Interstate 80 in southwest Wyoming was closed most of the day.									
WYZ08-09-24	11	0100MST- 0920MST			0	0	0	0	Heavy Snow
Four to six inches of snow was reported from Jackson. More snow was noted in the nearby mountains.									
WYZ64 > 67, 69 > 71	20	1200MST- 2200MST			0	0	0	0	High Winds
Winds of 35 to 45 miles an hour were common to southeast Wyoming over and near the mountains. Wind gusts were up to 70 miles an hour were reported 12 miles south of Wheatland. No injury or damage was reported.									
WYZ65 > 73	21	0200MST- 0900MST			0	0	0	0	High Winds
Strong and gusty winds were noted during the early morning hours. Wind gusts at the Cheyenne Airport gusts were up to 72 miles an hour. Winds on the summit between Cheyenne and Laramie were recorded up to 66 miles an hour. Several trucks were blown over before roads in and out of Cheyenne could be closed.									
WYZ01-02-08-09, 23 > 25, 29-30	22	0900MST- 1700MST			0	0	0	0	Heavy Snow
A storm from the west brought a good deal of snow to the western portion of the state. The Targhee Mountains reported the most snow with eighteen to twenty-four inches. Jackson logged six to eight inches and Evanston reported anywhere from six to ten inches. Afton along with the lower elevations of Yellowstone Park noted five to six inches of snow.									
WYZ15-63-64-65- 66-67-71-72-73	22	1400MST- 2100MST			0	0	0	0	High Winds
Strong and gust winds buffeted southeast Wyoming during the afternoon and evening hours. Wind gusts of over 60 miles an hour occurred in numerous locations. No reports of injuries or damage.									
WYZ64-65	23	0900MST- 1300MST			0	0	0	0	High Winds
Wind gusts to 63 miles an hour were reported near Elk Mountain on the north end of the Snowy Range Mountains.									
WYZ64-65	25	0030MST- 0400MST			0	0	0	0	High Wind
Strong and gusty winds were noted through the early morning hours on the north end of the Snowy Range Mountains. Wind gusts to 64 miles an hour were reported at Arlington.									
<b>ALASKA, Northern</b>									
Kuskokwim Valley	01	1730AST			0	0	?	0	Heavy Snow
A low pressure area that moved just northwest of McGrath brought eight to twelve inches of snow to the Kuskokwim Valley in less than 12 hours.									

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
<b>ALASKA, Northern Cont'd</b>									
Kodiak Island Prince William Sound and the Copper River Delta	02				0	?	?	0	High Winds
High pressure building over the Alaska mainland and a persistent low over the north central Gulf of Alaska caused north to northwest winds to gust to more than 75 mph in places from Kodiak Island to the Copper River Delta east of Cordova Saturday afternoon and evening.									
Alaska Peninsula Eastern Aleutians	03				0	?	?	0	High Winds
A strong pressure gradient between a developing low over the western Aleutians near Shemya and building high pressure over the Alaska mainland brought Winds gusts of 70 to 80 mph to the eastern Aleutians and the Alaska Peninsula. The strong winds caused a factory trawler to collide with another vessel at the Unalaska Marine Center leaving a 4 by 6 ft. hole in the second ship.									
Aleutians	05				0	?	?	0	High Winds
A vigorous storm brought wind gusts to 70 mph to much of the Aleutians.									
Eastern Aleutians Alaska Peninsula Yukon Kuskokwim Delta	13				0	?	?	0	High Winds
A strong weather system in the Bering Sea brought wind gusts to 75 mph to the Alaska Peninsula and to between 60 and 65 mph to the Yukon Kuskokwim Delta. The strong winds in Captains Bay caused a ship to break free from its anchor. It later grounded on a shallow reef with minor damage.									
Alaska Peninsula	13								<b>Record High Temperatures</b>
Fifty one degrees recorded at Cold Bay set a new record high for the month of January. The old record of 50 was set just 13 days ago on January 1st, 1993 and in 1973.									
Prince William Sound	16- 18				0	?	?	?	Heavy Snow
Two weather systems buried the city of Valdez with over forty inches of snow during a 30 hour period. At times snow fell at a rate of 4 inches per hour. From 0300AST on the 16th to 2000AST on the 17th over forty four inches of snow was recorded. By 0800AST on the 18th, 56 inches had fallen resulting in a snow load of about 45 pounds per square foot. The storm total from 0300AST on the 16th to 1230AST on the 18th was 57.0 inches. During the same period 45.1 inches of snow fell on Cordova Airport collapsing a hanger that damaged 4 airplanes and 2 boats that were stored inside.									
Pribilofs	23				0	0	0	0	Blizzard
Northeast winds of 30 to 40 mph reduced visibilities to .25 mile or less in blowing snow for about a 6 hour period.									
Yukon Kuskokwim Delta	23 26				0	?	?	0	Wind Chill
Northeast winds of 25 mph combined with a temperature of minus 25 to produce dangerous wind chills that ranged between 70 and 90 degrees below zero for a three day period.									
Bristol Bay	25- 26				0	?	?	0	Heavy snow
Twelve inches of snow fell at the King Salmon airport in a 24 hour period ending at 1300AST on the 26th.									
Kuskokwim Valley	28	1500							<b>Record Snowfall</b>
Through 1500AST on the 28th 41.6 inches of snow had fallen at McGrath. The previous January snowfall record was 39.0 inches set in 1960.									

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
<b>ALASKA, Northern Cont'd</b>									
Yukon Kuskokwim Delta Kuskokwim Valley	30- 31				0	?	?	0	Wind Chill
			Twenty mph northeast winds and 20 to 25 below temperatures resulted in wind chills of 65 to 75 below in the Bethel area.						
Kodiak Island South Central Alaska	31				0	?	?	0	High Winds Low Wind Chills
			A strong ridge of high pressure over the eastern Bering Sea pushed very cold air into the Kodiak Island area and western south Central Alaska resulting in strong north to northwest winds and very low wind chill temperatures. Winds gusts were record to 75 mph with wind chill temperatures to 50 below occurred in the city of Kodiak during the evening. Eastward over the Kenai Peninsula wind gusts of 40 mph had produced wind chill temperatures near 45 below. In the Anchorage Bowl below zero temperatures coupled with north winds up to 25 mph resulted in wind chill temperatures to 50 below during the evening. Further north along the Broad Pass area of the Parks Highway winds gusts were reported to 45 mph reduced visibilities in snow and blowing snow and produced dangerously low wind chill temperatures to 90 below zero.						
<b>ALASKA, Southern</b>									
AKZ03,07,08,04	01-04								Heavy Snow
			A large storm near Shemya, 982 mb in depth, moved northeastward to St. Lawrence Island on the 4th. Associated moist southwesterly flow over the interior brought up to ten inches of snow to the and extensive power outages.						
AKZ005,06,24	03								High Wind
			Same storm as above caused southeast winds 37 knots gusts were up to 44 causing power outages in the area.						
AKZ01	05								Blizzard
			Strong east/west pressure gradient associated with Bering Sea Storm caused east winds to 35 knots and visibilities in blowing snow to 1/8 sm.						
AKZ03,04,07	06								Heavy Snow
			A 960 mb low just east of Shemya moved to 450 nm west of St. Paul Island and turned northwestward. Frontal activity and strong moist southwesterly flow brought up to 10 inches of snow over the interior.						
AKZ05,06,24	08-09								High Wind
			A 970 mb low over Anadyr moved northward over the Chukotsk Peninsula and weakened. Maximum winds over the west coast were 49 knots.						
AKZ04,07,08	08								Heavy Snow
			Same low as above brought strong occluded fronts and moist flow off the Bering sea. Up to 8 inches in 12 hours fell over the interior. Avalanches in Attigun Pass resulted in the entrapment of 70 trucks. No damage reports were available.						
AKZ01	10								High Wind/ Blizzard
			A 981 mb low Chukchi Sea moving northward brought southwest winds of 36 knots gusts were up to 45 knots and visibilities to 1/8 mile.						
AKZ007	12-13								Heavy Snow
			A 980 mb wave west of Nunivak Island moved northeastward to the vicinity of Barter Island. 12 inches of snow fell in 24 hours in the Tanana Valley. Some snow load damage to local roofs, amount not determined.						
AKZ001,04	15-17								Blizzard
			A 979 mb low 120 nautical miles northwest of Cold Bay moved northward and filled over the southwestern interior. Seventy mph winds and avalanches in Attigun pass trapped an unspecified number of trucks. No damage reports available.						

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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## ALASKA, Southeastern

**AKZ012-013**

Lynn Canal-Glacier Bay  
and Central Southeast  
Alaska

02- 03	Afternoon- Evening								High Wind
-----------	-----------------------	--	--	--	--	--	--	--	-----------

Strong northerly winds resulted when a large high pressure center was building over the Yukon Territory as a weak low (1002 mb) was situated just off shore of central southeast Alaska. The low had moved to the southeast through the Panhandle by morning as the high in the interior had strengthened to 1049 mb. Between these two features, a very strong pressure gradient was established producing the strong winds over southeast Alaska. The strongest winds occurred in northern areas with several stations reporting sustained winds from 35 to 40 knots with a few gusts just over 50 knots being reported as Cape Spencer topped the list with a peak wind of 53 knots in the early morning.

**AKZ012**

Lynn Canal-  
Glacier Bay

18	All day								Heavy Snow
----	---------	--	--	--	--	--	--	--	------------

A strong low pressure center (974 mb) developed in the southeastern Gulf of Alaska bringing an abundance of warm and moist air over southeast Alaska above the relatively shallow pool of cool air which was in place over the panhandle for several days. Precipitation over southeast Alaska quickly turned to rain and mixed rain, and snow, except for the Lynn Canal-Glacier Bay areas. These areas had enough cold air in place to receive substantial amounts before any rain had mixed in with the snow. Haines, in northern Lynn Canal had reported 14 inches of new snow on the ground from this storm by mid-afternoon, before the snow had mixed and turned to rain.

**AKZ013 > 015**

Central Southeast Alaska-  
Southern Southeast Alaska-  
Coastal Southeast  
Alaska

18	Afternoon- Night			0	0	3	0		High Wind
----	---------------------	--	--	---	---	---	---	--	-----------

The strong low which had caused the heavy snowfall and gusty amounts in Lynn Canal-Glacier Bay also produced strong and gusty southeasterly winds throughout southeast Alaska. Winds from around 40 mph with gust to 60 mph were reported in several locations of the panhandle. The strongest winds diminished over most areas except for southern southeast Alaska as a second low pressure system developed over the area. There were no reports of any injuries, but some locals, including Juneau, experienced loss of power as the heavy, wet snow was blown off trees onto power lines.

**AKZ013-015**

Central Southeast Alaska-  
Southern Southeast  
Alaska

23	Morning- Evening								Heavy Snow
----	---------------------	--	--	--	--	--	--	--	------------

A moderate low pressure system (990 mb) moved to the southeastern Gulf of Alaska, sending an occluded front over the southern portions of the panhandle. This system had enough moisture from the Pacific to produce scattered areas of heavy snowfall in the southern half of southeast Alaska. Sitka, along the central coast, reported over six inches in about 12 hours, while Petersburg had 18 inches. Snowfall amounts varied from two to six inches in other areas, before the storm had moved inland to British Columbia.

**AKZ014-015-012-013**

Southern Southeast Alaska-  
Coastal Southeast Alaska-  
Lynn Canal/Glacier Bay-  
Central Southeast  
Alaska

29	Morning-			0	1	3	0		High Wind
----	----------	--	--	---	---	---	---	--	-----------

A 976 mb low moved over the southeastern Gulf of Alaska, and then north over the Gulf . . . sending a strong occluded front over southeast Alaska. This produced strong and gusty winds throughout the panhandle, with sustained wind of 35 to 40 knots and gusts from 50 to 70 knots.

# Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time Local/Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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## ALASKA, Southeastern Cont'd

Strongest winds were along the coastal areas, as Port Alexander had gust of 65 to 70 knots, and Sitka had sustained winds of 35 knots with gusts to 53 knots. Sitka Airport had a hanger have its roof torn off and blown across the road. A person inside managed to hide and escape the only some minor scratches. Strong winds are quite common in southeast Alaska, but major damage or injuries are somewhat rare due to the sparse population in the area.

**AKZ012 > 015**  
 Lynn Canal/Glacier Bay-  
 Central Southeast Alaska-  
 Southern Southeast Alaska-  
 Coastal Southeast  
 Alaska

30-31	Morning-Evening				0	0	3	0	High Wind
-------	-----------------	--	--	--	---	---	---	---	-----------

A 972 mb low over the Gulf of Alaska moved north along the Gulf, pushing a strong occluded front over southeast Alaska with strong and gusty winds throughout the panhandle. Sustained winds of 35 knots with gusts to 70 knots occurred, with the strongest in the southern panhandle. Most damage from this storm was from the heavy rain along with the warm temperatures (over 4 inches of rain and 58 degrees, in SE Alaska). Storm drains were clogged with the seasons snowpack. Several homes had flooded basements in Ketchikan as a result, and a small bridge collapsed from the weight. Juneau experienced a temporary power and cable television outage, as a tree fell across power lines, just in time for the Super Bowl.

## HAWAII

Maui	5-6				0	0	?	0	Ice Storm
------	-----	--	--	--	---	---	---	---	-----------

Power lines and transmission antennae on Mount Haleakala damaged due to winds at 100 mph blowing down heavily ice laden structures. As much as 18 inches of ice covered everything on the summit.

Oahu	6	1000HST			0	0	4	0	Wind
------	---	---------	--	--	---	---	---	---	------

Minor wind damage occurred as a squall line with winds gusting at 50 mph to 60 mph moved across the island.

Hawaii	6	2200HST			0	0	5	0	Wind
--------	---	---------	--	--	---	---	---	---	------

Extensive wind damage occurred on the Big Island as strong gusty winds associated with the thunderstorms raked the island. Trees and wires were blown down in Kohala and Kona and Hamakua districts. A 60-foot boat was lost at Kailua-Kona. Some flooding from heavy rains was reported in Kohala and Kona districts.

## PACIFIC

American Samoa	4				0	0	5	5	Tropical Storm Nina
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Tropical Storm Nina passed just south of Somoa with winds gusting at 60 mph at Pago Pago. Some minor roof damage around the area and also damage to banana and breadfruit.

American Samoa	30				0	0	5	5	Hurricane Lin
----------------	----	--	--	--	---	---	---	---	---------------

Hurricane Lin forms just northwest of Somoa on the 30th and moves south and southeast across Savaii in western Samoa on the 31st. Damage mostly light in American Samoa as winds gusted at about 60 mph at exposed locations.

## PUERTO RICO

PRZ002	21	unknown			0	0	0	0	Waterspout
--------	----	---------	--	--	---	---	---	---	------------

A pilot reported a waterspout over eastern Puerto Rico waters.

PRZ004-005	28-29				0	0	5	0	Flash Flood
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Around three to five inches of rain fell from late afternoon on January 28 to early morning hours on January 29 mostly over western and interior sections of Puerto Rico. Trees were blown down

## Storm Data and Unusual Weather Phenomena

January 1993

Location	Date	Time	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
		Local/ Standard			Killed	Injured	Property	Crops	

### PUERTO RICO Cont'd

on roads 119 and 358 in San German. Mud slides and fallen trees were reported in Maricao. Fifteen to 25 houses were flooded and 6 families had to be evacuated in Cabo Rojo. Seven houses were effected by the water in Mayaguez.

### VIRGIN ISLANDS

None reported.

**STORM DAMAGE CATAGORIES**

REFERENCE NOTES

- 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

- 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

# STORM SUMMARY

JANUARY 1993

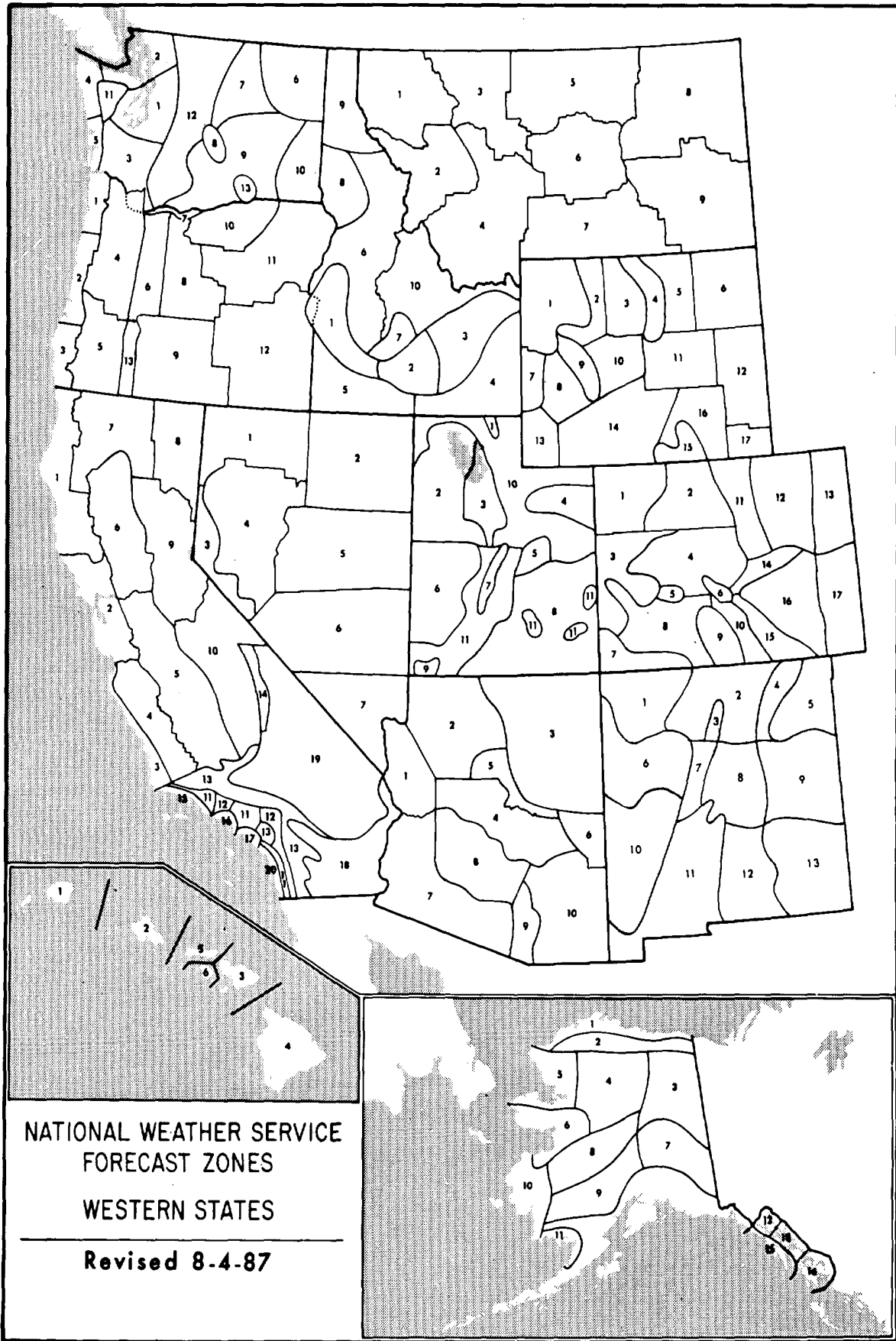
TYPE	ALABAMA	ARIZONA	ARKANSAS	CALIFORNIA	COLORADO	CONNECTICUT	DELAWARE	FLORIDA	GEORGIA	IDAHO	ILLINOIS	INDIANA	IOWA	KANSAS	KENTUCKY	LOUISIANA	MAINE	MARYLAND & D.C.	MASSACHUSETTS	MICHIGAN	MINNESOTA	MISSISSIPPI	MISSOURI	MONTANA	NEBRASKA	NEVADA	NEW HAMPSHIRE	
<b>TORNADOES</b>						0	0								0			0	0									
Number		3		5				7	1																			
Days		20		16				20	6																			
Deaths																												
Injuries																												
Property Damage																												
Crop Damage																												
<b>HAIL</b>																												
Deaths																												
Injuries																												
Property Damage																												
Crop Damage																												
<b>THUNDERSTORM WINDS</b>																												
Deaths	0																											
Injuries	0																											
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Property Damage																												
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<b>FLASH FLOODS</b>																												
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<b>HEAVY SNOWSTORMS AND BLIZZARDS a</b>																												
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Property Damage																												
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Crop Damage																												



# STORM SUMMARY

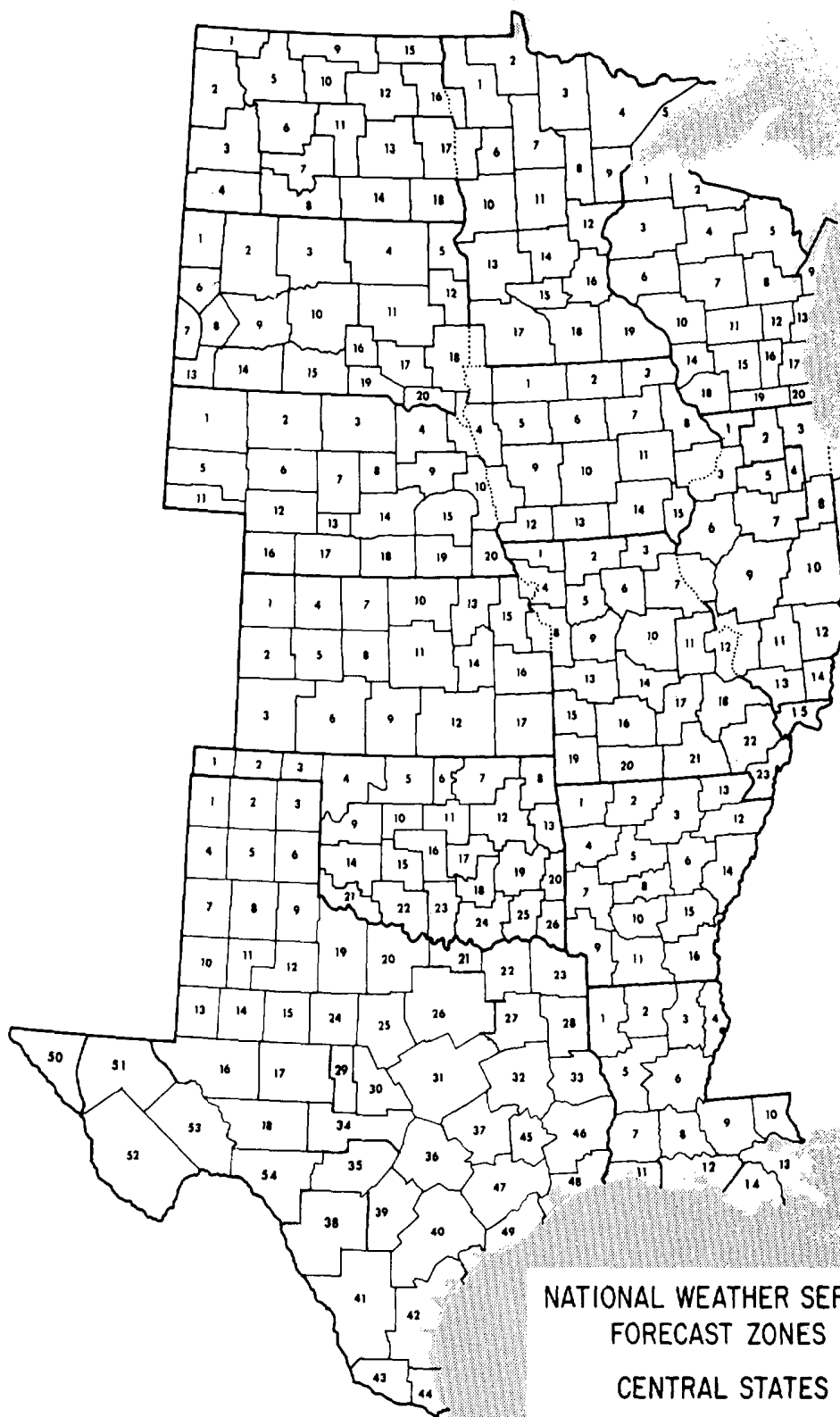
JANUARY 1993

TYPE	MONTANA	NEBRASKA	KANSAS	NORTH CAROLINA	NORTH DAKOTA	OHIO	OKLAHOMA	NEBRASKA	PENNSYLVANIA	RHODE ISLAND	SOUTH CAROLINA	SOUTH DAKOTA	MISSOURI	TEXAS	UTAH	VERMONT	VIRGINIA	WASHINGTON	WEST VIRGINIA	WISCONSIN	WYOMING	ALASKA	HAWAII	PACIFIC	PUERTO RICO	VIRGIN ISLANDS	NATIONAL	INJURY	TOTALS
<b>TORNADOES</b>					0						0															0			
Number														1															
Days														10															
Deaths														0														0	
Injuries														0														0	
Property Damage														0														0	
Crop Damage														0														0	
<b>HAIL</b>																													
Deaths																													
Injuries																													
Property Damage																													
Crop Damage																													
<b>THUNDERSTORM WINDS</b>																													
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<b>LIGHTNING</b>																													
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NATIONAL WEATHER SERVICE  
FORECAST ZONES  
WESTERN STATES

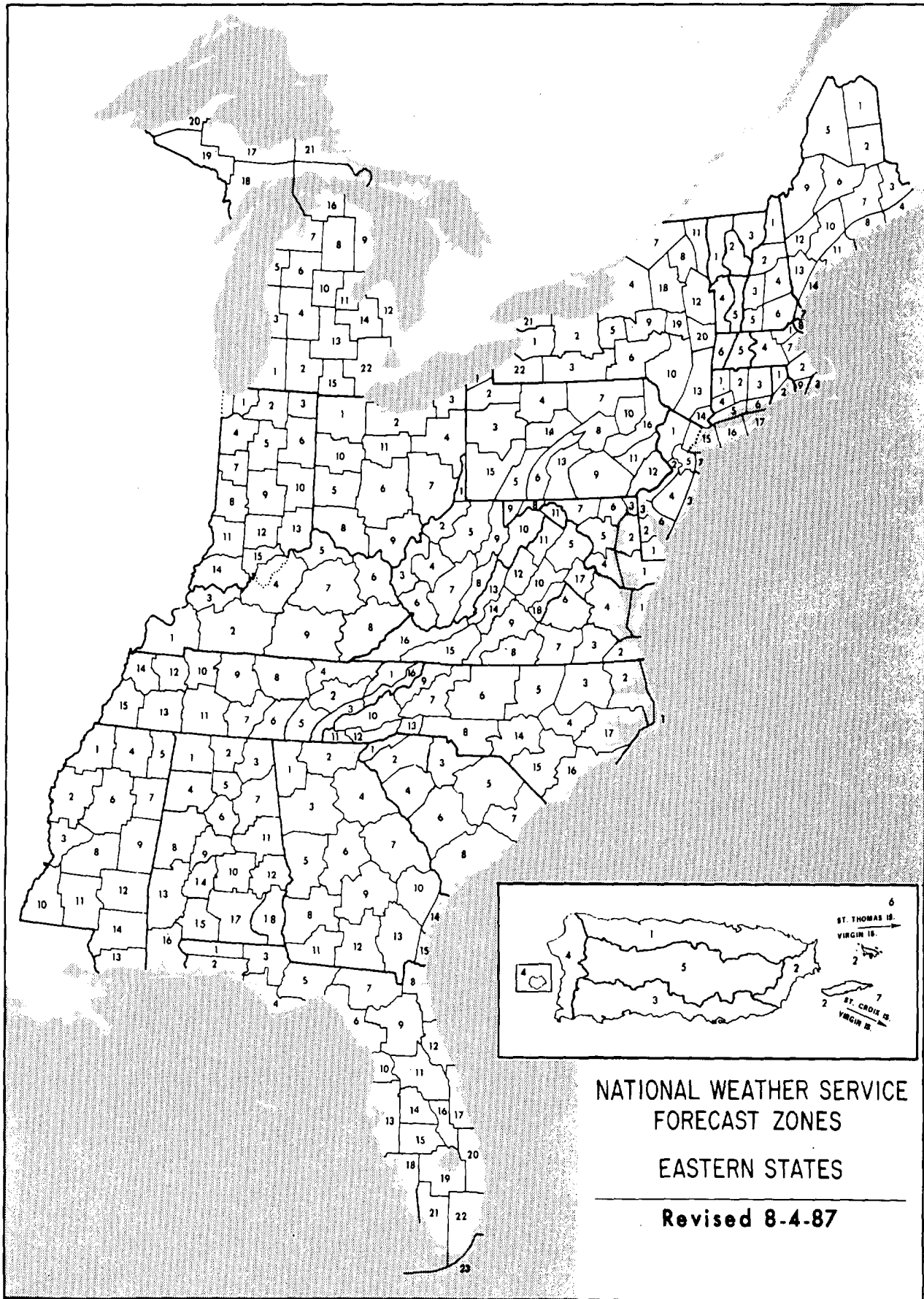
Revised 8-4-87



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FORECAST ZONES  
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Revised 8-4-87





CLIMATOLOGICAL DATA is a unique source of weather information derived from data collected by over 8,000 cooperative weather observers located throughout the United States, Puerto Rico, the Virgin Islands, and U. S. Pacific Islands. It is published monthly, with an Annual Summary, for each State or combination of States/Areas by the National Climatic Data Center, Asheville, North Carolina.

★ **MONTHLY** editions contain:

- Temperature and precipitation extremes and summarized data.
- Daily precipitation, maximum and minimum temperatures, snowfall, soil temperatures, and evaporation & wind.
- Graphical displays of various climatological features.
- Station indices and locator maps.
- Monthly totals of heating degree days and snowfall are published as seasonal tables in the July issue.

★ **ANNUAL SUMMARY** contains monthly and annual:

- Total precipitation and departures from normal.
- Average temperatures and departures from normal.
- Temperature extremes and freeze data.
- Soil temperatures.
- Total evaporation and wind movement.
- Monthly and seasonal cooling degree days.
- Graphical displays of various climatological features.
- Station indices and locator maps.

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

# CLIMATOLOGICAL DATA ANNUAL SUMMARY PENNSYLVANIA 1987

ISSN 0364-5843

VOLUME 92 NUMBER 13



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DIRECTOR

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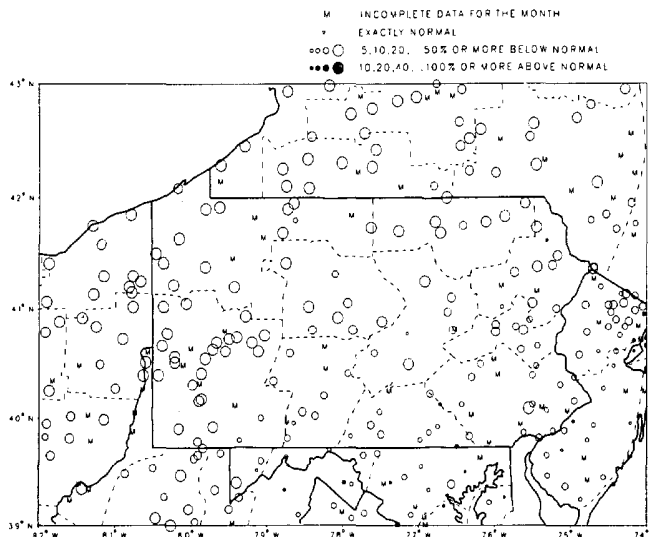
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# CLIMATOLOGICAL DATA PENNSYLVANIA JANUARY 1988 VOLUME 93 NUMBER 1

MONTHLY PRECIPITATION DEPARTURE FROM  
INDIVIDUAL STATION NORMALS (1951-1980)



CIRCLE DIAMETER IS PROPORTIONAL TO DEPARTURE ON A CONTINUOUS SCALE

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*Samuel D. Nelson*

DIRECTOR, NATIONAL CLIMATIC DATA CENTER

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### STORM DATA

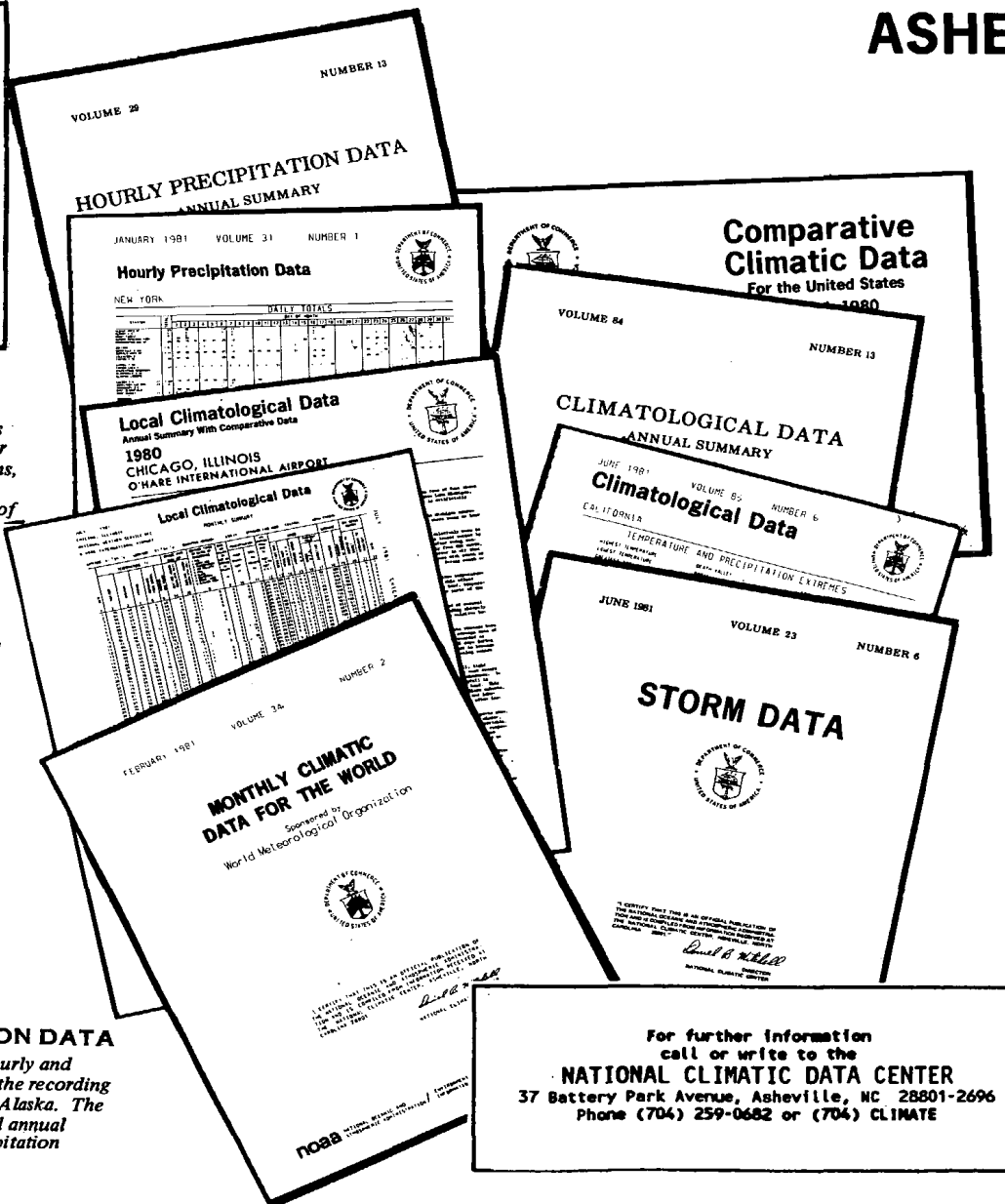
Monthly issue presents a chronological listing, by states, of occurrences of storms and unusual weather phenomena, together with data on the paths of individual storms, deaths, injuries, and estimated property damage, and a brief narrative description of each event. A new section in the bulletin entitled "OUTSTANDING STORMS OF THE MONTH" highlights severe weather and includes descriptive photographs of storms, their tracks, and analyzed maps. The December issue includes annual summaries of tornadoes and lightning and North Atlantic tropical cyclones.

### LOCAL CLIMATOLOGICAL DATA

Published monthly for each first-order station. Presents daily maximum and minimum temperatures, degree day data, precipitation, station pressures, wind statistics, sunshine and sky cover data, as well as 3-hourly data for certain parameters. An annual issue is available summarizing monthly data and including up to 40 years record, and featuring a narrative climatological summary and history of the station.

### HOURLY PRECIPITATION DATA

Monthly issue presents daily, hourly and maximum short duration data for the recording gage stations for each state except Alaska. The annual issue tabulates monthly and annual totals, and annual maximum precipitation data by selected time categories.



### CLIMATOLOGICAL DATA

Published monthly for each state. Gives daily temperature and precipitation records, and monthly averages and totals, with departures from normal when available. Also derived statistics such as heating and cooling degree days, counts of days equaling or exceeding given temperature and precipitation thresholds, extremes, etc., are published for cooperative and first-order stations. Evaporation and soil temperature data are given for reporting stations. Seasonal snowfall, heating and cooling degree day tables included in selected tables. Annual summary also available.

### COMPARATIVE CLIMATIC DATA

Presents tables of monthly and annual averages, totals or extreme climate conditions for approximately 300 major population centers. This publication is particularly helpful for comparing temperature, rainfall, snowfall, wind velocities, sunshine, cloudiness and relative humidities for the principal cities. The cities are listed alphabetically by state in two sections: observed data and climatological normals. This is an annual publication.

### MONTHLY CLIMATIC DATA FOR THE WORLD

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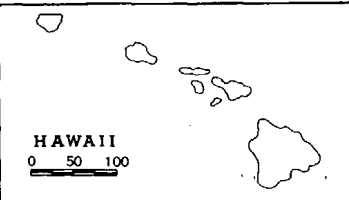
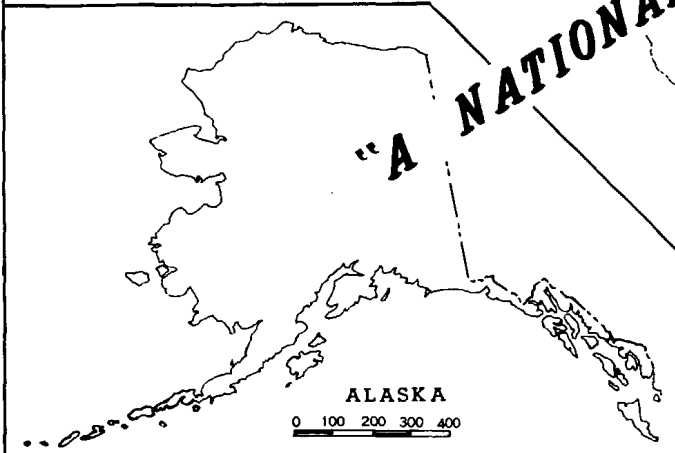
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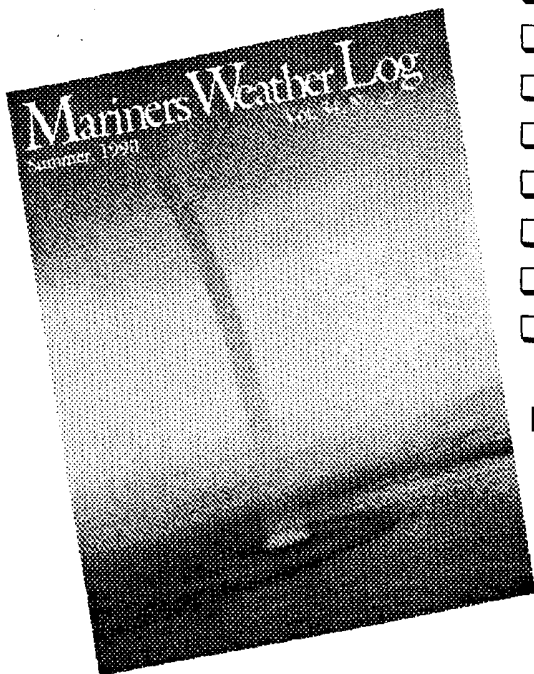
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