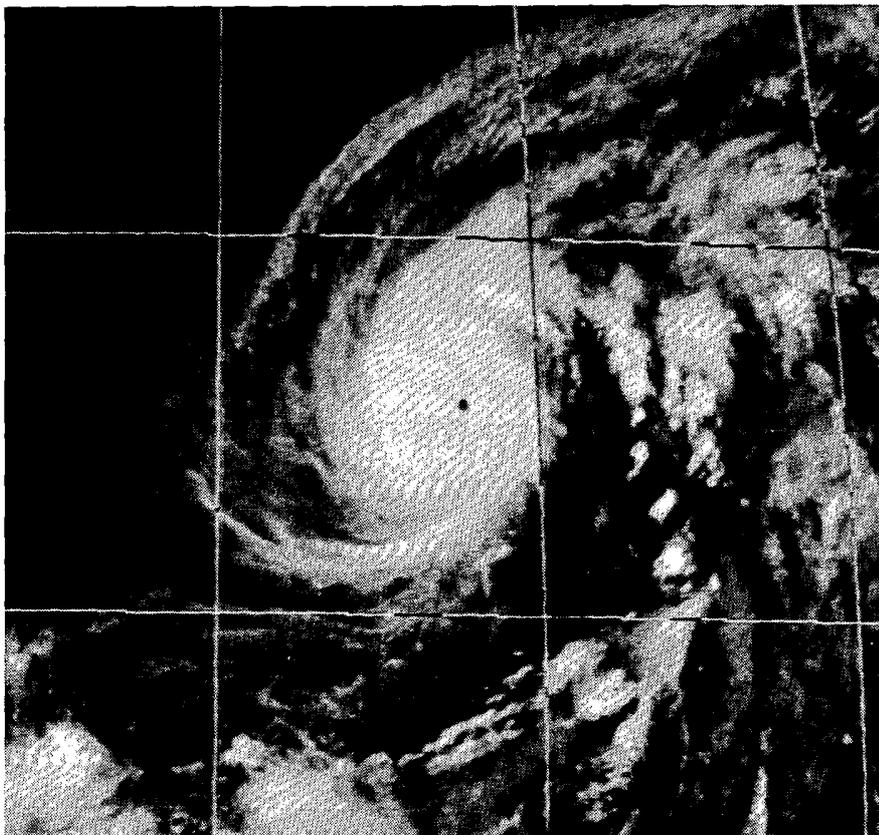


STORM DATA



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THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
AND IS COMPILED FROM INFORMATION RECEIVED AT THE
NATIONAL CLIMATIC DATA CENTER, ASHEVILLE NORTH CAROLINA"
28801

Kenneth D. Walden

DIRECTOR
NATIONAL CLIMATIC DATA CENTER

Support for this publication is provided in part by the Office of Naval Research,
Marine Meteorology Program, Dr. Robert F. Abbey, Jr., Director.
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C O N T E N T S

Cover: Supertyphoon KIM with a well-defined, clear eye is shown at its peak intensity (135 knot, maximum sustained winds; 165 knot gusts) at 1800GMT on December 2nd, just prior to its making an assault on the Marianas Islands during its west-northwest trek through the Western Pacific from November 28th through December 12th, 1986 (see pages 6 through 10). ---Satellite photo from NESDIS.

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NOTE: NOVEMBER 1986 CORRECTION - - Heading month on pages 23, 24, and 25 should be NOVEMBER vice DECEMBER.

STORM DATA (ISSN 0039-1972)

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

Central States: FEB, MAY, AUG, NOV.

Western States: MAR, JUN, SEP, DEC.

Storm Data is published monthly by the National Climatic Data Center.

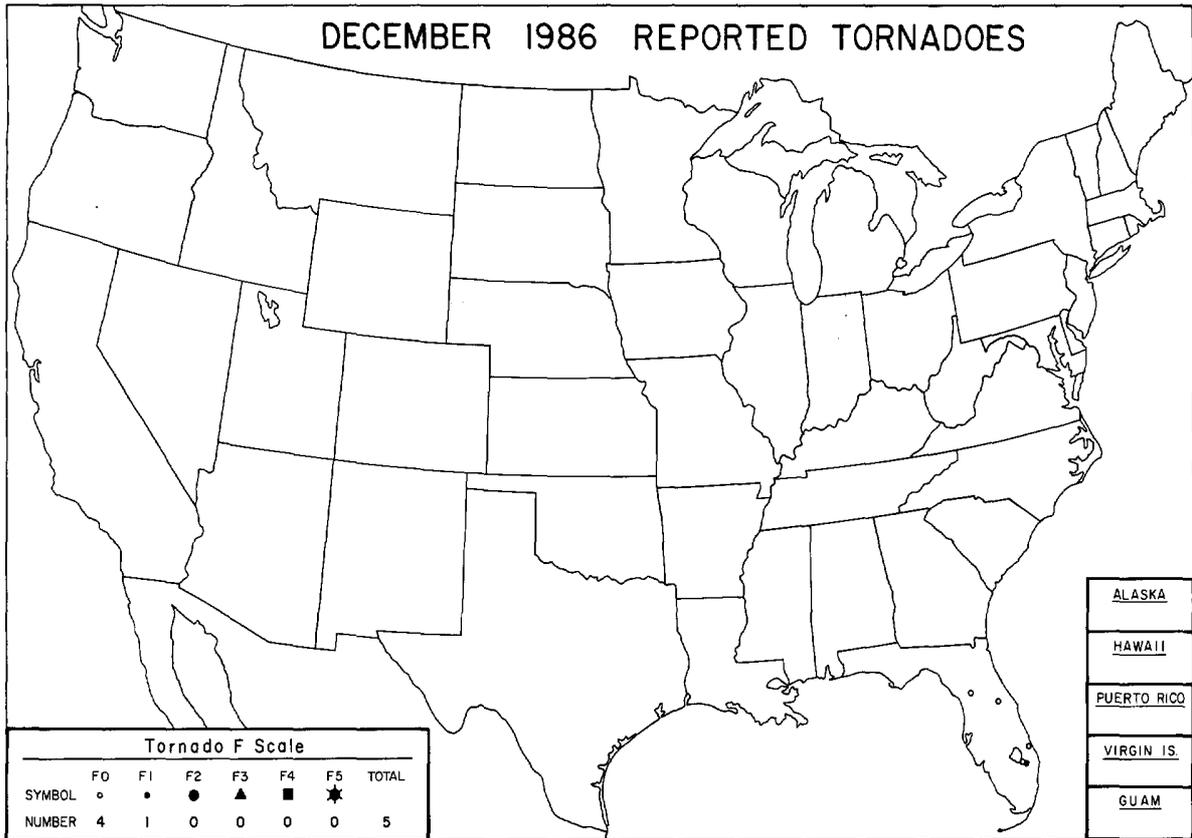
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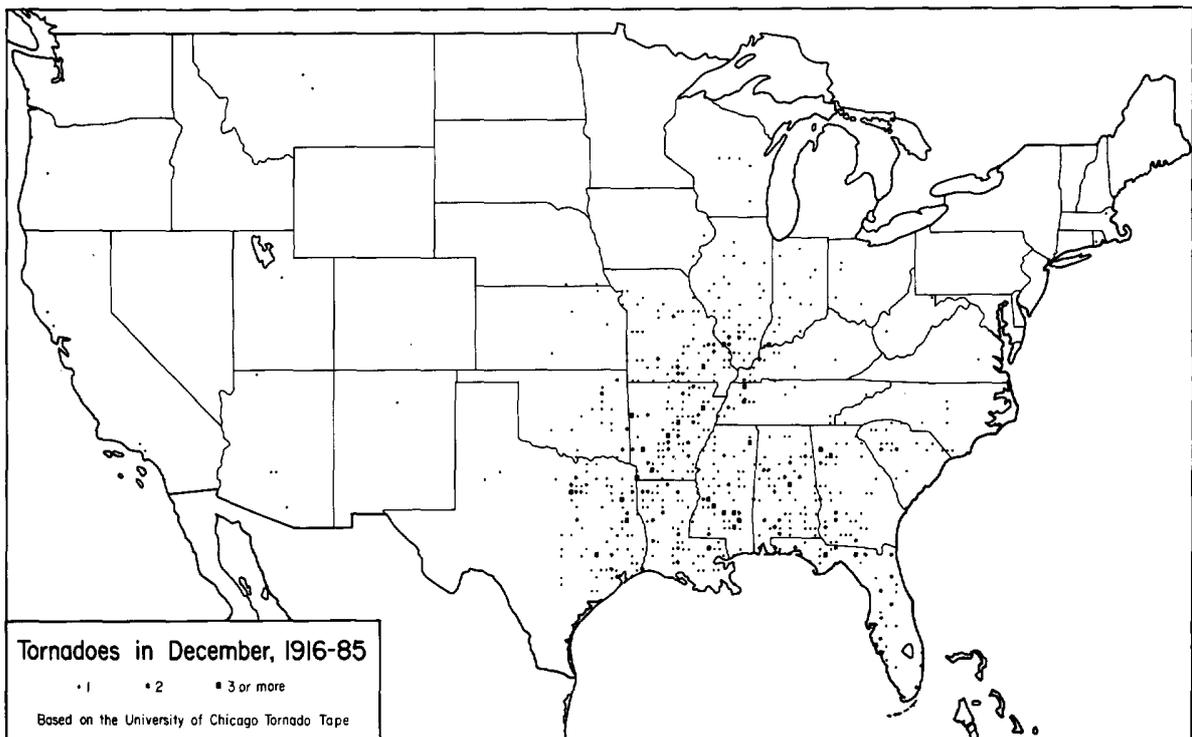
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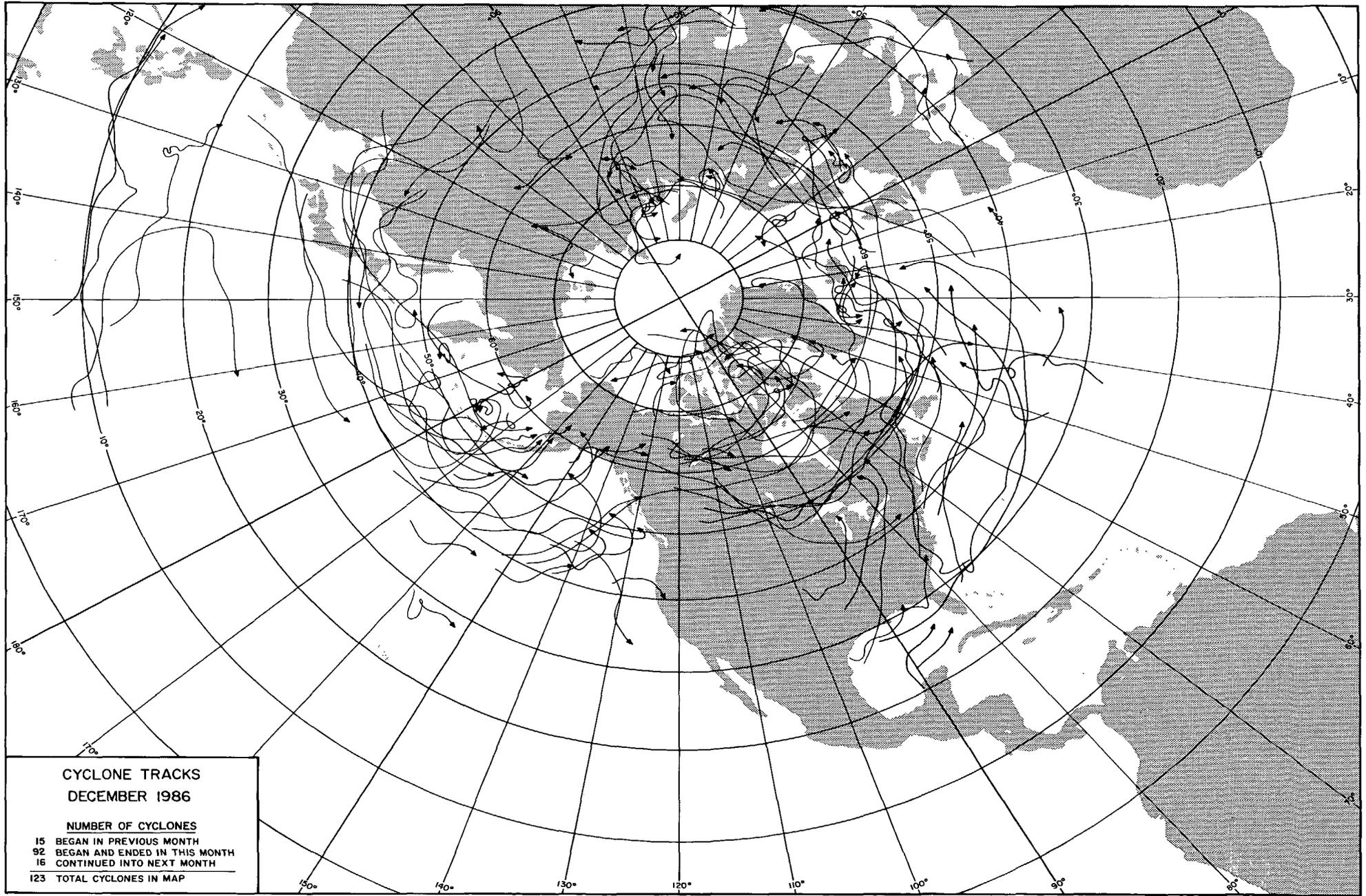
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Asheville, NC 28801-2696

OUTSTANDING STORMS OF THE MONTH



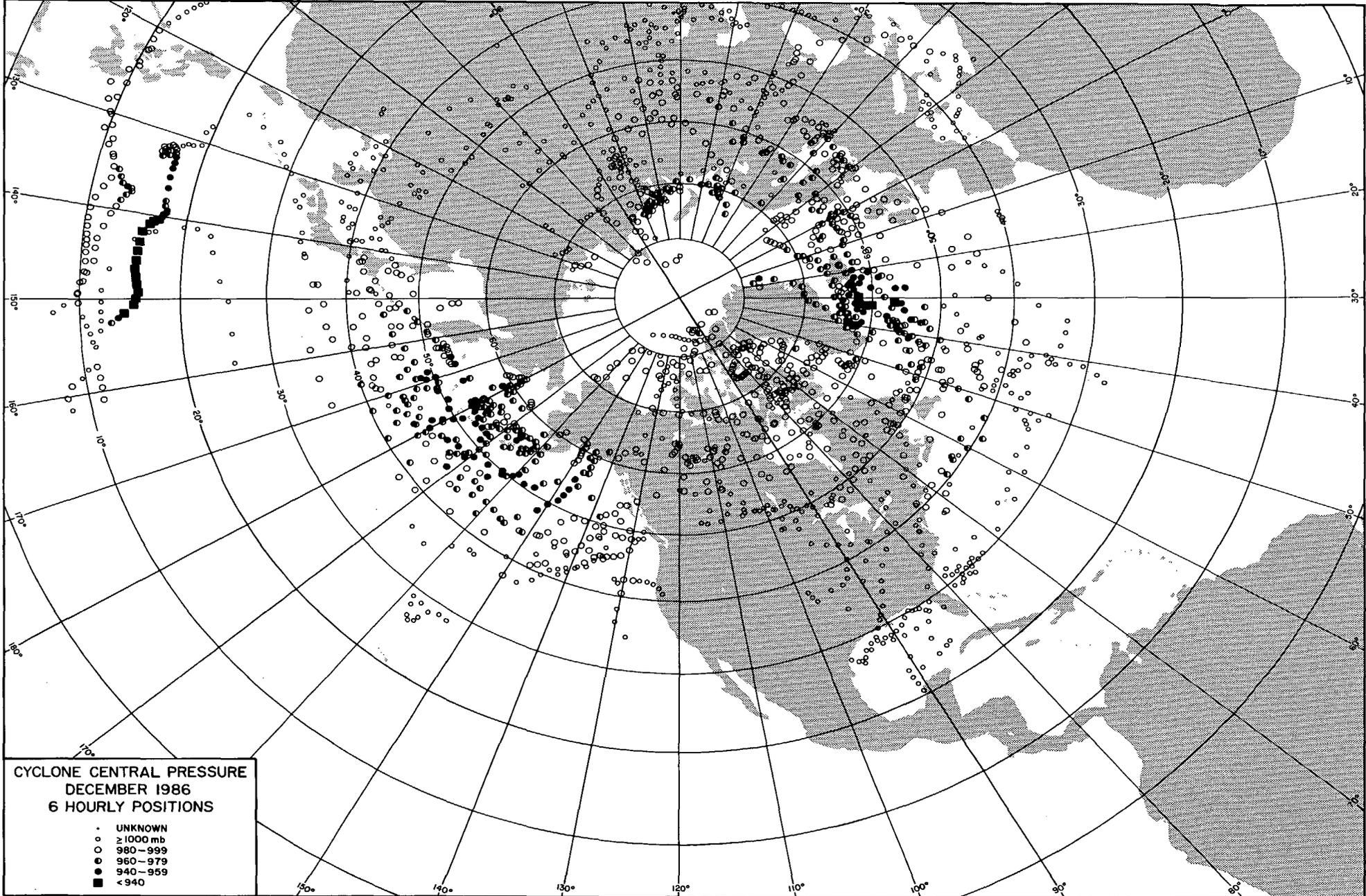
<p>● COMPLETE REPORT RECEIVED</p> <p>◐ PRELIMINARY REPORT RECEIVED</p> <p>○ REPORT NOT RECEIVED</p> <p>(N) northern (W) western</p> <p>(S) southern (C) central</p> <p>(E) eastern (O) coastal</p> <p>(SE) southeastern</p>	<table style="width: 100%; text-align: center;"> <tr> <td>● 1AL</td><td>● 7DE</td><td>● 14KS</td><td>● 21MN</td><td>● 28NJ</td><td>● 33OH</td><td>● 39SD</td><td>● 44VA</td><td>● 49AK(SE)</td> </tr> <tr> <td>● 2AZ</td><td>● 8FL</td><td>● 15KY</td><td>● 22MS</td><td>● 29NM</td><td>● 34OK</td><td>● 40TN</td><td>● 45WA</td><td>● 50HI</td> </tr> <tr> <td>● 3AR</td><td>● 9GA</td><td>● 16LA</td><td>● 23MO</td><td>● 30NY(O)</td><td>● 35OR</td><td>● 41TX(N)</td><td>● 46WV</td><td>● 51PR</td> </tr> <tr> <td>● 4CA(N)</td><td>● 10ID</td><td>● 17ME</td><td>● 24MT</td><td>● 30NY(C)</td><td>● 36PA(E)</td><td>● 41TX(S)</td><td>● 47WI</td><td>● 52VI</td> </tr> <tr> <td>● 4CA(S)</td><td>● 11IL</td><td>● 18MD</td><td>● 25NE</td><td>● 30NY(W)</td><td>● 36PA(W)</td><td>● 41TX(W)</td><td>● 48NY</td><td>● 53PC</td> </tr> <tr> <td>● 5CO</td><td>● 12IN</td><td>● 19MA</td><td>● 26NV</td><td>● 31NC</td><td>● 37RI</td><td>● 42UT</td><td>○ 49AK(N)</td><td></td> </tr> <tr> <td>● 6CT</td><td>● 13IA</td><td>● 20MI</td><td>● 27NH</td><td>● 32ND</td><td>● 38SC</td><td>● 43VT</td><td>○ 49AK(S)</td><td></td> </tr> </table>	● 1AL	● 7DE	● 14KS	● 21MN	● 28NJ	● 33OH	● 39SD	● 44VA	● 49AK(SE)	● 2AZ	● 8FL	● 15KY	● 22MS	● 29NM	● 34OK	● 40TN	● 45WA	● 50HI	● 3AR	● 9GA	● 16LA	● 23MO	● 30NY(O)	● 35OR	● 41TX(N)	● 46WV	● 51PR	● 4CA(N)	● 10ID	● 17ME	● 24MT	● 30NY(C)	● 36PA(E)	● 41TX(S)	● 47WI	● 52VI	● 4CA(S)	● 11IL	● 18MD	● 25NE	● 30NY(W)	● 36PA(W)	● 41TX(W)	● 48NY	● 53PC	● 5CO	● 12IN	● 19MA	● 26NV	● 31NC	● 37RI	● 42UT	○ 49AK(N)		● 6CT	● 13IA	● 20MI	● 27NH	● 32ND	● 38SC	● 43VT	○ 49AK(S)	
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Missing data: Eurasian continent area only, 12GMT, Dec. 16 through 06GMT, Dec. 23

Mapped at the University of Chicago from NMC, 6-hourly surface maps



**CYCLONE CENTRAL PRESSURE
DECEMBER 1986
6 HOURLY POSITIONS**

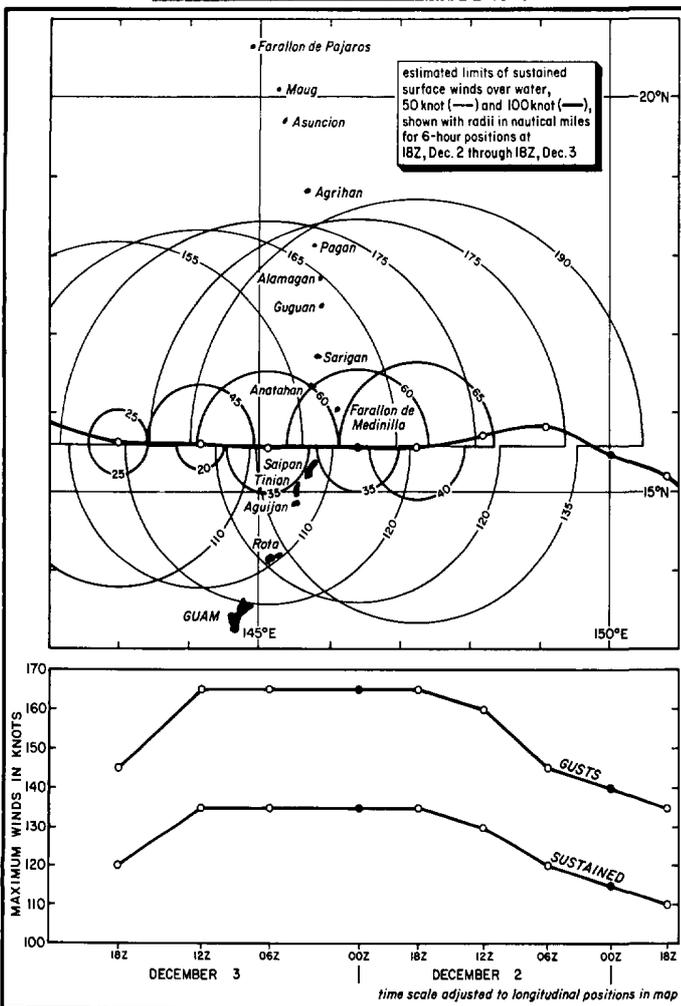
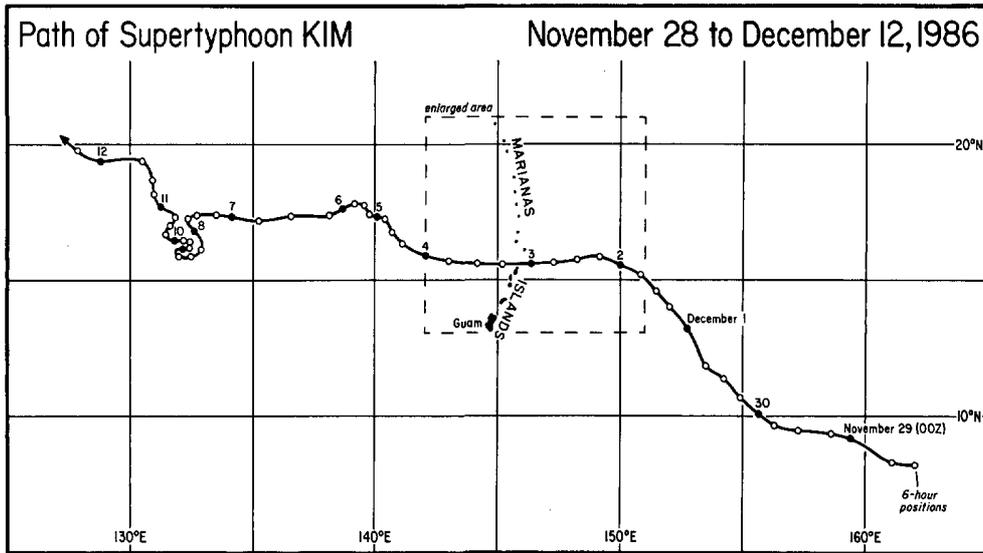
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Mapped at the University of Chicago from NMC, 6-hourly surface maps

1. SUPERTYPHOON KIM, November 29 to December 12, 1986

In the last days of November, a late-season typhoon formed at about 8°N and 162°E in the Western Pacific. The storm, named KIM, was quick to intensify as it moved generally west-northwest; and attained supertyphoon status as it approached the Marianas Islands on December 2nd. [55m/s (107 knot) maximum sustained winds is one of several criteria on which supertyphoon status is contingent.] The Islands received about \$20 million in damage which was concentrated on the islands of Saipan and Tinian. Guam had only minor damage. KIM gradually weakened as and after it passed through the island chain, but maintained its organization until December 12th. During its final days, KIM meandered in a small area as organized remnants of Tropical Storm Lex passed northward to KIM's east (see map below).



ABOVE: The path of KIM through the western Pacific Ocean.

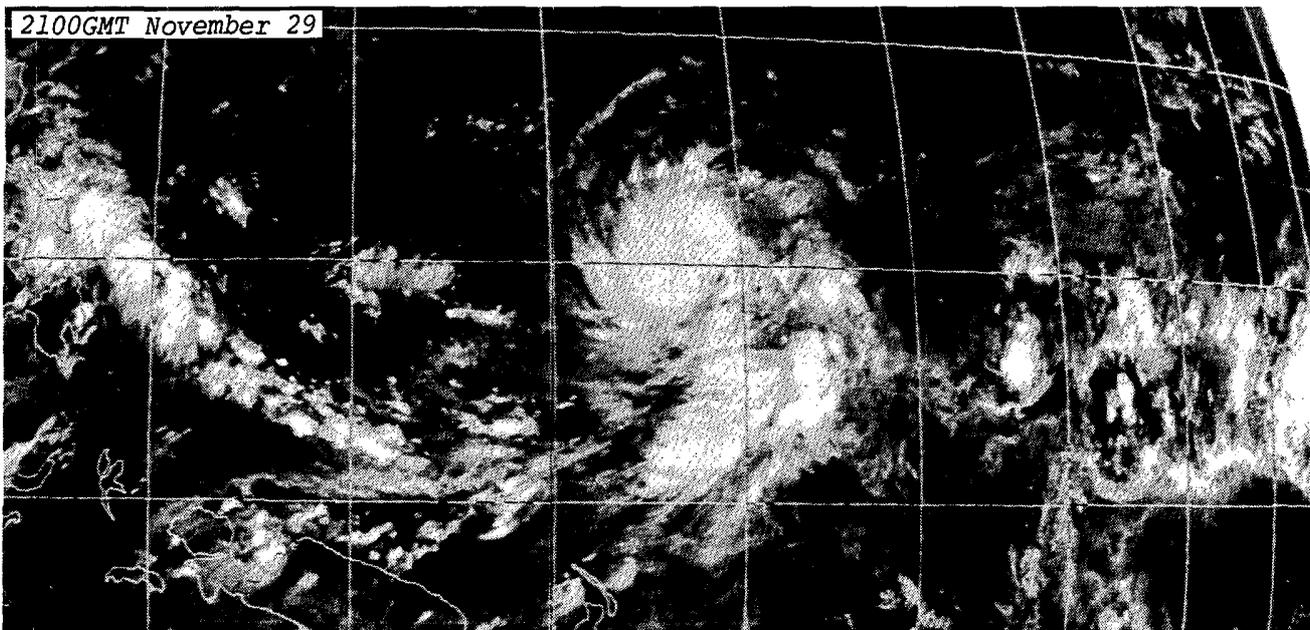
LEFT: Enlargement of KIM's path through the Marianas Islands showing limits defining the estimated areas affected by sustained surface winds over water of 50 knots and greater and 100 knots and greater at five 6-hour positions along the path. The decrease in the limits' radii with time demonstrates KIM's decreasing intensity as the storm passed through the island chain. The graph below the map gives KIM's estimated, maximum sustained winds and peak gusts for the same times and positions shown in the map.

---Both figures mapped by the University of Chicago from (above) National Meteorological Center surface data and (left) data supplied by the NWSFO at Honolulu, Hawaii.

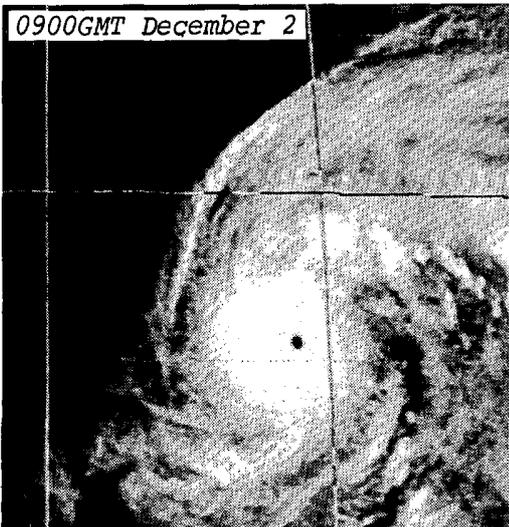
NEXT FOUR PAGES: Pages 7 through 10 contain GMS-3 satellite, infrared images of KIM during the storm's 14-day life. All of the photos are provided by the National Environmental Satellite Data and Information Service.

SUPERTYPHOON KIM ---- continued

2100GMT November 29

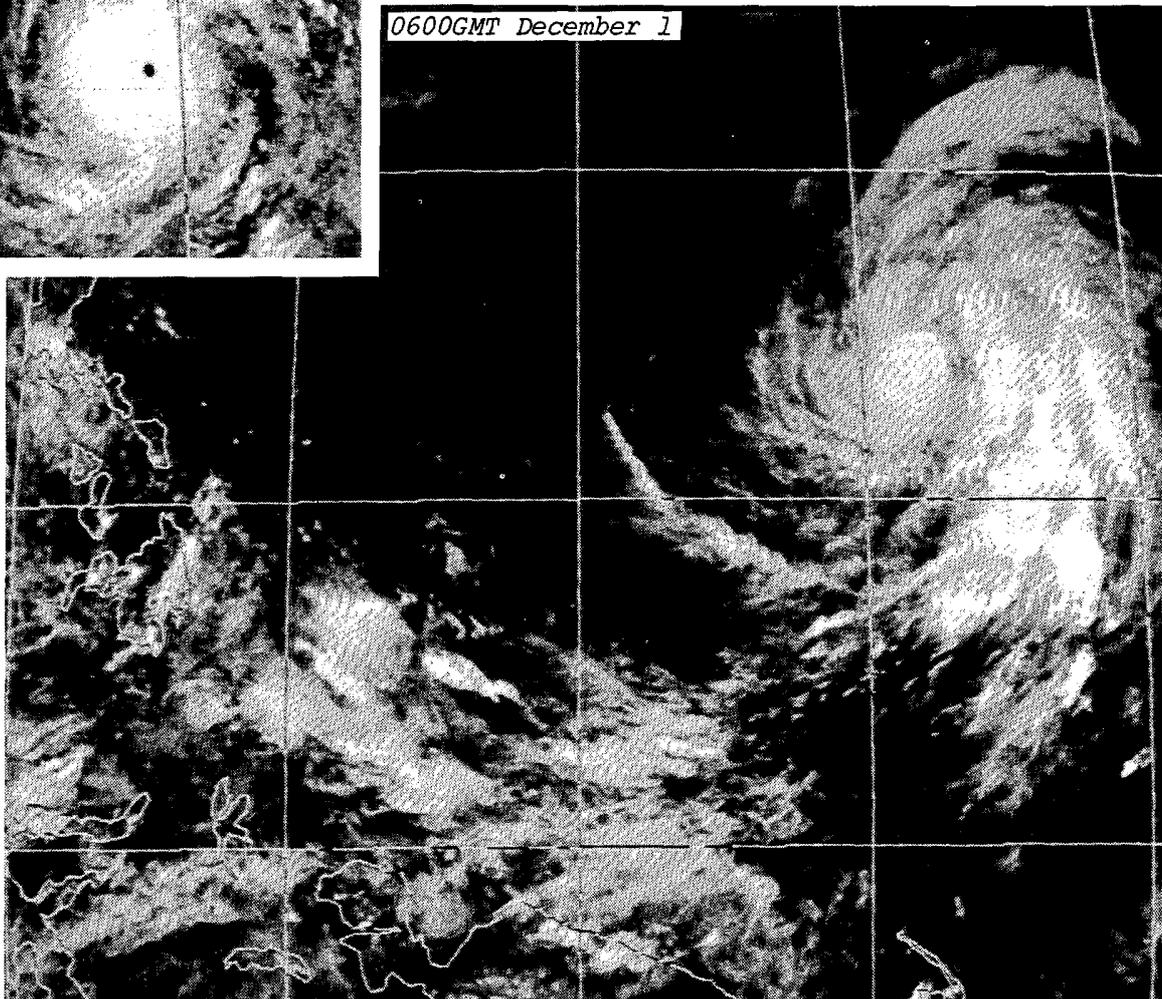


0900GMT December 2

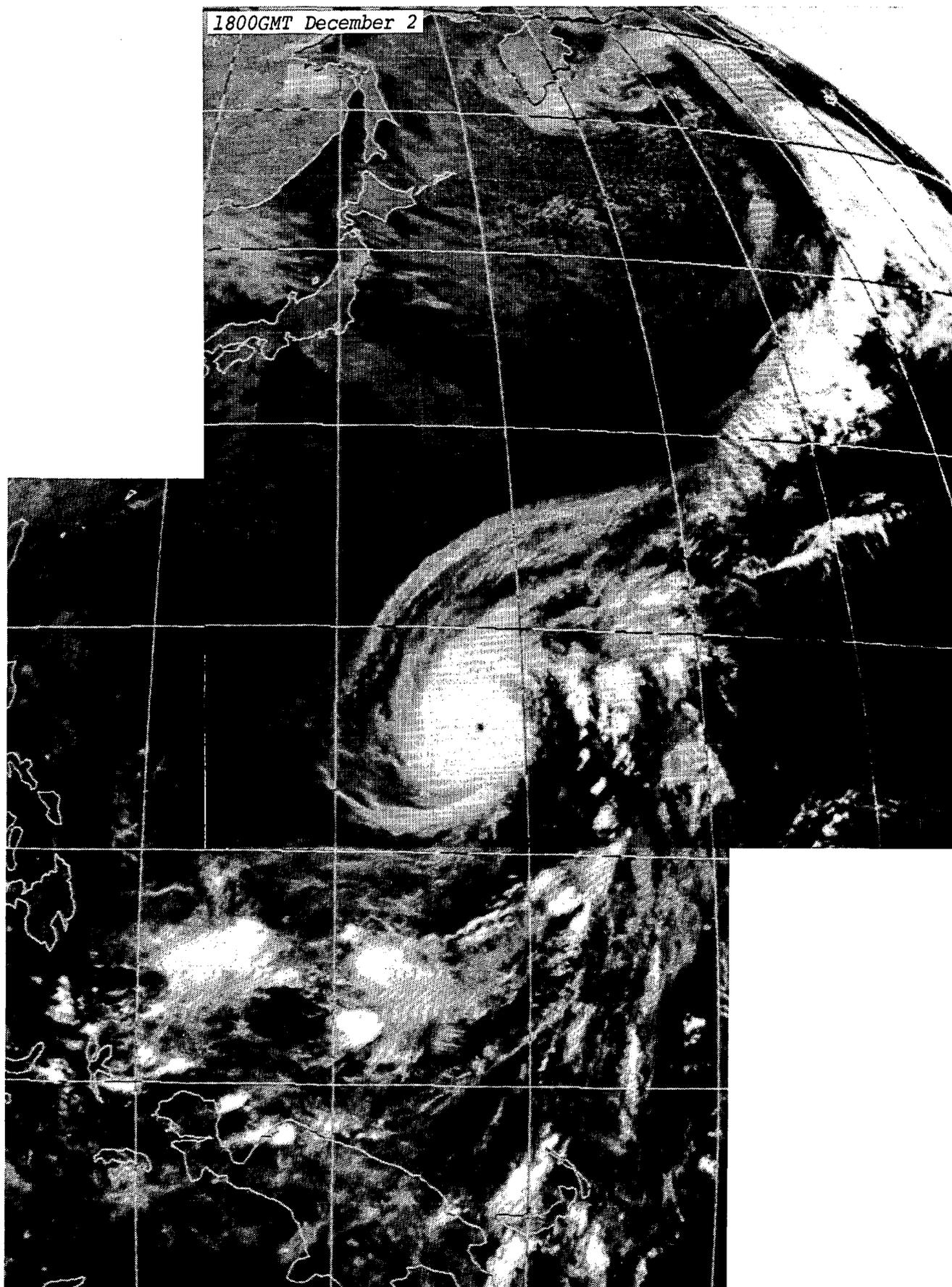


Typhoon KIM in its early stages is shown in reference to its birthplace, the Intertropical Convergence Zone (ITCZ) on November 29th above, with respect to other tropical activity to its west and south on December 1st below, and with a well-defined eye on December 2nd after a rapid intensification, left.

0600GMT December 1

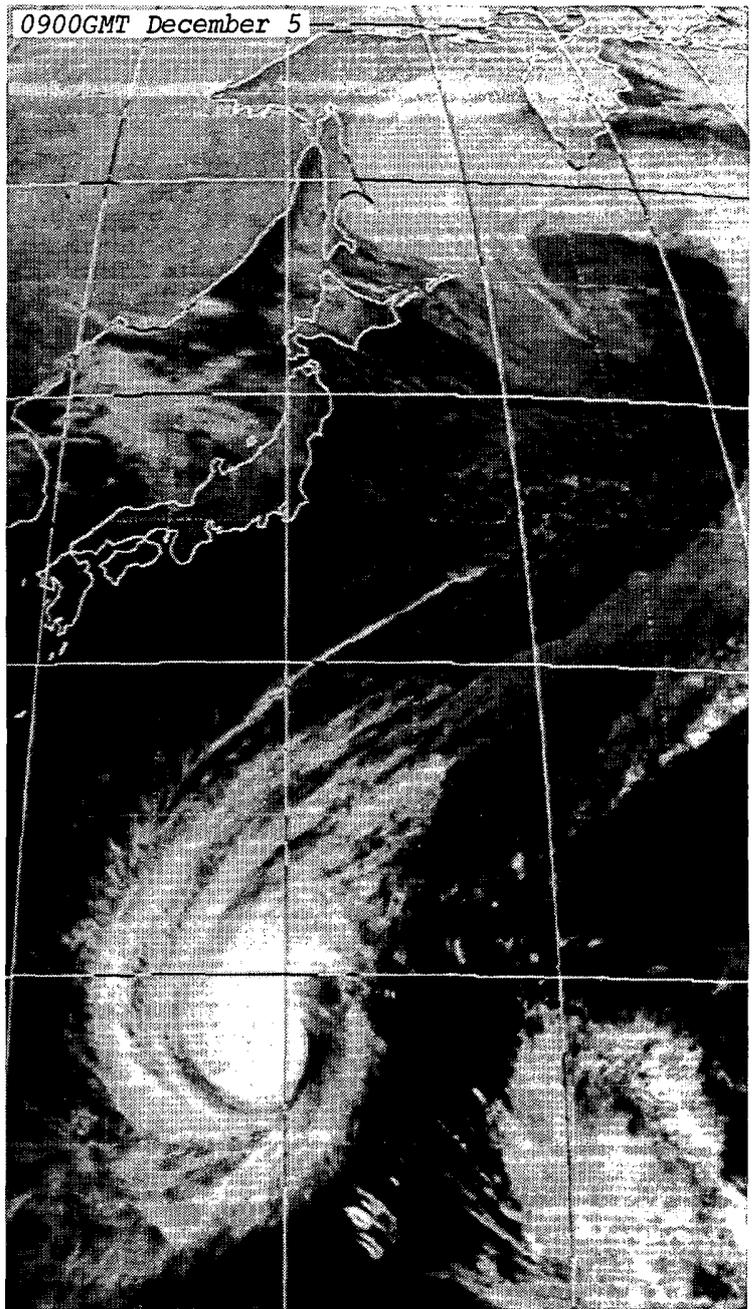
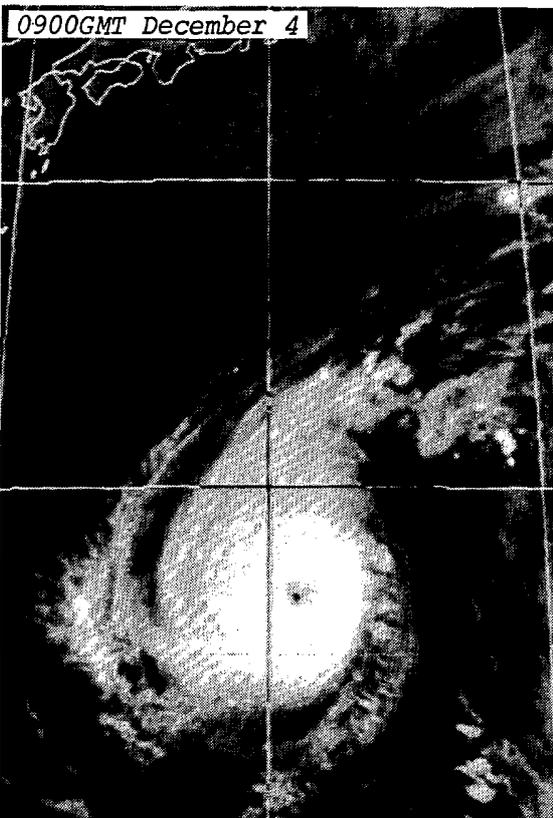
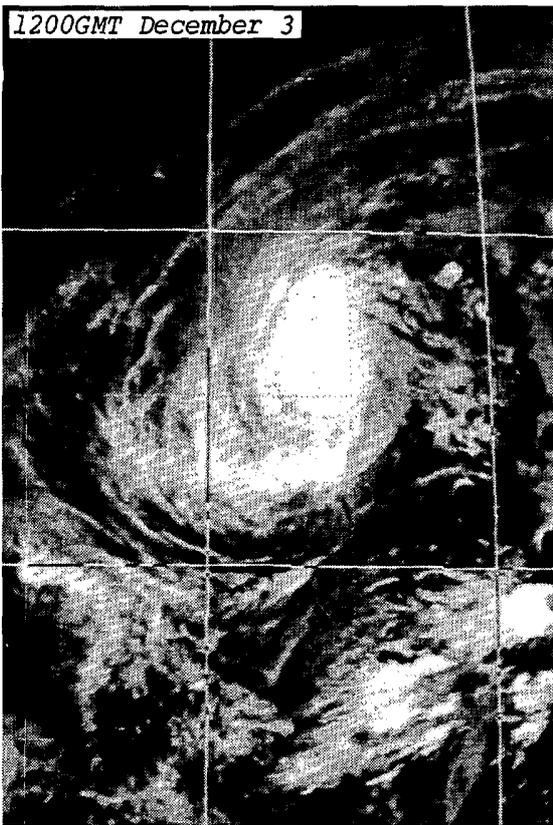


SUPERTYPHOON KIM ---- continued



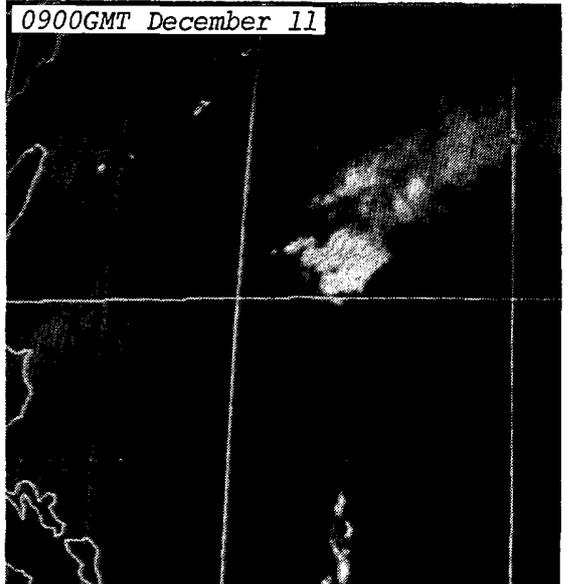
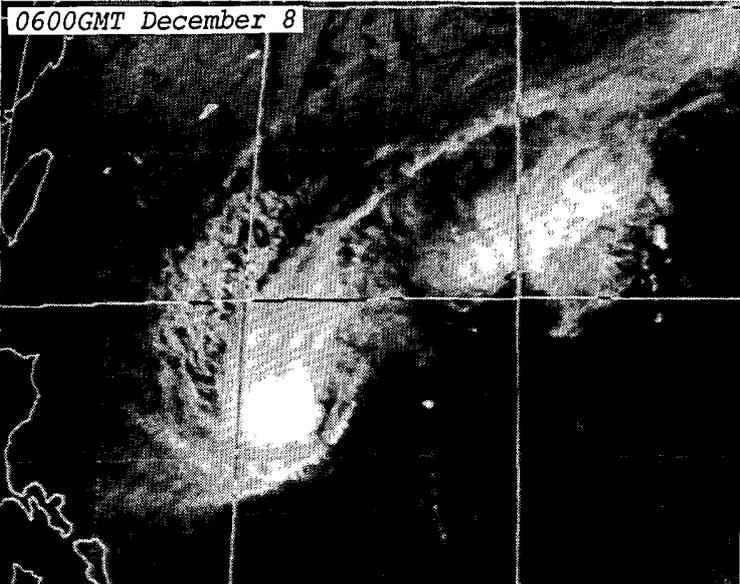
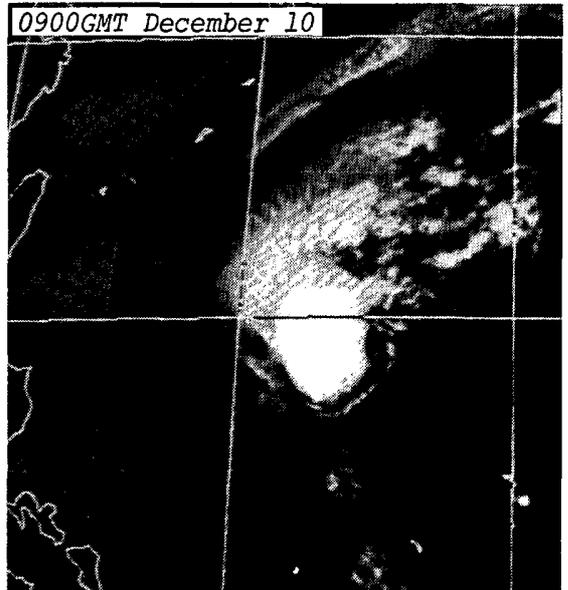
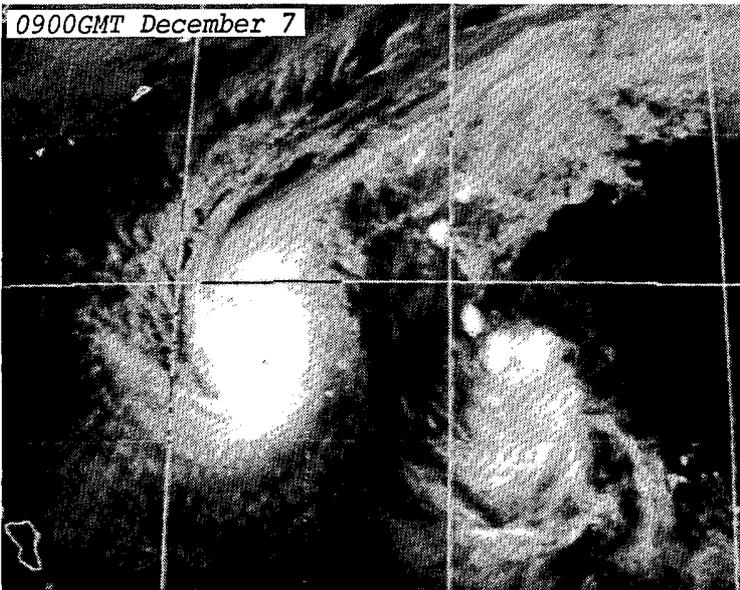
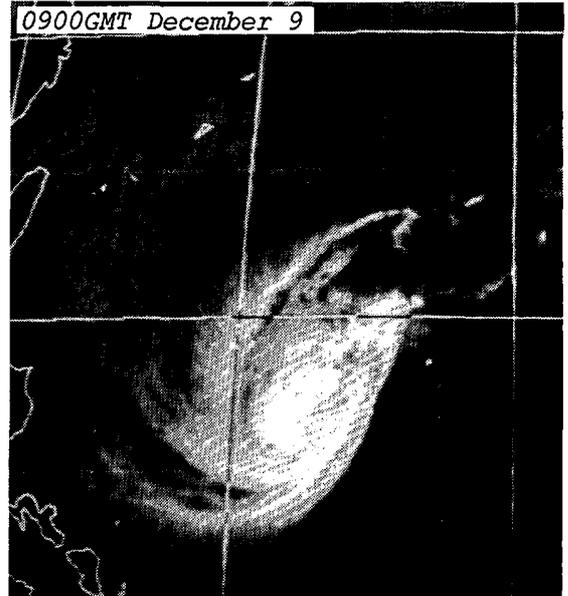
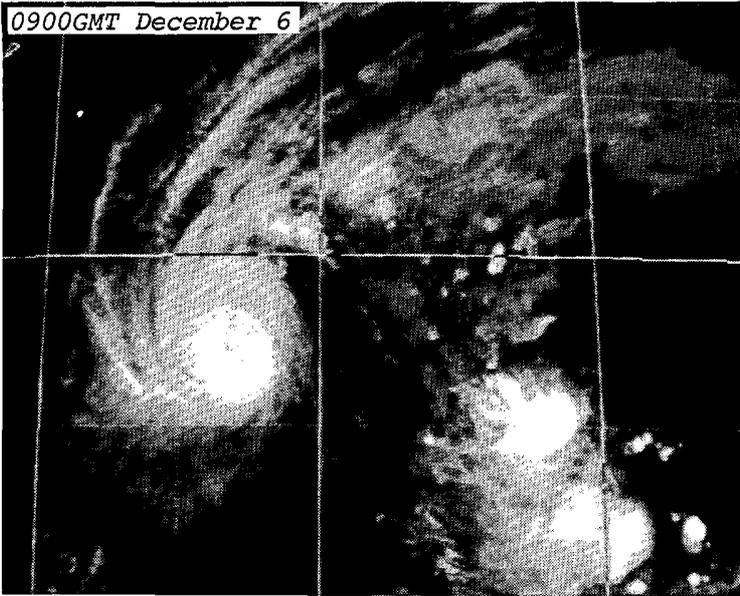
A composite of two satellite images shows Supertyphoon KIM at peak intensity and in reference to other Western Pacific weather systems at 1800GMT on December 2nd. Note from the overall cloud patterns the extent of the large-scale flows associated with and responsible for the storm's rapid and intense development.

SUPERTYPHOON KIM ---- continued



KIM's weakened state shortly after passing through the Marianas Islands is evident in the top left, December 3rd photo, the storm had re-exhibited a clear eye for a short time on the 4th as seen at left, and organized remnants of Tropical Storm LEX are seen entering the influence of KIM's circulation from the south-east in the December 5th view above.

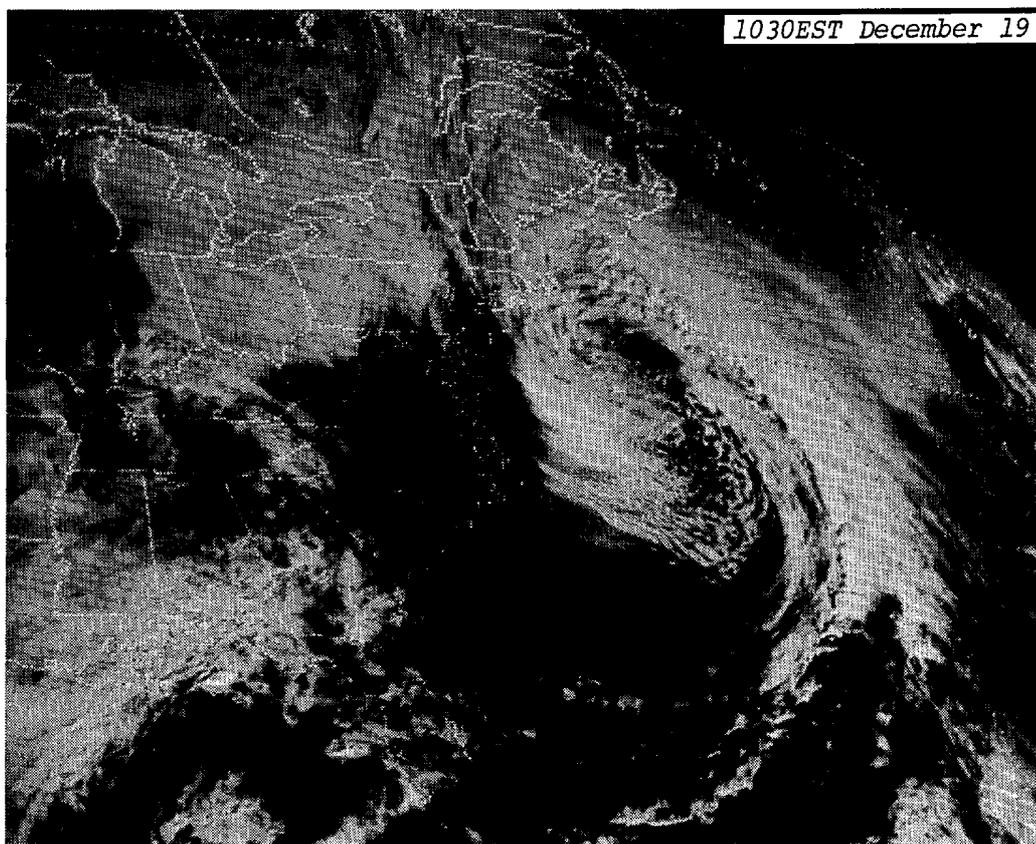
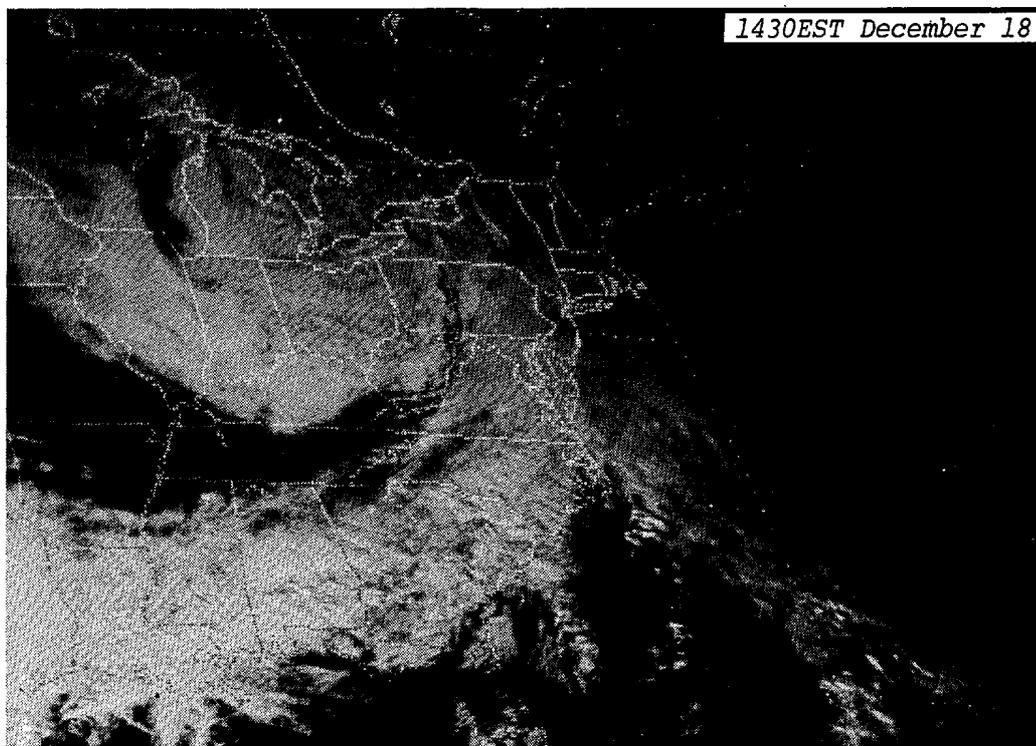
SUPERTYPHOON KIM ---- continued



Images from KIM's final week show the northward passage of LEX's remnants to KIM's east from December 6th through 8th, left, and KIM's eventual demise thereafter, right.

2. WINTER STORM in the NORTHEAST, December 18-19, 1986

A strong winter storm that developed off of the New Jersey coast and moved east out to sea lashed the Northeast with high winds and heavy rain and snow on December 18th and 19th. The storm left snowfall amounts of up to 30 inches in Vermont, 24 inches in Massachusetts, and 20 inches in New Hampshire. The highest rainfall amounts neared 4 inches in southern New England, and winds there gusted to as high as 70 mph.



GOES 6 satellite, visible images of the winter storm which developed rapidly overnight on December 18th and 19th. ---Photos from NESDIS.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

DECEMBER 1986

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED* DAMAGE		CHARACTER OF STORM
					KILLED	INJURED	PROPERTY	CROPS	
1 ALABAMA ————— NONE REPORTED									
2 ARIZONA ————— NONE REPORTED									
3 ARKANSAS									
Crittenden County	08	Night			0	0	3	-	Flash Flooding
<p>Mostly urban flooding resulted from heavy rainfall across the county. A West Memphis publishing company had its storeroom flooded. Many streets and underpasses were flooded in West Memphis, Earle and Marion.</p>									
4 CALIFORNIA, Northern ————— NONE REPORTED									
4 CALIFORNIA, Southern ————— NONE REPORTED									
5 COLORADO									
Statewide	18-19				0	0	0	0	Snow
<p>Snow fell throughout the state, mostly in light to moderate amounts. The mountains and eastern foothills received the most snow, with totals in the 6 to 12 inch range except for 20 inches at Monarch Pass. 3 to 6 inches fell in northeastern Colorado, with 1 to 3 inches at many spots in the southeast and west.</p>									
6 CONNECTICUT									
CTZALL, Statewide	18-19	Evening Morning			0	0	4	0	High Winds, Heavy Rain, and Snow
<p>An intense coastal storm brought very strong east to northeast winds gusting up to 50 MPH at times along with heavy rain. Heavy snow fell in the highest elevations in the northwest. Large power outages affecting up to 15,000 to 20,000 customers were reported across sections of the state. No injuries or serious damage was reported.</p>									
7 DELAWARE ————— NONE REPORTED									
8 FLORIDA									
Monroe Co. Key West	08	0119EST			0	0	0	0	Heavy Rain
<p>Heavy rain, 6.6 inches, caused flooding of streets with up to two feet of water on the roadways. Most of the rain fell between 500AM and 700AM EST.</p>									
Duval Co. Jacksonville	10	0829EST			0	0	0	0	TSTM wind (50)
<p>A wind gust to 50 knots was observed at Jacksonville Naval Air Station. Hail one-half inch in diameter was also observed.</p>									
Charlotte Co. Punta Gorda	20	0700EST			0	0	3	0	TSTM wind (50)
<p>High wind destroyed a pool screen enclosure, damaged a solar hot water panel, and tore several roof tiles from a house.</p>									
Seminole Co. 6mi S Sanford	23	1400EST	0.5	30	0	0	5	0	Tornado (F0)
<p>A waterspout came ashore from Lake Jessup and destroyed three greenhouses at a nursery and damaged other nursery equipment. Two houses and three mobile homes were also damaged.</p>									
Marion Co. Ocala	23	1802EST	2.0	30	0	0	5	0	Tornado (F0)
<p>A church roof was torn off by a tornado. A second church was destroyed by the tornado. One mobile home was severely damaged and three block homes were also severely damaged. Power lines and trees were downed.</p>									
9 GEORGIA ————— NONE REPORTED									
10 IDAHO									
IDZ006	6	all day			0	0	0	0	Heavy Snow
<p>Ten inches of snow fell at Powell and eight inches at Dixie.</p>									
IDZ006	29	most of day			0	0	0	0	Heavy Snow
<p>Six inches of new snow fell at Powell.</p>									
11 ILLINOIS									
ILZ002 Lake Michigan Shore	01				0	0	5	0	High Wind and Lakeshore Erosion
<p>East and northeast winds of 30 to 40mph over Lake Michigan generated 6 to 12 foot waves for an 16-hour period. The high waves, coupled with record high water levels in Lake Michigan, exacerbated shoreline erosion and flooding which have been increasingly recurrent problems as the lake has risen. Flooding affected residential streets on Chicago's north side, and in a few instances waves actually broke against the bases of waterfront highrise buildings. Waves pounded a 26-story apartment building at 6301 N. Sheridan Road so severely that vibrations could be felt through the entire structure. Streets which experienced flooding were: Thorndale, Glenlake, Granville, Rosemont, North Shore, Chase, Jarvis, and Birchwood.</p>									
12 INDIANA ————— NONE REPORTED									
13 IOWA ————— NONE REPORTED									
14 KANSAS									
KSZ002 Scott County	01	0000 to 2400CST			0	0	0	0	Heavy Snow
<p>A winter storm dropped 3 to 6 inches of snow from Southwest through North-Central Kansas. Heavy snow was confined to Scott County where 8 inches to about a foot accumulated. Scott City measured 13 inches. Strong winds caused enough drifting to close many roads during the early morning hours.</p>									

STORM DATA AND UNUSUAL WEATHER PHENOMENA

DECEMBER 1986

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS				ESTIMATED DAMAGE		CHARACTER OF STORM																																				
					KILLED	INJURED	PROPERTY	CROPS	PROPERTY	CROPS																																					
15 KENTUCKY																																															
Central Kentucky	09	0000 EST			0	0	3	0			Lowland Flooding																																				
<p>Moderate to heavy rain fell over most all of Kentucky beginning shortly after midnight on December 9, 1986, and continued into the afternoon hours of the 9th. Rainfall totals of two to three inches fell on already saturated ground, bringing streams and creeks across Kentucky to levels of bankfull or above. Across Central Kentucky, a few scattered incidents of flash flooding occurred along with numerous reports of ponding of water across roadways. The majority of the land area affected by the flooding was confined to agricultural lowlands. Flood stages were exceeded in the Rolling Fork Basin and at the Green River Basin. River crests were not reached for a few days, averaging from 6 am EST, December 11, 1986, to 7 am EST, December 12, 1986.</p>																																															
16 LOUISIANA																																															
St. Bernard Parish	22	1700CST			0	0	?	?			Coastal Flood																																				
<p>A strong low pressure area (1002 mb) developed in the northwest Gulf of Mexico during the afternoon and evening of the 22nd. The low moved on a northeast track and made landfall in St. Mary Parish during the morning of the 23rd. The low produced gale force, east winds and a 4 to 6 ft. NGVD storm surge in eastern St. Bernard Parish outside the hurricane protection levee system. The parish civil defense reported about 1.7 ft. of water above the roads in the Ysloskey, Reggio and Delacroix areas. About 25 people evacuated their homes. The maximum storm tide at the Bayou Benvenue lock was 6.1 ft. NGVD around 0200CST on the 23rd. Flood waters receded at around 1030CST.</p>																																															
17 MAINE																																															
MEZ004-008-011-014 Coastal	02-03	1900EST			0	0	6				Proxigean Spring Tide and High Winds																																				
<p>Around noon on the 3rd, a proxigean spring tide occurred along the coast. This is a relatively rare event and happens when the moon makes a particularly close approach to the earth during perigee and is in or near (within 1 and 1/2 days) either of its new or full phase. This coupled with the arrival of an intense low pressure system off the New Hampshire and Maine coasts near the time of high tide, caused tides to run 1 to 2 feet above normal. The Portland Harbor tide gauge was officially recorded as 12.46 feet above mean low water at 1142EST, or the 11th highest tide ever recorded in the harbor since records began in 1912. The tide at Cape Newegan on Southport Island (Lincoln County) was over 13 feet at the height of the storm, where the mean high tide is normally at 8.8 feet. High winds produced seas of 10 to 20 feet. Portland's large navigational buoy reported 20-footers at 1100EST. Coast Guard stations at Southwest Harbor, Manana Island, and Goat Island, reported frequent gusts to 69 mph (60 kts) Wednesday morning. There was widespread-but-generally-minor lowland coastal flooding and some beach erosion and property damage from Kittery to Eastport. All coastal cities and towns had isolated power outages from downed trees and limbs. Most coastal communities reported that the heavy surf dumped tons of sand and debris on coastal roadways and caused varying degrees of flooding and washouts on these roads. Flooding of basements of ocean-side residences and businesses was also common. Many piers and wharves were under water at high tide. Coastal York County appeared to be the hardest hit area. A 26-foot-long lobster boat at Cape Porpoise sank at its mooring; the town's Pier Road flooded and was closed; Ocean Avenue and other roads were wash by passable. The town of York had several dirt roads washed out. In Kennebunk, Gooch's Beach witnessed waves crashing about 30 feet over the seawall, spewing rocks onto Beach Avenue and damaging part of the seawall. The Camp Ellis section of Saco saw several streets flooded and damaged, and porches of homes close to the water destroyed. Old Orchard Beach had a 10 x 20 foot section of roof blown off a building. About 1,400 homes in Cape Porpoise and Kennebunkport were without power for 4 hours. In Lincoln County, Damariscotta reported 65 mph (57kts) wind gusts with extensive damage to a boathouse and two boats. Many ocean-side cottages lost shingles and part of their roofs. Several trees were blown down on Pemquid Point Road briefly disrupting electricity. At Damariscotta Mills, Great Salt Bay was extremely high, flooding out the fish house. South Bristol's sand cove on Rutherford Island was heavily washed out by the rough surf and high tides. Cape Newegan reported 62 mph (54 kts) wind gusts.</p> <p>The largest power outage affected 6,000 to 8,000 customers in Freeport and Harpswell (Cumberland County), and the Sagadahoc County towns of Phippsburg and Bowdoinham. A section of Cundy's Harbor in Harpswell was without power for 12 hours, where one family on the point lost 20 of their 30 trees. Port Clyde, St. George, and Tenants Harbor suffered the worst road washouts in Knox County. Also, an Owl's Head family had to be evacuated due</p>																																															
MAINE																																															
MEZ001-002-005-006-009 Mountains & Northern	09	0400EST			0	0	5				Heavy Snow																																				
<p>A low pressure area formed off the New Jersey coast, late Monday night. It intensified and moved rapidly east, then northeast, arriving over eastern Nova Scotia, early Wednesday morning. This system dumped 5 to 10 inches of snow over northern and mountain sections of the state. There were the usual number of fender benders, but no injuries were reported. Following is a list of heavy snowfall amounts in inches and by zones:</p> <table style="width: 100%; border: none;"> <tr> <td>.....Zone 001.....</td> <td>.....Zone 005.....</td> <td>.....Zone 009.....</td> </tr> <tr> <td>Fort Kent 6</td> <td>Allagash 6</td> <td>Brassua Lake 7</td> </tr> <tr> <td>Caribou 7</td> <td>Telos Lake 9</td> <td>Comstock 7</td> </tr> <tr> <td>Portage 6</td> <td>Clayton Lake 9</td> <td>Eustis 8.6</td> </tr> <tr> <td></td> <td></td> <td>Flagstaff Lake 7</td> </tr> <tr> <td>.....Zone 002.....</td> <td>.....Zone 006.....</td> <td>Kingfield 6</td> </tr> <tr> <td>Grand Lake 7</td> <td>Millinocket 6</td> <td>Phillips 8</td> </tr> <tr> <td>Houlton 6</td> <td>Moosehead 8</td> <td>Upperdam 10</td> </tr> <tr> <td></td> <td>Nilo 5</td> <td>Pittston Farm 7</td> </tr> <tr> <td></td> <td>Guilford 5</td> <td>Middle Dam 7</td> </tr> <tr> <td></td> <td>Blanchard 7</td> <td>Harris Dam 7</td> </tr> <tr> <td></td> <td></td> <td>Kyman Dam 7</td> </tr> </table>											Zone 001.....Zone 005.....Zone 009.....	Fort Kent 6	Allagash 6	Brassua Lake 7	Caribou 7	Telos Lake 9	Comstock 7	Portage 6	Clayton Lake 9	Eustis 8.6			Flagstaff Lake 7Zone 002.....Zone 006.....	Kingfield 6	Grand Lake 7	Millinocket 6	Phillips 8	Houlton 6	Moosehead 8	Upperdam 10		Nilo 5	Pittston Farm 7		Guilford 5	Middle Dam 7		Blanchard 7	Harris Dam 7			Kyman Dam 7
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MEZ003-004-007-008-010-011-012-013-014	09	0400EST			0	1	4				Snow & Mixed Precipitation																																				
<p>A low pressure area formed off the New Jersey coast, late Monday night. It intensified as it moved rapidly east, then northeast, arriving over eastern Nova Scotia, early Wednesday morning. Snow from this system accumulated 3 to 5 inches, with periods of sleet and/or freezing rain alone or mixing with the snow. Law enforcement agencies reported very few accidents, since most vehicles sliding off roads did not hit anything. No injuries were reported. The worst accident occurred in Kittery (York County). A southbound tractor-trailer skidded out of control on an icy portion of I-95. The vehicle broke through a guardrail and came to rest about a half mile from the Piscataquis River bridge. It took more than one hour to remove the injured driver from the wreckage, Tuesday morning.</p>																																															
MEZ012-013	18-19	1400EST			0	0	4				Heavy Snow																																				
<p>A low pressure area developed off the New Jersey coast, Thursday morning and intensified as it moved just east of Cape Cod, Friday morning. It moved rapidly east thereafter. Only extreme western Maine received heavy snowfall with 4 to 8 inches accumulation, and snowfall amounts dwindled rapidly the further one moved north and east. Along the coast, precipitation was primarily rain. This system basically affected the states to the west and south of Maine. Following is a list of heavy snowfall amounts in inches and by zones:</p> <table style="width: 100%; border: none;"> <tr> <td>.....Zone 012.....</td> <td>.....Zone 013.....</td> </tr> <tr> <td>Bethel 6</td> <td>East Hiram 8</td> </tr> <tr> <td>Lovell 5.5</td> <td></td> </tr> <tr> <td>New Sharon 4</td> <td></td> </tr> <tr> <td>Rumford 7</td> <td></td> </tr> <tr> <td>West Paris 5</td> <td></td> </tr> </table>											Zone 012.....Zone 013.....	Bethel 6	East Hiram 8	Lovell 5.5		New Sharon 4		Rumford 7		West Paris 5																									
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Statewide	25	0300EST			1	0	5				Freezing Rain and Rain																																				
<p>Two low pressure areas, one over western Lake Ontario and the other near New York City early Christmas morning, combined to form one center over southwestern New Hampshire in the afternoon. This system then moved through extreme western Maine and arrived near Anticosti Island, early Friday morning. Cold air trapped at the surface caused the rain to freeze on impact, making for extremely slippery travel conditions. The freezing precipitation moved into southwestern Maine in the early morning and spread to eastern and northern Maine by noon. The Maine Turnpike lowered its speed to 45 mph from 0500EST to 0700EST. Many members of the sanding crews could not make it or arrived very late for work due to the extremely slippery conditions, and even one of the turnpike's sanding trucks slid off the road. Numerous vehicles slid off roads and highways, many of them into guardrails and utility poles. Only several minor injuries were reported, but none were serious. However, there was one death. A 33-year-old male was killed in Thomaston (Knox County), Thursday morning when his pickup truck hit a steel mailbox post. He was thrown through the windshield of the vehicle, which flipped and landed on top of him. The freezing rain quickly turned to rain along the coast, and slowly worked its way inland during the day. The western half of the Maine coast reported around 2 inches of rain which flooded many cellars and basements. Portland had 1.87 inches and Brunswick 2.14 inches.</p>																																															

STORM DATA AND UNUSUAL WEATHER PHENOMENA

DECEMBER 1986

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED ¹ DAMAGE		CHARACTER OF STORM
					KILLED	INJURED	PROPERTY	CROPS	
18 MARYLAND and D.C.									
Baltimore, Anne Arundle, & St. Mary's Counties	2	0000-2400EST			0	0	4	0	Flood
			High astronomical tides combined with strong winds caused minor flooding.						
Garrett and Allegany Counties	2	0000-2400EST			0	0	3	0	Ice
			Ice on trees and wire caused power line damage.						
Prince George County	24	1500-2300EST			1	0	3	0	Flood
			Minor flood damage occurred from a 2 to 3 inch rainfall. A 38-year-old man drowned in Oxon Run Creek overflow.						
19 MASSACHUSETTS									
MAZ001-002-003-004-007-008-009, Central & Eastern Portions	18- 19	Evening All day			0	1	5	0	High Winds and Heavy Rain
			An intense coastal storm brought east to northeast winds which gusted up to 50 to 70 MPH causing large power outages affecting up to 25,000 to 35,000 electric customers. Peak gusts reached 52 MPH at Worcester, 63 MPH at Boston, 70 MPH at the Blue Hill Observatory, Milton, and 60 to 70 MPH on Cape Cod. Uprooted trees fell onto homes and autos in scattered locations. A Fall River motorist was injured by a tree knocked down by the high winds. Two to three inches of rain accompanied the winds. Street flooding was reported in many areas, and in Worcester a number of autos were damaged by the flooding.						
MAZ004-005-006, Central & Western Portions	18- 19	Evening Morning			0	0	0	0	Heavy Snow
			Heavy snow fell in the northern portions of Berkshire, Franklin, and Worcester counties, especially in the high elevations. Snow accumulations of up to 24 inches were reported from Monroe, and generally 12 to 20 inches over much of the area. Scattered power outages and very poor road conditions were reported, but no serious damage occurred.						
20 MICHIGAN ————— NONE REPORTED									
21 MINNESOTA ————— NONE REPORTED									
22 MISSISSIPPI									
Harrison and Hancock Counties	22- 23	1700 CST 0800 CST			0	0	5	0	Coastal Flooding
			Heavy rains of 2 to 3 inches combined with easterly winds of 30 to 40 mph to cause flooding along the coastal areas of Hancock and Harrison counties. Tides rose to 3 to 5 feet above normal. About 2 dozen homes suffered minor flooding. Several cars were flooded as numerous roads were inundated with water. Conditions improved as a powerful low pressure system in the gulf moved eastward and winds switched to the northwest.						
23 MISSOURI ————— NONE REPORTED									
24 MONTANA ————— NONE REPORTED									
25 NEBRASKA ————— NONE REPORTED									
26 NEVADA									
NVZ003	5	0000-1200 PST			0	0	0	0	High winds
			High winds buffeted extreme Western Nevada during the early morning hours. These winds caused scattered areas of power outages. Winds gusted to 63 mph at the Reno Airport and 75 mph at the Virginia Foothills.						
NVZ003	6- 7	1800-0600 PST			0	0	0	0	Heavy Snow
			Locally heavy snow fell along the east slopes of the Lake Tahoe Basin during the evening and early morning hours. Accumulations were generally 2 to 6 inches, with 4 inches at Mount Rose and 6 inches at Daggett Pass.						
NVZ003	19- 20	1800-0600 PST			0	0	0	0	Heavy Snow
			Locally heavy snow fell in the Lake Tahoe Basin overnight, causing chain or snowtire requirements on most mountain roads. Snow accumulations ranged from 4 to 8 inches, with Incline having received 6 inches of snow.						
NVZ006	20	0000-1200 PST			0	0	0	0	Heavy Snow
			Locally heavy snow in Central Nevada caused slick roads with numerous vehicles sliding off the road around Tonopah. Snow accumulations were 2 to 5 inches, with 4 inches reported at Tonopah.						
NVZ003	22	1500 PST			0	0	0	0	Heavy Snow
			Locally heavy snow fell in the Lake Tahoe Basin during the day. This caused chain or snow tire requirements on most mountain roads. Snow accumulations were between 3 and 8 inches.						
27 NEW HAMPSHIRE									
NHZ 007 Coastal	02- 03	1600EST			0	0	5		Proxigean Spring Tide and Heavy Rain
			Around noon on the 3rd, a proxigean spring tide occurred along the coast. This is a relatively rare event and happens when the moon makes a particularly close approach to the earth during perigee and is in or near (within 1 1/2 days) either of its new or full phase. This, coupled with the arrival of an intense low pressure system off the New Hampshire and Maine coasts near the time of high tide, caused tides to run one to two feet above normal. High winds produced seas of 10 to 15 feet. There was widespread-but-minor, lowland coastal flooding and some beach erosion. However, little property damage was reported. The Isles of Shoals Coast Guard Station recorded sustained southeast winds of 52 mph with gusts to 58 mph during the height of the storm on Wednesday morning. Hampton Beach reported 50 mph winds, over 3 inches (3.11) of rain, and a tide 1.6 feet above normal. This closed Ocean Boulevard for about 2 hours from the intersection of Route 51 to High Street. Parts of Ashworth and Brown Avenues, and almost all side streets off of Ashworth Avenue leading to the marsh were under water. This was the highest water at Hampton Beach in 6 years. A floating pier was lost at the Portsmouth Harbor Coast Guard Station. At Rye, several anchored small boats sank. Pease Air Force Base, in Portsmouth, recorded 3.11 inches of rain and a peak gust of 36 mph. About 20 surfers braved the high seas which they said had "standup tubes (curls) that you could drive a Mack truck through." Miraculously, they all survived the ordeal.						
NHZ001-002-003-004-005-006 Entire State, excluding Immediate Coast	02- 03	1600EST			0	2	5		Snow and Mixed Precipitation
			The state was under siege from an intense low pressure system moving northward through the Great Lakes with its associated cold front moving through the state, and an intensifying low that was moving up the East Coast. This produced snow which mixed with or changed to sleet and freezing rain over most of the state. In the south, the snow changed to rain. Snowfall amounts ranged from 2 inches in the south to 5 inches in the north. The combination of very wet snow, mixed precipitation, and temperatures hovering near the freezing mark produced slippery road conditions which, in turn, caused numerous auto accidents. There were no major accidents or deaths, however, there were two serious injuries, Tuesday night. A 17-year-old female lost control of the car which she was driving. It apparently left the north side of the Kancamagus Highway (Carroll County) and struck a tree. In Ashland (Grafton County), a car struck a 15-year-old boy who was walking on Route 3. The snowy and windy conditions were blamed for the driver not seeing him. Atop Mt. Washington (elev. 6,288 feet), the observatory reported 8 inches of snow before the freezing rain came, and a peak gust of 100 mph. For the mountain, this is not unusual for this time of year.						

STORM DATA AND UNUSUAL WEATHER PHENOMENA

DECEMBER 1986

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED ¹ DAMAGE		CHARACTER OF STORM																														
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NEW HAMPSHIRE																																							
NHZ001-002 Northern and White Mountain sections	09	0300EST			0	0	5		Heavy Snow																														
<p>A low pressure area formed off the New Jersey coast, late Monday night. It intensified and moved rapidly east, then northeast, arriving over eastern Nova Scotia, early Wednesday morning. This system dumped 4 to 9 inches of snow over northern and White Mountain sections of the state. The snow turned briefly to freezing rain before ending. There were several fender benders and rollovers, but only a few minor injuries were reported. Following is a list of heavy snowfall amounts in inches and by zones:</p> <p>.....Zone 001..... Zone 002.....</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 30%;">Errol 9</td> <td style="width: 30%;">Pinkham Notch 6</td> <td style="width: 30%;"></td> </tr> <tr> <td>Milan 6</td> <td>Gorham 6</td> <td></td> </tr> <tr> <td>Diamond Pond 5</td> <td></td> <td></td> </tr> <tr> <td>1st CT Lake 4</td> <td></td> <td></td> </tr> <tr> <td>Pittsburg 4</td> <td></td> <td></td> </tr> </table>										Errol 9	Pinkham Notch 6		Milan 6	Gorham 6		Diamond Pond 5			1st CT Lake 4			Pittsburg 4																	
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NHZ003-004-005-006 Central and Southern	09	0300EST			1	3	5		Snow and Mixed Precipitation																														
<p>A low pressure area formed off the New Jersey coast, late Monday night. It intensified as it moved rapidly east, then northeast, arriving over eastern Nova Scotia, early Wednesday morning. Snow from this system accumulated from 2 to 5 inches before changing to sleet, freezing rain and rain. The combination of the mixed precipitation and temperatures hovering near freezing produced extremely slippery conditions that closed most schools and forced cancellations of many public meetings, Tuesday night. Numerous fender benders and rollovers were reported throughout the region. There were two bad accidents. In Temple (Hillsborough County), a 60-year-old Peterborough woman died from head injuries from an auto accident on Route 101 at 1510EST. She and her husband, the driver, were westbound, when an eastbound van went out of control and slid sideways into the westbound lane, causing the collision. Both drivers were hospitalized. In Rochester (Strafford County), a 10-year-old boy was struck by a car on Chamberlain Street at 1552EST and was hospitalized in critical condition.</p>																																							
Rockingham County	17	0600EST			1	1	5		Snow and Freezing Drizzle																														
<p>Light snow and freezing drizzle that began falling early Wednesday morning produced very slick road conditions. There were several bad auto accidents in Rockingham County during the commuter hours. In Salem, a 29-year-old woman was pronounced dead at the scene of the accident after her car slipped over an embankment on Route 28 at around 0800EST. In Seabrook, a 40-year-old woman was seriously injured after her car skidded on I-95 and collided with a tractor-trailer truck. In Wincham, an accident involving 6 cars and a flatbed truck in the southbound lane of I-93 occurred at about 0630EST. There were no injuries. It took 5 hours to clear the highway, which delayed commuters.</p>																																							
NHZ003-004-005-006 Central and South-western	18	1300EST			0	0	5		Heavy Snow																														
<p>A low pressure area developed off the New Jersey coast, Thursday morning and intensified as it moved just east of Cape Cod, Friday morning. It moved rapidly east thereafter. This system brought 6 to 20 inches of heavy wet snow from Frankestown north to North Conway and west to the Connecticut River Valley. The northern and White Mountains only received a trace upwards to 6 inches. The southeastern part of the state, from the south and east of Concord, received all rain. There were countless auto accidents and fender-benders throughout the state, but no deaths or serious injuries were reported. The worst accident occurred in Warner (Merrimack County) when a tractor-trailer jackknifed, forcing the closure of the northbound lanes of I-89. There were no injuries. The heavy wet snow, described as having the consistency of wet cement, caused many power interruptions as snow-laden tree limbs crashed across and through transmission lines. Hardest hit was the Lakes region, the Monadnock region, and Carroll County, where about 4,000 homes and businesses were without power for up to 20 hours. At least 2 dozen school districts in the heavy snow area closed, and many organizations cancelled meetings. Some businesses reported delayed openings. Ski areas in central and southwestern New Hampshire were elated as they reported from 8 to 24 inches of new snow. Following is a list of heavy snowfall amounts in inches and by zones:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 30%;">.....Zone 003.....</td> <td style="width: 30%;">.....Zone 004.....</td> <td style="width: 30%;">.....Zone 005.....</td> </tr> <tr> <td>Claremont 12</td> <td>Alton 11</td> <td>Hillsboro 12-13</td> </tr> <tr> <td>Sunapee 15-16</td> <td>Barnstead 6</td> <td>Jaffrey 18</td> </tr> <tr> <td></td> <td>Blackwater Dam 8</td> <td>MacDowell Dam 11</td> </tr> <tr> <td>.....Zone 006.....</td> <td>Bristol 7</td> <td>Marlow 14</td> </tr> <tr> <td>Frankestown 6</td> <td>Franklin Falls 7</td> <td>Peterborough 20</td> </tr> <tr> <td>Greenville 7-14</td> <td>Plymouth 6</td> <td>Rindge 17</td> </tr> <tr> <td>Hopkinton 10</td> <td>Lakeport 9</td> <td>Swanzy 6</td> </tr> <tr> <td></td> <td>North Conway 6</td> <td>Walpole 18</td> </tr> <tr> <td></td> <td>Tamworth 6</td> <td></td> </tr> </table>									Zone 003.....Zone 004.....Zone 005.....	Claremont 12	Alton 11	Hillsboro 12-13	Sunapee 15-16	Barnstead 6	Jaffrey 18		Blackwater Dam 8	MacDowell Dam 11Zone 006.....	Bristol 7	Marlow 14	Frankestown 6	Franklin Falls 7	Peterborough 20	Greenville 7-14	Plymouth 6	Rindge 17	Hopkinton 10	Lakeport 9	Swanzy 6		North Conway 6	Walpole 18		Tamworth 6	
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28 NEW JERSEY, Northern																																							
Somerset and Middlesex Counties	03	Afternoon			0	0	?	0	Flood																														
<p>Heavy rainfall over the Raritan River Basin of between 1.5 to 2.5 inches produced flooding at Manville, Bound Brook and New Brunswick, New Jersey. The Raritan and Millstone Rivers crested around 2.5 feet above flood stage. The effect was mainly restricted to several road closings.</p>																																							
28 NEW JERSEY, Southern — NONE REPORTED																																							
29 NEW MEXICO																																							
Bernalillo County	08	1600 MST			0	0	0	0	Funnel																														
<p>The funnel was sighted over northern sections of Albuquerque.</p>																																							
Southern New Mexico	09-10				0	0	?	?	Heavy Snow																														
<p>A snowstorm dumped up to 12 inches of snow on southern New Mexico, closing highways, schools, and businesses. Interstate 10 between Deming and Las Cruces and Interstate 25 between Las Cruces and Truth or Consequences were closed. The storm dumped 10-12 inches in Deming and 6 inches in Las Cruces.</p>																																							
30 NEW YORK, Coastal																																							
Rockland and Westchester Counties	03	Morning			0	0	?	0	Flood																														
<p>Several small streams and rivers in Rockland and Westchester Counties crested above bank full and caused minor flooding that closed several roadways but caused little damage.</p>																																							
Suffolk and Nassau Counties	03	Morning			0	0	?	0	Coastal Surge																														
<p>A storm moving northward along the Atlantic coast produced tides 1 1/2 to 2 1/2 feet above normal. This and heavy surf combined to produce major beach erosion along the southern shore of Suffolk County, especially in the Hamptons. Coastal flooding and minor beach erosion occurred along the south shore of Nassau County.</p>																																							
30 NEW YORK, Central																																							
NYZ006-007-008-009-010-011-012-018-019-020	02	1100EST			2	13	6	0	Snow/Freezing Rain																														
<p>A major winter storm crippled Eastern New York. Snow started about mid-day. Snow fell at the rate of 2-3 inches per hour during the afternoon. Snow totals ranged from 5 to 10 inches around Eastern New York. Snow changed to rain during late afternoon; this added to local problems. Freezing rain was listed as the cause of a fatal one-car crash on Route 22 in Washington County. Icy roads were also listed as the cause of a fatal accident in Rome, NY. A third accident was reported in Sangerfield, NY.</p>																																							
							M-39-V																																
							M-UNK-V																																
							M-30-V																																
NYZ006-007-008-009-010-011-012-018-019-020	18	0700EST			1	22	6	0	Snow																														
<p>Heavy wet snow blanketed Eastern New York. 40,000 homes were left without power when tree limbs and power lines fell under the weight of wet snow. Five (5) radio stations and two (2) TV stations, in the Albany area, went off the air when local power failed. Approximately 1.3 million gallons of raw sewage also spilled into the Hudson River due to power outages. One (1) roof collapsed in the city of Albany, as did the inflatable dome of an athletic field owned by the State University. One (1) person was killed when a van slid off the road in Melrose, Rensselaer County.</p>																																							
							F-39-V																																
Dutchess County	19	0400EST			0	0	4	0	High Wind																														
<p>High winds in Millbrook, Dutchess County, blew down an office complex which was under construction.</p>																																							

STORM DATA AND UNUSUAL WEATHER PHENOMENA

DECEMBER 1986

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED ¹ DAMAGE		CHARACTER OF STORM
					KILLED	INJURED	PROPERTY	CROPS	
30 NEW YORK, Western									
NYZ022 Cattaraugus County	02	Morning			0	0	4	0	Freezing Rain
									Freezing rain glazed area roads. It was responsible for some accidents and slowdown of traffic.
NYZ004 Jefferson County	02	Morning			0	0	4	0	Snow & High Wind
									A combination of snow, sleet, and wind made driving dangerous. One car accident in Watertown resulted in the death of a man.
NYZ001 Southern Erie County	04	Early Morning			0	0	4	0	High Wind
									High winds downed power lines and cut electricity to 2300 homes and businesses in West Seneca, Orchard Park, Elma, and East Aurora.
NYZ001 Genesee County	04	Morning			0	0	4	0	Snow
									Wet snow pulled tree branches down over power lines and severed them. Power outages were reported in Alexander.
NYZ001-022 Portions of Southern Erie, Genesee, Wyoming, & Chautauque Counties	04	Afternoon			0	0	5	0	Snow
									A lake-effect snowstorm buried parts of southern Erie, Wyoming, Genesee, and Chautauque Counties with heavy snow. East Aurora in southern Erie County received 20 inches. Pavilion in Genesee County got 18 inches while Warsaw in Wyoming County got 12 inches. Schools were forced to close. Various activities were cancelled. Vehicular accidents sent many persons to area hospitals.
NYZ001-022-004-005 Parts of Erie, Chautauque, Cattaraugus, Cayuga, Wyoming, & Lewis Counties	12	Evening			0	0	5	0	Snow
									Up to 4 inches of snow fell and made motoring very dangerous. There was a slowdown of traffic. Many accidents were reported.
31 NORTH CAROLINA									
NCZ-007-009-010 Western NC	01	0900EST			0	0	6	?	High Winds, Ice Storm
									One of the worst ice storms in recent memory struck parts of Western NC. Watauga, Avery, Burke, and a small part of eastern Buncombe county were hit the hardest. Most of the damage was to power lines and poles. Some large radio and city antennas were also damaged. Numerous trees fell across the area, and some fell onto cars and houses. Ice began forming during the morning, and continued throughout most of the day. Up to 2 inches accumulation was reported from areas which received the most damage. High winds in the same area served to amplify the impact of the storm. Winds were measured as high as 51 mph in downtown Asheville, and as high as 75-80 mph in the mountains. Some communities were without power for several days because of the storm.
NCZ-001-016 Coastal NC	01-02				0	0	7	?	Coastal Storm
									Moderate to sometimes strong onshore winds, combined with a period of high tides resulted in the worst coastal flood in many years. During the morning of the 2nd, the tide rose to its highest point in southeastern NC: land was flooded up to about 6.5 feet above MSL. Severe beach erosion also occurred. Property losses amounted to about \$5 million at Topsail Beach in Pender County, and about \$3.5 million at Long Beach in Brunswick County. Several hundred oceanfront structures were damaged and a number of automobiles were damaged in the tidal flooding. Rural Route 1568 was destroyed by the surf on the northern end of West Onslow Beach. Along the Outer Banks, structural damage was limited to severe beach erosion under cottages in the South Nags Head area. Moderate to severe beach erosion was reported on Ocracoke Island, and along the beaches of Dare County. 8 to 12 feet of beach were lost in spots.
32 NORTH DAKOTA									
NDZ001-005 Northwestern North Dakota	02	Morning			0	0	4	0	High Wind
									A grain storage building, under construction, was toppled by strong winds at Mohall (Renville Co.).
33 OHIO									
OHZ001 Lucas and Ottawa Counties	01	morning			0	0	6	0	High Waves/Flooding
									Strong east winds pushed waters from Lake Erie inland at many shoreline locations; this was the worst case of such flooding on record. Most of the damage occurred on the Lake Erie Islands, where a number of structures were inundated.
OHZ009 Pike County	02	1400 EST			0	0	?	0	Flood
									The Scioto River went into flood at Piketon. The river crested at a stage of 18.7 feet (flood stage 16 feet) at 0900 EST on the 3rd, causing only minor damage.
OHZ006 Ross County	03	0015 EST			0	0	?	0	Flood
									The Scioto River began flooding at Circleville. The river crested at a stage of 15.8 feet (flood stage 14 feet) at 0100 EST on the 4th, which was not enough to cause significant damage.
OHZ011 Marion County	03	0800 EST			0	0	0	0	Flood
									The Scioto River flooded at LaRue, Crest; stage occurred at 1600 EST on the 4th and was 11.5 feet (flood stage 11 feet). No damage resulted.
OHZ007 Guernsey County	03	0900 EST			0	0	0	0	Flood
									Wills Creek flooded at Cambridge. The crest stage of 14.3 feet (flood stage 13 feet) came at 0900 EST on the 4th. There was little or no damage.
OHZ004 Trumbull County	03	1300 EST			0	0	0	0	Flood
									The Mahoning River went into flood at Leavittsburg. The river crested at a stage of 10.1 feet (flood stage 10 feet) at 1700 EST on the 3rd, which caused no damage.
OHZ003 Northeast Ohio	13	0700 EST			0	0	?	0	Heavy Snow
									Scattered locations received 6 inches of snow.
OHZ009 Lawrence County	29	Afternoon			0	0	4	0	High Winds
									High winds felled trees at several locations in the county.
34 OKLAHOMA									
08Z002-003	9	Daytime			0	?	?	?	Heavy Snow
									Up to 6 inches of snow and sleet fell across portions of Texas and Beaver Counties. The slick roadways caused numerous accidents with a few minor injuries.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

DECEMBER 1986

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED DAMAGE		CHARACTER OF STORM	
					KILLED	INJURED	PROPERTY	CROPS		
35 OREGON										
OR2007 Columbia Gorge	04	0800PST			0	0	?	0	High Wind	A strong pressure gradient developed between eastern and western Oregon, resulting in gusty winds of up to 55 mph.
OR2007 Columbia Gorge	09	1115PST			0	0	?	0	High Wind	A strong pressure gradient developed between western and eastern Oregon, resulting in wind gusts of up to 65 mph in the Columbia Gorge.
OR2007 Columbia Gorge	17	0400PST			0	0	?	0	High Wind	A strong pressure gradient developed between western and eastern Oregon, resulting in wind gusts of up to 75 mph in the Columbia Gorge.
OR2001-002-003 Oregon Coastal Strip	22	0200PST			0	0	?	0	High Wind	A low pressure system formed off of the south Oregon coast and moved northward along the coastal strip, producing wind gusts of up to 89 mph at Cape Blanco.
36 PENNSYLVANIA, Eastern - NONE REPORTED										
36 PENNSYLVANIA, Western										
Erie County	04	Afternoon			0	0	0	0	Heavy Snow	Up to 6 inches of snow fell throughout the county.
Lawrence County, 7 NE New Castle	09	1820EST			0	0	4	0	High Wind	Fifty to sixty mph, non-convective winds accompanying the passage of a cold front blew down a barn in Washington Township, 7 miles northeast of New Castle.
Clearfield County, 20 SE Dubois	24	1315EST			0	0	0	0	Ice Storm	Freezing rain conditions led to ice accumulation in the above listed counties. In Clearfield County, trees were bent and powerlines downed near Madera, 20 miles southeast of Dubois. The ice accumulation bent trees throughout Elk County and downed both trees and powerlines throughout Somerset and Bedford counties and eastern portions of Cambria County. In Bedford County, roads were closed between Rainsburg and Patience.
Elk County	24	1420EST			0	0	0	0	Ice Storm	
Somerset County	24	1830EST			0	0	0	0	Ice Storm	
Bedford County	24	2000EST			0	0	0	0	Ice Storm	
Cambria County	24	2100EST			0	0	0	0	Ice Storm	
37 RHODE ISLAND										
RIZALL, Statewide	02- 03	Evening Morning			0	0	4	0	Heavy Rain and Wind	A total of 3.7 inches of rain during a sixteen hour period was recorded by the National Weather Service at Warwick and between two and four inches was reported to have fallen statewide. Many roads were inundated by street flooding, numerous basements were hit by flooding, and the Narragansett River poured over its banks in North Providence. No serious damage was reported. Gusty winds knocked down tree limbs and power lines in scattered locations.
RIZALL, Statewide	18- 19	Evening All day			0	0	0	0	High Winds and Heavy Rain	An intense coastal storm brought east to northeast winds which gusted up to 50 to 60 MPH resulting in scattered power outages but no reports of serious property damage.
38 SOUTH CAROLINA										
Anderson County, Anderson area	1	1400EST			0	0	3	0	High Winds	High winds caused by a strong pressure gradient over the area blew down several trees in Anderson, disrupting electrical service to 800 customers.
Horry County (entire Coast)	1-2				0	0	6	0	High Tides	
Georgetown County (entire Coast)	1-2				0	0	6	0	High Tides	
Charleston County (entire Coast)	1-2				0	0	5	0	High Tides	
Beaufort County (entire Coast)	1-2				0	0	4	0	High Tides	A low pressure area developed a short distance east of St. Augustine, Florida on December 1st. The storm moved northeast to near Wilmington on the 2nd. Strong northeasterly winds gusting to over 50 knots occurred along the entire South Carolina coastline. The combination of storm-produced tides plus an unusually high spring tide resulted in tides of 2 to 4 feet above normal. There was extensive beach erosion along the entire South Carolina coastline. The most damage occurred at time of high tide on the 1st along the outer northeast coast, including Georgetown and Horry Counties. The high tides along with 7 to 10 foot waves destroyed walkways, oceanfront decks, seawalls, and boardwalks, flooded streets and causeways, scoured out support pilings, and broke windows. Some Garden City motels lost their swimming pools. In Surfside, 70% of the "walk-overs" were destroyed. The southern end of Pawley's Island was flooded, with many walkways and decks destroyed. There was heavy beach erosion along outer beaches of Charleston and Beaufort Counties. Total storm damage was 3 million dollars.
39 SOUTH DAKOTA - NONE REPORTED										
40 TENNESSEE										
Lake County	09	0130CST			0	0	3	0	Flash Flood	Heavy rainfall (estimated near 4.5 inches in the Wynnburg area) caused water to rise rapidly in many areas of Lake County during the early morning hours. A mobile home near Burrus Chapel Church received minor damage when water entered the structure. Water ran over several county roads.
Union City, Obion County	09	0400CST			0	0	3	0	Flash Flood	About 80 families (150 people) were evacuated from or left from the Green Acres Mobile Home Park on Reelfoot Avenue during the early morning hours. Between 3 and 4 inches of rain fell between midnight and sunrise. It was the third time in three years that flooding occurred there; flood damage in this instance occurred to the park's front office.
Williamson County	09	0730CST			0	0	4	0	Thunderstorm Wind	A mobile home on Behtesda Road was demolished by strong thunderstorm winds; most of the home's contents were also destroyed.
Smyrna, Rutherford County	09	Morning			0	0	4	0	Thunderstorm Wind	Strong thunderstorm winds damaged two parked Cessna 172 aircraft and two buildings at the Smyrna Airport. One plane was heavily damaged as it was torn from its tie-downs and landed upside down.
Murfreesboro, Rutherford County	11	Early morning			0	6	4	0	Ice Storm	Freezing rain contributed to two chain reaction accidents in Murfreesboro. Six people were injured slightly, treated at a local hospital, and released.
41 TEXAS, Northern										
North Texas	11- 12	Evening- Morning			0	0	?	?	Winter Storm	Snow and sleet fell across a large part of North Texas during the evening of the 11th and early morning of the 12th. Maximum accumulations were generally two inches or less except in an area around Stephenville where 6 inches accumulated. Hundreds of accidents were reported on the icy roads.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

DECEMBER 1986

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

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

41 TEXAS, Southern

Galveston and Jefferson Counties	22	1100CST							High Wind and Coastal Flooding
<p>A low pressure system in the northwest Gulf of Mexico produced winds gusting to 50 MPH on the upper Texas Coast. Coastal tidal flooding resulted from the high winds and the unusually high astronomical tides. Tides were from two to four feet above normal and closed several roads in the area including Tx. Hwy. 87 east of High Island. The surf was reported up in the dunes as far south as Port Aransas. There was some beach erosion on the western end of Galveston Island where 6 foot waves and swells pounded the area. There was minor wind damage at Galveston where two traffic lights were blown down.</p>									
Bexar, Comal and Guadalupe Counties	22	1800CST							Flash Flooding
<p>General rains of about 3 inches fell over the above counties, with some totals as high as 6 inches. Many low water crossings and roads were covered with high water. As many as 10 streets in San Antonio were barricaded. In the east and northeast part of San Antonio, the Salado Creek rose out of its banks and flooded some low-lying areas. In Comal County, Alligator Creek near the community of Hunter flooded some low areas including the access road to I-35.</p>									
Jefferson County	22-23	Evening							Flooding
<p>4 to 5 inches of rain in and around Beaumont flooded streets and stalled many cars mainly on the south side of the city along Hillebrandt Bayou.</p>									

41 TEXAS, Western ————— NONE REPORTED

42 UTAH

UTZ004 Uinta Basin	09	1030MST							Heavy Snow
<p>From four to six inches of snow fell in the vicinity of Myton overnight. Travel through the area was restricted during the morning hours.</p>									

43 VERMONT

VTZ 001-002-003-004-005	09	0945EST							Snow
<p>A major winter storm hit the state of Vermont. Snowfall totals in Windham County were close to 30 inches, while snow fall in Northern Vermont was a couple of inches. The heavy snow caused power lines and trees to come down.</p>									
VTZ 001-002-003-004-005	18	0830EST							Snow
<p>Heavy wet snow fell on the entire state of Vermont. In Southern Vermont between Bennington and Brattleboro, snow fall amounts of 20-30 inches were common. 29,000 homes were without power across Vermont. Radio Station WKVI in Brattleboro lost commercial power so they switched to a backup generator. When fuel started running low, station employees tried to buy gas, but without power the pumps would not work. Local fire departments solved the problem by loaning the station some spare gas. The effects of the major winter storm were felt for several days.</p>									
VTZ 001-002-003-004-005	26	0900EST							Snow
<p>Heavy snow fell in the state of Vermont. Two (2) men were killed in a car crash during the storm due to slick roads. The storm dumped over one (1) foot of snow in much of the state.</p>									
<p>M-25-V M-25-V</p>									

44 VIRGINIA

VAZ001-002-003-004-005-006	2	Afternoon							Flood
<p>An extended period of easterly winds beginning on November 30, forced additional water into the Chesapeake Bay and some of its tidal tributaries. By December 2, water levels were 3 to 4 feet above normal. This resulted in some flooding of low-lying areas along the Chesapeake Bay and along the Potomac River south of Washington at the time of high tide during the afternoon and evening.</p>									
In Alexandria, about one foot of water surged into streets along the Potomac, but preventative measures prevented any serious damage. In Prince William County, about a foot of water covered some low-lying roads near the Potomac River.									
Fairfax County	24	1845EST							Flash Flood
<p>Two to three inches of rain fell over Fairfax County causing many small streams to overflow their banks. In McLean, a man was killed when he attempted to drive across a small stone bridge that crosses Scotts Run Creek. The creek was swollen by the heavy rain and the car was washed into the creek and carried about a half mile downstream. M52V</p>									
Clark County	24	2345EST							Flash Flood
<p>Two people were killed when the pickup truck they were riding in was swept down Opequon Creek. The driver, who was unhurt, was attempting to drive across the creek. M31V, P28V</p>									

45 WASHINGTON ————— NONE REPORTED

46 WEST VIRGINIA

Pocahontas County	02	0300EST							Winds
<p>Many families were without power when 68 mph wind gusts swept through the Green Bank area of Point Mountain in Pocahontas County. Numerous large trees were uprooted and radio station WJNE-WVHT went off the air.</p>									
Grant County	23	overnight							Ice Storm
<p>Heavy ice as a result of freezing rain occurred on Mt. Storm in Grant County, causing extensive damage to trees and powerlines. Numerous county roads were blocked by the fallen limbs.</p>									

47 WISCONSIN

WIZ009-013-017-020 Extreme Eastern Wisconsin	01- 02	0300CST 0200CST							High Wind and Shore Erosion
<p>Easterly winds of 30 to 40 mph sent waves of 6 to 9 feet crashing into the western shores of Lake Michigan. This combined with record high lake levels caused a lot of erosion damage. Some large chunks of land and several trees began sliding into the lake in Sheboygan County. Shoreline erosion also caused \$67,000 damage to some homes in Racine County. Sand and rocks were thrown onto roads and also caused considerable damage to the Racine County Harbor Project. Public utility damage in Racine County was assessed at \$50,000. The backed up Pike River flooded a newly constructed portion of Highway 32 in Kenosha County.</p>									

48 WYOMING

WYZ011 East-Central	30	2040MST							High Wind
<p>Gusts to 55 mph were reported in downtown Casper.</p>									

STORM DATA AND UNUSUAL WEATHER PHENOMENA

DECEMBER 1986

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					KILLED	INJURED	PROPERTY	CROPS	
49 ALASKA, Northern ————— NO REPORT RECEIVED									
49 ALASKA, Southern ————— NO REPORT RECEIVED									
49 ALASKA, Southeastern									
Petersburg	25					4			High Winds
<p>Gusty winds associated with a strong occluded front crossed southern Southeast Alaska during the early morning hours of Christmas Day. The only reported damage from these winds was in Petersburg where a work shed was pushed off its foundation, many trees were downed, and several power outages occurred.</p>									
50 HAWAII									
HI2001-002 Kauai and Oahu	05	1600HST			0	0	4	0	High Wind
<p>Winds gusting locally near 50 mph did minor damage mainly along the windward slopes of Kauai and Oahu.</p>									
North and West Shores of All Islands	08-09				1	0	3	0	High Surf
<p>High surf which may have reached close to 30 feet in spots during the night did only minor damage. One person was lost in the high waves near Hanalei on the north shore of Kauai during the early evening hours as the surf rose rapidly.</p>									
51 PUERTO RICO ————— NONE REPORTED									
52 VIRGIN ISLANDS ————— NONE REPORTED									
53 PACIFIC									
Marianas Islands	03				0	10	7	6	Typhoon KIM
<p>Typhoon KIM at supertyphoon strength with 135 knot (155 mph) sustained winds close to its center, moved westward through the Marianas Islands on December 3rd following a path roughly along 15.5°N latitude. The center of the eye passed about 15 miles north of Saipan at 1500LST. Extensive damage occurred to dwellings, crops, and public property on Saipan and neighboring Tinian to the south, and to a lesser extent on Rota farther south. Only light damage was reported on Guam about 130 miles south of KIM's track. Preliminary damage estimates were \$20 million, of which \$2.5 million was agricultural damage. KIM was the first and the most severe of several late-season typhoons that formed during December, or in this case late November, close to the equator and just west of the International Dateline, and which from there moved west-northwest toward Guam and beyond. To the south of the equator, several early-season tropical cyclones were likewise spawned by this active convective area on the equator as strong and persistent westerly winds prevailed on the equator, a condition sometimes conducive to mirror-image cyclone development during the transition months when sea surface temperatures are warm enough to sustain tropical cyclones in both hemispheres.</p>									

STORM SUMMARY

DECEMBER 1986

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

SEE REFERENCE NOTES FOR STORM DAMAGE CATEGORIES

REFERENCE NOTES

- † Storm damage categories are from 1 to 9 as follows:
- 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

- * Miles instead of yards
** Yards instead of miles
@ Includes heavy sleet storm
Freezing drizzle and freezing rain, commonly known as glaze
≠ Not received or incomplete
o/c Under Estimated Damage, Property/Crops, indicates crop damage amount is included in the figure given

Definition of Fujita Tornado Scale (F scale)

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

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

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

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

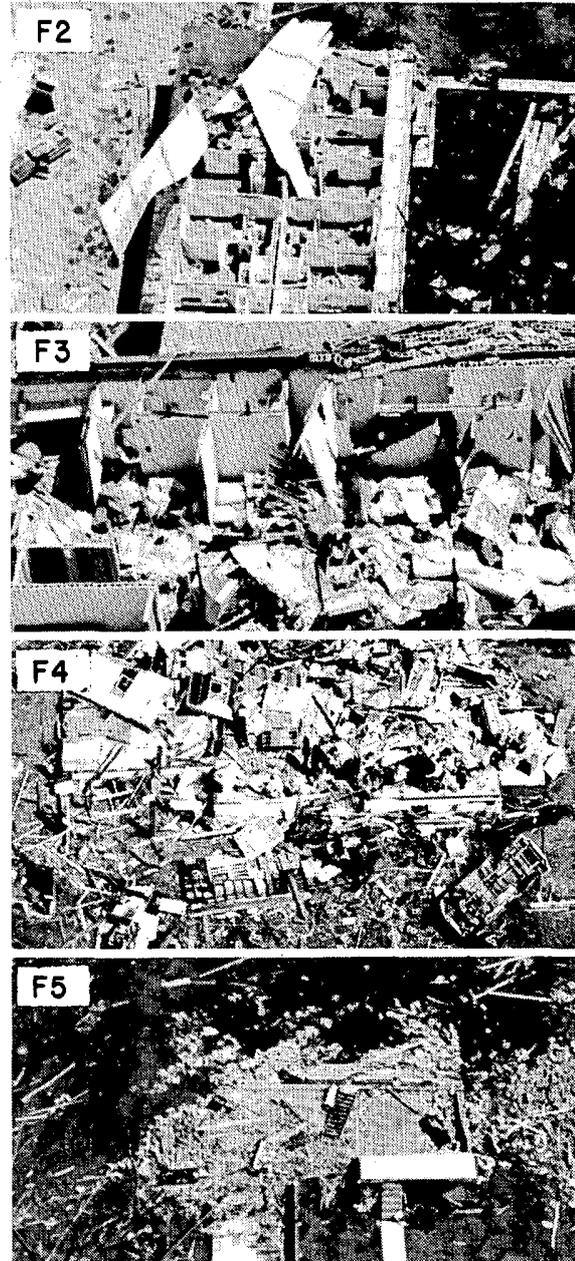
(F4) Devastating tornado (207-260 mph): Devastating damage
Well-constructed houses leveled; structure with weak foundation blown off some distance; cars thrown and large missiles generated.

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

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

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

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



USCOMM-NOAA-ASHEVILLE, N.C. 1986-2075

