

NOVEMBER 1982

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STORM DATA



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L. Ray Horst

ACTING DIRECTOR

NATIONAL CLIMATIC DATA CENTER

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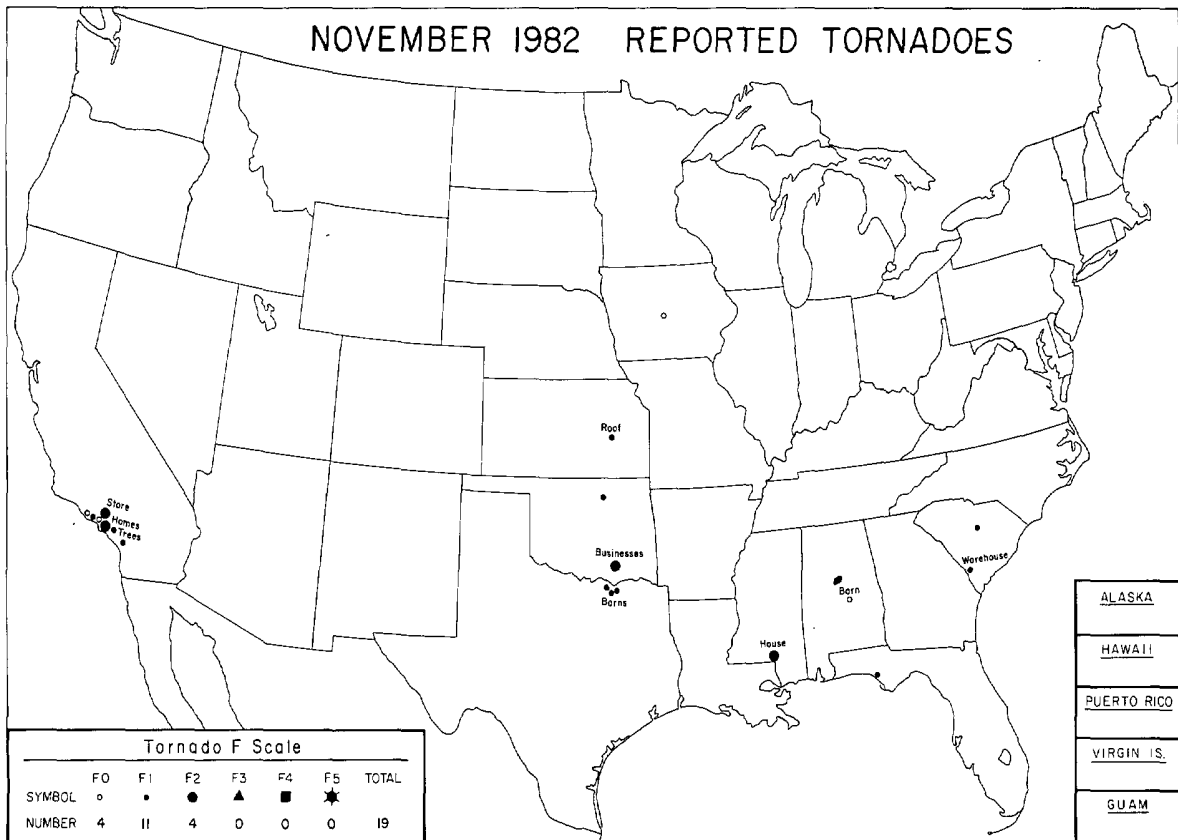
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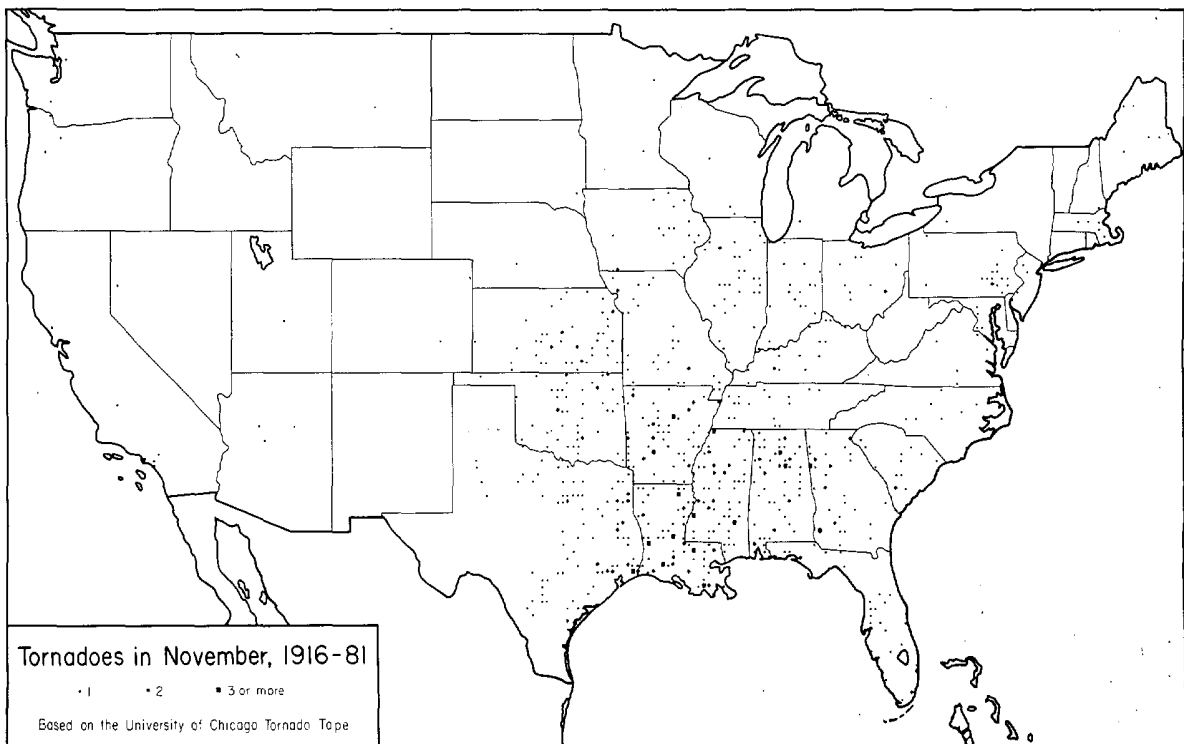
NOTE: The section on Outstanding Storms of the Month is prepared and edited by Professor T. Theodore Fujita, University of Chicago. The narrative descriptions of Storms by State and Summaries of Hurricanes and Tropical Storms are prepared by the National Weather Service. The National Climatic Data Center compiles the statistics on deaths, injuries, and damage. Additional funding is provided by the Federal Emergency Management Agency. 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.

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OUTSTANDING STORMS OF THE MONTH

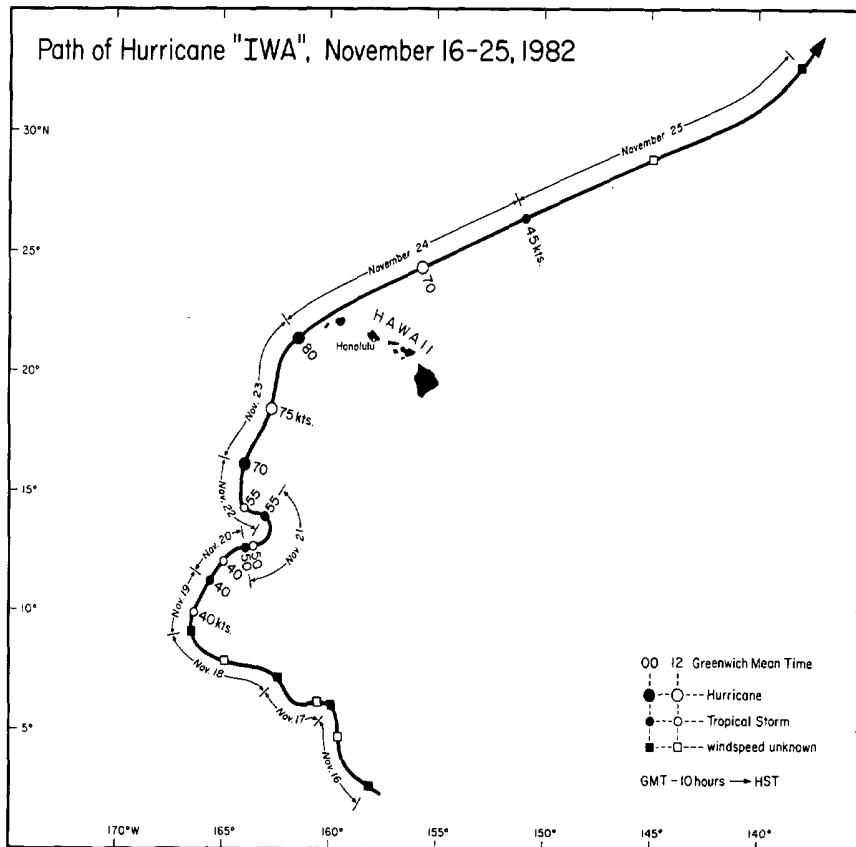


● TYPED REPORT RECEIVED	◐ PRELIMINARY REPORT RECEIVED	○ NO REPORT RECEIVED	(N) northern (S) southern	(E) eastern (W) western	(C) central (O) coastal						
● 1AL	● 5CO	● 10ID	● 15KY	● 20MI	● 25NE	● 30NY(O)	● 33OH	● 37RI	● 41TX(S)	● 45WA	● 50HI
● 2AZ	● 6CT	● 11IL	● 16LA	● 21MN	● 26NV	● 30NY(C)	● 34OK	● 38SC	● 41TX(W)	● 46WV	● 51PR
● 3AR	● 7DE	● 12IN	● 17ME	● 22MS	● 27NH	● 30NY(W)	○ 35OR	● 39SD	● 42UT	● 47WI	● 52VI
● 4CA(N)	● 8FL	● 13IA	● 18MD	● 23MO	● 28NJ	● 31NC	● 36PA(E)	● 40IN	● 43VT	● 48WY	● 53GU
● 4CA(S)	● 9GA	● 14KS	● 19MA	● 24MT	● 29NM	● 32ND	● 36PA(W)	● 41TX(N)	● 44VA	● 49AK	

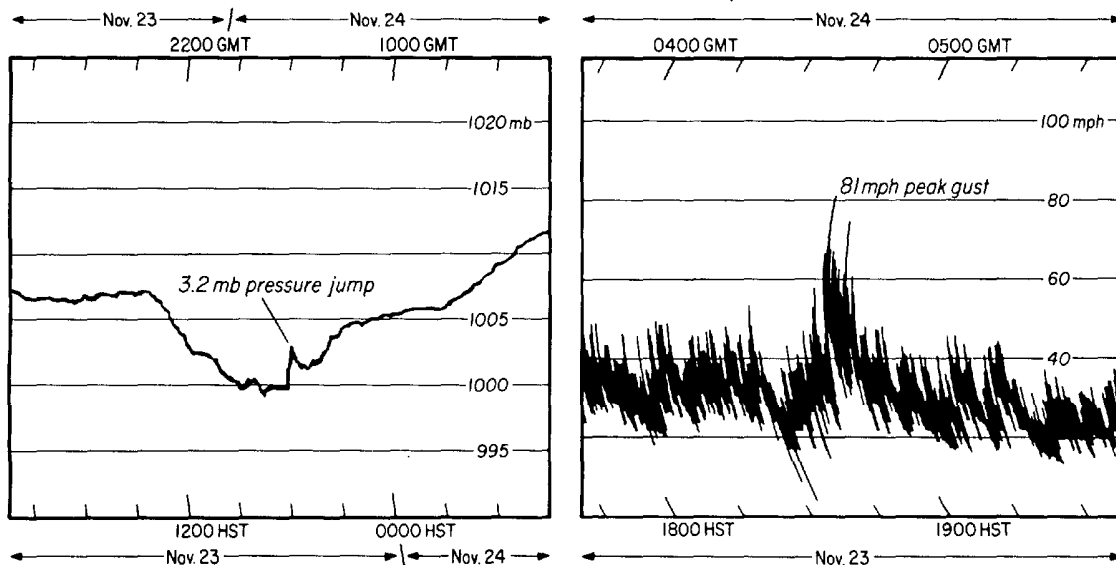


1. HURRICANE "IWA" on November 16-25, 1982

Hurricane IWA, a rare, late season storm which formed just north of the equator in the Central Pacific, struck the Hawaiian Islands of Niihau, Kauai and Oahu with high winds and damaging surf on November 23rd and 24th. The path of IWA, mapped below, shows that the storm meandered slowly northward as it intensified. IWA reached peak intensity as it passed within 25 miles of Kauai with maximum sustained winds of 80 to 90 mph and gusts up to 120 mph. The storm then accelerated northeastward as it weakened into an extratropical low. ---Map compiled from satellite tracking by Linwood F. Whitney, NESS Washington, D.C. and additional data supplied by Hans E. Rosendal, NWSFO, NHL Honolulu, Hawaii.

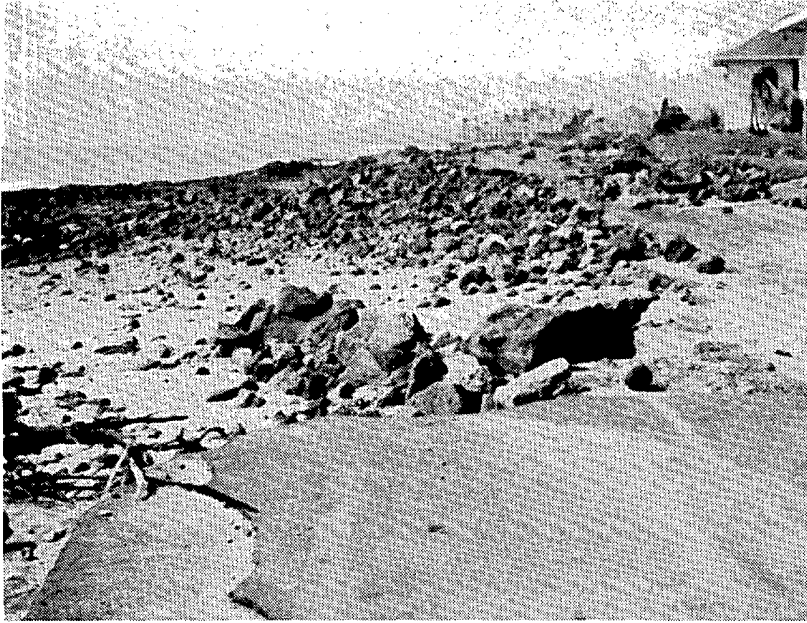


Pressure & Wind Traces at the Honolulu International Airport



In Honolulu, the height of the storm occurred at 1845 HST on November 23rd with the passage of a squall line. Pressure and wind traces above show an 81 mph peak gust and a corresponding 3.2 mb pressure jump which followed a windshift from SSE to SSW.

HURRICANE "IWA" ----Continued



Most of the damage caused by IWA was attributed to high surf along the southern shores of Niihau, Kauai and Oahu. The height of the storm surge along the south shore of Kauai was estimated to be 6 to 8 feet.

The photos at left show examples of an area of concentrated damage at Poipu on the south coast of Kauai. The combination of wind and waves destroyed many ocean front buildings and caused widespread beach erosion.



The damage due to wind alone was extensive on Kauai and uniformly distributed over the island. On Oahu however, wind damage was much more variable due to topographic effects.

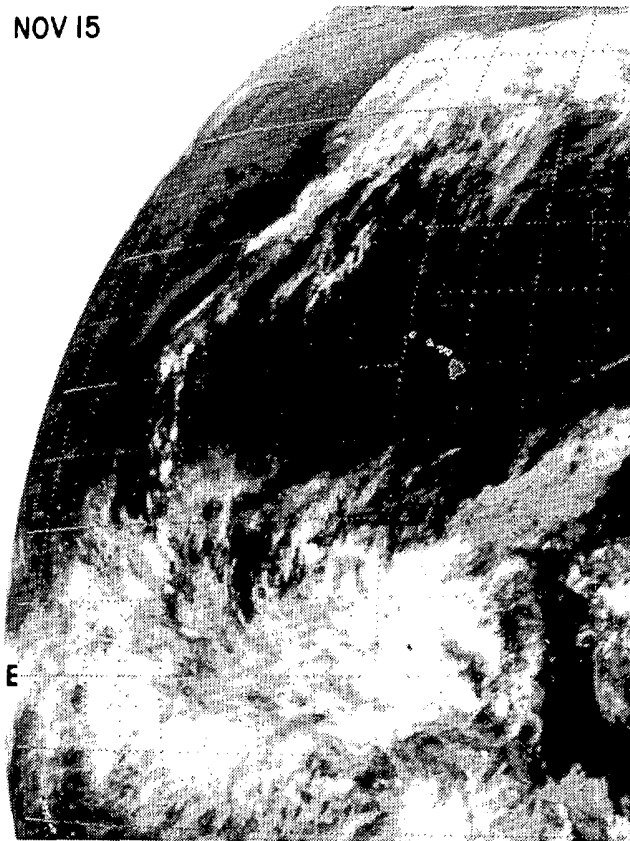
The total losses are estimated to be \$200 million, \$150 million on Kauai and \$50 million on Oahu.

---Top and middle photos by Saul Price, bottom photo by Myron Kerner, both NWSFO Honolulu, Hawaii.

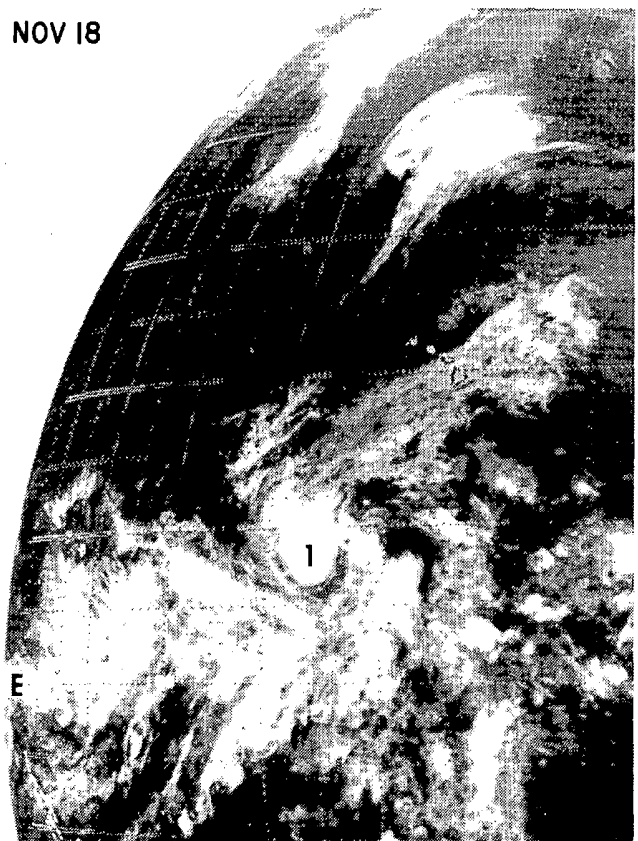


HURRICANE "IWA" ----Continued

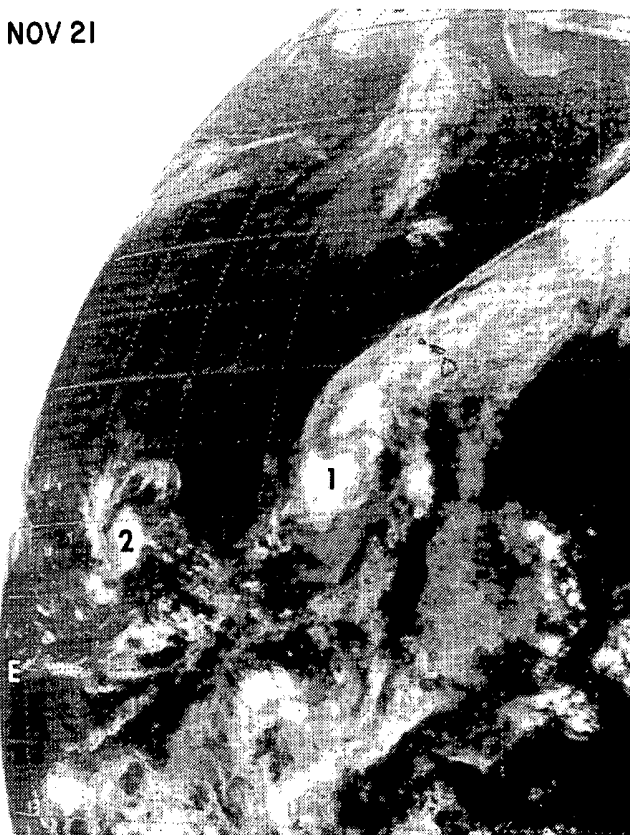
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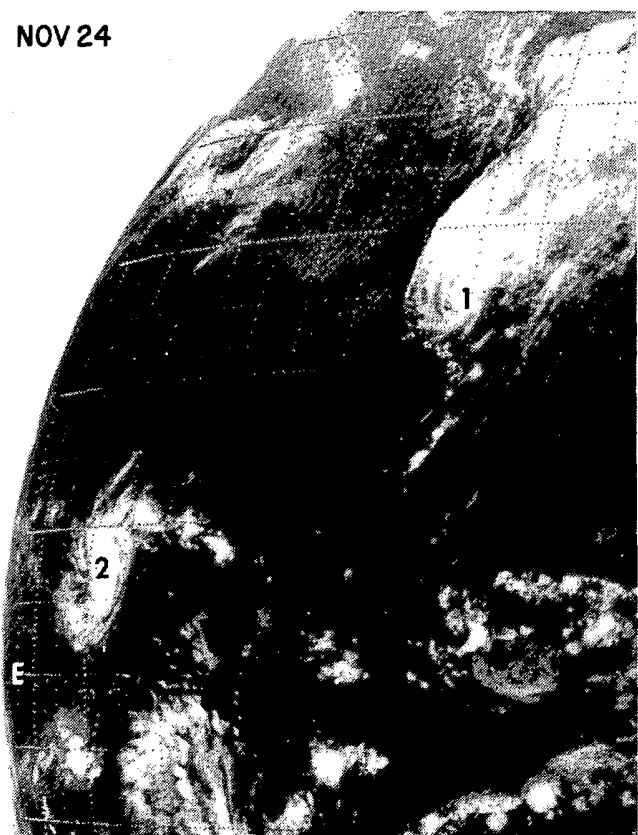
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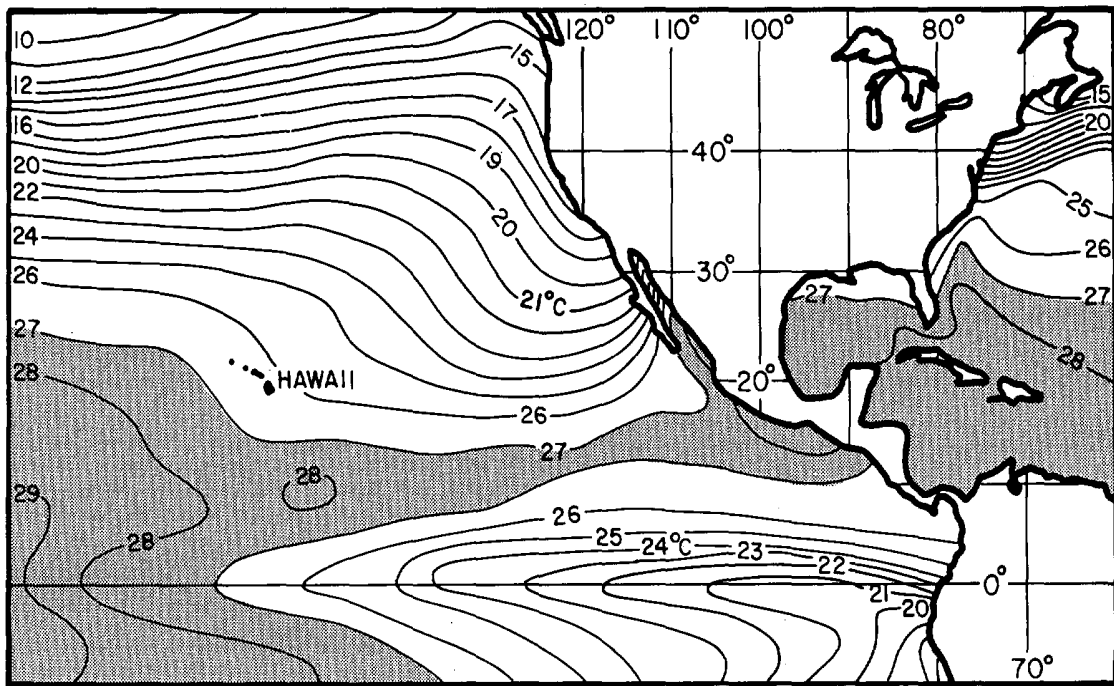
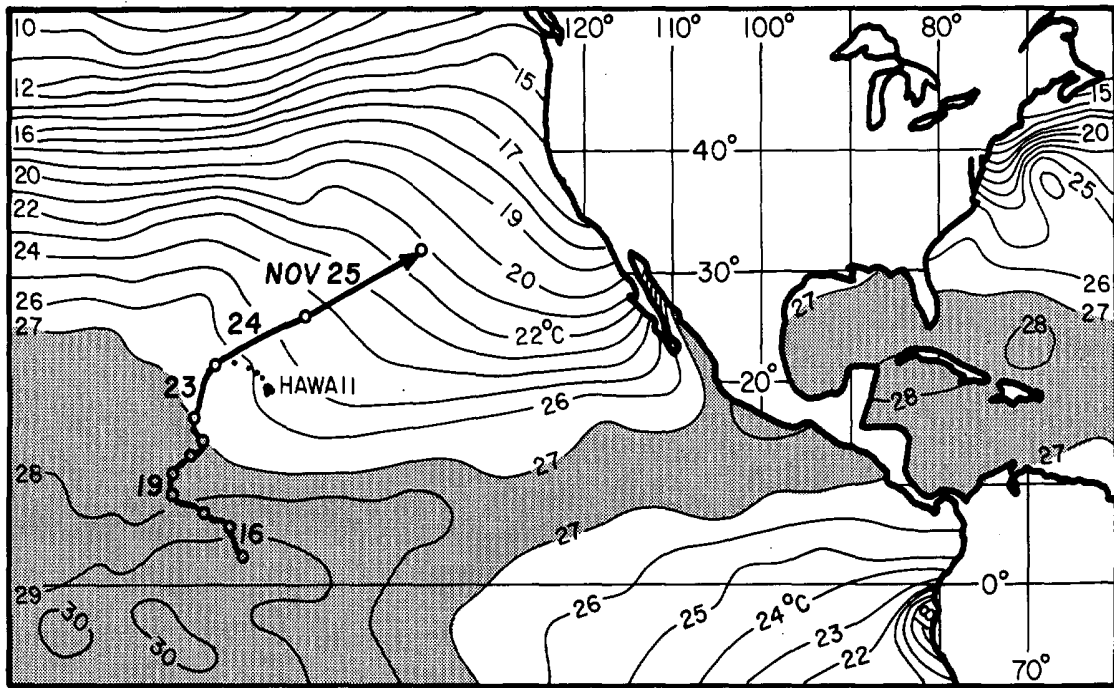
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GOES West IR pictures showing Hurricane IWA (1), Typhoon PAMELA (2), and their parent clouds seen on both sides of the equator (E). All of the photos were taken at 1145 GMT (0145 HST). The November 15th photo shows the formative stage of IWA. Typhoon PAMELA (2) formed west of the International Date Line and moved westward across the Marshall Islands toward the Philippines. ---Photos from NESS.

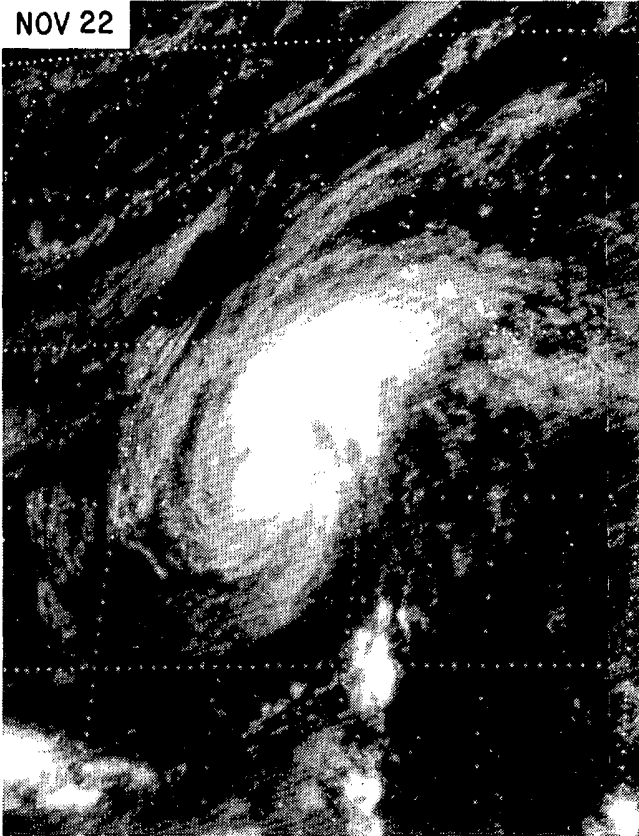
HURRICANE "IWA" ----Continued

The two maps below show the distribution of ocean-surface temperature measured by satellite during the month of October, 1982 (top map) and, the climatological ocean-surface temperature (bottom map). The bottom map shows the existence of a tongue of cold water extending from off Peru, westward along the equator. Comparison of the two maps indicates the existence of warm waters near the equator south of Hawaii where IWA formed on November 16th. Note that an extensive intertropical cloud mass on the November 15th satellite picture on the page at left is located over the region of warm water. ---Maps furnished by Allen Strong, NESS.

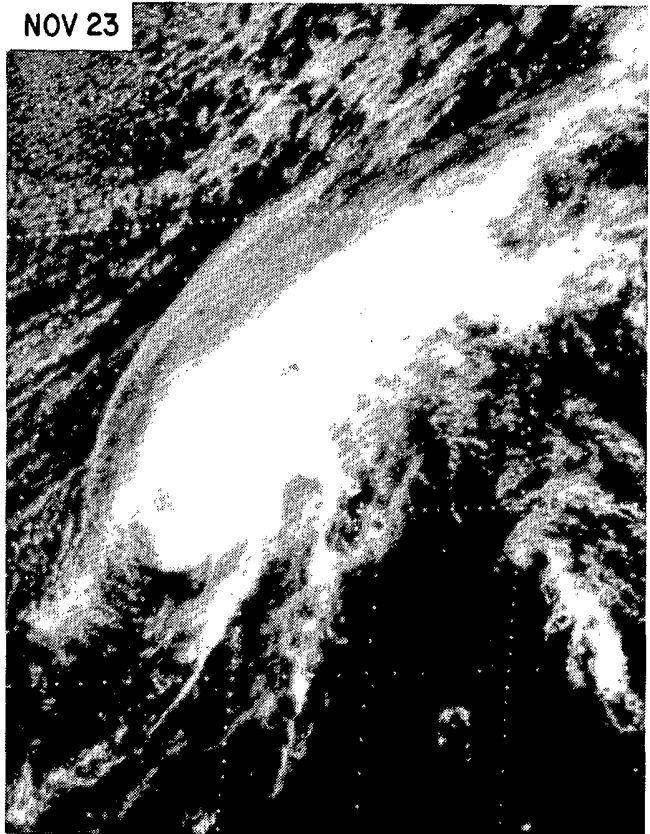


HURRICANE "IWA" ----Continued

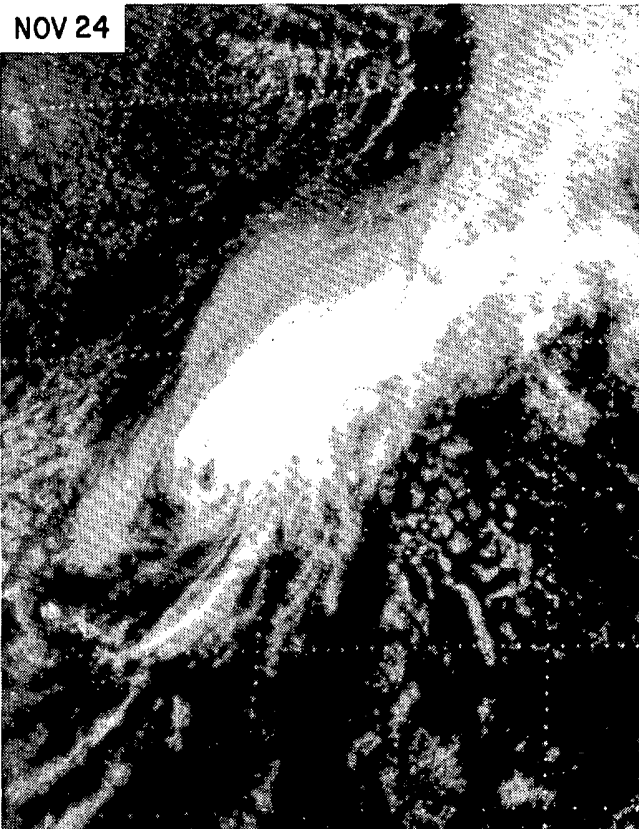
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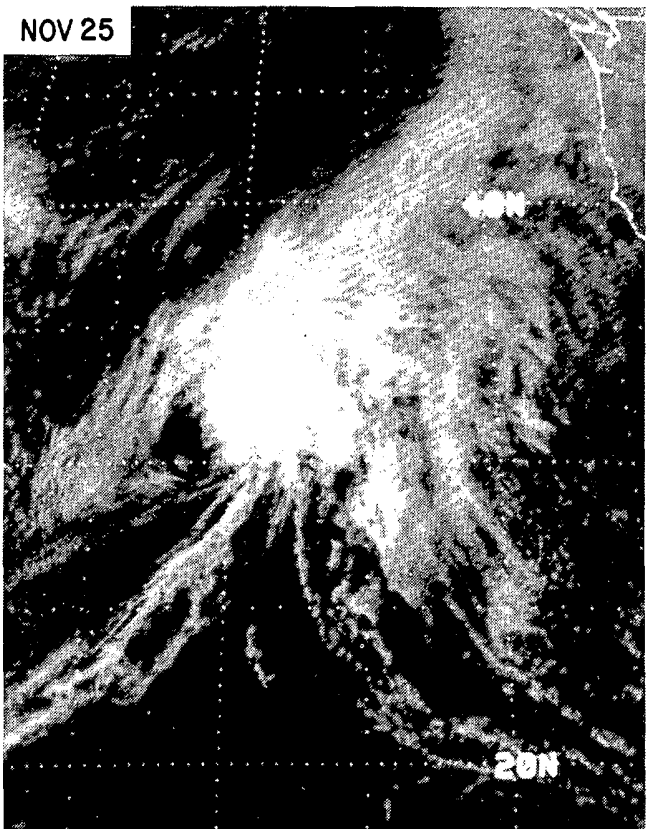
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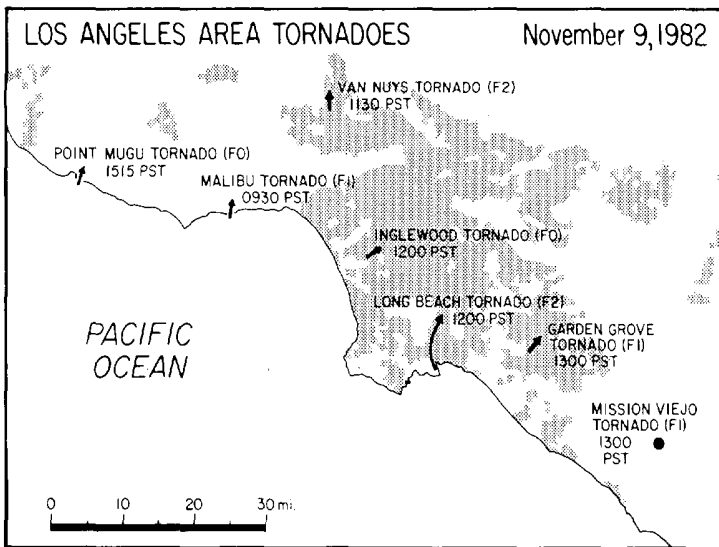


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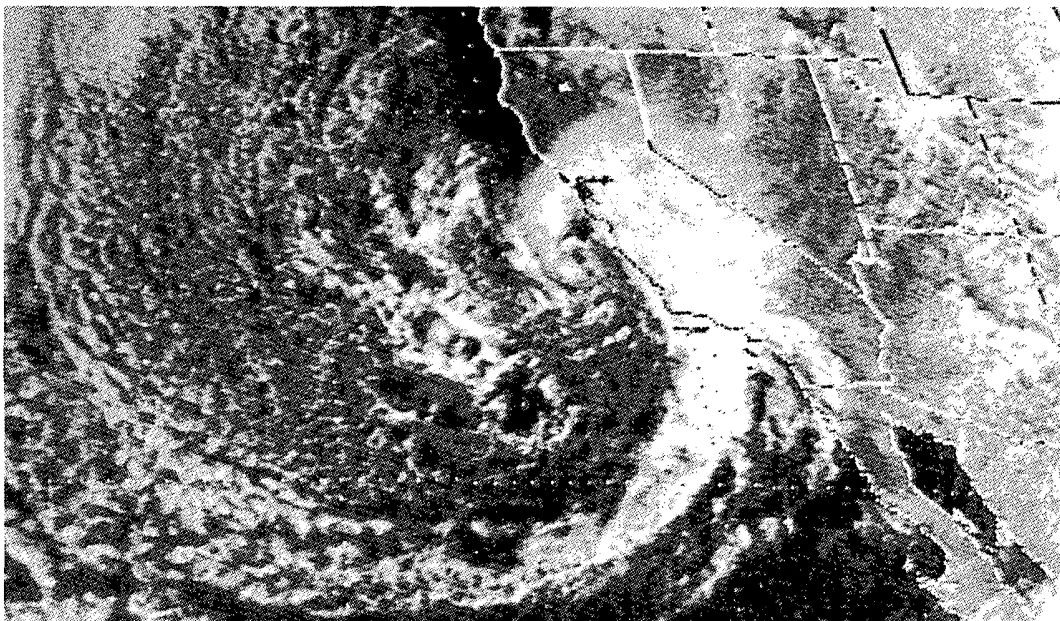
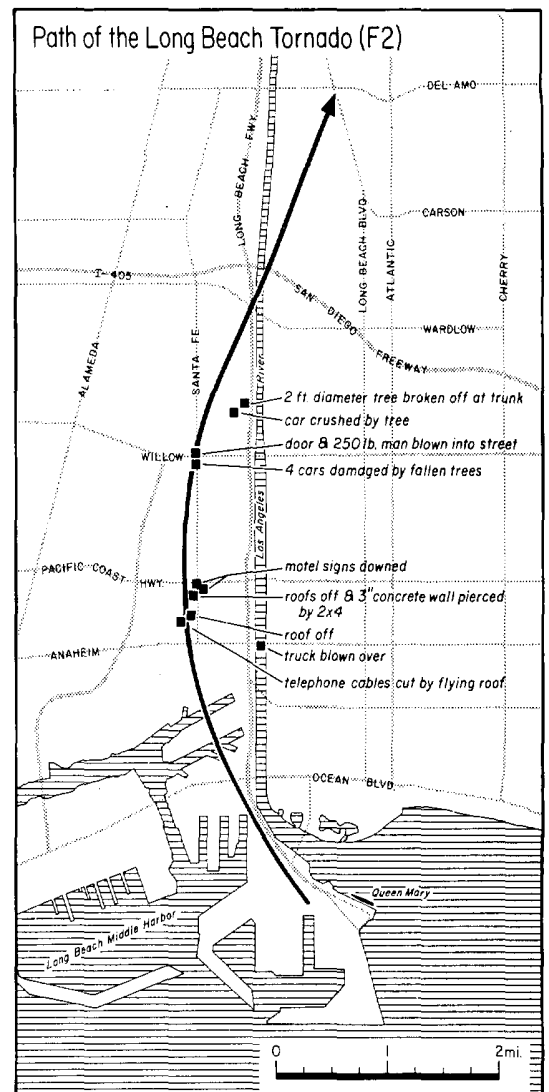
The visible satellite pictures above were each taken at 2045 GMT (1045 HST) on November 22nd to the 25th as Hurricane IWA passed near Hawaii. The sequence shows the transformation of the storm from a tropical, warm core system to an extratropical, cold core low. The rapid acceleration of IWA at this time resulted in the relatively short duration of winds and, light rainfall experienced over Hawaii. ---Photos from NESS.

2. TORNADOES in the LOS ANGELES AREA on November 9, 1982



The occurrence of tornadoes in Southern California is not a common event. However, on November 9th a total of 7 tornadoes touched down in the Los Angeles area during a strong winter-type storm. Of the 7 tornadoes, there were 2 F0, 3 F1, and 2 which reached F2 in intensity. Two of the tornadoes began as waterspouts which moved onshore at Point Mugu and Malibu. The tornadoes generally moved from south-southwest to north-northeast in advance of an approaching cold front.

The Long Beach Tornado, mapped at right, was the longest and most damaging of the tornadoes. Starting near the Queen Mary oceanliner, it travelled 10 miles northward along the Los Angeles River.

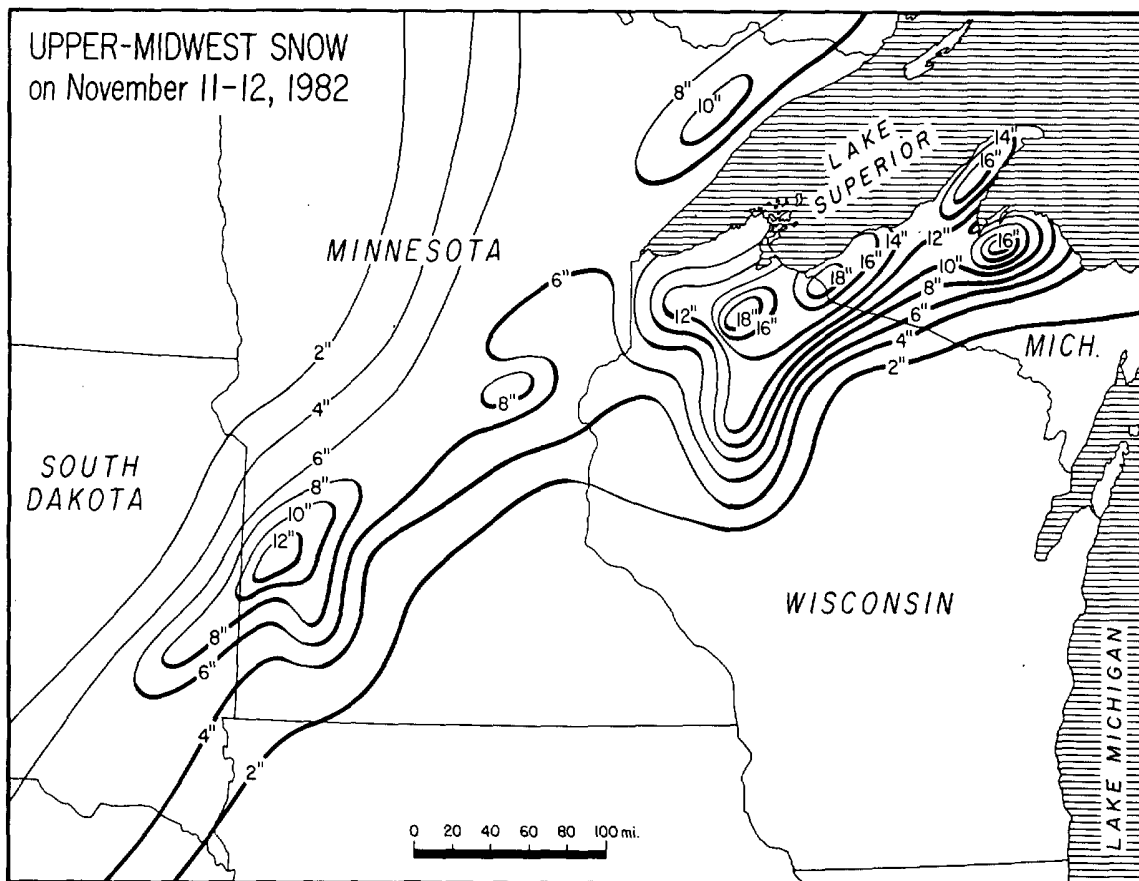


A visible satellite picture taken at 1045 PST on November 9th shows the tornado-producing Pacific storm as it buffets the California coast.
 ---Maps and photo supplied by Arthur Lessard, NWSFO Los Angeles, California.

3. HEAVY SNOW in the UPPER-MIDWEST STATES on November 11-12, 1982

An early, heavy snow on November 11th and 12th fell in much the same area as a previous storm on October 19th to 21st. The snow area, mapped below, is shown as a southwest to northeast band in southeast South Dakota which extends through Minnesota; and, an area of lake-effect enhanced snowfall in northern Wisconsin and the upper peninsula of Michigan.

Up to 13 inches of snow fell at Ivanhoe, Minnesota. Hurley, Cable and Grandview, Wisconsin each recorded a total of 18 inches. When the storm had ended, Hurley had already reached a total of 41 inches of snow for the season from only three storms. ---Map data supplied by NWSFO's at Ann Arbor, Michigan; Minneapolis, Minnesota; Omaha, Nebraska; Sioux Falls, South Dakota; and Milwaukee, Wisconsin.



STORM DATA AND UNUSUAL WEATHER PHENOMENA

NOVEMBER 1982

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									
Mobile Bay	12	0700CST							Waterspout
Two waterspouts were reported by the Coast Guard just northeast of Fort Morgan. The waterspouts moved west before disappearing.									
Speigner Area, Elmore County	12	1330CST	0.1	30	0	0	3	0	Tornado (F0)
An apparent mini tornado took the roof off one small barn and damaged some trees and utility lines. An eyewitness reported that the funnel dropped down, damaged the barn and lifted immediately back up.									
2 ARIZONA									
Statewide	30				1	0	5	7	Wind, Heavy Rain, Heavy Snow
An intense, cold, winter storm moved across the state with very strong winds, heavy rain, and heavy snow. Snowfall was generally between 8 and 18 inches above the 5000 ft. level and 1 to 4 inches at 4000 and 5000 ft. Rainfall of 1 to 4 inches was common over the lower elevations of the eastern two-thirds of the state. Most streams and washes were running near bank full. There was widespread flooding of highways and streets, especially in the metropolitan areas. Numerous families were evacuated from along Oak Creek in the Sedona area. A massive rock and mud slide blocked state route 179, north of Sedona, for 3 days. One death occurred when a father and son went through a barricade and tried to drive across the swollen Agua Fria River northwest of Phoenix. They were rescued by helicopter from the cold water, but the father died in the hospital from hypothermia. The strongest winds were during the late afternoon and evening with a peak gust of 60 MPH at Phoenix Airport and 90 MPH at the National Astronomical Observatory on Kitt Peak, southwest of Tucson. There was considerable wind damage to mobile homes, houses, trailers, power lines, signs and trees throughout the state. The cotton crop suffered extensive wind and water damage, which was estimated at over \$10 million.									
3 ARKANSAS									
Washington County	01	about 1600CST			0	0	?	0	Severe Thunderstorm
A strong thunderstorm moved through Fayetteville producing some golf ball sized hail and high winds.									
Boone County	01	about 1900CST			0	0	?	0	Lightning
Electrical power and Cable TV services were disrupted in Harrison.									
Union County	02	0440CST			0	0	?	0	Wind
Between 300-400 businesses and residences were without electrical power for about an hour in El Dorado due to wind damage from a nearby thunderstorm.									
Quachita County	11	0200CST			0	0	?	0	Wind
A thunderstorm produced minor wind damage that interrupted electrical power in Camden.									
Howard County	11	about 1145CST			0	0	?	-	Wind
Strong thunderstorm winds knocked down trees and interrupted electrical power for about an hour in Nashville.									
Hot Spring County	12	0000 to 0200CST			0	0	4	0	Wind
In Malvern, heavy winds from a thunderstorm unroofed a business, knocked down a brick wall, uprooted trees and caused power outages to about 3,000 customers.									
Saline, Pulaski, and Faulkner Counties	12	0000 to 0200CST			0	0	?	0	Wind
Strong, gusty winds moved through central Arkansas producing minor tree damage and interrupting power, as a line of thunderstorms moved through the area.									
Green County	12	about 0200CST			0	0	?	0	Wind
Thunderstorm winds caused minor damage to businesses' signs and windows in Paragould.									
Garland County	19	0630 to 0800CST			0	0	4	0	Flooding
Some flooding occurred in downtown Hot Springs after heavy rain.									
4 ARKANSAS									
Sebastian County	22	about 1100CST			0	0	?	0	Severe Thunderstorm
Strong winds blew trees into power lines and lightning struck transformers causing power outages to 1400 residents in Fort Smith.									
Madison County	22	about 1200CST			0	0	4	0	Lightning
A barn was struck by lightning and destroyed by subsequent fire in Huntsville.									
Garland County	22	1600CST			0	0	?	?	Hail
The State Police reported nickel size hail in Hot Springs Village.									
Saline, Pulaski, and Lonoke Counties	22	1720 to 2000CST			0	0	?	?	Severe Thunderstorm
Three-quarter inch hail and 60 MPH winds were reported along I-30 at the Saline-Pulaski County line. The storm moved east through Little Rock, Lonoke, Keo and Carlisle. It produced heavy rains, damaging winds, and hail up to golf ball size along much of its path.									
Independence County	23	0230CST			0	0	4	0	Lightning
In Batesville lightning struck a home damaging the electrical system and windows - without fire.									
4 CALIFORNIA, Northern									
Humboldt County Rio Dell	16	1725PST						4	Hail
Small hail covered the ground. Minor damage to grapes.									
Trinity County Southwest corner	27	2000PST						5	Rain (slide)
Fifteen freight cars of a train derailed from a slide near Island Mountain.									
Sierra	29	1800PST 30 2400PST							Snow
Two to six feet of snow fell in 24 to 30 hours. In periods, wind gusts of 50-70 MPH were common.									
SFO Bay	30	0030PST 2200PST						1 7 4	Wind
Strong winds knocked out power. Wind gusts of 68 MPH recorded at SFO Airport. There was damage to houses, downed trees and power lines.									
Northern California Coast	30	0500PST 2200PST						5	Flooding
Strong winds with high surf caused flooding of some coastal businesses.									
Solano County Venice Island	30	1700PST						5 4	Flooding
Heavy runoff combined with high tide caused a levee break and by the following day had widened to 90 inches and flooded 3,000 acres of agriculture land and a few houses. Most crops were harvested. There was only damage to recently planted wheat and barley.									
Sierra, Humboldt County, Eureka	30	1800PST			4			5	High Wind
Wind gusts of 70 MPH combined with heavy surf helped sink a 47-foot crab boat, killing 4 fishermen.									
4 CALIFORNIA, Southern									
Malibu, Los Angeles County	9	0930PST							Waterspout/Tornado (F1) Heavy Rain, Hail
A waterspout was observed for several minutes before it came onshore. Major damage to a few homes reported. A catamaran was blown about 125 feet into the air. It landed atop a beach house. Heavy rain and 1/2 to 3/4 inch hail accompanied the twister.									
Van Nuys, Los Angeles County	9	1130PST	1	150	0	0	unk	0	Tornado (F2)
The twister moved from south to north in an area North of the downtown section of San Fernando Valley. Damage was confined to an area of about 1 city block in width and 1 mile in length as it moved from Van Nuys into Pamarano City. One major department store suffered severe damage of about 250,000 dollars.									

STORM DATA AND UNUSUAL WEATHER PHENOMENA

NOVEMBER 1982

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	

— CALIFORNIA, Southern

Long Beach, Los Angeles County	9	1200PST	10	1300	0	0	unk	0	Tornado (F2) A waterspout moved onshore at Long Beach Harbor on a SW to NE heading. The twister caused considerable damage to homes and commercial buildings. Approximately 300 trees were uprooted.
Inglewood, Los Angeles County	9	1200PST							Tornado (F0) A funnel cloud was spotted about 3/4 mile east-northeast of the Los Angeles International Airport moving WSW to ENE. It briefly touched down. Minor damage only.
Garden Grove, Orange County	9	1300PST	0.1	150	0	0	unk	0	Tornado (F1) Tornado path was SW to NE. Damage in the form of uprooted trees and roof damage was confined to an area of about 3 square blocks.
Orange, Orange County	9	1300PST							Windstorm A violent windstorm caused considerable damage to private and commercial property. Path was 1/4 to 1/2 mile wide and an estimated 1.5 to 2 miles long. Direction of movement was SW to NE.
Mission Viejo, Orange County	9	1300PST			0	0	unk	0	Tornado (F1) About 8 miles SE of El Toro Marine Base, a small tornado briefly touched down causing minor roof damage and some damage to electrical power lines at Saddleback College.
Point Mugu, Ventura County	9	1515PST							Waterspout/Tornado (F0) Eyewitnesses reported a waterspout came ashore and quickly dissipated causing only minor damage.
Banning, Riverside County	10	1150PST							Funnel Clouds Two (2) funnel clouds were sighted N of Banning.
Oceanside, San Diego County	10	1630PST							Waterspout Pilot reported waterspout 20 miles WSW of Oceanside.
Pomona, Los Angeles County	10	1745PST							Funnel Cloud Pilot reported funnel cloud near Pomona.
Los Angeles, Orange, Ventura, Riverside, San Bernardino and San Diego Counties	29-30				12	unk	unk	unk	Severe Windstorm A fast moving storm moved southeastward through the South California area causing widespread wind damage. Wind gusts were 50 to 65 MPH along the coastal sections of Los Angeles and Orange Counties. Moderate to heavy rain fell amounting to about 1.5 to 2 inches over the interior and 4 to 5 inches in surrounding mountains. Flooding was localized to low-lying areas. Strong winds toppled trees and power lines. Wind generated waves combined with high tides caused serious erosion of beachfront property in Malibu. Several homes were damaged and one home destroyed. Within the Los Angeles City limits, nearly 900 trees were downed causing widespread power outages. Approximately 80 homes were damaged by falling trees. Death toll incidents were as follows: 1. A Los Angeles Department of Water and Power employee was killed when a 110-ton crane was felled by strong winds at Long Beach at 9:00 A.M. 2. A woman was killed when her automobile skidded off a wet road in the city of Orange. 3. Two men died in separate auto accidents in northern San Diego County. 4. A 4-year boy was swept down a creek at Camp Pendleton after his family's Jeep vehicle overturned while attempting to cross the creek. 5. A 66-year old man was killed in west Los Angeles after his automobile crashed into an RTD bus. 6. A 22-year old man was killed in an auto accident on Interstate 15 in San Diego County. 7. A woman drowned in a creek in Ventura County after being thrown from her automobile following a collision with a bridge abutment. 8. In a related incident, three men died in a small aircraft as it crashed into a mountain north of Fontana sometime Monday night, Nov. 29th.

— CALIFORNIA, Southern

									9. A doctor drowned when his automobile was swept into a channel between Beaumont and Banning, Ca.
5 COLORADO									
Mountains, Northeast	10/11				0	0	3	0	Heavy Snow, Lightning Moderate to heavy snow fell in the mountains; most spots recorded 6 to 12 inches, but up to 4 feet fell in the San Juan mountains, stranding many hunters. No one was injured. An unusual thunderstorm near Cortez produced lightning which hit power poles and a mobile home, causing minor damage. Up to 4 inches of snow fell at higher elevations between Denver and Colorado Springs, and winds gusted to around 50 MPH in parts of Larimer and Weld Counties.
Mountains, Northeast	11/29-12/1				0	0	?	0	Heavy Snow A prolonged snowstorm buried parts of the Rockies with 2 to 5 feet of snow. At Purgatory ski resort, 36 inches fell in 24 hours, with 51 inches over the three day period. Mesa Lakes resort measured 31 inches in 24 hours, along with 40 to 50 MPH winds in the vicinity. Four feet of snow fell at Wolf Creek Pass during the storm. Numerous avalanches occurred, blocking many highways in the San Juan Mountains. About a foot of snow fell at lower elevation towns such as Dolores, Cortez, and Durango. Snowfall was lighter in most areas of the northern and central mountains of Colorado, with storm totals generally in the 6 to 18 inch range. 3 to 5 inches also fell at some spots along the Front Range and in Weld County.
6 CONNECTICUT									
Statewide	12 PM EST 13 Early AM EST				0	0	4	0	Windstorm, heavy rain Strong to gale force south and southwesterly winds ahead of an approaching cold front blew down numerous tree limbs causing many power outages across the state. Local street flooding occurred in some areas. In New London a 33-foot sailboat was ripped from its mooring and battered to pieces on rocks in the Thames River.
7 DELAWARE									NONE REPORTED
8 FLORIDA									
Dade, Broward, Palm Beach Counties	01	0430EST 1030EST			0	0	4	0	Heavy Rains Weak trough of low pressure surface aloft moved slowly northwest into the southeast Florida coast during the night. With moderate low level easterly wind off the Atlantic Ocean and the warm Gulf Stream current being climatologically a shower producer in the area, the trough enhanced the activity and resulted in very heavy thunderstorms developing over the same area along the Gulf Stream and moving northwest into the same areas. Up to 4 inches of rain fell in some locations in the 3 hour period up to 0730EST. Street flooding was areally extensive but not life or in most cases property threatening. Many power lines were downed by strong winds.
Panama City Beach, Bay County	03	1600EST	.4	20	0	0	3	0	Waterspout/Tornado (F1) Two small boats in the bay off the beach were swamped by wind-driven waves near the waterspout then moved ashore along the beach. It ripped the roofs off pool sheds of two adjacent motels along the waterfront. The roof of one residential dwelling was partially torn off and debris from it caused minor damage to a few nearby cars. In the same area power lines were blown down and signs were smashed.
Fort Pierce, St. Lucie County	03	1800EST			0	0	2	0	Wind A heavy thunderstorm moved through the area around dusk producing winds strong enough to topple a few power lines. No other damage was reported.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

NOVEMBER 1982

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					KILLED	INJURED	PROPERTY	CROPS	
FLORIDA									
Palm Beach, Martin Counties	08	1400EST			0	0	5	0	Flood
	Tropical air from the Atlantic and the highlighting effect of the Gulf Stream again produced heavy rains. Most rainfall was in northern Palm Beach and southern Martin counties, where 24-hour totals of up to 14 inches was more than one quarter of the normal yearly total. A few homes and businesses were flooded with damage to furniture, appliances, carpeting, and business inventory.								
Palm Beach, Martin Counties	16	0900EST 1700EST			0	0	3	0	Heavy Rains
	The third in a series of heavy rain events in 2 weeks along the southeast Florida coast. This time while rainfall totals were heavy, only minor and short-lived street, highway, and lowland flooding was reported.								
9 GEORGIA									
Barrow County	12	1735EST			0	0	3	0	Wind
	Strong thunderstorm winds downed several trees and power lines in Winder.								
Putnam County	12	1950EST			0	0	3	0	Wind
	Strong thunderstorm winds downed several trees in the Lake Sinclair area. The winds demolished a utility building and caused minor damage to one home.								
10 IDAHO ————— NONE REPORTED									
11 ILLINOIS ————— NONE REPORTED									
12 INDIANA									
1 W Mount Zion Wells County	1	1410EST			0	0	4	0	Thunderstorms Winds
	One metal barn destroyed by strong thunderstorm wind.								
Francesville, Pulaski County	1	1745EST			0	0	5	4	Thunderstorm Winds
	Strong winds caused extensive damage to trees and buildings. Two buildings lost part of their roofs and several others had their windows blown in. One truck trailer upset.								
2S Winamac Pulaski County	1	1755EST			0	0	4	4	Thunderstorm Winds
	Strong winds flatten corn fields and several large trees downed. One house lost part of its chimney.								
13 IOWA									
Ankeny (Polk County)	11	1520CST	Brief Narrow		0	0	3	0	Tornado (F0)
	A possible tornado touched down at Greentree Village apartments. Witnesses stated that there was sound like the passing of a train. There was damage to a section of fence, and to the soffit, gutterpipe, downspouts and to objects laying about the area. The large machine loaded garbage containers were tossed about as well.								
Warren County	11	2020CST			0	0	3	0	Thunderstorms
	High winds in a thunderstorm knocked two power poles and three sections of wire just north of Carlisle.								
IOWA									
Iowa	11	Evening 12 to Morning			0	0	4	3	Windstorm
	High winds knocked out some windows in a state government building in Des Moines. The window in a merchant's storefront in Iowa City was destroyed. Trees, a railroad crossing gate, and traffic light cables in Ames were downed. An unoccupied grain wagon in Dubuque was toppled. Unharvested corn in the fields was flattened. The roof and part of the wall of a vacant building in Boone was knocked off. Other incidents of the havoc caused by the wind occurred throughout the state. Winds were blowing at more than 50 MPH in some areas, and gusting over 60 MPH.								
14 KANSAS									
North Central and Central Kansas	11	1200- 2000CST			0	0	5	0	Wind
	Strong gusty winds caused a variety of minor damage throughout the north central and central counties in Kansas. Peak wind gusts were measured at 72 mph at the Russell Airport about 1300, 62 mph at the Concordia Airport at 1442, and 80 mph at the Great Bend Airport.								
Saline County	11	1430CST			0*	0*	6	5	Wind
	A tree limb, blown down by strong winds, snapped a power line and ignited dry grass in a field near Brookville. The resulting fire was fanned by the wind and burned out of control into the evening. The fire consumed 22 square miles of farmland, destroyed several farm buildings, and killed 250 head of cattle. *One person was killed while fighting the fire and 11 others were injured.								
Harris, Anderson County and Southern Franklin County	11	1605CST	3	100	0	0	4	0	Tornado (F1)
	A tornado touched down 5 miles northwest of Harris and skipped along the ground east northeast about 3 miles. Part of the roof was torn from a home in the northwest corner of Anderson County and some outbuildings were damaged in southern Franklin County.								
East Central Kansas	11	1630- 1830CST	70	15mi.	0	0	5	0	Wind, Funnel
	Damaging winds accompanied thunderstorms on a 15 mile wide path from 10 miles northwest of Iola to Olathe. Outbuildings, barns and sheds were damaged throughout the path. One hangar was destroyed and another damaged at the Garnett Airport at 1715. The roof was ripped from a mobile home in Miami County southwest of Spring Hill. A funnel was sighted in Johnson County near Overland Park at 1818CST.								
Labette, Cherokee and Crawford Counties	11	1800- 2000CST			0	1	4	0	Wind
	Damaging winds accompanied thunderstorms across the listed counties. A girl sustained a minor injury when a tree limb blew down upon the car in which she was sitting. A barn was destroyed near Mound Valley and a mobile home overturned near Altamont just after 1800CST.								
Mission Hills, Johnson County	11	1830CST			1	0	0	0	Flash Flood
	A couple's car became stranded as they were crossing a low water bridge on rain-swollen Brush Creek near the Mission Hills Country Club. The woman was rescued but the man was swept downstream and drowned.								
Sedgwick and Butler Counties	27	Morning			0*	0	4	0	Ice Storm
	Freezing rain dropped power lines and ignited several fires in Wichita. *Four people were killed in traffic accidents caused by icy roads.								
15 KENTUCKY ————— NONE REPORTED									

STORM DATA AND UNUSUAL WEATHER PHENOMENA

NOVEMBER 1982

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	

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	

16 LOUISIANA

Jena, La Salle Parish	02	0930CST			0	0	3	0	Thunderstorm winds
Severe thunderstorm winds snapped off a utility pole and uprooted a large pecan tree blowing it over into a mobile home.									
Lafayette, Lafayette Parish	02	1230CST			0	0	4	0	Thunderstorm winds
A thunderstorm downburst damaged a 12' x 40' utility building when it was blown into another building.									
Oil City, Caddo Parish	19	0545CST			0	0	?	0	Lightning
An oil storage tank was struck by lightning and ignited. The ensuing fire spread to five other tanks which blazed for 3 hours. A nearby mobile home was scorched but sustained no other damage.									
Allen, Evangeline, Rapides, and Avoyelles Parishes	27	0100 to 1000CST			0	0	5	0	Flash Floods
A band of heavy rain fell from northeast of Lake Charles to southeast of Alexandria with amounts of 7 to 8 inches causing flooding of secondary roads and agricultural land.									
Tioga and Alexandria, Rapides Parish	27	0800 to 0915CST			0	0	4	0	Thunderstorm winds
A downburst from a large thunderstorm damaged several homes and uprooted trees. A 25' x 56' wood and metal patio roof was ripped off and slammed down on the main structure of the house. Tool sheds were extensively damaged and several homes were damaged by falling trees.									
Central and Northeast Louisiana	30	1500CST to Dec 1 1030CST			0	0	?	?	Heavy Rain
Twenty parishes in Louisiana received 2 to 4 inches of rain in 18 hours resulting in flash flooding and urban street flooding throughout the area.									

17 MAINE ————— NONE REPORTED

18 MARYLAND and D.C. — NONE REPORTED

19 MASSACHUSETTS

Statewide	12	PM EST			0	0	4	0	Windstorm, Heavy Rain
Gale force southerly winds ahead of an approaching cold front with gusts up to 50 to 70 MPH blew down numerous tree limbs and a few large trees knocking down electrical wires with resulting power outages to several thousand customers. In Taunton two six by six foot plate glass windows were blown in late Friday evening. In Brockton a large tree fell across a driveway damaging a car very early Saturday morning. A large tree fell on a truck in Stoneham.									

20 MICHIGAN

4 SW Cass City, Tuscola County	02	1715EST			0	0	4	0	Lightning
House destroyed by fire, car damaged.									
Entire State	12	All Day			0	3	4	0	Wind
2 persons injured in collapse of bus shelter in Kalamazoo, 1 by bricks blown off high building in Detroit. Cars and buildings damaged by falling trees in Grand Narrais and Battle Creek. Widespread power outages. Gusts to 47 mph in Detroit, to 65 mph in Grand Rapids.									

21 MINNESOTA

Southwest, Central Northeast	11/12	Evening thru following day			1	0	4	0	Blizzard/Heavy Snow
Rain and sleet in the south and east changed to snow during the evening of November 11th and winds increased to 40-60 mph. Blizzard conditions resulted in southwest and central Minnesota. Six to ten inches of snow fell from the southwest through Willmar and St. Cloud into the Arrowhead region. The greatest amount of snow was 15 inches reported from Ivanhoe in the southwest. An elderly man perished during the blizzard on the morning of Nov. 12. His body was found in a parking lot in Willmar buried in the snow. Property damage was limited but the snow ended last minute harvest attempts by farmers in the southwest. Scattered power outages were reported. The blizzard also delayed many travelers. Drifts were as high as 10 ft.									
Southeast	11/12	Evening through morning			0	0	3	0	Wind
As blizzard conditions raged further north through Minnesota, high winds struck the southeast portion of the State. High winds tore the roof off a trailer home in rural Wabasha county during the evening. Winds to 68 mph were reported at Mankato overnight and 75 mph at Albert Lea early in the morning.									
Northeast	20	Morning			0	0	4	0	Thunderstorm/Flooding
Warm temperatures combined with heavy rains and thunderstorms to produce rapid snowmelt conditions and flooding. Rivers and streams went over bankfull. Highway 210 in the Jay Cook State Park was closed due to mud slides. In Duluth, some streets were isolated and many businesses and residential areas suffered water damage.									

22 MISSISSIPPI

Harrison County	2	1300CST			0	0	0	0	Funnel Cloud
A funnel cloud was sighted by the Harrison County Sheriff's Department at the Port Bienville Industrial Park, and at the junction of Highway 607 and Interstate 10. No damage reported.									
Spring Cottage Marion County	30	1800CST 1/2	100		0	0	5	0	Tornado (F2)
A tornado touched down briefly in the rural community of Spring Cottage destroying a frame house, blowing the roof off a large barn and blowing down numerous large trees. No one was in the house at the time of the tornado.									

23 MISSOURI

Saline	1	1550CST			0	0	0	0	Large Hail Nickel size hail reported at Marshall.
Saline	1	1558CST			0	0	2	?	Large Hail Hail to 1 1/2 inch diameter reported by public to Radio Station KMMO. Hail report was from Slater.
Barry	1	1605CST			0	0	1	2	Large Hail Hail to 1 inch diameter covered ground across southern portion of county from near Seligman to near Shell Knob.
Saline	1	1610CST			0	0	0	?	Large Hail Hail to 1 1/2 inch diameter reported by public in Gillam to Radio Station KMMO.
Barton	1	1658CST			0	0	2	0	Damaging Wind Wind overturned a tractor trailer rig just north of Irwin on highway 71.
Boone	1	1710CST			0	0	?	?	Large Hail Hail to 1 inch diameter in Midway.
Boone	1	1710-1725CST			0	0	5	?	Large Hail Hail from golfball to baseball size reported in and around Columbia with greatest damage to the north of the city. Considerable damage was done to homes automobiles and property. 3 inches of rain fell at one location before hail destroyed the rain gage.
Cooper	1	1725CST			0	0	2	?	Large Hail Highway patrol reported golf ball size hail covering Interstate 70 in eastern portion of the county.

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NOVEMBER 1982

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					KILLED	INJURED	PROPERTY	CROPS	
MISSOURI									
Douglas	1	1808CST			0	0	0	0	Large Hail
Golf ball size hail reported at Ava.									
Audrain	1	1827CST			0	0	?	?	Large Hail
KXEO Radio reported golf ball size hail in Parber, Laddonia and Vandalia.									
Audrain	1	1845CST			0	0	0	0	Large Hail
An amateur Radio Operator reported nickel size hail 3 miles southwest of Mexico.									
Adair	1	EVENING			0	4	0	0	Lightning
Four men walking across a soybean field were struck down by lightning. One man had to be revived by CPR.									
24 MONTANA ————— NONE REPORTED									
25 NEBRASKA									
Panhandle, North Central, Central and Northeast Nebraska	11	Daytime			0	0	3	3	Heavy Snow, Near Blizzard
Heavy snow fell in sections of the region. Winds gusting at times from 40 to 60 m.p.h. caused near blizzard conditions in areas due to blowing and drifting snow. Particularly hard hit areas were the southern panhandle counties of Banner and Kimball, where 6 to 14 inches of snow fell and drifts were reported 6 feet deep. A Banner County rancher was stranded in a truck for 7 hours when he went out to check cattle. Utility outages were also reported in the storm area, some up to 24 hours. Other larger snowfalls included 8 to 10 inches at Gordon, and 5 inches around Crofton in the northeast.									
Central, and Southwest Nebraska	11	Afternoon & Night			0	0	4	2	High Winds
Strong winds gusting 45 to 65 m.p.h. caused utility line and tree damage including the McCook, Cozad and Ogallala areas. At Hastings, the roof of a drive-in bank sustained heavy damage.									
Northeast, East Central, and Southeast Nebraska	12	Morning			0	0	4	4	High Winds
Strong winds gusting 50 to 65 m.p.h. during the early morning caused scattered utility line and tree damage along with damaging some of the corn crop yet to be harvested. Damage to a building roof was reported at Dakota City.									
South Central Nebraska	27-28	Night to Morning			0	0	0	0	Heavy Snow
Heavy snow was reported with 6 inches at Kearney and 5 inches at Naponee.									
26 NEVADA ————— NONE REPORTED									
27 NEW HAMPSHIRE ————— NONE REPORTED									
28 NEW JERSEY ————— NONE REPORTED									
29 NEW MEXICO									
Southern Half of the State	26-27	Continuous			3	-	5	-	Heavy Snowstorm
Heavy snow fell from just south of Albuquerque to the Texas border. Amounts of 8 to 12 inches were recorded in some areas. Three people were reported dead as a result of this storm.									
30 NEW YORK, Coastal ————— NONE REPORTED									
30 NEW YORK, Central									
Southern Tier Lower Hudson Valley									? °C Drought
Precipitation was below normal for the past five months. New York State declared a Drought Alert. Several reservoirs are low. Some areas have less than thirty day supply of water. Stream flows are also falling off. Hardest hit area seems to be the Oneonta area.									
Area Wide	29	1700EST			3	?	7	?	°C Freezing Rain
Temperatures dropped below freezing resulting in a freezing rain storm late in the day.									
At least three persons were killed in car accidents due to the storm, in Little Falls. The twenty-five car pile up was the result of freezing rain.									
30 NEW YORK, Western									
Buffalo, Erie County	5	afternoon			0	0	4	0	Snow
A lake effect snow squall dumped up to a foot of wet snow in about 6 hours. The weight felled trees and power lines and rendered many without electricity. Afternoon commuters trapped on area roadways had to undergo many miles of snail-paced traffic.									
Elmira, Chemung County; Bath, Steuben Co.; Mayville, Chautauque Co.; Clarence and Buffalo, Erie County	12				-	-	4	0	Wind
A strong wind with gusts up to 60 mph broke trees and power lines. A section of roof of a factory in Mayville was blown away. It whipped up Lake Erie and caused minor lake shore erosion.									
31 NORTH CAROLINA ————— NONE REPORTED									
32 NORTH DAKOTA									
Southeast	09-11				0	0	0	0	Heavy Snow
Heavy snow (7 inches at Oakes, 8 inches at Forbes and 11 inches at Fullerton in Dickey County; 7.5 inches at Wishek and Ashley in McIntosh County; 7 inches at Sysketon in Wells County; and 10 inches at Edgeley in LaMoure County) was reported over much of the area.									
33 OHIO ————— NONE REPORTED									
34 OKLAHOMA									
Achille, Bryan County	01	1715CST			0	0	?	?	Hail
Hail 1/2 inch.									
Lula, Pontotoc County	01	1718CST			0	0	?	?	Hail
Baseball size hail with damage to windows, roofs, and automobiles.									
Colbert, Bryan County	01	1850CST			0	0	?	?	Hail
Hail 1/2 inch.									
Oklahoma City, Oklahoma County	11	1045CST			0	6	?	?	Wind
High winds, 45 MPH or higher, caused a building under construction to collapse. The framework had been completed and the workers were getting the building ready to put the siding on it. Six of the workers were injured, with two hospitalized.									
Wynona, Osage County	11	1645CST	0.5	20	0	0	4	?	Tornado (F1) and Wind
A small tornado damaged the roof of one house and moved another off its foundation. High winds also damaged trailer homes, barns, and trees in the area.									

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OKLAHOMA

Dewey, Washington County	11 afternoon	0	0	?	?	?	?	Wind	
Winds 50-60 MPH overturned and destroyed a mobile home (the mobile home was tied down). There was also wind damage to trees, barns, and roofs.									
South Coffeyville, Nowata County	11 afternoon	0	0	?	?	?	?	Wind	
Winds near 70 MPH overturned two mobile homes, downed power lines, and damaged trees, barns, and roofs.									
Vinita, Craig County	11 afternoon	0	0	?	?	?	?	Wind	
High winds blew over a wall of a gymnasium which was under construction.									
Seminole, Seminole County	22 0410CST	0	0	6	?	?	?	Hail	
Golfball size hail did extensive damage to roofs, trees, power lines, and autos. Damage was expected to near \$1 million.									
Byars, McClain County	22 0715CST	0	0	4	?	?	?	Lightning	
Lightning struck a oil storage tank battery. Damage to the tanks and the oil burned was estimated near \$7000.									
Vinita, Craig County	22 morning	0	0	?	?	?	?	Lightning	
Lightning caused a fire which destroyed a barn and killed two broadbreds.									
Atoka, Atoka County	22 1610CST	5.0	150	0	0	6	?	Tornado (F2)	
A tornado touched down near Tushka and moved to just east of Atoka. The tornado damaged an Equipment Company, a Garage, a Dairy Farm, a County Barn and several houses. Some metal buildings built to withstand winds of 100 MPH were destroyed. Damages were expected to near \$1 million, with over \$300,000 damage to the Dairy alone.									

35 OREGON — NO REPORT RECEIVED

36 PENNSYLVANIA, Eastern — NONE REPORTED

36 PENNSYLVANIA, Western — NONE REPORTED

37 RHODE ISLAND

Statewide	12- PM EST 13 AM EST	0	0	?	?	0	0	Windstorm, Heavy Rain	
Gale force winds gusting to 50 to 70 MPH from the south ahead of an approaching cold front blew down tree limbs resulting in scattered power outages.									
Westerly	29 Early AM EST	0	0	0	0	0	0	Heavy Rain	
Eight thousand electrical customers lost power which was the result of heavy rain and faulty insulators.									

38 SOUTH CAROLINA

Hampton to Crockettville, Hampton County	3 1645EST	5	17	0	0	3	0	Tornado (F1)	
A small tornado, mostly aloft, touched down in the northeast edge of Hampton and again 5 miles northeast near Crockettville. Damaged a warehouse roof and car lot in Hampton. Two sheds destroyed near Crockettville.									
New Market Community 7 miles NW of Harts-ville, Darlington County	3 1900EST	0.1	13	0	0	4	0	Tornado (F1)	
A small tornado dipped down and destroyed a large garage, causing heavy damage to contents.									

39 SOUTH DAKOTA

Hutchinson County	11 1400CST	-	-	0	0	5	0	Lightning	
Lightning struck a florist supply warehouse northeast of Freeman setting it on fire. The warehouse was a total loss.									
Minnehaha County	11 Afternoon	-	-	0	0	2	0	Heavy Rain	
Runoff from heavy rains spilled into sanitary sewers in the south-west part of Sioux Falls, causing them to back up into basements.									
South Dakota	11 Late Afternoon 12 Early AM	-	-	0	0	5	0	Wind, Snow	
Wet snow and winds gusting to over 50 mph snapped almost a thousand power lines and poles. Snowfall amounts were generally 4-6 inches but ranged to nearly a foot or more in Brookings County. Gusts to 75 mph were recorded in McCook County. 60 mph wind gusts were reported at Corsica in Douglas County. Several semi-trucks jack-knifed on ice covered roads and numerous other automobile accidents were also reported. Numerous trees were blown down.									

40 TENNESSEE

Marion & Hamilton Counties	30- 1600- 1 0900CST	-	-	5	?	?	?	Flash Flooding	
Heavy rains began in the late afternoon of the 30th and continued into the night. The heavy rains caused flash flooding in the same sections hit in August 1982. Two temporary bridges erected after the August flooding were washed away again. One bridge was located over Suck Creek on State Highway 27 at the Hamilton-Marion county line and the other was over North Chickamauga Creek on U.S. Highway 27 near Soddy-Daisy. Flooding was scattered across Hamilton County with a number of roads covered by water. Tiftonia was hard hit with flooding of several houses. Twenty-four-hour rainfall was about 3-1/2 inches. The flooding this time was not as bad as the August flooding.									
Rhea County	30- 1600- 1 0900CST	-	-	?	?	?	?	Flash Flooding	
Heavy rains caused flooding of low lying places. Highways 30 and 60 were closed due to high water.									

41 TEXAS, Northern

Grayson County	1 1645- 1745CST	0	0	?	?	?	?	Wind, Hailstorm, and Lightning	
An intense thunderstorm moved northeastward through the Sherman and Denison areas. At 1645CST, golf ball size hail was reported by observers at the Sherman Airport. About the same time, thunderstorm winds unroofed a mobile home in Sherman. Lightning struck and damaged several homes and a nursing home in Denison a short time later. Rainfall amounts were generally in the 2 to 3 inch range within the county with over 6 inches falling at Denison Dam.									
Lewisville area, Denton County	22 1530- 1540CST	0	0	?	?	?	?	Hailstorm	
A severe thunderstorm intensified rapidly over southeast Denton County, dropping one inch diameter hail in eastern Lewisville at 1530CST. Amateur radio spotters tracked the storm eastward, reporting one inch hail in the Colony at 1540CST. The spotters also sighted a wall cloud, but no tornadic activity was observed.									
Southwest Collin County	22 1545- 1550CST	0	0	?	?	?	?	Hailstorm	
The Denton County storm continued eastward, with Amateur radio spotters reporting one inch hail along Highway 121 east of the Colony in southwest Collin County. The storm rapidly weakened after 1550 and produced no additional severe weather.									

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TEXAS, Northern

Central and Eastern Grayson County	22 1610CST	2	50	0	0	3	0	Tornado F1	
	1625CST	5	75	0	0	4	0	Tornado F1	
	1615-1630CST			0	0	?	?	Hailstorm	
<p>Mike Gray, an Amateur Radio storm spotter, sighted a funnel cloud in the Dorchester area, or just west of Howe at 1610CST. Later reports indicated that what had first appeared to be a funnel aloft produced a surface circulation and some tree and electrical line damage just south of Dorchester before dissipating.</p> <p>A short time later (about 1620), Gray, who was in direct contact with the National Weather Service Office in Fort Worth, reported the development of a new wall cloud with "violent rotation". As the Weather Service was issuing a tornado warning, the second tornado touched down about 3 miles northeast of Tom Bean, which is on Farm Road 902 east of Howe. The tornado moved north-northeast for about 6 miles, finally lifting after crossing Highway 82 about 1.5 miles west of Bells. The second tornado damaged barns and trees and destroyed a billboard along Highway 82. Scattered hail stones up to one inch in diameter fell in the precipitation area northeast of the second tornado.</p>									
Grayson County	22 1810CST			0	0	?	?	Hailstorm	
<p>A second severe thunderstorm produced one inch diameter hail at 1810 midway between Sherman and Denison.</p>									
Northern Fannin County	22 1950CST	5	50	0	0	3	0	Tornado F1	
<p>What was apparently a small tornado destroyed outbuildings and damaged trees along a southwest to northeast path from several miles north of Lake Bonham to several miles north of Lamasco. At least one farm home received moderate damage from the tornado.</p>									

41 TEXAS, Southern

Sheldon, Harris County	2 1300CST			0	0	0	0	Funnel	
<p>A funnel was sighted briefly near Sheldon. It did not touch down.</p>									
Cuero, DeWitt County	2 1630CST			0	0	6	0	Tstm winds, Hailstorm	
<p>A severe thunderstorm produced brief, damaging winds with golfball-sized hail near 1815CST. The winds, estimated at 60 mph, destroyed a warehouse, leveled equipment sheds, and uprooted trees, while the combination of wind and hail damaged roofs and fences and broke windows over much of Cuero. Power lines were also knocked out over much of the city, leaving the town without electricity for nearly 18 hours. A mobile home was lifted and tossed about near the airport with debris scattered over several blocks. Heavy rain was also reported but no flooding occurred.</p>									
Cameron County	3 0030-0300CST			0	28	7	6	Tstm winds	
<p>During the day of the 2nd, showers developed along an instability line ahead of an unusually strong cold front moving southward through central Texas. Wind gusts to 30 to 40 mph along with isolated gusts to 50 mph were generally reported across south Texas as the activity passed to the southeast. No significant damage was indicated.</p> <p>As the activity approached the Rio Grande Valley near 2230CST, its movement slowed. A second line of showers, that had developed along a second instability line and were moving southeastward, overtook the first line. The two lines merged in southeastern Kenedy County about 2315CST. A very strong thunderstorm developed at this intersection and built rapidly, reaching a maximum height near 2330CST. The top of the storm began to descend about 0030CST and, at this time, it produced a strong downburst of wind.</p> <p>The wind struck Port Mansfield at 0038CST with recorded sustained speeds of 40 to 50 mph and gusts to 74 mph. As the cell continued its southeastward movement, it continued to produce strong winds along and within approximately 15 miles of the lower coastline from Port Mansfield southward. The storm struck Port Isabel near 0150CST, producing sustained winds of near 70 mph with gusts recorded at the U. S. Coast Guard station at South Padre Island of 81 mph. At approximately the same time, winds recorded at the Brownsville airport by the NWS showed gusts to 47 mph. The activity continued moving southeastward, crossing into northern Mexico near 0300CST.</p> <p>Post-storm surveys indicated the worst damage occurred in the Port Isabel area and on South Padre Island, where 28 persons were injured. Several of the injuries occurred when the strong winds battered in a wall at an apartment complex. The remainder of the injuries were sustained by residents of some 15 trailer homes that were tossed and rolled up to 100 feet, in spite of the fact the homes had been strapped down by cables. Some of the injured had been carried with their trailer homes into the Bay.</p>									

TEXAS, Southern

<p>Over the county, nearly 70 homes and 40 businesses sustained damage while some 50 recreational vehicles were destroyed. More than 70 persons were left homeless and over 160 persons were displaced by the storm. An unspecified number of boats were damaged at area marinas. Two 8-thousand pound forms for pouring concrete floors were ripped from their steel rebar anchoring at a condominium under construction. One was left on the 7th story of the building, while the second was tossed to the ground.</p> <p>Four aircraft were overturned and seven others tossed in a heap near Bayview. 13 aircraft were damaged at the Brownsville Airport and at least 4 were damaged at the Harlingen Airport. Numerous telephone and power lines were down over the county. Damage was reported to homes, vehicles and outbuildings over the county as well.</p> <p>Small hail accompanying the high winds destroyed fields of corn in the area east of Rio Hondo. Losses were estimated at 5 to 10 percent of the crop with up to 60 percent loss in isolated pockets. Damage was also reported to citrus crops but no estimate was available on the costs. General 1 to 2 inch rains fell over the county with isolated reports of 5 inches on South Padre Island.</p>									
Lavaca, DeWitt, Victoria and Goliad Counties	19 0900-1600CST			0	0	6	0	Flood, Flash Flooding	
<p>Rain and rain showers that had developed near 0400CST on the morning of the 19th continued through the day in the Coastal Plains. Heavy rain began about 0800CST and continued through the early afternoon. This shower activity occurred in advance of a warm front moving northward onto the upper Texas coast from the Gulf of Mexico. General rains of 2 to 4 inches with scattered amounts above 6 inches were received. One unofficial report of an 11 inch rain was obtained from the Guadalupe area.</p> <p>Flooding was reported in Victoria shortly after 0900CST, in Yoakum just after noon and in Goliad and Jackson City near 1400CST. Flooding developed along Coletto Creek below the Coletto Reservoir and on the Lavaca River below Lake Texana Dam. Moderate lowland flooding between Victoria and Green Lake continued for several days. Among the roads closed due to the flooding were US 59 near Berclair and FM 616 near LaSalle. There were spotty reports of small hail and lightning strikes, but no injuries nor significant damage were indicated.</p>									

41 TEXAS, Western ————— NONE REPORTED

42 UTAH ————— NONE REPORTED

43 VERMONT ————— NONE REPORTED

44 VIRGINIA ————— NONE REPORTED

45 WASHINGTON ————— NONE REPORTED

46 WEST VIRGINIA ————— NONE REPORTED

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NOVEMBER 1982

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	
47 WISCONSIN									
Lisbon, Waukesha County	1	1500CST			0	0	3	0	Lightning
									House fire started by lightning strike.
Southern Wisconsin Counties	1	All Day			0	0	?	0	Minor Flooding
									Heavy rains caused localized flooding and power outages, especially in the City of Milwaukee and surrounding suburbs.
Extreme Northwest Wisconsin Counties	4-5				0	0	?	0	Snow, Wind and Blowing snow
									The second major snowstorm of the season occurred along the Lake Superior "snowbelt" depositing up to 12 inches of new snow.
Southwest Wisconsin Counties	11-12	Evening into the Morning hours			0	0	?	0	Minor Flooding, Mudslides
									2-4 inches of rain in 24 hours led to rivers over their banks and minor flooding.
Northwest Wisconsin	11-12	Late evening and into Next Day			0	0	?	0	Snow, Wind and Blowing Snow
									The third major snowstorm of the season dumped up to 18 inches of snow, closing schools and roads. Power outages to thousands of residents.
48 WYOMING									
Counties: Sweetwater, Carbon, Albany, Laramie, Natrona, Converse, Niobrara, Platte, and Goshen	11	Day			0	6	2	0	Winter Storm
									A winter storm hit southern Wyoming and deposited 2 to 5 inches of snow in the plains and up to one foot on Casper Mountain. Winds of 25 to 35 mph caused near blizzard conditions in many areas. Six storm related injuries occurred as a result of vehicle accidents on slick roads.
49 ALASKA ————— NONE REPORTED									
50 HAWAII									
Kauai, Oahu, Niihau	23	aftn/eve			1	25	8	7	Wind, Surf
									Hurricane INA causes major damage on the Hawaiian islands of Kauai, Niihau and Oahu as it moves across northwestern portion of chain in a ENE direction with the center passing within 25 miles of the northwest coast of Kauai. Damage mainly due to surf and high water and winds gusting to 100 to 120 MPH locally. See discussion in the Outstanding Storms of the Month section elsewhere in Storm Data.
51 PUERTO RICO ————— NONE REPORTED									
52 VIRGIN ISLANDS ————— NONE REPORTED									
53 PACIFIC									
Marshall Islands	26-30				0	?	?	?	Wind, Surf, Rain
									Typhoon Pamela forms just east of Majuro Nov. 24 and moves WNW across Majuro, Kwajalein and Enewetak on the 26th and 27th. Damage due to high winds, rough seas and heavy rain quite severe at a number of atolls throughout Marshalls. Pamela continues slowly westward nobing through Marianas at reduced intensity on Nov. 30-Dec. 1 and finally moves into Philippines on Dec. 7.

STORM SUMMARY

NOVEMBER 1982

STATE	TORNADOES					HAILSTORMS				WINDSTORMS				LIGHTNING				FLOODING				@HEAVY SNOWSTORMS AND BLIZZARDS			= ICE STORMS				δ ALL OTHER			
	NUMBER	DAYS	DEATHS	INJURIES	+DAMAGE	DEATHS	INJURIES	+DAMAGE		DEATHS	INJURIES	+DAMAGE		DEATHS	INJURIES	+DAMAGE		DEATHS	INJURIES	+DAMAGE		DEATHS	INJURIES	+DAMAGE		DEATHS	INJURIES	+DAMAGE				
								PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			
Alabama	1	1			3																											
Arizona											5	6																				
Arkansas								?	?		4	?																				
California	7	1			?			4		5	1	8	4																			
Colorado																																
Connecticut																																
Delaware																																
Florida	1	1			3							2																				
Georgia												4																				
Idaho																																
Illinois																																
Indiana												5	4																			
Iowa	1	1			3						4	3																				
Kansas	1	1			4						1	6	5																			
Kentucky																																
Louisiana												5																				
Maine																																
Maryland & DC																																
Massachusetts												4																				
Michigan											3	4																				
Minnesota												3																				
Mississippi	1	1			5																											
Missouri																																
Montana												5	?																			
Nebraska												2																				
Nevada												4	4																			
New Hampshire																																
New Jersey																																
New Mexico																																
New York												4																				
North Carolina																																
North Dakota																																
Ohio																																
Oklahoma	2	2			6						6	?	?																			
Oregon																																
Pennsylvania																																
Rhode Island																																
South Carolina	2	1			4							?																				
South Dakota												5																				
Tennessee																																
Texas	3	1			4							6	?																			
Utah																																
Vermont																																
Virginia																																
Washington																																
West Virginia																																
Wisconsin																																
Wyoming																																
Alaska																																
Hawaii																																
Pacific																																
Puerto Rico																																
Virgin Islands																																

Hurricane Iwa's Passage over the Hawaiian Islands

November 23, 1982

By

Hans E. Rosendal, NWSFO, HNL.

During the afternoon and evening hours of November 23, 1982, Hurricane Iwa swept northward out of the tropical Central Pacific and lashed the Hawaiian Islands of Niihau, Kauai, and Oahu with high winds and damaging surf. This was the first hurricane to seriously affect the Hawaiian Islands for nearly a quarter of a century, and it served as a reminder to the Islands' residents that hurricanes can and do, on rare occasions, cause a serious impact. The last previous tropical cyclone to cause major damage within the Hawaiian chain was Hurricane Dot, which moved across the Island of Kauai in August of 1959.

Hurricane Iwa was a late season tropical cyclone and followed a somewhat different track than mid season tropical cyclones. In November, the sea surface temperatures of the tropical oceans as far north as 15° N may still be quite warm, near 28° C (82°F) over large areas while the upper flow is starting to become quite winterlike to the north. This means that a tropical storm may still have the low-level moisture and instability and upper divergence needed for development. Then once this development has taken place, the strong upper flow may reach far south into the tropics to move the cyclone quickly northward to higher latitudes. The Hawaiian region is not particularly known for frequent late season development, though during the last 100 years or so, there have been enough cases in the region to warrant a cautious look southward of the Islands for possible development.

The climatology of the incidence and tracks of early historic storms in the Hawaiian Islands region is not entirely complete, and there may be the problem of determining whether a storm event late in the calendar year was a tropical cyclone or not. However, at least two tropical cyclones, one of November 17-20, 1874 and the other of November 26 - December 4, 1904, seem to fit this particular pattern of moving in from the south. In more recent years, Hurricane Nina of November 29 - December 7, 1957 was the latest such case before Iwa.

As a curious coincidence, Hurricane Nina, probably the storm of record most similar to Iwa, affected the Hawaiian Islands almost exactly to the date 25 years ago in late November and early December 1957. Nina and Iwa both formed near Palmyra Island (6N, 162W) and from there moved slowly northward while gaining hurricane strength. Nina's path followed roughly the longitude line of 161W while Iwa, a little farther west, moved along 164W. At a distance of about 150 miles southwest of Kauai, Nina made a sharp turn westward, which spared the Hawaiian Islands the worst of her fury. Nina, nevertheless, did come close enough to cause considerable surf damage along the south shores of Kauai, and the fringes of her circulation extended in over Kauai and Oahu, causing some wind and heavy rain damages to portions of these Islands.

Hurricane Iwa did not turn on a path westward away from the Islands as Nina did. Rather, Iwa, after having been nearly stationary or drifting very slowly northward in the area near 12N 164W for 24 to 48 hours on November 21-22, all of a sudden made a leap northward and northeastward toward Kauai.

The rapidly accelerating forward motion carried the center of Iwa north northeastward close to Niihau and within about 25 miles of the northwest coast of Kauai at 1700 HST on November 23d. Hurricane Iwa at the time was moving with a forward speed of 30 to 40 mph past Kauai with maximum sustained winds estimated at 80 to 90 mph in a small area near the center and gusts as high as 100 to 120 mph.

The very sudden forward acceleration of Hurricane Iwa probably added to the severity of the winds north in the "dangerous semicircle" extending over Kauai and Oahu. It also likely caused the energy of the swell waves moving with or out ahead of the storm to become more concentrated in time and space. On the other hand, the forward acceleration of the storm caused the severe wind conditions to be of relatively short duration at any one point and resulted in the rainfall accumulation over the Islands being unusually light.

Surf and water damage to shoreline property was very extensive along the entire south shore of Kauai. Most of the damage was concentrated in the Poipu area where exposed luxury hotel and condominium property within several hundred feet of the ocean was flattened or severely damaged. A number of small vessels were sunk or grounded at Nawiliwili Harbor near Lihue and at Port Allen on the south coast. On Oahu, surf and water damage, along with the wind damage, affected the Waianae communities from Nanakuli to Makaha severely. Some damage also occurred to shoreline property in the Kahala area below the famous Diamond Head Crater. On Kauai, as well as Oahu, damage was heavier where no protective reefs were present offshore. Lesser surf damage occurred on the other Islands from Lanai to Big Island at locations where the southwesterly swell battered coastal installations. High water washed sand into some of Waikiki's streets and flooded cars in basement parking areas. The height of the actual storm surge with Hurricane Iwa is difficult to estimate. It probably reached to about 3 feet near Waikiki, 5 feet along the Waianae coast, and 6 to 8 feet along the south coast of Kauai.

Wind damage on Kauai was quite extensive and showed relatively little variability over the Island. On Oahu, local terrain features affected the flow very strongly, and there was a distinct lessening of damage eastward and southward across the Island away from the center of the hurricane. The pockets of heavy wind damage on Oahu usually coincided with locations where winds from southeast through southwest directions blew downslope from off the Waianae and Koolau ranges. Strongest winds at Honolulu International Airport occurred at 1845 HST during the passage of a convergence line or squall line which separated SSE winds ahead of it from SSW winds behind it. The fastest 1-minute average wind speed then registered 46 mph with a peak gust at 81 mph out of the SSW. Much of the wind damage on Oahu occurred as this north-south oriented line of showers moved across the Island between about 1800 and 1930 HST. At Lihue Airport, the fastest 1-minute average wind speed was 65 mph out of the south at 1733 HST. Gusts to 85 mph were clocked at 1703 HST and again at 1737 HST. A number of smaller aircraft sustained damage at both Lihue and Honolulu. At Honolulu International Airport, an old DC-3 aircraft was rolled across the field by the strong winds at the height of the storm. Within the airport terminal complex, several passengers suffered cuts from flying glass as a large window pane shattered during the gusty winds.

Rainfall over the Islands accompanying Hurricane Iwa was unusually light. A hurricane of similar strength could easily have deposited as much as 10 to 15 inches in less than 12 hours over portions of the Islands with destructive flooding the result. The very fast forward movement of Hurricane Iwa, as it swept by the Islands, appears to be the main reason for this lack of rainfall. Iwa also, at the time, was in the process of undergoing the transformation from a tropical, warm core system into an extratropical, cold core low-pressure area. During this transformation process, the convective cloudiness around the center tends to become more asymmetrically distributed. As seen from the satellite pictures, Iwa was starting to take on some of these extratropical features of the "open wave" type frontal low-pressure system with a flatter central pressure distribution and with much of the heavy precipitation displaced to the north of the center out over the open waters north of Kauai.

In spite of the furious winds and destructive waves accompanying a moderate hurricane like Iwa, no fatalities occurred on land. One seaman, aboard a Navy destroyer leaving Pearl Harbor ahead of the storm, was killed by a heavy sea and several others were injured. Otherwise, injuries were mostly minor. At the height of the storm, 5800 people were evacuated from shoreline areas of Kauai and placed in temporary shelters. Total damage losses, public as well as private, were estimated near \$200 million, of which \$150 million occurred on Kauai and \$50 million on Oahu. This compares with losses of \$7 million in 1959, dollars associated with Hurricane Dot's passage 23 years ago. Within the agricultural sector on Kauai and Oahu, damage to banana and papaya was extensive, and a large sugar cane acreage was set back severely as leaves were stripped by the strong winds. Sugar growers also sustained damage to production facilities, equipment and buildings.

Utilities on Kauai and Oahu were hard hit. The electric power distribution system suffered severely, and many customers were without electric power for more than a week. There were also telephone service interruptions with the outside world, mostly of a very temporary nature, as both satellite and cable links were severed. The local telephone service, however, stood up well during the storm. All television stations were off the air much of the night, and only one or two radio stations were able to continue to broadcast. The lack of electric power also affected the local utilities' ability to pump water and to produce synthetic natural gas. The tourist industry on Kauai suffered badly in the aftermath of the storm as many visitors were anxious to leave for other Islands or for home.

In view of the large amount of destruction by wind and waves, it seems miraculous that injuries and loss of life was so small. Adequate warnings, followed by a good public response and protective measures taken by civil defense and other agencies, no doubt all contributed. Iwa thus served as a reminder that hurricanes can and do, on rare occasions, affect the Hawaiian Islands in a serious way. Iwa lacked the very dangerous and damaging aspects of excessive rainfall over the mountainous Islands. Damages from wind and storm surges and high water could also have been much worse had Iwa moved on a path somewhat closer to the densely populated Oahu. The increased population of the Hawaiian Islands in recent years and the often carefree construction in exposed beach front areas or along valley bottom lands subject to flooding mean that there must be a continued effort to focus public awareness on the dangers of these storms. The next one may not wait 25 years.

REFERENCE NOTES

Storm damage categories are from	*	Miles instead of yards
1 to 9 as follows:	**	Yards instead of miles
1 Less than \$50	@	Includes heavy sleet storm
2 \$50 to \$500	#	Freezing drizzle and freezing rain, commonly known as glaze
3 \$500 to \$5,000	≠	Not received or incomplete
4 \$5,000 to \$50,000	o/c	Under Estimated Damage, Property/Crops, indicates crop damage amount is included in the figure given
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		

"F" SCALE DEFINITIONS

0 = 40-72	MPH	Breaks branches off trees; signboards damaged.
1 = 73-112	MPH	Peels surface off roofs; trailer houses pushed or damaged.
2 = 113-157	MPH	Tears roofs off frame houses and outbuildings; cars blown off highway.
3 = 158-206	MPH	Windows of skyscrapers smashed; frame houses destroyed; cars lifted off ground.
4 = 207-260	MPH	Skyscrapers twisted; frame houses leveled; cars blown some distance.
5 = 261-	MPH	or greater.

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