

## Hawaii Flood History

A Hawaiian hurricane is a tropical cyclone that forms in the Pacific Ocean and affects the Hawaiian Islands. Hawaii lies in the central Pacific, which, on average, has four to five tropical cyclones observed in the basin every year. These numbers range up to 11 a year, such as in the 1992 and 1994 seasons, although rarely do these storms actually affect Hawaii. Before the 1950s, many "windstorms" struck Hawaii. If these storms were in fact hurricanes, they were not called hurricanes. Records show that these undeclared storms have been hitting Hawaii long before tropical cyclone records have been kept. This is a list of storms to affect the state.

### Pre&ndash;1950

- 1843: The earliest report of a tropical cyclone that could have affected Hawaii was recorded in 1843. On September 23, a German ship recorded a cyclone (known later as the "Cyclone of the Lark") near 17°N and 141°W. No further records are available, But extrapolation of the cyclones forward movement would have sent it directly into the southern coast of the Big Island of Hawaii. Whether it even came close to Hawaii is unknown at this point.

- August 1871: Excerpts from a Honolulu newsletter known as the Hawaiian Gazette describes a weather event that related closely to a tropical cyclone. Quotes from captains and civilians describe a severe windstorm that ravaged the islands for several hours. Damage is unrecorded.

- November 1874: A possible tropical cyclone may have dropped over 20 inches (508 mm) of rain on Honolulu and southerly gales destroyed 23 homes, and damaging at least 50.

- December 1902&ndash;January 1903: A low pressure system (known later as "The Froc Cyclone") that took a path similar to that of a tropical cyclone, passed through Kaulakahi Channel in late December 1902. No records of unusual weather were recorded, so the storm was likely still forming as it crossed Hawaii.

- October 1906: A tropical cyclone passed about 60 miles (97 km) south of South Point. Heavy rains were recorded; "the heaviest in years". A little over 12 inches (305 mm) fell in 4 1/2 hours.

- November 1906: 90 miles (145 km) south of Honolulu on November 3, 1906, a tropical cyclone was recognized. The storm supposedly tracked northward, passing through the Kauai channel. This cyclone must have been abnormally small or very weak, because climatological records show no unusual rainfall, wind, surge, or low pressure. The storm dissipated near British Columbia.

- August 1925: High seas and gusty winds were recorded in Hawaii from a nearby tropical cyclone.

- August 1938: A possible tropical cyclone produced heavy wind and rain in the state.

### 1950s

- August 1950: Hurricane Hiki passed north of the islands, bringing gale winds. 68 mph (110 km/h) winds were recorded in Kauai. Additionally, over 52 inches (1321 mm) of rain fell over 4 days in Kauai. One died from Hiki.

- July 1957: Hurricane Kanoa, after taking a long journey across the eastern Pacific, became a non-tropical circulation a few miles east of Hawaii. The remnants of Kanoa brought welcomed rain.

- November&ndash;December 1957: Hurricane Nina was a category one hurricane that formed south of Hawaii. Nina moved north and took a sharp turn to the west without actually striking the island state. Nina's closest approach to land, which was relatively far off the coast, was only about 120 miles (193 km) southwest of Kauai. Nina caused about \$100,000 damage in Kauai and dropped over 20 inches (508 mm) of rain in 14 hours. In addition, Nina set a record for the highest wind gust ever recorded in Honolulu: 82 mph (132 km/h).

- August 1958: On August 7, a tropical storm seemed to rapidly appear directly off the coast of Hilo. It moved across the islands, dropping considerable rainfall and causing about \$500,000 of damage, dissipating thereafter.

- August 1959: Hurricane Dot was a powerful hurricane in the year of 1959. Dot entered the Central Pacific as a category 4 hurricane just south of Hawaii. On August 5, Dot had seemed to turn more northwest, aiming it directly at Kauai. On the 6th, Dot began weakening and at its landfall in Kauai, Dot was a mere category one. Despite being greatly weakened, the hurricane brought gusts of over 100 mph (161 km/h). In some areas of the island, palm trees had been snapped in half, suggesting winds were locally over 125 mph (200 km/h). Damages from Dot cost no more than a few million dollars, and rainfall was relatively light; around 4 inches (101mm). There were no deaths as a result of Hurricane Dot.

## 1960s

- September 1963: Tropical Storm Irah crossed the islands as a depression, bringing 36 mph (58 km/h) winds, but causing very little damage.

- August 1966: Hurricane Connie brought heavy rain in the Big Island and Maui without making landfall.

## 1970s

- August 1970: Tropical Storm Maggie passed just south of the Big Island, dropping nearly 10 inches (254 mm) of rain.

- January 1971: Although not having existed in the Central Pacific as a tropical cyclone, the extratropical low that was Tropical Storm Sarah in the West Pacific passed over Hawaii in mid January, causing high winds and heavy rain.

- July 1971: Hurricane Denise dissipated before reaching Hawaii, but brought beneficial rain of over one inch to dry farms and sugar plantations. Denise's outer winds also helped Sheila Scott while she was flying solo around the world, and a boat named Winward Passage win the Transpacific Yacht Race. Both were headed to Honolulu.

- August 1972: Hurricane Diana dissipated a few miles off shore of the Big Island, dropping over 10 inches (254 mm) of rain in some parts.

- September 1972: Hurricane Fernanda may have caused a flash flood near Waipio as it passed to the northeast.

- August 1976: Tropical Storm Gwen passed north of Hawaii, dropping 1-2 inches (25 to 50 mm) of rain across the entire state.

- July 1978: Hurricane Fico created 15 foot (4.6 m) waves, felled trees and knocked out power across the island state.

## 1980s

- July 1982: Hurricane Daniel passed through the Islands as a tropical depression, causing little, if any, damage.

- November 1982: Hurricane Iwa was one of Hawaii's most damaging hurricanes. It was only a category one hurricane, but it passed just miles west of Kauai, moving at a speed of nearly 50 mph (80 km/h). Severe property damage was inflicted on the island; up to \$250 million (a record for that time). Iwa was the most damaging hurricane to ever hit Hawaii until Hurricane Iniki took over the title 10 years later.

- July & August 1983: Hurricane Gil passed over northern Hawaii a tropical storm, causing minor damage.

- October 1983: Hurricane Raymond took a similar path as Gil, but as a depression, causing no damage.

- July 1985: Hurricane Ignacio, although missing the islands, generated surf that measured from 10 to 15 feet (3 to 4.5 meters) causing reports of damage to coastal roads and structures. Only light rain was reported.
- July 1986: Waves caused by Hurricane Estelle caused \$2 million dollars in damage when they destroyed five houses and damaged several others. Two people on Oahu drowned in rough surf.
- August 1988: Tropical Storm Gilma moved through the island chain as a depression, dropping locally heavy rainfall of up to four inches (100 mm) in some places.
- August 1988: Hurricane Uleki approached the state. Two drownings on Oahu are attributed to rough surf caused by the hurricane.
- July 1989: Hurricane Dalilia dropped heavy rains over Hawaii, setting a new July record for the Honolulu International Airport, 2.33 inches in 24 hours. Rain was heavier elsewhere, with up to 8 inches (203 mm) falling near the North Shore.

## 1990s

- August 1991: Hurricane Fefa dissipated shortly before landfall. Two people were injured by lightning. Locally strong winds occurred, with wind gusts reaching 58 mph at some localities, mainly over Hawaii and Maui. Some very heavy downpours occurred, particularly on the Big Island. Localized flash flooding was reported in the Kohala and Hamakua districts.
- July 1992: Hurricane Georgette brought locally squally winds over the state as a depression. Several large waterspouts were sighted off Hapuna Beach in the South Kohala district.
- September 1992: Hurricane Iniki was likely the worst hurricane ever to affect Hawaii. It hit the island of Kauai as a Category 4 on September 11. Iniki caused almost \$2 billion in damage, mainly to Kauai, becoming the costliest East/Central Pacific hurricane ever recorded. Additionally, 6 died as a result of the hurricane. Iniki was the strongest hurricane to ever strike Hawaii, having winds of 140 mph (225 km/h). A Hawaiian hurricane has yet to surpass Iniki's extreme strength and cost.
- September 1992: Hurricane Orlene struck Hawaii as a tropical depression causing heavy rainfall, washing out roads, shortly after Iniki ravaged the island.
- July 1993: Hurricane Eugene dropped appreciated rain on the state as it dissipated. There were some minor power outages and the rain made traffic conditions hazardous. One fisherman was reported missing after the storm.
- August 1993: Hurricane Fernanda brought heavy surf of up to 15 feet (4.6 m) on the east facing beaches from the Big Island to Kauai. Some heights between 15 and 20 feet (4.6 m to 6.1 m) was reported on Kauai. There was some damage to shoreline roads on all islands and some homes had water enter into them.
- July 1994: Hurricane Daniel dumped 5 inches (127 mm) of rain over the windward slopes of Big Island. Moderate surf of up to 6 feet (1.8 m) affected on the east and southeast shorelines on the Big Island.
- July 1994: Hurricane Emilia caused damage to trees and foliage while passing south of Hawaii. There was high surf of up to 10 feet (3 m) along the Puna and Kau shorelines.
- July 1994: The remnants of Tropical Storm Fabio brought heavy showers to Big Island and Oahu, with rainfall reaching up to 4 inches (101 mm).
- August 1994: Tropical Depression One-C passed just south of the islands, causing severe flooding in Hilo.
- August 1999: Hurricane Dora caused minor wind gusts of up to 58 mph (93 km/h) on the southern part of Big Island as it passed south of Hawaii.

## 2000s

- August 2000: Hurricane Daniel passed north of the islands, bringing a few thunderstorms to the island, although no significant flooding resulted. High surf with waves of up to 10 feet (3 m) impacted the eastern side of the island of Hawaii.

- August 2003: Hurricane Jimena brought up to 10 inches (254 mm) of rain as it passed Big Island. High surf with heights of up to 15 feet (4.5 m) were reported on the windward sections of Big Island. A gust of 53 mph (85 km/h) kt was recorded at South Point.

- August 2004: The remnants of Hurricane Darby passed over the islands and combined with an upper level trough to create unstable moisture in the air, dropping up to 5 inches (127 mm) of rain in a few hours in the Big Island, causing flooding and road closures. Rainfall up to 5 inches (127 mm) was also reported in Oahu.

- September 2005: An upper level trough which had resulted in the remnants of Hurricane Jova brought unstable conditions to Hawaii, allowing locally heavy rainfall to occur.

- September 2005: The remnants of Hurricane Kenneth brought locally heavy rainfall, with up to 12 inches (305 mm) falling on the Big Island of Hawaii. Intense rains over Oahu and Kauai caused flash floods on Kaukonahua Stream and the overflow of Lake Wilson at Wahiawa Dam. Flash floods occurred on Hanalei River forcing the closure of Kuhio Highway.

- August 2007: Hurricane Flossie passed within 100 miles of the Big Island of Hawaii bringing rain and tropical storm-force winds to the island.