Monthly Precipitation Summary

State of Hawai‘i

Month: January 2024
Prepared: February 6, 2024

Note: This summary uses the arithmetic mean, or average, for “normal” rainfall values.

State:

The new year started with a day of trade winds across the State of Hawai‘i. That would be the last day with trade winds across the entire state for the rest of the month. On January 2, the surface high pressure system that produces the trades shifted to the east, resulting in southeasterly winds over the main Hawaiian Islands through January 6. A low pressure system developed northwest of the state on January 7, then moved east to a position north of Kaua‘i on January 8 with an associated cold front trailing southwestward from the low. Surface winds veered to a southerly to southwesterly direction as the front approached Kaua‘i and pulled deep tropical moisture over the island chain. The combination of this enhanced moisture with unstable conditions aloft generated bands of heavy rainfall east of the front from Kaua‘i to Moloka‘i. West O‘ahu received the highest rain totals, with the Mākaha area receiving over 11 inches in 24-hours. The actual frontal boundary arrived over Kaua‘i during the evening of January 8 and reached O‘ahu during the early morning hours of January 9. By this time, the pre-frontal rain bands were affecting Maui County. Heavy rainfall along the south- and southwest-facing flanks of Haleakalā produced flash flooding in Kīhei, and closed Pi‘ilani Highway at several low water crossings over normally dry gulches. On the afternoon of January 9, heavy rainfall reached the Big Island and closed Wood Valley Road and Ka‘alāiki Road due to flooding in low water crossings. This front was the first of 5 cold fronts to reach the main Hawaiian Islands in January.

The second cold front of the month reached Kaua‘i on January 11 soon after the first front dissipated east of the Big Island. Conditions aloft were more stable with this frontal system, and while the northwestern slopes of Kaua‘i received 2 to 4 inches of rain, the rest of the state had much lower totals during its passage.

On January 16, following a few days with light winds and cooler, drier air, pre-frontal rain bands ahead of the third cold front of the month developed over the state. Atmospheric conditions were most favorable for significant rainfall over Maui, with the main rainband moving over West Maui just after midnight. The band progressed eastward and intensified over central and southeast Maui. Rain gage and radar rainfall estimates indicated totals of 3 to 5 inches from West Maui to Kīhei and Upcountry Maui. The south- and southeast-facing slopes of Haleakalā picked up 6 to 8+ inches. The radar estimated much higher amounts over the upper southeast-facing slopes but the peak amounts appear to be erroneous due to data contamination by the terrain. Flash flooding occurred once again in the Kīhei area, with South Kīhei Road closed for a second week in a row. A driver was rescued from the bridge over Kūlanihāko‘i Gulch after flood waters trapped the vehicle. Pi‘ilani Highway was also closed again after low water crossings became impassable west of Kaupō. The front itself moved from Kaua‘i to Molokai on the afternoon and

evening of January 16, then passed over Maui and the Big Island on January 17.

A ridge of high pressure settled in over the main Hawaiian Islands on January 18 after the front dissipated east of the Big Island. Light winds and stable conditions produced very little rainfall through January 23. A weak cold front moved across the island chain on January 24 and 25, followed by another weak cold front passage on January 29. After the January 24-25 frontal passage, the subtropical high pressure ridge was displaced south of the Big Island, keeping the state under mostly southeast, south, and southwest low level winds for the rest of the month.

On a related note, there is a strong El Niño event occurring across the Pacific. Winter rainfall over the Hawaiian Islands during this type of event is usually below average across the island chain. The rainy conditions from multiple cold front passages are very much atypical during January when a strong El Niño is in place.

Island of Kauaʻi:

The lack of trade winds during January resulted in most of the normally "windward" gages along the north- and east-facing slopes recording below average monthly rainfall totals. Normally "leeward" gages on the south- and west-facing slopes had mostly above average rainfall totals. One consequence of the anomalous weather pattern is that Mount Waiʻaleʻale, usually the wettest location on Kauaʻi for any given month, had less rainfall than several other gages on the island. The highest monthly rainfall total of 19.39 inches (164 percent of average) came from the U.S. Geological Survey's (USGS) gage at Waiakoali on the upper west side of the island. This site also had the highest daily rainfall total of 4.62 inches on January 8. The gages at Hanapēpē and Kalāheo recorded their highest January totals since 2005 and 2013, respectively.

Island of Oʻahu:

Rain gages along the slopes of the Koʻolau Range had mostly near to below average rainfall totals for the month of January. Gages along the slopes of the Waiʻanae Range had mostly near to above average totals. The Poamoho Experiment Farm gage had the highest monthly total of 19.72 inches (408 percent of average), and this was also the highest January total on record for this site. The USGS' rain gage at Mākaha Stream had the highest daily total of 11.44 inches on January 8. Mākua Range had its highest January total since 2003. The Kahuku Training Area, Schofield Barracks, and Wheeler Army Airfield sites all had their highest January totals since 2004.

Maui County:

Most of the gages across Maui County had above average rainfall totals for the month of January. The USGS' gage on Puʻu Kukui had the highest monthly total of 26.75 inches (86 percent of average), and the highest daily total of 11.44 inches on January 16. Records for the highest January rainfall total were broken at Kula Branch Station, ʻUlupalakua Ranch, and Kīhei 2. Gages at Kahului Airport, Lahainaluna, Māhinahina, Waikapū Country Club, and Wailuku posted their highest January totals since 2004.

Island of Hawai‘i:

January rainfall totals from the northeast half of the island were mostly below average, while totals from the southwest half were mostly near to above average. This distribution of rainfall is not surprising due to the prevalence of kona winds during the month. The Pali 2 rain gage had the highest monthly total of 12.80 inches (122 percent of average), which was the highest January total at this site since 2004. The Pali 2 gage also had the highest daily total of 6.89 inches on January 9.

Data Sources: Data used in this report are from National Weather Service sources including climate network weather observation stations at Līhu‘e, Honolulu, Kahului, and Hilo, the Ua Net network of automated rain gages, and selected Cooperative Observer sites. Additional data come from automated rain gages operated by the State of Hawai‘i Department of Land and Natural Resources, the U.S. Geological Survey, the U.S. Bureau of Land Management, the U.S. National Park Service, the Department of Defense, the U.S. Fish and Wildlife Service, and the U.S. Department of Agriculture, as well as manual observations from the Community Collaborative Rain, Hail, and Snow Network (CoCoRaHS). Averages come from the National Centers for Environmental Information (1991-2020 series) and the Rainfall Atlas of Hawai‘i (http://rainfall.geography.hawaii.edu/). Supplemental data used in some of the analyses are from the Hawai‘i Climate Data Portal (https://www.hawaii.edu/climate-data-portal/). Data presented here are not certified and should be used for informational purposes only.

Kevin R. Kodama
Senior Service Hydrologist
NOAA/NWS Weather Forecast Office Honolulu