ANNUAL SEVERE WEATHER SUMMARY FOR 2021

METEOROLOGICAL SERVICE, JAMAICA

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Jamaica's General Weather Pattern

Typically Cold Fronts that traverse from the North American continent to the Caribbean region including Jamaica are evident from mid-October to mid-April; whilst the Tropical Weather Systems namely Tropical Waves, Tropical Depressions, Tropical Storms and Hurricanes occur from April to December. The official hurricane season is from June to November. Jamaica's bimodal rainfall pattern consists of two peak periods, of which the primary peak occurs in October and the secondary peak is usually observed in May. The lowest amounts of rainfall (dry period) are at a minimum during the period of December to March and the month of July.

Summary of Severe Weather Events in 2021

Troughs were the main significant features that impacted the island during 2021. These systems resulted in severe weather conditions across sections of the island as captured in Figure 1. The severe weather events varied in the reports of impacts that affected the island and include flooding, landslides, lightning activity, blocked roadways and damages to property and infrastructure.

During the year meteorological drought conditions were observed across sections of the island for at least seven of the 12 bi-monthly periods. Table 1 shows the various severe weather features and events, the reported impacts caused by each event and the parishes or areas which were affected. A Tropical Wave which interacted with the Upper-level Trough from June 28 to 29, produced rainfall which resulted in a huge landslide that occurred on the main road from Lucea to Montego Bay in the vicinity of the Riley Bridge.

Meteorological Drought

Meteorological drought is reported on a parish level over a bi-monthly period. Drought conditions were observed for the following bi-monthly periods: December/January, January/February, March/April, April/May, September/October, October/November and November/December. These conditions were declared for nearly all parishes with the exception being for Hanover, which

experienced some mild dryness. As seen in Figure 2, St. Thomas recorded the most bi-monthly periods of meteorological drought conditions, while, St. James, Trelawny, St. Ann, Portland and Westmoreland experienced the least number of bi-monthly periods. Generally, parishes in the southern section of the island were affected more frequently by drought conditions when compared to those in the north.

Temperature

Based on analyses done by National Aeronautics and Space Administration (NASA) and the National Oceanic and Atmospheric Administration (NOAA), the Earth's global average surface temperature in 2021 was regarded as being equal to that of 2018, as the joint sixth warmest year on record. In NOAA's Annual 2021 Global Climate Report, it stated that 'the Earth's global average surface temperature in 2021 was about 0.84°C warmer than the baseline 1981-2010 mean'. In 2020 the global average surface temperature was 0.99°C warmer by similar comparison. This means that the average surface temperature in 2021 was about 0.15°C cooler than that of 2020 and this was attributed to the cold phase of the El Niño Southern Oscillation (ENSO) climate pattern, known as La Niña, across the tropical Pacific Ocean. In fact, La Niña conditions were observed during the latter months of 2020 and continued for most months during 2021.

During the period May to August 2021, extreme temperatures were at times, lower at some locations across the island when compared to those of 2020. For example, Woodford Park in St. Andrew recorded an extreme temperature of 30.1 °C on May 11, 2021, compared to 33.3 °C on May 26, 2020; Fair Prospect H.S. in Portland recorded an extreme temperature of 32.0 °C on June 20, 2021, compared to 36.4 °C on June 2, 2020; Mayfield A.A. recorded an extreme temperature of 31.9 °C on July 3, 2021, compared to 35.4 °C on July 30, 2020 and Innswood H.S. in St. Catherine recorded an extreme temperature of 34.6 °C on August 16, 2021, compared to 37.1 °C on August 13, 2020. This general trend for stations to record lower temperatures in 2021 when compared to 2020 was in keeping with what was observed globally.

Tropical Cyclones

Tropical Storm Grace moved from east to west across the island on August 17, 2021 and impacted the island with tropical storm conditions. Tropical Cyclones Elsa and Ida however, traversed close to Jamaica but, also influenced weather conditions across the island. In the case of Ida the tropical disturbance which developed into the storm was impacting weather conditions over Jamaica when the cyclone formed to the south-southwest of Negril. Both Elsa and Ida resulted in days of heavy rainfall, thunderstorms and gusty winds across sections of the island on July3-4 and August 26-27 respectively.

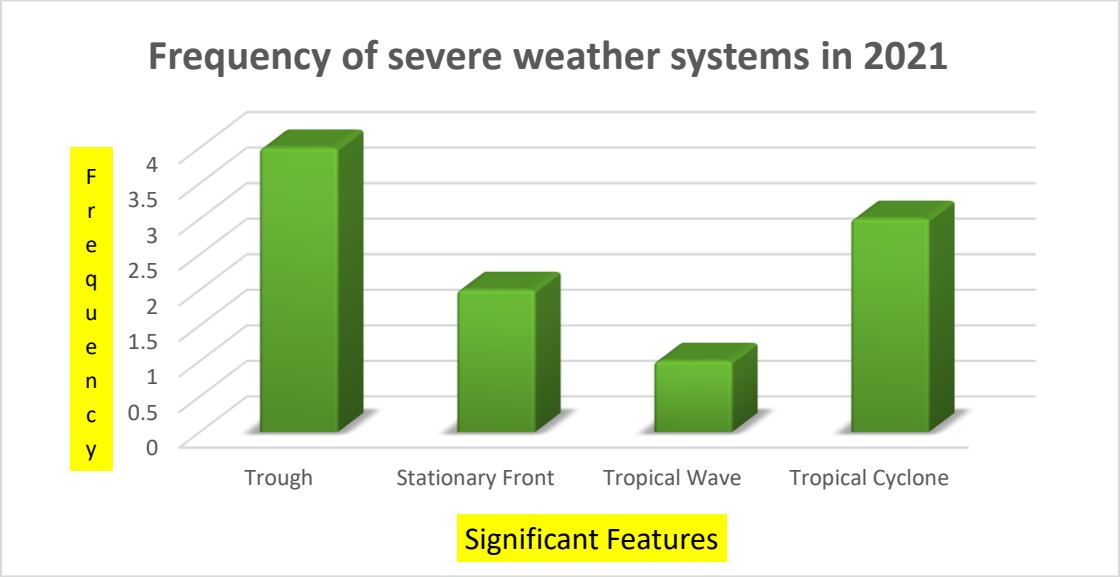

Figure1: Depicts the severe weather features that impacted the island during 2021

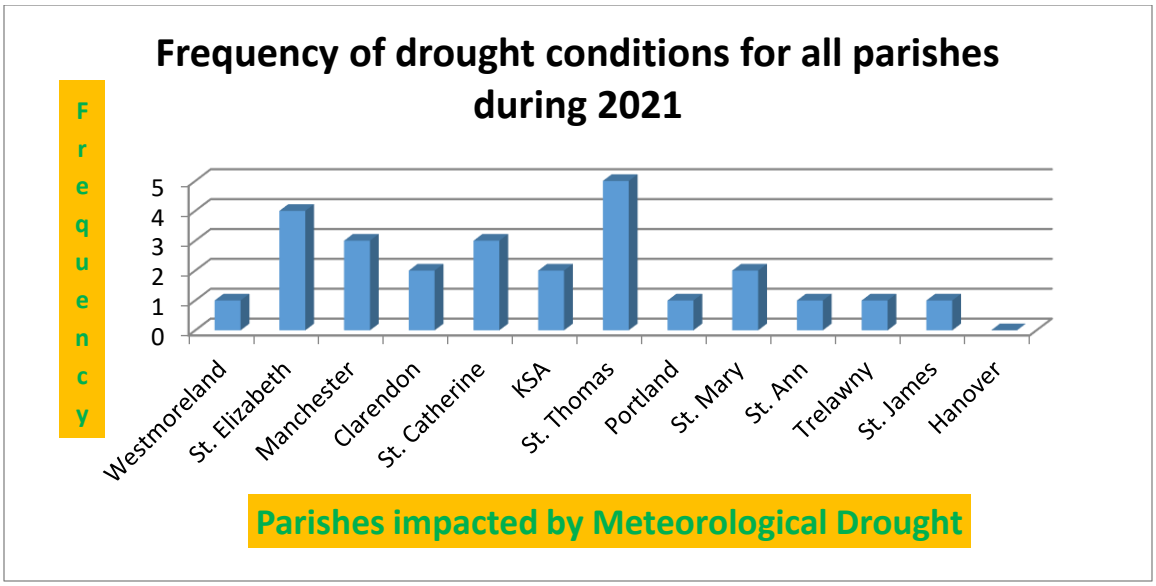

Figure 2: Parishes impacted by Meteorological Drought conditions during 2021

Figure 3. Map showing the number of bi-monthly occurrences of meteorological drought for each parish.

Severe Weather Events Reported for 2021			
Date	Weather Feature	Damage/Impact	Affected parishes/areas
January- December	El Nino	Meteorological Drought	Westmoreland, St. Elizabeth, Manchester, Clarendon, St. Catherine, Kingston & St. Andrew, St. Thomas, Portland, St. Mary, St. Ann, Trelawny and St. James.
January 8-9	Trough (Deformation zone) in the vicinity of Jamaica and Cuba	Flooding of roadways and communities	Media reports of flooding along the Long Hill main road in Montego Bay after heavy rains. Janelle Rickets of the NWA western office stated that a gully overflowed its banks and along with blocked drains were responsible for the flooding in the communities of Belmont, Wiltshire and Cornwall Courts.
February 4-5	Weak Stationary Front just east of Jamaica	Flooding of roadways and homes	Overnight rains, some lasting more than 13 hours, have affected Portland. The Jamaica Observer and TVJ reported flooding in the Black Hill, Caenwood, Bybrook and Breastworks areas in western Portland. The Parish Disaster Preparedness Officer; Denise Lewis, said that the Cane Side River and the Little Annotto River had overflowed sections of their banks in Breastworks causing houses to be flooded.
June 28-29	A Tropical Wave interacting with an Upper-Level-Trough	Landslide and road blockage	Several hours of rainfall in western parishes including Hanover on the afternoon of the 28th.This resumed from late on the 28th into early day on the 29th. Early on the 29th a huge landslide occurred on the main road from Lucea to Montego Bay in the vicinity of the Riley Bridge, this according to Steven Shaw of

			the NWA, on RJR 94FM's program "On the road with the NWA"
*July 3-4	**Tropical Storm Elsa** with its centre passing to the east and north of Jamaica. At 7am, 30 Km NNE of Port Antonio on the 4th.	Flooding of roadways	Several hours of continual rainfall starting on the night of the 3rd and continuing all day on the 4th resulted in flooding in several communities in St. Thomas, KSA, St. Catherine and Clarendon as carried in the local media.
25-Jul	An Upper-Level-Trough west of Jamaica.	Destruction of agricultural crops ,trees and roofs	As reported on TVJ prime time news, a 'freak storm' resulted in the destruction of crops and other trees in a section of Lacovia, St. Elizabeth. In the tv video report repairs were being done to a section of a roof of a house.
27-Jul	A Mid to Upper Level Trough which moved across Jamaica from east to west.	Destruction of crops and downed electrical power lines	As reported by RJR news and TVJ prime time news, heavy showers accompanied by lightning, thunder and violent winds resulted in crop damages, downed trees and power poles between Bartons and Lacovia in St. Elizabeth
17-Aug	**Tropical Storm Grace** moved from east to west across the island.	Flooding, landslides, downed trees and electrical power lines	The cyclone moved across the island with the center moving from east to west bringing tropical storm conditions across the island. Reports of flooding in all parishes, along with landslides, downed trees, downed power lines and electrical outages were reported in several parishes.

* August 26-27	Tropical Wave with an associated area of Low Pressure along its southern axis, moved across Jamaica late on the 25th and developed into Tropical Depression 9 at 10am on the 26th, with its center about 180Km SSW of Negril Point. Hurricane Hunter Aircraft found that surface winds had reached tropical storm strength and so the Depression became Tropical Storm Ida at 4:20 pm, when 160Km WSW of Negril point	Flooding, landslides and blocked roads	As reported in the local media period of showers impacted all parishes with reports of community and road flooding, landslides, rock falls and blocked roads in several parishes.
02-Oct	A long amplitude Trough extending from the Atlantic Ocean across the Bahamas and Cuba, just west of Jamaica, across Costa Rica.	Downed trees (resulted in road blockage),loss of electricity and damage roofs	As reported on TVJ Prime Time news, a freak storm occurred in the Linstead area of St. Catherine, resulting in downed trees and some zinc being blown from roofs. According to one resident, at around 3pm heavy rains and strong winds began and lasted for 15 minutes.
*08-Nov	A Stationary Front to the west of Jamaica.	Flooding, blocked roadways and damaged to infrastructure	Overnight and morning rainfall over western parishes of Trelawny, St, James, Hanover, Westmoreland and sections of St. Elizabeth. As reported on RJR 94FM, heavy rainfall has resulted in flooding in sections of Montego Bay and environs.

Table 1: shows the severe weather events that were reported in 2021.[1]

[1]Disclaimer: The information about damages/impacts and affected parishes/areas were those that were reported in the local electronic and/or print media and therefore the Meteorological Service, Jamaica takes no responsibility for the accuracy of the information, save and except for that of Meteorological Drought.

***- Denotes weather events for which Severe Weather Reports were done**.

References

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