



ANNUAL MEETING OF THE CMO DIRECTORS OF METEOROLOGICAL SERVICES



Report on the Weather and its impacts: Cooperative Republic of Guyana (2021)

Mr. Esan Ayeni Hamer
Deputy Director

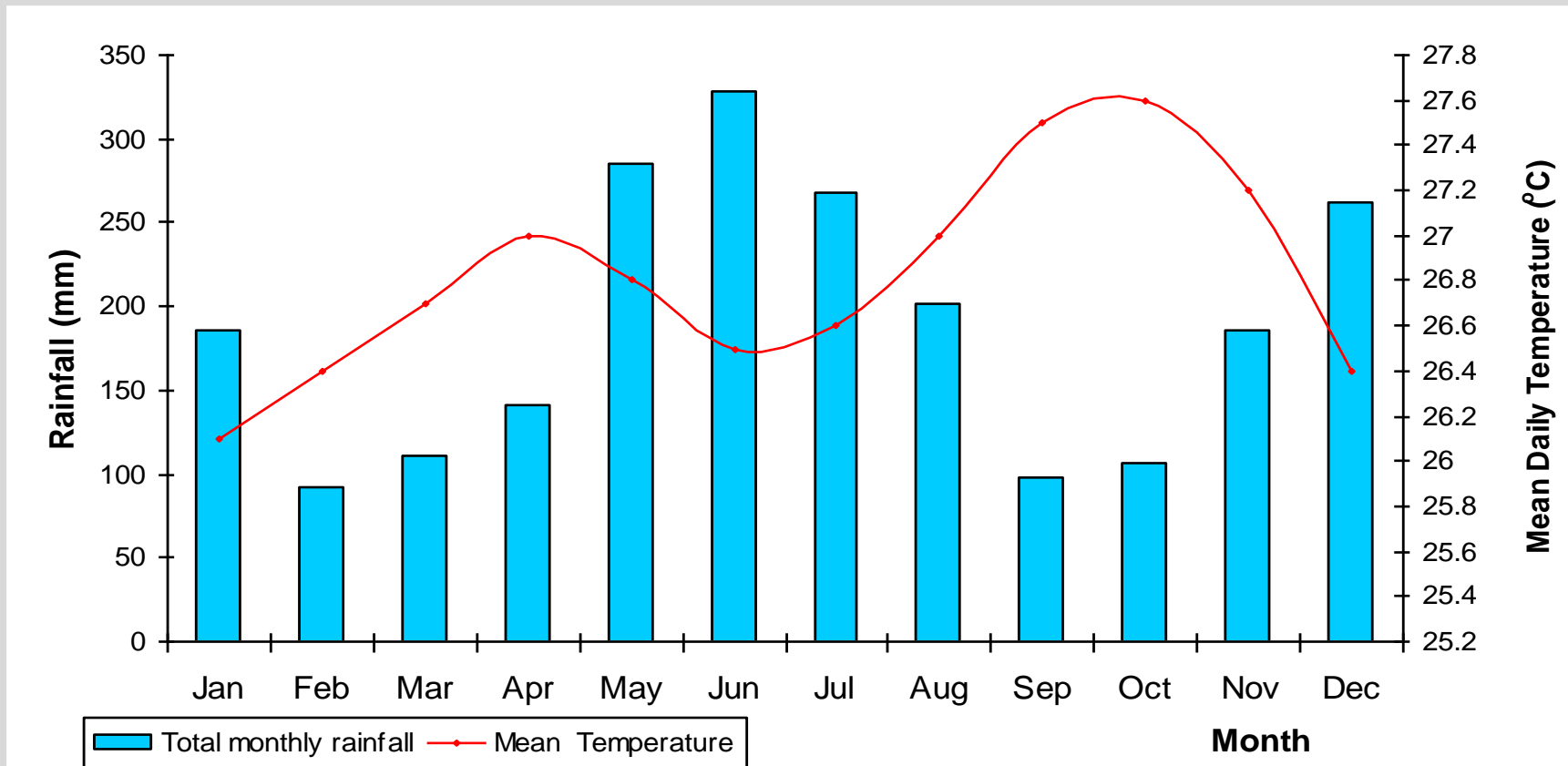
November , 2021



Guyana's Climatology



Most of Guyana has two (2) peak rainfall and dry seasons:





Seasonal Forecast for the year 2021

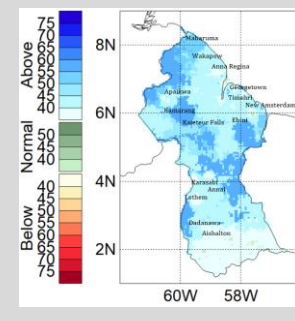
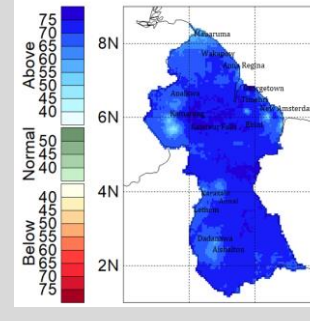
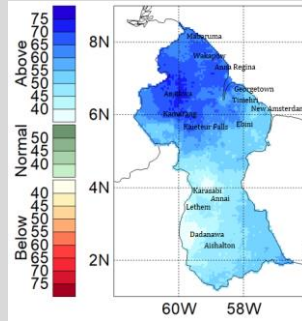
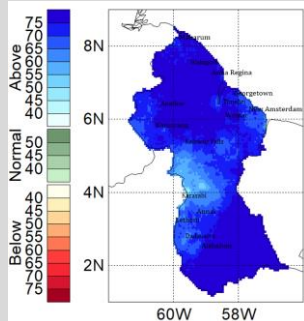


JFM

FMA

MAM

AMJ

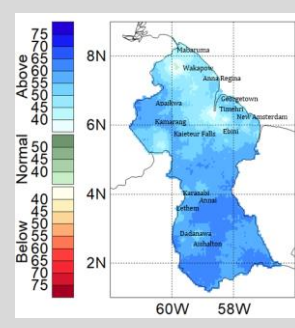
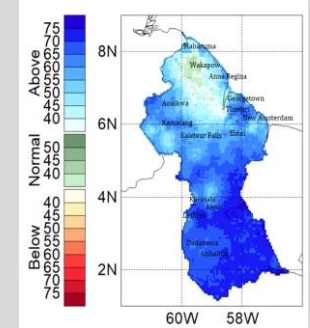
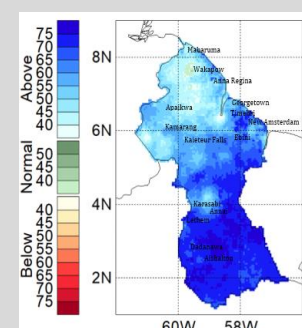
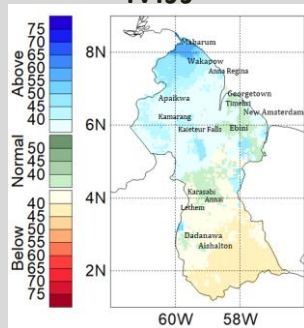


MJJ

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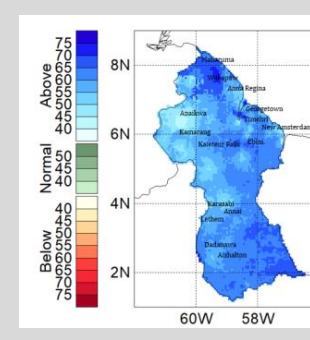
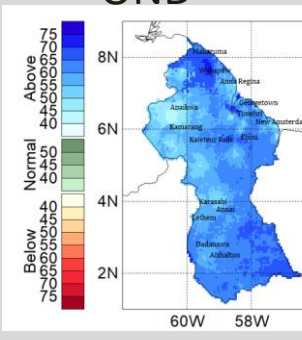
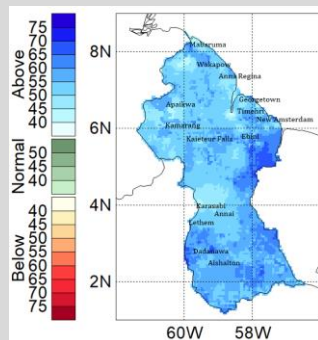
ASO



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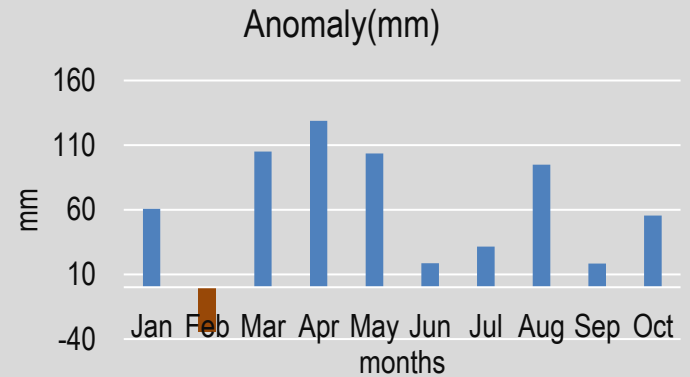
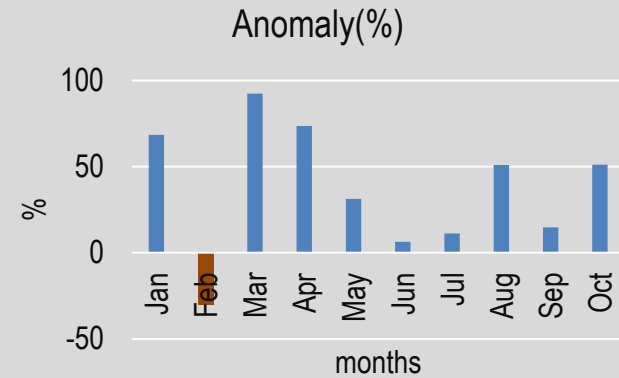
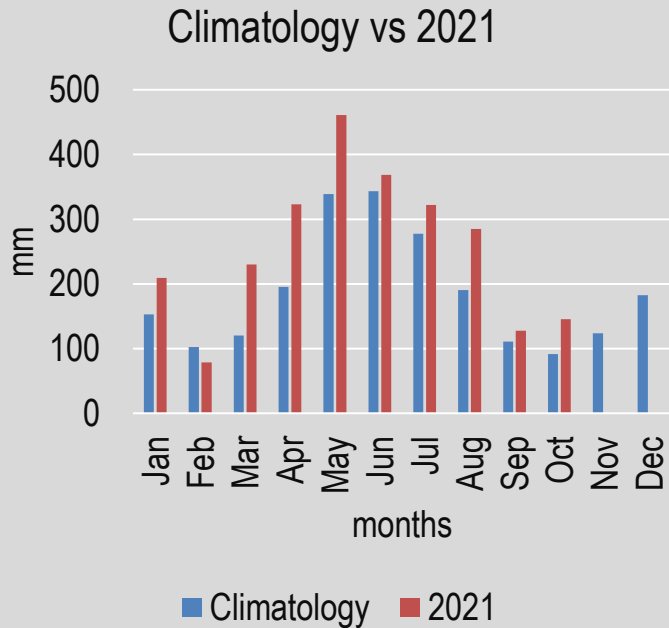
NDJ



Year	DJF	JFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	OND	NDJ
2020	0.5	0.5	0.4	0.2	-0.1	-0.3	-0.4	-0.6	-0.9	-1.2	-1.3	-1.2
2021	-1.0	-0.9	-0.8	-0.7	-0.5	-0.4	-0.4	-0.5	-0.7			

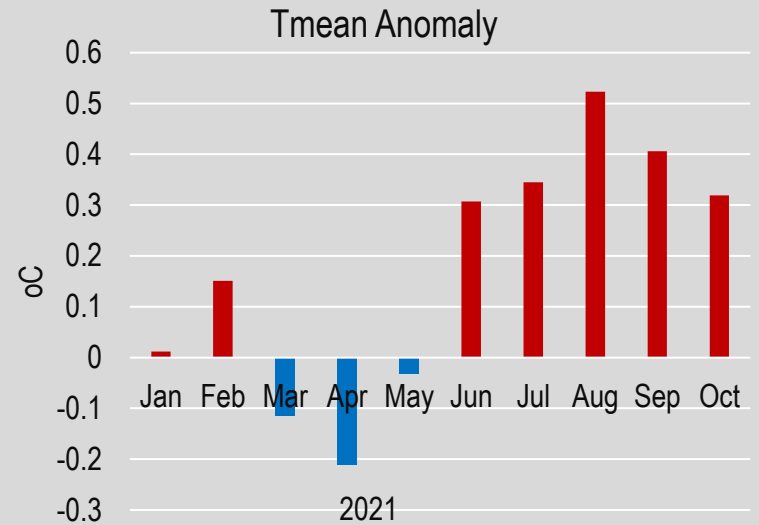
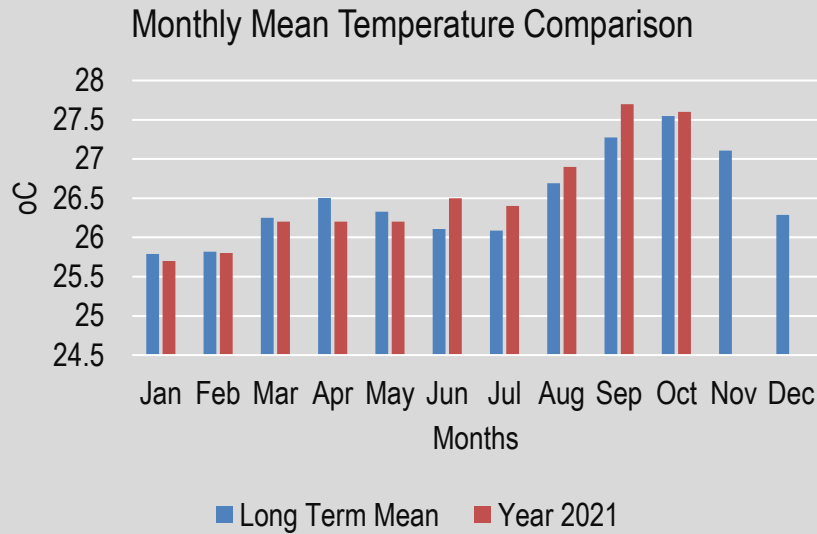


Rainfall analysis for 2021





Temperature Analysis for 2021





What was in the news for the year

GUYANA DEVASTATED BY FLOODS



H.E. Dr. Mohamed Irfaan Ali
President of the Cooperative
Republic of Guyana

His Excellency President Ali formally declares flooding a national disaster.

The proclamation published in the Official Gazette on June 10, 2021, where a total of 28,228 households were affected by flooding, some with water entering their homes, domestic animals and livestock in distress or farmlands inundated.

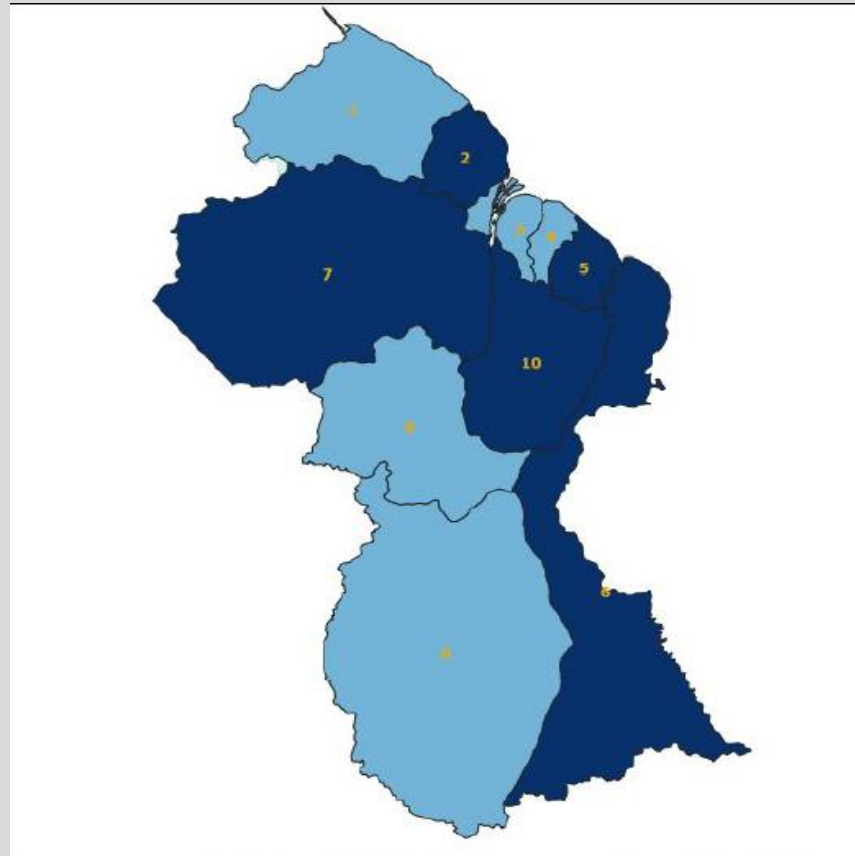


A Tropical Wave embedded within the ITCZ affected Guyana resulting in heavy rainfall during the month of May into June.

A section of Region 5 inundated by floodwaters



Disaster Levels of Floods by Administrative Regions



Date Source: GADM, OSM, Guyana lands & Surveys Commission, Civil Defence Commission, Guynode.com, RDCs & NDCs

CRS: EPSG 4326 - WGS 84

Map created by: Preparedness Unit of CDC
Date: June 10, 2021
Email: preparedness@cdc.gov.gy

Legend
DRM Levels by Region

- Level 1
- Level 2
- Level 3

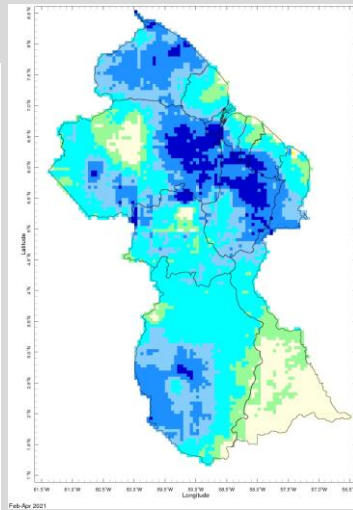
Administrative Regions	
1	Barima-Waini
2	Pomeroon-Supenaam
3	Essequibo Islands-West Demerara
4	Demerara-Mahaica
5	Mahaica-Berbice
6	East Berbice-Corentyne
7	Cuyuni-Mazaruni
8	Potaro-Siparuni
9	Upper Takutu-Upper Essequibo
10	Upper Demerara-Upper Berbice



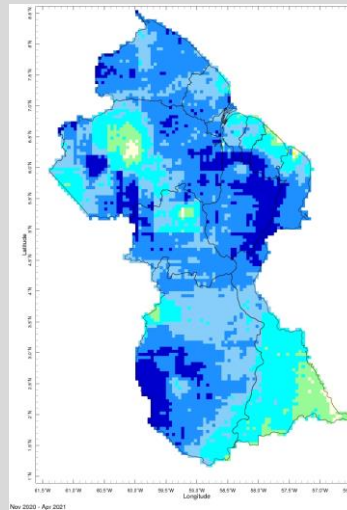
Lead up to the May/June rain and after the season



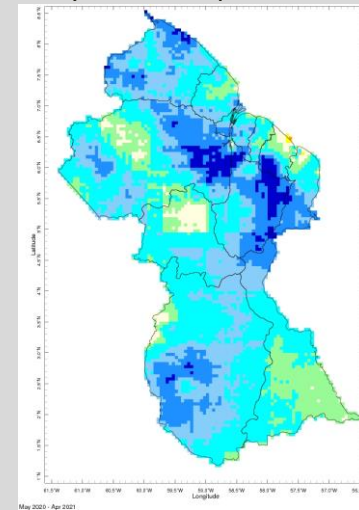
Feb to Apr 2021



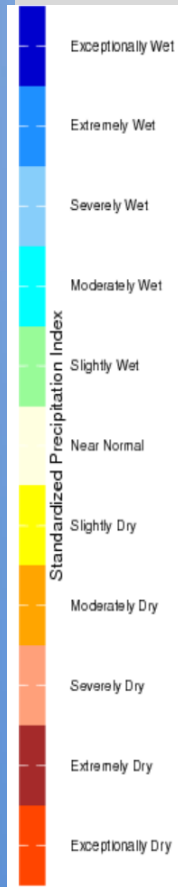
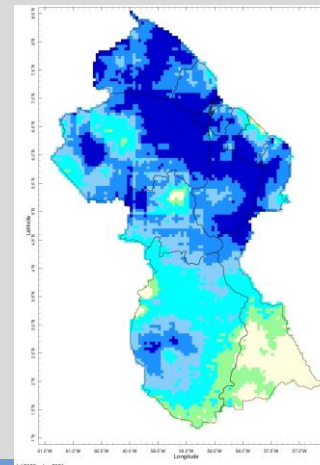
Nov 2020 to Apr 2021



May 2020 to Apr 2021

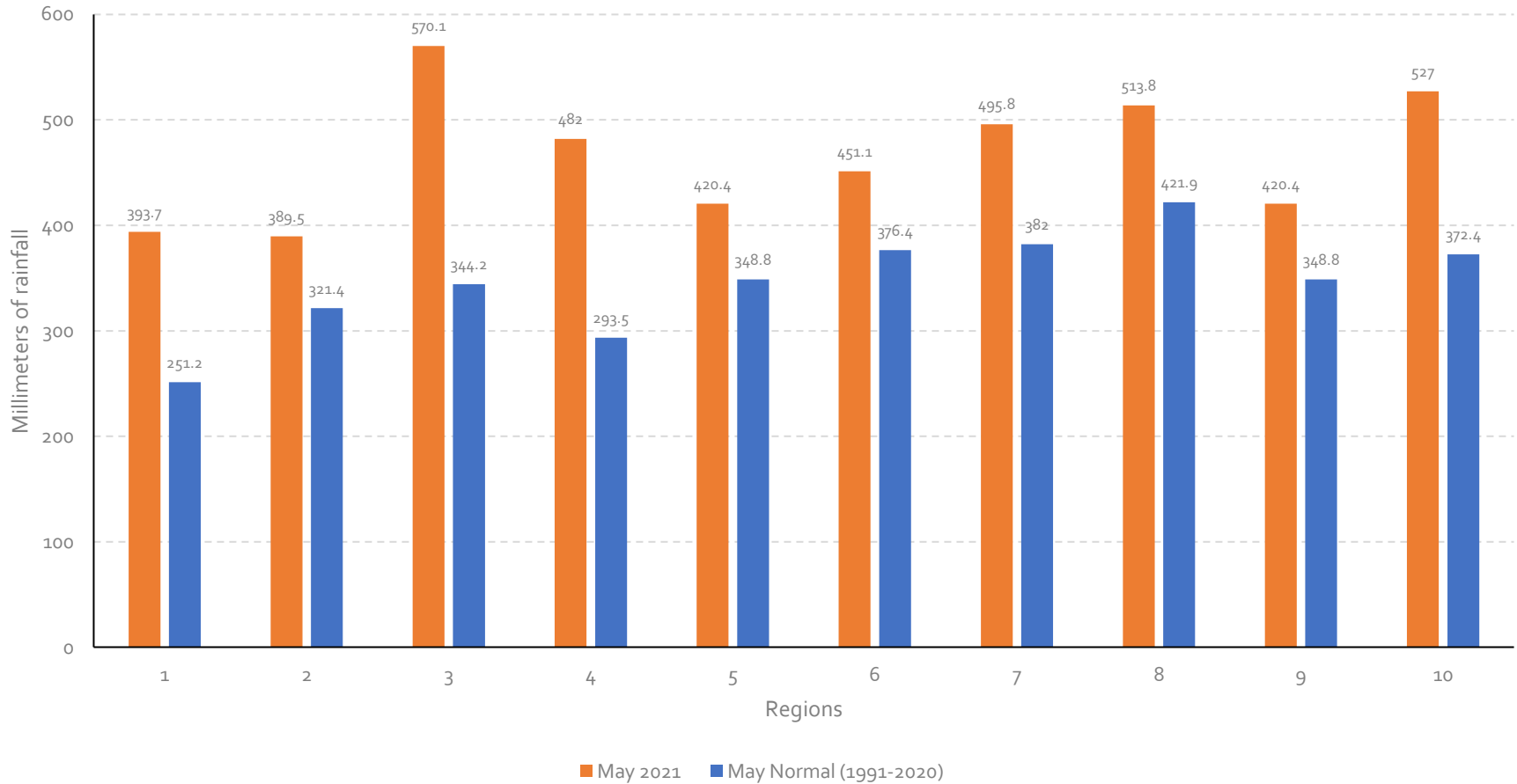


July 2020 to Jun 2021





Regional Rainfall Analysis: May, 2021



RAINFALL IN MAY 2021 AND ITS NORMAL FOR THE PERIOD 1991-2020 IN REGIONS OF GUYANA
(In millimeters of rainfall)



Regional Rainfall Analysis: May, 2021

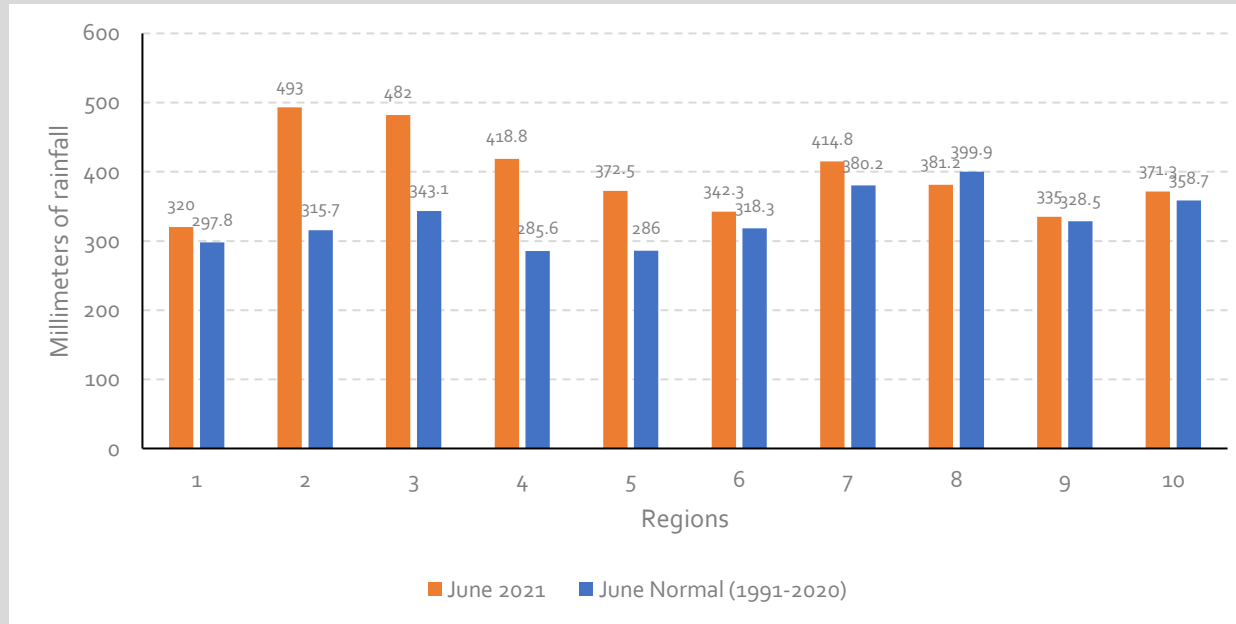


May, 2021 recorded the second highest rainfall across the country since 1981. The ranking of all monthly rainfall totals for the month of May from 1981 to 2021 is shown below. The data show that 85% (17 of 20) of the top 20 wettest Mays were recorded in the last two decades, while 50% (10 of 20) of the top 20 wettest Mays were recorded between 2010 and 2021. This is an indication that Mays are tending towards becoming wetter across Guyana.

Ranking	Year	Country Avg. (mm)
1	2004	658.4
2	2021	607.7
3	2010	607.7
4	1996	590.8
5	1981	565.3
6	2000	558.8
7	2019	549.7
8	2003	545.3
9	2007	545.2
10	2013	545.2
11	2012	538.5
12	2006	536.4
13	2011	532.6
14	2005	521



Regional Rainfall Analysis: June, 2021



TOTAL RAINFALL IN JUNE 2021 AND ITS NORMA FOR THE PERIOD 1991-2020 IN
REGIONS OF GUYANA
(In millimeters of rainfall)



Regional Rainfall Analysis: June, 2021



June, 2021 recorded the twelfth highest rainfall across the country since 1981. The ranking of all monthly rainfall totals for the month of June from 1981 to 2021 is shown below. The data show that 65% (13 of 20) of the top 20 wettest Junes were recorded in the last two decades, while 40% (8 of 20) of the top 20 wettest Junes were recorded between 2010 and 2021. While less pronounced when compared to Mays, it appears that Junes are also tending towards becoming wetter across Guyana.

Ranking	Year	Country Avg. (mm)
1st	1996	480.0
2nd	1995	438.0
3rd	2002	432.0
4th	2017	422.2
5th	2006	421.8
6th	2020	415.6
7th	1986	406.7
8th	2018	395.9
9th	1999	388.4
10th	2000	376.7
11th	2007	375.2
12th	2021	368.3
13th	2014	366.7
14th	2019	366.6



Situation Report



The Situation Report by the Civil Defence Commission (CDC), Guyana issued on 21 June, 2021 stated the following:

Regions 10, 7, 6, 5 and 2 were the most impacted.

48,720 households suffering flooding in more than 300 communities across all ten (10) Administrative Regions.



Scenes of affected areas



Flooding in Region 10, Guyana (Source: CDC - June 12, 2021)



President Ali visits flood affected area – Guyana Chronicle





Flooded areas in Guyana detected by satellite images (Radar) during May and June 2021.



Source: Assessment team with data processed by Emergency Management Service European Commission and UNITAR - NOAA based on satellite images took in May and June 2021 (Sensors: Sentinel 1, 2, RCM-2, VIIRS). (2021)



Impacts on the Agriculture Sector (in GYD)



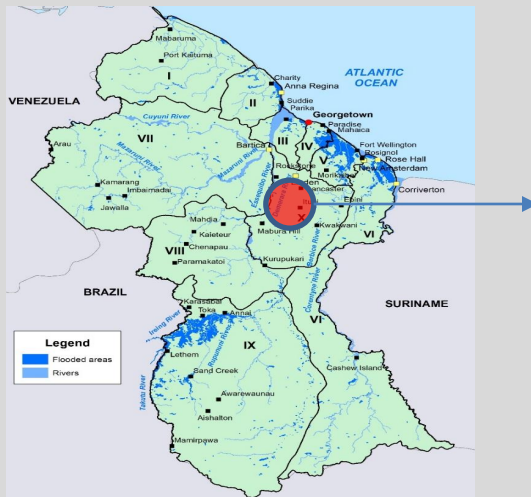
Region	Damages	Losses	Additional Costs	Total
1	-	\$707,838,557	\$266,500,000	\$974,338,557
2	\$1,744,117	\$939,093,611	\$154,150,000	\$1,094,987,728
3	\$4,850,752	\$2,268,609,261	\$347,700,000	\$2,621,160,013
4	\$4,457,353	\$599,477,790	\$133,600,000	\$737,535,144
5	\$734,154,641	\$2,301,168,571	\$258,000,000	\$3,293,323,212
6	\$2,969,394,432	\$10,712,408,852	\$390,800,000	\$14,072,603,284
7	\$866,255	\$343,535,309	\$175,800,000	\$520,201,564
8	-	\$643,630,940	\$180,700,000	\$824,330,940
9	\$9,292,598	\$796,805,000	\$332,500,000	\$1,138,597,598
10	\$9,813,464	\$205,748,602	\$63,050,000	\$278,612,066
Total	\$3,734,573,613	\$19,518,316,494	\$2,302,800,000	\$25,555,690,107

Regarding, the additional costs are related to the attention of the producers affected by this event. Subsidies were awarded to three types of agents: a) farmers; b) homestead farms; c) households. The first type of agent was awarded a one-time payment of GYD 100,000, while the other two were awarded a payment of GYD 50,000. The total amount paid was GYD approx. 2.3 billion GYD.

Source: Evaluation team based on information from the Ministry of Agriculture.



Response measures



Special Hydrologist, Mr. Colis Allen leading a technical team on an assignment in **Kwakwani, Berbice River, Region 10**, on June 24, 2021. The assignment was aimed at conducting stream flow and assessing the river profile by application of an Acoustic Doppler Current Profiler (ADCP)



Response measures

GUYANA CHRONICLE
The Nation's Paper

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We ain't waiting on Santa
We buyin' we own this Christmas

Distribution of \$7.8B flood relief to start this week

By Rehana Ahamad | August 16, 2021



Agriculture Minister, Zulfikar Mustapha, has been on the ground ever since the floods started in May



Effect of 2021 Floods on Hydromet's infrastructure



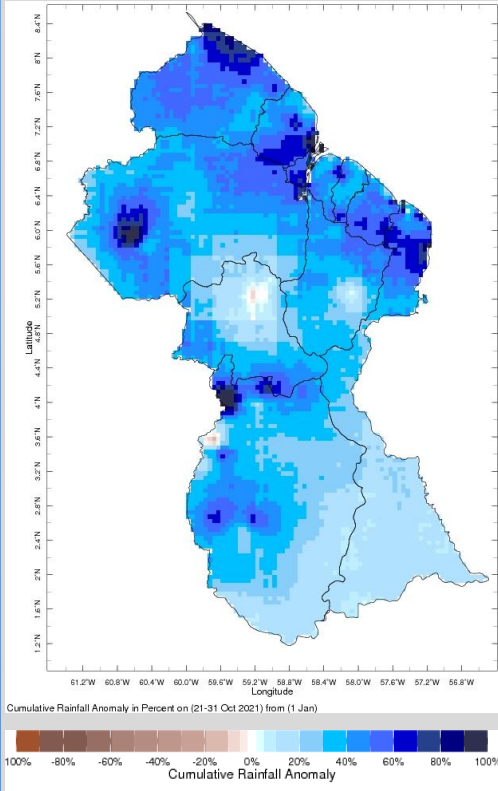
Images depicting an automatic weather station (AWS) submerged by flood waters in inland locations – Guyana May / June floods 2021



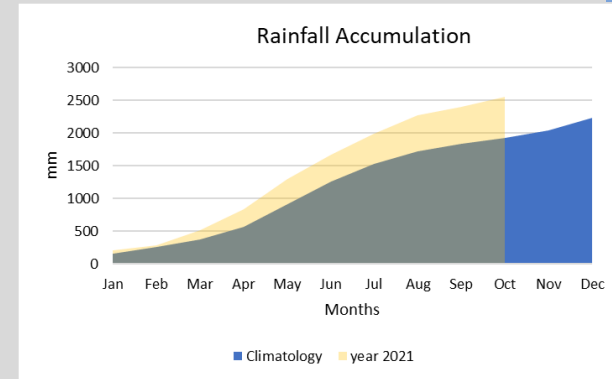
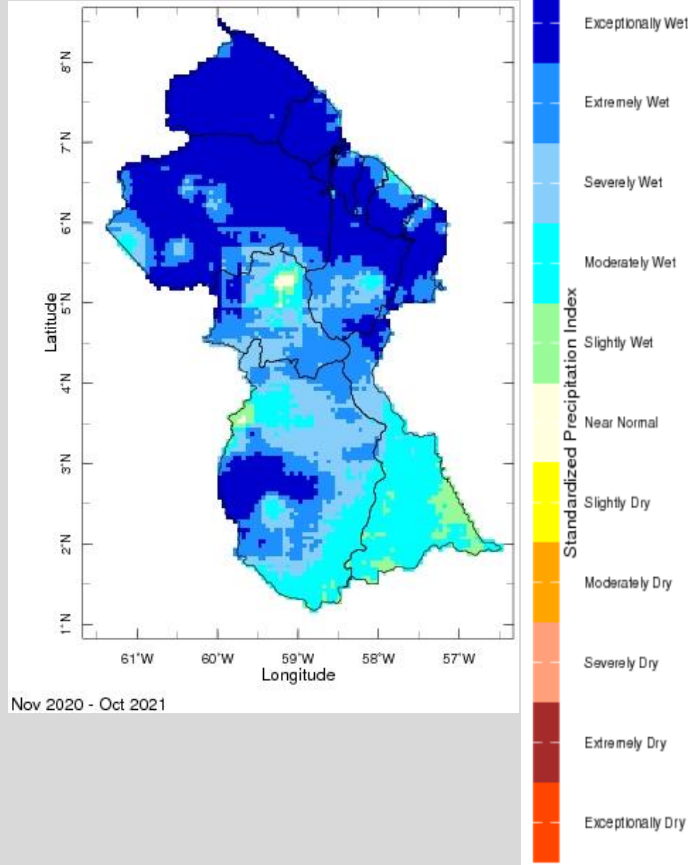
Monitoring up to October 2021 and Forecast



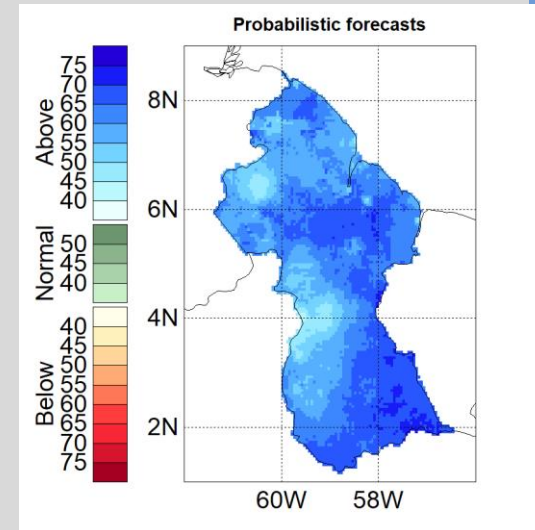
Cumulative Rainfall anomaly in percent from Jan 2021 to Oct 2021



SPI-12 covering Nov 2020 to Oct 2021



DJF 2020 to 2021





THE END



South America
Undiscovered