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Caribbean Agro-Meteorological Initiative
Enhancing Farming through Weather and Climate Information

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ANNOUNCEMENTS

The weak El Niño is likely to last until September and could strengthen a bit, but is not likely to influence rainfall significantly for the remainder of the dry season. However, there is some chance of below normal rainfall during the wet season. Drought concerns have grown in the northern Windward and the Leeward Islands, with impacts being felt in some of the islands. However, there are no concerns west of the Leeward Islands, and St. Lucia is now under drought watch instead of drought warning.

REGIONAL OVERVIEW ON WEATHER AND CLIMATE FOR MARCH 2015

Mixed conditions existed in the eastern Caribbean and Guyana for the month. Trinidad, Tobago and St. Lucia were normal; Grenada and St. Vincent slightly wet; Barbados moderate to very wet; Dominica moderately dry; Antigua severely dry; and Guyana extremely wet in the north to normal in the east. Jamaica conditions ranged from moderately wet in the west to extremely wet in the east, while in Belize they ranged from normal in the south to moderately wet in the north.

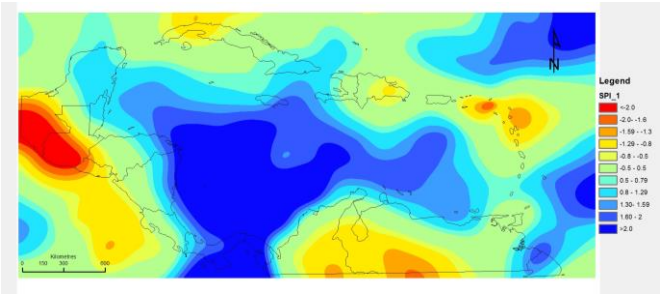

Figure 1. SPI for the Caribbean for March 2015. More information on the SPI can be viewed at http://rcc.cimh.edu.bb/climate-monitoring/spi-monitor/.

Most annual cropping takes place over a period of about three months. In the eastern Caribbean and Guyana, there is a clear distinction between the normal to below normal north and the normal to above normal south. Trinidad, Tobago and St. Lucia were normal; Grenada and Barbados moderately wet; St. Vincent slightly wet; Dominica moderately dry; Antigua severely dry; and Guyana moderately wet in the north to normal in the southeast. Belize was normal, and so too was Jamaica apart from the extreme south that was slightly wet.

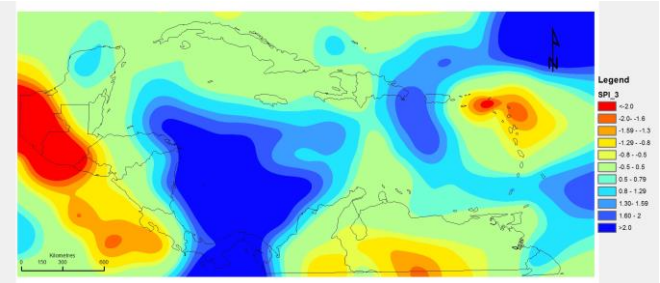

Figure 2. SPI for the Caribbean for January to March 2015. More information on the SPI can be viewed at http://rcc.cimh.edu.bb/climate-monitoring/spi-monitor/.

The Atlantic high pressure system continued to be the dominant feature throughout March, peaking at 1039mb and supporting some breezy conditions in the eastern Caribbean. The conditions prevented deep convection across much of the east, limiting the rainfall during the month for the most part. Some haziness was also observed.

In the west in the vicinity of Jamaica, surface troughs coupled with a few frontal systems were the most dominant weather features throughout the month.

NATIONAL OVERVIEWS

Antigua and Barbuda

March was very dry for the country. The average rainfall for the month was 20.8mm; which is the 15th lowest on record. At the V. C. Bird International Airport, there was a record low two wet days (with ≥ 1mm). This low number of wet days for March can only be expected to happen once in every 42 years. The maximum 24-hour rainfall was just 4 mm; the sixth lowest on record. With the low rainfall for the month, the drought has re-intensified to serious levels. Surface and ground water continue to dwindle. However, for the time being, the impacts are being masked by desalinated water resources. Water rationing is near minimum and agriculture extension officers are indicating moderate production levels by farmers, with pumpkins still glutting the market.

Night-time temperatures were once again above normal for the third month in a row. The mean daily minimum (night-time) temperature was 23.3°C, tying 2007 for the sixth warmest on record. On the hand, the mean daily maximum temperature of 28.3°C was below normal and the lowest since 2011. Meanwhile, the mean temperature for March was near normal - 25.5°C. However, this is the warmest March since 2010.

Barbados

Winds varied between 35 and 50 km/hr. In addition, developments on the southern side of the Atlantic high pressure, system brought frequent showers across Barbados and some neighbouring islands. This resulted in well-above normal rainfall (127% increase), with the Airport observing 85.1mm of rainfall over a period of 17 rainy days (with ≥ 1mm) or over twice the long-term average number of rain-days of eight. The most significant rainfall events occurred on 3rd (11.3mm), 8th (24mm) and 20th (17.5mm) in association with the movement across the chain of a number of deep-layered trough features. The 2015 March rainfall total is also the second highest since 1942. The highest stands at 87.2mm which was recorded in 1999.

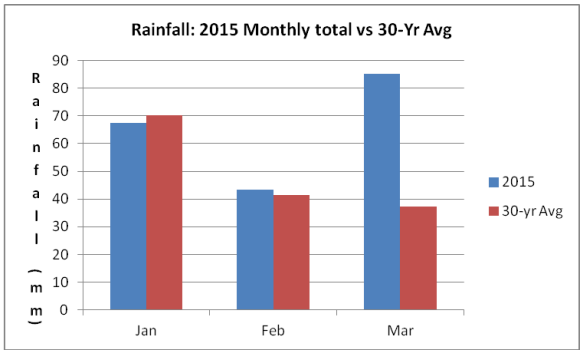

Figure 3 Actual and average monthly rainfall totals at Grantley Adams Airport Barbados for the year so far.

Meanwhile, there were only six days on which the maximum temperature exceeded the long-term average of 29.7°C. The highest maximum reached was 30.3°C on the 26th and 27th, while the lowest minimum observed was 20.1°C on the 17th. On all other days, the maximum temperature ranged between 28.6° and 29.5°C.

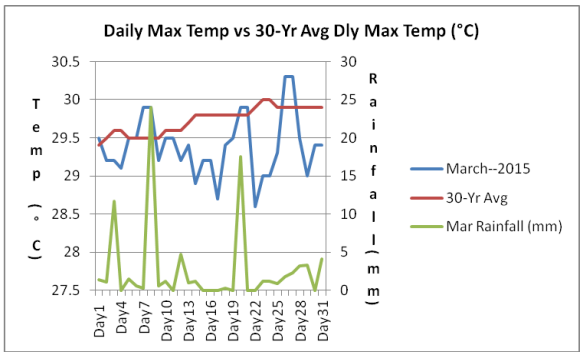

Figure 4 March 2015 rainfall and maximum temperatures, along with the 30 year average of maximum temperature at Grantley Adams Airport, Barbados.

Dominica

At the Canefield Airport, 55.7mm of rainfall was recorded which is about 14% above the mean. More than 75% of this total occurred during the first 2 weeks of the month. The highest 24-hour total recorded was 14.8mm on the 1st. There were 11 rainfall days, which is normal. There were two 4 days dry spells towards the end of the second week and into the third. The average air temperature was 27.0°C. The maximum daily temperature recorded was 32.2°C on the 26th and the minimum was 20.2°C recorded on the 17th. Average wind was east south-easterly at a speed of 9km/hr. The highest wind gust was 54km/hr recorded on the 29th.

During the month, 103.6mm of rainfall was recorded at Douglas-Charles Airport. This is about 92% of the

mean. The maximum 24-hour total recorded was 15.9mm on the 31st. There were 17 rainfall days. A 5-day dry spell also occurred during the second week. The average air temperature was 26.5°C. The highest temperature recorded was 29.5°C on the 20th and the lowest recorded was 18.9°C on the 17th. Winds maintained an easterly direction at an average speed of 15km/hr. The highest wind gust recorded was 63km/hr on the 9th and 28th.

In the northern part of the island, farmers complained of the uncharacteristic dry conditions being experienced. Rain-fed crops under production and livestock faced water stress. In the south however, rainfall amounts were reported to be normal. There was adequate moisture for continued vegetable establishment and production. Farmers also reported that strong winds were experienced for a few days during the month and day and night time temperatures had increased slightly.

Diseases which affected crops this month included Black Leg and Verticillium Wilt. These affected crops such as the Irish potato. Black Leg is a bacterial disease that causes plant stems to rot and is favours moist conditions during planting. Infected plants have curled leaves near the top. In advanced stages, plants are wilted, foliage yellows, and leaves roll. Tubers may rot while in the field or after being placed in storage.

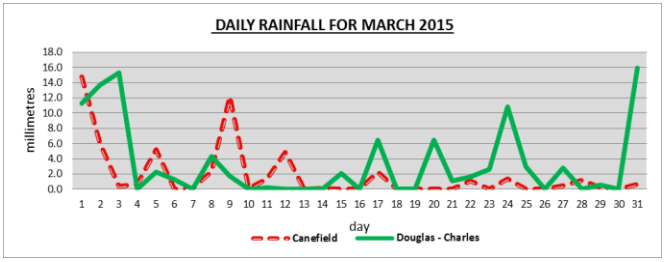

Figure 5 Daily rainfall at Canefield and Douglas-Charles Airports, Dominica during March 2015.

Grenada

Patches of shallow moisture produced scattered to isolated showers resulting in March's rainfall being 37.4mm. This was higher than last year's by 4.1mm, and higher than the ten year's average by 11.4mm. The highest 24-hour rainfall of 16.4mm fell on the 19th, with seventeen days of measurable rainfall during the month.

The highest maximum temperature was 31.8°C recorded on the 14th, while the lowest minimum of 21.7°C was recorded on the 1st.

As a result of strong winds, small craft advisories were issued for moderate to rough seas for sixteen days during the month. From the 1st to the 14th along with the 28th and 29th, warnings were issued restricting fisher folks from venturing out of port. Minimum catch was experienced. Tuna, Small Jacks, Conch, Ocean Gar and Hinds were available but in reduced quantities

The month of March saw farmers continuing to enjoy good production in root crops, vegetables, and fruits. Pumpkins, dasheen, sweet-potatoes, ginger, tannia, limes, oranges and grapefruits were abundant on the market.

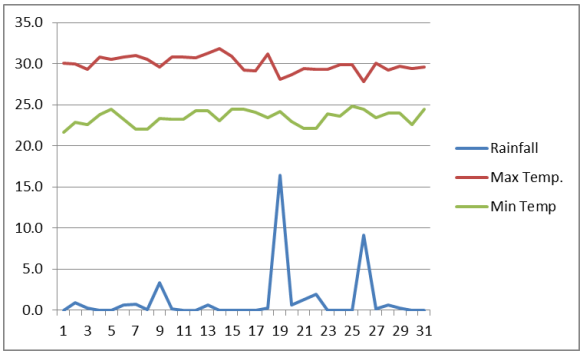

Figure 6 Daily rainfall and maximum and minimum temperatures at Maurice Bishop International Airport, Grenada for March 2015.

Jamaica

Towards the end of the month the country was affected by a series of surface troughs and cold fronts which resulted in an increase in shower activities across most parishes. Manley in the southeast and Sangster in the northwest both exceeded their monthly rainfall means (1971-2000 mean).

During the month, Sangster in the northwest recorded 93.2mm of rainfall, while Norman Manley in the southeast received 63.1mm. There were seven (7) rainfall days reported for Sangster, while Norman Manley International airports had three (3).

The highest maximum temperature recorded for Sangster Airport was 33.1°C (11th), meanwhile 33.8°C (12th) was reported for Norman Manley

Airport. It was noted that the 20yr mean extreme maximum temperature value was exceeded at both airports.

Table 1 Climatological Statistics for Manley and Sangster Airports for March 2015..

Monthly Averages	Norman Manley	Sangster
Extreme Maximum Temperature	33.8 °C (32.7 °C)	33.1 °C (32.5 °C)
Lowest Minimum Temperature	21.4 °C (21.1 °C)	21.5°C (20.1 °C)
Rainfall Total	63.1 mm (24.0)	93.2 mm (53.0)
Rainfall days (≥1mm)	3 days (4.5)	7 days (10.5)

Values in red indicate the 1992-2011 (20–year) averages.
Values in orange represent 1971-2000 mean.

St Lucia

Rainfall for March exceeded the mean for both Hewanorra and George Charles Met. Offices. The first half of the month was relatively dry. Hewanorra recorded 18.1 mm of rainfall while George Charles recorded 32.3 mm. The second half of the month was much wetter and produced 41.7mm and 67.1mm at Hewanorra and George Charles respectively. There was a 10-day dry spell from the 9th to 19th at Hewanorra and a 9-day dry spell from 11th to 19th at George Charles.

Table 2 March 2015 monthly averages at Hewanorra Airport, St. Lucia.

Cloud Cover (oktas)	Wind Dir (o from N)	Wind Speed (kt)	Air Temp. (°C)	RH (%)	Rainfall (mm)
4	80	16	26.5	72	59.8
Max Temp (°C)	Min Temp (°C)	Daily Sunshine (Hrs)	Daily Evap (mm)	Soil 20 (°C)	
29.5	24.4	8.9	8.7	28.1	

Table 3 March 2015 monthly averages at George Charles Airport, St. Lucia.

Cloud Cover (oktas)	Wind Dir (o from N)	Wind Speed (kt)	Air Temp. (°C)	RH (%)	Rainfall (mm)
5	90	10	26.7	70	99.4
Max Temp (°C)	Min Temp (°C)	Daily Sunshine (Hrs)	Daily Evap (mm)	Soil 20 (°C)	
29.3	23.1				

April is on average the third driest month at George Charles and the forth driest at Hewanorra Airport Stations. Long dry spells are common during the month of April. The mean rainfall totals for April are 78.1mm at Hewanorra and 92.6mm at George Charles. On average there are 13 rainy days.

Farmers should continue their water conservation practices at least until the close of the dry season.

St Vincent and the Grenadines

A combination of sunny and occasionally cloudy skies was observed across St. Vincent and the Grenadines, with most of the shower activity occurring during the late night and early morning hours. Winds flowed mostly from an east to east northeasterly direction, with the highest gust at E.T. Joshua Airport - Arnos Vale recorded as 61km/hr on the 10th. These brisk winds influenced sea conditions to be moderate to rough at times.

At the E. T. Joshua Airport, total rainfall was 107.2mm. This exceeded the average of 82.8 mm for this station.

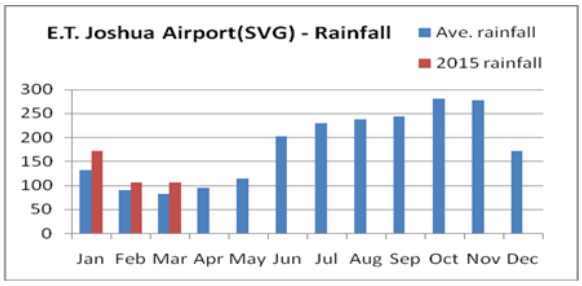

Figure 7 Actual monthly rainfall totals at E.T. Joshua Airport, St. Vincent and the Grenadines for the year so far, along with the average for all months.

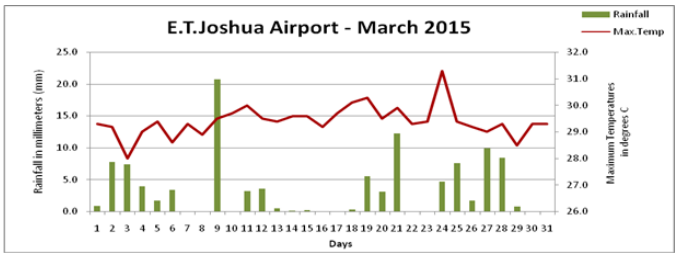

Figure 8 March 2015 rainfall and maximum temperature at E.T. Joshua Airport, St. Vincent and the Grenadines.

The average maximum temperature recorded at this station was 29.4°C, while the average minimum temperature was 22.8°C. Extreme maximum temperature was 31.3°C, which was 0.8°C more than

the 30 year (1981 – 2010) average, and the extreme minimum temperature was 20.7°C, 0.6°C lower than the average for this station. Mean relative humidity was 72.0 %, 1.1% lower than the average.

Trinidad and Tobago

March's rainfall total at Piarco in Trinidad was 29.1mm or 92.4% of the 1981-2010 average. At Crown Point in Tobago, February's rainfall total was 43.1mm or 121.4% of the average.

March continued the trend of high temperatures and mostly dry weather conditions, but the first two days began with reasonable amounts of rainfall at Piarco. The days following were fairly dry, before scanty to moderate rainfall returned on the 10th, when 3.0mm was measured. Overall the ten-day rainfall amounted to 17.3 mm, which is reasonable for the driest month of the year. Crown Point in Tobago had 9.9mm of rainfall over the first two days. Ten-day rainfall totalled 10.5 mm at Crown Point. The average maximum and minimum temperatures were down by 0.3^0C and 0.2^0C, and maximum temperatures peaked at only 32.3 ^{0}C and 31.1^0C at Piarco and Crown Point respectively.

Temperatures increased during the second dekad as dry weather continued its dominance with only the 13th, in Tobago, producing significant rainfall. Overall, the ten-day rainfall total was 1.3mm at Piarco and 6.4mm at Crown Point and this would have been similar in other districts across the country. Compared to the first dekad, the average maximum and minimum temperatures increased by 0.5^0C and 0.3^0C and maximum temperatures peaked at only 32.8 ^{0}C and 31.8 ^{0} C at Piarco and Crown Point respectively.

Temperatures increased during the third dekad as dry weather continued its dominance into the first seven days of the third dekad with only the 28th and 29th producing significant rainfall in Trinidad. In Tobago, temperatures decreased slightly as there was significant rainfall on the 22nd and 26th to 28th. Overall, the ten-day rainfall total was 10.3mm at Piarco and 26.2mm at Crown Point, and this would have been similar in other districts across the country. The rainfall, no doubt, would have improved water harvesting on some days in the farming community, particularly in Tobago. Compared to the second dekad, the average maximum increased by 0.3^0C in Trinidad and decreased by 0.4^0C in Tobago, while maximum temperatures peaked at 33.9^0C at Piarco and 31.4^0C at Crown Point.

The rain at the start of the month would have been adequate for normal plant daily water requirement but would not have replenished water available for agriculture in any significant way. With little or no rain falling during the second dekad, along with increases in temperatures, the conditions became unfavourable. With moderate to heavy rain falling during the third dekad, the conditions would have improved for agriculture. These conditions would have been adequate for normal plant daily water requirement especially in Tobago. However, for Trinidad it remained unfavourable.

REGIONAL OVERVIEW ON SEASONAL CLIMATE FORECAST

Weak **El Niño** conditions continue, and are likely to continue well into the Caribbean wet/hurricane season, with some possibility of strengthening to moderate. It is unlikely that rainfall would be affected by this phenomenon for the remainder of the dry season (i.e. until end May/early June). However these conditions and any resulting ones will be monitored closely, as there is still some chance of higher probabilities for below-normal rainfall and higher temperatures south of 20°N, especially for the period June to September – particularly if the El Niño strengthens. Please note that CariCOF statistical models still indicate an early onset of the wet season in most of the Caribbean at this time, particularly as SSTs (see below) are above normal in much of the region.

Caribbean Sea Surface Temperatures (SST) are 1°C above-average over much of the Caribbean. Some cooling is however possible, but would be monitored as the El Niño can trigger warming of waters later in the calendar year. **The Trade Winds** are above average at this time, and though the predictability is low, could get stronger during the forecasting period, particularly in the vicinity of the ABC Islands. The above average SSTs can cater to above normal rainfall, but this could be negated

though by the El Niño, particularly if it strengthens during the wet/hurricane season.

April to June 2015

Better than average chance for normal to above normal rainfall in most of the Caribbean, except in the south east Caribbean in the vicinity of Trinidad and Tobago and Guyana and over the Leeward Islands where there is only a slightly better than normal chance for normal to above normal rainfall.

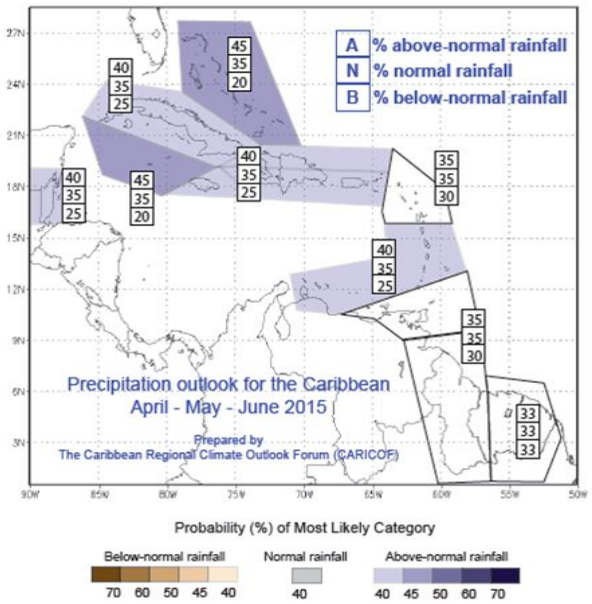

Figure 9 The April to June 2015 rainfall forecast

July to September 2015

Predictability is low over most of the Caribbean. However, there is a better than normal chance for normal to below normal rainfall over Belize. Contrastingly there is a better than average chance for normal to above normal rainfall over Cuba, Cayman Islands and the Guianas (except Guyana).

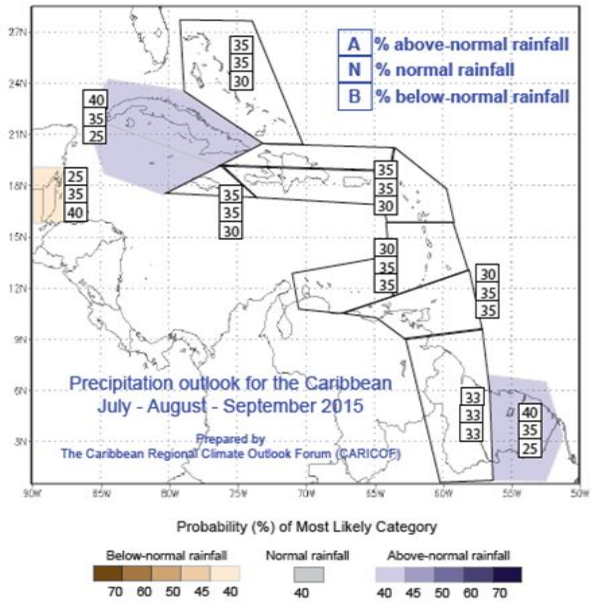

Figure 10 The July to September 2015 rainfall forecast

Drought concerns have grown in the northern Windward and the Leeward Islands, with Antigua issuing a short-term drought warning that may be alleviated by May/June, and with impacts being felt in some of the other islands. However, there are no concerns west of Puerto Rico, and St. Lucia is now under drought watch instead of drought warning. Some concerns exist in the ABC Islands.

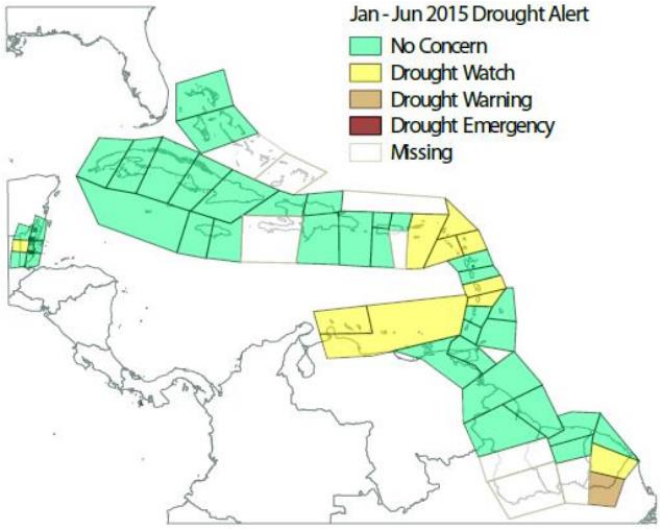

Figure 11 Drought Alert map produced in March 2015 based on the relative forecasted rainfall totals (SPI) for the period January to June 2015.

Prepared by
Caribbean Institute for Meteorology and Hydrology (CIMH) and the National Meteorological Services of Antigua and Barbuda, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, St Lucia, St Vincent and the Grenadines and Trinidad and Tobago
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