



ARUBA

CLIMATOLOGICAL SUMMARY 2019

PRECIPITATION

The total amount of rainfall recorded at Reina Beatrix International Airport for the year 2019 was **217.6** mm. This is **53.9%** below normal (Figure 1).

During the first quarter of the year 2019 (January, February, March) a total of **4.6** mm of rainfall was recorded. This is **2.1%** of the total amount for 2019.

During the second quarter of the year 2019 (April, May, June) a total of **5.1** mm of rainfall was recorded. This is **2.3%** of the total amount for 2019.

During the third quarter of the year 2019 (July, August, September) a total of **100.5** mm of rainfall was recorded. This is **46.1%** of the total amount for 2019.

During the fourth quarter of the year 2019 (October, November, December) a total of **107.4** mm of rainfall was recorded. This is **49.4 %** of the total amount for 2019.

The last quarter of the year 2019, which is part of the rainy season was the *wettest* quarter, and the total amount of rain for that quarter was below normal values.

The *wettest* month for 2019 was September with a total of **71.7** mm which was above normal values for that month. The *driest* month for 2019 was May with a total of **0.4** mm which is below normal for that month.

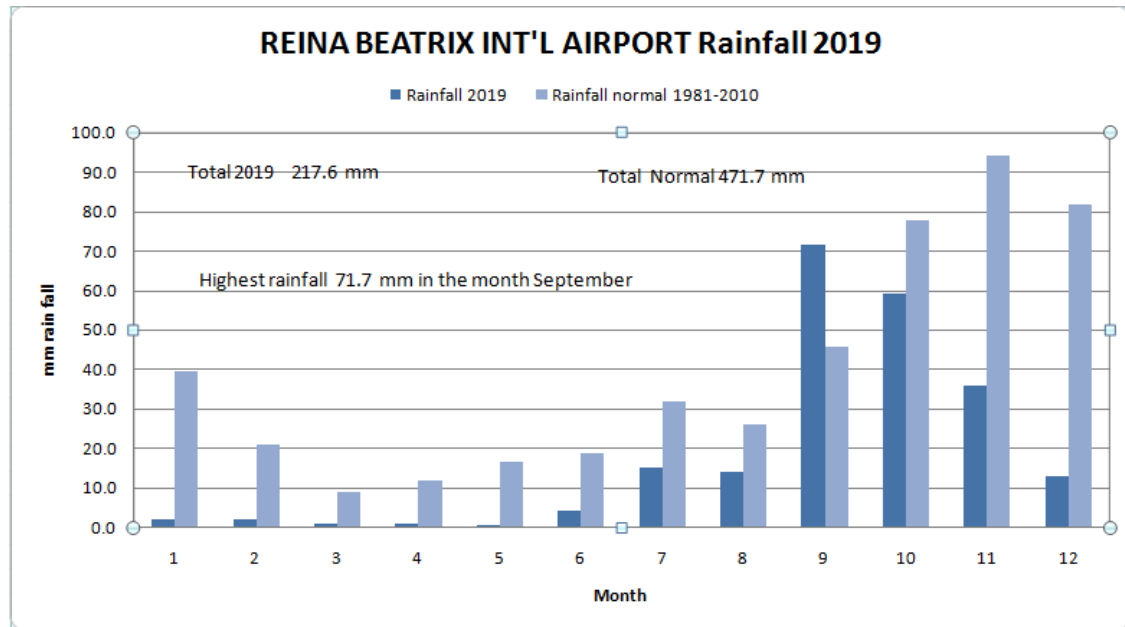


Figure 1. Rainfall 2019 versus 30 year normal (1981-2010) in mm.

TEMPERATURE

The year average air temperature recorded at the Reina Beatrix International Airport Aruba for 2019 was **28.7 °C** (normal value **28.1 °C**), which is a bit above normal. (Figure 2a).

The *warmest* month of 2019 were September with an average of **30.0 °C** and the *coldest* month of 2019 was January with an average of **27.1 °C**.

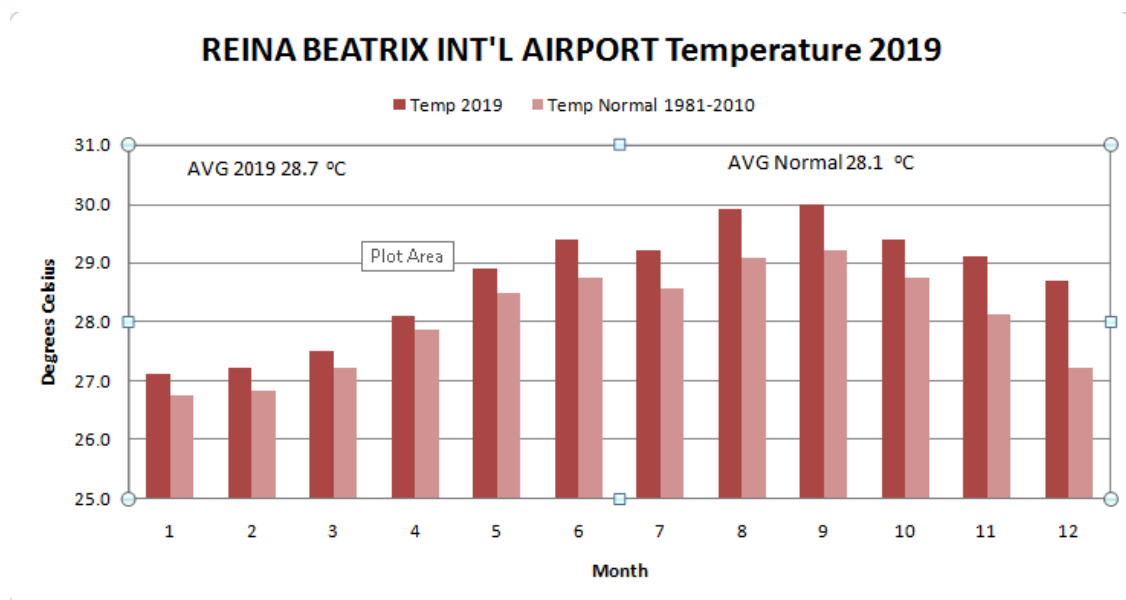


Figure 2a. Temperatures in degrees Celsius 2019.

The average maximum temperature for the year 2019 was **31.9 °C** compared with the normal average maximum temperature **31.5 °C** which is a bit above normal. (Figure 2b).

The *absolute* maximum temperature was in August and September 2019 with **33.4 °C** .

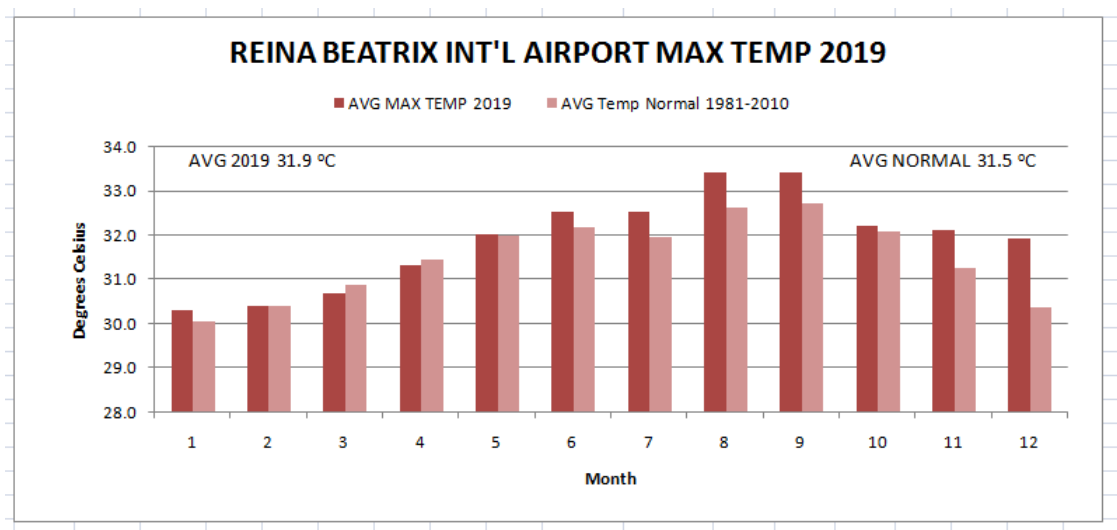


Figure 2b. Maximum temperatures in degrees Celsius 2019.

WINDSPEED

The year average wind-speed at 10 meters height for the year 2019 at the Reina Beatrix International Airport was **7.7 m/sec** (27.70 km/h) compared with the normal value of **7.3 m/sec** (26.3 km/h) is just above normal.(Figure 3a).

The *highest* average wind-speed of **8.9 m/sec** (32.0 km/h) was recorded during the month of June 2019. The *lowest* average wind-speed during the month of November 2019 with a **5.2 m/sec** (18.7 km/h).

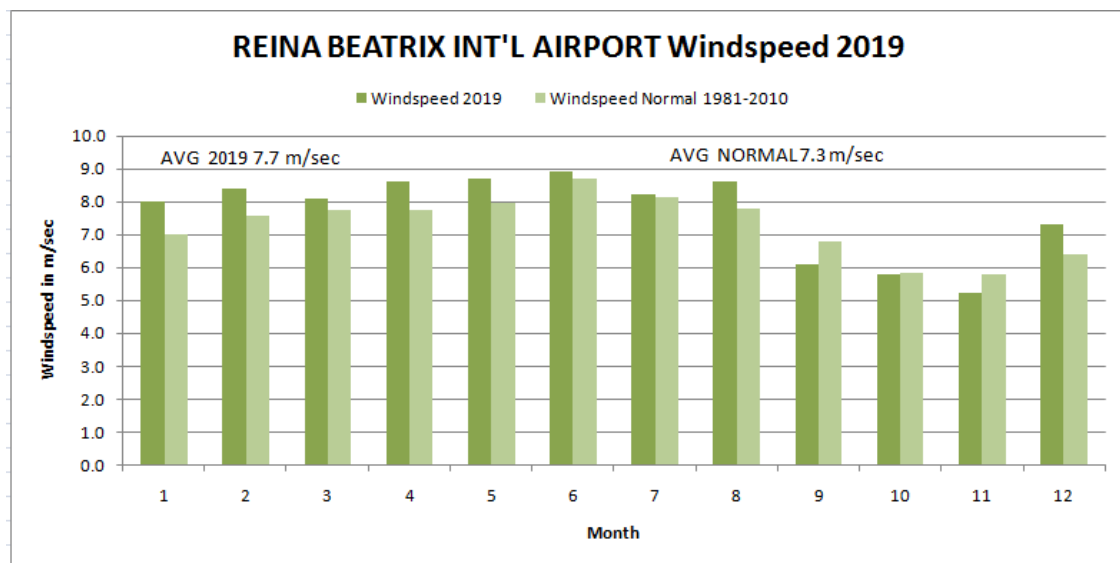


Figure 3a. Wind-speed 2019 in m/sec.

The average maximum wind-speed for the year 2019 was **14.6** m/sec (52.6 km/h) compared to the normal value of **14.5** m/sec (52.2 km/h), which is around normal. (Figure 3b).

The *absolute* maximum wind-speed of **16.3** m/sec (58.7km/h) was recorded during the month of June 2019.

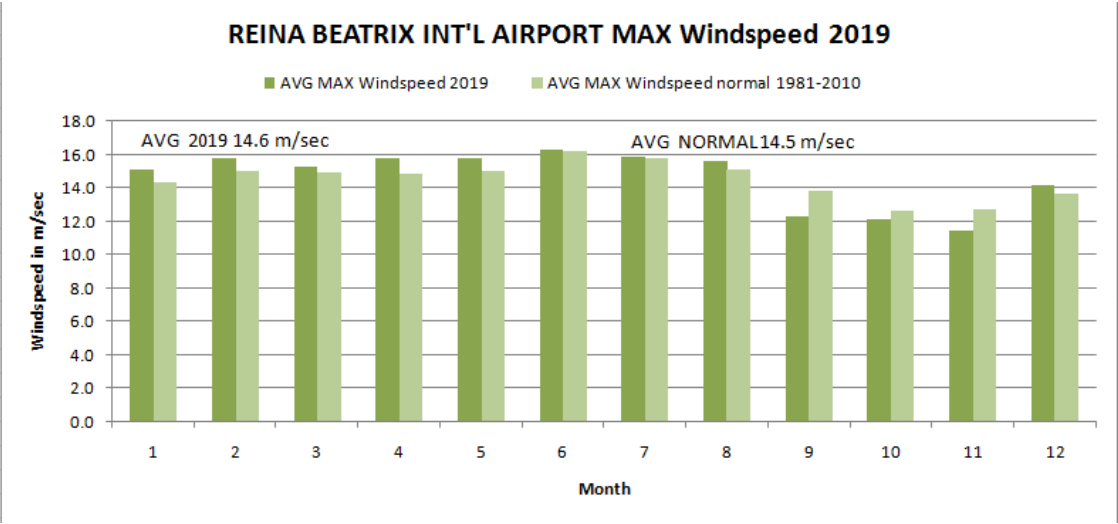


Figure 3b. Maximum wind-speed 2019 in m/sec.

The wind-rose figure indicates that for **83.6%** of the time the wind was between 11-17 knots. The wind was **8.2%** of the time between 17-21 knots and **8.2%** of the time between 7-11 knots. (Figure 3c).

The wind was **92 %** of the time from the East and **8 %** from the East-South East.

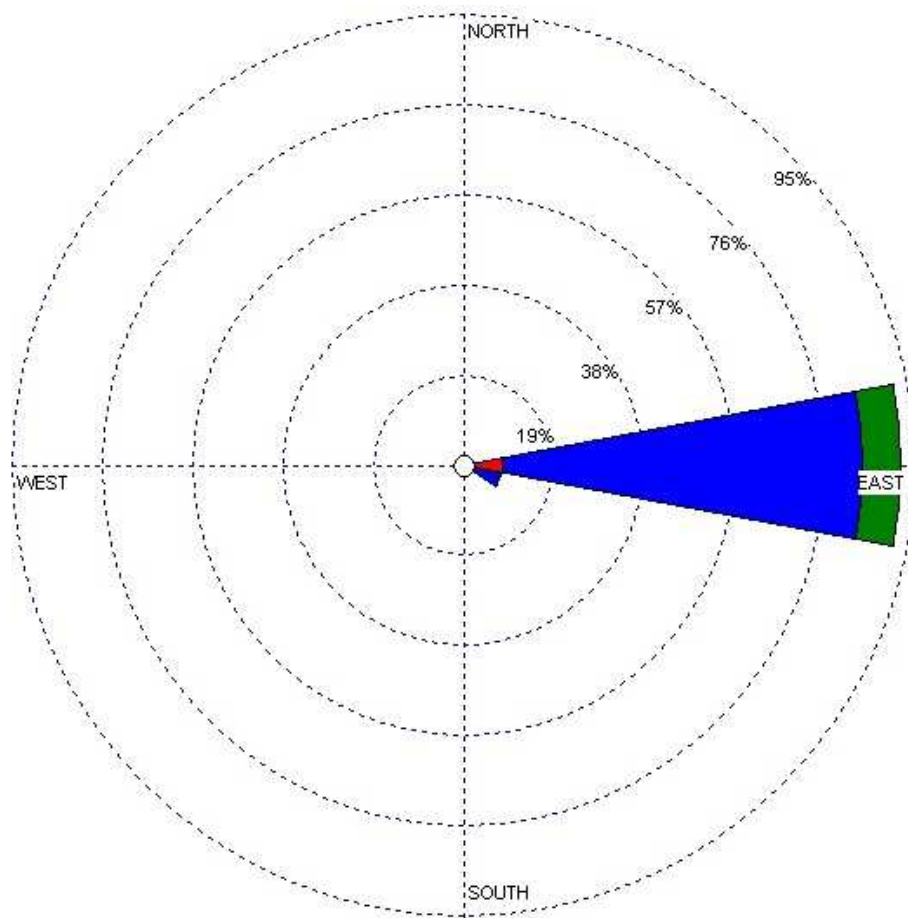


Figure 3c. Wind-rose data 2019 in knots.

ATMOSPHERIC PRESSURE

The average atmospheric pressure for 2019 recorded at the Reina Beatrix International Airport was **1011.9** hPa compared with the normal value of **1011.8** hPa which is around normal (Figure 4).

The *highest* monthly average atmospheric pressure of **1013.7** hPa was recorded during January 2019 with the *lowest* during November 2019 of **1010.2** hPa.

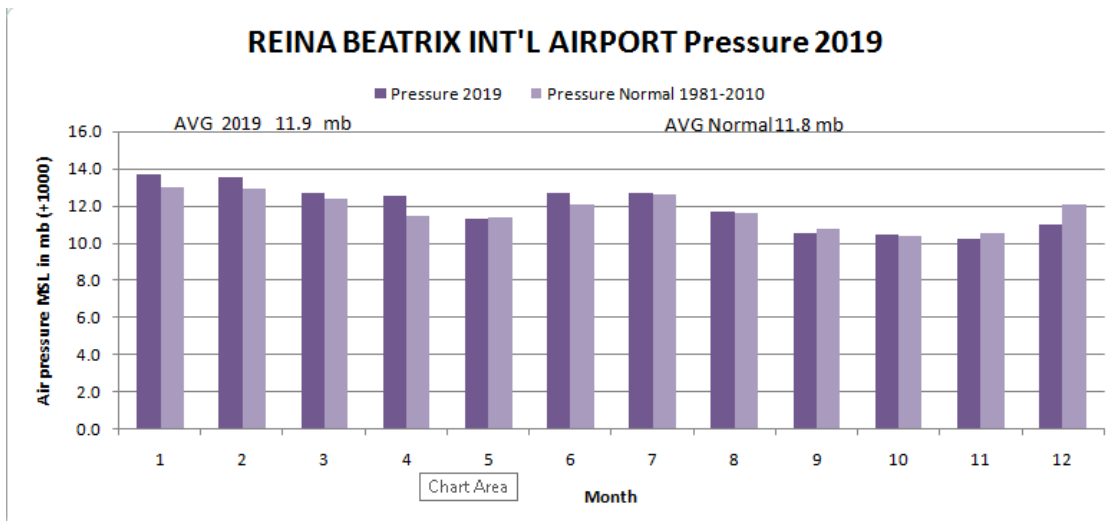


Figure 4. Atmospheric Pressure at MSL, (Mean Sea-Level) in hPa (+1000) 2019.

CLOUD COVERAGE

The average cloud coverage in 2019 was **57.6 %** compared with the normal value of **47.3%** which is above normal. (Figure 5).

Highest average cloud coverage in 2019 was observed during May (**71.8%**) with the *lowest* during the month of January (**35.7 %**).

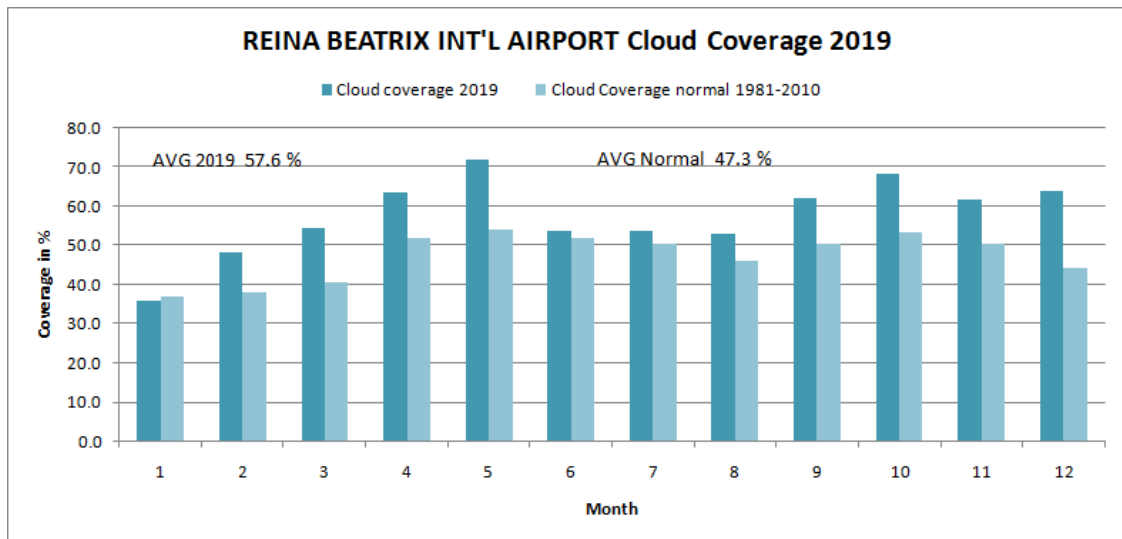


Figure 5. Total cloud coverage in percentage 2019.

RELATIVE HUMIDITY

The average relative humidity of 2019 was **75.8%** compared to the normal value of **77.4%**, which is a bit below normal. (Figure 6).

Highest monthly average relative humidity of **80.3%** was recorded during the month of April 2019 with a *lowest* monthly average of **71.1%** during the month of June 2019.

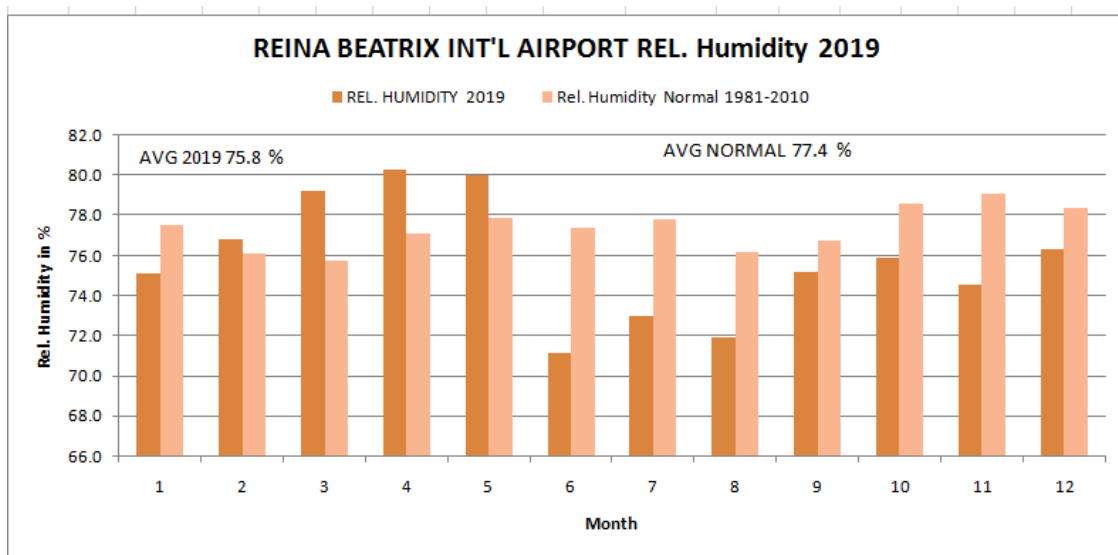


Figure 6. Relative humidity in percentage 2019.

SPECIAL OCCURRENCE (EVENTS) DURING THE YEAR 2019

SEISMIC ACTIVITIES:

There was only one earthquake event near Aruba recorded on May 13 2019 at 6:41 PM local time and had a magnitude of 2.8 with epicenter at latitude 11.260 degrees north and longitude 69.995 degrees west, which is about 28 kilometers south of Aruba and a depth of 10.0 kilometers.

EARTHQUAKES NEAR ARUBA YEAR 2019

Date	Local Time	Latitude North	Longitude West	Magnitude	Depth
	(AM/PM)	(degrees)	(degrees)		(km)
May 13, 2019	6:41 PM	11.260	69.995	2.8	10.0

Table 1. Earthquakes near Aruba year 2019.

CLIMATE ANOMALY 2019:

Temperature

The year 2019 concludes a decade of exceptional global heat, retreating ice and record sea levels driven by greenhouse gases from human activities. Average temperatures for the five-year (2015-2019) and ten-year (2010-2019) periods are almost certain to be the highest on record. 2019 is on course to be the second or third warmest year on record, according to the World Meteorological Organization.

The WMO provisional statement on the State of the Global Climate, says that the global average temperature in 2019 (January to October) was about 1.1 degrees Celsius above the pre-industrial period.

Drought

Dry conditions affected many parts of Central America. It was substantially drier than normal in Honduras, Guatemala, Nicaragua and El Salvador, until heavy rains in October. Central Chile also had an exceptionally dry year, with rainfall for the year to 20 November at Santiago only 82 mm, less than 25% of the long-term average.

Tropical cyclones

Tropical cyclone activity globally in 2019 was slightly above average. The Northern Hemisphere, to date, has had 66 tropical cyclones, compared with the average at this time of year of 56, although accumulated cyclone energy (ACE) was only 2% above average. The 2018-19 Southern Hemisphere season was also above average, with 27 cyclones.

One of the year's most intense tropical cyclones was Dorian, which made landfall with category 5 intensity in the Bahamas. The destruction was worsened as it was exceptionally slow-moving and remained near-stationary for about 24 hours.

TROPICAL CYCLONE ACTIVITIES:

Overall, the 2019 Atlantic hurricane season featured above normal activity. Eighteen named storms formed, of which six became hurricanes and three became major hurricanes - category 3 or higher on the Saffir-Simpson Hurricane Wind Scale. This compares to the long-term average of twelve named storms, six hurricanes, and three major hurricanes. There were also two tropical depressions that did not reach tropical-storm strength. In terms of Accumulated Cyclone Energy (ACE), which measures the combined strength and duration of tropical storms and hurricanes, activity in the Atlantic basin in 2019 was well above the long-term mean.

One tropical storm (Sebastien) formed in the Atlantic basin in the month of November, and one subtropical storm (Rebekah) that formed in October was still active when the month began. On average, one tropical storm forms in the basin every other year in the month of November.

Name	Dates	Max Wind (mph)
STS Andrea	20-21 May	40
H Barry	11-15 Jul	75
TD Three	22-23 Jul	35
TS Chantal	21-23 Aug	40
MH Dorian	24 Aug- 7 Sep	185
TS Erin	26-29 Aug	40
TS Fernand	3- 4 Sep	50
TS Gabrielle	3-10 Sep	60
MH Humberto	13-19 Sep	125
TS Imelda	17-19 Sep	40
H Jerry	17-25 Sep	105
TS Karen	22-27 Sep	45
MH Lorenzo	22 Sep- 2 Oct	160
TS Melissa	11-14 Oct	65
TD Fifteen	14-16 Oct	35
TS Nestor	18-19 Oct	60
TS Olga	25 Oct	40
H Pablo	25-28 Oct	80
STS Rebekah	30 Oct- 1 Nov	45
TS Sebastien	19-24 Nov	55

Table 2. Hurricanes 2019.

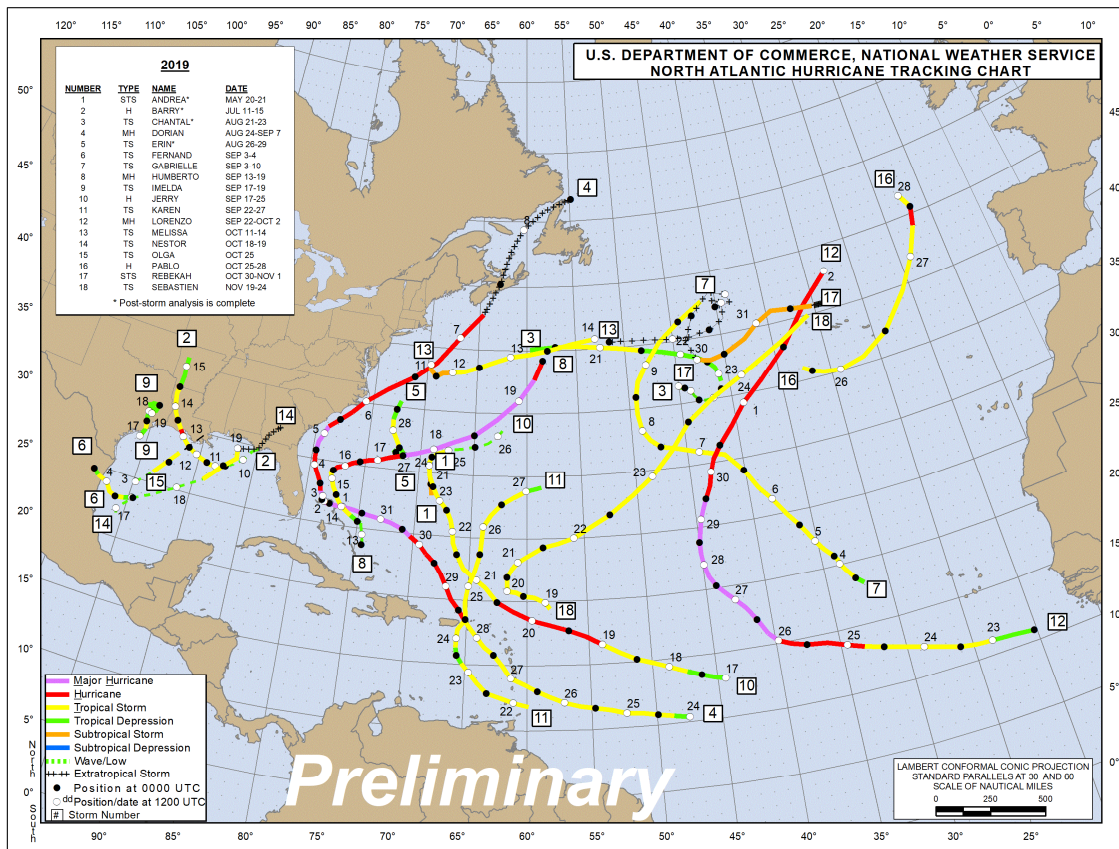


Figure 10. Storm tracks Atlantic Basin 2019.

In figure 10 we can see the storm tracks. Major Hurricane Dorian and Tropical Storm Karen were closest to Aruba but were no major threat.

For the year 2020 a near normal hurricane season is forecasted.

Keep in mind that these are extreme long-term forecasts and therefore changes can occur.

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