



**World Meteorological Organization**  
**RA IV HURRICANE COMMITTEE**  
**FORTY-FIRST SESSION**

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**RA IV/HC-41/Doc.3.2(11)**

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Approved by Xu Tang, Mon Feb 18 13:17:20 UTC 2019

**AGENDA ITEM NO.3: REVIEW OF THE 2018 CYCLONE SEASON**

**AGENDA ITEM NO.3.2: COUNTRY REPORT**

**AGENDA ITEM NO.3.2(11): BARBADOS**

**1.1 Significant hazards and impacts by Tropical Cyclones which affected Barbados**

**Tropical Storm Kirk.**

On 22<sup>nd</sup> September, 2018, Tropical Storm Kirk formed in the far eastern Atlantic. The storm degenerated into an open wave on morning of the 24<sup>th</sup> of September after succumbing to an influx of dry mid-level air into the core and relatively cooler sea surface temperatures. The Cyclone regenerated on the morning of the 26<sup>th</sup> of September but was now facing inhibiting south-westerly to westerly shear. This resulted in most of the adverse weather being displaced on the eastern quadrants of the cyclone. Tropical Storm Kirk centre passed about 45 miles to the north of Barbados on the 27<sup>th</sup> of September, 2018 with maximum sustained winds of 50 mph on the north east and south eastern quadrants.

Tropical storm warnings, flood watches, small craft warnings and high surf advisories were in effect for Barbados and Dominica while a Tropical Storm watch was issued for Saint Vincent from 6am 26<sup>th</sup> September, 2018.

As Kirk deviated slightly from the official forecast track to a west south-westerly track shortly after the centre passed to the north of Barbados, prolonged strong convective pockets of moderate to heavy showers and isolated thunderstorms were experienced mainly across southern and eastern sections of the island. At our Charnocks Christ Church operations station rainfall accumulation of 241.2mm (9.5 inches) (See table 1) was recorded. Severe flash flooding resulted from this rainfall event.

Sustained 30 - 34 knot winds with higher gust ranging from 38 to 46 knots for approximately 4 hours were experienced across the island during the early night of the 27<sup>th</sup> of September. This activity was all associated with the south eastern quadrant of the cyclone. Minimal structural damage associated with winds or wave/storm surge were reported in the final damage assessment report.

**1.2 Lessons Learnt**

Due to the relatively small nature of Barbados (166 sq miles ) total rainfall accumulation under such events are usually specified as a range across the entire island. However from a hydrological stand point impacts vary significantly across the various water catchment areas of the island. Although 2018 was the first successful year of testing 800m resolution WRF model runs across the island, doubt was cast into the initial 10 inches accumulation forecast for the eastern sections of the island due to the ongoing verification delay of the actual onset as

indicated by the model and subsequent declining total accumulation values of subsequent model runs.

### 1.3 Remedy

Steps have already been taken to improve/implement impact based forecasting through a Weather Ready Nations project coordinated by CIMH and UCAR with funding provided by USAID. This activity is expected to be operational for the 2019 Hurricane season. Hazard, impacts and response products, for wind, rainfall, severe convection and near shore waves will be actively generated by operational forecasters in close coordination with the Department of Emergency Management.

This will give the Emergency Management better insight into where and when resources will be needed particularly in cases where some level of uncertainty exists. Other stake holders along with the general public will have access to these products.

## 2 Coordination with emergency managers and other stakeholders

Tropical Storm Warnings were issued from 6am on Wednesday, 26<sup>th</sup> September 2018 for Barbados and Dominica (DOM), while a tropical Storm watch was issued for St.Vincent and the Grenadines (SVG) of the same day.

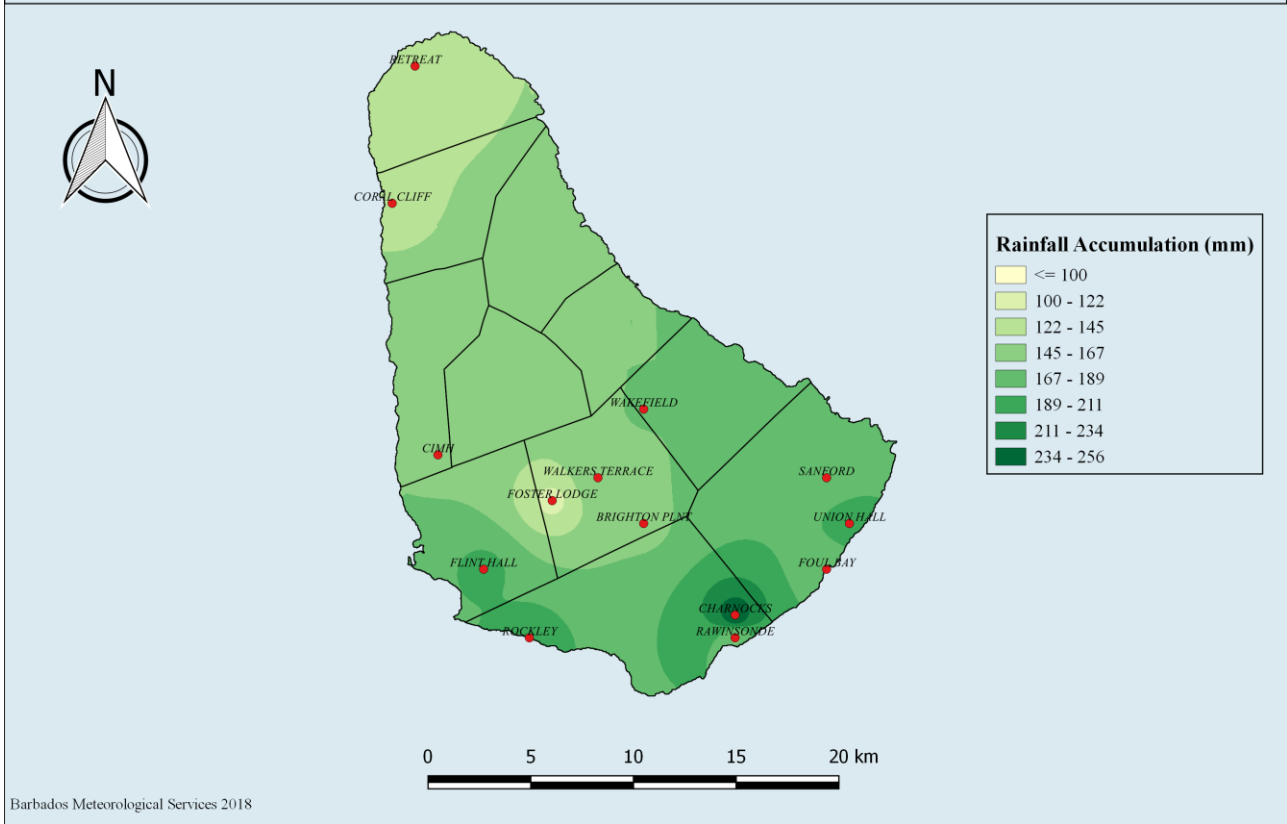
The BMS (Barbados Meteorological Services) was in frequent ( 3 hour intervals ) contact with the local Department of Emergency Management and with senior officials from SVG and DOM before any watches were issued. It was expressed at the time that our major concern was the high levels of rainfall accumulation (6 to 12 inches ) across the three territories (In particular over Dominica).

Very good communication leading up to and during the event took place between the BMS, NHC and CIMH.

STATION	LONGITUDE	LATITUDE	27TH	28TH	TOTAL
RAWINSONDE	-59.49	13.07	161.7	2	163.7
SANFORD	-59.45	13.14	164.2	10.4	174.6
UNION HALL	-59.44	13.12	197.9	2.2	200.1
BRIGHTON PLNT	-59.53	13.12	158.8	3.8	162.6
FOSTER LODGE	-59.57	13.13	98.2	16.5	114.7
WALKERS TERRACE	-59.55	13.14	139.2	19.3	158.5
CIMH	-59.62	13.15	159.7	4.9	164.6
CHARNOCKS	-59.49	13.08	242.2	13.7	255.9
RETREAT	-59.63	13.32	123.5	6.2	129.7
ROCKLEY	-59.58	13.07	139.4	60.5	199.9
FOUL BAY	-59.45	13.1	98.4	74.5	172.9
CORAL CLIFF	-59.64	13.26	116.6	24.6	141.2
FLINT HALL	-59.6	13.1	149.4	45.2	194.6
WAKEFIELD	-59.53	13.17	108	59.9	167.9

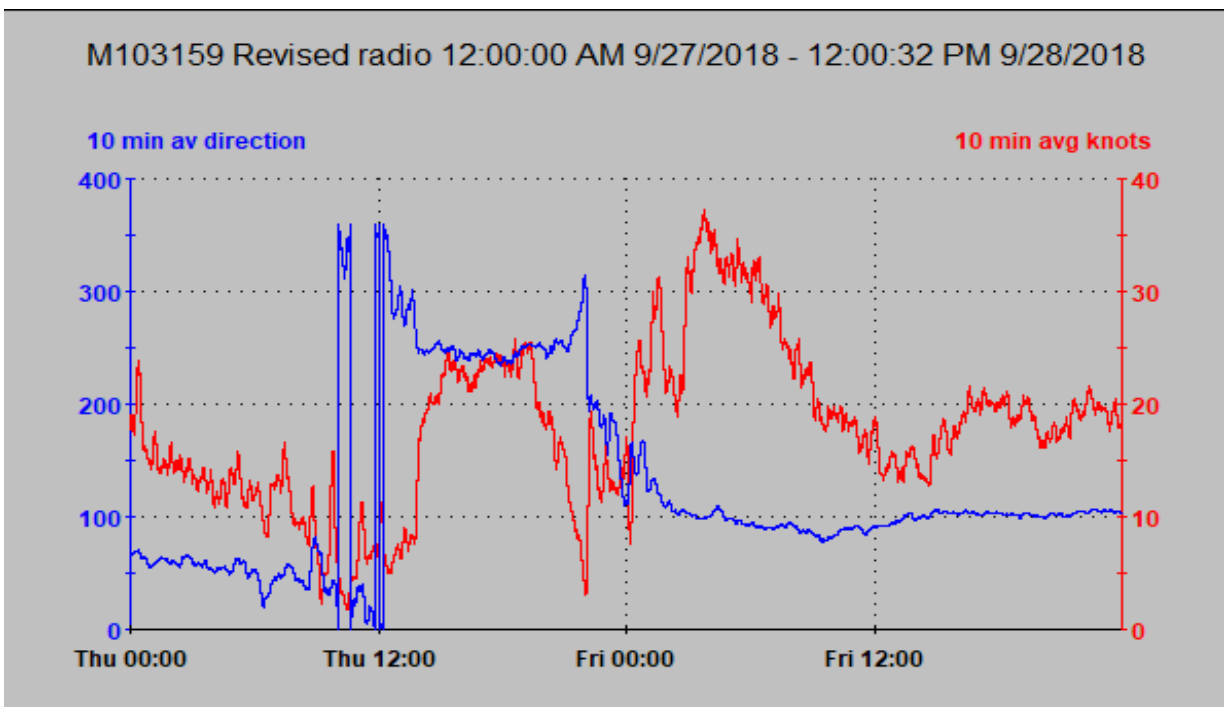
Table 1 (Rainfall in mm)

**ACCUMULATED RAINFALL DURING THE PASSAGE OF TROPICAL STORM KIRK**



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Pic 1. IDW of rainfall accumulation



Pic 2. Wind Direction and speed during passage of Kirk

Parameter	Quantity
Deaths	0
Injuries	1
Damage Homes and Infrastructure	43 ( 22 of which were from one densely populated district )

Damage Assessment Report from Department of Emergency Management (Table 2)



