

Rainfall frequency and extreme forecasts — wet days and wet spells outlooks JAS 2015

Dr. Cedric VAN MEERBEECK¹, Dr. Simon MASON², Ángel MUÑOZ², Dr. Teddy ALLEN², Wazita Scott¹

¹Caribbean Institute for Meteorology and Hydrology (CIMH), Barbados

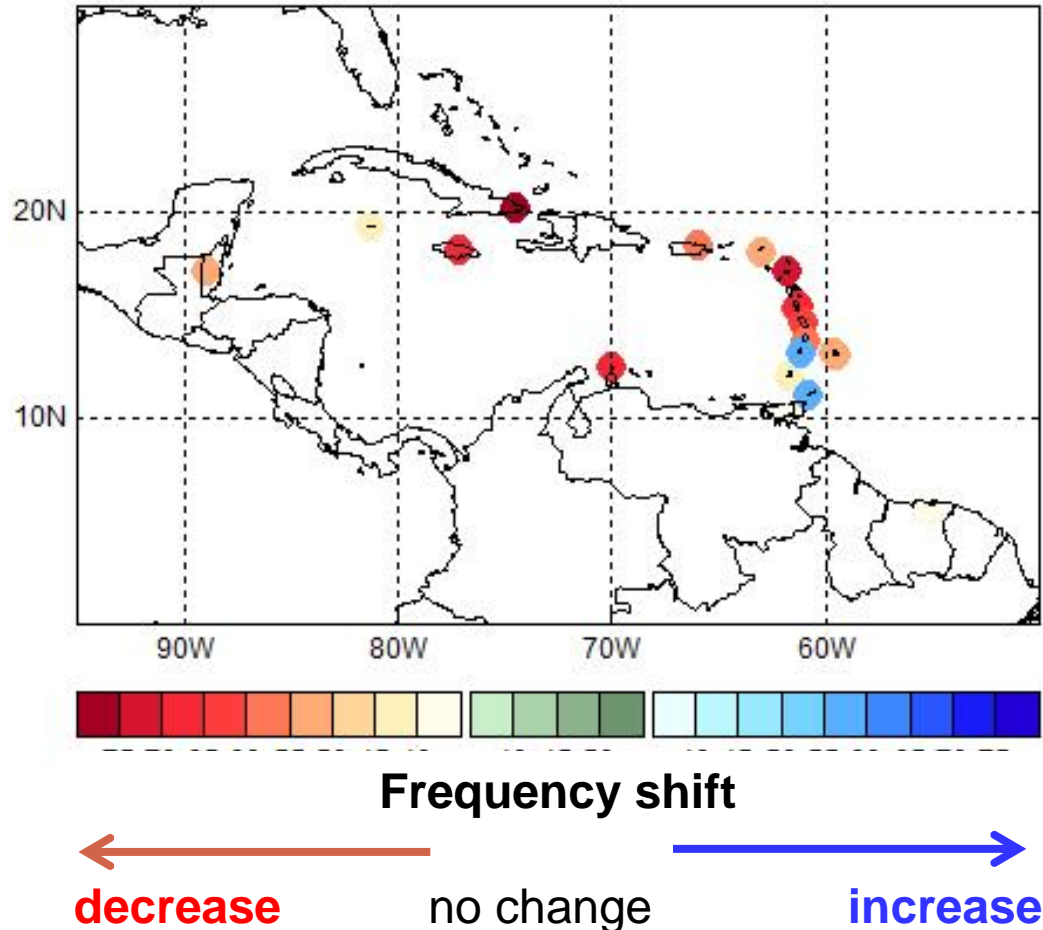
²International Research Institute for Climate and Society (IRI), USA

The 2015 Wet/Hurricane Season Caribbean Climate Outlook Forum, June 1-2, St. Lucia

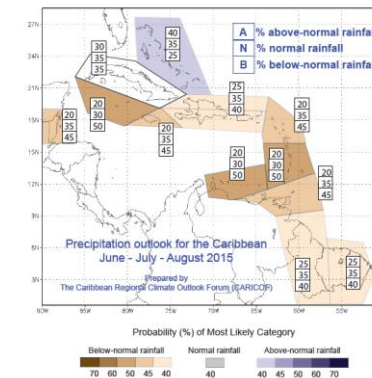


Forecasting wet day frequency within a season

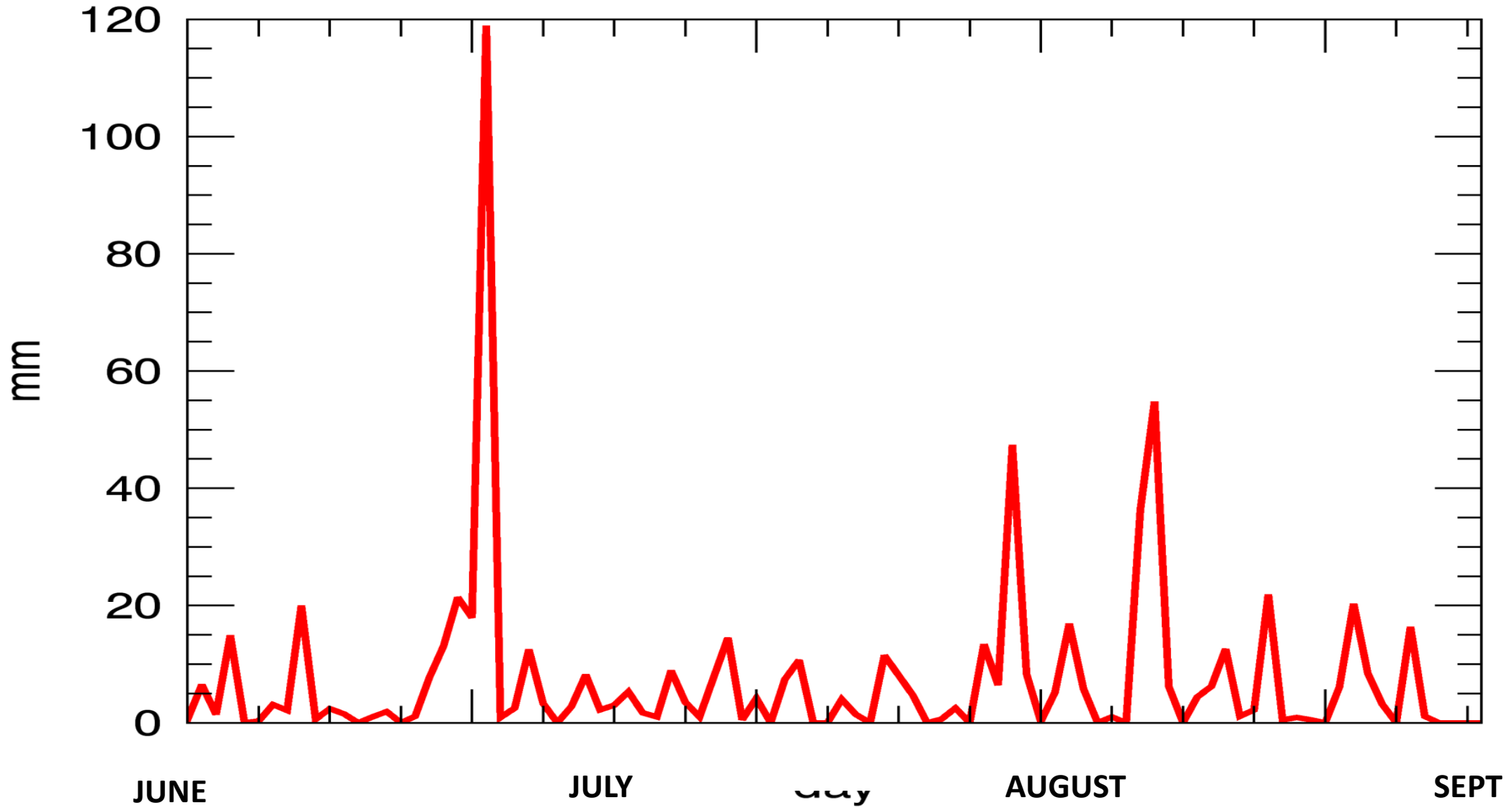
Wet day frequency shifts Jul to Sep 2015



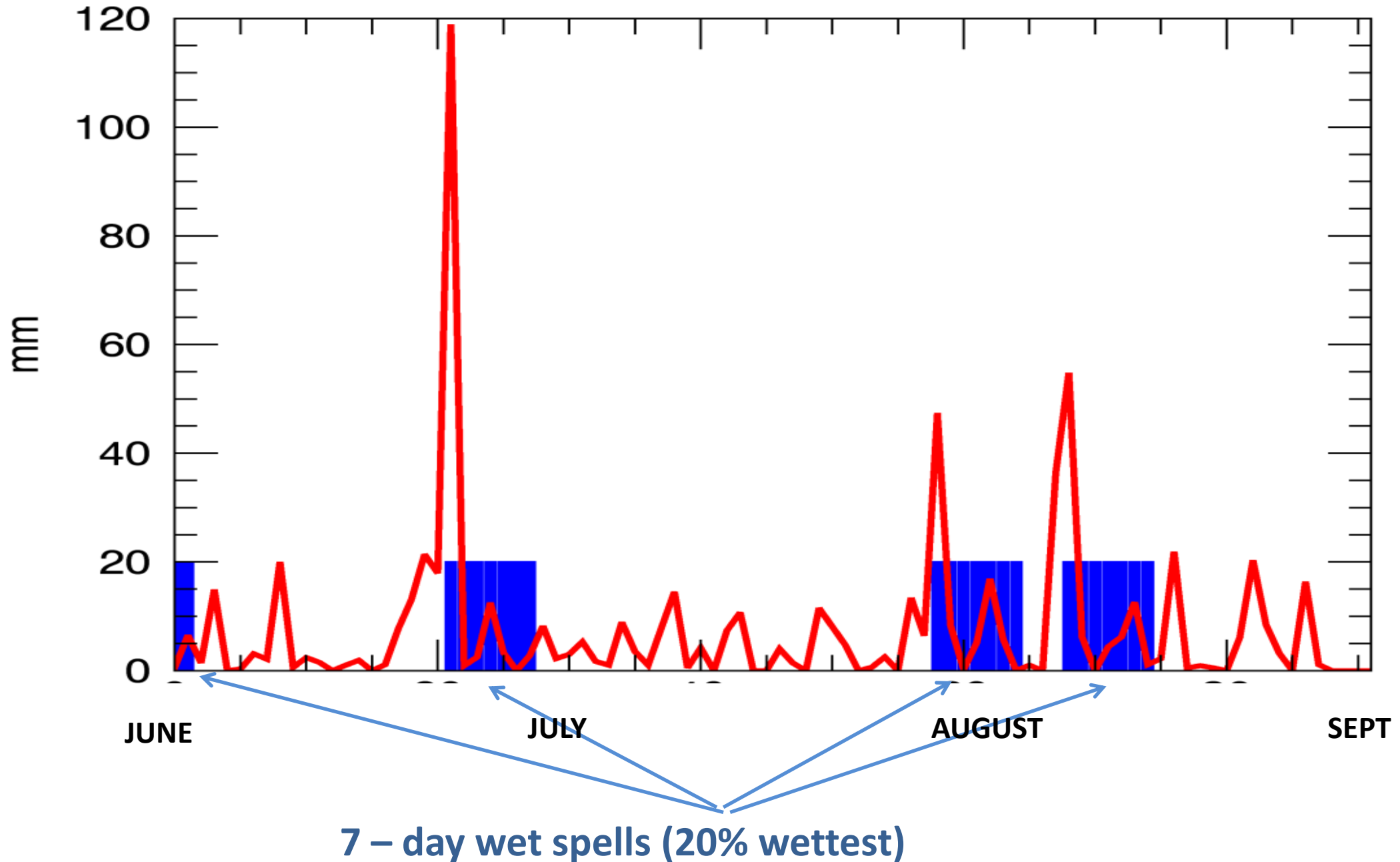
FORECAST: Region-wide, July to September rainfall expected to be below- to normal, with fewer wet days than usual.



2010 JJA Rainfall at Hewanorra, St. Lucia



2010 JJA Rainfall at Hewanorra, St. Lucia



NUMBER OF 7-DAY WET SPELL EVENTS

12

10

8

6

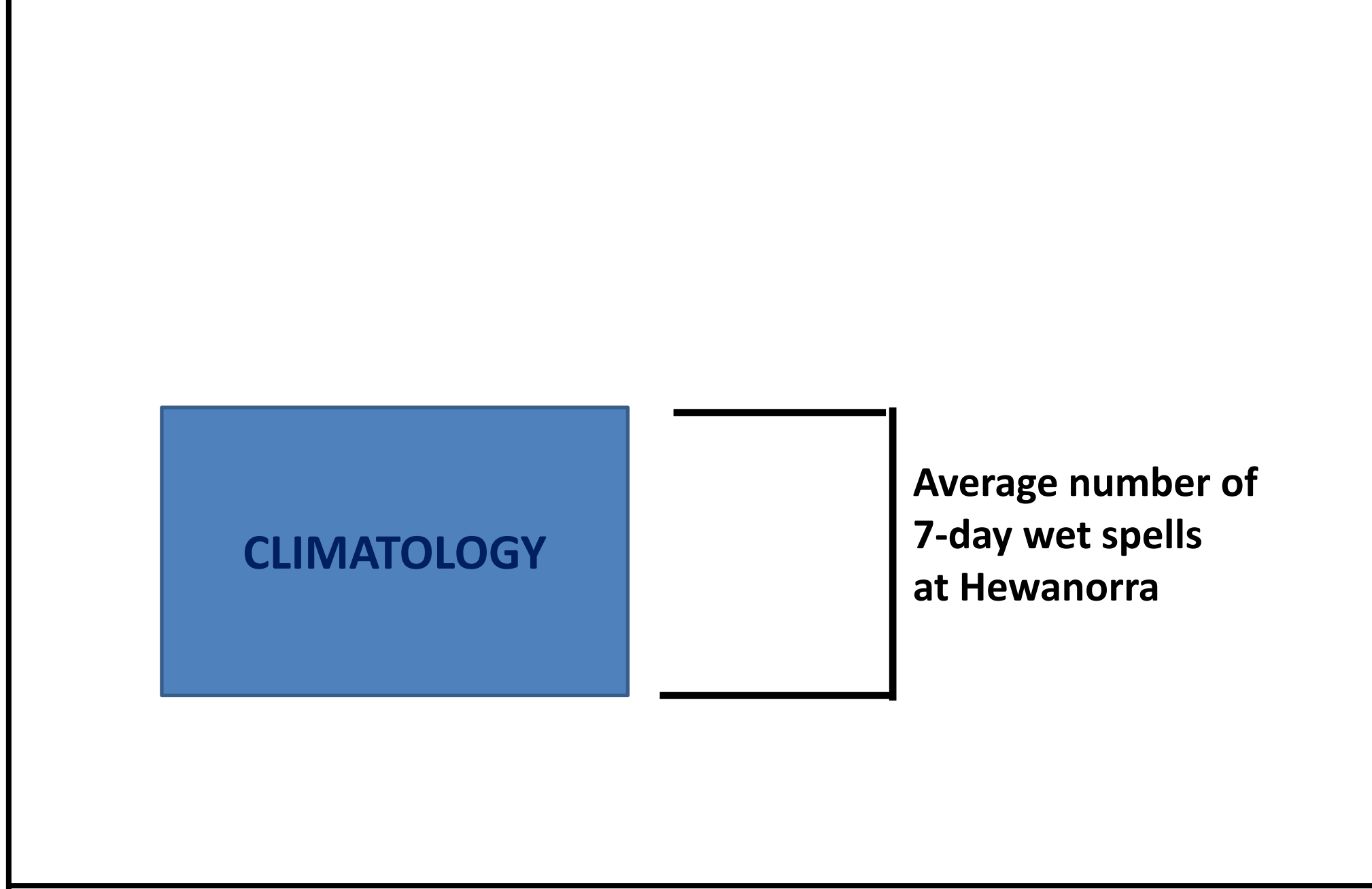
4

2

CLIMATOLOGY

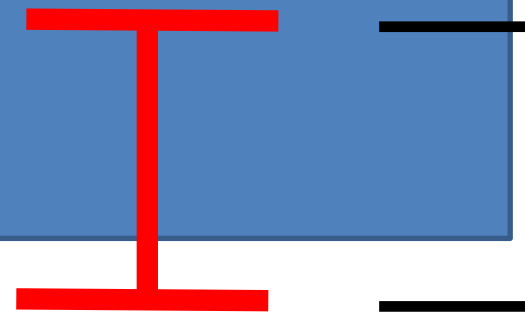
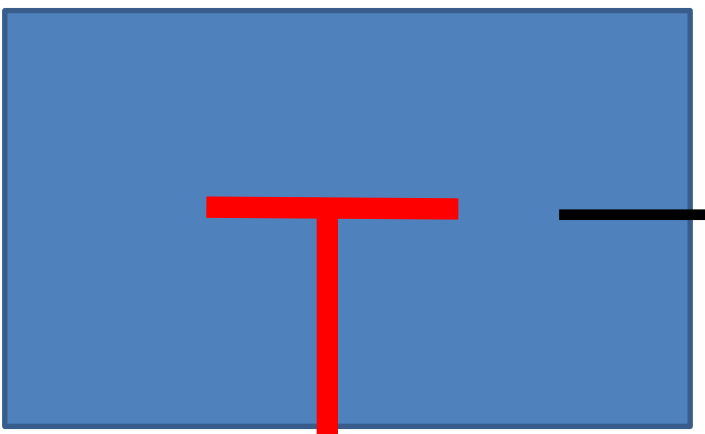
**Average number of
7-day wet spells
at Hewanorra**

Hewanorra



NUMBER OF 7-DAY WET SPELL EVENTS

12
10
8
6
4
2



predicted number of
7-day wet spells
at Hewanorra
for JJA 2015

Hewanorra

NUMBER OF 7-DAY WET SPELL EVENTS

12

Average range of 7-day wet spell events:

3 to 7 events

10

*Predicted range of 7-day wet spell events
for JJA 2015:*

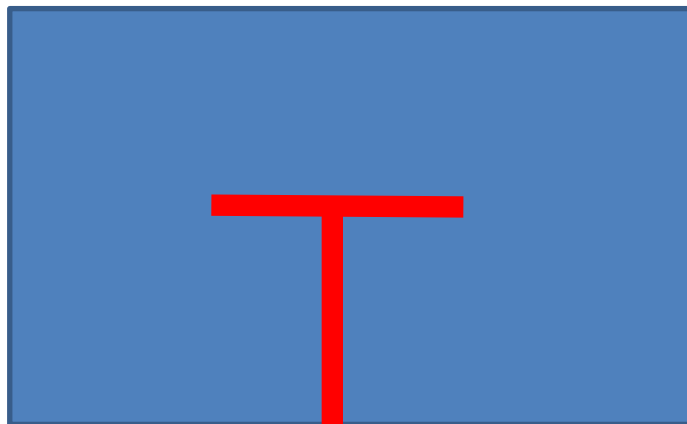
2 to 5 events

8

6

4

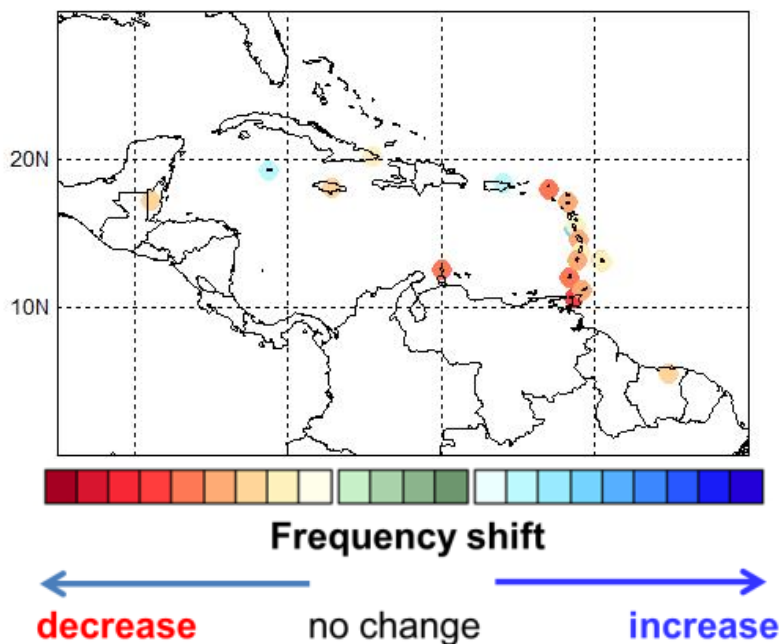
2



Hewanorra

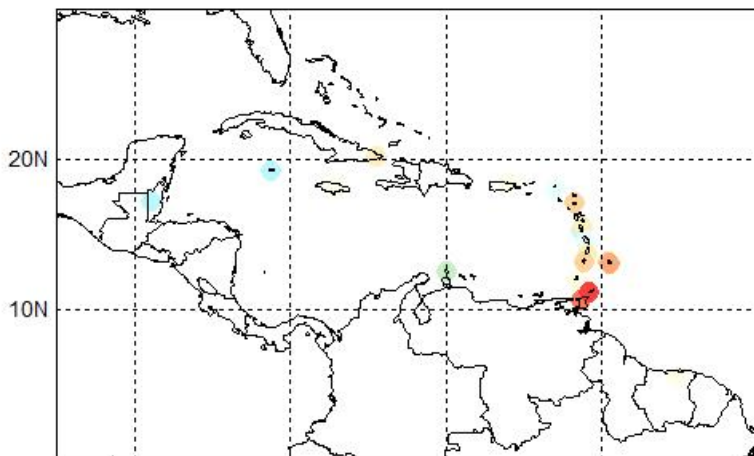
Forecasting shifts in *very* wet spell frequency within a season

JAS 2015 frequency of 7-day wet spells

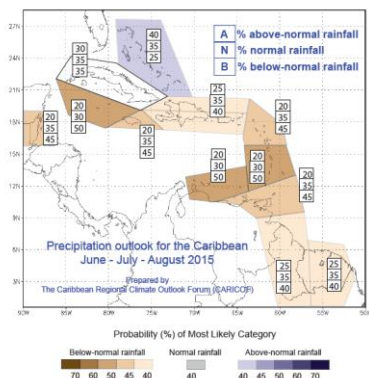


FORECAST: Region-wide, July to September rainfall expected to be below- to normal, with fewer wet days and wet spells than usual, especially in the Leewards and Windwards.

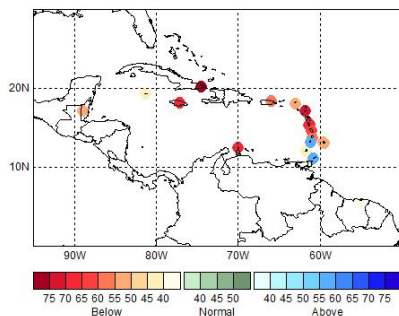
JAS 2015 frequency of 7-day very wet spells



Reduced flood potential throughout the region (with the exception of the Bahamas)



Wet day frequency shifts Jul to Sep 2015



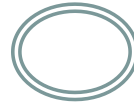
July to September 2015 Forecast

| | Number of wet days | | Number of 7-day wet spells (20% wettest) | | Number of 7-day very wet spells (10% wettest) | |
|-------------------------------------|--------------------|--------------|--|-------------|---|-------------|
| | Climatology | Forecast | Climatology | Forecast | Climatology | Forecast |
| Antigua (VC Bird) | 10-14 | 9-13 | 2-7 | 0-6 | 0-3 | 0-3 |
| Aruba (Beatrix) | 2-6 | 1-4 | 1-6 | 0-4 | 0-2 | 0-3 |
| Barbados (CIMH) | 12-16 | 12-16 | 3-7 | 3-8 | 1-4 | 1-4 |
| Barbados (GAIA) | 13-16 | 13-17 | 4-8 | 3-8 | 1-4 | 1-4 |
| Belize (C. Farm) | 12-16 | 10-16 | 3-7 | 3-7 | 1-5 | 1-5 |
| Cayman | 10-15 | 10-16 | 3-8 | 3-11 | 1-4 | 1-5 |
| Cuba (Punta Maisi) | 3-6 | 3-5 | 0-4 | 0-4 | 0-2 | 0-2 |
| Dominica (Canefield) | 17-22 | 16-21 | 4-14 | 4-21 | 1-9 | 2-12 |
| Dominica (Douglas Charles) | 18-23 | 17-22 | 2-8 | 2-8 | 1-5 | 0-5 |
| Dom. Republic (Las Americas) | | | | | | |
| Grenada (MBIA) | 13-16 | 12-17 | 4-7 | 2-7 | 1-4 | 1-5 |
| Jamaica (Worthy Park) | 9-14 | 8-12 | 2-7 | 2-6 | 0-4 | 1-5 |
| Martinique (FDF Desaix) | 17-21 | 16-20 | 4-8 | 3-7 | 2-5 | 1-4 |
| Puerto Rico (San Juan) | 12-17 | 12-17 | 3-7 | 3-9 | 1-4 | 0-4 |
| St. Lucia (Hewanorra) | 15-20 | 13-18 | 4-7 | 3-9 | 1-5 | 0-4 |
| St. Maarten (TNM) | 11-16 | 9-15 | 1-6 | 0-5 | 0-3 | 0-4 |
| St. Vincent (ET Joshua) | 18-22 | 18-23 | 3-8 | 2-8 | 1-4 | 0-3 |
| Suriname (Zanderij) | 12-17 | 11-16 | 1-4 | 1-4 | 0-3 | 0-4 |
| Trinidad (Piarco) | 16-20 | 15-19 | 4-7 | 2-7 | 1-4 | 1-3 |
| Tobago (ANR Robinson) | 12-18 | 12-19 | 4-7 | 3-6 | 2-3 | 1-3 |

brown - decrease in numbers,

dark blue – increase in numbers

Rainfall frequency forecasts



- A proof of concept
 - **YOUR INPUT:** threshold values (e.g. 100mm in 1 week) and duration of interest for wet spells
 - The more extreme, the less predictable.
 - Technical methodology for rainfall frequency prediction can be applied to dry spells and heat waves.



Thank you