

## Wx-0214 (14 Feb 2020)

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### 1. Three day outlook

Synopsis – A 1028 hpa Atlantic high pressure maintains a strong ridging pattern over the Eastern Caribbean. Steep pressure gradient maintains strong winds from the east to east north east across the area pushing occasional shallow convective cloud patches across area. Occasional showery spells are expected. Seas are moderate to rough.

Forecast – High centre is forecast to weaken slightly. Partly Cloudy patches with scattered showers favouring night, early morning. Tomorrow fair to partly cloudy and hazy with occasional showers. Winds easterly at 15 to 20.

Seas moderate to rough with waves 8 to 9 feet. Swells every 11 seconds from the northeast.

3-day outlook – An upper level trough west of the island chain, together with the subtropical jet will bring in mid to upper level moisture from the south and southwest, increasing the likelihood of showers. Wind speeds will decrease slightly by 72 hrs. Seas remain moderate Saturday.

According to the IFS forecast, the surface airmasses (1000-900 hPa, blue pts.) continue to be advected from the extratropics, recurving in front of the West African coast. On Sat 15.2. these airmasses remain remarkably constant in height within the 10 days before their arrival at BB. The airmasses arriving in the layer 700-900 hPa (green and yellow pts.) are transported towards BB either from the east or from the south. The airmasses in the layer 700-500 hPa continuously originate from South America gaining height while moving towards BB. At upper levels (500-300 hPa, red pts.) the airmasses descend from the jet on Fri 15.2.. On Sat 16.2. and Sun 17.2. upper level airmasses are transported to BB by following the Hadley cell circulation: 10 days before arrival at BB they're transported within the low-level easterlies from Africa into the tropics, where they're ascending 5-4 days before arrival at BB. This change in circulation pattern is associated with an increase in moisture at upper levels

### 2. Data for Flight Planning

Yesterday's conditions at various sites represented by daily mean and standard deviation:

FIELD	BCO	CE	NTAS	BT
LAT	13°09'46"	13°21'	14°49'	08°00'
LON	59°25'44"	57°17'	51°01'	55°00'
LCL				
CBH-LCL				
CTH	08. - 1.6 km **	0.8 - 1.6 km **	0.8 - 1.6 km **	3.0 - 4.0 km **
CIRRUS TOP			9.0 - 11.0 km **	-
AOD	0.2 **	0.1 **	0.2 **	0.3 **
PW (MM)	37.9 ± 2.5 mm			40.5 ± 2.8 mm *
SFC WIND			9.5 m/s ; 69 °	11.0 m/s ; 75 °
3KM WIND	2.7 m/s ; 62 °			9.5 m/s ; 77 ° *
6KM WIND	15.8 m/s ; 244 °			11.2 m/s ; 229 ° *
9KM WIND	44 m/s ; 241 °			33.2 m/s ; 249

<b>SST</b>		25.9 °C	27.2 °C
<b>INVERSION HEIGHT</b>			2.0 ± 0.2 km *
<b>EIS</b>	1.95 ± 0.18 km		3.6 ± 0.3 K *
<b>LTS</b>	2.9 ± 0.4 K		14.8 ± 0.5 K *
<b>CLOUD PATTERNS</b>	-	fish	-
			Flowers / messy

\*from

CE: circle east, BT: Boulevard des Tourbillons

### 3. Model forecast

Comparison of yesterday's conditions to one-day forecasts for 57° 30 'W and 13° 30 ' N:

FIELD	AROME	HARMONIE	UK MET	OBS CE
<b>LCL</b>	~ 800m			630m
<b>INVERSION HEIGHT</b>	~1900-2000m			cloud top
<b>CIRRUS TOP</b>	165 hPa			2.5-4 km
<b>PW</b>	35 mm (-5 mm versus yesterday)			no cirrus
<b>SFC WIND</b>	9m/s (11 under shower)			38mm
<b>CLOUD PATTERNS</b>	gravel with little rain			10 m/s, 75 deg
				sugar with gravel further south

### 4. Figures – yesterday's conditions

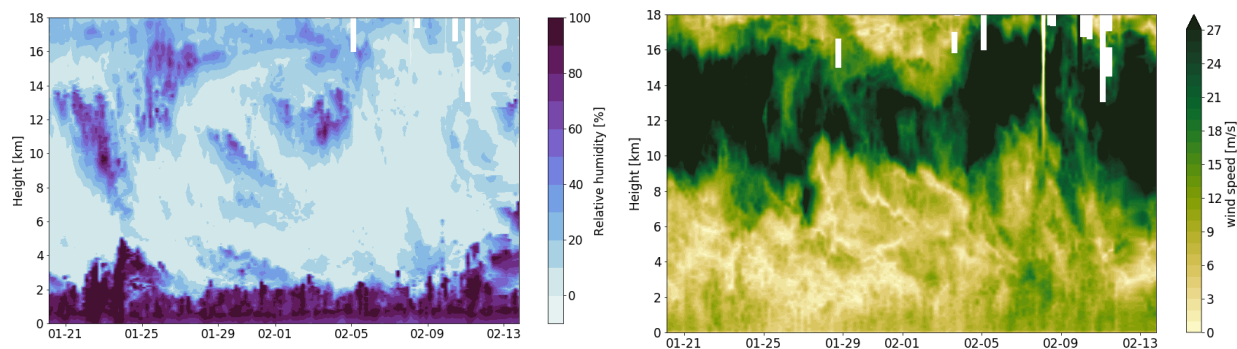


Figure 1: Soundings from BCO throughout EUREC<sup>4</sup>A of relative humidity (left) and wind speed (right). Note that the wind speed color bar is saturated.

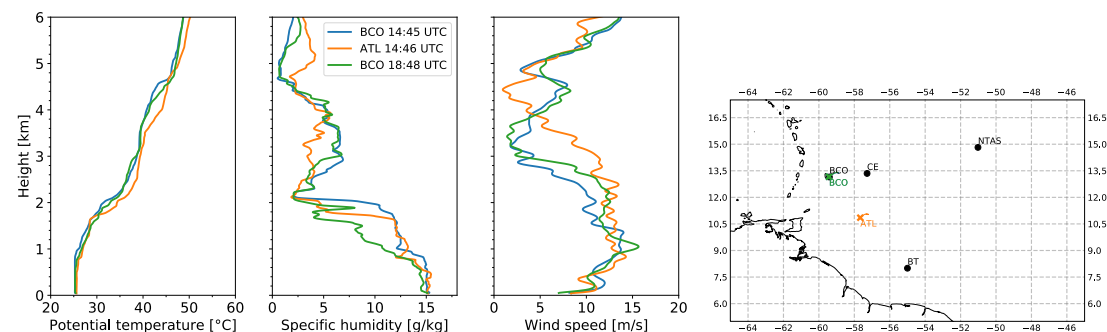


Figure 2: Soundings from four different platforms.