

## Wx-0209 (09 Feb 2020)

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### 1. Three day outlook

*Synopsis* - Very strong pressure gradient, windy conditions and choppy seas; Isolated showers related to patchy clouds (flowers) on the moist easterly winds. NHC GALE WARNING in place <https://www.nhc.noaa.gov/text/MIAOFFNT3.shtml>

*Forecast* – Today winds gusty, occasional cloudy with isolated brisk showers. Winds ...ENE to Easterly at 18 to 25 kts gusting to 35 kts.

*Seas choppy to rough* - waves 6 to 10 feet, swells every 9 to 12 sec from the northeast.

*3-day outlook* - Atlantic ridge will slowly progress eastwards...shallow cumulus clouds are expected to dominate. An upper level trough just east of the islands will continue to induce only a few showers. Very brief weakening expected on Monday as new front traverses to the north but strong high follows and windy conditions resume.

*Air Mass Origin* - According to the IFS forecast, on 8 and 9 February, air masses arriving above Barbados descend from the extratropics within the zonally elongated anticyclone covering the whole North Atlantic. As this persistent anticyclone moves eastwards, the low-level airmasses are advected more and more from the east on Monday/Tuesday 10 and 11 February, instead of the northeast on Sunday 9 February. The increasing meridional pressure gradient associated with the mid North Atlantic anticyclone accelerates low-level winds. The situation on Monday/Tuesday 10 and 11 February seems favourable for the development of somewhat deeper convection and cold pools due to the relatively deep trade wind layer reaching up to 700 hPa and meridional advection of drier and colder slantwise subsiding airmasses aloft.

### 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	875 ± 160 m	705 ± 150 m		
CBH-LCL	- 10 ± 85m	100 ± 85 m		
CTH	0 - 0.8 km	0 - 0.8 km	0 - 0.8 km	0 - 0.8 km
CIRRUS TOP	-	-	-	-
AOD	-	-	0.1	0.1
PW (MM)	27.8 ± 3.6 mm	34.9 ± 5 mm *	31.9 ± 3.5 mm **	27.4 ± 4 mm ***
SFC WIND	10.5 m/s, 100°	11.1 m/s, 78° *	8 m/s	
3KM WIND			9.2 m/s, 83°	
6KM WIND			**	6.3 m/s, 63° ***
9KM WIND			6.2 m/s, 352°	
	11.7 m/s, 36°	6.4 m/s, 19° *	**	4 m/s, 273° ***
		7.8 m/s, 315°	10.9 m/s,	16 m/s, 262°
	15.2 m/s, 8°	*	274° **	***
SST		27.6°C *	26.2 °C	
INVERSION HEIGHT			2.4 ± 0.4 km	
	1.9 ± 0.2 km	2.3 ± 0.3 km *	**	2.1 ± 0.3 km ***

<b>EIS</b>	3.3. ± 1.1 K	3.1 ± 1 K *	2.7 ± 0.6 K **	1.9 ± 0.7 K ***
<b>LTS</b>			13.8 ± 0.7 K	
	13.6 ± 0.8 K	14.1 ± 0.9 K *	**	12.3 ± 0.5 K ***
<b>CLOUD PATTERNS</b>	sugar	Fish	Fish	sugar

\* from Meteor \*\*from Ron Brown (between CE & NTAS) \*\*\* from Atalante  
 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>	950 m		785 m	705 ± 150 m
<b>INVERSION HEIGHT</b>	2400 m		3km	2.3 ± 0.3 km
<b>CIRRUS TOP PW</b>	no cirrus		no cirrus	-
	> 30		29.6	34.9 ± 5 mm
<b>SFC WIND</b>	9.8 m/s		77 deg, 7m/s	11.1 m/s, 78°
<b>CLOUD PATTERNS</b>	gravel		gravel (localised)	fish

### 4. Figures – yesterday's conditions

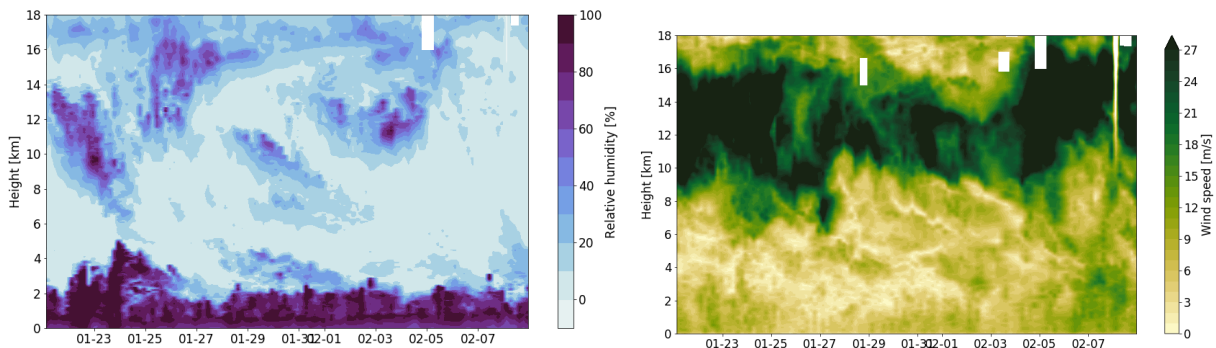


Figure 1: Soundings from BCO throughout EUREC<sup>4</sup>A of relative humidity (left) and wind speed (right). Note that the wind speed color bar is saturated.

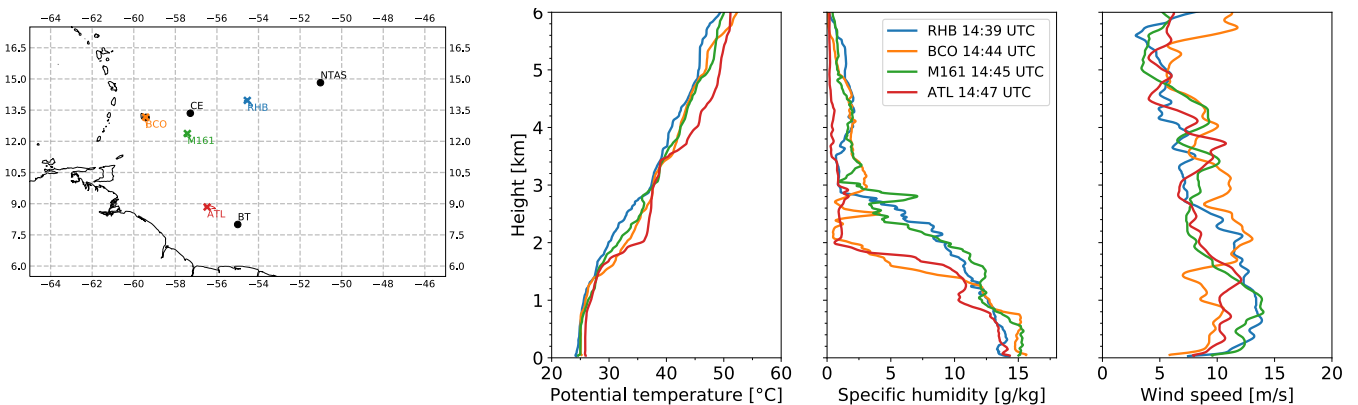


Figure 2: Soundings from four different stations.