

Wx-0201 (01 Feb 2020)

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1. Three day outlook

Synopsis — Dry and stable conditions continue north of 11 N. A weak trough south of 11 N will propagate shallow moisture and chance of isolated brisk showers. Shallow cumulus clouds will dominate and dust haze increases.

Forecast — Chance of showers is 10%, any showers will be brief. Winds will be Easterly to East Southeasterly at 10 to 15 kts, occasionally 20 knts.

Seas moderate — waves 2 to 3 metres, swells every 14 to 15 sec from the northeast.

3-day outlook – Slight strengthening of the Atlantic subtropical high with increase in dust haze. Winds will be brisk to breezy, dry and stable weather. Shallow cumulus clouds are expected to dominate.

air mass origin — According to the IFS forecast, air masses arriving in BB at 300-500 hPa (red pts.) are advected by westerlies in the zonally oriented pronounced subtropical jet and descend by approximately 100 hPa in 3 days. At mid levels (500-800 hPa, orange and yellow pts.) air masses are advected by westerlies and loop southward anticyclonically before reaching BB. Air masses arriving at 800-900 hPa (green pts) reach BB from the South. They were located over the Amazon catchment 5-10 days before arrival travelling northeastward before recurving to the West in the context of the ridge building of last week (27-29.1.). Air masses arriving at 900-1000 hPa are advected by the easterly to south-easterly trade winds, after spending several days stagnating over the central tropical North Atlantic (link). The contrast in the large-scale flow situation with the tropical origin of low-level airmasses from 28.1. to 2.2. compared to the midlatitude origin of low-level airmasses last week (20.1-27.1) is fascinating. The waviness of the upper-level jet stream (more zonal this week, more large-amplitude wave breaking last week) might be an important player in forming these contrasting situations.

2. Data for Flight Planning

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

| Field | BCO | CE | HALO Circle | NTAS | BT |
|------------------|---------------|------------|-----------------|------------|---------------|
| Lat | 13°09'46" | 13°21' | | 14°49' | 08°00' |
| Lon | 59°25'44" | 57°17' | | 51°01' | 55°00' |
| LCL | 592±55 m | 540±130 m | 683 +/- 67 m | | 590 ± 50 m |
| CBH-LCL | | -10±30 m | | | |
| CTH | 0.9 - 1.8 km | | | - | 0.9 - 2.4 km |
| Cirrus Top | - | - | | - | - |
| AOD | 0.15 | 0.25 | | 0.35 | 0.6 |
| PW | 35.5 ± 2.6 mm | 38.2 ± 6.1 | 32.3 +/- 2.1 mm | | 38.9 ± 2.2 |
| Sfc Wind | | 27.8 m/s, | 6.7 m/s; 92° | 5 m/s, 90° | |
| 3km Wind | 1.2 m/s, 73° | 1.6 m/s, | 2.3 m/s; 160.9° | | 8.9 m/s, |
| 6km Wind | 5.9 m/s, 148° | 5.2 m/s, | 3.1 m/s; 159.3° | | 13.5 m/s, |
| 9km Wind | 7.4 m/s, 304° | 11.3 m/s, | 8.4 m/s; 322.1° | | 14.3 m/s, |
| SST | - | 27.3 °C | | 26.3 ° | |
| Inversion height | 2.1 ± 0.2 km | 2.7 ± 0.7 | 2 km | | 2.5 ± 0.3 |
| EIS | 3.4 ± 0.8 K | 3.6 ± 1.0 | | | 4.0 ± 0.6 K** |
| LTS | 14.7 ± 0.6 K | 15.5 ± 0.8 | 14.3 +/- 0.7 K | | 14.9 ± 0.7 |
| Cloud Patterns | sugar | a flower | a flower | sugar | sugar |

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 | UK MET | OBS CE |
|------------------|------------|--------------------|
| LCL | 600 m | 683 +/- 67 m |
| inversion height | 2 km | 2 km |
| Cirrus Top | - | - |
| PW | 36.0 mm | 32.3 +/- 2.1 mm |
| Sfc wind | 8 m/s, 96° | 6.7 m/s; 92° |
| Cloud pattern | sugar | sugar and a flower |

4. Figures

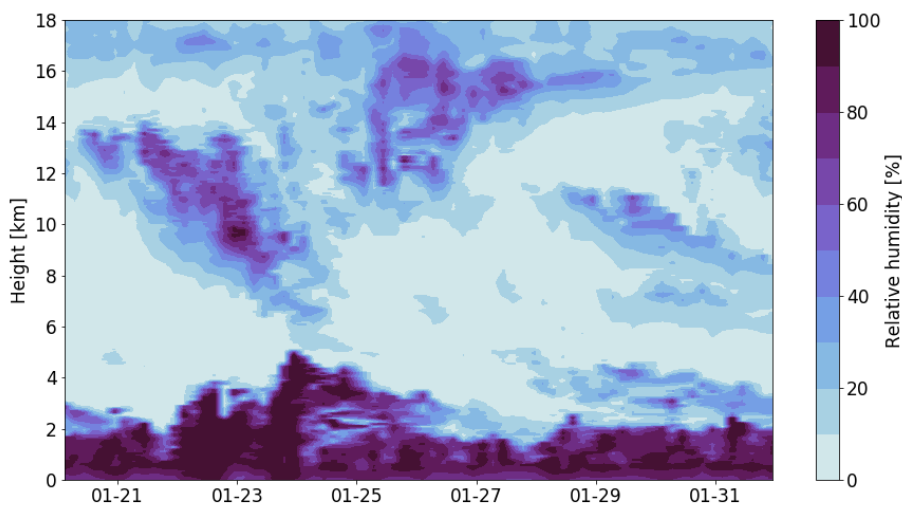


Figure 1: Soundings from BCO throughout EUREC⁴A.

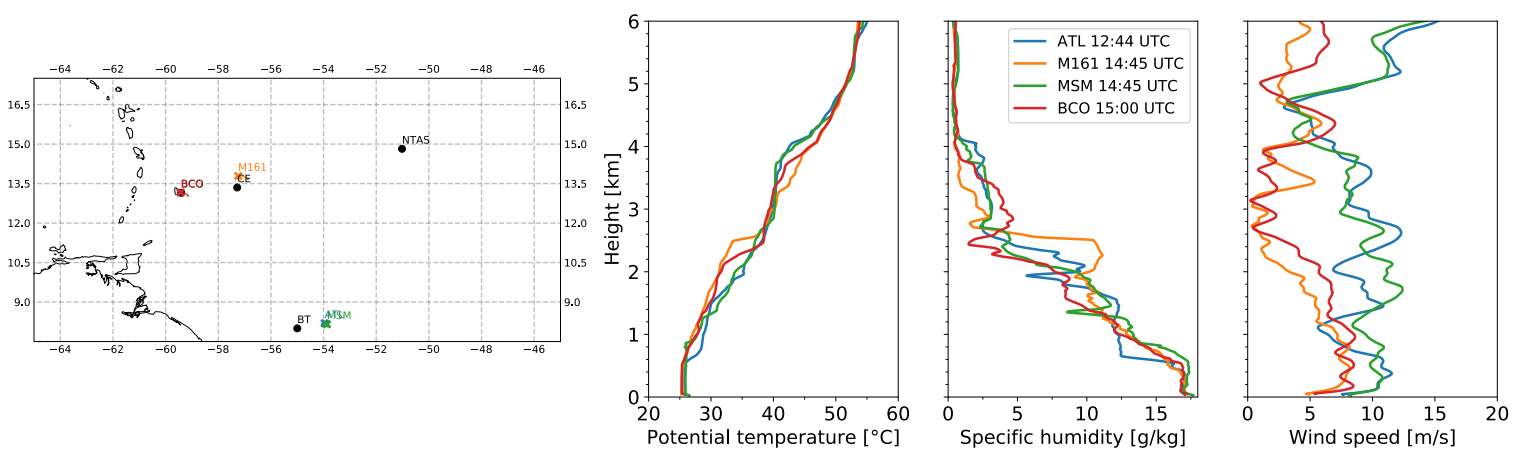


Figure 2: Soundings from four different stations.