# Meteor 0128 (2020)

Stefan Kinne ( 29 jan 2am)

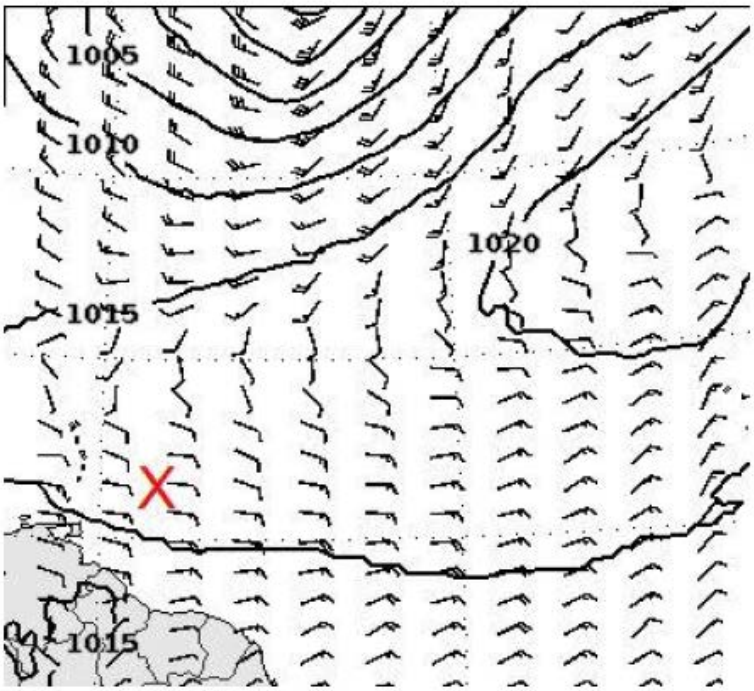
## 1. Objective

A new attempt to get cloud-kite data over a longer distance. Regular CTD every couple of hours and launching radiosondes at 2.45, 6.45, 10.45, 14.45, 18.45 and 22.45 UTC.

After we learned that direct co-locations with airplanes complicated matters, such that measurements would need to be interrupted, we stayed away from direct aircraft co-locations in time and rather focused on standard sampling on (or ta least near the 57.245W longitude between 12N and 14.5N. We had relative strong winds (of 6 m/s) so that with partly going into the wind sufficient lift was expected. Unfortunately, this relative wind was too weak for a fast lift of the cloud-kite instrument. Thus, at this time a relative wind of more than 12m/s is needed for a sufficient lift of the instrument to higher altitudes, which often is only possible when the METEOR steams into the wind without (CTD) stops. New track patterns will be tested in the next days, but long-term cloud-kite operations seem out of question in the designated Meteor area unless the wind increases or the instrument package is reduced.

## 2. Synoptic Situation

Satellitenbild GOES16 **28.01.2020** 13:00 UTC




Vorhersage für Mittwoch 12 UTC

## Weather observations (every 3hr)

```
20 01 28001 99134 70572 11498 10807 10257 20225 40160 53014 70200 81200 22272 04274
2//// 3//// 4//// 5//// 6//// ICE /////
 20 01 28031 99137 70572 46/// /1108 10262 20221 40164 50004 7//// 8//// 22202 04273
2//// 3//// 4//// 5//// 6//// ICE /////
```

```
 20 01 28061 99140 70572 16/// /1107 10260 20215 40150 57014 7//// 8//// 22202 04273
2//// 3//// 4//// 5//// 6//// ICE /////
 20 01 28091 99143 70572 46/// /1107 10257 20214 40143 55007 7//// 8//// 22282 04269
2//// 3//// 4//// 5//// 6//// ICE /////
 20 01 28121 99144 70572 11498 11007 10260 20210 40162 52019 70200 81800 22201 04269
20201 310// 40803 5//// 6//// ICE /////
 20 01 28151 99141 70572 41498 10907 10262 20215 40161 58001 70200 81200 22242 04270
20201 311// 40803 5//// 6//// ICE /////
 20 01 28181 99138 70572 11498 11007 10263 20211 40135 58026 70100 81200 22242 04274
20201 310// 40803 5//// 6//// ICE /////
 20 01 28211 99136 70572 41498 30909 10262 20213 40130 56005 70311 83200 22241 04273
20201 311// 40803 5//// 6//// ICE /////
```

High altitude cirrus cloud sheets in the morning, then blues skies before heading into the mid-level altocumulus cloud cover of a dying frontal system until the evening

## 3. Cruise-day Elements

IWV (integrated water vapor): 29 kg /m2 +/- 2
LWP (liquid water path): 26 g /m2 +/- 19

| Time | 0-3UTC | 4-6UTC | 7-9UTC | 10-12UTC | 13-15UTC | 16-18UTC |
|---|---|---|---|---|---|---|
| Height_m | 558.98 | 626.05 | 693.13 | 581.34 | 581.34 | 693.13 |
| max_hydro_frac_low | 0.18 | 0.10 | 0.05 | 0.05 | 0.8 | 0.11 |
| Height_m | 5008.41 | 1207.39 | 1207.39 | 1207.39 | 1207.39 | 1207.39 |
| max_hydro_frac_mid | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Height_m | 14965.51 | 14935.70 | 14965.51 | 14935.70 | 6004.98 | 6004.98 |
| max_hydro_frac_high | 0.01 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 |

Low=up to 1200m, mid=up to 6000m, high=up to 15000m

**hourly means of ship data** (1st line 0-1 UTC, 2nd line 1-2 UTC … last line 23-24 UTC)

| salinity PSU | Tdew °C | Tair °C | Twater °C | TrueDir deg | RH % | rel.Wind m/s | trueWind m/s | lw Rad W/m² | sw Rad W/m² | lat °N | lon °E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 35.1666 | 22.36 | 25.74 | 27.3 | 85.33 | 81.23 | 8.42 | 6.51 | 395.37 | -1 | 13.48 | -57.25 |
| 35.2129 | 22.46 | 25.85 | 27.36 | 89.83 | 81.15 | 7.5 | 6.87 | 399.2 | -1 | 13.59 | -57.25 |
| 35.2483 | 21.92 | 26.13 | 27.3 | 99.83 | 77.4 | 7.72 | 7.32 | 402.58 | -0.95 | 13.64 | -57.25 |
| 35.3383 | 21.66 | 26.15 | 27.32 | 110.5 | 75.93 | 7.81 | 8.07 | 405.85 | -1 | 13.77 | -57.25 |
| 35.358 | 21.36 | 26.09 | 27.23 | 114.52 | 74.87 | 7.4 | 7.45 | 387.28 | -1 | 13.88 | -57.25 |
| 35.3832 | 21.35 | 26 | 27.28 | 109.13 | 75.13 | 7.45 | 7.29 | 389.97 | -1 | 13.92 | -57.24 |
| 35.4532 | 21.17 | 25.93 | 27.09 | 109.95 | 74.62 | 6.91 | 7.01 | 386.7 | -1 | 14.06 | -57.24 |
| 35.5369 | 21.07 | 25.79 | 27.14 | 107.98 | 74.73 | 7.13 | 7.11 | 390.43 | -1 | 14.17 | -57.25 |
| 35.4937 | 21.01 | 25.7 | 26.99 | 107.36 | 74.9 | 7.35 | 7.19 | 383.52 | -1 | 14.21 | -57.24 |
| 35.4338 | 20.95 | 25.7 | 26.9 | 107.15 | 74.7 | 7.14 | 6.84 | 384.32 | -1 | 14.34 | -57.25 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 35.4285 | 21.14 | 25.76 | 26.97 | 105.18 | 75.27 | 6.51 | 6.36 | 383.85 | 28.43 | 14.46 | -57.25 |
| 35.4276 | 21.33 | 25.94 | 26.98 | 105.95 | 75.28 | 7.83 | 6.45 | 384.57 | 218 | 14.46 | -57.25 |
| 35.4315 | 21.4 | 26.02 | 26.91 | 105.33 | 75.25 | 9.47 | 7.24 | 389.82 | 440.77 | 14.34 | -57.24 |
| 35.4518 | 21.05 | 26.17 | 26.9 | 101 | 72.95 | 8.31 | 6.92 | 385.7 | 661.98 | 14.21 | -57.25 |
| 35.4636 | 21.37 | 26.18 | 26.94 | 87.22 | 74.48 | 6.98 | 6.37 | 386.93 | 815.45 | 14.17 | -57.24 |
| 35.5398 | 21.57 | 26.11 | 27.15 | 88.68 | 75.7 | 9.54 | 7 | 408.9 | 715.3 | 14.08 | -57.22 |
| 35.4248 | 21.14 | 26.15 | 27.29 | 96.1 | 73.52 | 10.72 | 7.62 | 401.05 | 909.18 | 13.98 | -57.13 |
| 35.3674 | 21.33 | 26.26 | 27.39 | 98.97 | 73.92 | 5.9 | 7.23 | 400.65 | 784.72 | 13.87 | -57.17 |
| 35.3482 | 21.2 | 26.28 | 27.5 | 90.75 | 73.2 | 7.45 | 7.05 | 390.28 | 701.4 | 13.79 | -57.25 |
| 35.3382 | 21.2 | 26.32 | 27.49 | 84.53 | 73.07 | 8.1 | 7.34 | 397.19 | 417.02 | 13.77 | -57.24 |
| 35.2243 | 21.27 | 26.25 | 27.37 | 92.97 | 73.68 | 9.37 | 7.98 | 396.67 | 255.98 | 13.65 | -57.24 |
| 35.1532 | 21.21 | 26.19 | 27.34 | 87.85 | 73.73 | 8.45 | 7.76 | 392.48 | 27.43 | 13.54 | -57.25 |
| 35.1724 | 21.34 | 26.17 | 27.33 | 89.68 | 74.37 | 9.24 | 8.07 | 391.77 | -0.98 | 13.5 | -57.24 |
| 35.3056 | 21.34 | 26.2 | 27.33 | 93.85 | 74.25 | 9.67 | 8.68 | 391.63 | -1 | 13.4 | -57.24 |

**inter-calibration:** **none**
**CTD stations:** **7**
**radiosondes**: **7**
**overflights:** **none**

| station no. | UTC | device | action | latitude | longitude | depth | contact person |
|---|---|---|---|---|---|---|---|
| M161 67 | 28 jan 2020 / 01:28-02:02 | CTD | CTD | 13°35.636 N | 57°14.715' W | 800 | Baranowski |
| M161 68 | 28 jan 2020 / 04:31-05:08 | CTD | CTD | 13°53.338 N | 57°14.693' W | 800 | Baranowski |
| M161 69 | 28 jan 2020 / 07:32-08:07 | CTD | CTD | 14°10.918 N | 57°14.722' W | 800 | Baranowski |
| M161 70 | 28 jan 2020 / 10:32-11:08 | CTD | CTD | 14°28.550 N | 57°14.726' W | 800 | Baranowski |
| M161 71 | 28 jan 2020 / 13:46-14:21 | CTD | CTD | 14°10.928 N | 57°14.731' W | 800 | Baranowski |
| M161 72 | 28 jan 2020 / 18:40-19:17 | CTD | CTD | 13°47.637 N | 57°14.737' W | 800 | Baranowski |
| M161 73 | 28 jan 2020 / 21:35-22:11 | CTD | CTD | 13°31.226 N | 57°14.745' W | 800 | Baranowski |

## 4. Instrument Status

Instrument-Status (**W**-working, **P**-partially-working, **F**-failure, **U**-untested)

| | | | status | operators |
|---|---|---|---|---|
| radiosondes | | | **W** | Katharina, Imke, Yanmichel, Almuth, Kevin, Sebastian, Geiske |
| cloud-radar | | | **W** | Heike, Johannes |
| micro-radiometer | | | **W** | Heike, Johannes |
| spect-radiometer | | | **W** | Heike, Johannes |
| Raman-lidar | | | **W** | Ludwig |
| cloud-kite | | | **W** | Oliver, Marcel, Marcel, Antonio, Robert, Sanola |

| | | | | |
|---|---|---|---|---|
| Picarro | | | W | Sebastian |
| micro-biology | | | W | Wiebke, Jan, Abiel |
| ADPC ocean curr. | | | W | Callum, Beth |
| thermosalinograph | | | W | Callum, Beth |
| glider | | | W | Callum, Beth |
| UAV | | | W | Darek, Jakub, Michal, Wojciech |
| eddy-flux-data | | | W | Katharina, Imke, Heike |
| wind-lidar (DTU) | | | W | Geiske, Kevin |
| wind-lidar (Bre) | | | F | Geiske, Kevin |
| MAX-DOAS | | | W | Alma |
| ceilometer | | | W | Stefan |
| cloud camera | | | W | Stefan |
| sunphotometer | | | W | Stefan, Przemek, Andreas, John, Sanola |
| aero scat/abs | | | W | Przemek (Mr P) |
| WRAS (aero size) | | | W | Alma |
| CTD | | | W | Darek and friends (almost all) |
| Rodney | | | W | Darek and his helpers |

## 5. Outlook

Tonight we will reach L2, reach the most southern point of the track and head back in a northerly direction. No cloud-kite operations are scheduled, so will follow the 57.245W latitude to the north and then turn around again at the northern point. We continue with regular (ca 3hrly) CTD and (4hrly) radiosonde launches.