

Meteor 0226 (2020)

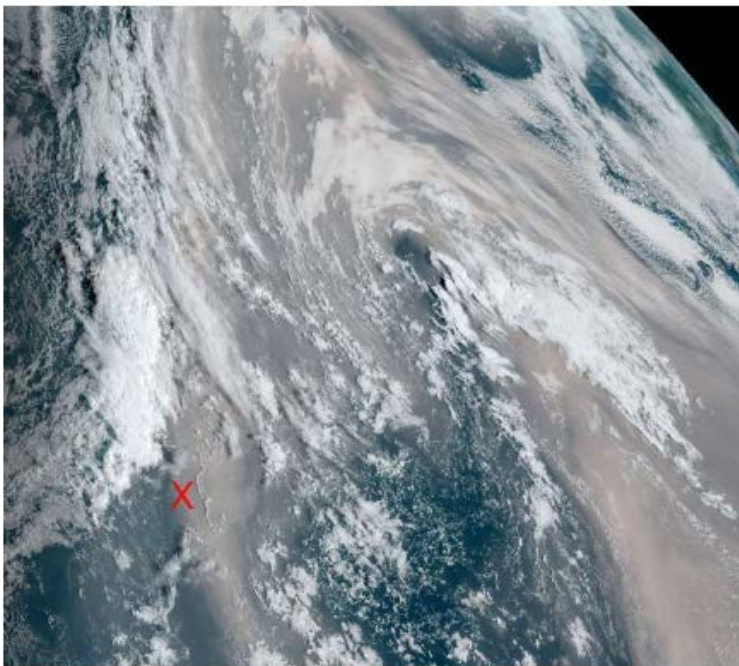
Stefan Kinne (27 feb 10am)

1. Objective

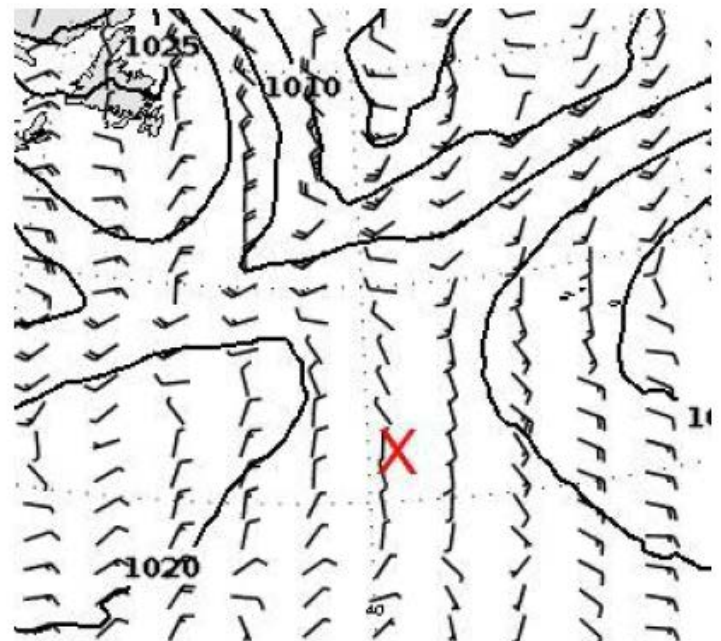
Deployment of one ARGO float with a CTD profile down to 2000m, other CTD (daily cycle investigation) casts and two radiosondes launches at 10.35 and 22.35UTC

We finally reached the dust plume. Cirrus was with us all day – more or less. Thus, sunphotometer samples always recorded a mixture although the dust AOD was dominating (AOD.550nm from 0.6 in the morning to 0.45 in the evening). Winds were very calm relatively: thus 3 CTD casts and UAV flights at those station.

2. Synoptic Situation



Satellitenbild GOES16 26.02.2020 10:20 UTC



Vorhersage für Donnerstag 12 UTC

Weather observations (every 3hr)

```
20 02 26001 99282 70438 16/// /0905 10208 20160 40207 53009 7///// 8///// 22212 04218
2///// 3///// 4///// 5///// 6///// ICE /////
20 02 26031 99285 70434 46/// /1004 10207 20163 40204 58003 7///// 8///// 22212 04217
2///// 3///// 4///// 5///// 6///// ICE /////
20 02 26061 99289 70431 16/// /1202 10204 20153 40189 58015 7///// 8///// 22212 04215
2///// 3///// 4///// 5///// 6///// ICE /////
20 02 26091 99293 70427 46/// /0804 10203 20155 40183 55006 7///// 8///// 22212 04216
2///// 3///// 4///// 5///// 6///// ICE /////
20 02 26121 99296 70424 11996 80803 10207 20148 40196 53013 70622 80007 22212 04216
20100 305/// 40904 5///// 6///// ICE /////
20 02 26151 99300 70420 41596 70503 10201 20156 40186 58010 70622 81108 22212 04217
20100 307/// 40904 5///// 6///// ICE /////
```

20 02 26181 99301 70418 11496 81003 10202 20163 40169 56017 70622 81107 22211 04218
 20100 307// 40904 5///// 6///// ICE /////
 20 02 26211 99303 70414 41497 70503 10204 20165 40173 53004 70622 82208 22212 04222
 20100 306// 40904 5///// 6///// ICE /////

Cirrus all day (so dust vs cirrus separation in sunphotometer (sun did not reach the horizon). Fairly dry atmosphere, no rain stinging still just between the dust-low to the east and the front with precipitation to the west.

3. Cruise-day Elements

IWV (integrated water vapor): 19 kg /m2 +/- 3
 LWP (liquid water path): 2 g /m2 +/- 44

| Time | 0-3UTC | 4-6UTC | 7-9UTC | 10-12UTC | 13-15UTC | 16-18UTC | 19-21UTC | 22-24UTC |
|---------------------|---------|---------|---------|----------|----------|----------|----------|----------|
| Height_m | 514.26 | 626.05 | 335.39 | 626.05 | 581.34 | 581.34 | 469.54 | 491.90 |
| max_hydro_frac_low | 0.04 | 0.02 | 0.00 | 0.00 | 0.01 | 0.02 | 0.05 | 0.10 |
| Height_m | 1207.39 | 1274.47 | 1207.39 | 1207.39 | 1207.39 | 1207.39 | 1207.39 | 1609.85 |
| max_hydro_frac_mid | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 |
| Height_m | 8375.27 | 8249.01 | 8417.36 | 9259.09 | 8627.79 | 7659.80 | 7912.32 | 7491.45 |
| max_hydro_frac_high | 0.81 | 0.99 | 0.51 | 0.46 | 0.68 | 1.00 | 0.87 | 0.87 |

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/m ² | sw Rad W/m ² | lat °N | lon °E |
|-----------------|------------|------------|--------------|----------------|---------|-----------------|-----------------|----------------------------|----------------------------|-----------|-----------|
| 36.9536 | 16.25 | 20.76 | 21.79 | 88.4 | 74.98 | 8.71 | 4.39 | 352.8 | -1 | 28.23 | -43.72 |
| 36.8921 | 16.36 | 20.65 | 21.67 | 91.67 | 76 | 8.95 | 4.83 | 356.17 | -1 | 28.36 | -43.6 |
| 36.8989 | 16.47 | 20.61 | 21.66 | 94.78 | 76.65 | 8.72 | 4.69 | 365.45 | -1 | 28.49 | -43.48 |
| 36.9389 | 15.83 | 20.67 | 21.7 | 102.7 | 73.4 | 7.96 | 4.18 | 373.37 | -1 | 28.61 | -43.35 |
| 36.9274 | 15.6 | 20.57 | 21.7 | 105.78 | 72.78 | 7.62 | 3.96 | 372.48 | -1 | 28.74 | -43.23 |
| 36.8943 | 15.4 | 20.4 | 21.6 | 115.13 | 72.57 | 6.39 | 2.66 | 363.05 | -1 | 28.86 | -43.11 |
| 36.8669 | 15.21 | 20.26 | 21.63 | 112.48 | 72.25 | 6.67 | 2.83 | 356.55 | -1 | 28.99 | -42.98 |
| 36.8834 | 14.65 | 20.18 | 21.65 | 93.42 | 70.12 | 7.41 | 3.17 | 347.95 | -1 | 29.11 | -42.86 |
| 36.9147 | 14.61 | 20.24 | 21.69 | 73.88 | 69.68 | 7.9 | 3.06 | 344.98 | -1 | 29.24 | -42.74 |
| 36.9213 | 14.89 | 20.21 | 21.59 | 91.57 | 70.97 | 8.41 | 4.14 | 341.92 | 25.3 | 29.37 | -42.61 |
| 36.9284 | 14.73 | 20.27 | 21.66 | 97.7 | 70.03 | 7.91 | 3.64 | 343.32 | 189.1 | 29.49 | -42.49 |
| 36.8888 | 14.31 | 20.52 | 21.63 | 84.77 | 67.13 | 5.07 | 2.88 | 342.65 | 387.42 | 29.6 | -42.38 |
| 36.8673 | 14.82 | 20.45 | 21.6 | 56.03 | 69.72 | 7.2 | 2.86 | 346.7 | 589.23 | 29.65 | -42.33 |
| 36.8499 | 14.15 | 20.4 | 21.52 | 39.9 | 66.97 | 8.34 | 2.8 | 346.83 | 716.03 | 29.79 | -42.19 |
| 36.8428 | 14.81 | 20.3 | 21.58 | 54.27 | 70.27 | 7.92 | 2.34 | 350.1 | 682.05 | 29.93 | -42.06 |
| 36.8691 | 15.38 | 20.32 | 21.66 | 49.22 | 72.8 | 2.46 | 1.88 | 350.62 | 659.28 | 30 | -41.98 |
| 36.8689 | 14.9 | 20.54 | 21.71 | 60.8 | 69.65 | 3.15 | 1.4 | 359.3 | 528.98 | 30.01 | -41.97 |
| 36.8645 | 16 | 20.24 | 21.85 | 87.52 | 76.2 | 8.15 | 3.06 | 361.17 | 328.97 | 30.08 | -41.84 |
| 36.8583 | 16.2 | 20.37 | 21.75 | 109.92 | 76.6 | 5.94 | 2.04 | 354.9 | 374.5 | 30.17 | -41.67 |

| | | | | | | | | | | | |
|---------|-------|-------|-------|-------|-------|------|------|--------|--------|-------|--------|
| 36.8561 | 16.23 | 20.75 | 21.65 | 94.28 | 74.83 | 4.22 | 1.64 | 349.78 | 189.22 | 30.21 | -41.59 |
| 36.9706 | 16.58 | 20.44 | 21.89 | 67.4 | 78.13 | 8.17 | 3.05 | 360.57 | 32.65 | 30.28 | -41.45 |
| 37.0007 | 16.5 | 20.41 | 21.92 | 48.88 | 77.9 | 8.08 | 3.01 | 360.37 | -1 | 30.37 | -41.28 |
| 36.9394 | 16.3 | 20.36 | 21.69 | 52.08 | 77.17 | 8.74 | 3.35 | 355.6 | -1 | 30.46 | -41.11 |
| 36.845 | 16.69 | 20.32 | 21.63 | 48.42 | 79.15 | 7.81 | 2.37 | 362.93 | -1 | 30.55 | -40.94 |

inter-calibration: none
CTD stations: 3
radiosondes: 2
overflights: none

| station no. | date / time UTC | device | action | latitude [°N] | longitude [°W] |
|-------------|---------------------------|--------|--------|---------------|----------------|
| M161 249 | 26 feb 2020 / 11:36-12:03 | CTD | 500m | 29°36.715 N | 42°22.117' W |
| M161 250 | 26 feb 2020 / 15:10-16:29 | CTD | 2000m | 30°00.102 N | 41°58.921' W |
| M161 251 | 26 feb 2020 / 16:38 | ARGO | Deploy | 30°00.226 N | 41°58.921' W |
| M161 252 | 26 feb 2020 / 18:56-19:20 | CTD | 500m | 30°11.727 N | 41°37.008' W |

4. Instrument Status

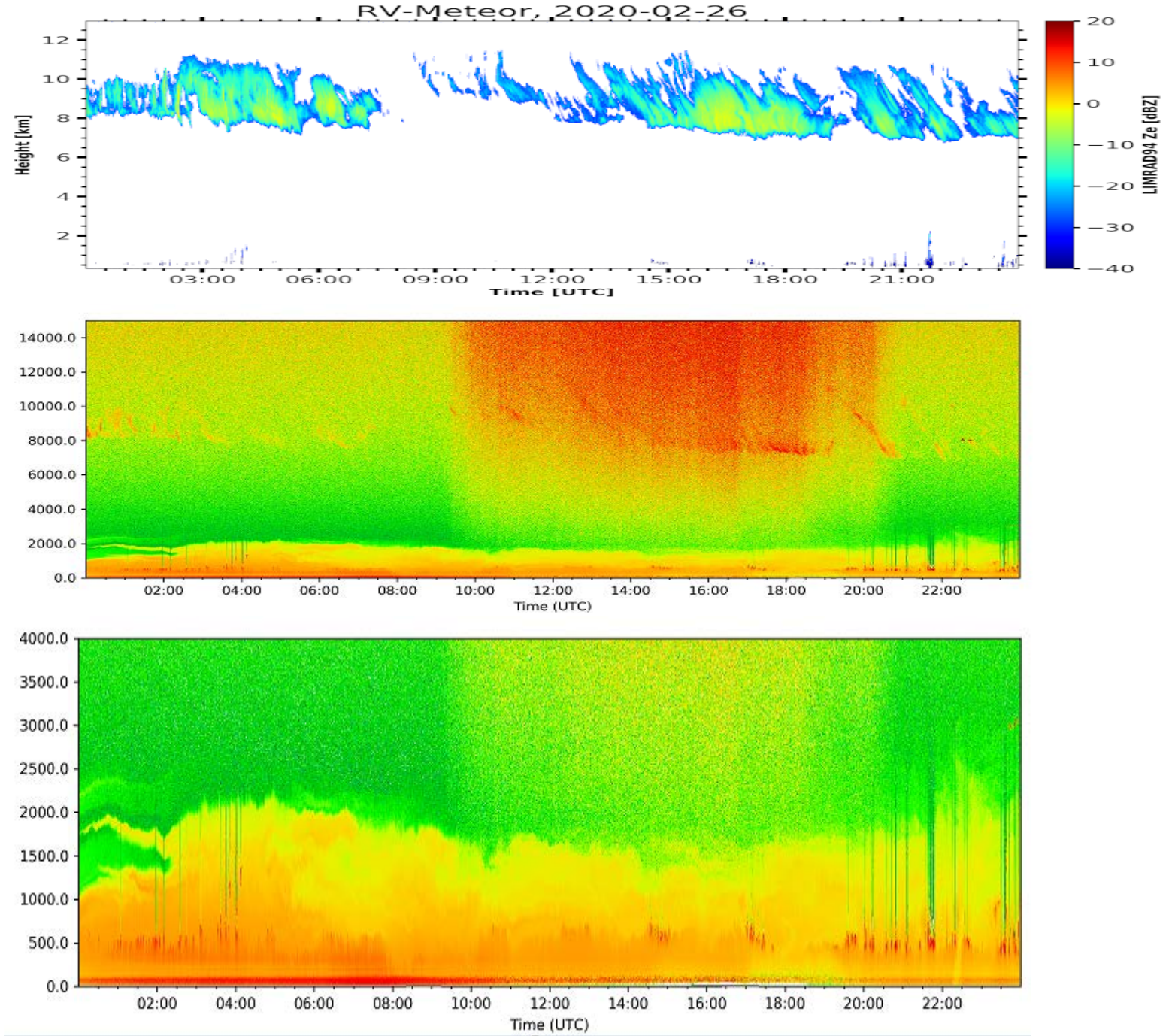
Instrument-Status (**W**-working, **P**-partially-working, **F**-failure, **U**-untested, **R**-ready, **L**-lost, **S**-stopped)

| | 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 |
| spare cloud-kite | S | 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 | S | Callum, Beth |
| UAV | W | Darek, Jakub, Michal, Wojciech |
| eddy-flux-data | W/S | Katharina, Imke, Heike |
| wind-lidar (DTU) | W | Geiske, Kevin |
| wind-lidar (Bre) | W | 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, Przemek, Beth, Callum, Alma, Sanola, Kevin, Robert, Wojtek, Almuth |
| Rodney | | | S | Darek, Jakub, Przemek |

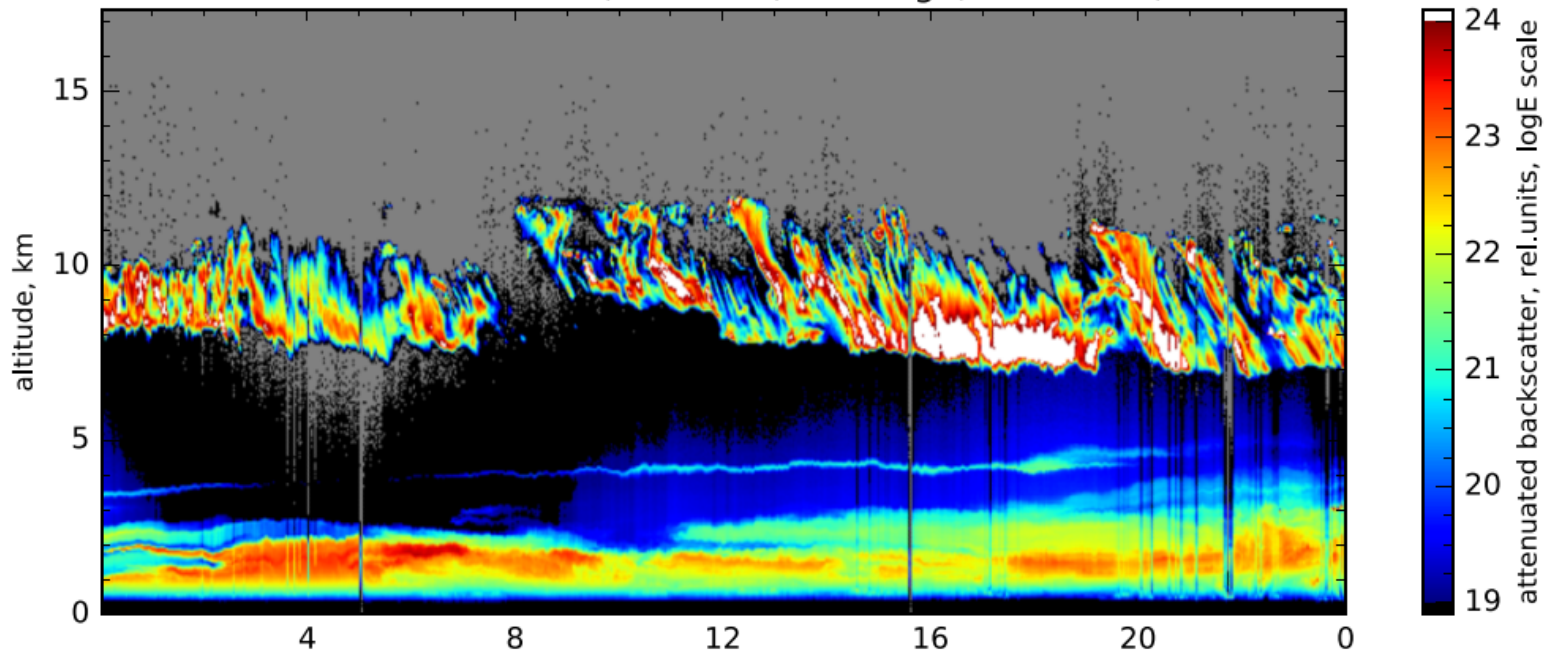
5. Outlook

Tomorrow will sink the fourth ARGO float and continue to Ponta Delgada

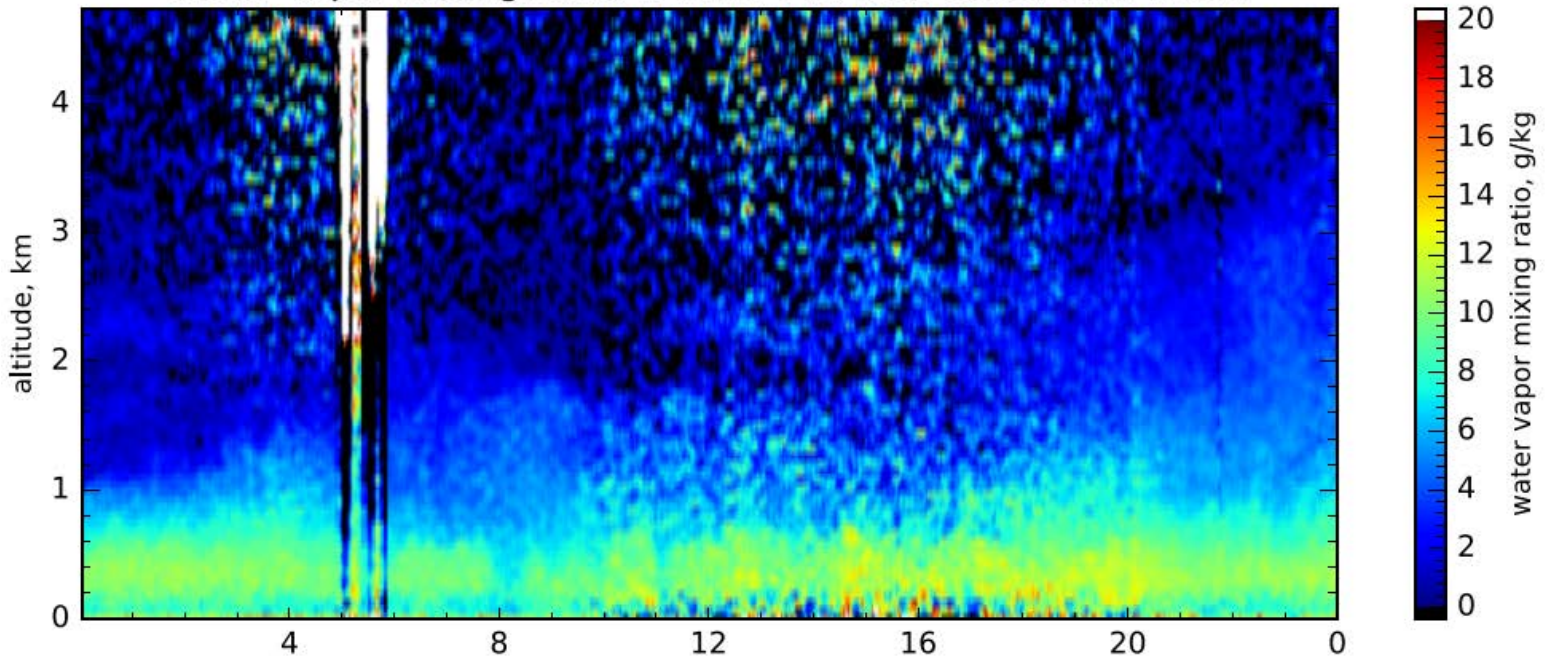


METEOR radar (top) and ceilometer (center and bottom) on Feb 26

attenuated backscatter, 1064nm, far range, res.: 120s, 60m

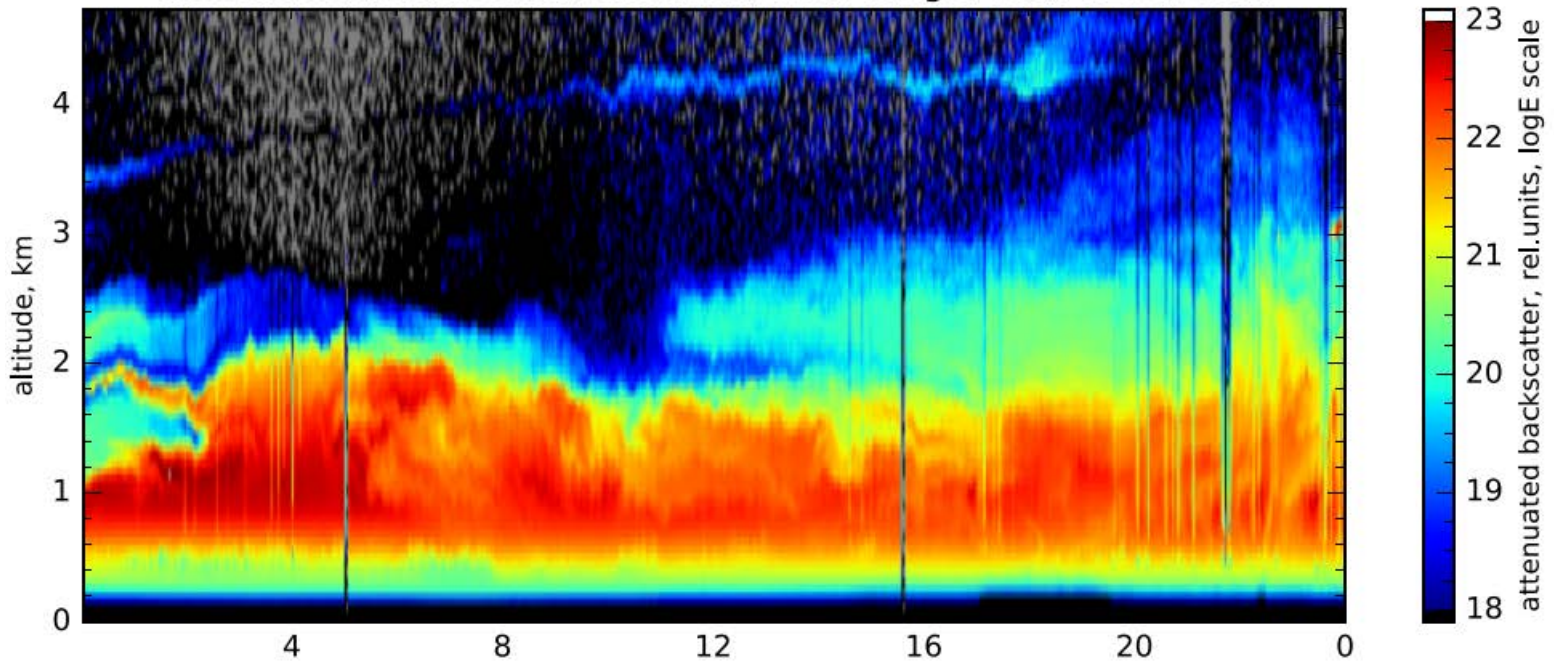


Water vapor mixing ratio, FAR+NEAR, res.: 600s, 60m-180m

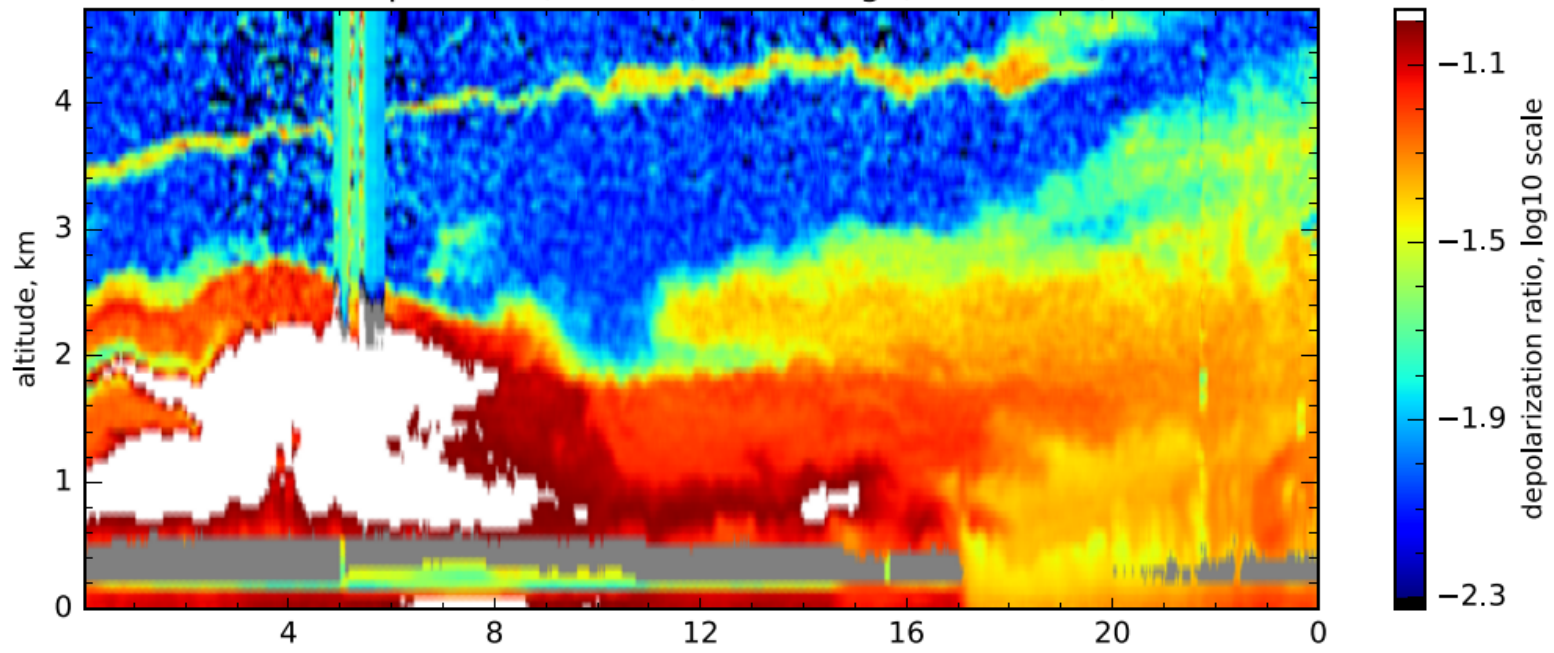


Raman lidar on Feb 26: backscatter (up to 15km) and water vapor (up to 5km)

attenuated backscatter, 1064nm, near range, res.: 120s, 60m

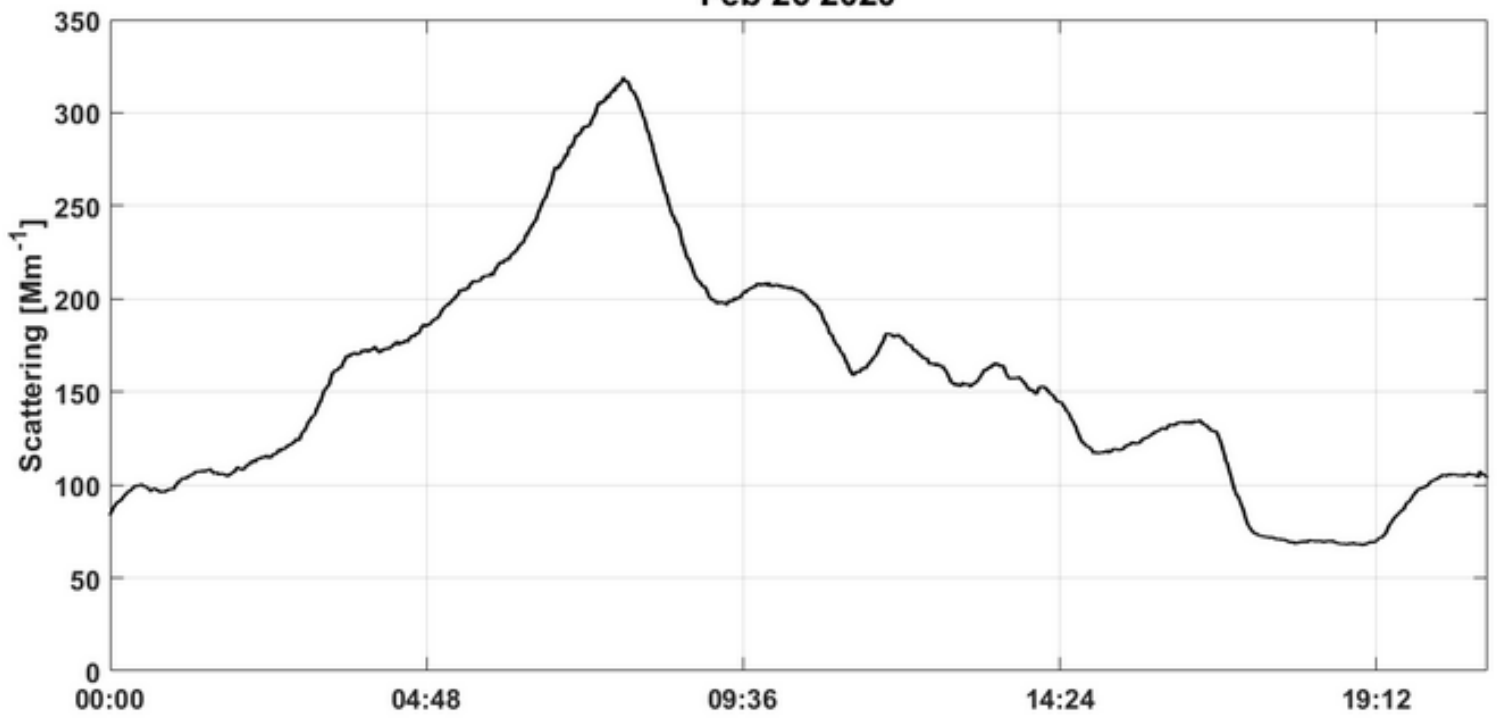


Volume linear depol. ratio, 532nm, near range, res.: 600s, 60m-180m



Raman lidar (lower 5km) on Feb 26: backscatter and depolarization

Feb 26 2020



In-situ scattering at the surface