

Meteor 017 (2020)

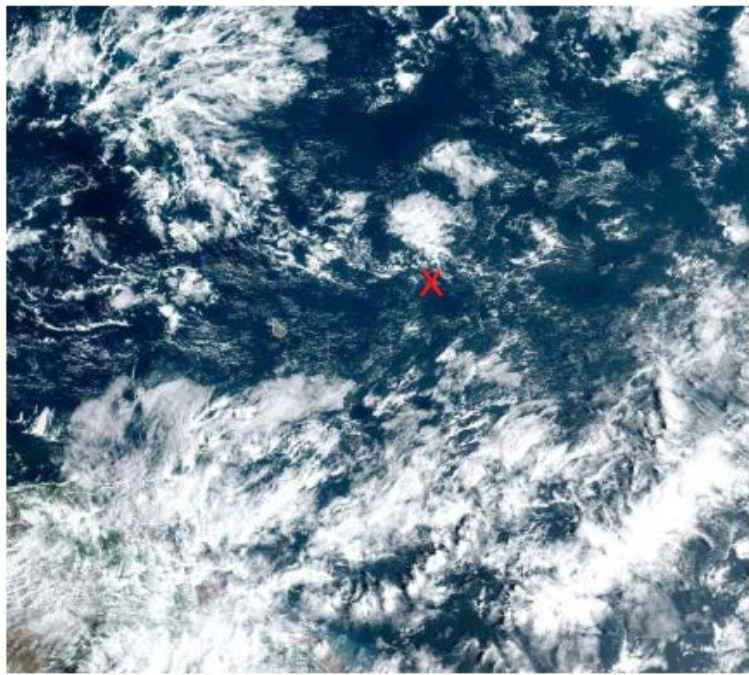
Stefan Kinne (18 feb 2am)

1. Objective

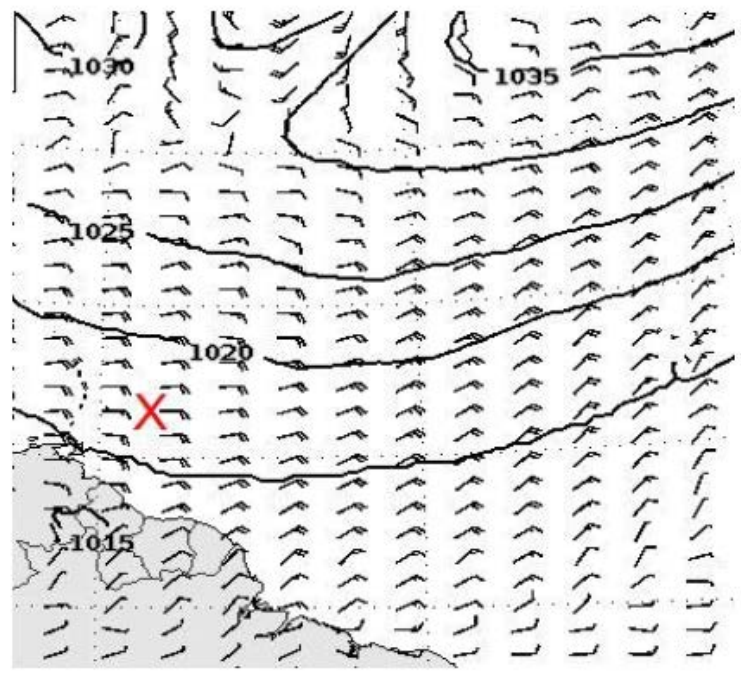
Exchange of goods with the MERIAN on the sea. Collecting regular CTD casts every 3 hours on the way down to L2.

Overnight we had reached the northern point of the METEOR track and headed south with regular CTD casts at the usual stop. The regular radiosonde launches have been stopped, The DWD will just launch 1 sonde for the midnight time slot (22.45 UTC) and our ca 20 remaining sondes will be launched at opportunities on the transit to the Azores (e.g. AEOLUS wind lidar validations, or specific convections). After we finished the CTD at the center position of the METEOR track, we met the MERIAN in the afternoon (19 UTC) only to find out that their crane does not work. Do we went our own ways to meet again in two days in calmer water near Barbados. We good sunphotometer sampling conditions we noticed that elevated dust aerosol is back and (if believing models) is getting worse over the next days.

2. Synoptic Situation



Satellitenbild GOES16 17.02.2020 13:20 UTC



Vorhersage für Dienstag 12 UTC

Weather observations (every 3hr)

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20 02 17001 99142 70569 16/// /0810 10259 20210 40152 51009 7///// 8///// 22221 04268
2///// 3///// 4///// 5///// 6///// ICE /////
 20 02 17031 99142 70567 46/// /0810 10260 20208 40157 52005 7///// 8///// 22221 04269
2///// 3///// 4///// 5///// 6///// ICE /////
 20 02 17061 99143 70570 16/// /0810 10257 20203 40143 58014 7///// 8///// 22272 04267
2///// 3///// 4///// 5///// 6///// ICE /////

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20 02 17091 99145 70572 46/// /0812 10255 20201 40140 55003 7///// 8///// 22272 04268
2///// 3///// 4///// 5///// 6///// ICE /////
20 02 17121 99142 70572 11498 50810 10259 20202 40160 52020 70282 85800 22242 04268
20302 309/// 40803 5///// 6///// ICE /////
20 02 17151 99139 70572 41598 20811 10263 20206 40168 51008 72581 82200 22242 04270
20302 310/// 40803 5///// 6///// ICE /////
20 02 17181 99136 70572 11597 20811 10263 20206 40146 57022 70381 82800 22242 04270
20302 309/// 40904 5///// 6///// ICE /////
20 02 17211 99133 70572 41597 10711 10264 20202 40142 55004 70100 81200 22242 04271
20302 308/// 40904 5///// 6///// ICE /////

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Blue skies with sporadic low altitude clouds (sometimes with a few rain-drops) were back again and so is dust. No mid and high level (cirrus) clouds.

3. Cruise-day Elements

IWV (integrated water vapor): 38 kg /m2 +/- 2
LWP (liquid water path): 57 g /m2 +/- 276

Time	0-3UTC	4-6UTC	7-9UTC	10-12UTC	13-15UTC	16-18UTC	19-21UTC
Height_m	715.49	737.85	648.41	626.05	804.93	715.49	760.21
max_hydro_frac_low	0.04	0.14	0.50	0.23	0.17	0.09	0.07
Height_m	1207.39	1207.39	1207.39	1207.39	1252.11	1252.11	2124.11
max_hydro_frac_mid	0.00	0.01	0.42	0.13	0.09	0.03	0.05
Height_m	7323.10	8585.71	6138.04	12836.47	12878.56	12836.47	12920.65
max_hydro_frac_high	0.13	0.12	0.01	0.00	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	Tdew	Tair	Twater	TrueDir	RH	rel.Wind	trueWind	lw Rad	sw Rad	lat	lon
PSU	°C	°C	°C	deg	%	m/s	m/s	W/m ²	W/m ²	°N	°E
35.3685	21.1	25.88	26.82	75.23	74.6	10.75	9.58	399.75	-1	14.18	-56.9
35.3817	20.95	25.99	26.81	89.35	73.37	11.6	9.38	397.65	-1	14.18	-56.87
35.416	20.91	26.06	26.89	84.25	72.88	12.65	10.02	399.67	-1	14.18	-56.78
35.4506	20.5	26.02	26.95	85.55	71.22	10.05	9.89	395.12	-1	14.18	-56.73
35.4551	20.61	25.84	26.9	88.3	72.48	6.95	10.35	396.68	-1	14.23	-56.81
35.4113	20.62	25.77	26.86	84.03	72.82	7.44	10.36	403.22	-1	14.3	-56.94
35.3063	20.62	25.68	26.77	80.78	73.15	10.29	10.21	399.4	-1	14.33	-57
35.3047	20.86	25.6	26.71	85.78	74.7	8.19	11.4	411.78	-1.08	14.38	-57.07
35.366	20.79	25.15	26.77	88.83	76.4	8.71	11.57	437.07	-1.03	14.45	-57.2
35.4154	20.25	25.67	26.86	81.43	71.58	12.02	11.64	400.23	-1.08	14.47	-57.24
35.3971	20.82	25.55	26.86	76.85	74.75	11.75	11.63	399.8	31.27	14.36	-57.24
35.3519	21.1	25.6	26.81	76.18	75.82	9.99	9.88	411.65	145.57	14.22	-57.25
35.2807	21.25	25.67	26.8	74.88	76.3	11.18	10.39	412.13	422.82	14.18	-57.24
35.4992	20.58	26.24	26.9	91.8	70.62	11.84	10.9	398.92	615.28	14.07	-57.24

35.5701	20.61	26.28	27.04	87.97	70.65	11.63	10.78	405.3	701.95	13.93	-57.25
35.5621	20.89	26.32	27.08	82.72	71.7	10.37	10	403.35	873.47	13.89	-57.25
35.5452	20.84	26.4	27.03	86.87	71.12	12.28	10.94	400.78	919.77	13.82	-57.24
35.5074	21.07	26.36	26.98	81.63	72.33	12.03	11.31	404.45	824.68	13.65	-57.24
35.505	20.35	26.36	27.06	80.2	69.12	11.24	10.72	399.17	716.7	13.59	-57.25
35.4888	20.33	26.39	27.01	82.62	68.98	12.26	11.29	405.25	465.82	13.49	-57.24
35.5094	20.26	26.43	27.04	77.52	68.43	11.89	11.44	393.48	279.87	13.33	-57.25
35.5339	20.69	26.33	27.08	77.87	70.68	11.82	11.37	398.9	54.67	13.27	-57.24
35.7952	20.8	26.34	27.18	79.83	71.18	11.55	10.98	418.07	-0.73	13.13	-57.24
35.9377	21.58	26.44	27.2	74.56	74.22	11.02	10.72	439.54	-0.9	13.01	-57.25

inter-calibration: Merian (close at 19UTC)
 CTD stations: 9
 radiosondes: 1
 overflights: none

station no.	UTC	device	action	latitude	longitude	depth	contact person
M161 221	17 feb 2020 / 00:27-21:06	CTD	CTD	14°10.922 N	56°54.016' W	800	Baranowski
M161 222	17 feb 2020 / 03:07-03:40	CTD	CTD	14°10.938 N	56°44.063' W	800	Baranowski
M161 223	17 feb 2020 / 06:03-06:41	CTD	CTD	14°19.747 N	56°59.846' W	800	Baranowski
M161 224	17 feb 2020 / 08:55-09:30	CTD	CTD	14°28.580 N	57°14.778' W	800	Baranowski
M161 225	17 feb 2020 / 11:51-12:31	CTD	CTD	14°10.927 N	57°14.725' W	800	Baranowski
M161 226	17 feb 2020 / 15:15-16:00	CTD	CTD	13°53.317 N	57°14.702' W	800	Baranowski
M161 227	17 feb 2020 / 17:57-18:35	CTD	CTD	13°35.643 N	57°14.733' W	800	Baranowski
M161 228	17 feb 2020 / 20:38-21:15	CTD	CTD	13°17.993 N	57°14.736' W	800	Baranowski
M161 229	17 feb 2020 / 23:28-01:50	CTD	CTD	13°00.032 N	57°14.723' W	800	Baranowski

4. Instrument Status

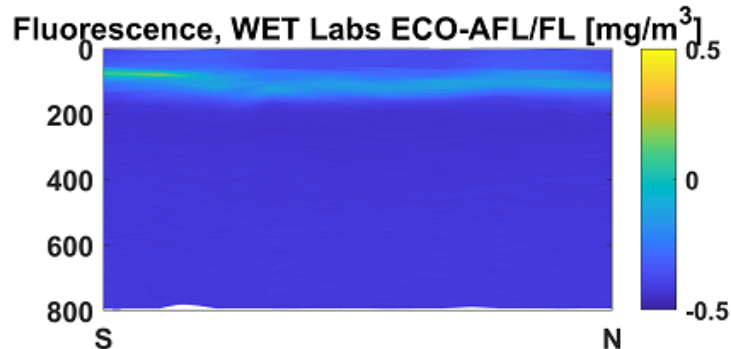
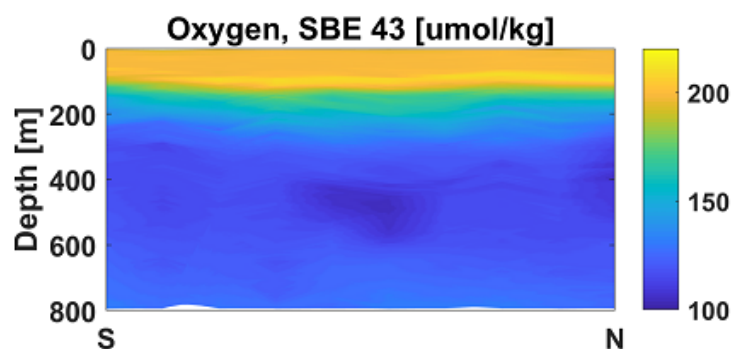
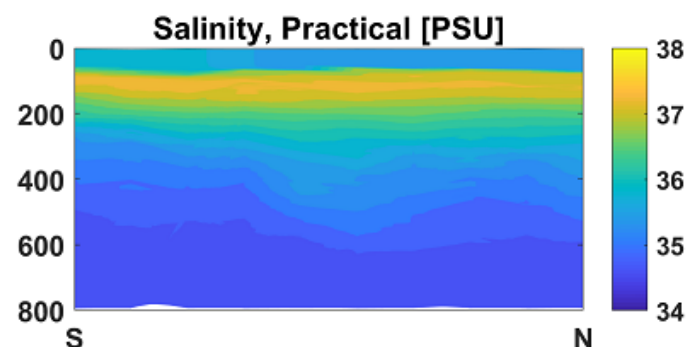
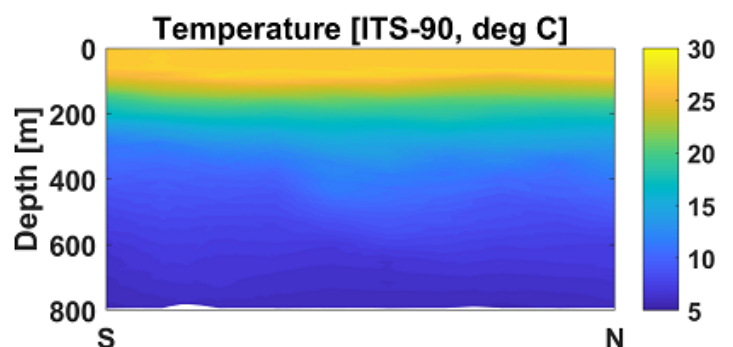
Instrument-Status (W-working, P-partially-working, F-failure, U-untested, R-ready, L-lost)

	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	F	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)		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		W	Darek, Jakub, Przemek

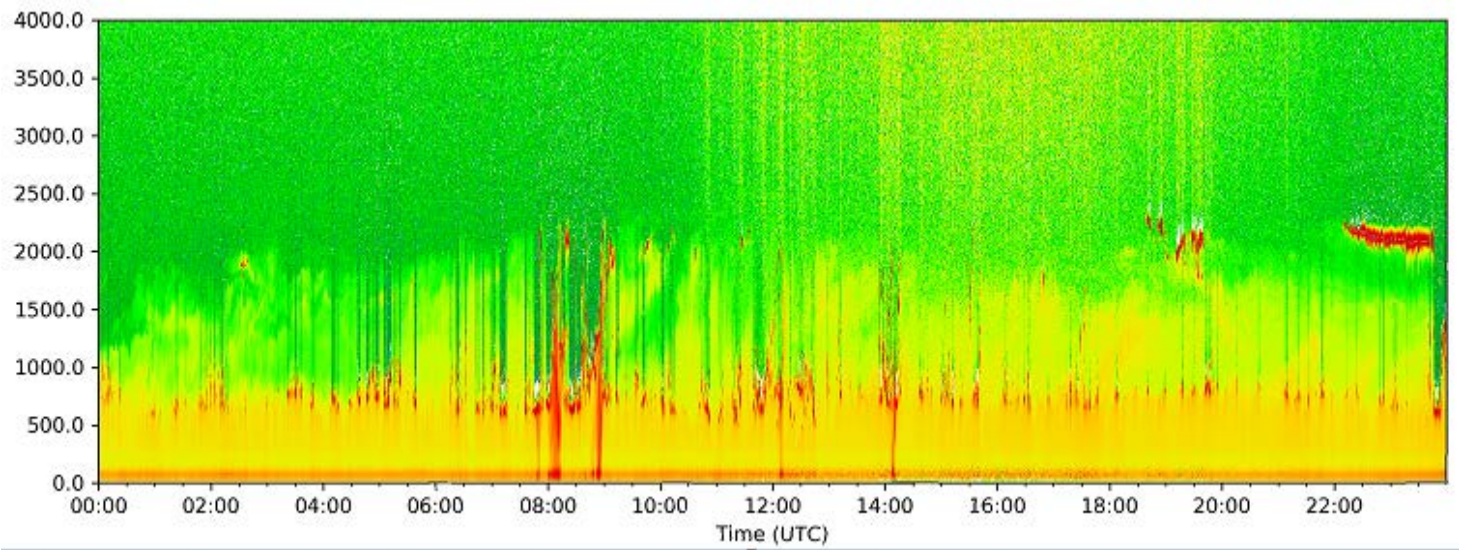
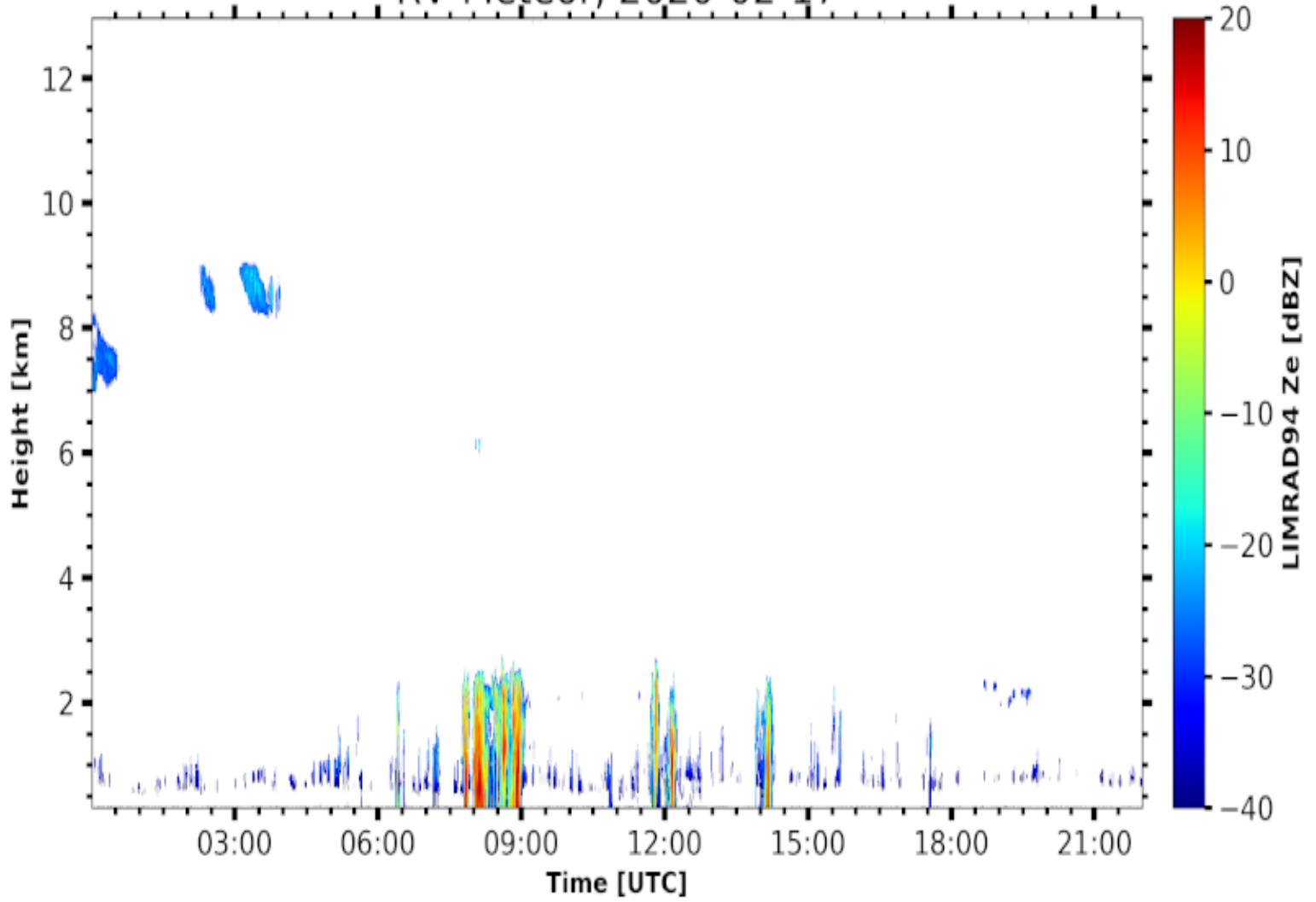
5. Outlook

Tonight we will reach the southern turning point and then head north until the center of the track. We then hope for clouds and plan to go with the wind towards Barbados (for the hopefully then successful inter-ship transfer of goods then in calmer waters).



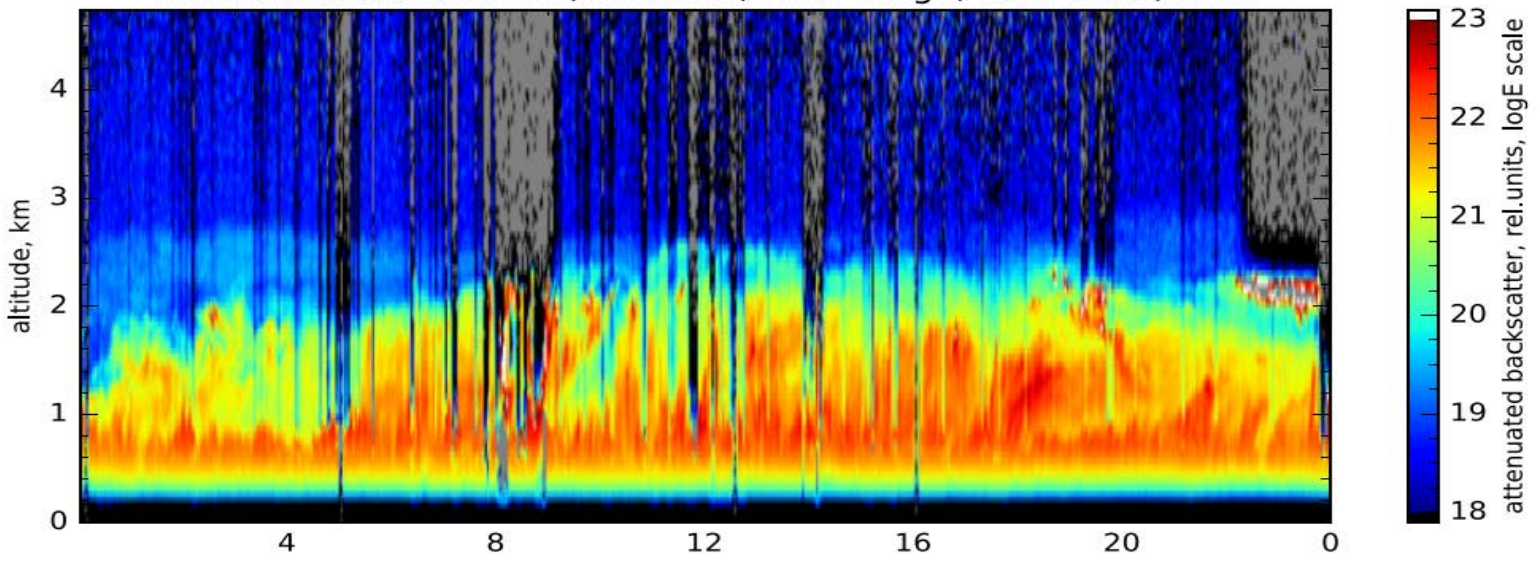
CTD cast data for Feb 17.

RV-Meteor, 2020-02-17

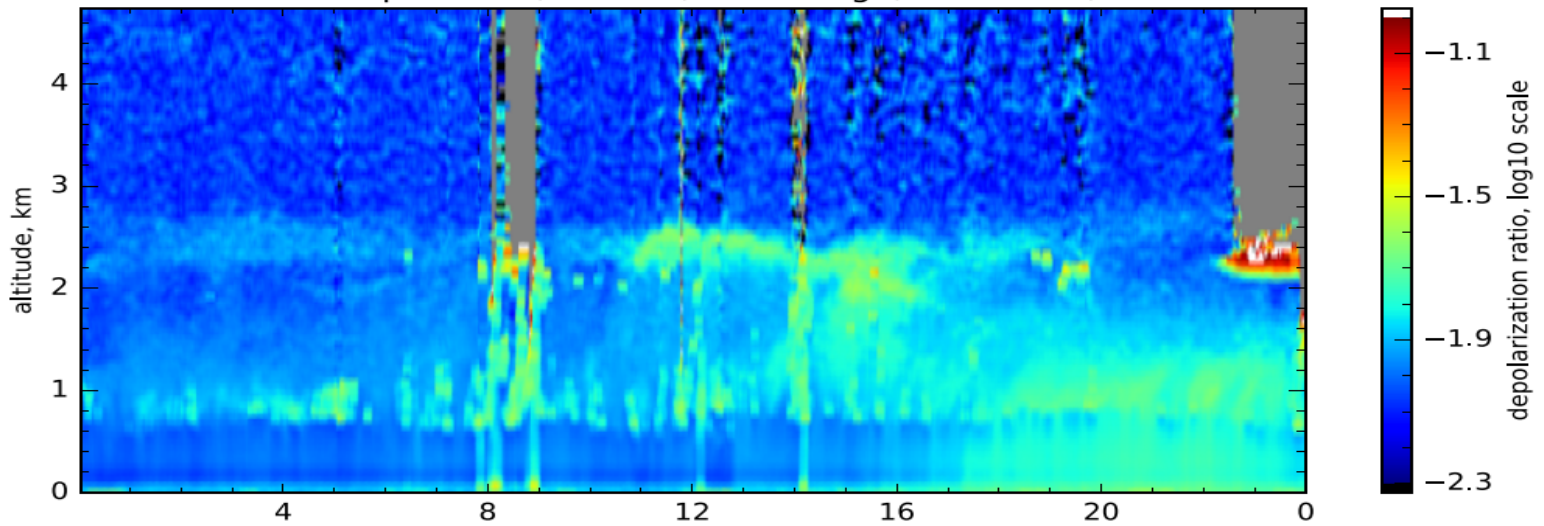


METEOR cloud-radar data f(top) and ceilometer (bottom) of Feb17

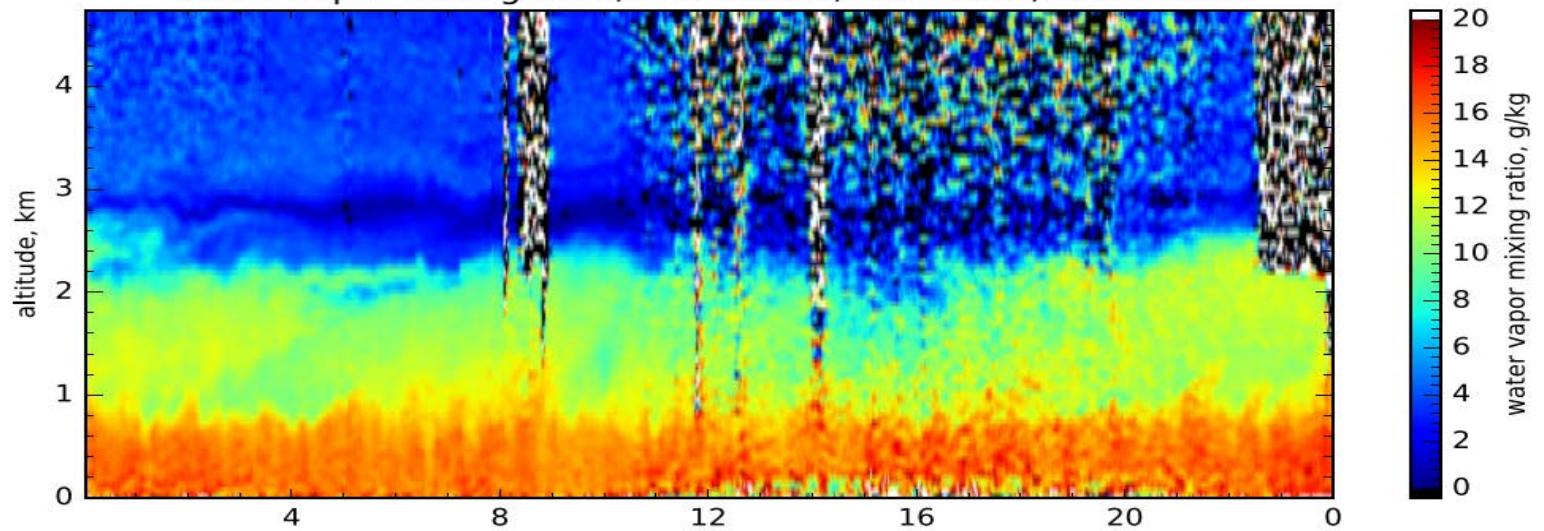
attenuated backscatter, 1064nm, near range, res.: 120s, 60m



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

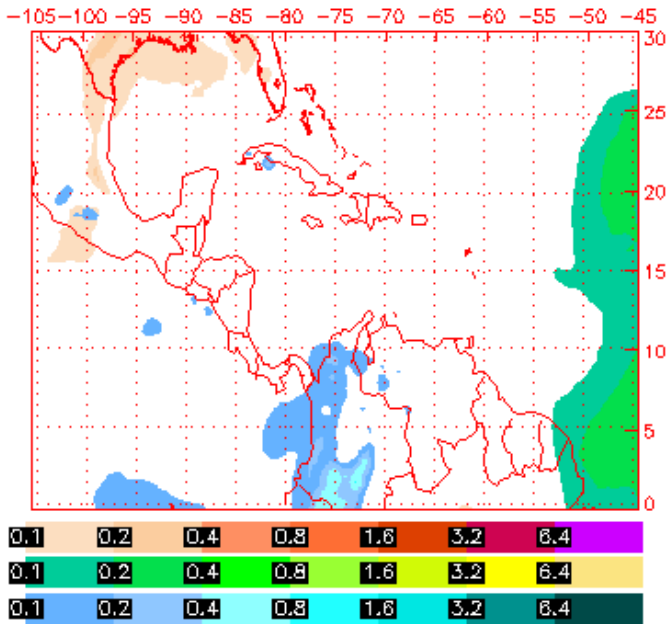


Water vapor mixing ratio, FAR+NEAR, res.: 600s, 60m-180m

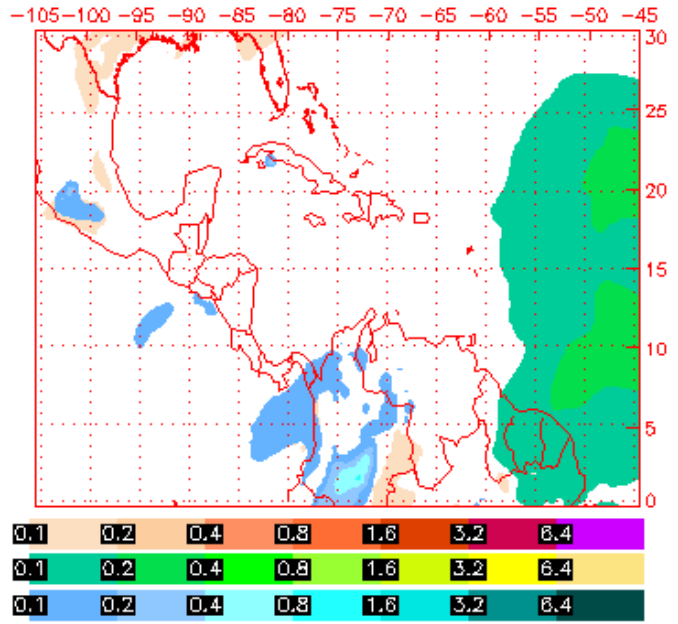


Raman-lidar data on Feb 17 (backscatter, depolarization, water vapor)

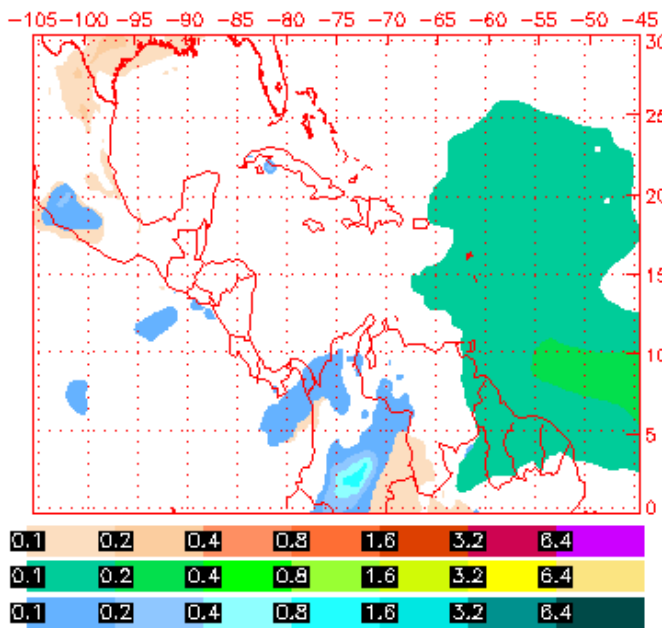
NAAPS Total Optical Depth for 18:00Z 17 Feb 2020
 Sulfate: Orange/Red, Dust: Green/Yellow, Smoke: Blue



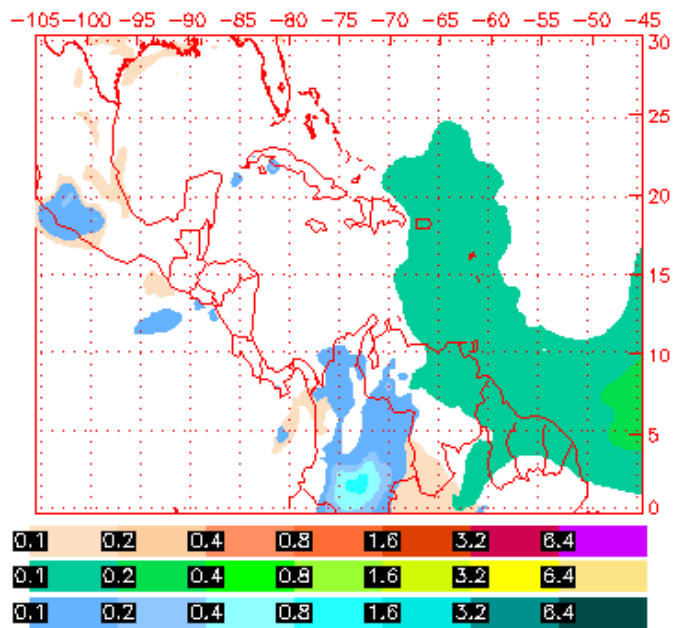
NAAPS Total Optical Depth for 18:00Z 18 Feb 2020
 Sulfate: Orange/Red, Dust: Green/Yellow, Smoke: Blue



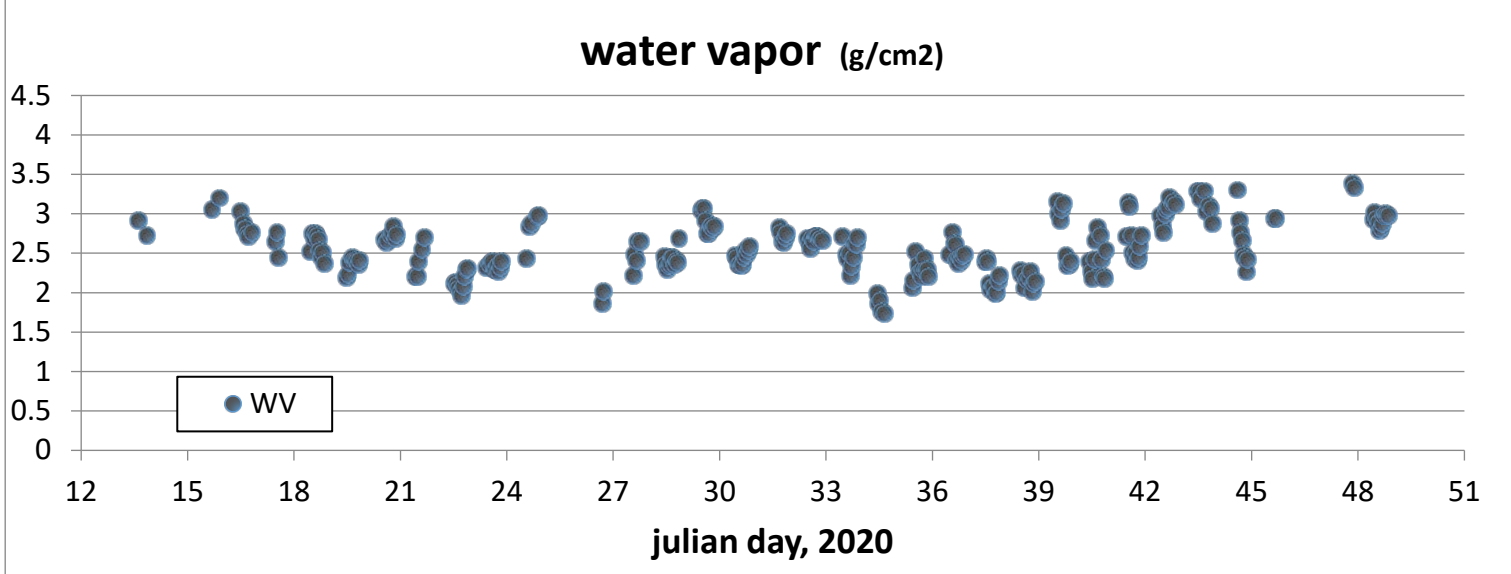
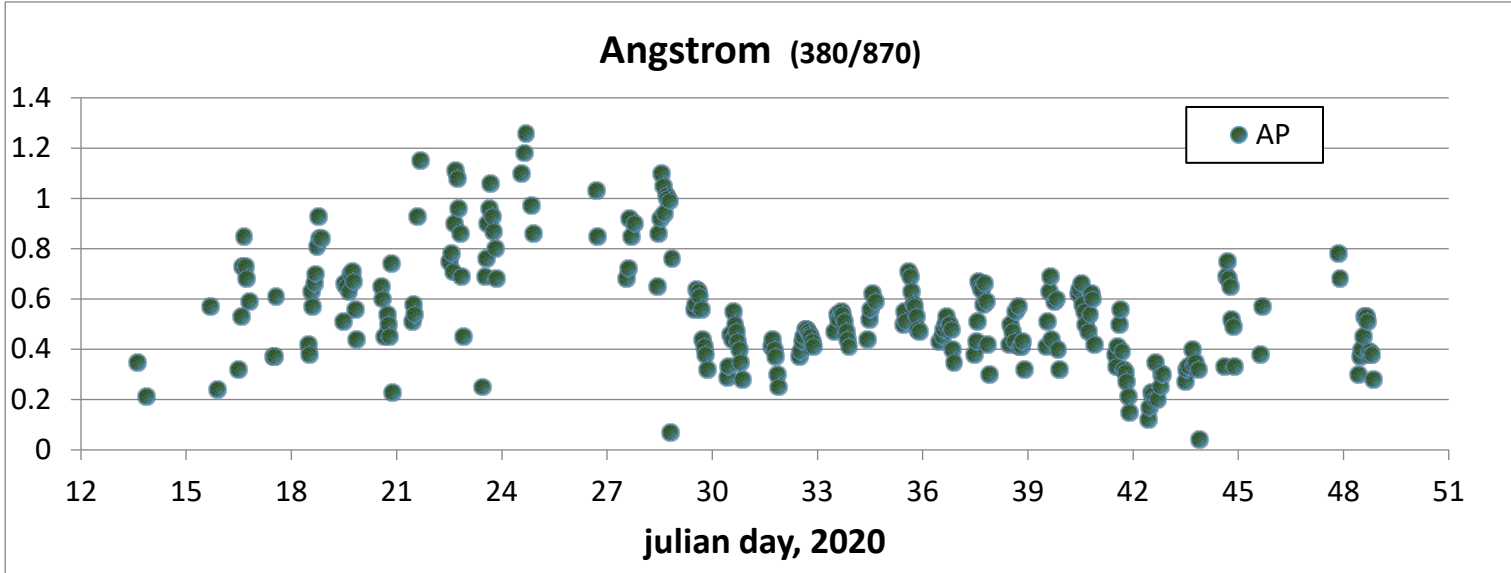
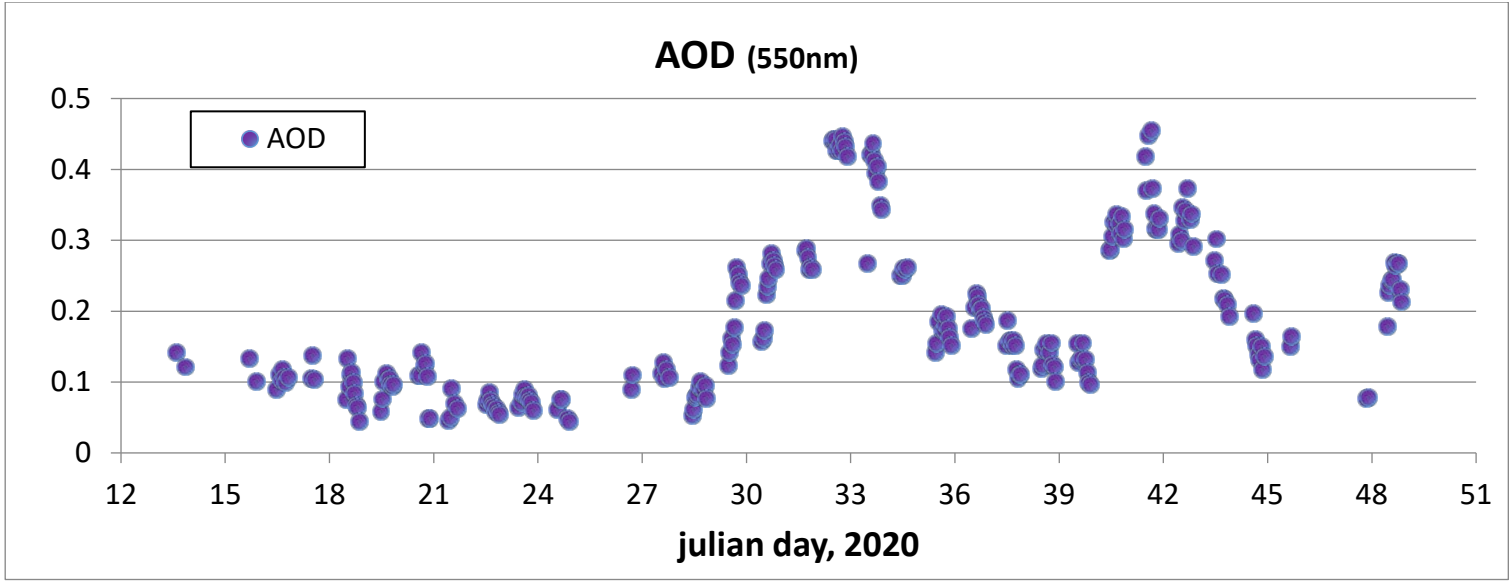
NAAPS Total Optical Depth for 18:00Z 19 Feb 2020
 Sulfate: Orange/Red, Dust: Green/Yellow, Smoke: Blue



NAAPS Total Optical Depth for 18:00Z 20 Feb 2020
 Sulfate: Orange/Red, Dust: Green/Yellow, Smoke: Blue



NRL NAAPS model forecast for aerosol AOD by type for 18UC (14LT) on Feb 17 (upper left), Feb 18 (upper right) Feb 19 (lower left) and Feb 20 (lower right).



MICROTOPS hourly average for AOD (amount), Angstrom (1/size) and (clr) water vapor content, [Jan13-Feb17]