Meteor 0203 (2020)

Stefan Kinne (4 feb 2am)

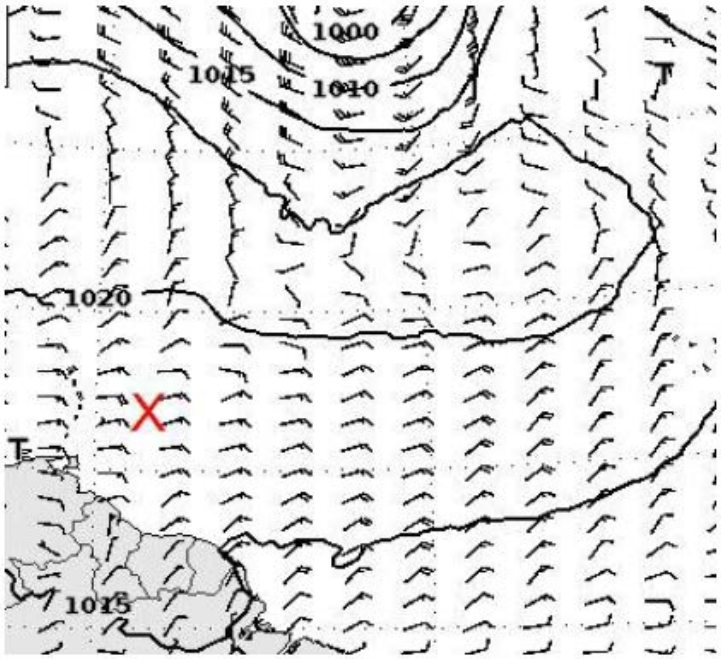
1. Objective

Rescuing the MERIAN glider at 11.6N, 59.2W. An extended (12 hour!) continuous cloud-kite operation into the wind (back to METEOR track). Radiosonde launches at 2.45, 6.45, 14.45, 16.33 (DWD), 18.45 and 22.45 UTC.

We reached the glider area early in the morning. However, it took at least one full hour to locate the glider as sargassm patches complicated a detection. We had entered the Trinidad EEZ, so all instruments (except for the ceilometer) had to be turned off of disabled between late night and noon. Once back in the Notem zone (after our only CTD today) we used the 12 hour ride back to the METEOR track to give the cloud-kite group (as sufficient lift requires a movement into the wind) an opportunity for a long time sampling period. Dust was still in the air (dust AOD estimated at 0.1), as we had followed the dust plume on the excursion to the glider rescue region.

2. Synoptic Situation

Satellitenbild GOES16 **03.02.2020** 13:10 UTC



Vorhersage für Dienstag 12 UTC

Weather observations (every 3hr)

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20 02 03001 99127 70573 11598 10807 10266 20203 40175 53015 70200 81100 22281 04276
2//// 3//// 4//// 5//// 6//// ICE /////
 20 02 03031 99124 70578 46/// /0807 10265 20201 40176 50001 7//// 8//// 22253 04276
2//// 3//// 4//// 5//// 6//// ICE /////
 20 02 03061 99121 70583 16/// /0808 10262 20209 40160 58016 7//// 8//// 22253 04276
2//// 3//// 4//// 5//// 6//// ICE /////
 20 02 03091 99118 70589 46/// /0808 10262 20201 40160 55000 7//// 8//// 22253 04279
2//// 3//// 4//// 5//// 6//// ICE /////
```

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 20 02 03121 99116 70592 11598 30909 10267 20186 40178 52018 70300 81205 22252 04278
20201 310// 40803 5//// 6//// ICE /////
 20 02 03151 99119 70592 41998 60907 10268 20204 40187 50009 70311 80006 22282 04278
20201 309// 40803 5//// 6//// ICE /////
 20 02 03181 99121 70591 11598 70807 10269 20205 40169 58018 70311 81108 22211 04279
20201 309// 40803 5//// 6//// ICE /////
 20 02 03211 99122 70587 41598 70707 10268 20201 40169 55000 70322 81808 22222 04279
20201 309// 40803 5//// 6//// ICE /////
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Few low clouds and blue skies in the morning. Towards noon high altitude (> 10km) cirrus sheets and filaments moved in, increased in intensity and covered the skies until sunset.

3. Cruise-day Elements

IWV (integrated water vapor): 25 kg /m2 +/- 3
LWP (liquid water path): 11 g /m2 +/- 18

Time	0-3UTC	4-6UTC	7-9UTC	10-12UTC	13-15UTC	16-18UTC	19-21UTC
Height_m	760.21	782.57	782.57	715.49	894.36	782.57	760.21
max_hydro_frac_low	0.04	0.09	0.07	0.00	0.00	0.02	0.00
Height_m	1207.39	1207.39	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	0.00
Height_m	11994.74	12836.47	12836.47	10605.87	10605.87	10690.05	10816.31
max_hydro_frac_high	0.00	0.00	0.00	0.25	0.32	0.90	0.34

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
35.3408	20.4	26.51	27.6	78.28	68.75	2.56	6.52	385.88	-1.28	12.64	-57.37
35.5544	20.62	26.45	27.64	73.95	69.95	2.11	6.54	386	-1.17	12.53	-57.55
35.6103	20.49	26.43	27.63	75.73	69.48	2.38	7	389.57	-1	12.43	-57.72
35.6486	20.38	26.36	27.61	81.65	69.2	2.91	7.46	386.83	-1	12.32	-57.9
35.4269	20.34	26.31	27.56	86.63	69.33	3.46	7.5	383.02	-1	12.22	-58.07
35.3691	20.49	26.26	27.59	84.67	70.2	4.05	7.8	385.82	-1.02	12.12	-58.24
35.4297	20.32	26.2	27.81	85.22	69.65	3.76	8.07	380.63	-1	12.01	-58.41
35.4075	20.15	26.21	27.78	86.48	68.97	3.9	8.1	375.48	-1	11.91	-58.59
35.4387	20.14	26.19	27.81	85.67	68.87	3.66	7.99	375.08	-1.18	11.81	-58.77
35.5009	20.24	26.24	27.87	85.65	69.23	3.33	7.95	376.25	-1.13	11.7	-58.95
35.5125	20.48	26.6	27.78	87.85	68.7	4.79	8.72	379.31	21.8	11.61	-59.14
35.5428	20.13	26.43	27.76	85.03	67.97	8.8	8.63	377.68	192.72	11.6	-59.21
35.547	20.24	26.62	27.72	83.37	67.68	8.13	8.2	378.18	424.45	11.59	-59.23
35.5353	20.21	26.72	27.67	89.13	67.08	10.19	8.74	379.15	635.23	11.63	-59.25

35.562	19.96	26.82	27.8	87.23	65.7	9.96	7.66	383.85	690.7	11.81	-59.25
35.6129	19.74	26.84	27.89	91.05	64.63	8.62	7.33	381.72	913.4	11.98	-59.25
35.6414	19.85	26.9	28.02	89.47	64.93	7.12	6.74	383.25	910.2	12.02	-59.24
35.618	20	26.86	27.99	83.97	65.68	9.98	6.74	388.45	845.28	12.03	-59.21
35.5903	20.57	26.82	28	83.95	68.35	11.37	6.75	394.1	669.88	12.08	-59.07
35.5559	20.75	26.79	27.99	78.13	69.2	11.43	6.76	398.23	406.85	12.13	-58.92
35.5679	20.53	26.74	27.99	72.4	68.38	11.39	6.81	392.8	207.18	12.18	-58.78
35.557	20.25	26.71	27.92	60.83	67.34	11.37	6.85	386.97	42.53	12.23	-58.64
35.439	20.16	26.55	27.79	58.1	67.57	11.41	6.87	380.88	-0.67	12.28	-58.49
35.4044	20.04	26.49	27.58	55.42	67.34	12.09	7.48	378.08	-1.02	12.33	-58.35

inter-calibration: **none**
CTD stations: **1**
radiosondes: **6**
overflights: **none**

station no.	UTC	device	action	latitude	longitude	depth	contact person
M161 113	3 feb 2020 / 13:03	glider	recovered	11°35.228 N	59°14.572' W	0	crew
M161 114	3 feb 2020 / 15:49-16:46	CTD	CTD	12°01.074 N	59°14.571' W	800	Baranowski

4. Instrument Status

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

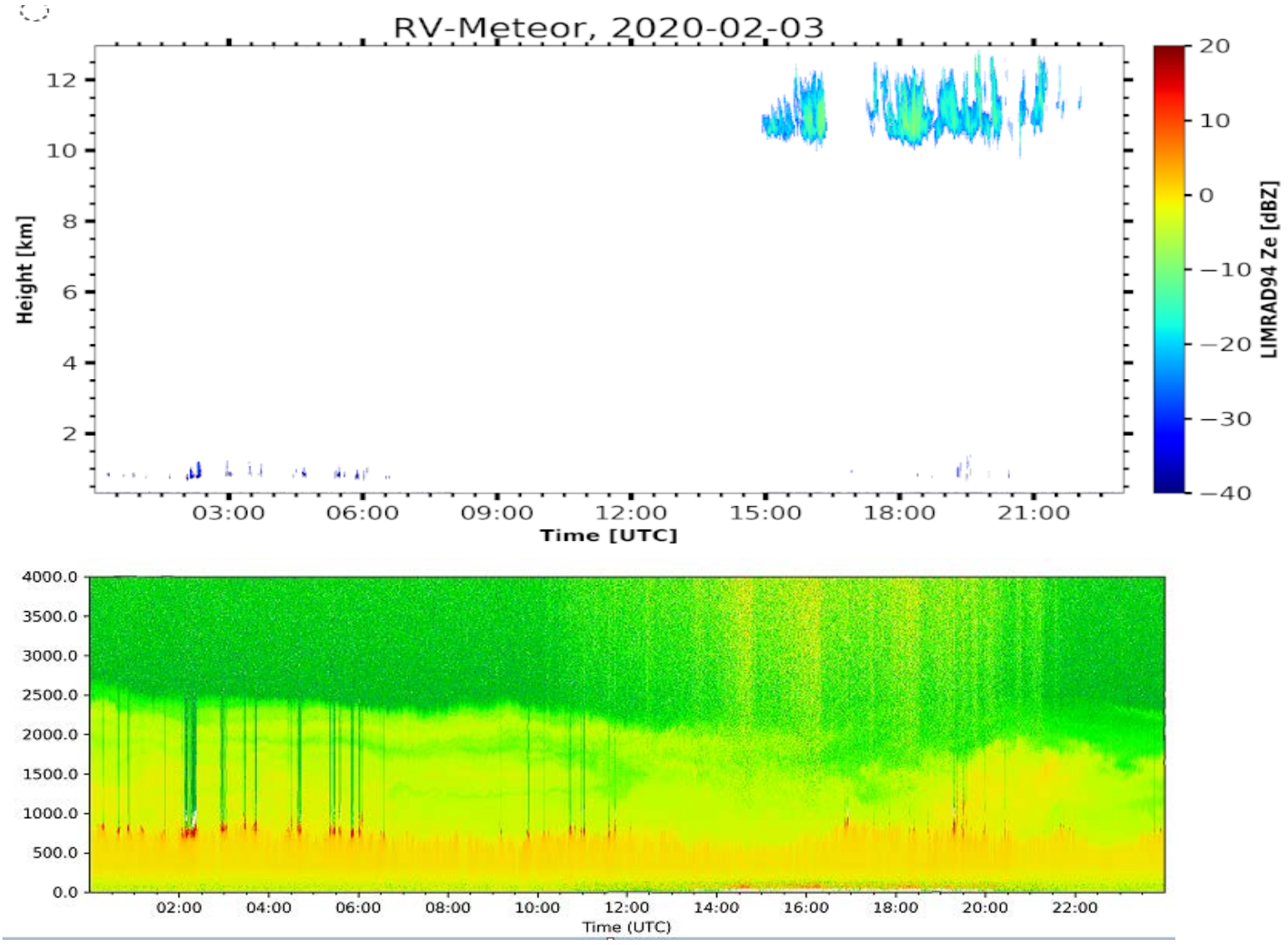
			status	operators
radiosondes			W	Katharina, Imke, Yanmichel, Almuth, Kevin, Sebastian, Geiske
cloud-radar			W	Heike, Johannes
micro-radiometer			W	Heike, Johannes
spect-radiometer			W	Heike, Johannes
Raman-lidar			W	Ludwig
cloud-kite			W	Oliver, Marcel, Marcel, Antonio, Robert, Sanola
Picarro			P	Sebastian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

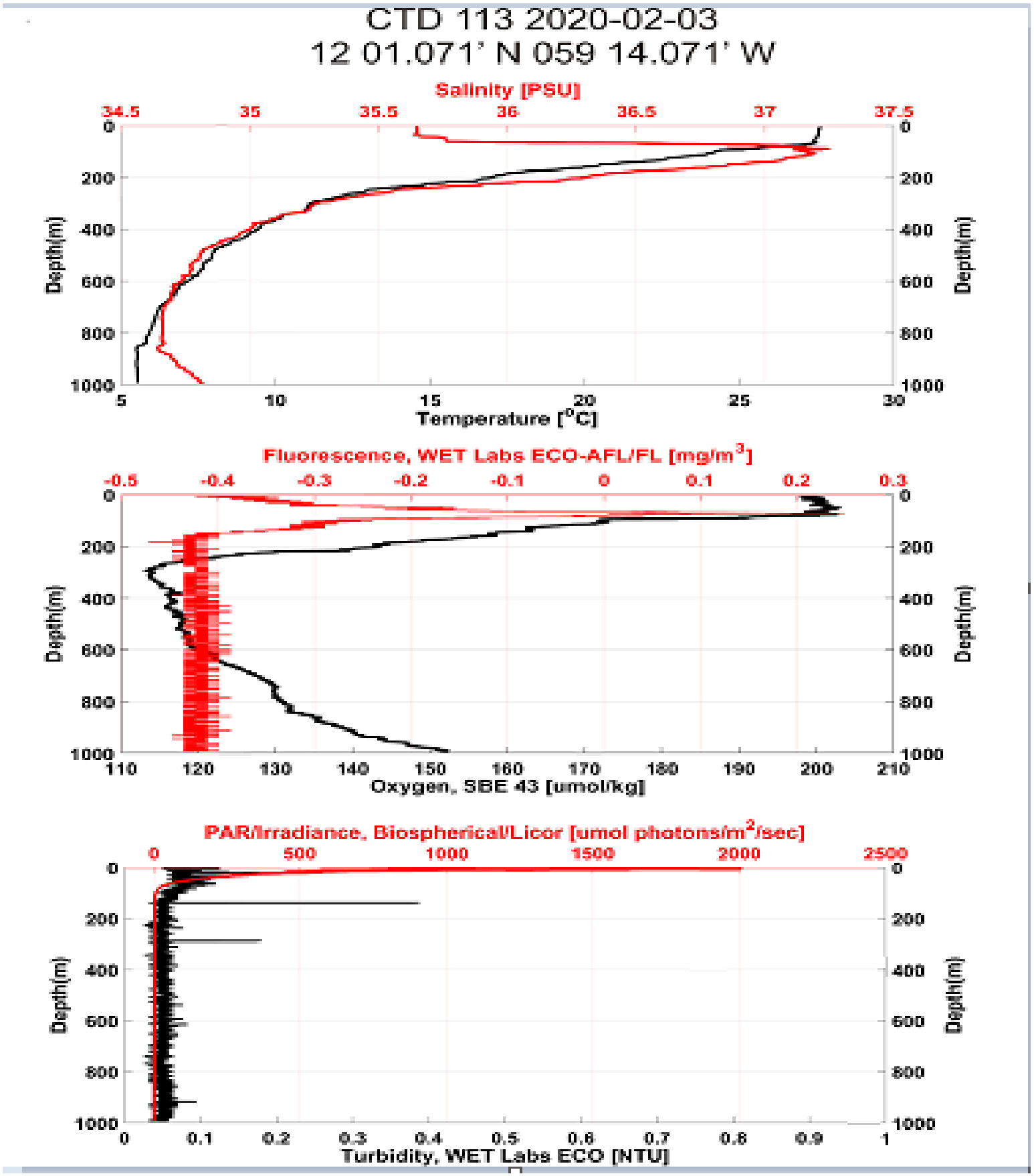
all instruments were shut down while in the Trinidad EEZ 8-14 UTC (except for the ceilometer due to DWD permit)
LIDAR was shut down during the outbound in the wind-leg to avoid dangerous reflections from the cloudkite fixtures

5. Outlook

During the night the L2 point will be reached and the METEOR will head northward on its track to L1 with regular CTD casts.



Corresponding METEOR radar (top) and ceilometer images (bottom) for Feb 3



Data from the (single) CTD profile at 12N 59W (south of Barbados) on Feb 3 by Przemek Makuc