

SOCIB Glider Mission Summary Report

SOCIB_CanalesMAR2021_20210323_sdeep07_GFMR0114

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SOCIB

Balearic Islands
Coastal Observing
and Forecasting System



Contents

1	Introduction	2
1.1	Summary	2
1.2	Metadata	4
2	Engineering Review	5
2.1	Preparation	5
2.2	Mission Survey	5
2.3	NAV plots	6
3	Scientific Preliminary Review	7
3.1	SCI Profiles	7
3.2	SCI plots	7
4	Appendix	19
4.1	Glider behaviour	19
4.2	Installed devices (from autoexec.mi)	19
4.3	Possible Iridium states	19
	List of figures	21

1 Introduction

The aim of this document is to summarize the most significant technical and scientific events during the glider mission. It will explain engineering events that could affect the science data and also some fact from the science point of view.

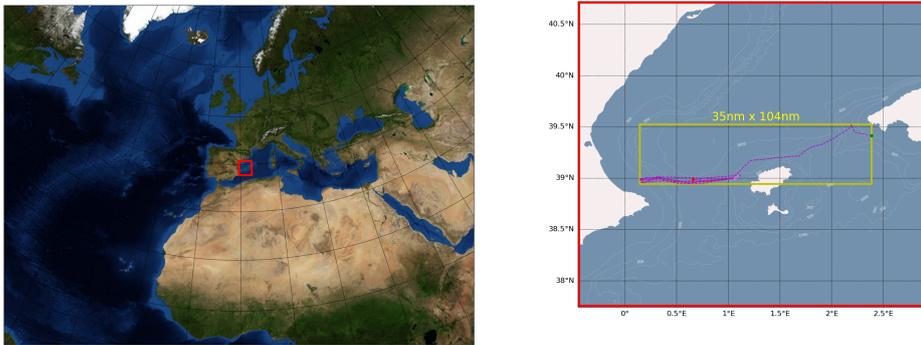


Figure 1.1: Map providing general overview of the Survey Area

1.1 Summary

Mission name	SOCIB_CanalesMAR2021_20210323_sdeep07_GFMR0114
Platform model	G3 Electric
Platform ID / Name / WMO Code	U828/ sdeep07/ 6801638
Software NAV version	Version 10.00 tags/V10.00-0-gdfe501e2 (0, 1)
Software SCI version	Version 10.00 tags/V10.00-0-gdfe501e2 (0, 1)
FWD bay sn	0517
SCI bay sn	1349
Mission duration	31.7 days
Mission start	2021-03-23 12:00:01
Mission end	2021-04-24 04:33:37
Total distance	na[km] na[nm]
Deployment point [dd°mm.mmmm']	N 39° 24.9674' E 02° 23.2944'
Recovery point [dd°mm.mmmm']	N 38° 59.2600' E 00° 39.5547'
Battery Consumption (Ah)	na
Battery specification	20210111 SN0046/ TWR 3S lithium (702)
Survey area	West mediterranean sea
Objetive	Establishing the variability of the N/S exchange of water masses that occur through the Ibiza Channel(IC). Sampling standard transects across the Ibiza Channel several times using physical and biogeochemical sensors. No greater than 1 month gap in between consecutive iterations. The Mallorca Channel is also sampled when operationally practical.
Abstract	Deployment of Slocum G3 deep glider sdeep07 in endurance line campaign Canales 2021 (SOCIB operational program), aiming the coverage of the Eivissa channel (8 transects) and Mallorca channel (1 transect) from MAR to ABR 2021, sampling physical and biogeochemical parameters (CTD, BSK, fluorescence and turbidity, oxygen, and PAR). This glider get lost in the IB channel on 24th Apr 2021. Only RT data is available
NAV events	<ul style="list-style-type: none"> ▪ Event 1: Glider lost because a ship strike. Only SCI bay recovered a year later, none usable, no data ▪ Event 2: check 20210712_Informe_Perdida_Glider-sdeep07_v3 ▪ Event 3: no DT data to process, many NAV plots are not able to produce
SCI events	<ul style="list-style-type: none"> ▪ Event 1: A few spikes (<10) have been observed in Temperature, Salinity, Conductivity, and oxygen. ▪ Event 2: We have clear evidence of low salinity (below 37.2 psu) and relatively warm water (>16C) from the sounding waters in the upper 60 m of the water column. This water mass has the thermohaline characteristics of the MAW which is evident both in the Mallorca and Ibiza channel. In the Mallorca, the channel occupies the whole channel but in the Ibiza channel, it is present as patches. ▪ Event 3: On the surface, the TS diagrams show that there is a clear distinction between the two surface water masses that are present in the Balearic Sea (Modified Atlantic Water (MAW) and the Surface Mediterranean Water. ▪ Event 4: Blobs of relative lower oxygen around 210 ml/l are appeared in 3 times between 50-100m.

1.2 Metadata

Principal Investigator	Prof. Joaquim Tintoré jtintore@socib.es (+34 971439821)
Institute	SOCIB
Project Affiliation (web-site)	http://www.socib.eu/
Campaign access type	Internal
Partnership / Participation	<ul style="list-style-type: none"> ▪ SOCIB
Data Retrieval	<ul style="list-style-type: none"> ▪ RT: sub-set via satellite link at each surface maneuver ▪ DM: full/direct memory card backup after glider disassembly during Conclusion mission-phase
Data Available From*	http://thredds.socib.es/thredds/catalog/auv/glider/catalog.html
DOI (if available)	https://doi.org/10.25704/jd07-sv9
Further Details	glider@socib.es

*Available netCDF data product:

- L0: https://thredds.socib.es/thredds/fileServer/auv/glider/sdeep07-scb_sldeep007/L0/2021/dep0001_sdeep07_scb-sldeep007_L0_2021-03-23_data_rt.nc
- L1: https://thredds.socib.es/thredds/fileServer/auv/glider/sdeep07-scb_sldeep007/L1/2021/dep0001_sdeep07_scb-sldeep007_L1_2021-03-23_data_rt.nc
- L2: https://thredds.socib.es/thredds/fileServer/auv/glider/sdeep07-scb_sldeep007/L2/2021/dep0001_sdeep07_scb-sldeep007_L2_2021-03-23_data_rt.nc

2 Engineering Review

2.1 Preparation

- Permission: ok
- Hardware: ok
- Batteries: ok
- Comms: ok
- Science: ok
- Ballasting: ok
- Sealing: ok
- Fileset: ok
- CEM: na
- Harbor check: ok
- Recovery: na
- Conclusion: ok

2.2 Mission Survey

- Deployment:
 - Vessel: Socib I
 - Personnel: 1 ETD + 1 GF (field team)+ 1 GF (piloting)
 - Location: Cala Figuera
- Navigation: The glider responded well to the commanded target waypoints.
- Underwater Maneuvering: Performed well
- Engineering sensors:

Sensor	Oddities	Warnings	Errors
na	na	na	na

- Communication Systems (see appendix for Iridium states):
 - Total number iridium calls [num]: na
 - Iridium calls to secondary [num]: na
 - ON overall iridium period [h]: na
 - Iridium calls state from MODE NO CARRIER to MODE UNKNOWN [num]: na
 - Iridium calls state from MODE OK to MODE UNKNOWN [num]: na
 - Iridium calls state from MODE CONNECT to MODE UNKNOWN [num]: na
 - Iridium calls state from MODE ERROR to MODE UNKNOWN [num]: na
 - Iridium calls state from MODE UNKNOWN to MODE AWAITING OK [num]: na
 - Drop calls (Iridium state from 2 to 99 with c iridium on = 1) [num]: na
 - Total time at surface [h]: na
 - Total time at surface [%]: na
- Hull/Hydrodynamics: No signs of problems

- Recovery:
 - Vessel: na
 - Personnel: na
 - Location: na

2.3 NAV plots

3 Scientific Preliminary Review

3.1 SCI Profiles

Calibration sheets available upon request to glider@socib.es

na * See appendix for sampling strategy details and changes during the mission

Sensor parameters set:

CTD	CC's per second	na
FLx	Chlorophyll dark count	43
FLx	Turbidity dark count	na
FLx	CDOM dark count	49
FLx	BB700 dark count	41

3.2 SCI plots

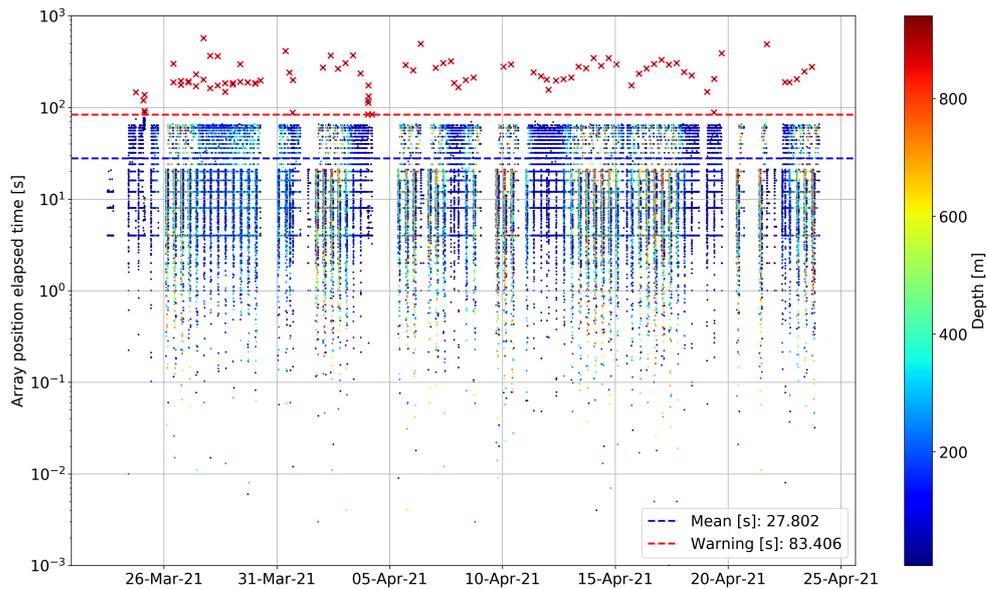


Figure 3.1: Array time

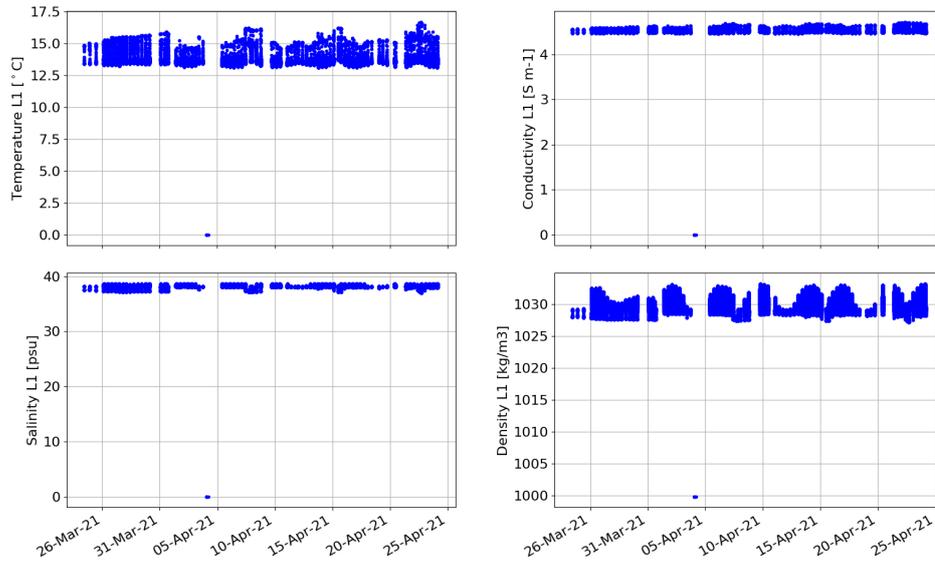


Figure 3.2: Raw CTD L1

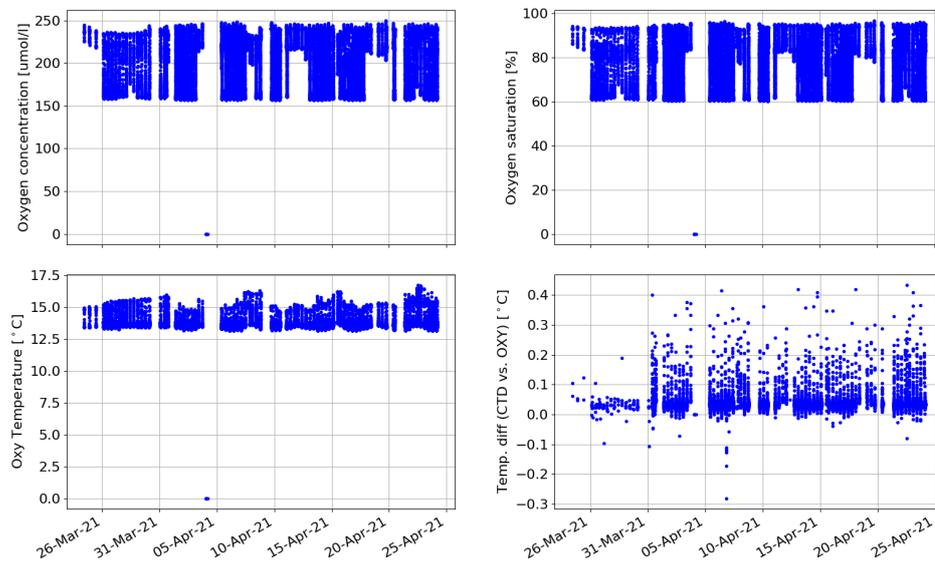


Figure 3.3: Raw OXY L1

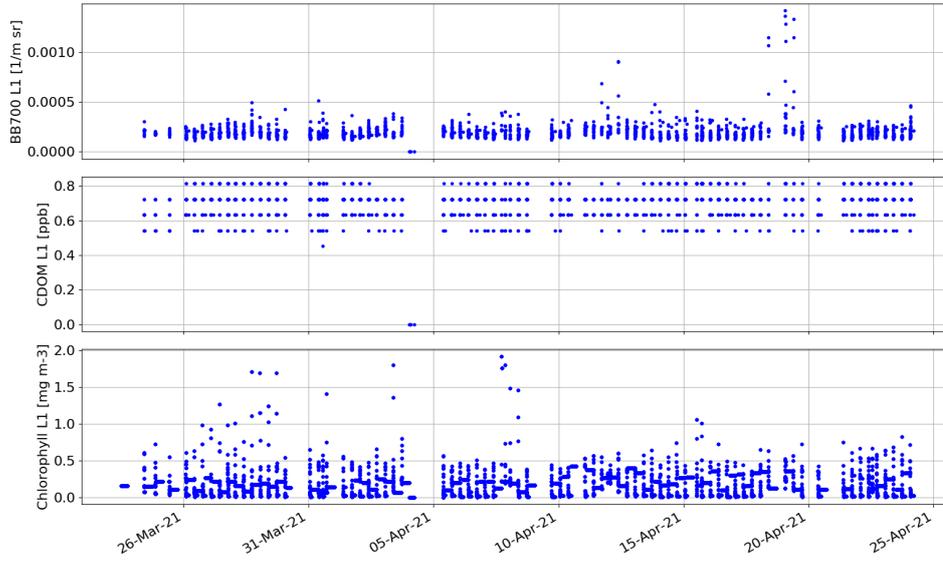


Figure 3.4: Raw FLBBCDSLCL1

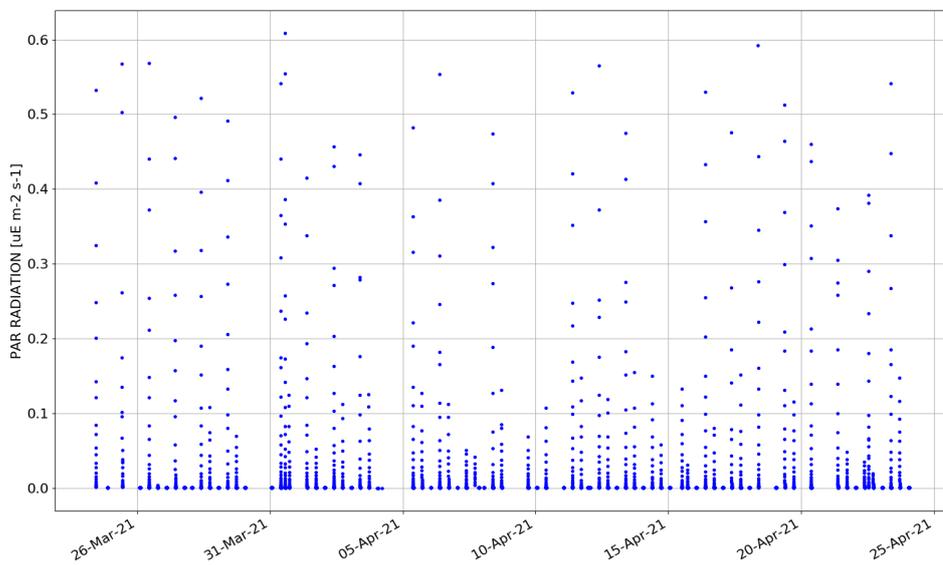


Figure 3.5: Raw PAR L1

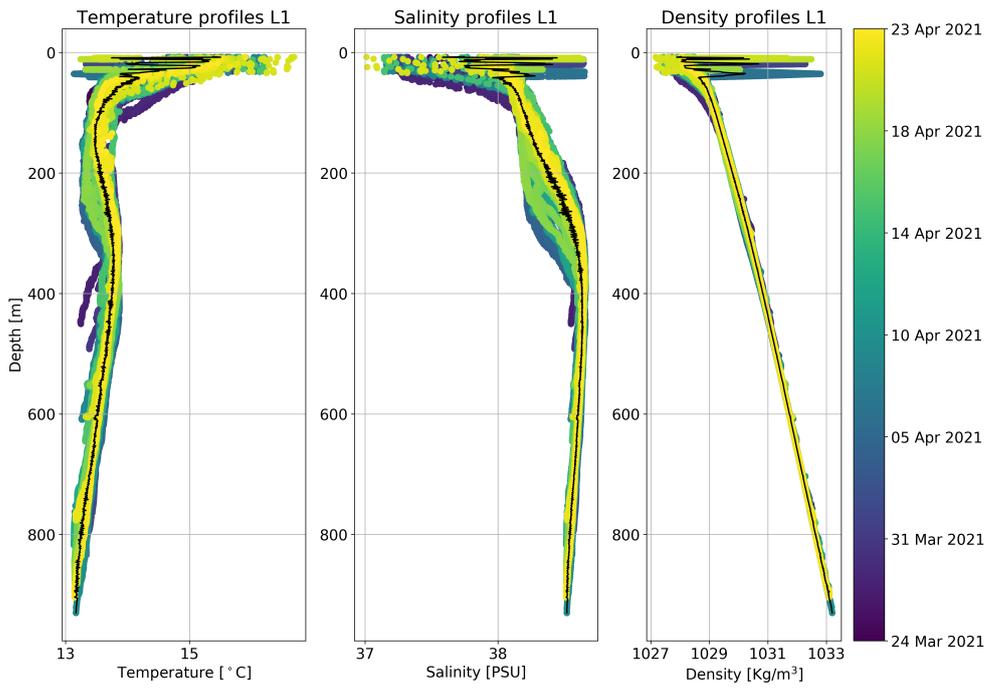


Figure 3.6: CTD profiles

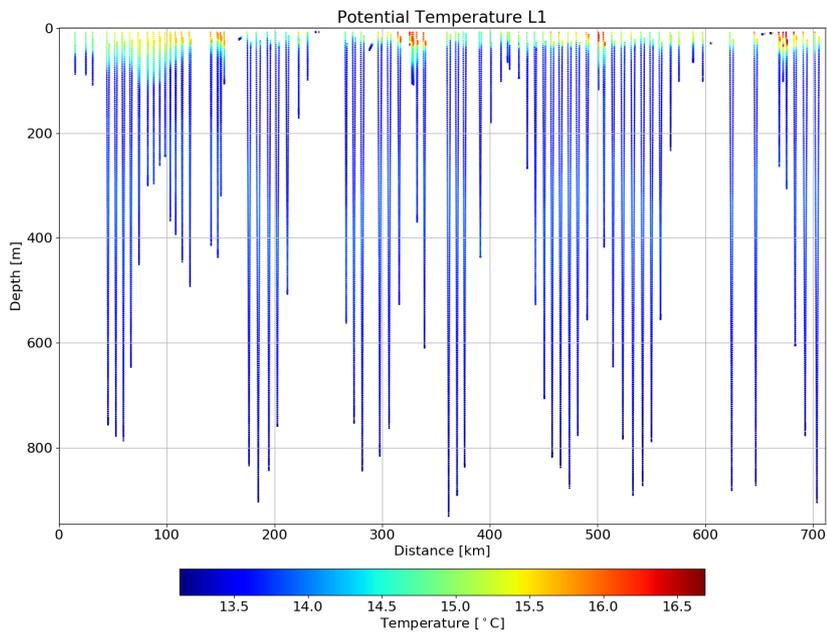


Figure 3.7: CTD temperature

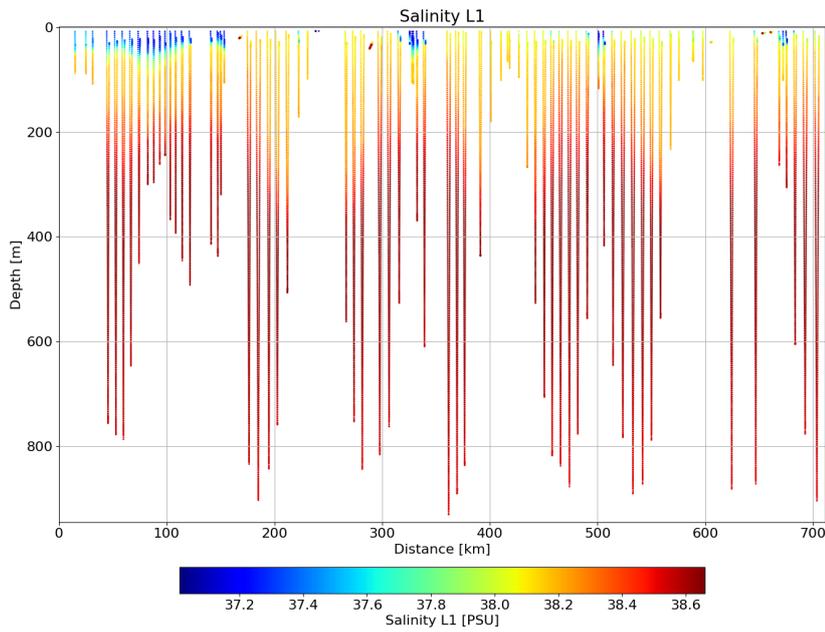


Figure 3.8: CTD Salinity

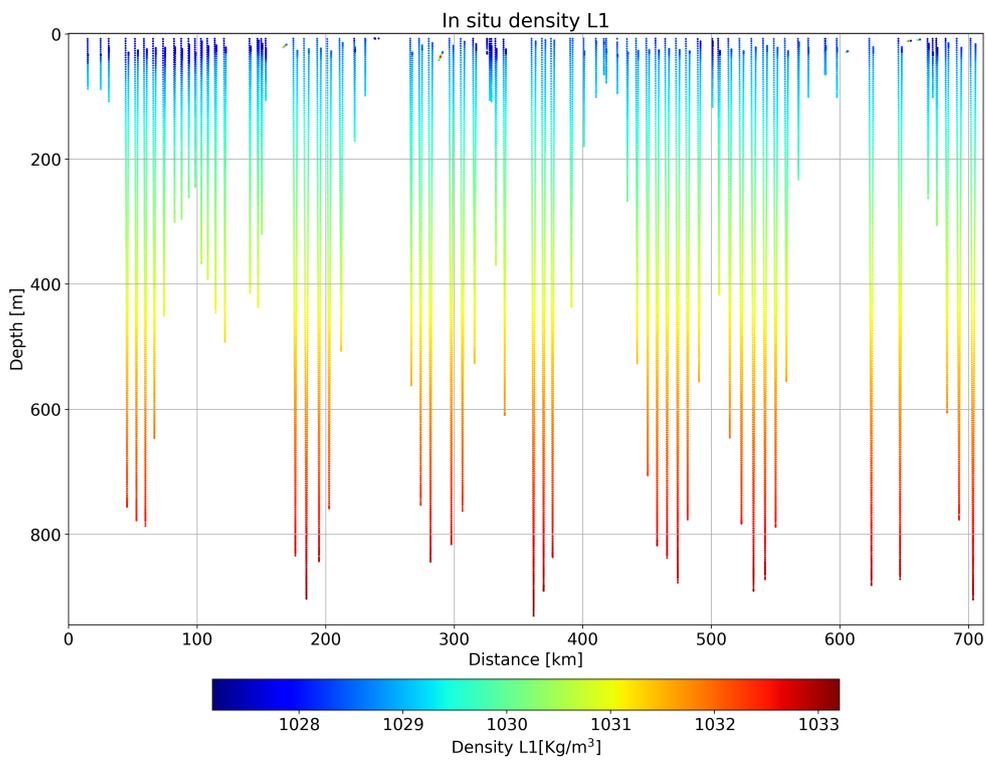


Figure 3.9: CTD Density

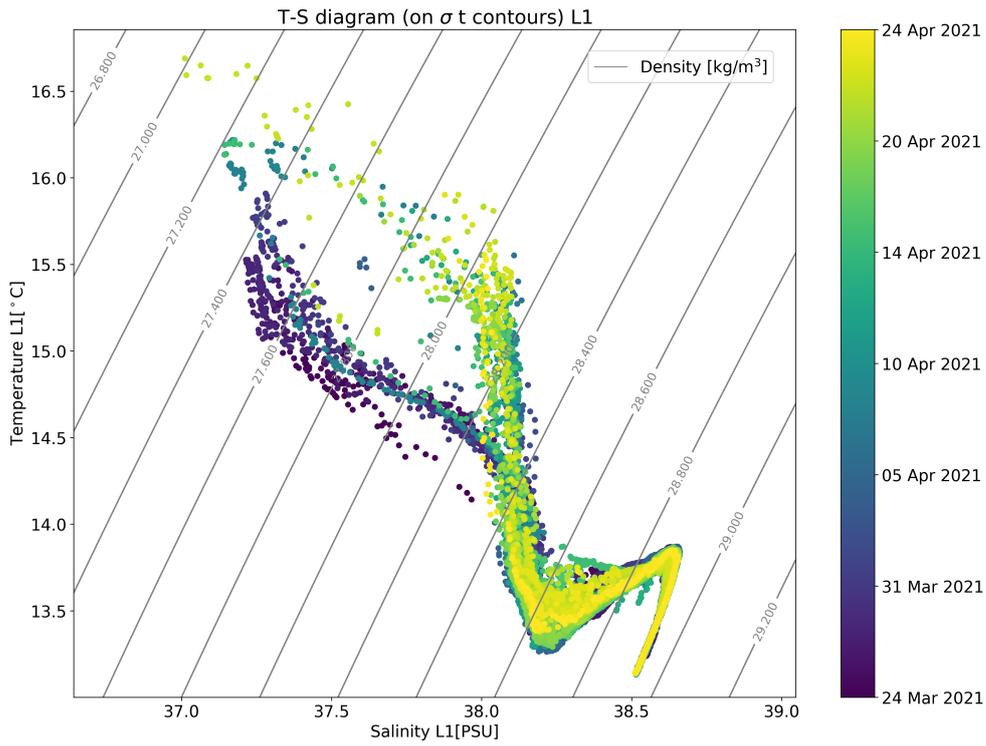


Figure 3.10: TS diagram (CTD)

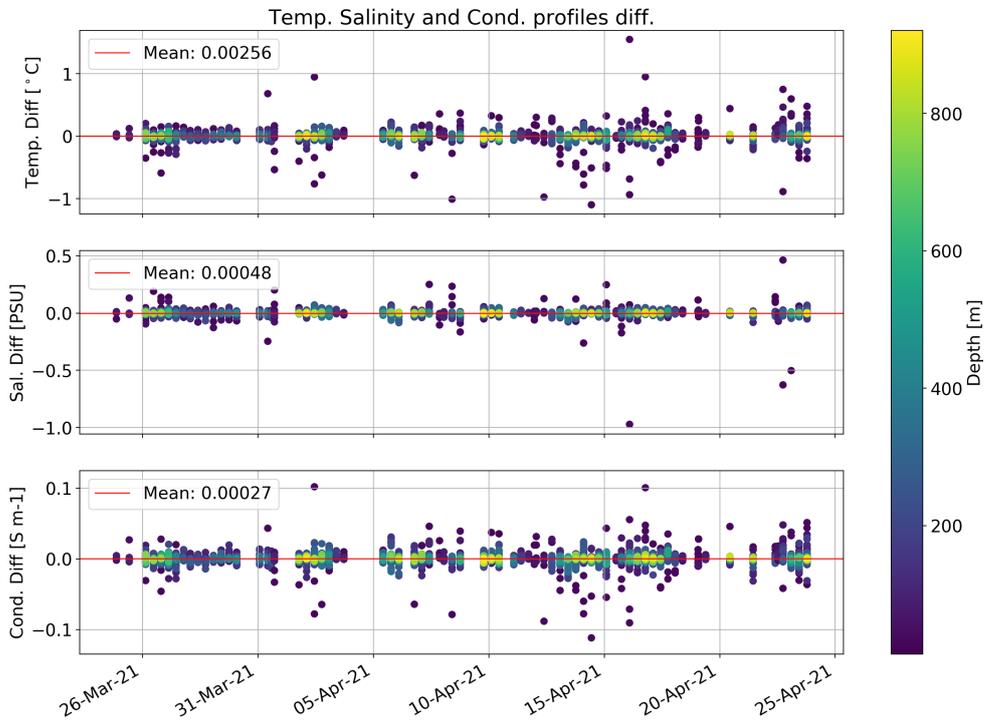


Figure 3.11: Profile consistency (CTD)

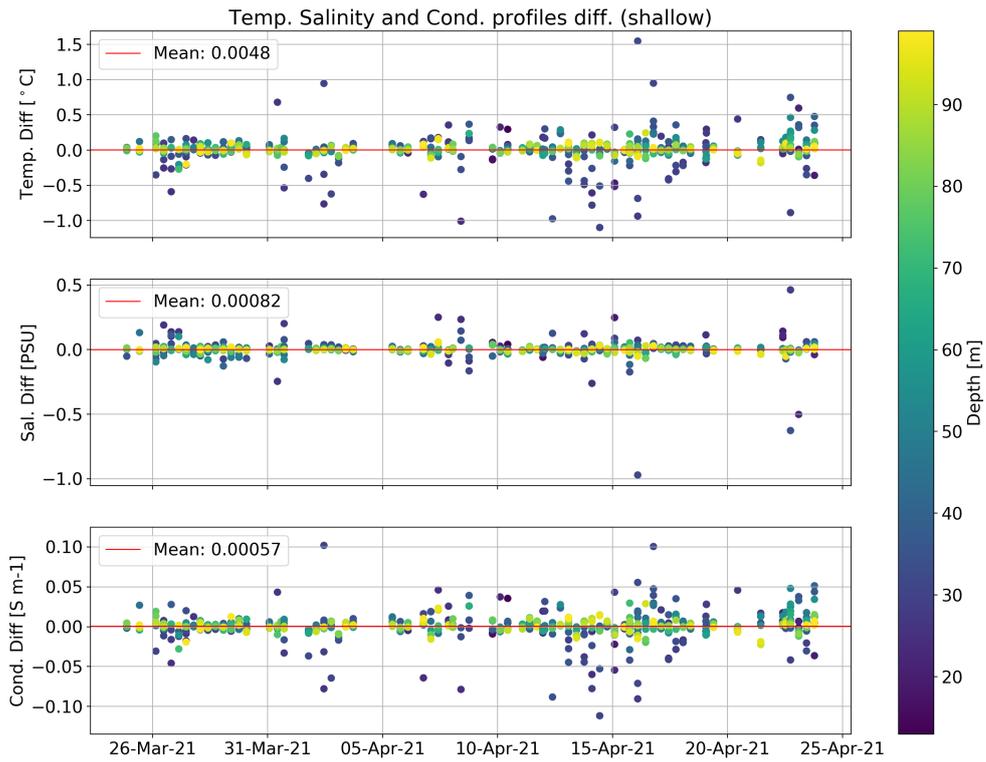


Figure 3.12: Profile consistency (CTD) zoom

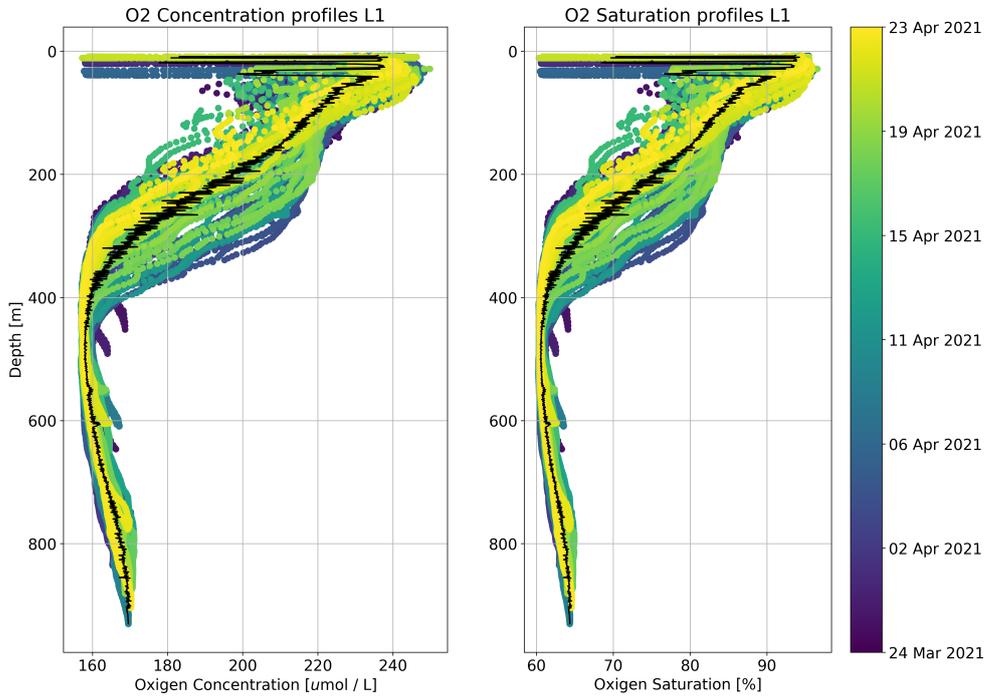


Figure 3.13: Oxygen profiles

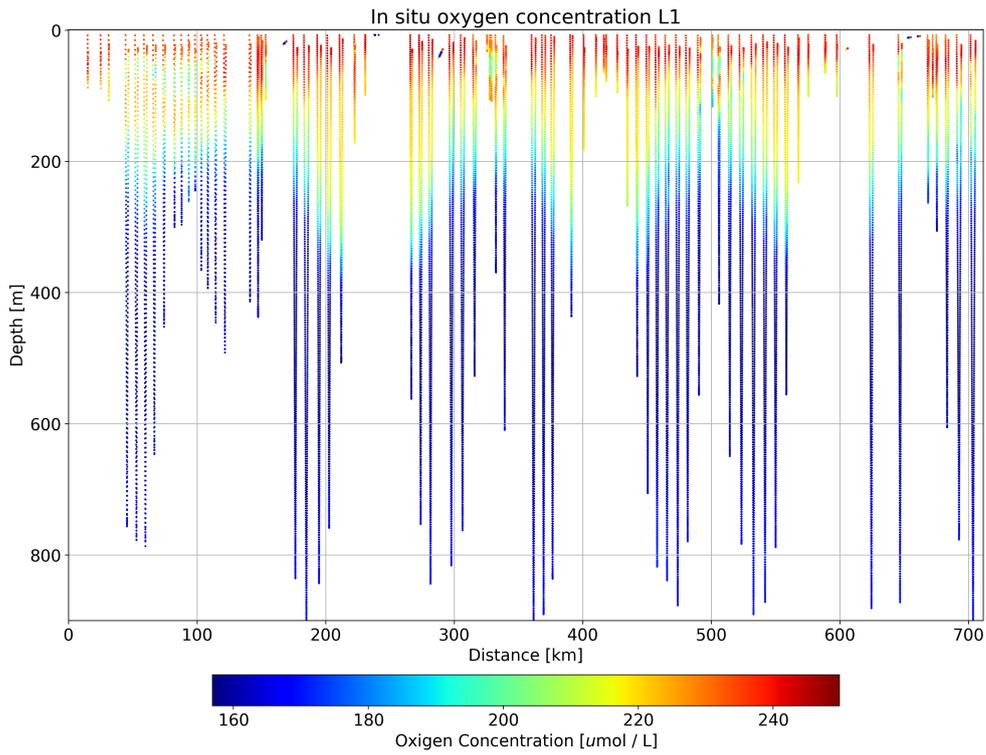


Figure 3.14: Oxygen Concentration

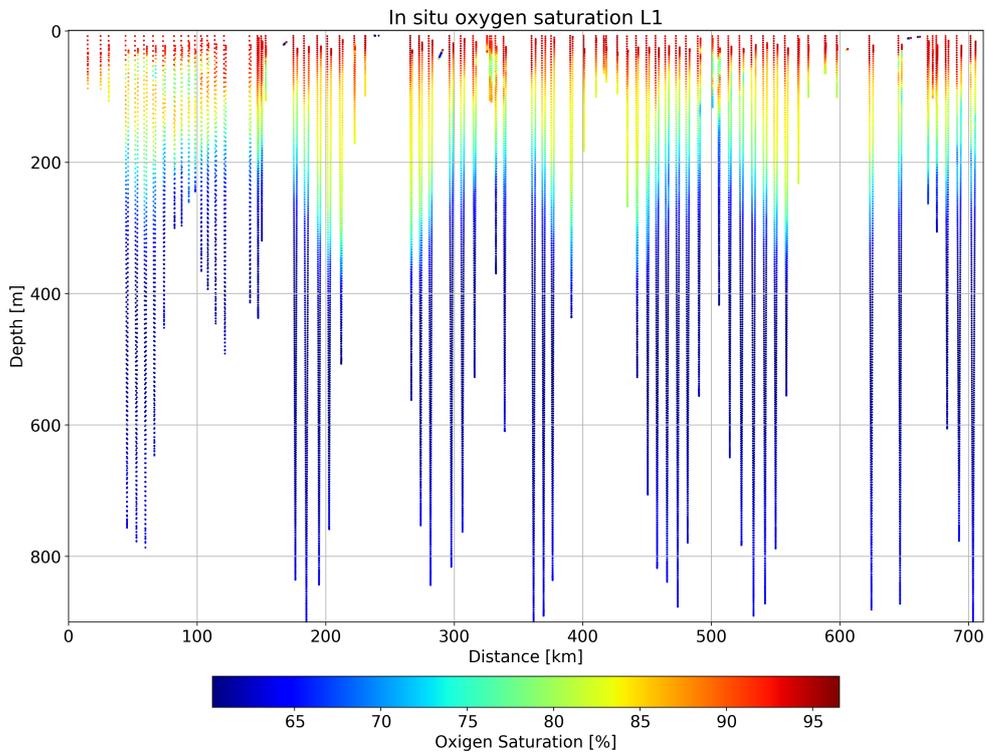


Figure 3.15: Oxygen Saturation

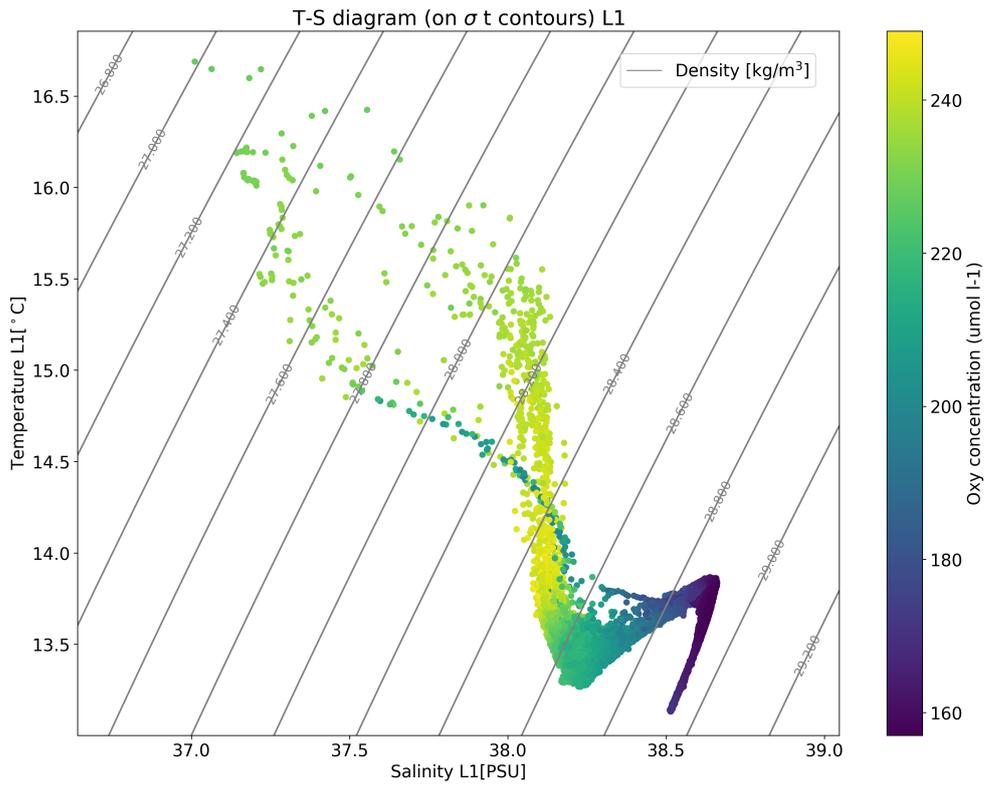


Figure 3.16: TS diagram (OXY)

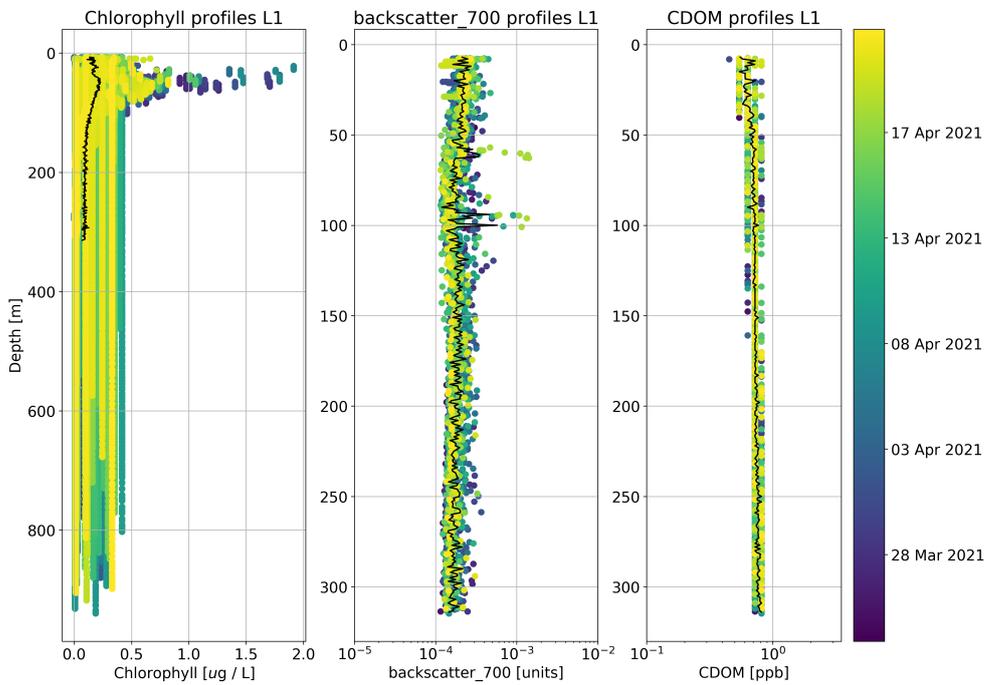


Figure 3.17: Chlorophyll-a, CDOM and BB700 profiles

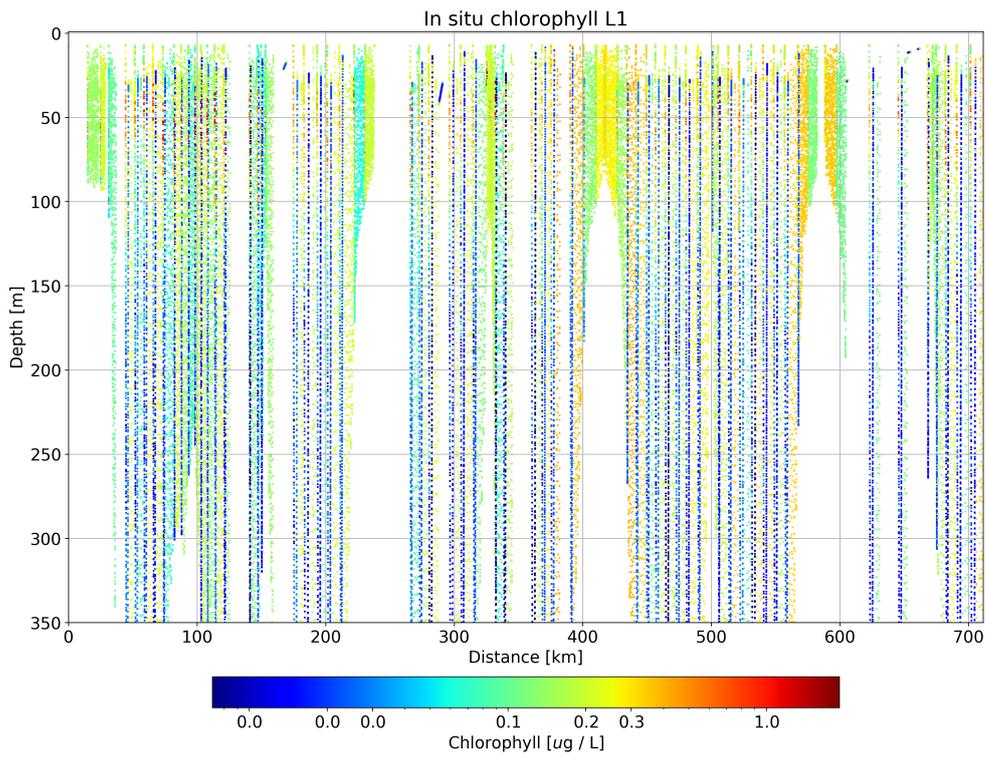


Figure 3.18: Chlorophyll-a

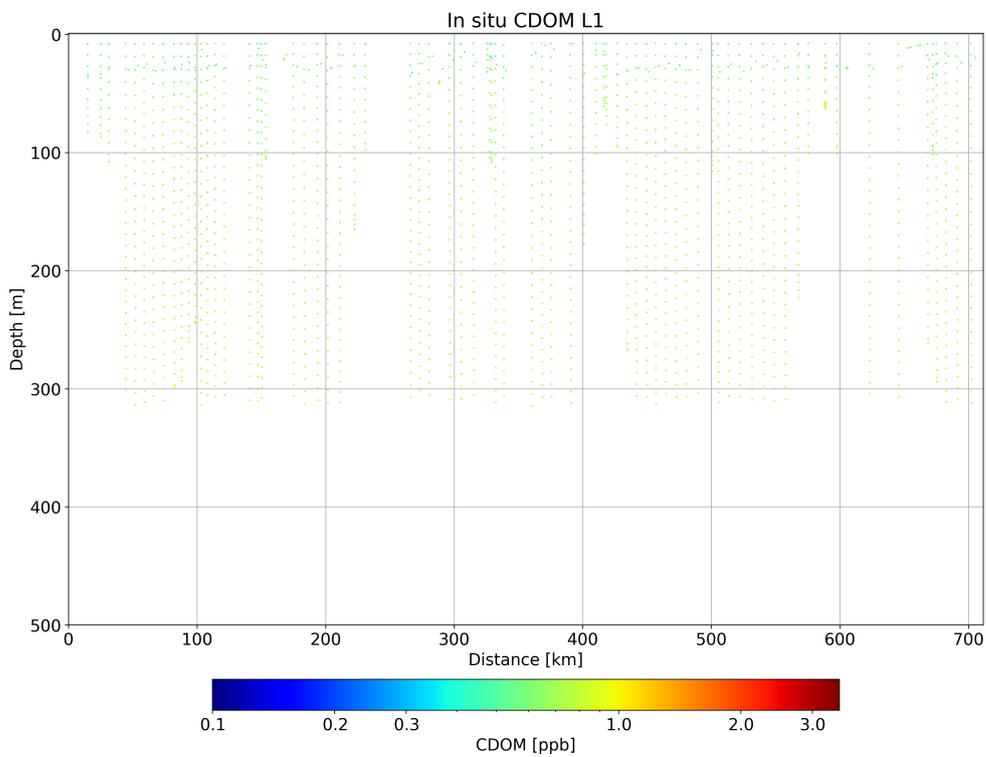


Figure 3.19: CDOM

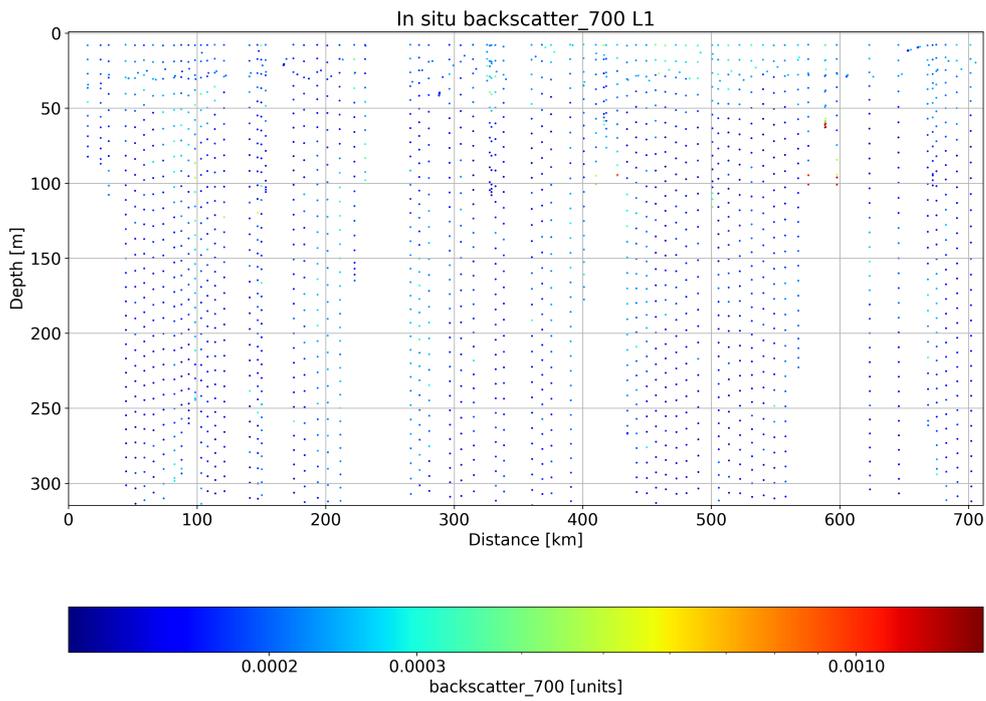


Figure 3.20: Backscatter 700

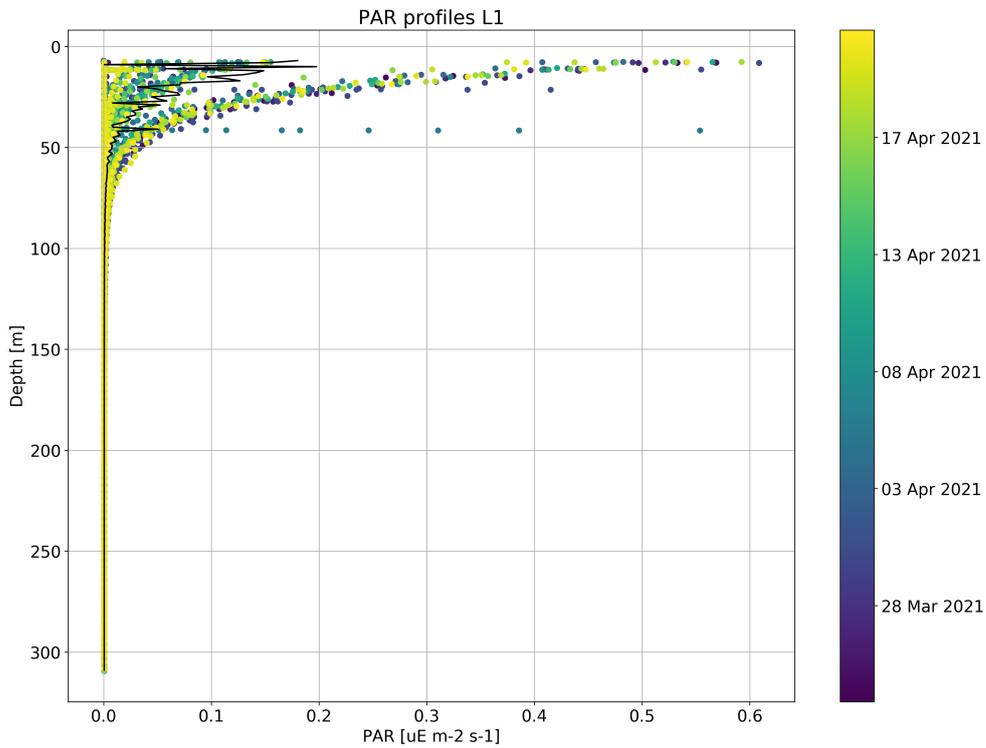


Figure 3.21: PAR profiles

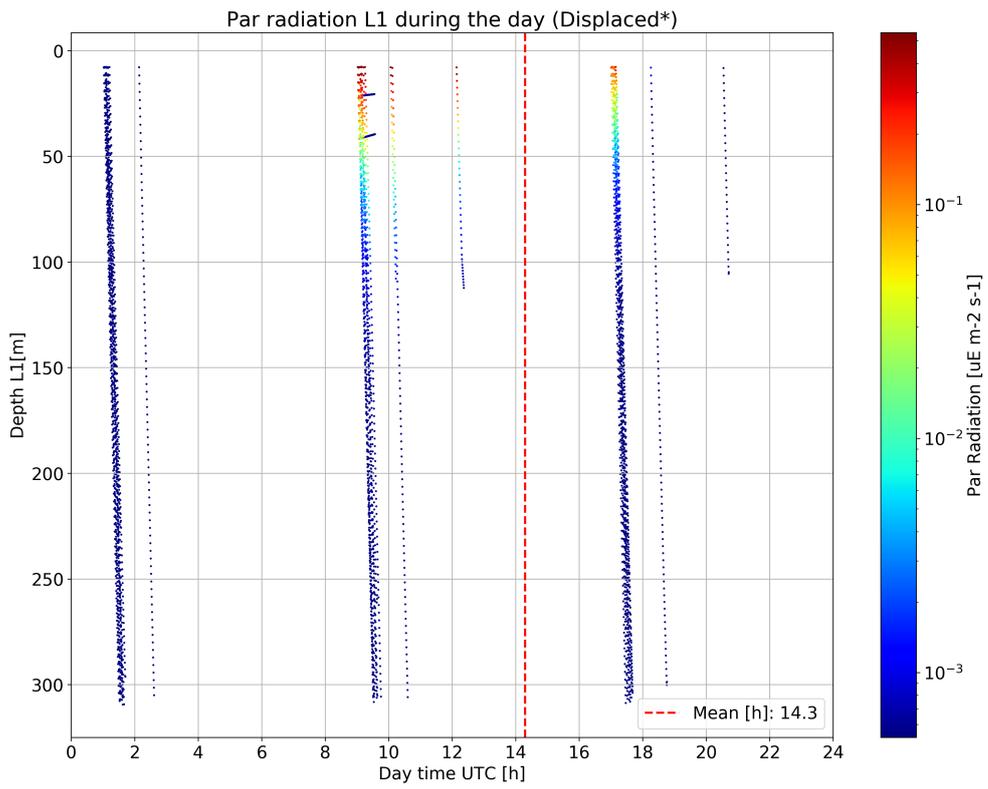


Figure 3.22: Daily par

4 Appendix

4.1 Glider behaviour

No MLG FILES to process

4.2 Installed devices (from autoexec.mi)

- Forward section assy _SN: 517
- Payload bay assy _SN: 1349
- Aft section assy _SN: 1003
- Aft electronic assy _SN: 1003
- Aft end cap assy _SN: 149
- Radomefin _SN: 1223
- Pressure transducer _SN: 123636
- Aft hull _SN: 2441
- Fwd hull _SN: 2440
- Freewave master _SN: 970-4038
- Iridium sim card _SN: 8988169234003166055
- Argos ID _SN: 198868-DEC / 0C1634C-HEX
- Altimeter _SN: 60162068
- Pitch motor _SN: 249
- 1000- Motor _SN: controller119
- 1000- Pump assy _SN: 640
- 1000- Valve assy _SN: 637
- Science SOM,STM32 _SN: 0028
- science motherboard _SN: 0007
- seabird CTD _SN: 9606
- Main board _SN: 161
- Communication board _SN: 004
- Iridium phone _SN: 199
- Main SOM,STM32 _SN: 0024
- Attitude sensor _SN: 42914
- Air pump _SN: 1297
- Communications Assy _SN: 0005
- Freewave Slave _SN: 968-0328
- GPS _SN: 1465
- Argos X-cat _SN: 1179
- Air bladder _SN: 1784

4.3 Possible Iridium states

- MODEM NO CARRIER = 0
- MODEM OK = 1
- MODEM CONNECT = 2
- MODEM ERROR = 3
- MODEM NO ANSWER = 4
- MODEM BUSY = 5
- MODEM NO DIALTONE = 6
- LOGGING IN = 7

- LOGGED ON = 8
- MODEM AWAITING OK = 10
- MODEM AWAITING CONNECTION = 11
- MODEM TIMEOUT = 12
- MODEM UNKNOWN = 99
- NO CHARS TIMEOUT = 100

List of Figures

1.1	Map providing general overview of the Survey Area	2
3.1	Array time	7
3.2	Raw CTD L1	8
3.3	Raw OXY L1	8
3.4	Raw FLBBCDSLCL1	9
3.5	Raw PAR L1	9
3.6	CTD profiles	10
3.7	CTD temperature	10
3.8	CTD Salinity	11
3.9	CTD Density	11
3.10	TS diagram (CTD)	12
3.11	Profile consistency (CTD)	12
3.12	Profile consistency (CTD) zoom	13
3.13	Oxygen profiles	13
3.14	Oxygen Concentration	14
3.15	Oxygen Saturation	14
3.16	TS diagram (OXY)	15
3.17	Chlorophyll-a, CDOM and BB700 profiles	15
3.18	Chlorophyll-a	16
3.19	CDOM	16
3.20	Backscatter 700	17
3.21	PAR profiles	17
3.22	Daily par	18

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we share the future*

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