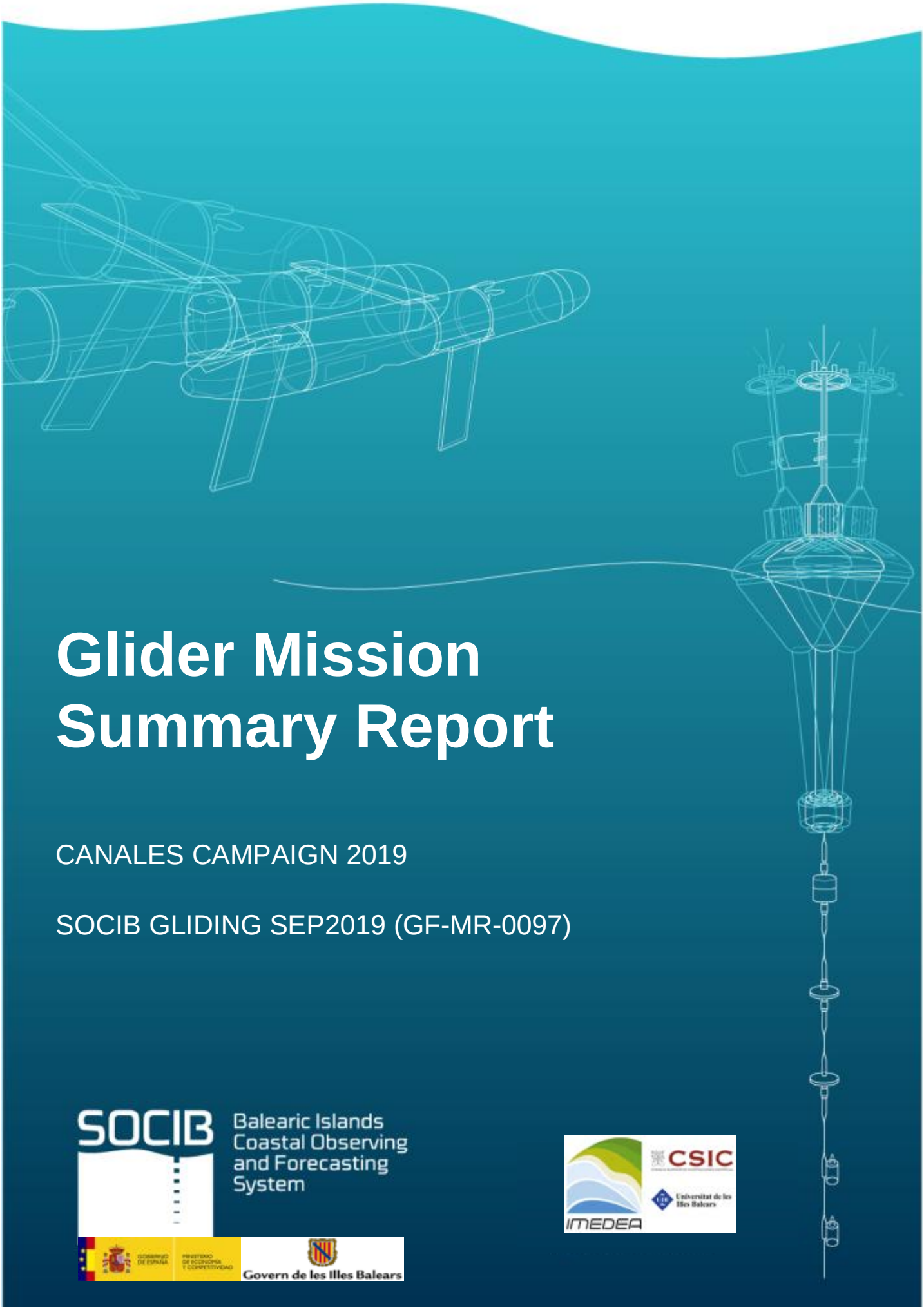

Glider Mission Summary Report

CANALES CAMPAIGN 2019

SOCIB GLIDING SEP2019 (GF-MR-0097)

SOCIB Balearic Islands Coastal Observing and Forecasting System

Govern de les Illes Balears

CSIC

IMEDEA

Universitat de les Illes Balears

Mission Name	*SOCIB_ENL_CANALES_SEP2019_SDEEP01_GFMR0097*
Platform Model	*Slocum 1000m G2*
Platform ID / Name / WMO Code	*U244 / SDEEP01 / 68967*
Related Platforms / Missions	*None*
Glider Software Version	*Nav : 8.2 Acomms, Payload: 8.2*
Start Date (UTC)	*2019-09-17 09:08:26*
End Date (UTC)	*2019-10-29 07:55:12*
Total Days	*41.9*
Total distance (Km / Nm)	*822.16[km] 443.93[nm]*
Battery Consumption (Ah)	*231.661 (reading from 188.316 to 419.977)*
Survey Area	*Mallorca and Eivissa Channels (Western Mediterranean Sea)*
Objective(s)	• *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.*
Significant events	• *This mission was the successful one after 2 tries:* o *First one was GFMR0095 failed due to a bug on software version 8.3* o *Second one malfunction on the altimeter, GFMR0096* • *By the end of the mission a malfunction on CTD pump was detect, it occurred during the entire mission* • *This glider was prepared with Teledyne, B.Allsup* • *This glider was prepared just after a refurbishment*

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Mission Preparation

- *Preparation was a typical one, most of the steps belong to GFMR0095.*
- *This preparation was done under the supervision of B.Allsup (TWR) in order to update and improve SOCIB protocols.*

Step	*Status*	*Comments*	
Hardware chech	*Ok*		
Comms check	*Ok*	*Avoided. SMS service out of order*	
Batteries check	*Ok*	*TWR battery pack*	
Ballasting check	*Ok*	*Target density: 1025,613 g/L*	*Tank density: 1026,326 g/L*
Final sealing check	*Ok*		
Fileset check	*Ok*		
Harbor check	*Ok*		
Compass Error Measurement	*NA*		

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Mission Survey

Deployment

This deployment was concatenated from GFMR0096, just after changing the altimeter.

Vessel:	*SOCIB I*
Personnel:	*1 ETD + 1 GF*
Location:	*Dragonera N 39°24.6920' E 02°18.1146'*

Navigation

It was satisfactory during most mission time. The glider responded well to the commanded target waypoints.

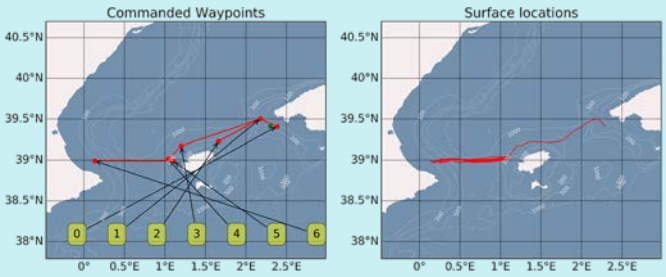

Figure 1 – Commanded Waypoints

Underwater Maneuvering

Performed well

Engineering

Sensor	*Oddities*	*Warning*	*Errors*
GPS	*5*	*1*	*0*
pitch_motor	*6*	*0*	*0*
science_super	*45*	*0*	*0*
digifin	*880*	*5*	*0*
IRIDIUM	*160*	*0*	*0*

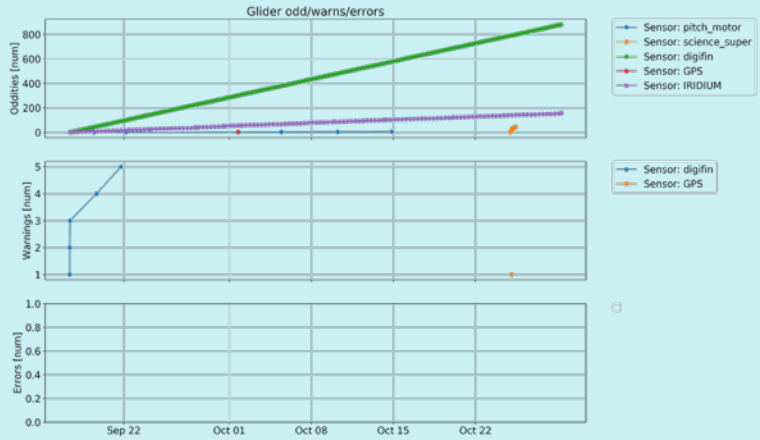

Figure 2 – Errors, warnings and oddities

Communication Systems

Total number iridium calls [num]: 146.0
Iridium calls to secondary [num]: 1
ON overall iridium period [s]: 17192
Iridium calls state from 99 to 10 [num]: 152
Iridium calls state from 0 to 99 [num]: 9
Iridium calls state from 2 to 99 [num]: 141
Iridium calls state from 4 to 99 [num]: 1
Iridium calls state from 2 to 99 with c_iridium_on = 1 (Drop calls) [num]: 2

Contextual/Awareness Sensors

Pressure transducer, internal vacuum and internal temperature worked correctly.
Compass also reported coherent values.
Altimeter detected the bottom correctly.

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Hull/Hydrodynamics	*No signs of problems*
Mission Runs	*1*
Recovery	*Emergency recovery performed as planned.* *Vessel:* *Ibanat* *Personnel:* *Ibanat personnel + 1GF* *Location:* *St. Antoni, Eivissa N 39°00.9351' E 01°02.5401'*

Glider Behavior

Date:	Event	Underwater Top Inflection Depth (m):	Underwater Bottom Inflection Depth (m)	Minimum Distance to Sea-floor to be kept (m)	Surface upon completion of this # of dives	Surface if this amount of hours without stable communications (hrs)	Surface at this particular UTC times	Surface if a waypoint is hit within that distance (km)	Altimeter	Pitch angle attack[deg]	Pitch control	Optics	Goto version	Overtime (days)
18/07/2019	Initial config	15	950	40	-1	12	2,10,18	100	on	±26	servo	ON	0	60
20190924_1200	YO buoyancy and loop												1	
20191001_1721	YO buoyancy													
20191008_1000	YO buoyancy													
20191024_1100	YO buoyancy													

SCI Profiles

(calibration sheets available upon request to glidertech@socib.es)

Sensor Type:	**CTD seabird**	**OPTODE Aanderaa**	**FLNTU**	
Serial number:	0107	1410	4124	
Calibration date:	02/06/2019	27/05/2019	06/06/2019	
Casts:	1651	1651	835	
Half-Yos:	1672			
Samples:	632867	593032	109002	
Sampled distance [km]:	488	488	154	
Intersample time [s]:	5.481	5.851	10.251	
Sampling Frequency [Hz]	1/4	1/4	1/8	1/16
Depth range this configuration applies (m)	[-5, 2000]	[-5, 2000]	[-5, 150]	[150, 300]
Sampling during Diving	Y	Y	Y	
Sampling during Overing	N	N	N	
Sampling during Climbing	Y	Y	N	
Sampling during Surface	N	N	N	

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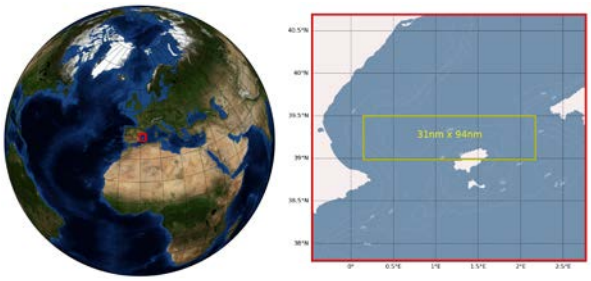
Principal Investigator (e-mail or contact phone/address)	• *Prof. Joaquim Tintoré jtintore@socib.es (+34 971439821)*
Institute	• *SOCIB*
Project Affiliation (web-site)	*http://www.socib.eu*
Partnership / Participation	• *IMEDEA(CSIC-UIB)*
Data Retrieval (real-time [RT] / delayed-mode [DM])	• *RT: sub-set 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/sdeep01-scb_sldeep001/catalog.html*
Further Details	*glidertech@socib.es*
Global Overview	 *Figure 3 - Map providing general overview of the Survey Area* Online track: http://apps.socib.es/dapp/?deployments=983-43-100-FF66CC&layers=none&units=scientific

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Scientific Preliminary Review

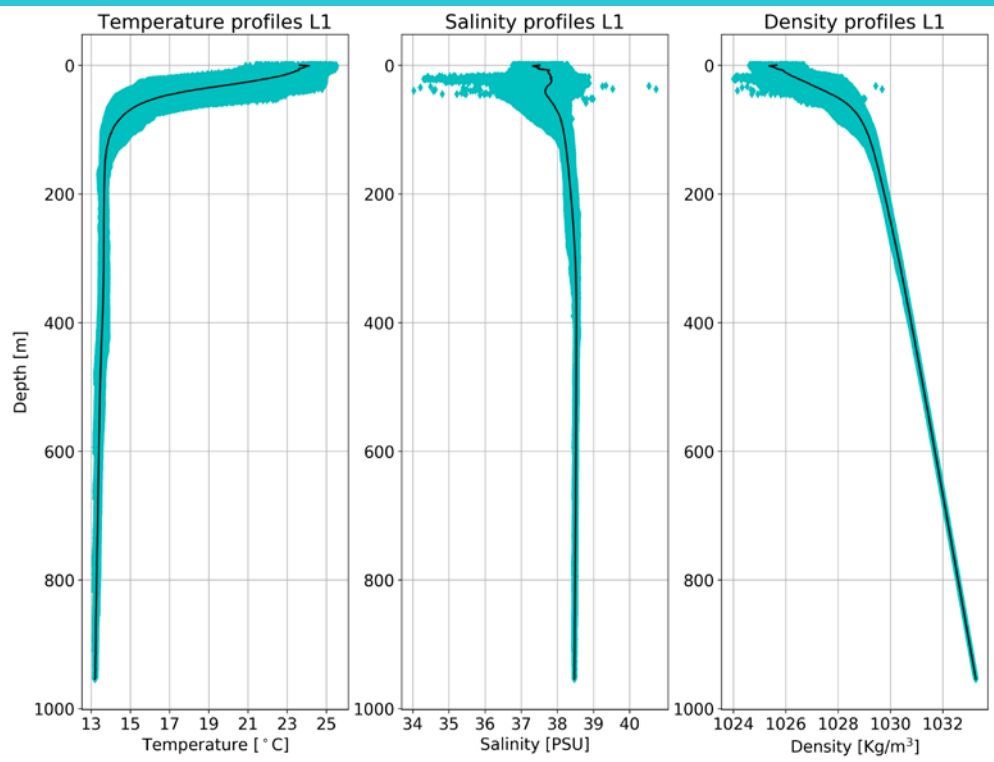

Figure 4 - CTD profiles

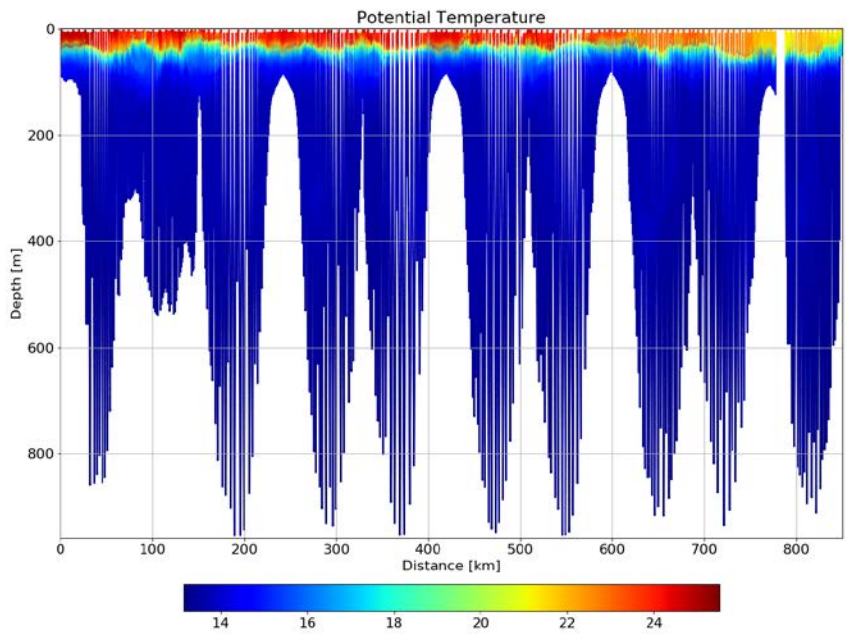

Figure 5 - Potential temperature (full depth range)

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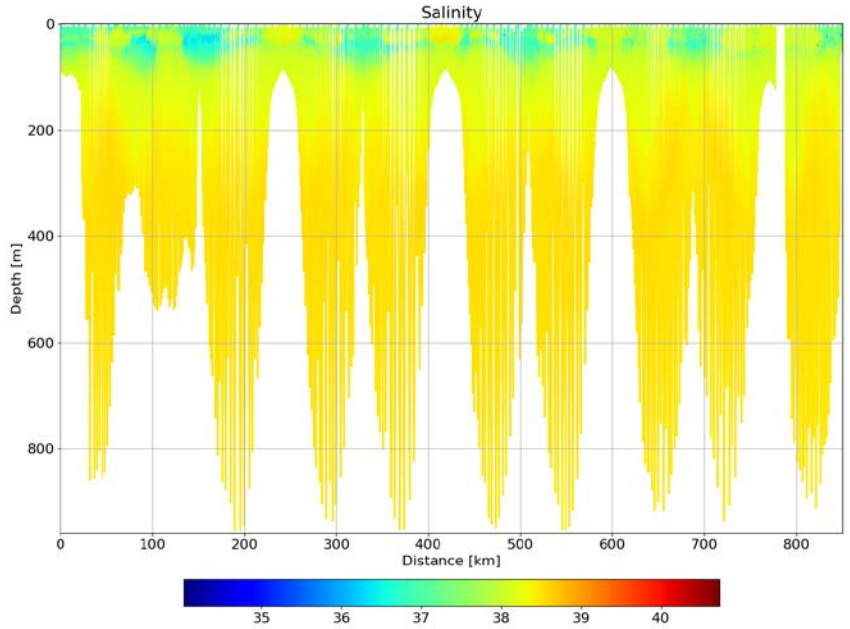

Figure 6 - Corrected salinity (full depth range)

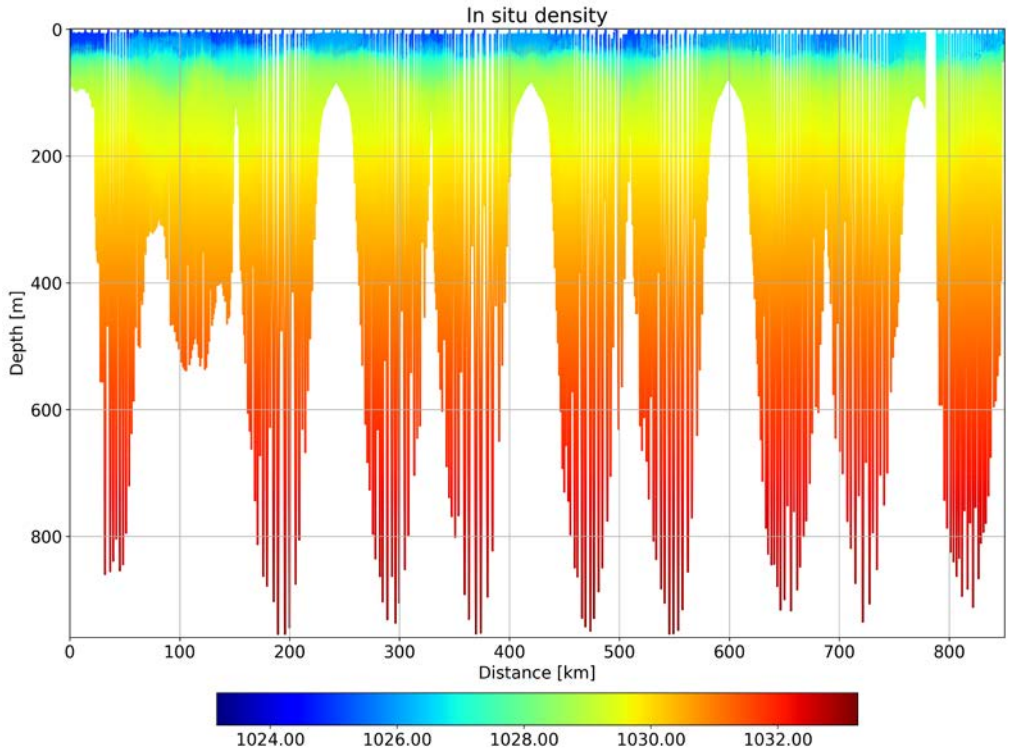

Figure 7 – In-situ Density derived from corrected salinity and temperature (full depth range)

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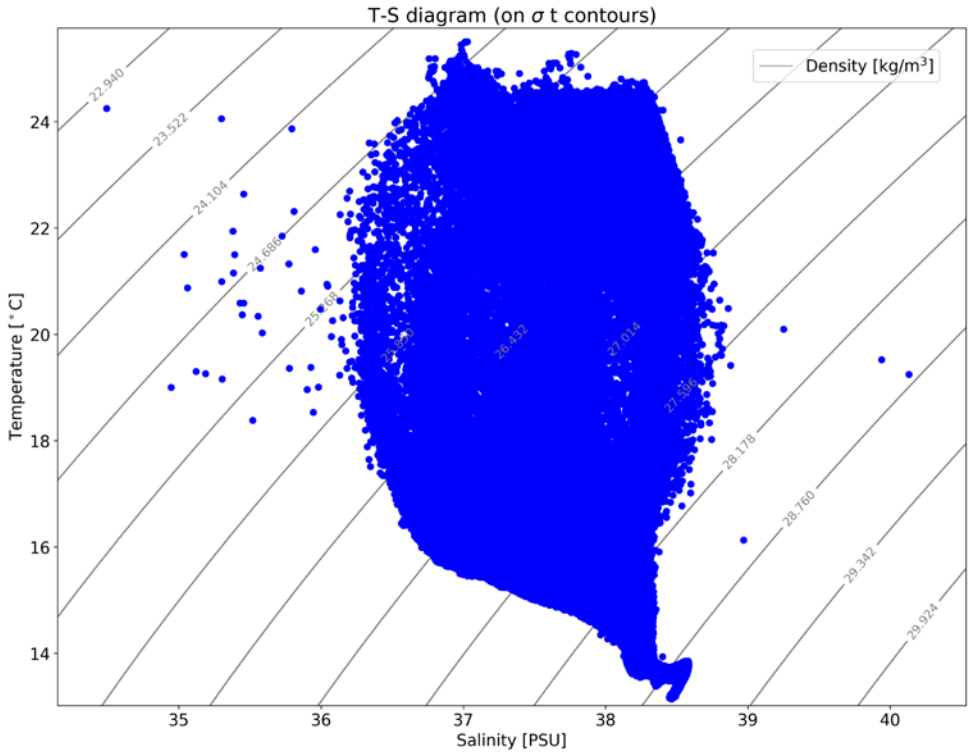

Figure 8 - T-S diagram (thermal-lag corrected)

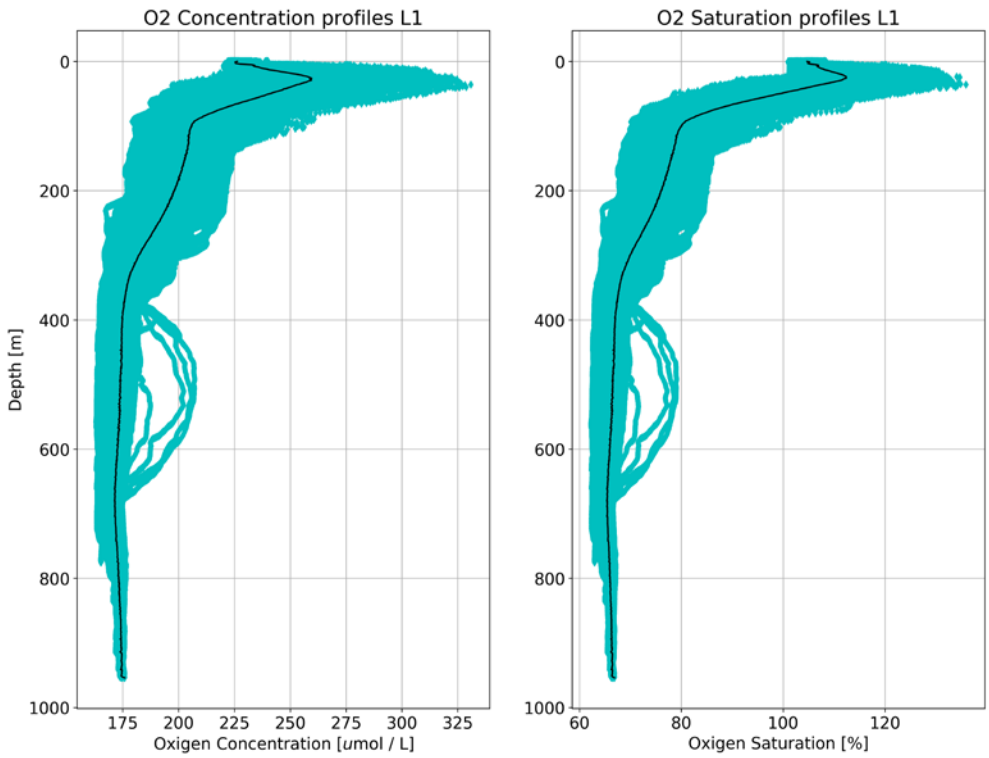

Figure 9 - In-situ oxygen profiles

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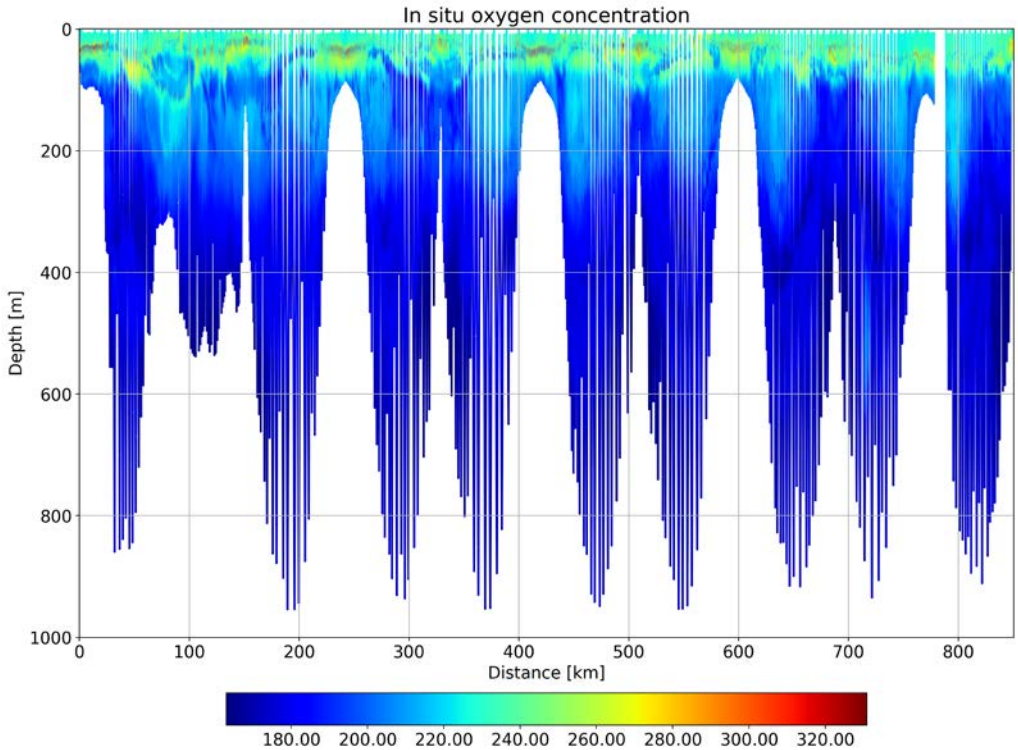

Figure 10 - In-situ oxygen concentration

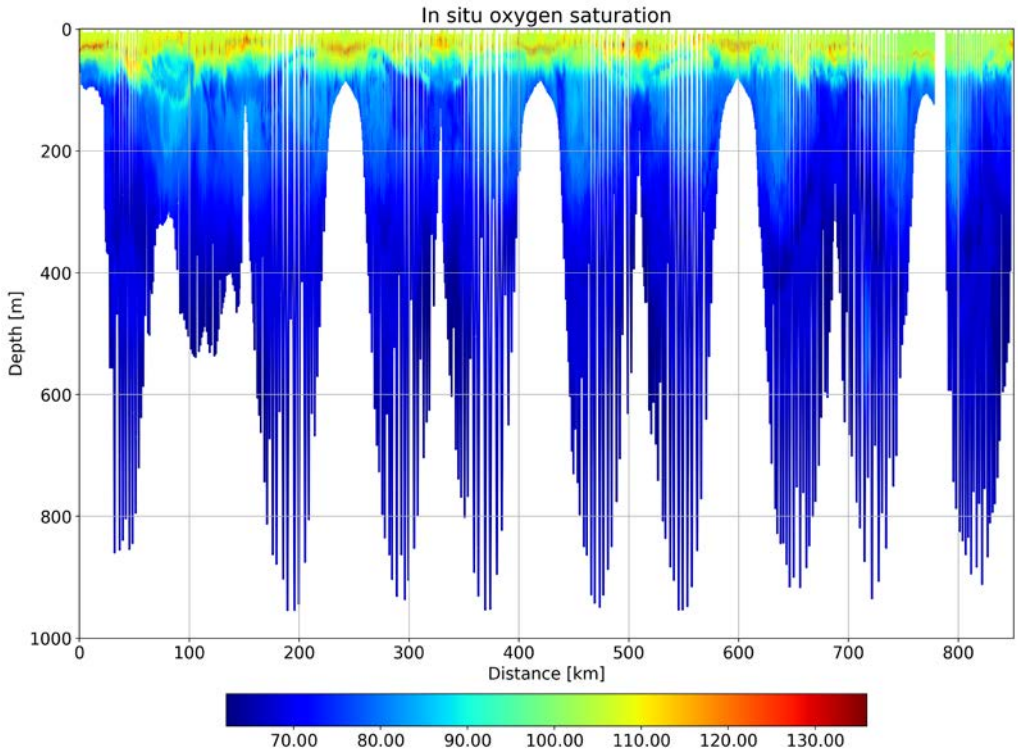

Figure 11 - In-situ oxygen saturation

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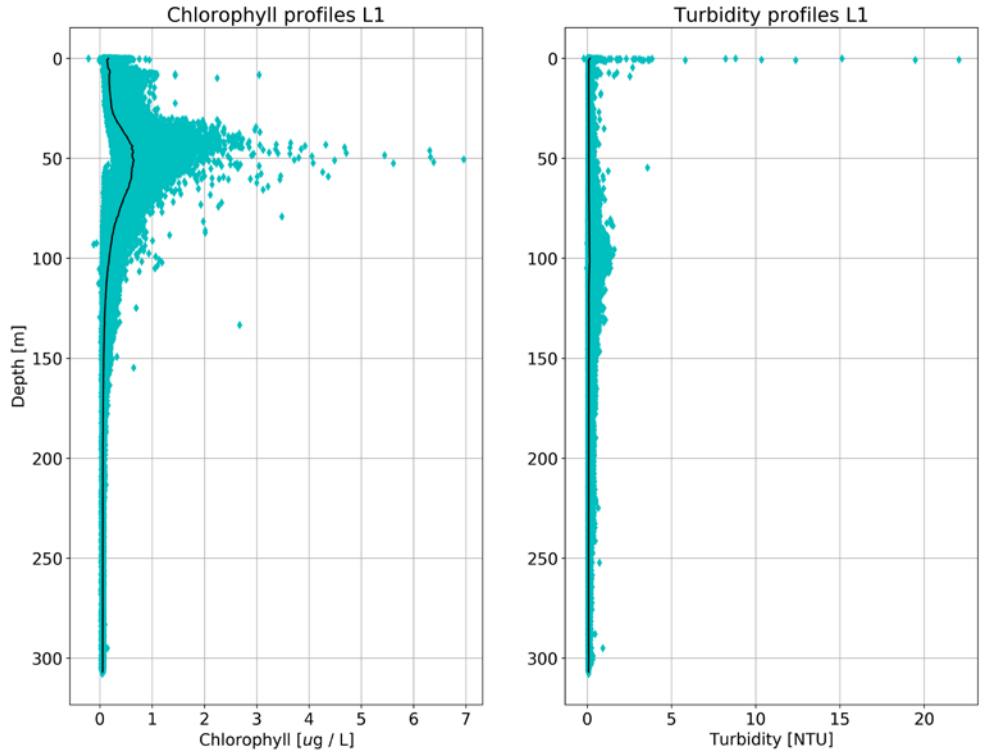

Figure 12 – In situ Chlorophyll and Turbydity profiles

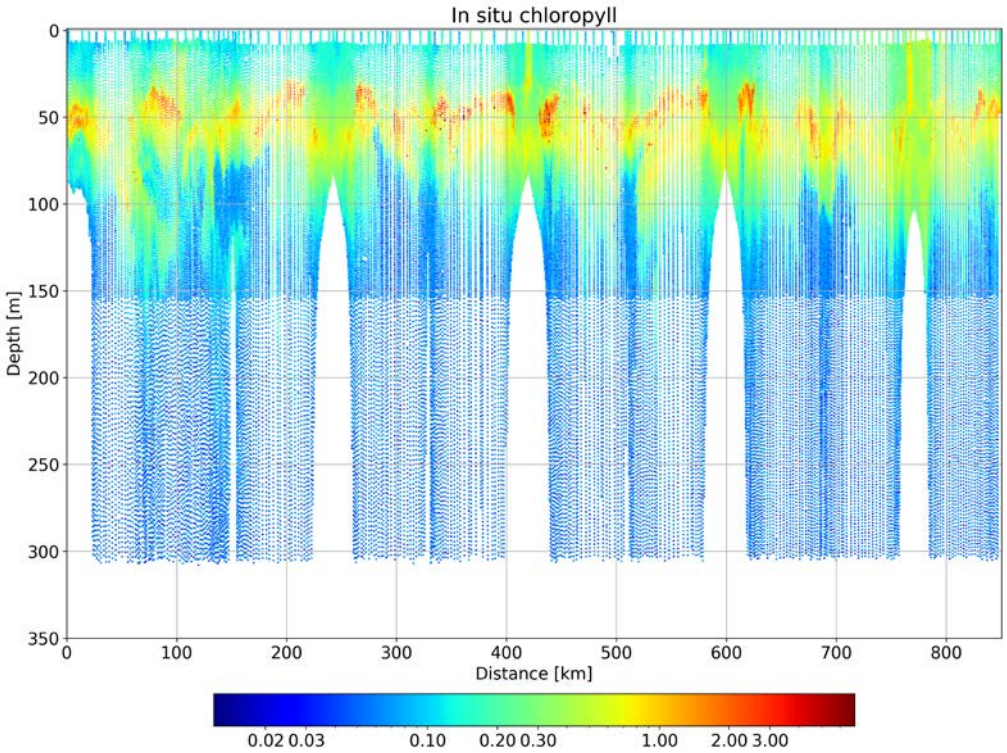

Figure 13 – In situ Chlorophyll

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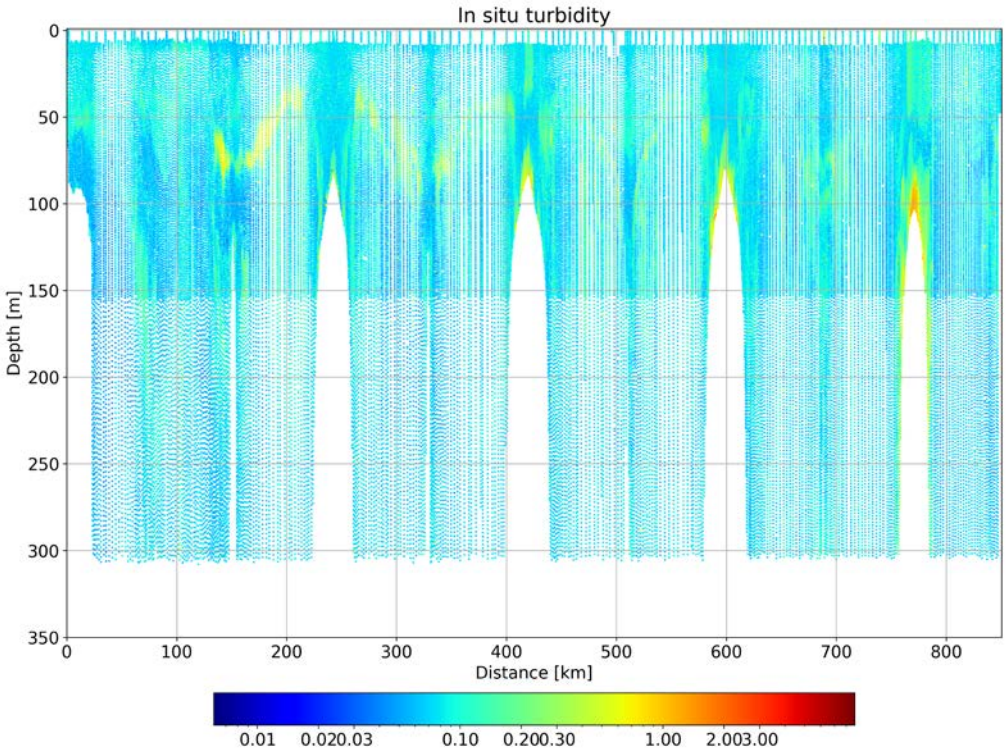

Figure 14 – In situ Turbydity

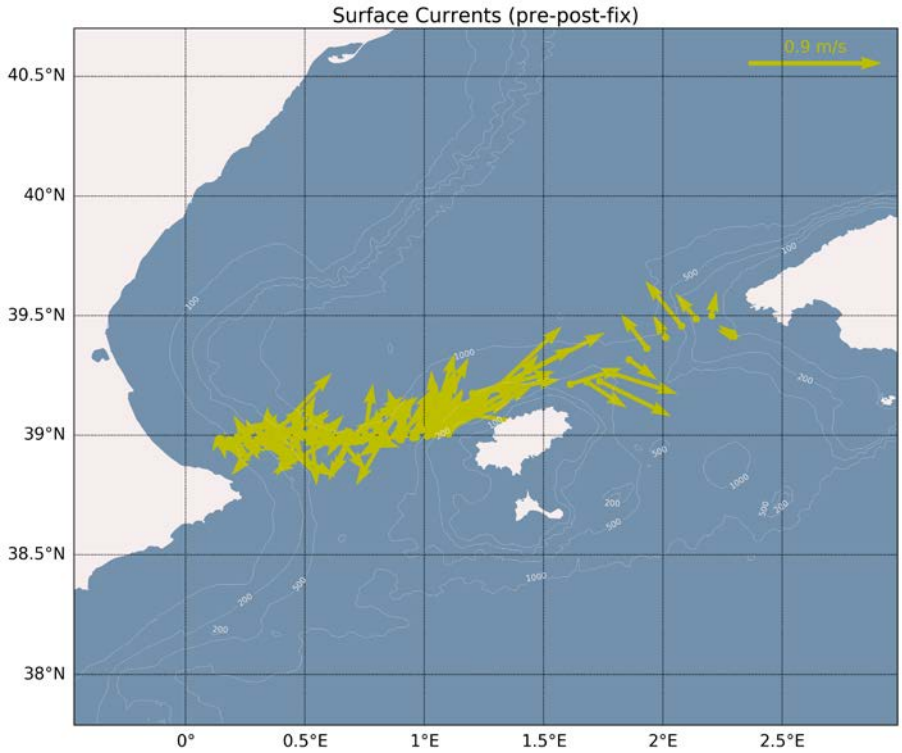

Figure 15 – Surface currents based on pre and post fix

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