

Glider Mission Summary Report

CANALES CAMPAIGN 2018

SOCIB GLIDING NOV2018 (GF-MR-0082)



Balearic Islands
Coastal Observing
and Forecasting
System



Mission Name	20181108_GF-MR-0082_SOCIB-ENL-CANALES-NOV2018_sdeep01
Platform Model	Slocum 1000m G2
Platform ID / Name / WMO Code	U244 / SDEEP01 / 68967
Related Platforms / Missions	<ul style="list-style-type: none"> None
Start Date (UTC)	2018-11-14 11:28:47
End Date (UTC)	2018-12-04 08:35:12
Total Days	19.9
Total distance (Km / Nm)	446.73[km] 241.21[nm]
Battery Consumption (Ah)	102 (reading from 2 to 104)
Survey Area	Mallorca and Eivissa Channels (Western Mediterranean Sea)
Objective(s)	<i>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.</i>
Significant events	<ul style="list-style-type: none"> Oil pump oddities Strange salinity profile due to malfunction on CTD pump, aborted mission Very high currents on Denia - Valencia

Mission Preparation

Preparation was a typical preparation

Step	Status	Comments
Hardware check	ok	Oil flux wrong direction. Known problem. Not solved during last refurbishment
Comms check	ok	SMS service out of order
Batteries check	ok	Eltec
Ballasting check	ok	Target density: 1025.158 g/L Tank density: 1027.64 g/L
Final sealing check	ok	Leak oil system
Fileset check	ok	Added the new TWR's SFMC dockserver number (First time since SFMC license was purchased)
Harbor check	ok	Performed in IMEDEA
Compass Error Measurement	NA	Not performed. Figure 1 belongs to previous mission GFMR0057

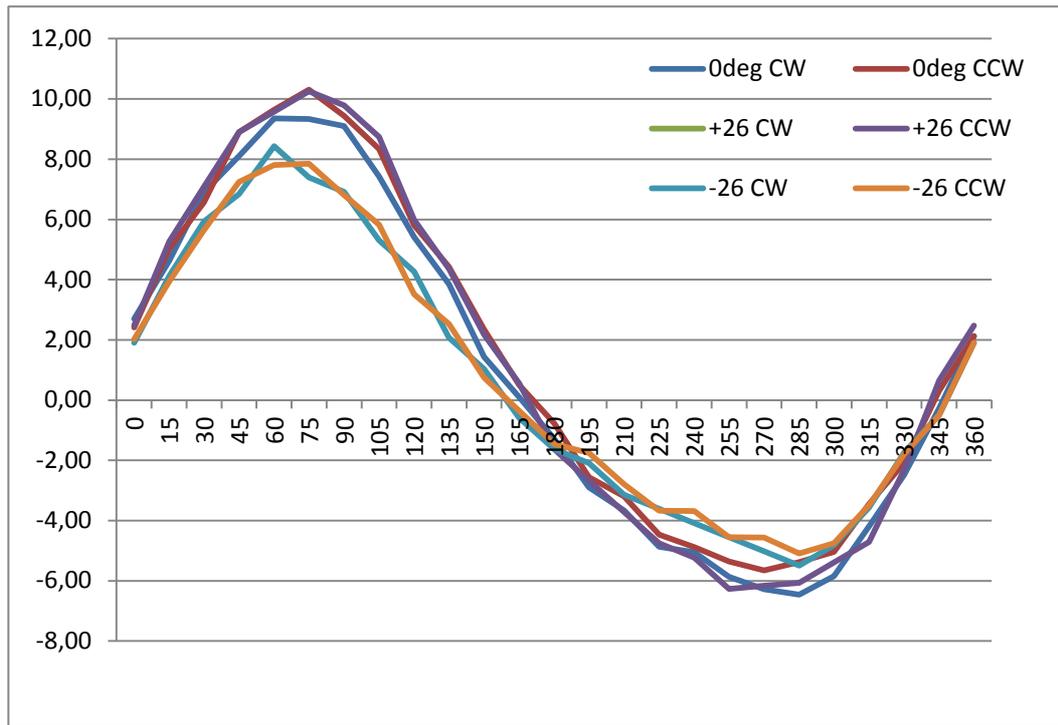


Figure 1 – Compass Error Measurement

Mission Survey

Deployment	Vessel: SOCIB R/V Personnel: 1 ETD + 1 GF Location: Sant Antoni - Eivissa
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Navigation
 It was satisfactory during the first Eivissa transect. Near Denia, glider suffered very hard currents to est-south direction. Due to this fact, it was impossible to achieve this waypoint. See Figure 2 – Commanded Waypoints and Figure 18 – Surface currents based on pre and post fix.

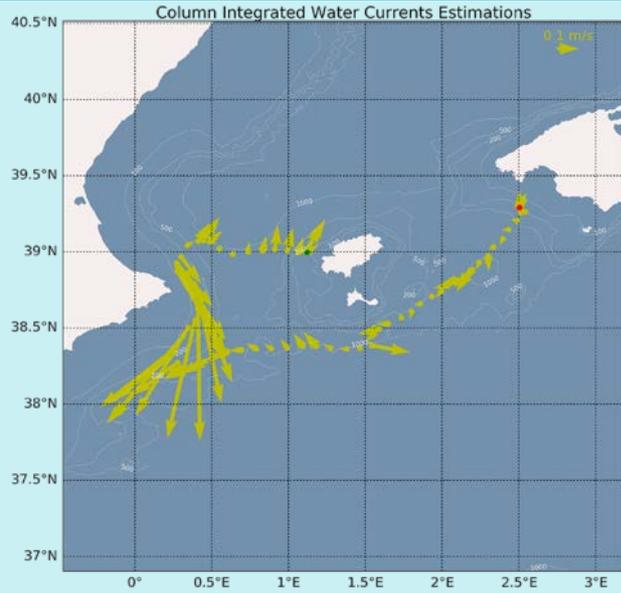


Figure 2 – Integrated Water Currents

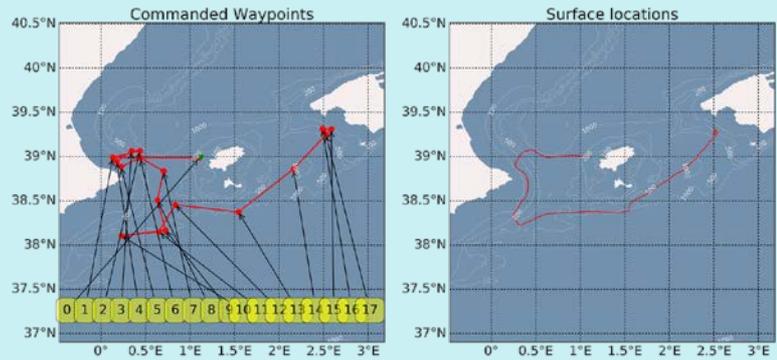


Figure 3 – Commanded Waypoints

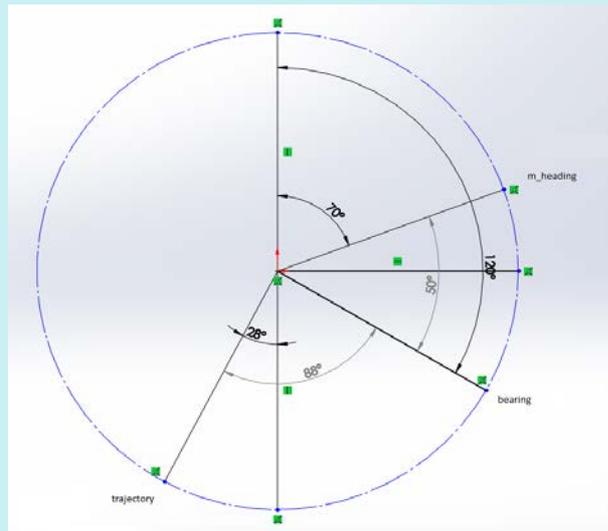


Figure 4 – Glider drift heading and position on 21/nov

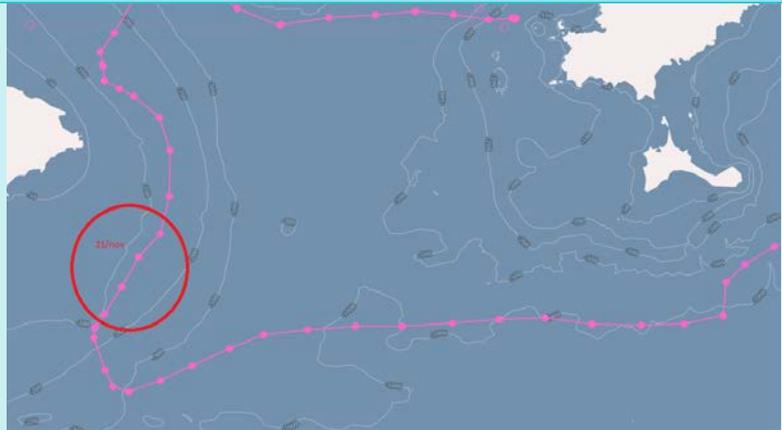


Figure 5 – Drift on shallow waters

In images above, **Figure 3 – Glider drift on 21/nov** and **Figure 4 – Drift on shallow waters**, glider tried to escape from currents with bearing of 120°, totally perpendicular to water current direction. But it didn't happen, currents were so hard, that digifin acted as a sail, m_heading was 70°. In this condition, glider do not work properly.

Underwater Maneuvering
Engineering

Internal oil leak. Oil went through the thermal valve or oil pump.

Sensor	Errors	Warnings	Oddities
Digifin	0	0	416
Iridium	0	0	84
GPS	0	5	0
attitude_rev	0	1	1
DE_PUMP	5	1	125



Figure 6 – Errors, warnings and oddities

Communication Systems

Total number iridium calls [num]: 82.0
 Iridium calls to secondary [num]: 0
 ON overall iridium period [s]: 9538.02359122
 Time iridium transmitting [s]: nan
 Iridium calls state from 99 to 10 [num]: 82
 Iridium calls state from 2 to 99 [num]: 81
 Iridium calls from 2 to 99 with c_iridium_on = 1 (Drop calls) [num]: 1
 Missed call detected on: 2018-11-14 11:28:47.678710+00:00
 Unstable comms detected on: 2018-11-14 11:28:47.678710+00:00

Contextual/Awareness Sensors

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

Hull/Hydrodynamics

No signs of problems

Mission Runs

1

Recovery	Premature recovery due to CTD pump malfunction. Evidence of that in TS plot. After the recovery, GFMR0083 with ideep02 started.
Vessel:	Socib I
Personnel:	1ETD + 1 GF
Location:	Palma Bay

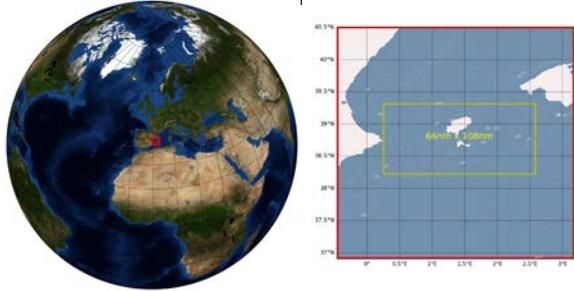
Glider Behavior

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)
14/11/2018	Initial config	15	950	40	∞	12	4,12, 20	100	on	±26	servo	ON	0	60
16/11/2018	Goto current provision												1	
18/11/2018	Oil full range													
18/11/2018	Return to St. Antoni													
18/11/2018	Glider trapped													
21/11/2018	Possible scape to south			20						±18				
22/11/2018	Return to deep waters									±26		OFF		
23/11/2018	Goto Recovery												2	
03/12/2018	Recovery													

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:	15/mar/2016	07/jun/2016	08/oct/2015	
Casts:	1025	368	368	
Half-Yos:	1026	1026	1026	
Samples:	490016	68291	33365	
Sampled distance [km]:	232	35	44	
Intersample time [s]:	3.355	5.747	9.289	
Sampling Frequency [Hz]	1/2	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	N	N	
Sampling during Surface	N	N	N	

Principal Investigator (e-mail or contact phone/address)	<ul style="list-style-type: none"> Prof. Joaquim Tintoré [SOCIB – Accessed Infrastructure] jtintore@socib.es (+34 971439821)
Institute	SOCIB in collaboration with IMEDEA
Project Affiliation (web-site)	http://www.socib.eu
Partnership / Participation	<ul style="list-style-type: none"> SOCIB (Accessed Infrastructure) IMEDEA (in-kind contribution)
Glider Software Version	Nav : 7.21 Acomms, Payload: 3.17
Data Retrieval (real-time [RT] / delayed-mode [DM])	<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/sdeep01-scb_sldeep001/catalog.html
Further Details	glidertech@socib.es
Global Overview	 <p>Figure 7 - Map providing general overview of the Survey Area</p> <p>Online track: http://apps.socib.es/dapp/?deployments=874-21-100-FF3300&layers=none&units=scientific</p>

Scientific Preliminary Review

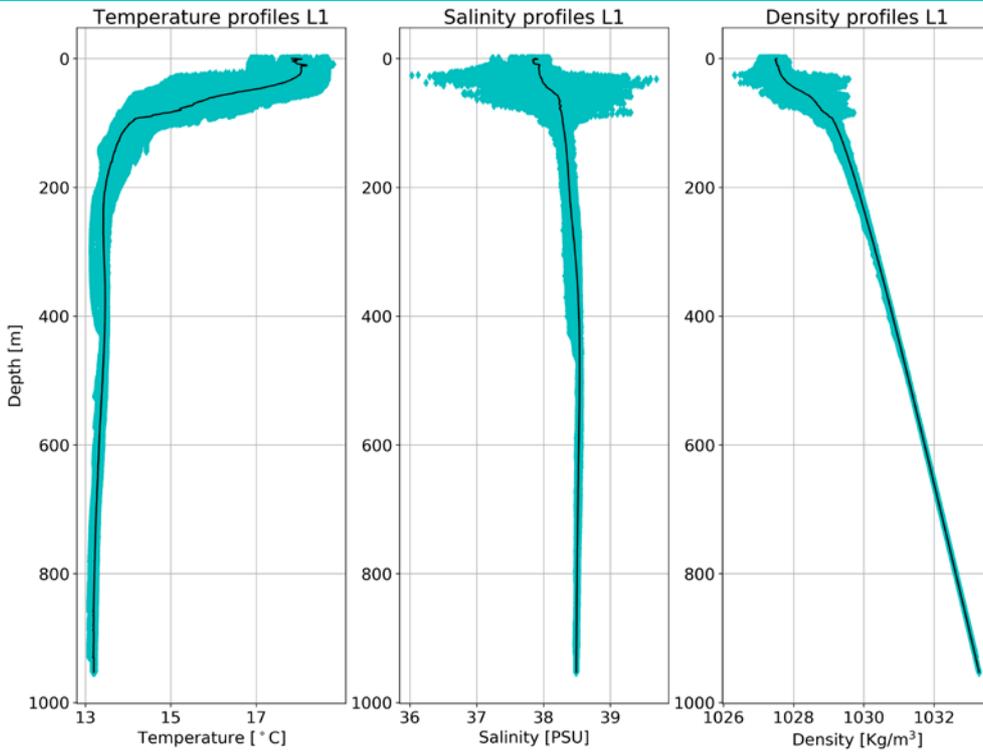


Figure 8 - CTD profiles

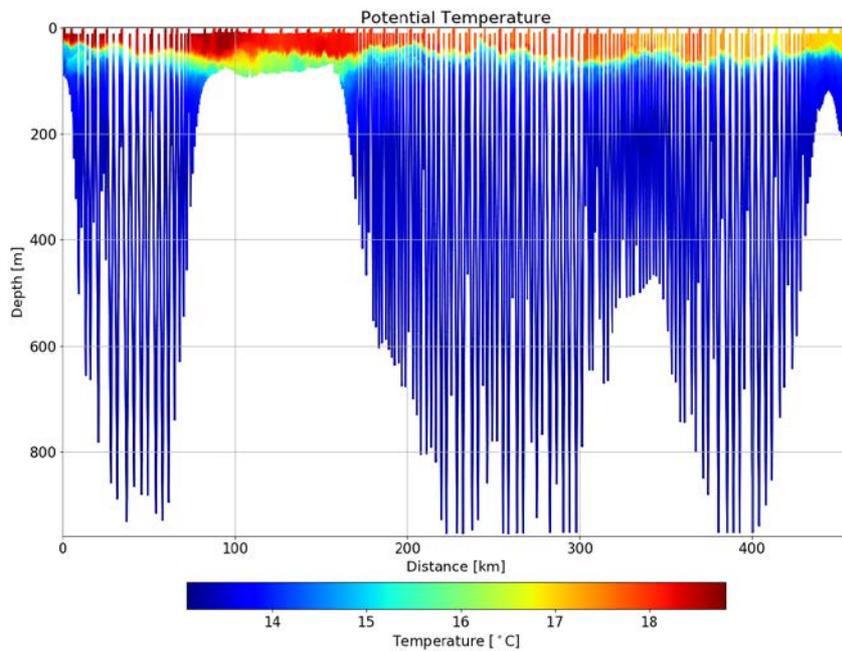


Figure 9 - Potential temperature (full depth range)

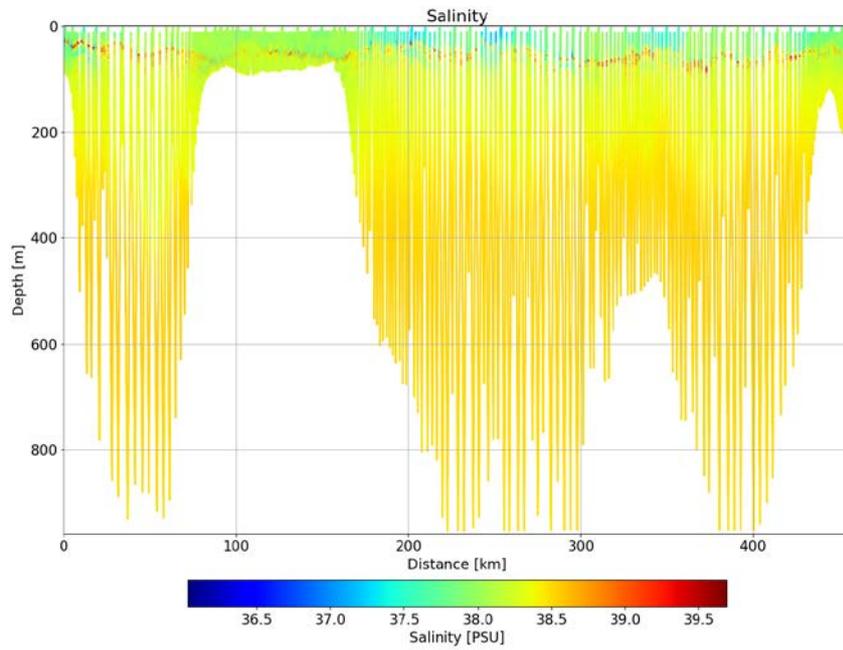


Figure 10 - Corrected salinity (full depth range)

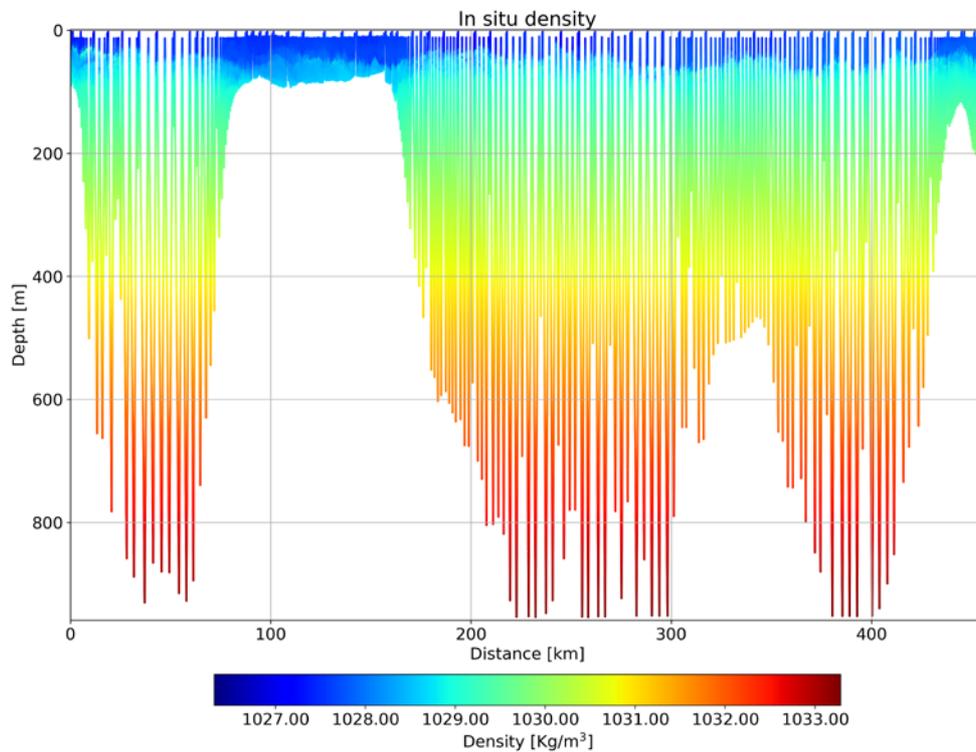


Figure 11 – In-situ Density derived from corrected salinity and temperature (full depth range)

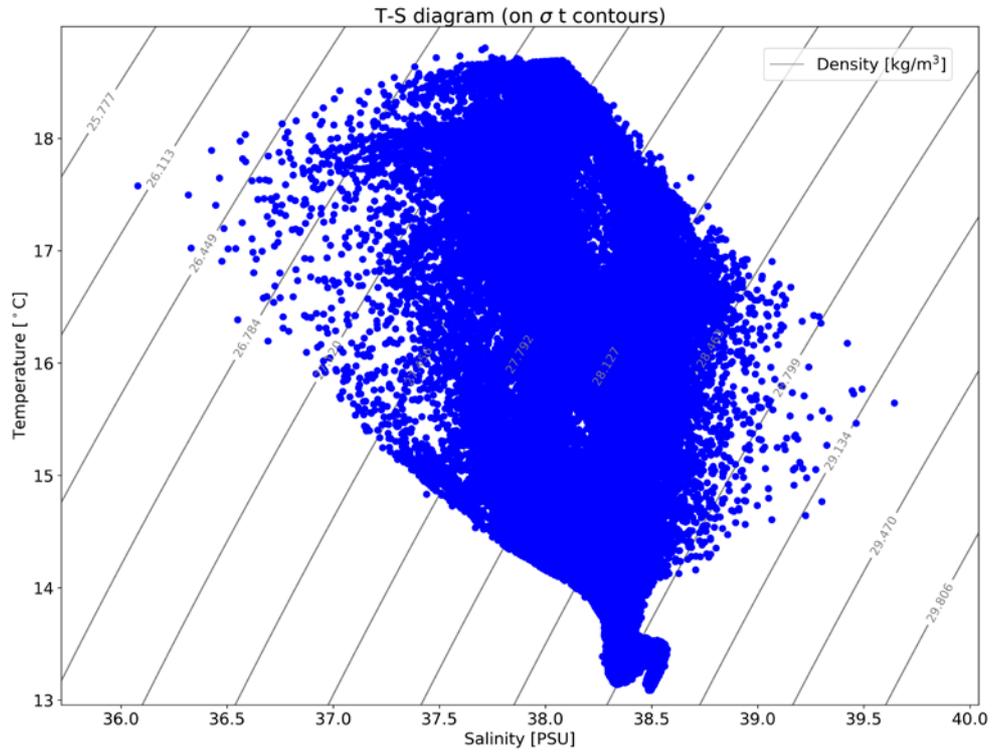


Figure 12 - T-S diagram (thermal-lag corrected)

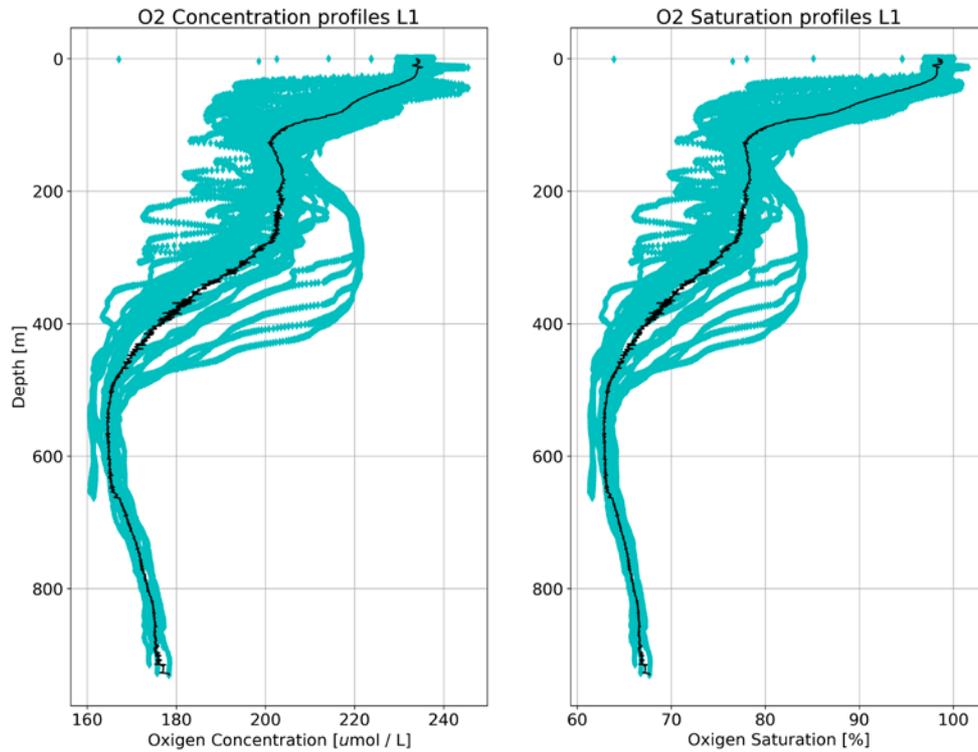
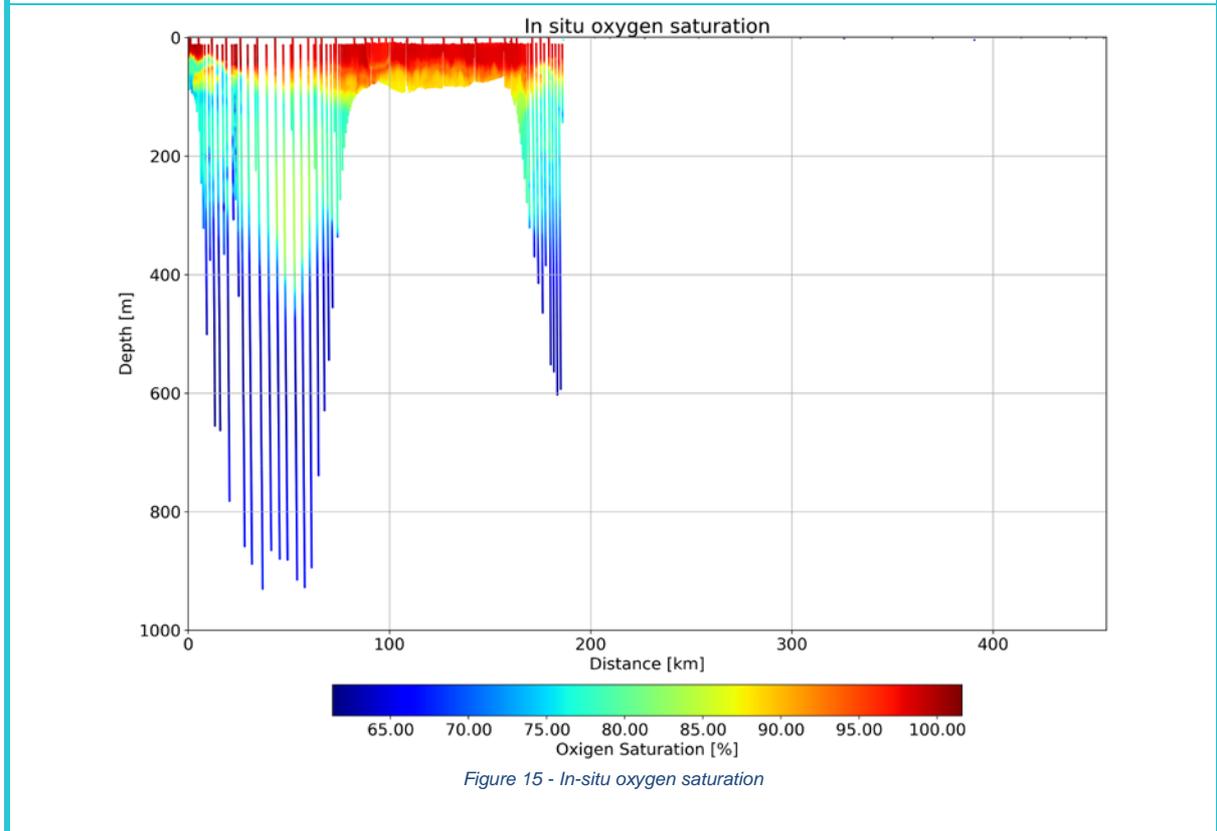
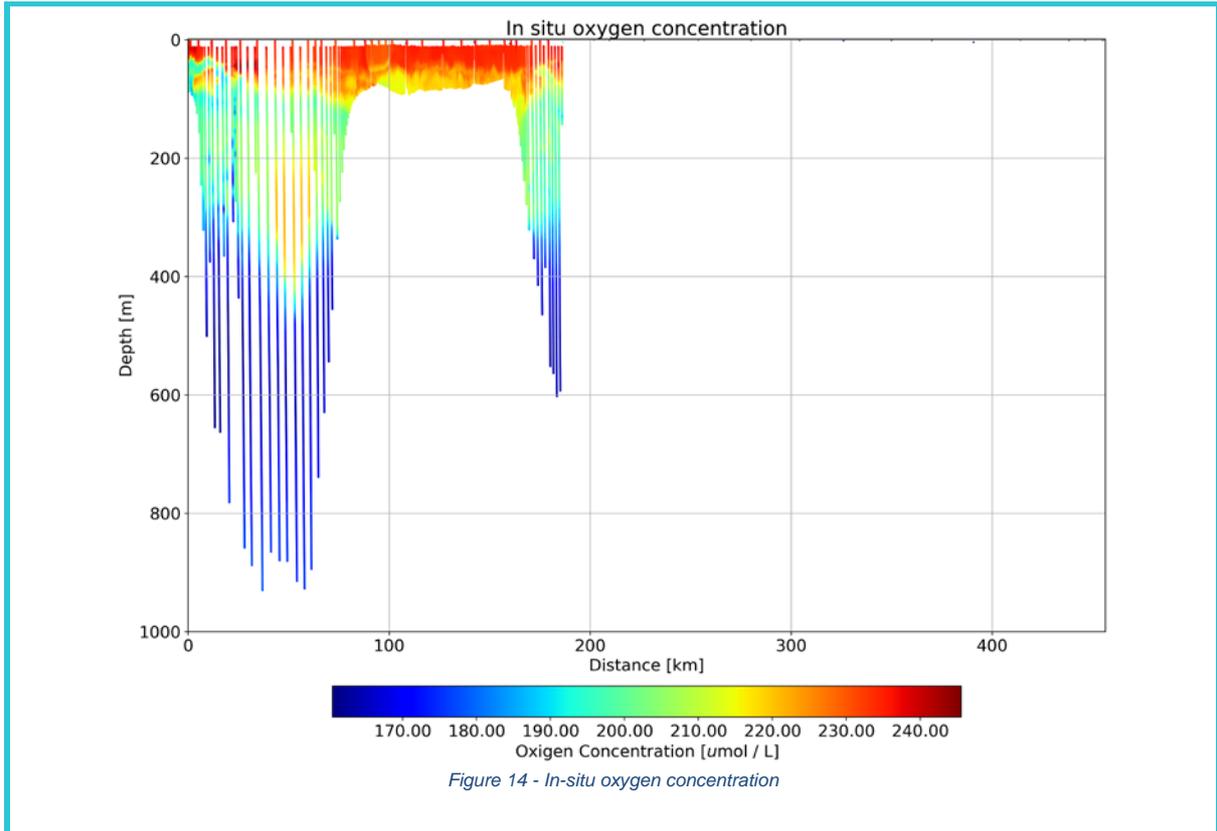


Figure 13 - In-situ oxygen profiles



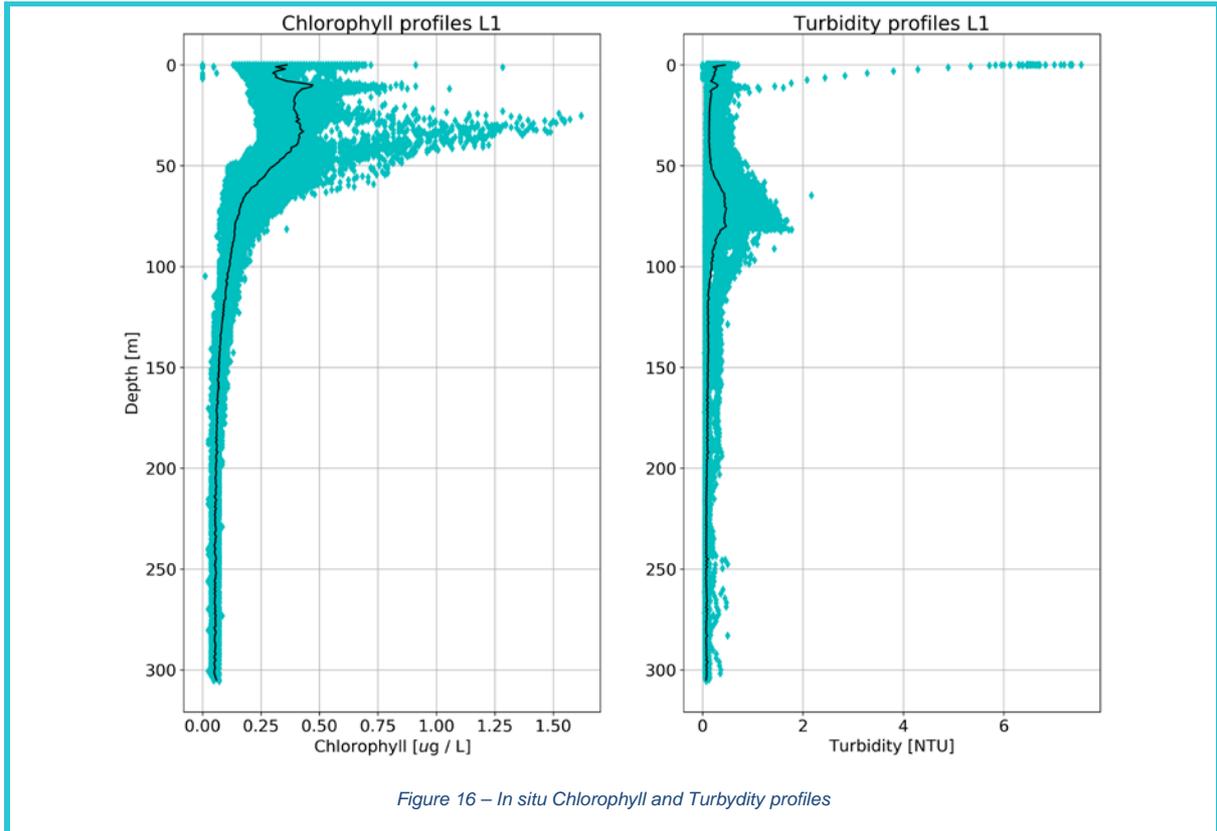


Figure 16 – In situ Chlorophyll and Turbidity profiles

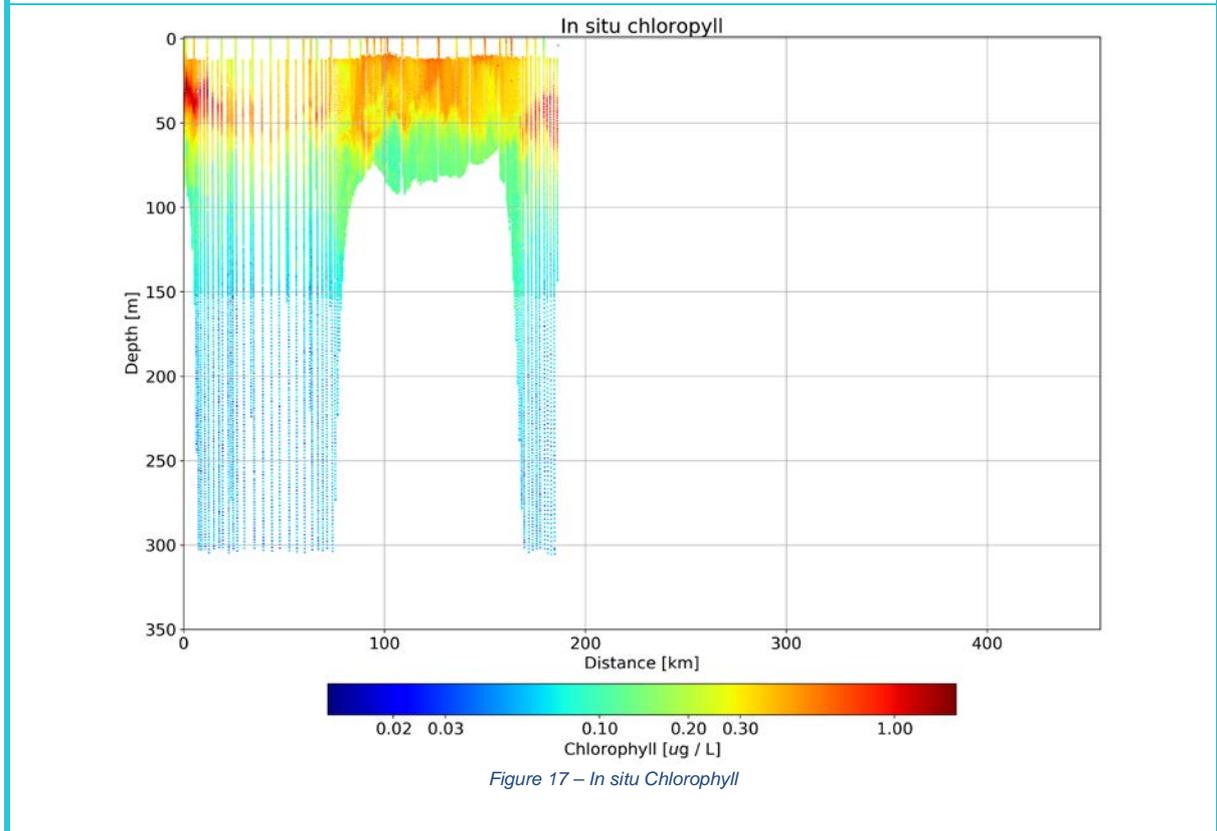


Figure 17 – In situ Chlorophyll

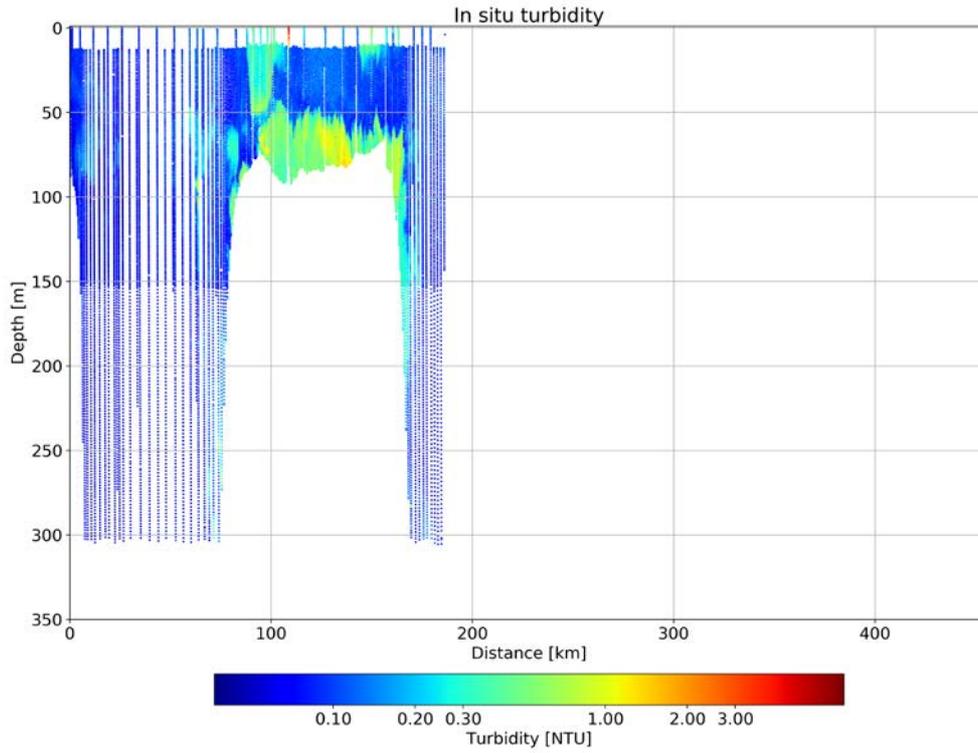


Figure 18 – In situ Turbidity

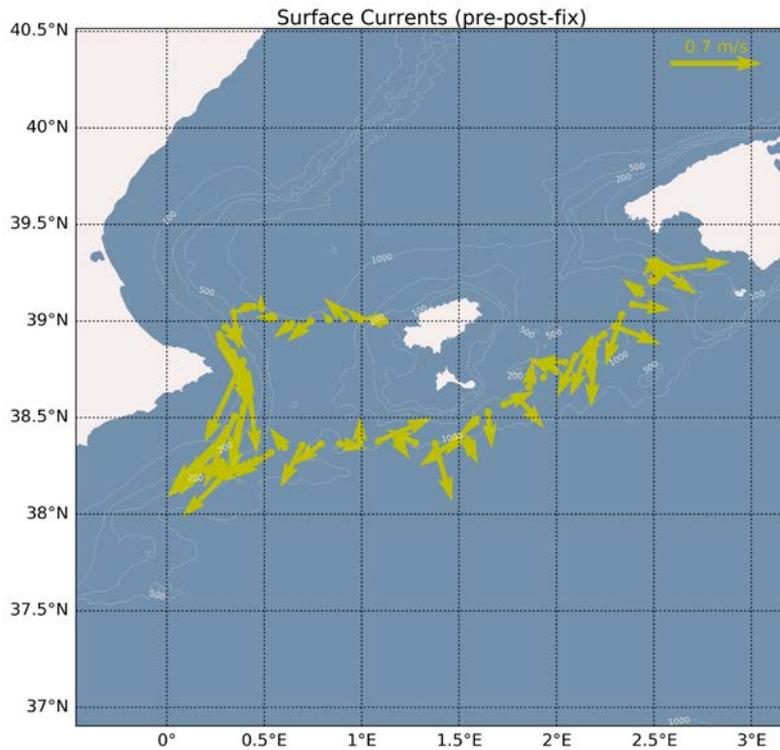


Figure 19 – Surface currents based on pre and post fix