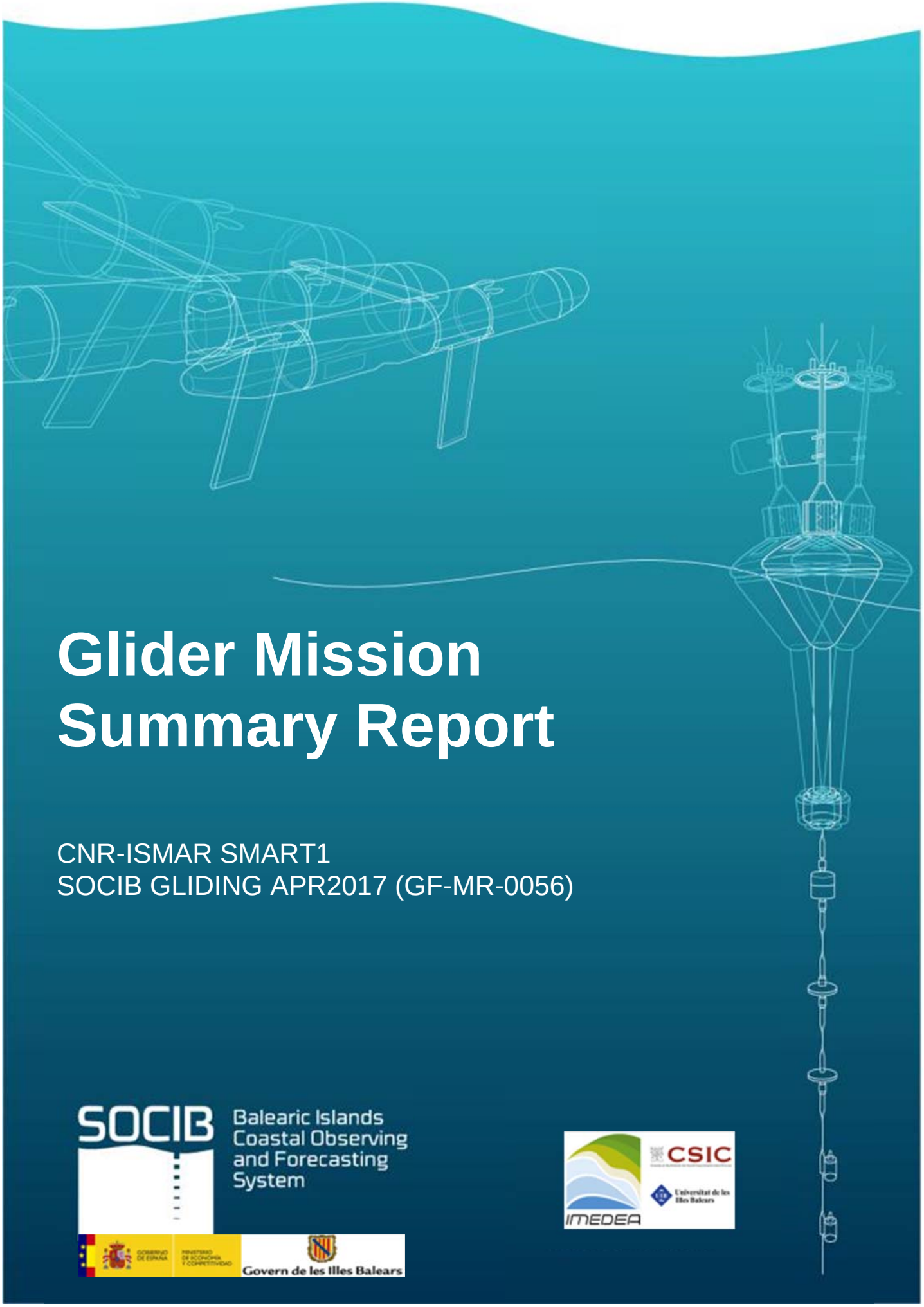

Glider Mission Summary Report

CNR-ISMAR SMART1
SOCIB GLIDING APR2017 (GF-MR-0056)

SOCIB Balearic Islands Coastal Observing and Forecasting System

Govern de les Illes Balears

CSIC

IMEDEA

Universitat de les Illes Balears

Mission Name		*20170406_GF-MR-0056_CNRismar-EXT-SMART_APR2017_teresa*	
Platform Model		*Slocum 1000m G2*	
Platform ID / Name / WMO Code		*U518 / teresa / unknown*	
Related Platforms / Missions		• *None*	
Start Date		*2017-04-06 13:55:56 UTC*	
End Date		*2017-04-26 10:38:21UTC*	
Total Days	*19.9*	**Total distance (Km / Nm)**	*435 / 234*
Battery Consumption (Ah)		*103 (reading from 44 to 148)*	
Battery Type		*Eltec (310 Ah-nominal capacity) (New)*	
Survey Area		*Sardegna – Menorca channel [Western Mediterranean Sea]*	

Objective(s)

***SMART** - **S**ardinia - **MA**llorca **R**epeated **T**ransect*

Set-up of a long-term repeated transect Menorca-Sardinia to monitor medium-to-long-term variability of surface and intermediate water masses. Investigation of turbulence structures in the WEST MED by means of a microstructure profiler (MicroRider) mounted on the glider. The glider will also be able to reach the transitional layer between intermediate and deep water, which is subject to the effects of the WMT and where thermohaline staircase are likely to form, These features are of special interest when observed with a microstructure profiler.

SCI Profiles

Sensor Type:	***CTD seabird***	***OPTODE Aanderaa***	***MicroRider***
Serial number:	*9239*	*0360*	*1206*
Calibration date:	*23/sep/2014*	*20/may/2014*	*13/aug/2012*
Casts:	*356*	*356*	*Unknown*
Half-Yos:	*356*	*356*	*356*
Samples:	*na*	*na*	*Unknown*
Sampled distance [km]:	*241*	*241*	*Unknown*
Intersample time [s]:	*3.331*	*9.93*	*Unknown*
Sampling Frequency [Hz]	*1/2*	*1/8*	*0 (as fast as possible)*
Depth range this configuration applies (m)	*[-5, 2000]*	*[-5, 2000]*	*[-5, 2000]*
Sampling during Diving	*Unknown*	*Unknown*	*Unknown*
Sampling during Overing	*Unknown*	*Unknown*	*Unknown*
Sampling during Climbing	*Unknown*	*Unknown*	*Unknown*
Sampling during Surface	*Unknown*	*Unknown*	*Unknown*

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

Mission Preparation

Preparation was undertaken by CNR-ISMAR technicians, at their facilities in La Spezia, in collaboration with SOCIB's Glider Facility members who provided remote (on-line meetings and emails) support.

Contact Mr. Mireno Borginin (mireno.borghini@sp.ismar.cnr.it) for details.

Mission Survey

Navigation	*It was very satisfactory. The glider responded well to the commanded target waypoints.*
Underwater Maneuvering	*Two main configurations were applied during the deployment: deep flying mode during the operative part of the mission in other to reduce consumption; and*

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	adaptive flying mode in the rest of the mission in order to avoid collisions with seabed.
Engineering	***Sensor*** ***Errors*** ***Warmings*** ***Oddities*** *Digifin 0 11 412* *Iridium 1 0 122* *GPS 0 7 0* *Science_super 0 1 1* *attitude_rev 1 1 0* *ocean_pressure 0 0 1*
Communication Systems	*Were reliable and fluent*
Contextual/Awareness Sensors	*Pressure transducer, internal vacuum and internal temperature seemed to have worked correctly. Compass also reported coherent values. Altimeter detected the bottom correctly.*
Hull/Hydrodynamics	*No signs of problems*
Mission Runs	*1*

Glider Behavior

Date:	*06/04/2017*	*09/04/2017*	*12/04/2017*	*19/04/2017*	*21/04/2017*			
Underwater Top Inflection Depth (m):	*-15*	*“*	*“*	*“*	*“*			
Underwater Bottom Inflection Depth (m)	*-950*	*“*	*“*	*“*	*“*			
Minimum Distance to Sea-floor to be kept (m)	*40*	*“*	*“*	*“*	*“*			
Surface upon completion of this # of dives	*1*	*“*	*2*	*“*	*∞*			
Surface if this amount of hours without stable communications (hrs)	*12*	*“*	*“*	*“*	*“*			
Surface at this particular UTC times	*disabled*	*“*	*“*	*“*	*5,11,17,21*			
Surface if a waypoint is hit within that distance (km)	*1*	*“*	*“*	*“*	*“*			
Altimeter	*off*	*“*	*“*	*On*	*“*			
Buoyancy Drive (cc-dive, cc-climb)	*-220, 233*	*“*	*-240,233*	*“*	*“*			
Pitch Control (dive, climb)	*-26º, 26º*	*1.04”,0.159”*	*-22º,0.159”*	*“*	*0.7856”, 0.159”*			

Administration / Notification

Although multiple administrative and notification procedures took place during the different stages described above, these have not been reported because are considered out of the scope of this report. Same applies for multimedia and public-diffusion (special and more intense actions taken in that aspect. Contact gliderteh@socib.es and outreach@socib.es for specific information); and also for accounting.

HHRR

The novelties and exigencies of this mission required of an extraordinary team coordination (with more people involved and number of intra-communications). Nevertheless, coordination amongst multiple participants (glider-techs, field-techs, scientists & outreachers) was fluent and efficient. There were no personal damages and the availability of each member, for all the tasks assigned at each moment, was correct (including on-alert shifts for field intervention and 24/7 glider monitoring during survey -which was more intense than usual-). Interaction with external partners was also very fruitful.

Compass Error Check

Not performed

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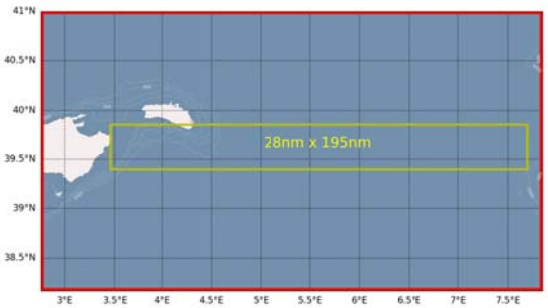
Principal Investigator (e-mail or contact phone/address)	• *Dr Jacopo Chiggiato [CNR-ISMAR – Accessing User]* *jacopo.chiggiato@ismar.cnr.it (+39 041.2407.945)*
Institute	• *SOCIB in collaboration with IMEDEA* • *CNR-ISMAR Istituto di Scienze Marine* *Arsenale - Tesa 104, Castello 2737/F, 30122* *Venezia, Italy*
Project Affiliation (web-site)	*http://www.socib.eu* *http://www.ismar.cnr.it/*
Partnership / Participation	• *CNR-ISMAR (Jerico-Next-TNA User)* • *SOCIB (Accessed Infrastructure)*
Glider Software Version	*Nav : 7.16 SBMB2, Payload: 7.16*
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/teresa-cnr_teresa/catalog.html*
Further Details	*mireno.borghini@sp.ismar.cnr.it* *glidertech@socib.es*
Global Overview	  *Figure 1 - Map providing general overview of the Survey Area* Online track: http://apps.socib.es/dapp/?deployments=489-3-0-000033,707-21-0-990033&layers=none&units=scientific

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Scientific Preliminary Review

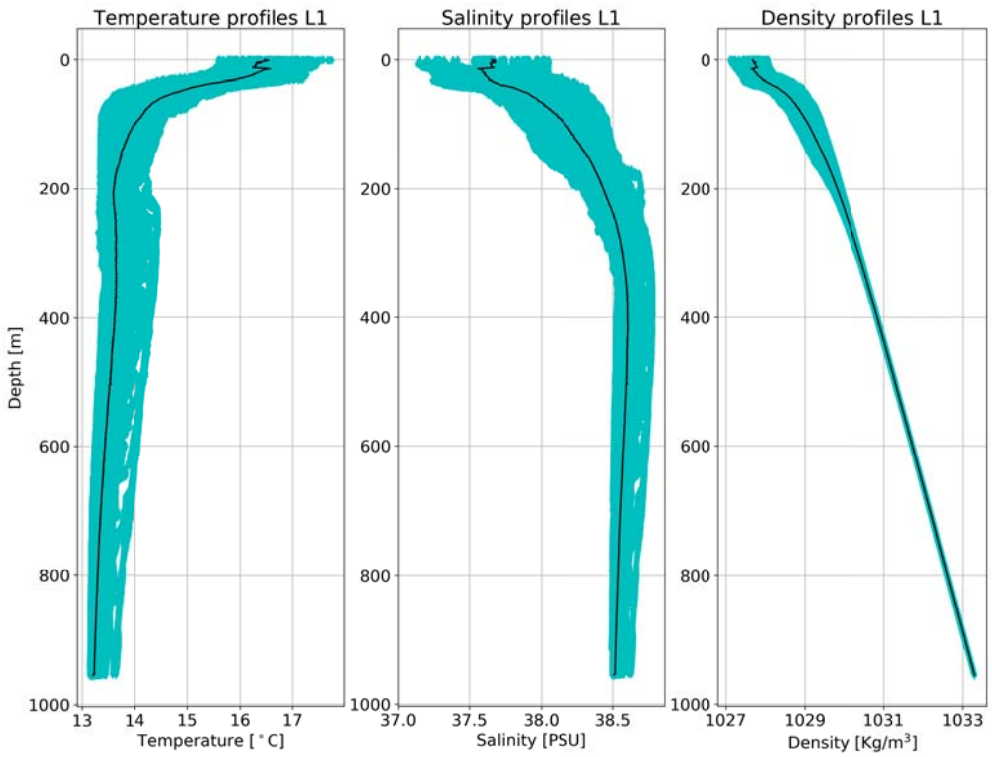

Figure 2 - CTD profiles

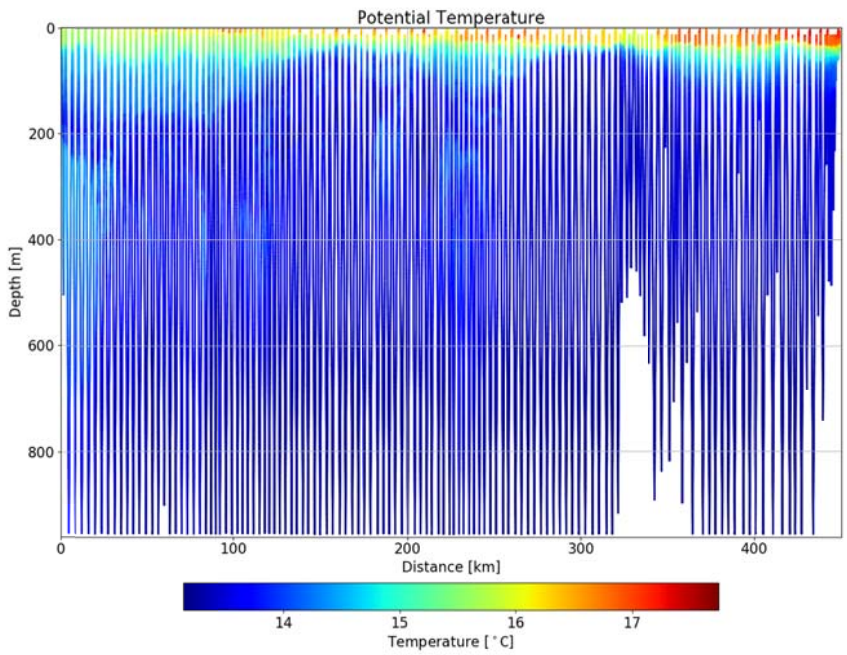

Figure 3 - Potential temperature (full depth range)

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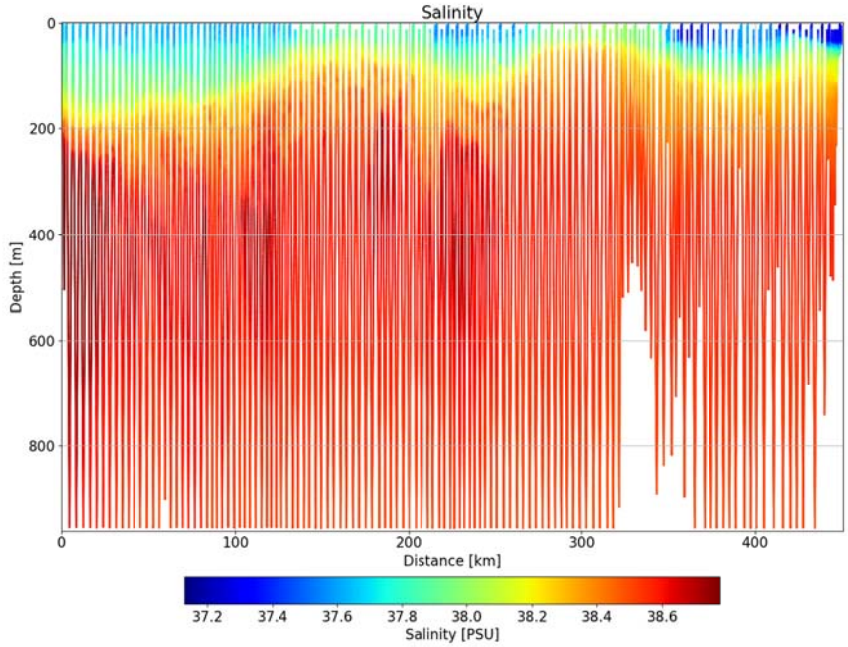

Figure 4 - Corrected salinity (full depth range)

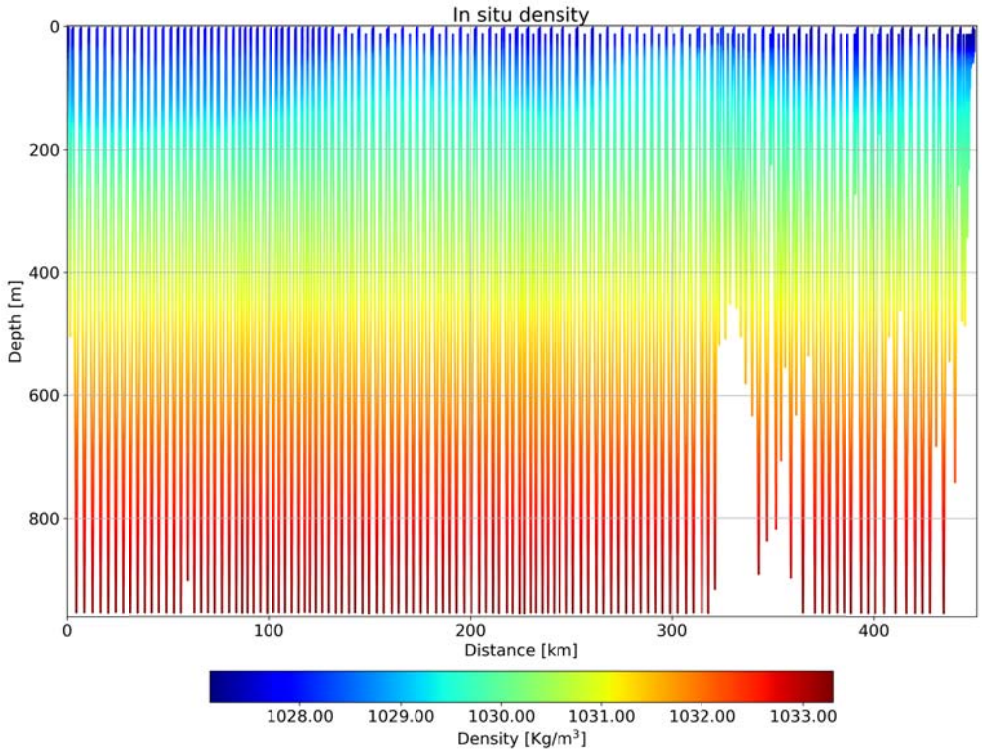

Figure 5 – In-situ Density derived from corrected salinity and temperature (full depth range)

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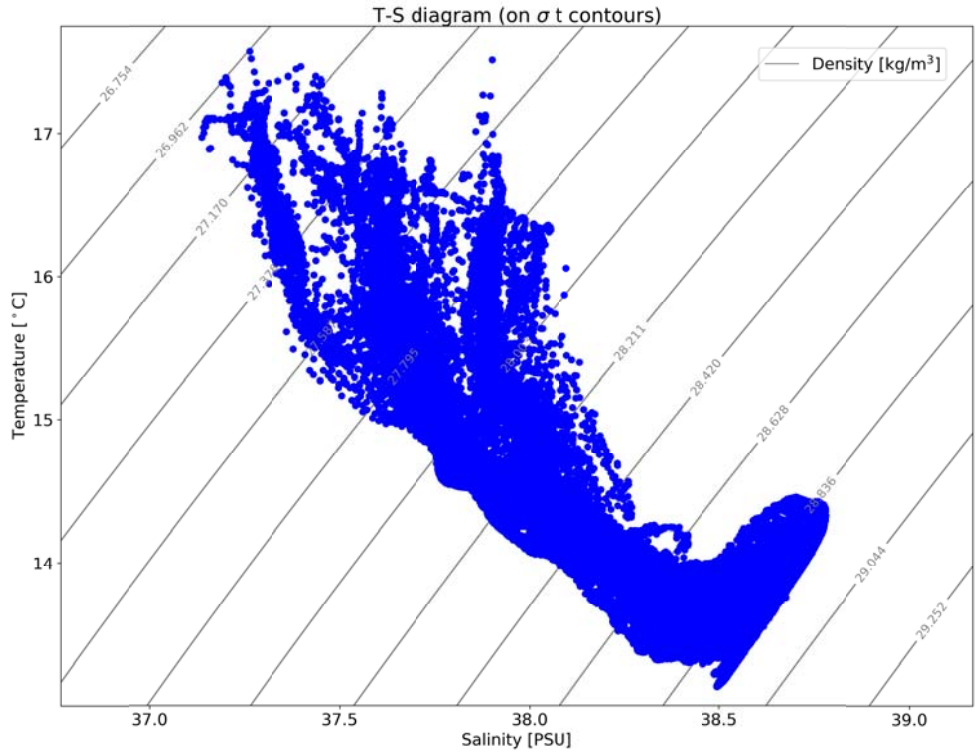

Figure 6 - T-S diagram (thermal-lag corrected)

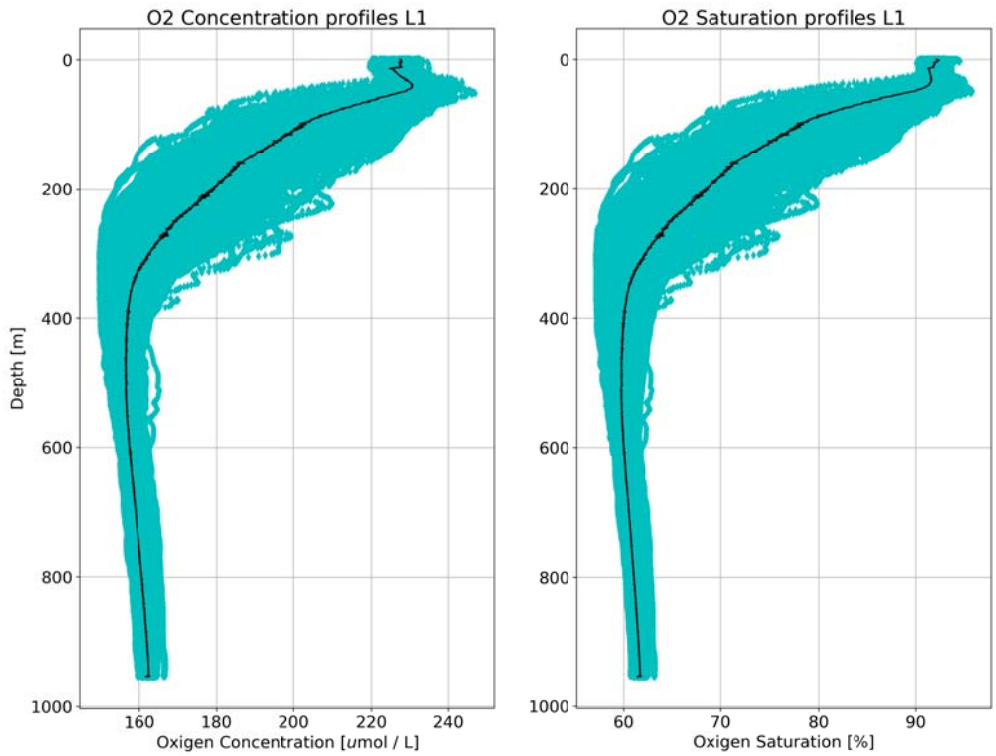

Figure 7 - In-situ oxygen profiles

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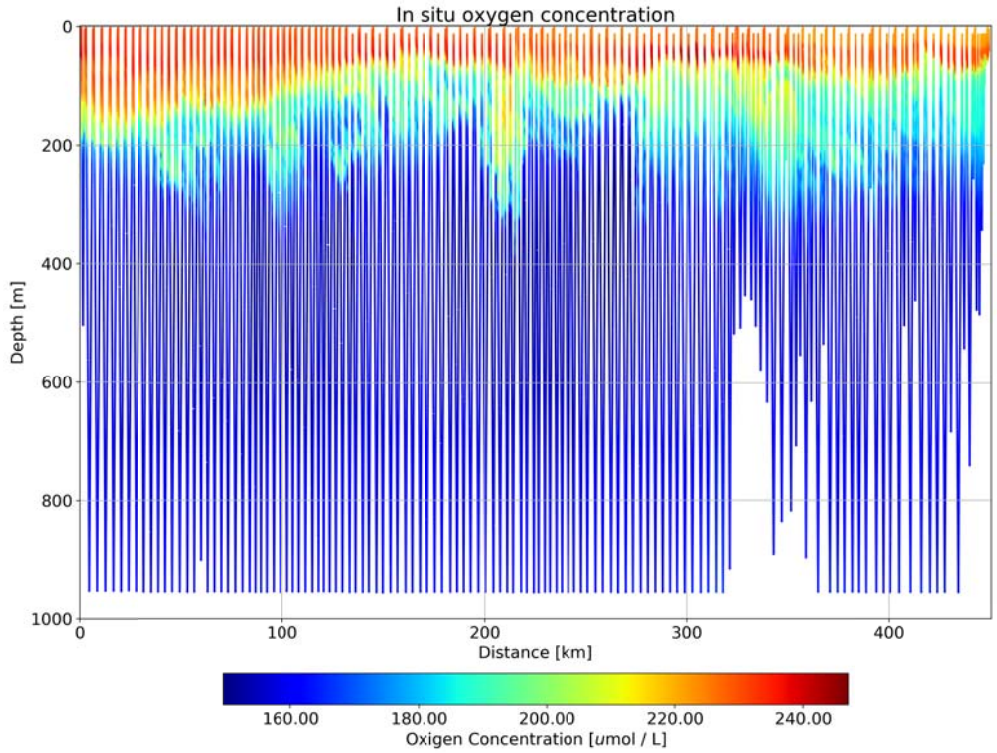

Figure 8 - In-situ oxygen concentration

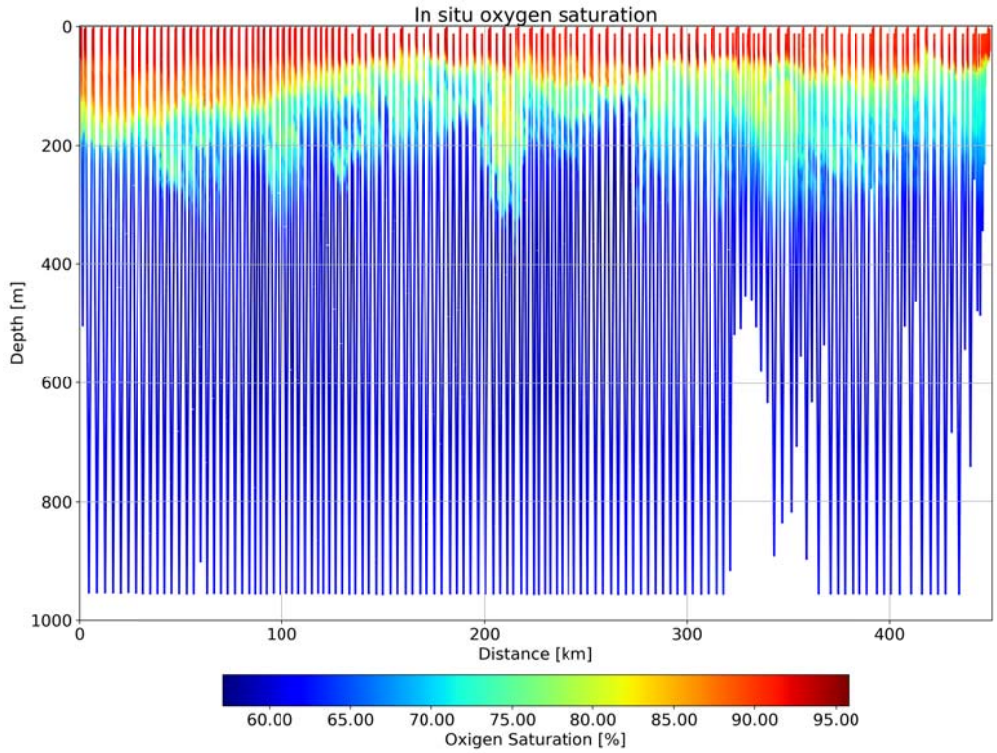

Figure 9 - In-situ oxygen saturation

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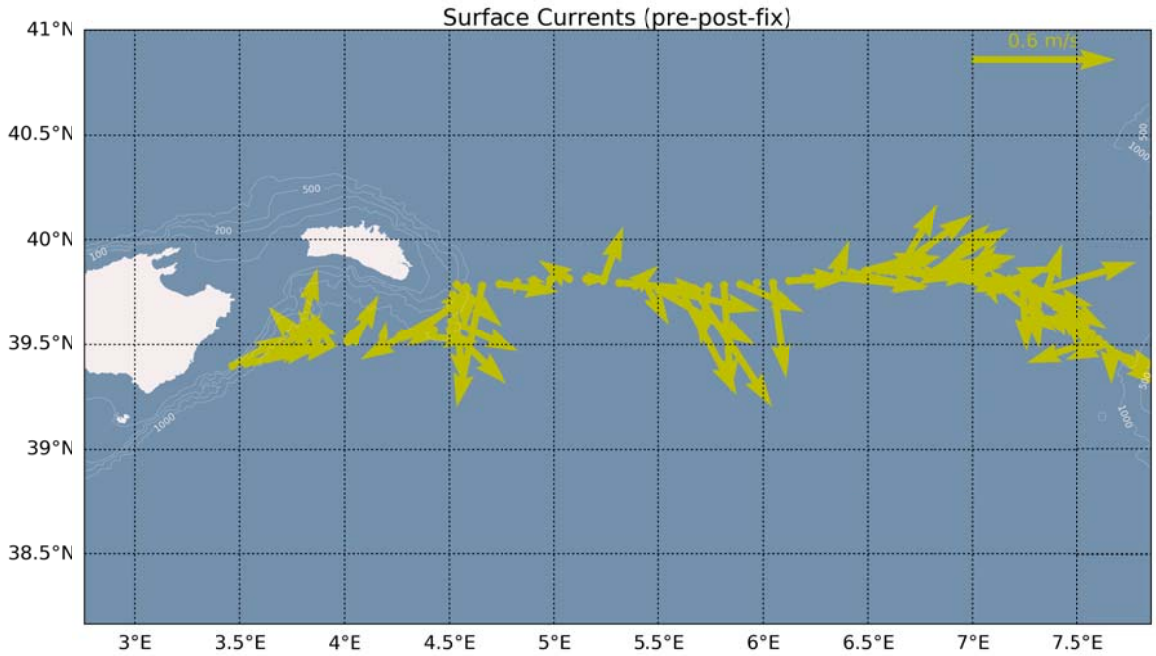

Figure 10 – Surface currents

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