

## TNA PROJECT REPORT

### 1. Project Information

<b>Proposal reference number</b>	JN_CALL_2_14
<b>Project Acronym (ID)</b>	GETSCh
<b>Title of the project</b>	Glider Experiments in the Tunisia-Sardinia Channel
<b>Host Research Infrastructure</b>	CNRS-INSU Glider National Facility (GNF)
<b>Starting date - End date</b>	16 March – 04 May 2018
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### 2. Project objectives

The proposed research is focusing on the Channel of Sardinia. The Sardinia Channel which is an important passage connecting the Algerian and the Tyrrhenian basins, with a sill depth of about 1900 m. In spite of the considerable amount of work achieved and accurate results obtained about the circulation in the Western Mediterranean Sea, during the last 20 years, the Sardinia Channel is still one of the less explored regions where the dynamical processes and water exchanges are not yet clearly identified.

In order to clarify some of these processes, in particular those related to the mesoscale variability, which might be related to the instable behaviour of the Algerian current and associated eddies, as well as interaction with the topography and the widening of the shelf in the channel, our methodology will be based on a combined approach using glider observations in the channel, sea surface height observation by satellite altimetry and available ship borne CTD, ferrybox, profiling floats and mooring data in the adjacent basins. The combination of all those data sets coming from multiple measuring platforms has demonstrated the benefits for improving the knowledge on water masses properties and mesoscale dynamics, as well as more quantitative analysis.

The GETSCh project main objectives are to :

- identify the physical properties of the surface and intermediate water masses between Northern Tunisian Coast and Sardinia,
- study the variability of the physical properties of surface and intermediate water masses;
- understand exchanges through sub-basins and the complex interactions through eddies;
- evaluate the transport of water, salt and heat through the area and verify if the interannual variability of the surface and intermediate water masses is due to climatic changes (here use



of the LOCEAN CTD historical database);

- assess the capabilities of coastal altimetry when validated by in-situ data.

### 3. Main achievements and difficulties encountered

The Glider BONPLAND has been deployed in Cagliari on the 15th of March by the Glider National Facility's staff helped by CNR Italy. It has performed transects between Sardinia and Tunisia during a 45 days mission. The glider was recovered near Cagliari (south of Sardinia) after collecting about 500 profiles.

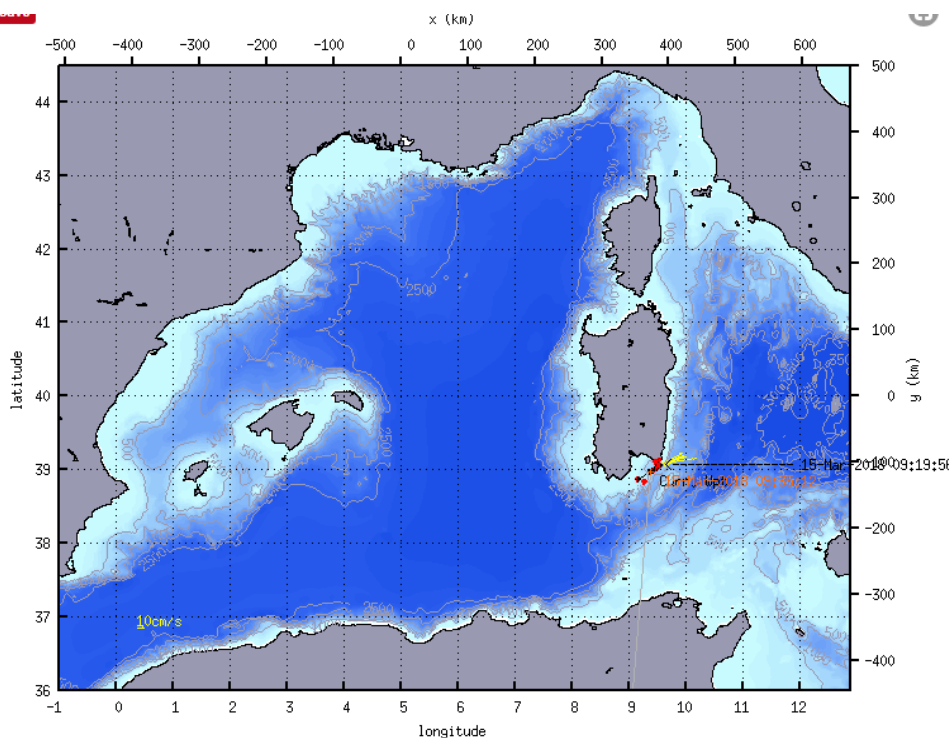


Figure 1 Glider track, complete mission (16 March to 04 May 2018)

The Glider Facility team was in charge of deploying and piloting the glider. Due to unexpected very bad weather in the area we had to change the position of the final waypoint in the section to avoid bathymetry issues. On the first days of the mission the glider experienced functioning issues that were solved remotely by the facility team. The recovery was made also during very bad weather conditions, hopefully the BonPland Glider was safely recovered on May 4th by the GNF with the precious help of Dr. Antonio Olita (Caligari) using a zodiac, being constantly in phone contact with the facility team.

Unfortunately the FerryBox does not sample on the deployments period because of technical maintenance of the opportunity ship C/f Carthage.

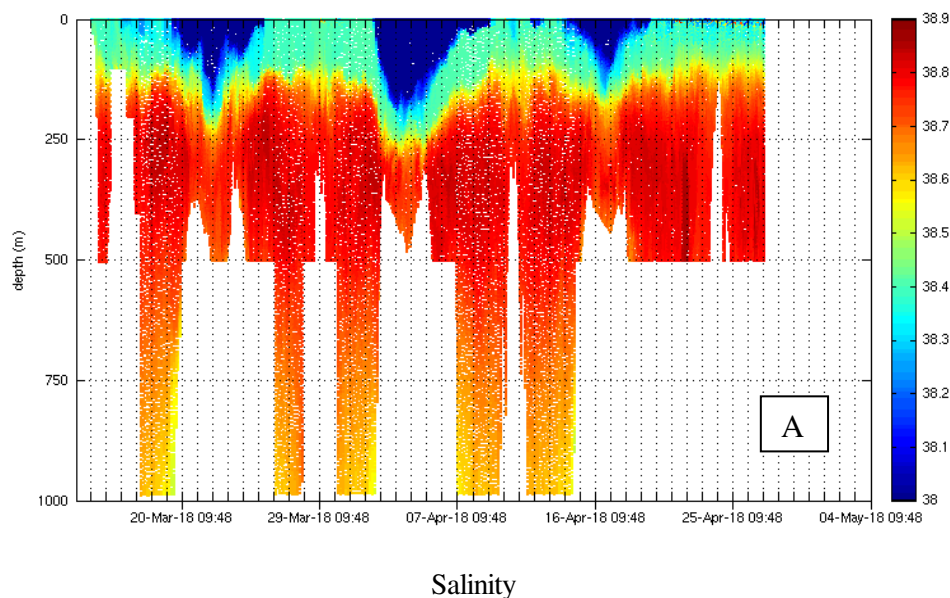
### 4. Dissemination of the results

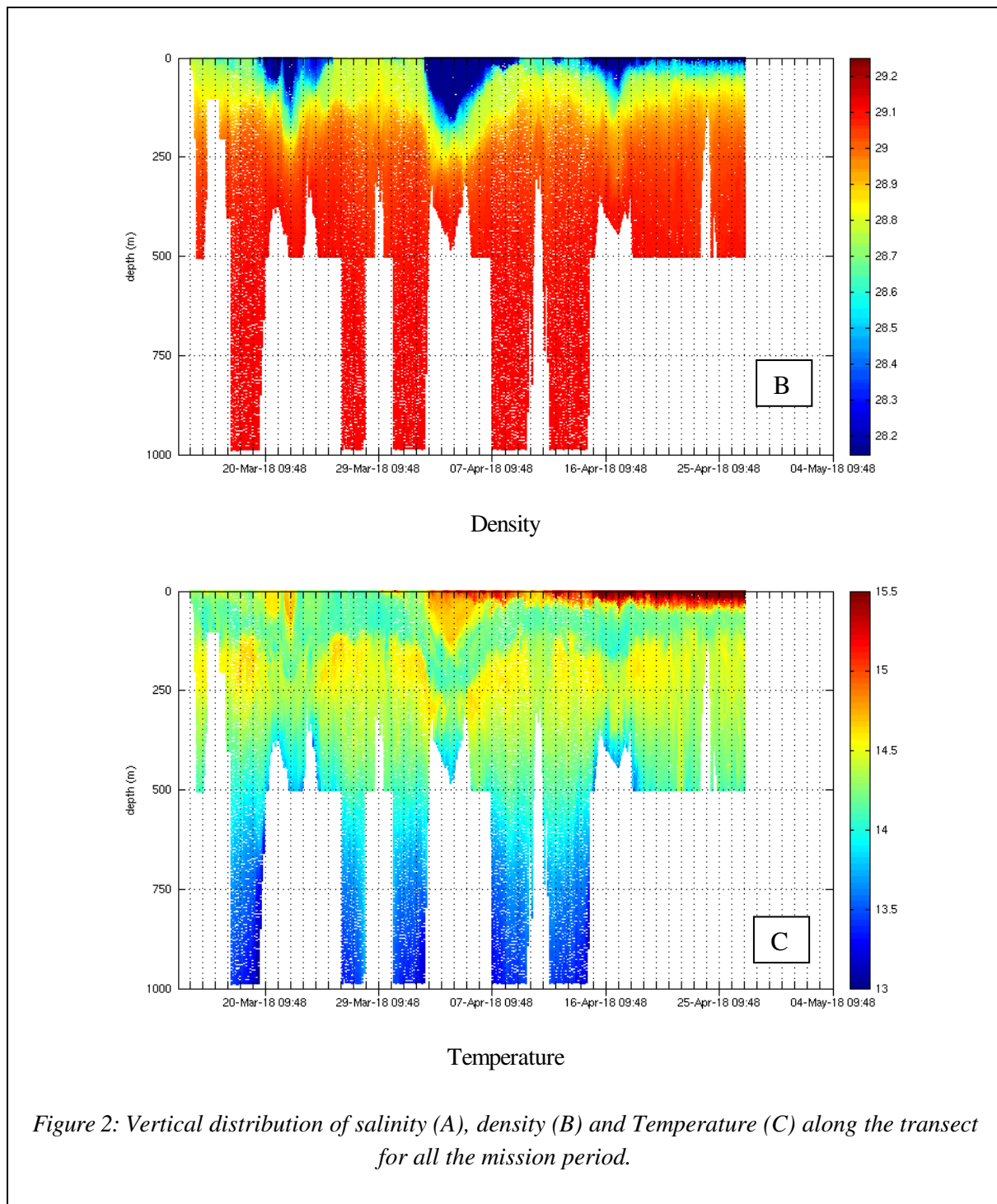
GETSCh is a second step in order to incorporate glider-based oceanography sampling at the Tunisia Sardinia section on a regular basis, while the mission is expected to provide some scientific insights regarding the inter-comparability of both independent sampling systems (Glider and deep mooring data) in the area. The dissemination paths of scientific outcomes should be the standard for science, as conference presentation and/or scientific documents. We have received the glider dataset about a

month ago, thus it is soon to draw a specific dissemination plan of the results. As agreed within the TNA call, main findings will be presented in the final JERICO\_NEXT meeting in 2019. The project user group and the project leader will meet soon to discuss the possibility of GETSCh workshop in Tunisia planned at the end of 2018 or early 2019. The results from the GETSCh mission will be firstly presented there. Also an internal report for INSTM on the potential of a fleet of gliders for regular monitoring will be issued. The scientific team plans to submit a paper within JERICO-NEXT special issue in Ocean Science ([https://www.ocean-science.net/special\\_issues/schedule.html#19](https://www.ocean-science.net/special_issues/schedule.html#19)). The data set gathered by the glider was processed by CORIOLIS under SEANOE Service (Sea scientific open data publication), and made public through the next link: <http://doi.org/10.17882/56794>.

## 5. Technical and Scientific preliminary Outcomes

After the glider mission ended in May, it took some weeks before the glider was sent back to the CNRS INSU GNF for data downloading and processing. The whole record, as processed by the GNF team, was sent to the INSTM on June 20. The whole record as processed by SEOANE was released on September 2018. Therefore, at the time of writing, the scientific analysis of the dataset is in a preliminary stage (Figure 2). Bonpland glider took slightly over 9 days each way, from March 16 to May 04. The glider was recovered on May 04 due to logistics. Its sensor payload provided pressure, temperature, salinity, dissolved oxygen, chlorophyll-fluorescence, colored dissolved organic matter (CDOM) and turbidity backscattering. CNRS-INSU processed record split the glider track into 320 downcast and another 320 upcast profiles, covering the whole section down to about 1000 m depth.





FINAL VERSION, 21 SEPTEMBER 2018