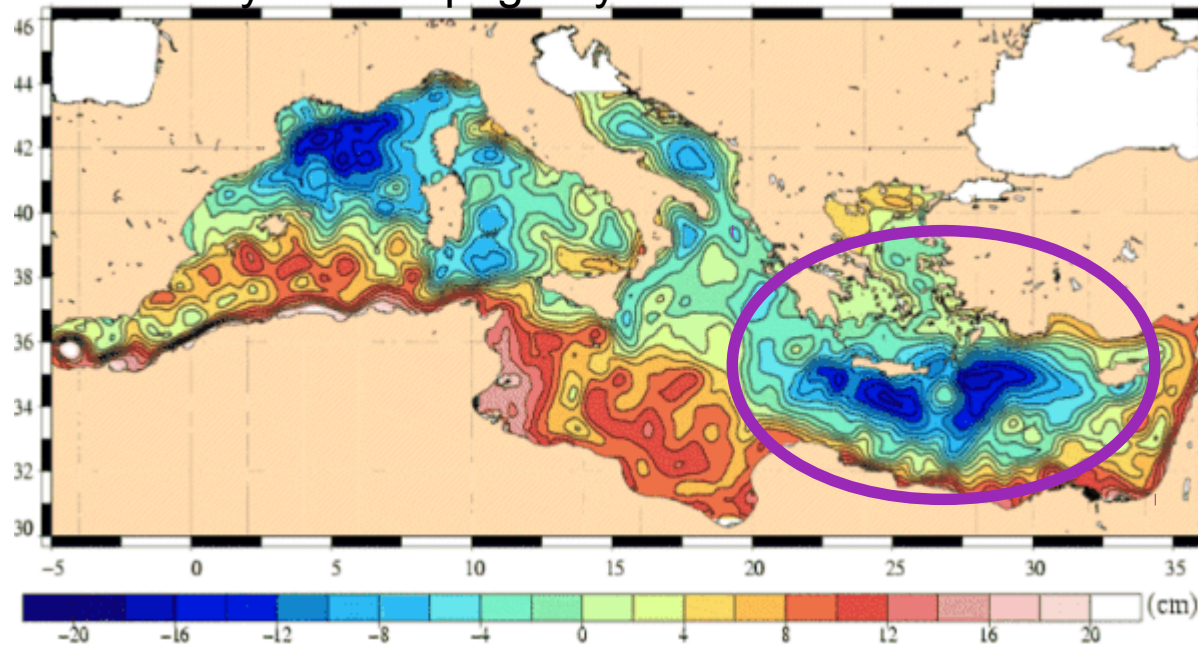# PERLE:
Pelagic Ecosystem Response in the Levant Experiment

Dynamic topograhy: surface circulation
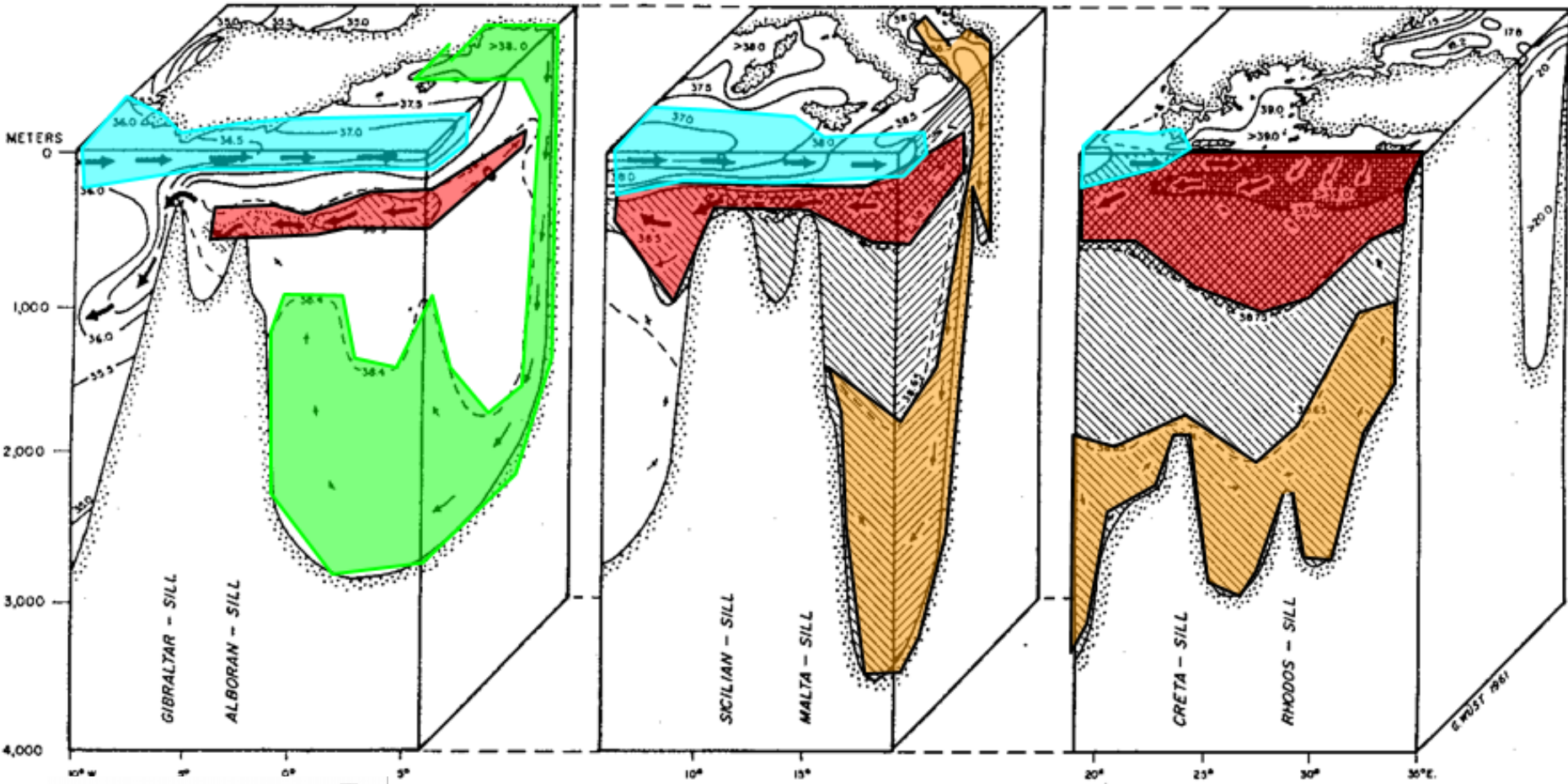
Pierre Testor (CNRS/LOCEAN, Paris, France),

Dan Hayes (CSCS, UC-OCY, Cyprus), **Elena Mauri** (OGS, Italy), **Leonidas Periviolotis** (HCMR),

Ayah Lazar, Hezi Gildor (IOLR), **Jacopo Chiggiato** (CNR-ISMAR),)

Xavier Durrieu de Madron (CNRS/CEFREM, Perpignan France)

Study of Levantine Intermediate Water (LIW) formation and impacts on marine ecosystem

LIW review paper in press:
https://doi.org/10.1007/978-3-319-91608-8_18
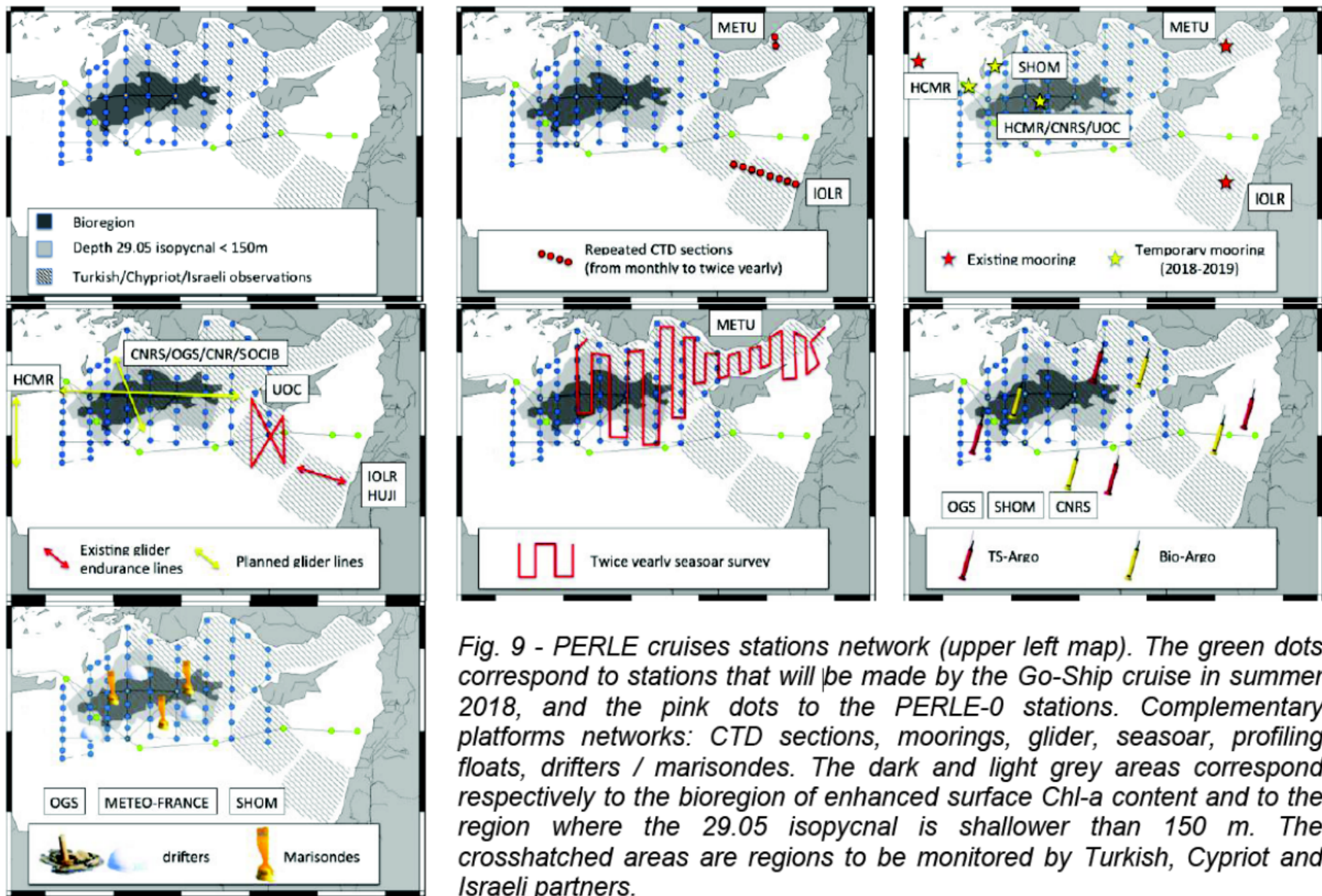
Fig. 9 - PERLE cruises stations network (upper left map). The green dots correspond to stations that will be made by the Go-Ship cruise in summer 2018, and the pink dots to the PERLE-0 stations. Complementary platforms networks: CTD sections, moorings, glider, seasoar, profiling floats, drifters / marisondes. The dark and light grey areas correspond respectively to the bioregion of enhanced surface Chl-a content and to the region where the 29.05 isopycnal is shallower than 150 m. The crosshatched areas are regions to be monitored by Turkish, Cypriot and Israeli partners.

R/V cruises and gliders sampling plans
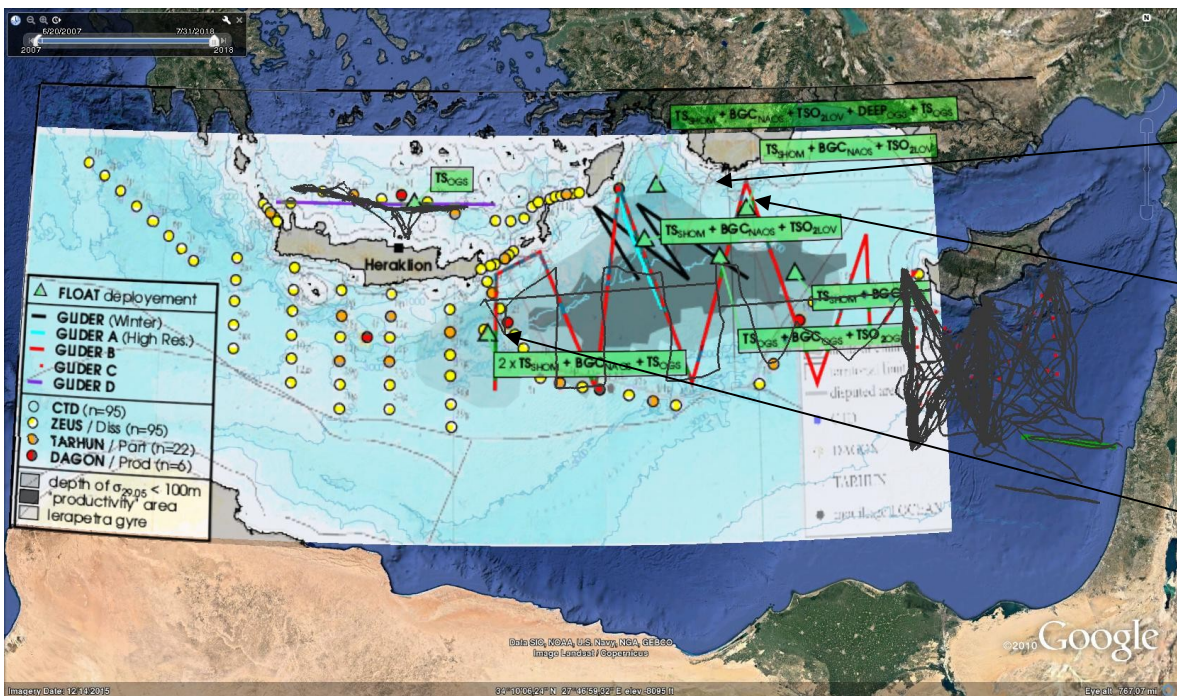
National waters borders

Profiling floats deployments
October 2018 (PERLE-1 cruise)
March 2019 (PERLE-2 cruise)

Mooring deployed
in October 2018
(PERLE-1 cruise)

Glider sampling repeated from October 2018 to June 2020
- Red: East-West (E-W)
- Cyan: High Frequency (HF) in Rhodos Gyre
- Black: Adaptive sampling (winter-spring period)
- Long term observations

with gliders from
- *CNRS national pool of gliders (France)*
- ***OC-UCY (Cyprus) = glider hub***
- *OGS (Italy)*
- *CNR-ISMAR (Italy)*
- *HCMR (Greece)*
- *IOLR (Israel)*

	2018			2019											2020				
	Oct	Nov	Dec	Jan	Fev	Mar	Avr	Mai	Juin	Juil	Aout	Sept	Oct	Nov	Dec	Jan	Fev	Mar	Avr	Mai	Juin
Radiales Long terme (Chypre, Grèce et Israël)																					
Radiale E-O																					
Radiale HF																					
Radiale Adaptative																					
Radiale Adaptative																					

Gliders OC-UVY
Gliders OGS
Gliders CNR-ISMAR
Gliders Chypre, Israël, Grèce
Gliders DT-INSU
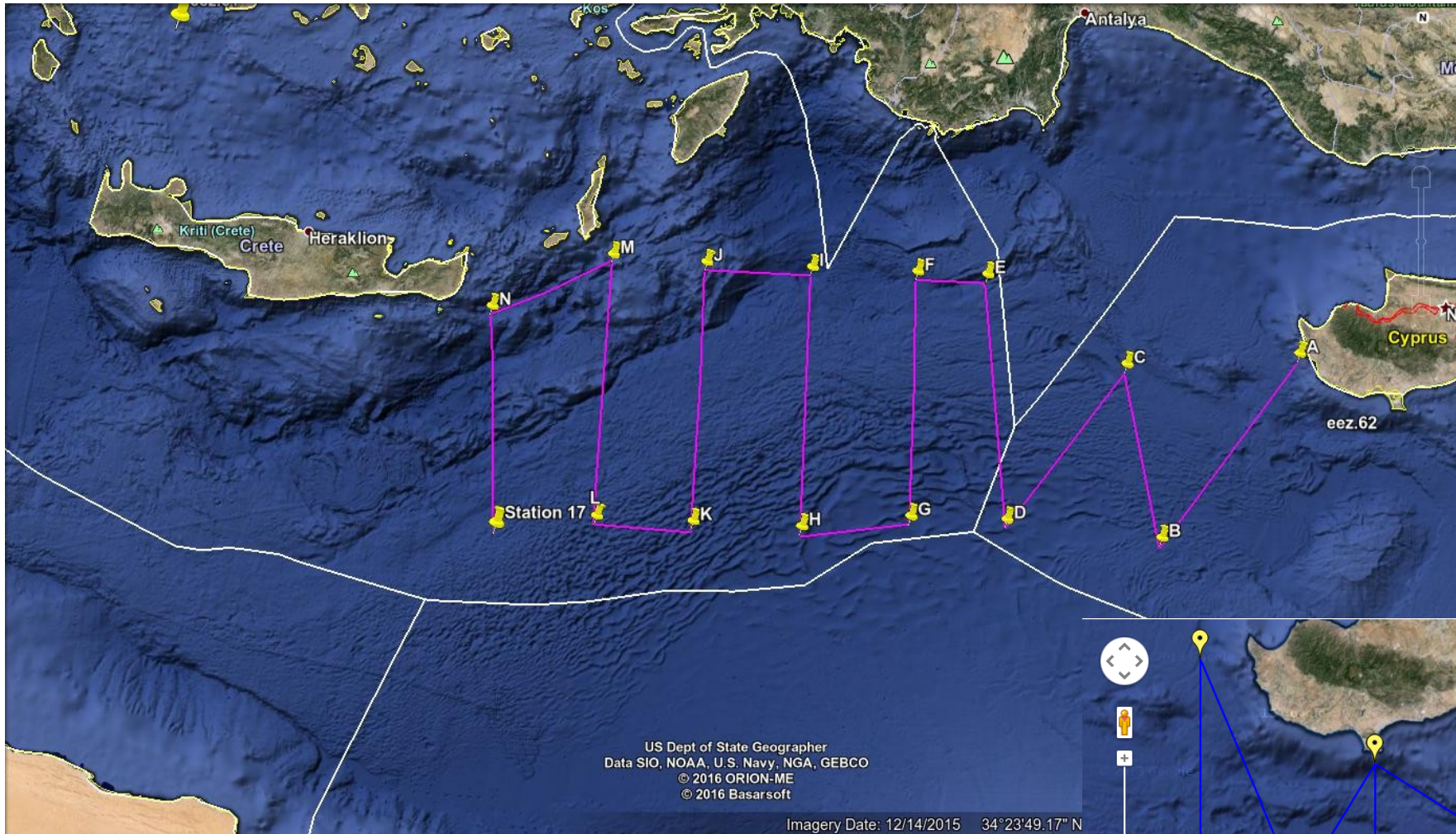
Background 2016 - 23 March to 5 June

Rhodes Gyre with surface and intermediate currents, eddies
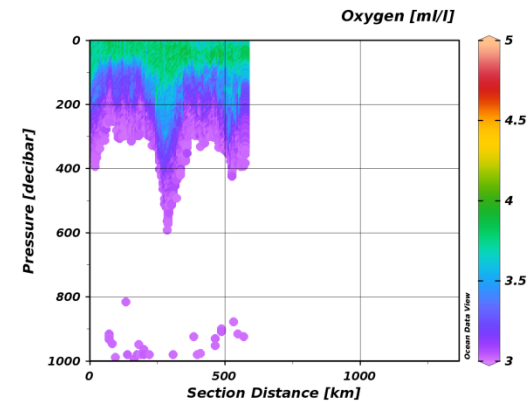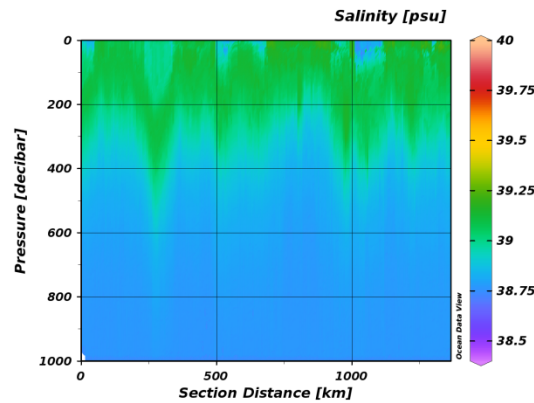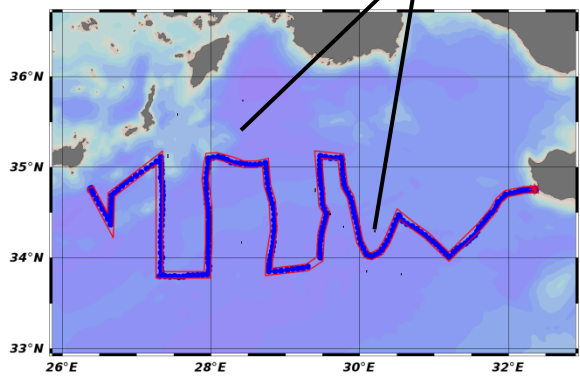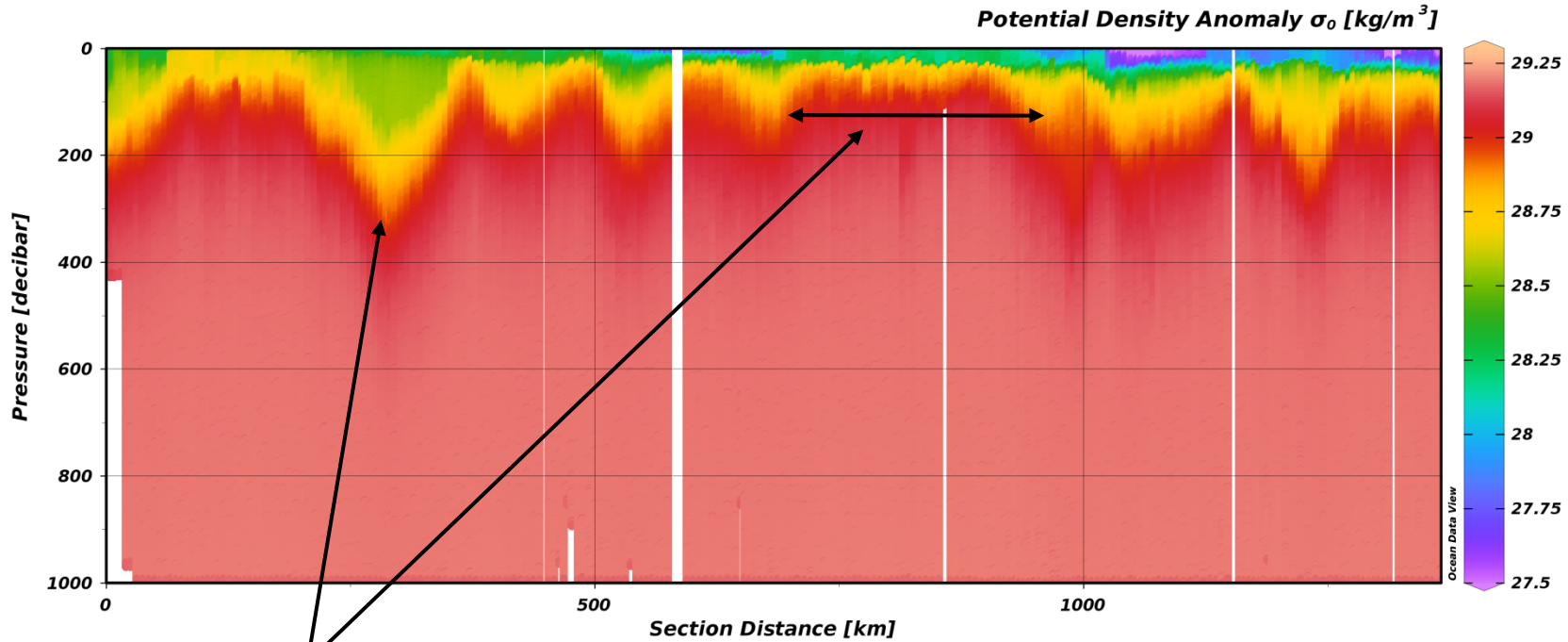
Warm-salty anticylone and cool cyclonic gyre where water column preconditioned for LIW

Background: Permit request and MOU
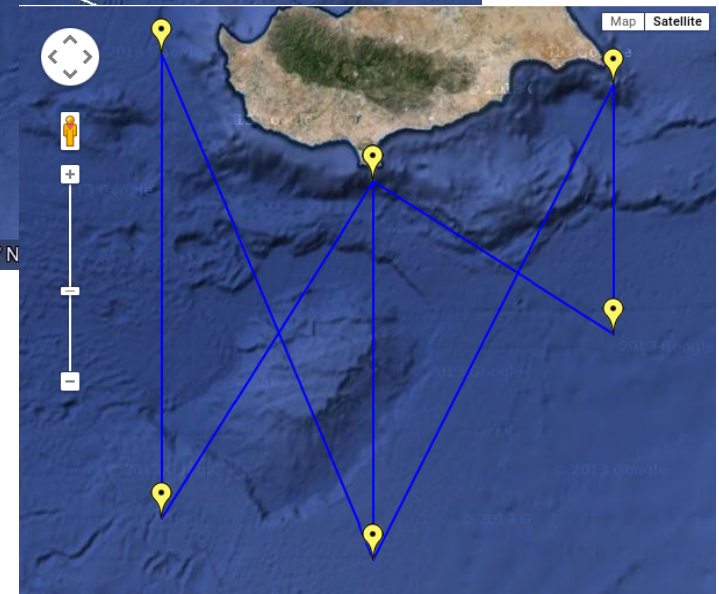## UCY manages glider missions from partners: CNRS, OGS, CNR-ISMAR

Data Policy: "Process and provide to the public, including the permitting authorities and research partners listed here and in the PERLE consortium, the glider data in near real-time and delayed mode."

Requests in June 2018
signed only early 2019, for Oct 2018-Dec. 2019.
To be amended for 2020

Timeline

June 2018:   we got informed that no glider would be available in 2018 from national pool of gliders because of lack of personnel. We proposed to repair and deploy Conti with the help of OC-UCY and CSCS (world-class seaglider expert licensed by Kongsberg). → No :-(→ 2 gliders from the national pool normally planned for February 2019

October 2018:   **PERLE-1 cruise**

December 2018:   update on availability of gliders from the national pool: one glider (Himilcon) planned for February March 2019. Deployment of Pheidippides (OC-UCY)

January 2019:   Himilcon tests failed :-(.

February 2019:   failure on Pheidippides (emergency recovery with the help of HCMR

March 2019:   **PERLE-2 cruise**

Avril 2019:   Himilcon tests successful

02 May 2019:   Himilcon sent

03 June 2019:   deployment request sent to OC-UCY (but 30 days delay for permit acceptance → no deployment before 4ᵗʰ July 2019)

15 June 2019:   Himilcon arrived in Cyprus

21 June 2019:   difficulties travel plans with LOCEAN, alternative found by DT-INSU ealy July.

10 July 2019:   Paul arrives in Cyprus, bad weather conditions

19 July 2019:   Deployment of Himilcon off Paphos, 9 months after the beginning of PERLE operations

17 August 2019:   Himilcon reaches Rhodos turn back

25 August 2019:   sensors turned off! :-(

10 Sept. 2019:   recovery planned
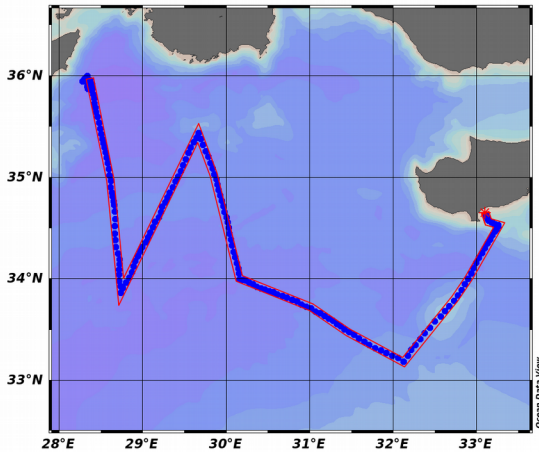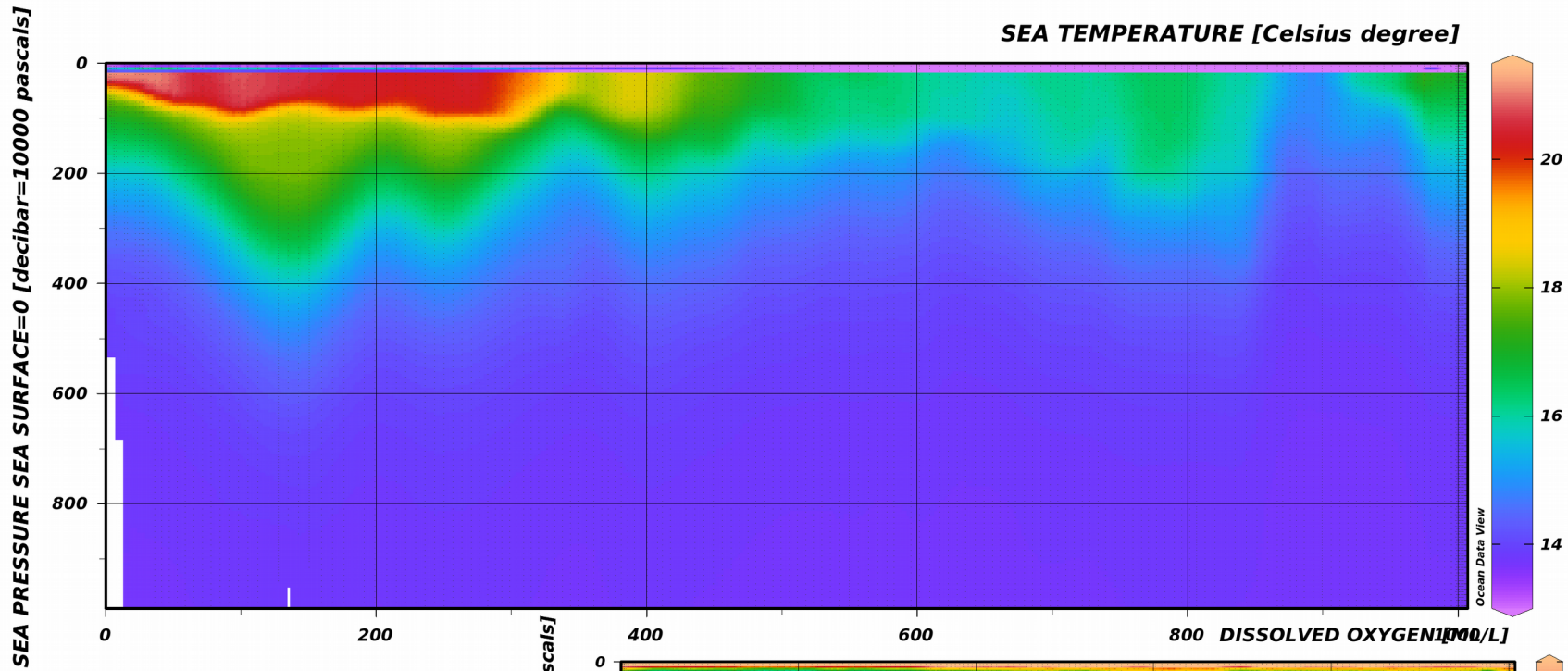
Survey 2018-19
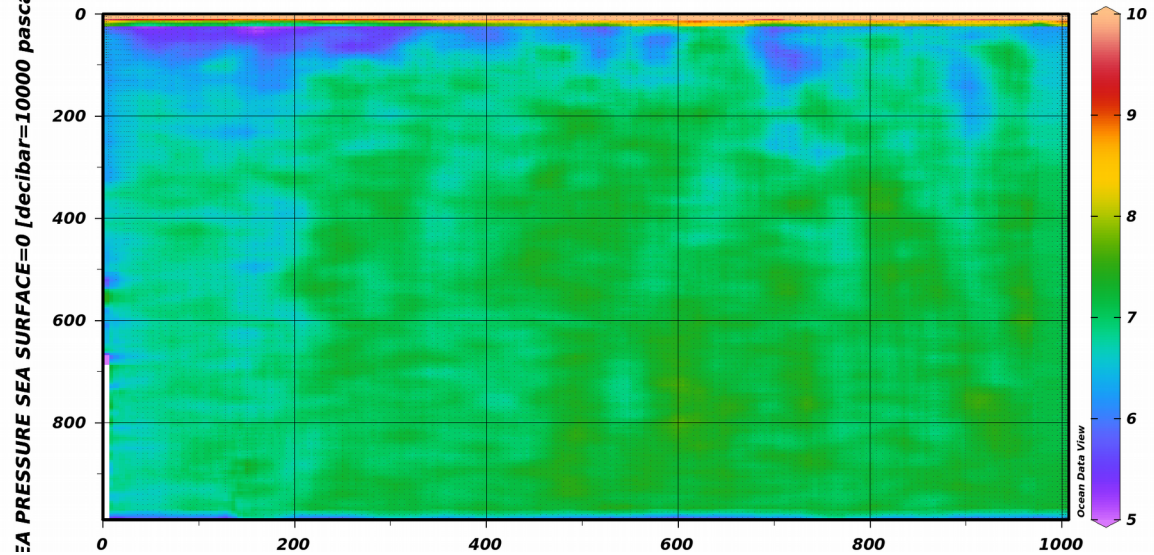## Temperature, salinity, oxygen from 10 Dec. 2018 to 14 Feb. 2019.
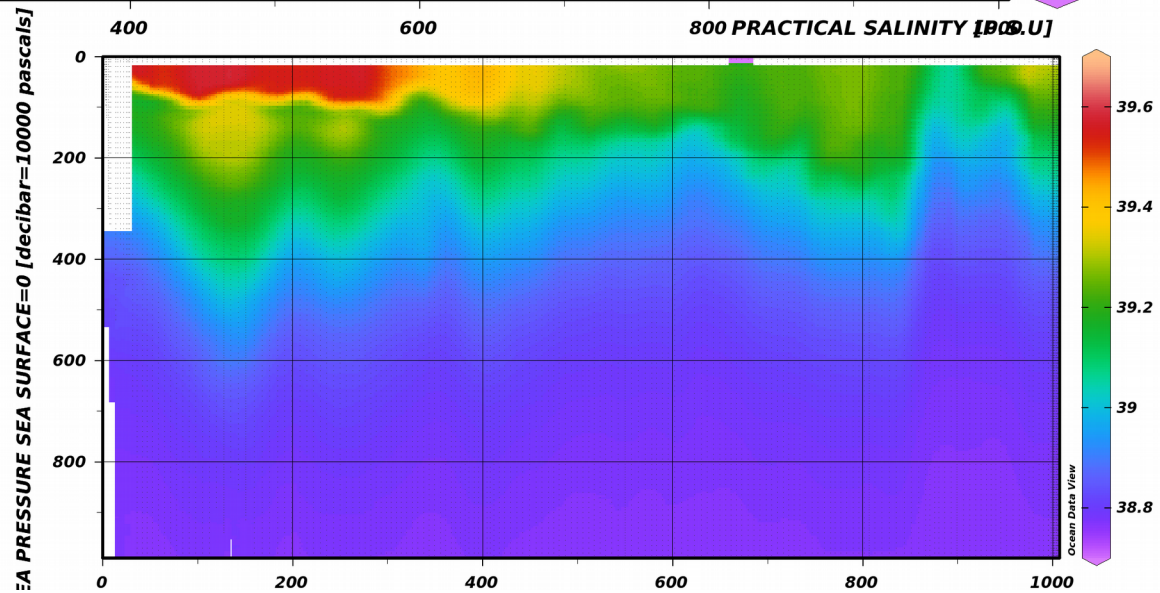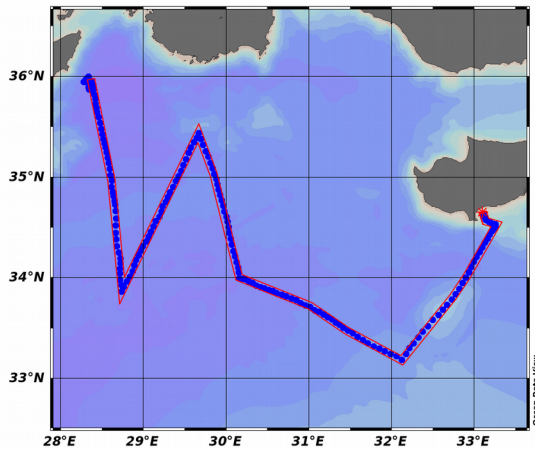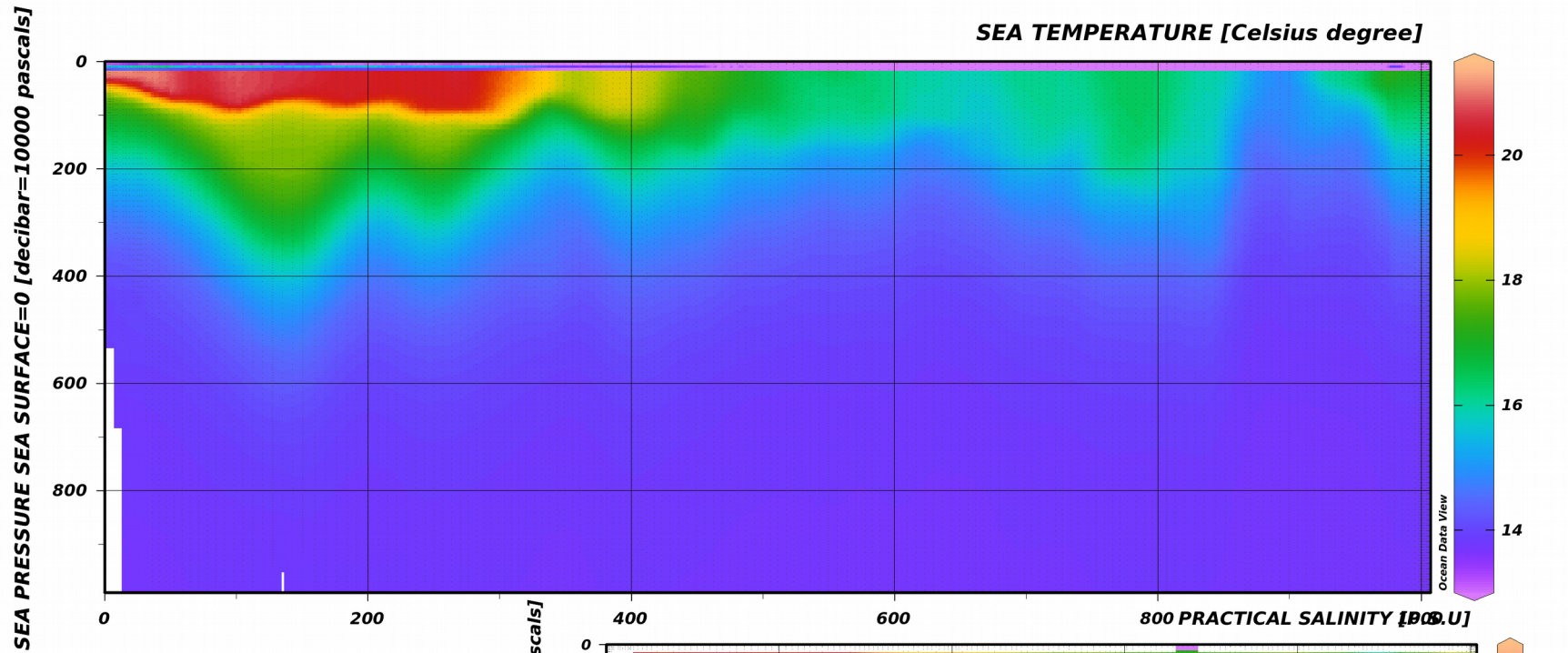
Survey 2018-19
Temperature, salinity, oxygen from 10 Dec. 2018 to 14 Feb. 2019.

Survey 2019

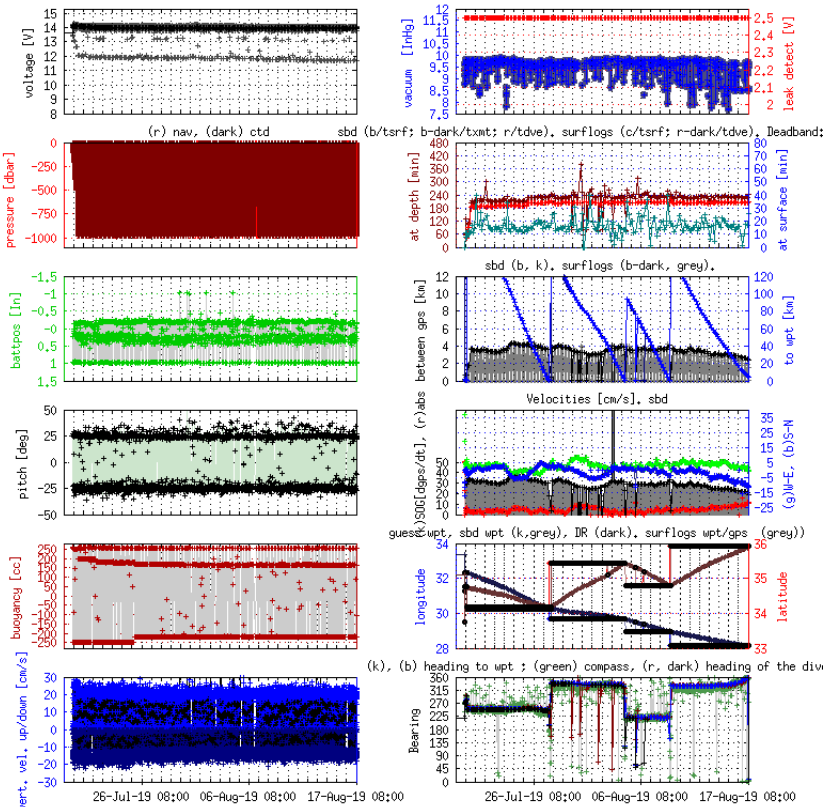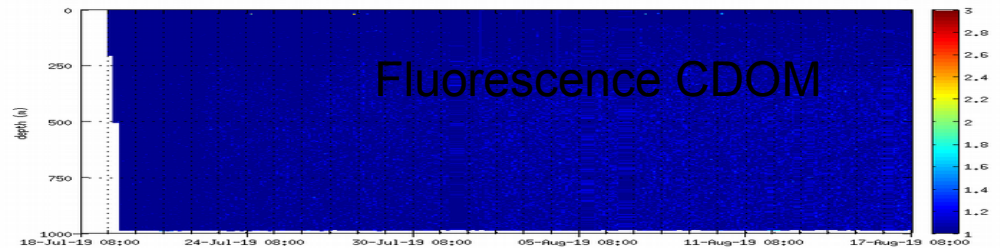## From 19 July 2019 to 10 September 2019
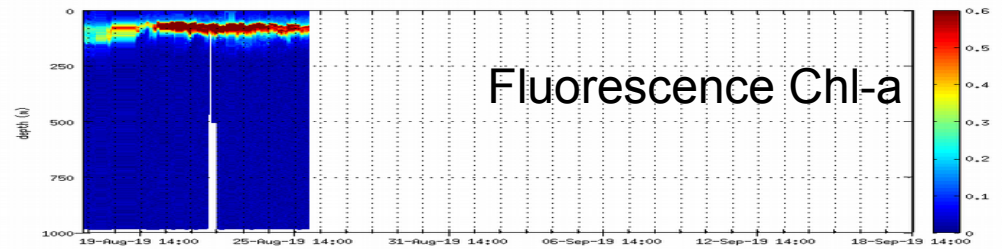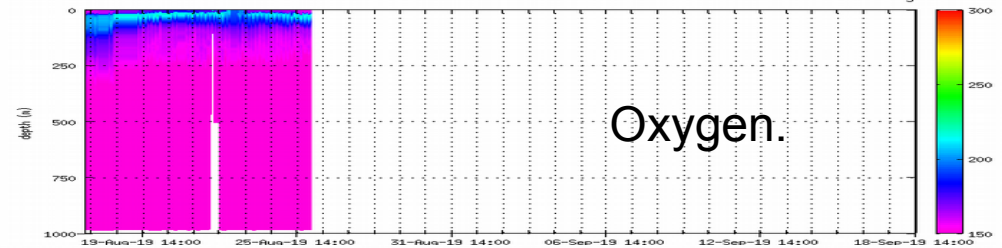## Section 1.

Survey 2019

From 19 July 2019 to 10 September 2019
Section 2.

Pot. Temp.

Salinity

Oxygen.

Fluorescence Chl-a

Backscatter (700nm)

Fluorescence CDOM
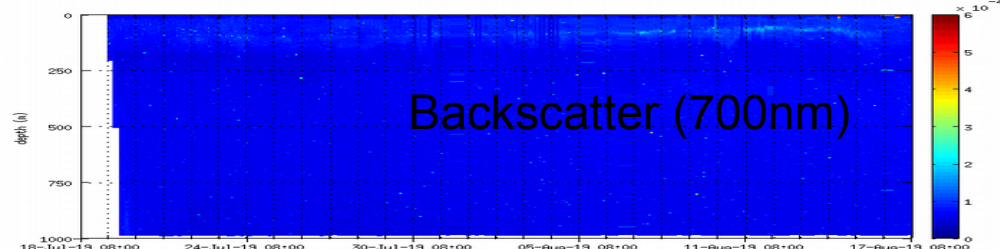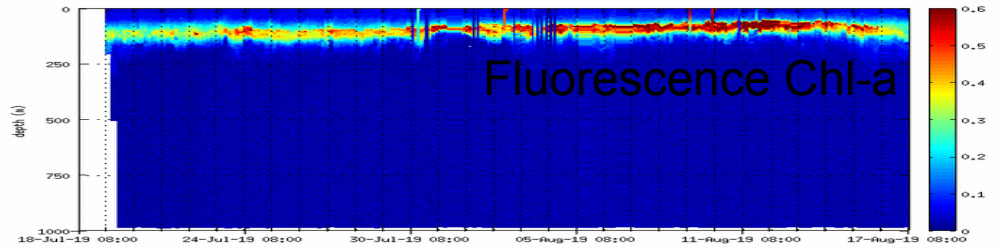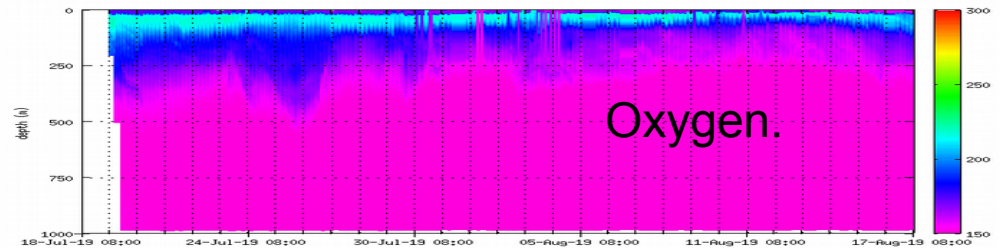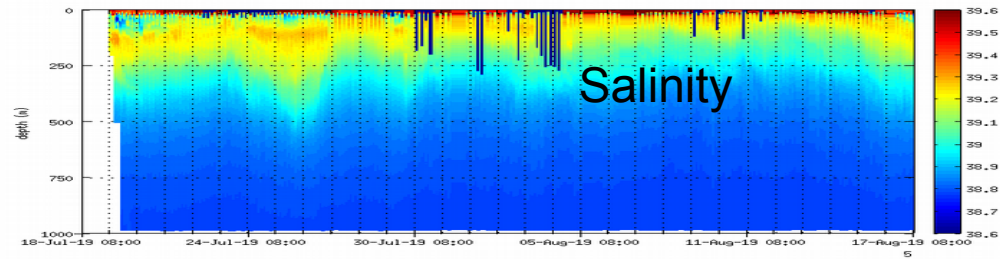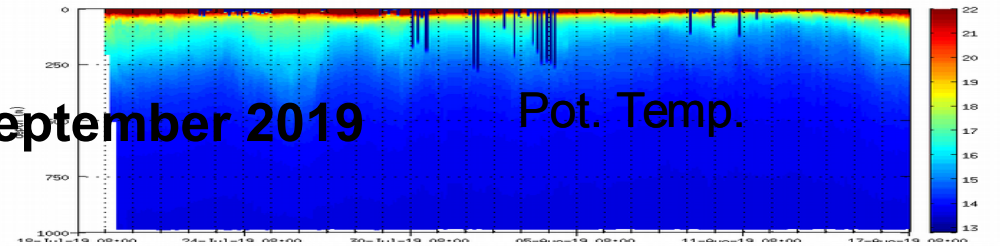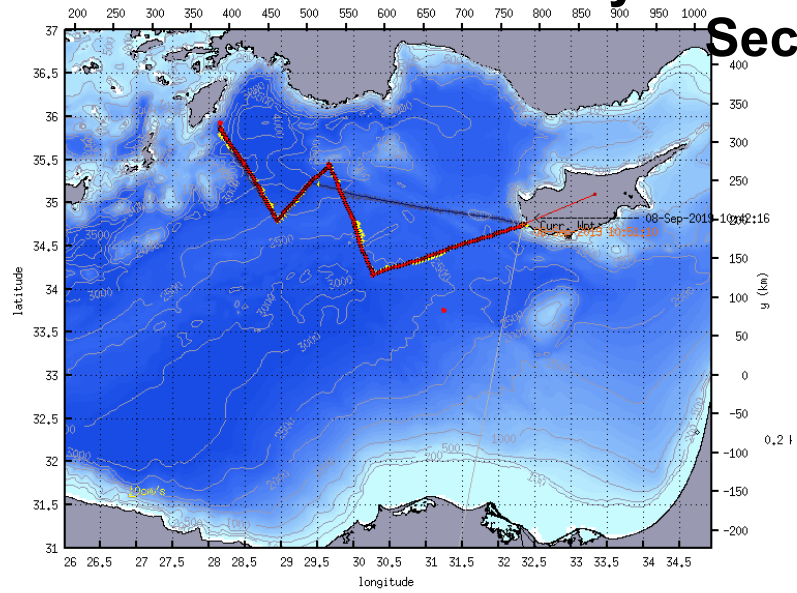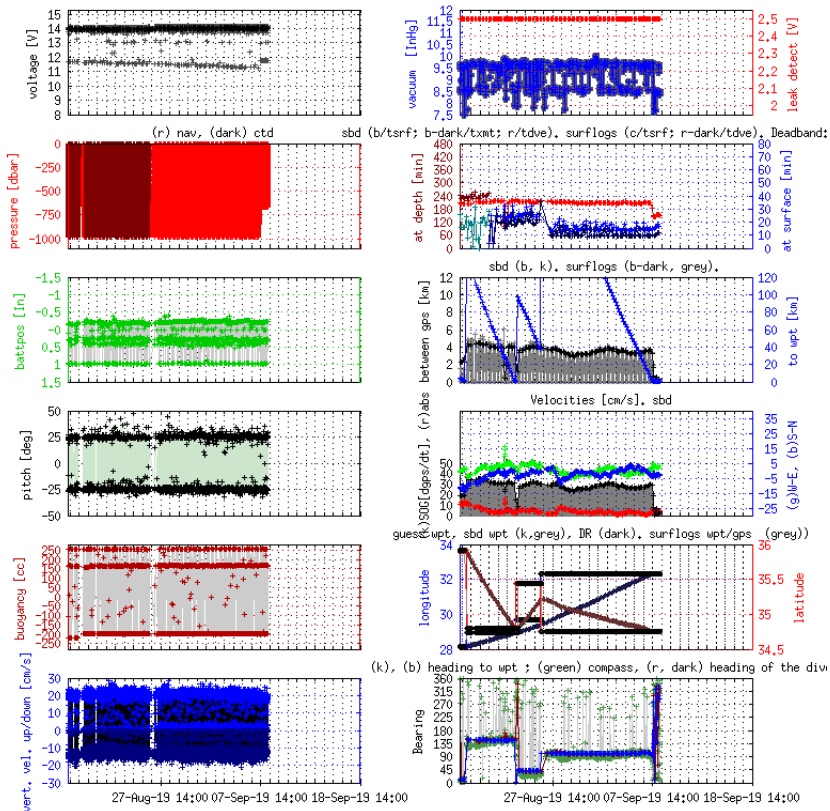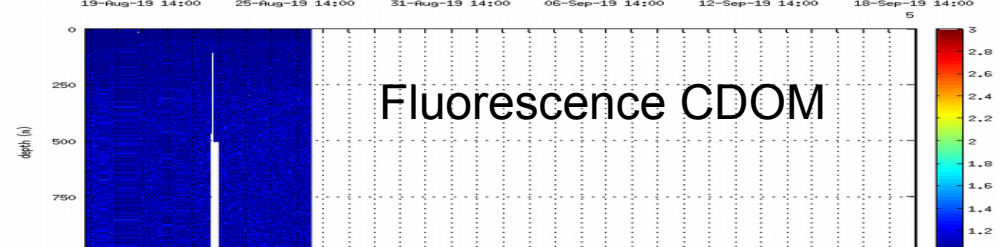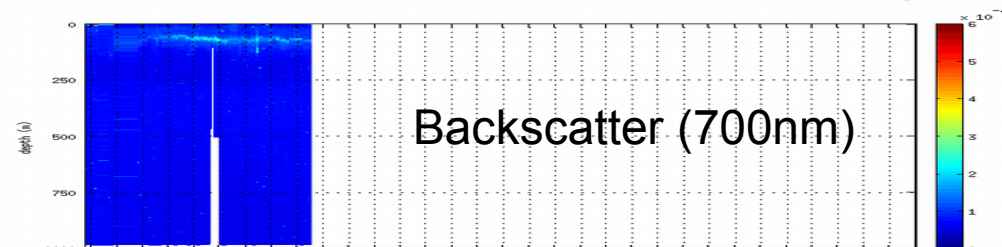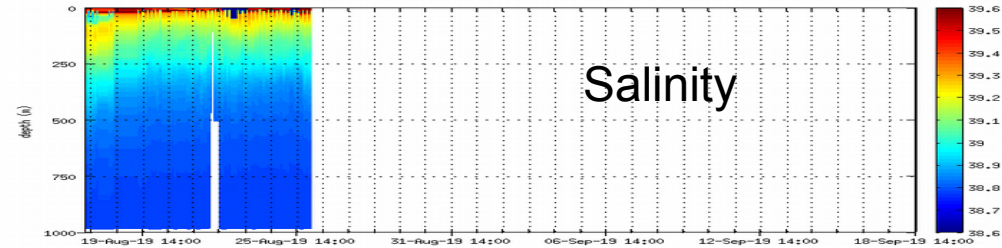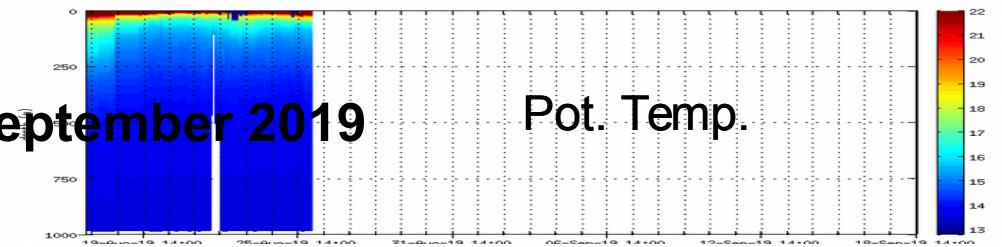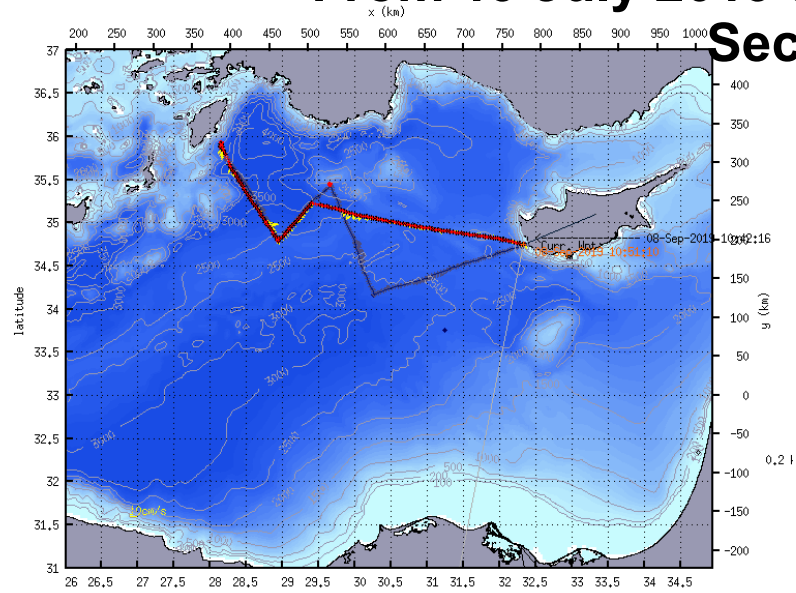
Conclusions

Some difficulties...
        9 months delay
        only 1 glider, 2/3 section…

→ Scientific impact MISTRALS (gliders and profiling floats only way to make measurements in the Rhodos gyre)

Next operations ?

-   E-W section continued until May 2020?

-   HF section and adaptive in Winter-Spring 2020?