



TNA PROJECT REPORT
2nd Call of Proposals
19 September – 25 November, 2013

A) General Information

Proposal reference number⁽¹⁾	CALL_3_7
Project Acronym (ID)⁽²⁾	MUSICS
Title of the project⁽³⁾	Multi Sensor Investigation in the Channel of Sardinia –
Host Research Infrastructure⁽⁴⁾	CETSM glider (EUDOXUS)
Starting date - End date⁽⁵⁾	15 August 2014: The glider left the facility and was shipped to the mooring point by R/V Thetys. 16 August 2014 – 19 September 2014 (experiment) <i>(if there were interruptions in the period above during which the glider was not used by the user group, please indicate the periods of each trip)</i> 1 st trip: from Sardinia to Northern Tunisian coasts and return 2 nd trip: from Sardinia to Northern Tunisian coasts and return 3 rd trip: from Sardinia to Northern Tunisian coasts and return 23 September 2014: The Glider is back to CETSM facility
Name of Principal Investigator⁽⁶⁾ Home Laboratory E-mail address Telephone	Dr Daniele Iudicone Stazione Zoologica A. Dohrn, Laboratory of Ecology and Evolution of Plankton - Villa Comunale, 80121 Napoli, Italy iudicone@szn.it +39 081 5833329
Additional users⁽⁷⁾	Slim Gana – SAROST SA, Tunisia Maurizio Ribera d'Alcalà – SZN, Italy Antonio Olita – CNR IAMC, Oristano - Italy Bruno Buongiorno Nardelli – CNR IAMC, Napoli - Italy

B) Project objectives (max. 250 words)⁽⁸⁾

The proposed research aims studying mesoscale dynamics and water exchanges in the Channel of Sardinia, a key region for the comprehension of the exchanges between the Eastern and Western Mediterranean basins. A combined approach will be adopted using glider observations, sea surface height observation by satellite altimetry and numerical modeling.

C) Main achievements and difficulties encountered (max. 250 words)⁽⁹⁾

Fortunately, no difficulties was encountered during the execution of the project thanks to a suitable coordination between all the partners and the facility staff.

A collection of an important oceanographic database was carried out, in a key region of the Mediterranean sea, i.e. the Sardinia Channel.

D) Dissemination of the results ⁽¹⁰⁾

Scientific articles and communication to scientific conferences, meetings and workshops. Publications will be available on open repositories.

E) Use of the Infrastructure/Installation ⁽¹¹⁾

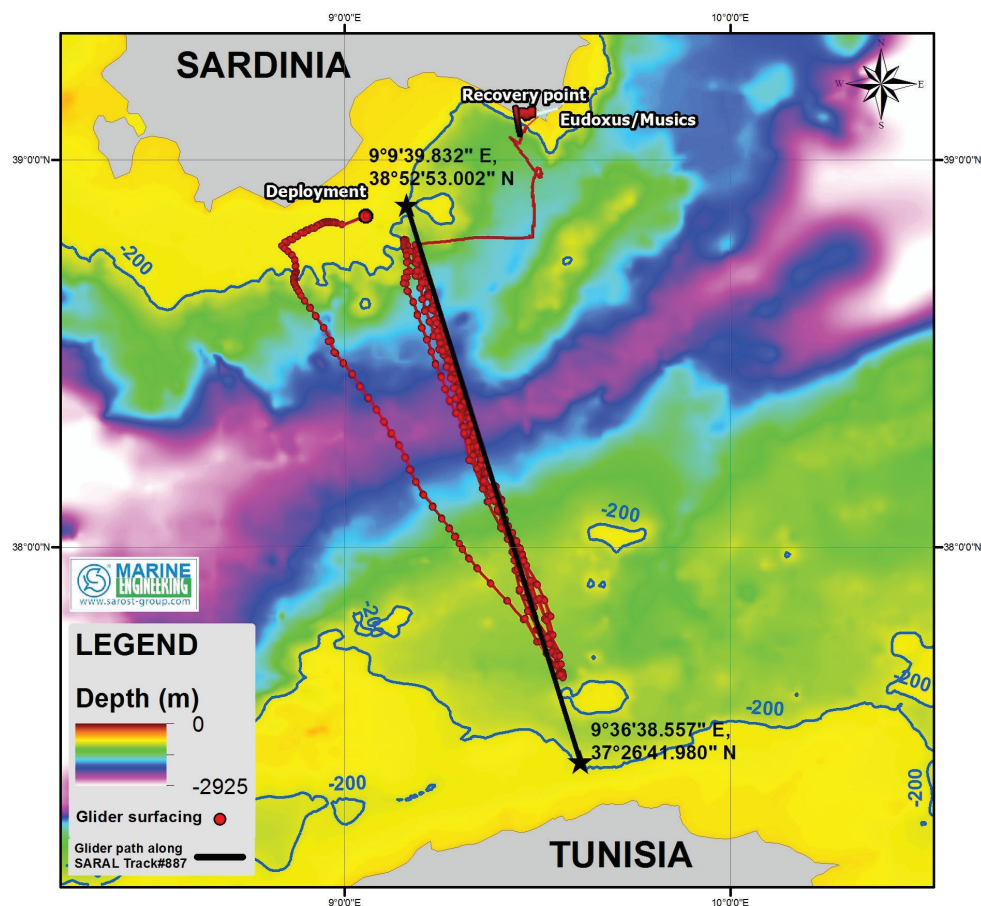
	In situ	By remote
Nr. of Users involved	2	4
Access units (days/months/etc)	0	35
In situ stay day / Remote Access duration	0	35

F) User project scientific field

Main field ⁽¹²⁾	Earth Sciences & Environment
Scientific description ⁽¹³⁾	Marine Science/Oceanography

H) Technical and Scientific preliminary Outcomes (max. 2 pages) ⁽¹⁴⁾

Six legs (3 return trips) were carried out by the glider "Eudoxus", as shown is the figure below:

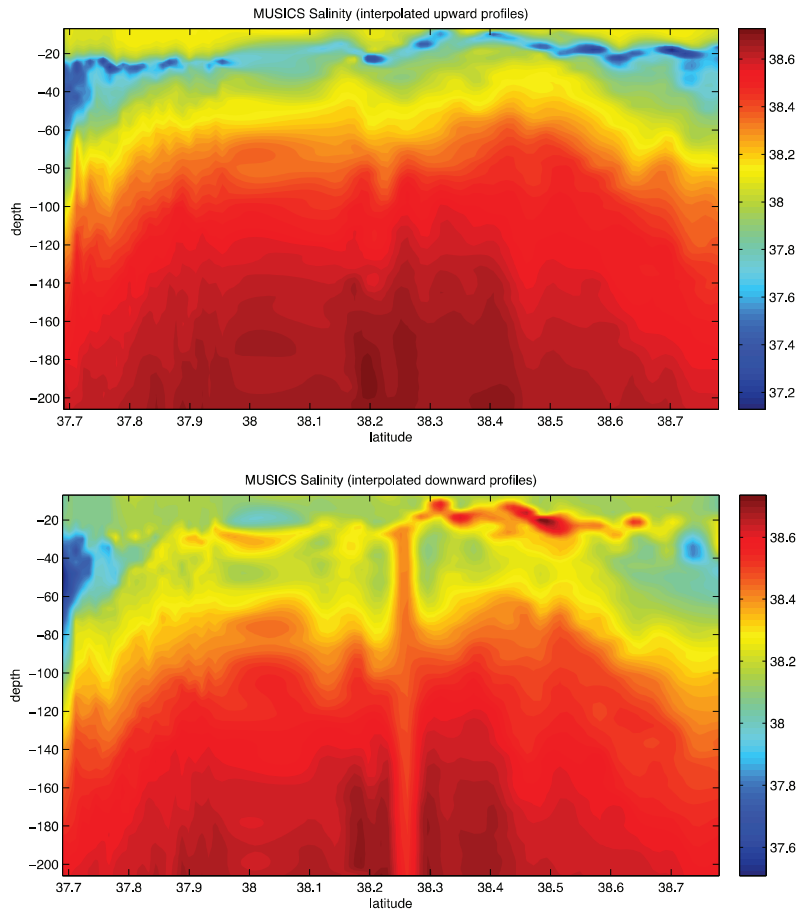


The analysis of the data is still in progress. At the present stage, we have elaborated vertical sections across the Sardinia channel of the following parameters: temperature, salinity, density, oxygen, turbidity, cdom and chla. Plots of the vertical sections are attached in Annex A.

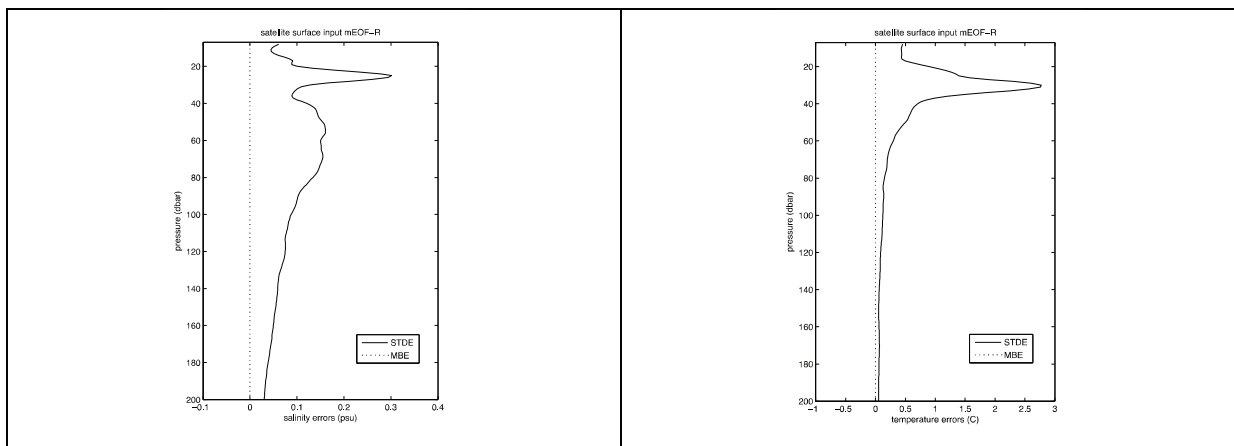
Simultaneously, Altimetric satellite data (SARAL/Altika) along track#887 have been download and are under process.

The preliminary results are based on the analysis of T/S profiles and they have drawn our attention that a deeper post-processing of the data is required.

Indeed, as shown in the figures below, the T/S profiles are different depending on whether one uses the upward data or the downward data.



Furthermore, a large error appears a the vicinity of the thermocline as highlighted by the following eof analysis:



A re-processing of the data will be performed during the second half of March 2015.

Musics & Abacus Joint meeting

A joint meeting involving both Musics and Abacus partner was held in Palma de Mallorca late January 2015 (the agenda of this meeting is attached in ANNEX B)

The scientific outcomes of this joint meeting are presented

- 1- Analysis of the Algerian basin circulation involving the complex interactions due to the eddies presence and persistence in the study area (Analysis of hydrographic features and dynamics to identify the physical and biological properties of the surface and intermediate water masses between Balearic Islands and Algerian coasts)
- 2- Glider and satellite monitoring of a Mediterranean mesoscale eddy: the case study monitored during Run 1 (PAPER 1) (To understand sub-basins dynamics and the complex interactions due to eddies)
- 3- Glider/Altika comparison during the Run 2 of ABACUS project (PAPER 2) (first time for a glider/altimetry comparison involving 2 overflights on neighbour ground track to assess the ocean description capabilities of multiplatform missions)
- 4- Analysis of the Algerian Current edge (physical and biogeochemical properties, meanders, etc.)

At the end of the meeting, a list of action was agreed, according the following agenda:

FEV/MARS 2015

- Abstract submission to IUGG-IAPSO 2015 in Prague (session PO2)
- Glider and satellite monitoring of a Mediterranean mesoscale eddy FEB/MAR/APR 2015
- Preliminary analysis of the satellite products to get an overview of the study area before, during and after the glider missions (altimetry, SST, chl-a) and to understand possible origin, evolution and dissipation of the monitored eddy
- Analysis of the full resolution L1 and L2 datasets, first physical products (mainly T and S to identify the water masses observed by the glider) then O2, chl-a, turbidity
- Preliminary analysis of the dynamic of the area from glider datasets

APR/MAY 2015

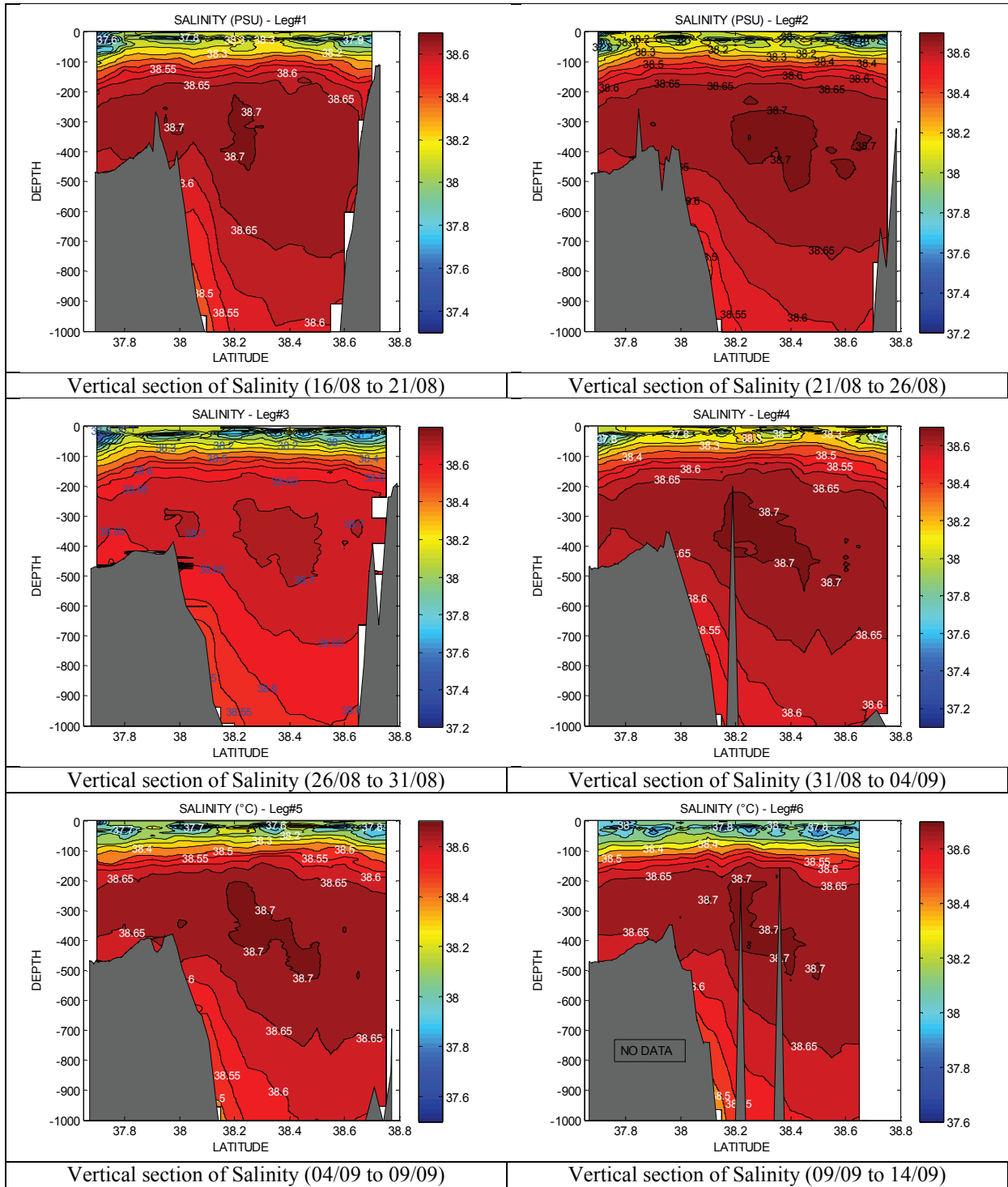
- Short term scientific mission (if accepted): mid-April to mid-May (advanced work on topic 1, 2 and possibly 4, (starting at developing analyses concerning topic 3)

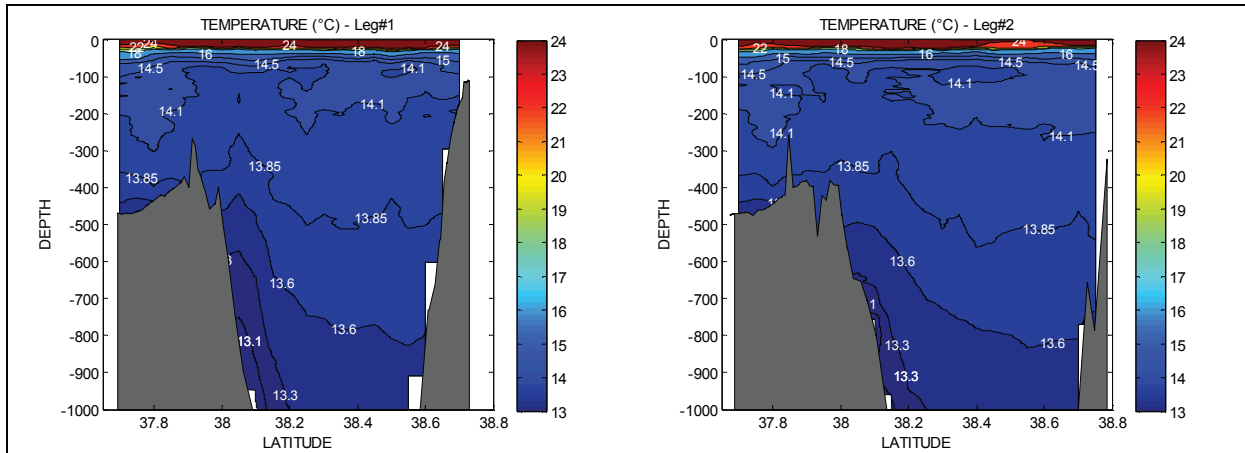
ABACUS-MUSICS-SOMBA-GABS joint issues

Questions:

- Synoptic coupling between SOMBA dataset and first leg of Abacus mission for cross calibration and/or data combination?
- SOMBA CTD casts from surface to bottom? Where and how many in between Mallorca and Algerian Current?
- Combination with MUSICS information?
- Combination with MUSICS and GABS to estimate a basin budget of surface and intermediate water masses?
- Glider usefulness for models assimilation (WMOP, others)?
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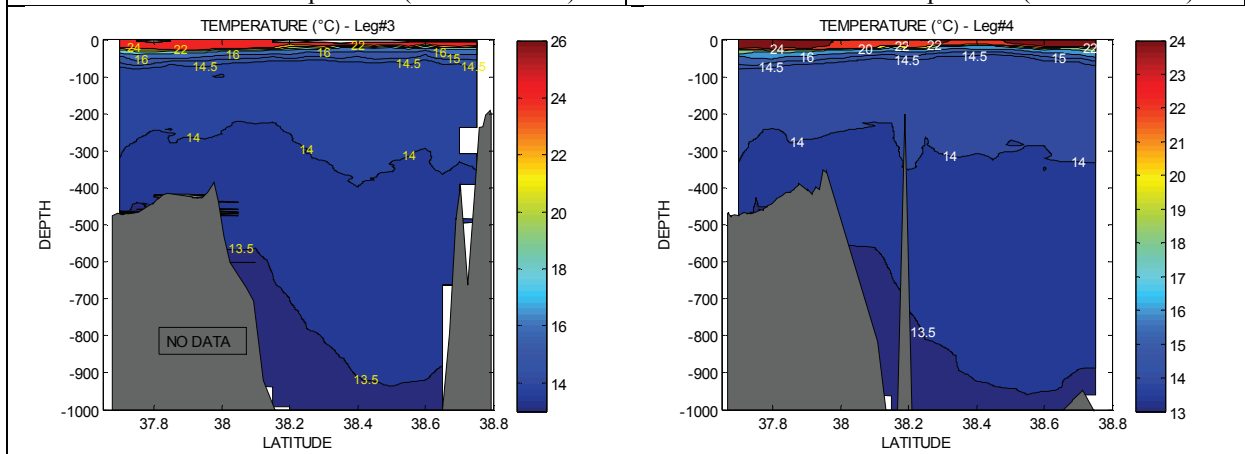
ANNEX A: Vertical sections of Temperature and Salinity





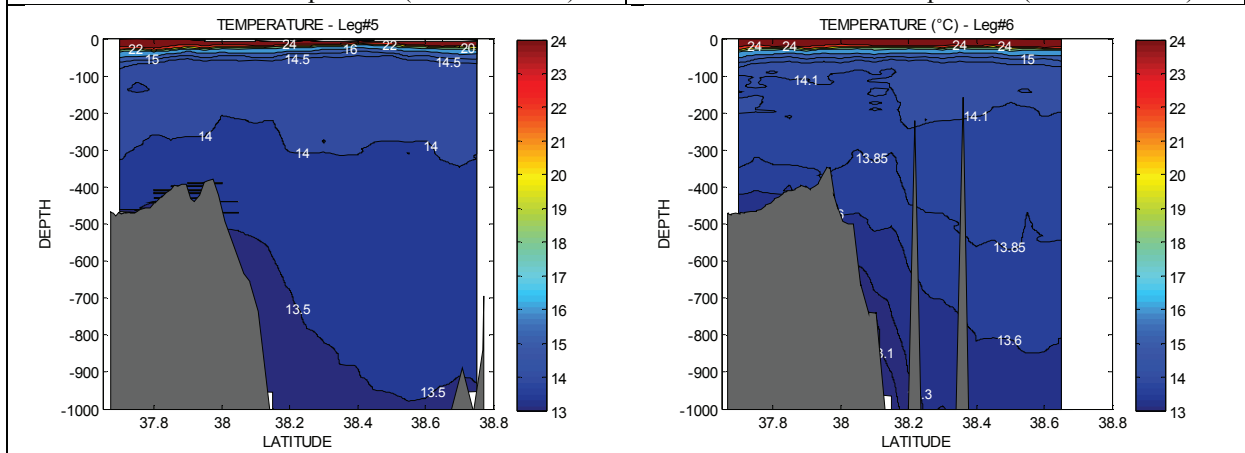
Vertical section of Temperature (16/08 to 21/08)

Vertical section of Temperature (21/08 to 26/08)



Vertical section of Temperature (26/08 to 31/08)

Vertical section of Temperature (31/08 to 04/09)



Vertical section of Temperature (04/09 to 09/09)

Vertical section of Temperature (09/09 to 14/09)

ANNEX B:

JERICO TNA GLIDER MISSIONS ABACUS and MUSICS JOINT MEETING

29-30 January 2015

IMEDEA (Esporles)

Provisional Agenda of the Meeting

29 January 2015

09:00 - 09:15: Meeting opening, scientific objectives and aims with regards to JERICO TNA commitments- Joaquin Tintoré - Pierre Testor
09:15 - 09:30: Presentation of ABACUS Glider campaign (Giuseppe Aulicino/Marc Torner)
09:30 - 09:45: Presentation of MUSICS Glider campaign (Slim Gana)
09:45- 10:00: Presentation of the SOMBA cruise (Pierre Testor/Laurent Mortier)
10:00 - 10:15: Presentation of GABS Glider campaign (March and October 2013), Sardinia-Balearic Is. transect (Antonio Olita)
10:15 - 10:45: Questions - Discussion
10:44 - 11:15: Coffee Break
11:15 - 12:30: ABACUS Group and MUSICS Group: Data calibration, validation and scientific exploitation strategy
12:30 - 14:00: Lunch
14:00 - 15:00: Satellite / glider data analysis and integration: discussion led by Ananda Pascual, Charles Troupin
15:00 - 16:00: Glider Toolbox (Charles Troupin, Joan Pau Beltran)
16:00 - 17:30: Split in 2 groups: ABACUS Group and MUSICS Group: Data validation and scientific exploitation strategy

30 January 2015, morning

09:00 - 10:45: Joint Session: ABACUS and MUSICS groups interactions for joint paper(s)
10:45 - 11:15: Coffee Break
11:15 - 12:30: Joint Session: ABACUS and MUSICS groups interactions for joint paper(s)
12:30 - 14:30: Lunch
14:30 - 17:30: What are next activities and projects?

CONFIRMED PARTICIPANTS

IMEDEA and SOCIB: Ananda Pascual, Jano Orfila,, Simón Ruiz, Ana Massanet, Marc Torner, John Allen, Charles Troupin, Joan Pau Beltrán, Emma Heslop, Joaquín Tintoré. (TNA JERICO & PERSEUS).

LODYC-LOCEAN: Pierre Testor

SAROST: Slim Gana (TNA JERICO - Musics project & PERSEUS)

Uniparthenope, Naples: Giuseppe Aulicino, Giorgio Budillon (TNA JERICO - Abacus project)

CNR, Oristano: Antonio Olita, Alberto Ribotti (TNA JERICO - Sardinia)

Excused:

CNR - Naples: Bruno Buongiorno

SZN - Daniele Iudicone

LOCEAN - Laurent Mortier