

ARGO-ITALY: ANNUAL REPORT 2013



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1. Introduction

ARGO-ITALY is the Italian component of a worldwide in situ global observing system, based on autonomous profiling floats, surface drifters, gliders and ship-of-opportunity measurements. It is primarily focused on the Italian seas, and the Mediterranean and Black seas, and includes observations of temperature, salinity, currents and biogeochemical/optical properties of seawater. The ARGO-ITALY objective is to provide a significant and sustained Italian contribution to the global ocean monitoring.

ARGO-ITALY contributes to international programs such as Argo and Euro-Argo (global monitoring of water properties with profiling floats), GDP (Global Drifter Program to measure near-surface temperature and currents), EGO (gliding vehicles to measure water properties) and SOOP (Ship-Of-Opportunity Program to temperature profiles) which have been developed to monitor the entire World Ocean on a long term basis.

ARGO-ITALY is a cost-effective long-term monitoring system that is a unique source of information to study the role of the oceans, and the Mediterranean Sea in particular, on the climate system. It also provides the data required by operational ocean monitoring systems in order to improve significantly extended forecasts of the atmosphere and oceans. ARGO-ITALY contributes to programs of operational oceanography, such as MOON (Mediterranean Operational Oceanography Network) and MyOcean (FP7 European project) and is essential for the production of marine core and downstream services products of Copernicus/GMES (Global Monitoring for Environment and Security). It is also an important component of GEOSS (Global Earth Observation System of Systems).

ARGO-ITALY is funded by the Italian Ministry of Instruction, University and Research (MIUR) since 2011. The operation of instruments at sea and the collection of data began in February 2012. A dedicated web site was developed to help with the internal organization of the project, to publish graphical and tabulated summaries and photographs on the operation of instruments in near-real time, and to post news, related links, small project calls, etc. related to ARGO-ITALY. The web address is : www.argoitaly.inogs.it

This report summarizes the activities of ARGO-ITALY in 2013 in terms of procurements of the instruments, their preparation and their deployments. Information about data processing and archiving is also given. Plans for 2014 are included in the last section.

2. Argo float activities in 2013

2.1 Float procurement

The following Argo floats were purchased in 2012-2013 with funds of ARGO-ITALY:

1. Five (5) Prov-Bio floats from NKE, Lorient, France (Fig. 1). The Prov-Bio is a Provor CTS 4 with Iridium global telephone network (RUDICS) for data telemetry and a GPS receiver for position. It measures at 1m vertical resolution not only temperature and salinity (Sea-Bird CTD) but also irradiance at three wavelengths (412 nm, 490 nm, 555 nm), fluorescence of Colored Dissolved Organic Matter, fluorescence of Chlorophyll-a, backscattering coefficient (530nm) and attenuation coefficient (660 nm).
2. Two (2) Prov-Nut floats from NKE, Lorient, France (Fig. 1). The Prov-Nut is a Prov-Bio float with additional sensors: an Aanderaa optode oxygen sensor and a SUNA nitrate sensor.
3. Twenty (20) Arvor-I floats from NKE, Lorient, France (Fig. 2). The Arvor-I uses the Iridium global telephone network (SBD) for data telemetry and has a GPS receiver for position. It is equipped with a Sea-Bird CTD.
4. Twenty (20) Apex floats from Webb Teledyne, Massachusetts, USA (Fig. 2). The Apex is fitted with a Sea-Bird CTD and uses the standard Argos system for positioning and data transmission.

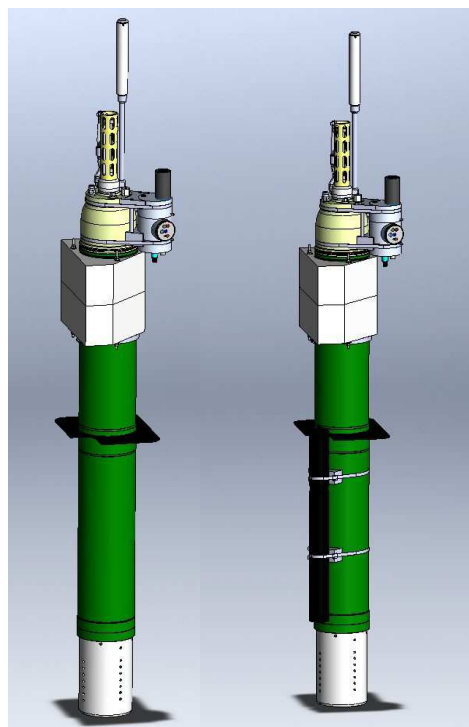


Figure 1. Prov-Bio (left) and Prov-Nut (right) floats, with the CTD and biochemical/optical sensors and Iridium antenna at the top, the SUNA nitrate sensor on the main tubular body and the bladder (to change buoyancy) at the bottom.



Figure 2. Arvor (left) and Apex (right) floats, with the CTD sensors and Argos Iridium/antenna at the top and bladder (to change buoyancy) at the bottom.

2.2 Float deployments

In total, 11 Italian floats were deployed in 2013 (see Tables 1 and 2 for details). These floats were Arvor designs manufactured by NKE (France), some with Iridium (Arvor-I) and others with Argos telemetry (Arvor-L). In the Mediterranean and Black Sea, 8 units were deployed (Table 1). Except for float WMO 6901821, all the instruments were still operating at the end of February 2014. They have a parking depth at 350 dbars and profiling depths alternating at 700 and 2000 dbars. They all have cycles of 5 days, except that WMO 6901826 and 6901827 had daily cycles during approximately the first month after deployment in the Southern Adriatic Sea. These floats were deployed in the southern Adriatic Sea by colleagues of the University Partenope of Naples as part of the SALVE project. Most floats were deployed from research vessels of opportunity (e.g., R/V Urania and OGS Explora) with the help of colleagues from Italy and Cyprus (see deployment pictures in Fig. 3). Float WMO 6901828 corresponds to a float which was recovered, refurbished locally in Varna, Bulgaria, and redeployed in the western Black Sea. Float WMO 6901816 was deployed in the northern Tyrrhenian Sea by colleagues from LAMMA/CNR as part of the DRIVE-FLOATS project.

Three Italian floats were deployed in the Pacific Ocean sector of the Southern Ocean and ice-free Ross Sea (Table 2) with the help of Italian colleagues onboard the South Korean R/V Araon (Fig. 4). Unfortunately, float WMO 6901813, which was tethered to act as a virtual mooring had transmission/floatation problems and died prematurely after only 29 daily cycles on 11 Feb 2013 (last GPS position available on 7 Feb 2013). The deployment of this float in a virtual mooring configuration was part of the T-REX/A project.

The other two floats had cycles of 10 days, parking depth of 1000 m and maximum profiling depth of 2000 m and were still operational at the end of February 2014. However, GPS positions problems occurred for WMO 6901815 starting 8 Nov 2013 and no positions are available for the profiles after that date.

<u>Model</u>	<u>WMO</u>	<u>Deploy Date</u>	<u>Lat</u>	<u>Lon</u>	<u>Cycles</u>	<u>Last Date</u>	<u>Lat</u>	<u>Lon</u>	<u>Status</u>	<u>Cycle</u>
Arvor I - 2	6901821	04-Mar-2013 07:56	39.25	18	53	01-Dec-2013 00:14	36.55	15.52	D	5
Arvor I - 2	6901822	23-Mar-2013 15:58	41.52	18.08	70	05-Mar-2014 00:11	41.69	17.82	A	5
Arvor I - 2	6901826	10-May-2013 04:10	42.02	16.18	102	04-Mar-2014 00:10	41.71	17.19	A	5
Arvor I - 2	6901827	11-May-2013 01:04	42	18.6	101	04-Mar-2014 00:12	40.7	18.87	A	5
Arvor-L	6901828	29-Sep-2013 21:20	42.83	28.82	32	01-Mar-2014 12:50	41.28	37.41	A	5
Arvor I - 2	6901824	04-Nov-2013 16:20	33.9	32.76	20	28-Feb-2014 23:58	34.78	31.88	A	5
Arvor I - 2	6901825	04-Nov-2013 19:05	34.24	33	24	28-Feb-2014 23:56	34.2	32.73	A	5
Arvor I - 2	6901816	18-Dec-2013 09:26	42.22	10.86	17	05-Mar-2014 00:19	41.3	9.92	A	5

Table 1. Status information for the 8 Italian floats deployed in the Mediterranean and Black Sea during 2013.

<u>Model</u>	<u>WMO</u>	<u>Deploy Date</u>	<u>Lat</u>	<u>Lon</u>	<u>Cycles</u>	<u>Last Date</u>	<u>Lat</u>	<u>Lon</u>	<u>Status</u>	<u>Cycle</u>
Arvor I - 2	6901813	06-Jan-2013 19:20	-75.09	164.88	29	11-Feb-2013 01:43	0	0	D	1
Arvor I - 2	6901814	10-Jan-2013 07:55	-61.5	178.67	41	26-Feb-2014 00:11	-58.26	-161.46	A	10
Arvor I - 2	6901815	10-Jan-2013 15:24	-60	178.26	41	26-Feb-2014 00:26	0	0	A	10

Table 2. Status information for the 3 Italian floats in the Southern Ocean during 2013.

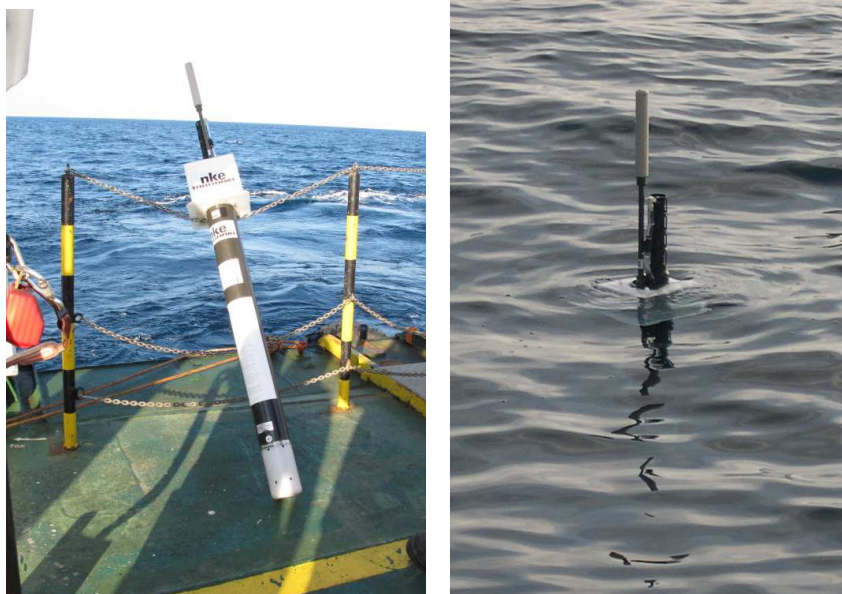


Figure 3. Arvor float (WMO 6901821) ready to be deployed in the northern Ionian Sea on the deck of R/V OGS Explora (right). Arvor float (WMO 6901816) just after deployment in the northern Tyrrhenian Sea.



Figure 4. Arvor float (WMO 6901814) ready to be deployed from R/V Araon in the Southern Ocean in January 2013.

At the beginning of 2014, the Argo-Italy program had a total of 20 active floats, including 15 instruments in the Mediterranean Sea, 4 in the Black Sea (Fig. 5) and 1 in the Southern Ocean (Fig. 6).

Since 18 February 2012, a total of 30 Argo-Italy have been deployed. In less that 2 years, they have provided almost 2000 CTD profiles. The histograms of number of CTD profiles per float is shown in Fig. 7. Six floats have done more than 120 profiles. In total, 3 floats (10%) have failed just after deployment.

ARGO-ITALY FLOAT POSITIONS AS OF 09-Jan-2014 (circle symbols = last positions)

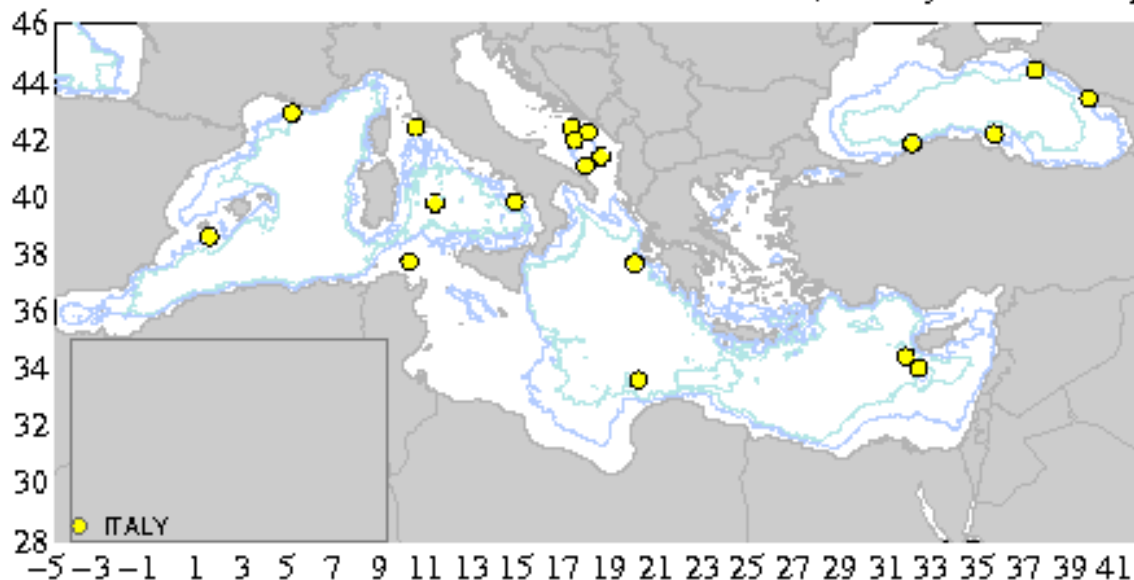


Figure 5. Positions of the 19 Argo-Italy floats in the Meditarrean and Black Sea in early January 2014.

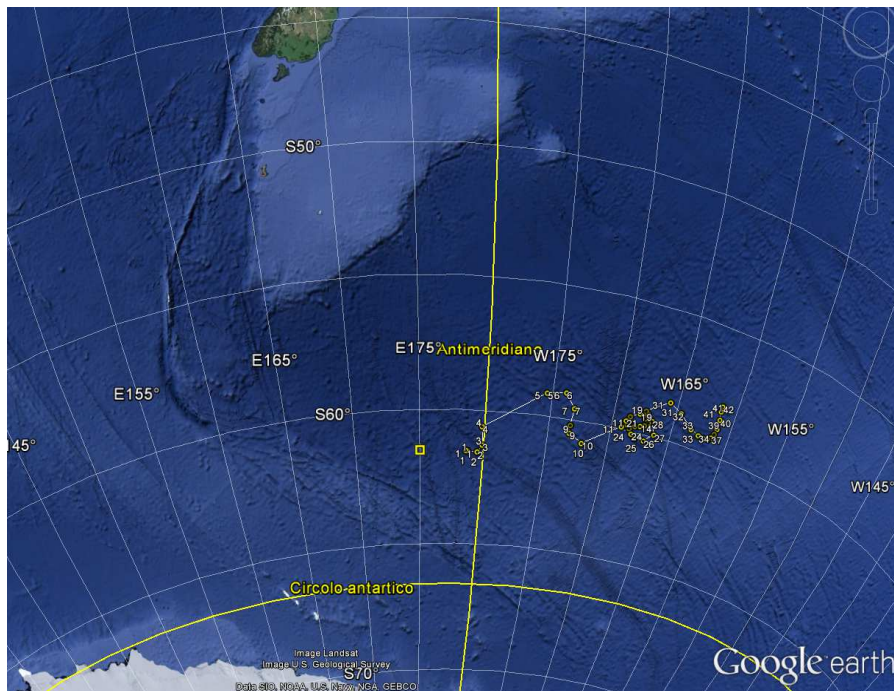


Figure 6. Trajectory of Argo-Italy float WMO 6901814 in the Pacific Sector of the Southern Ocean (South of New Zealand).

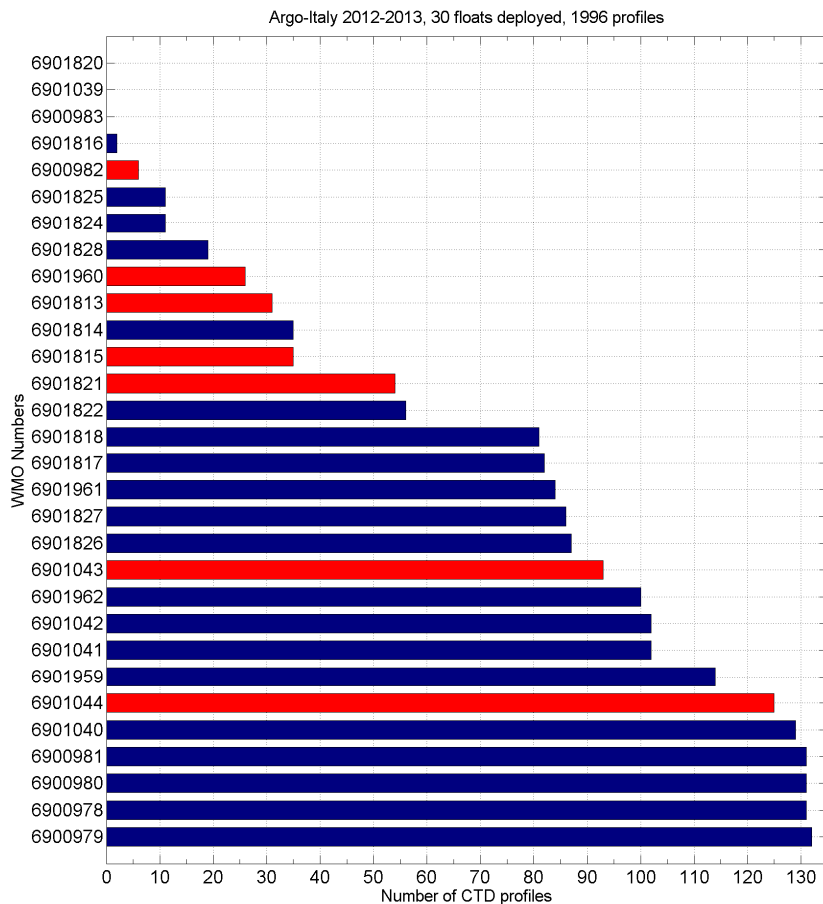


Figure 7. Histogram of number of CTD profiles per float for period 2012-2013 (red: dead float, blue: alive at the end of 2013).

3. SVP drifter activities in 2013

3.1 Drifter procurement

In 2013, there was no procurement of drifters.

3.2 Drifter deployments

During 2013, deployment activities continued in the Malta Channel in collaboration with colleagues from the University of Malta (Fig. 8). Deployment positions were in the western part of the channel (north of Gozo island) in order to obtain surface current measurements to calibrate and validate HF radar observations collected in the Malta Channel as part of the EU Calypso project (http://oceania.research.um.edu.mt/cms/calypsoweb/index.php?option=com_content&view=article&id=71&Itemid=202&lang=en). Status information about these drifters are listed in Table 3. Deployments were carried out in three episodes: June 2013, late September, early October 2013 and late October 2013. In early June 2014, 2 drifters were still alive and providing data in the Ionian Sea.

Argos/IMEI	Deploy Date	Lat	Lon	Last Date	Lat	Lon	Status
a300234011044330	16-Jun-2013 08:51	36.49	14.36	22-Jun-2013 19:00	35.8	35.8	D
a300234011042330	16-Jun-2013 08:14	36.59	14.4	03-Oct-2013 18:00	32.19	32.19	D
b300234011041340	16-Jun-2013 07:36	36.69	14.45	18-Feb-2014 18:00	31.86	31.86	D
a300234011043320	17-Jun-2013 15:00	36.36	14.31	07-Jan-2014 04:00	34.15	34.15	D
a300234011049320	17-Jun-2013 14:00	36.28	14.28	19-Jul-2013 17:00	35.07	35.07	D
a300234011040330	17-Jun-2013 13:00	36.17	14.24	26-Nov-2013 00:00	34.12	34.12	D
b300234011043350	27-Sep-2013 04:00	36.17	14.24	04-Oct-2013 10:00	35.74	35.74	D
b300234011044330	27-Sep-2013 05:00	36.37	14.31	09-Jun-2014 04:00	32.64	32.64	A
b300234011046330	27-Sep-2013 04:00	36.28	14.27	17-Jan-2014 01:00	35.52	35.52	D
a300234011041330	02-Oct-2013 10:12	36.43	14.33	21-Oct-2013 12:00	35.24	35.24	D
a300234011048350	28-Sep-2013 09:57	36.59	14.4	25-Mar-2014 16:00	32.1	32.1	D
a300234011048330	28-Sep-2013 10:30	36.49	14.36	05-Oct-2013 09:00	35.89	35.89	D
a300234011045330	28-Sep-2013 09:27	36.69	14.44	15-Apr-2014 22:00	35.19	35.19	D
a300234060767180	24-Oct-2013 09:05	36.1	14.31	09-Jun-2014 04:00	36.84	36.84	A
a300234060766200	24-Oct-2013 09:00	36.1	14.31	27-Nov-2013 14:00	34.25	34.25	D
a300234060769180	24-Oct-2013 09:03	36.1	14.3	05-Jun-2014 06:00	31.37	31.37	D

Table 3. Status information for Italian drifters deployed in the central Mediterranean (Malta Channel) in 2013.



Figure 8. SVP drifter just after deployment in the Malta Channel in June 2013.

The drifters deployed in the Malta Channel revealed complex patterns of surface circulation in the Ionian Sea and Cretan Passage, including sub-basin gyres, eddies, jet and also inertial motions (Fig. 9).

In March 2013, we took advantage of the transit of R/V OGS Explora to deploy drifters in the northern Ionian Sea (Fig. 10), from the “toe” to the “heel” of the Italian Peninsula (Fig. 11). Six drifters were deployed on 3-4 April 2013 (Table 4). Some of them ended up in the Gulf of Taranto. Others moved eastward and then northward or southward. One drifter found its way into the Adriatic Sea (as far north as 42°N). Another went south crossing meridionally the entire Ionian Sea to eventually strand on the Lybian coast near 30°N.

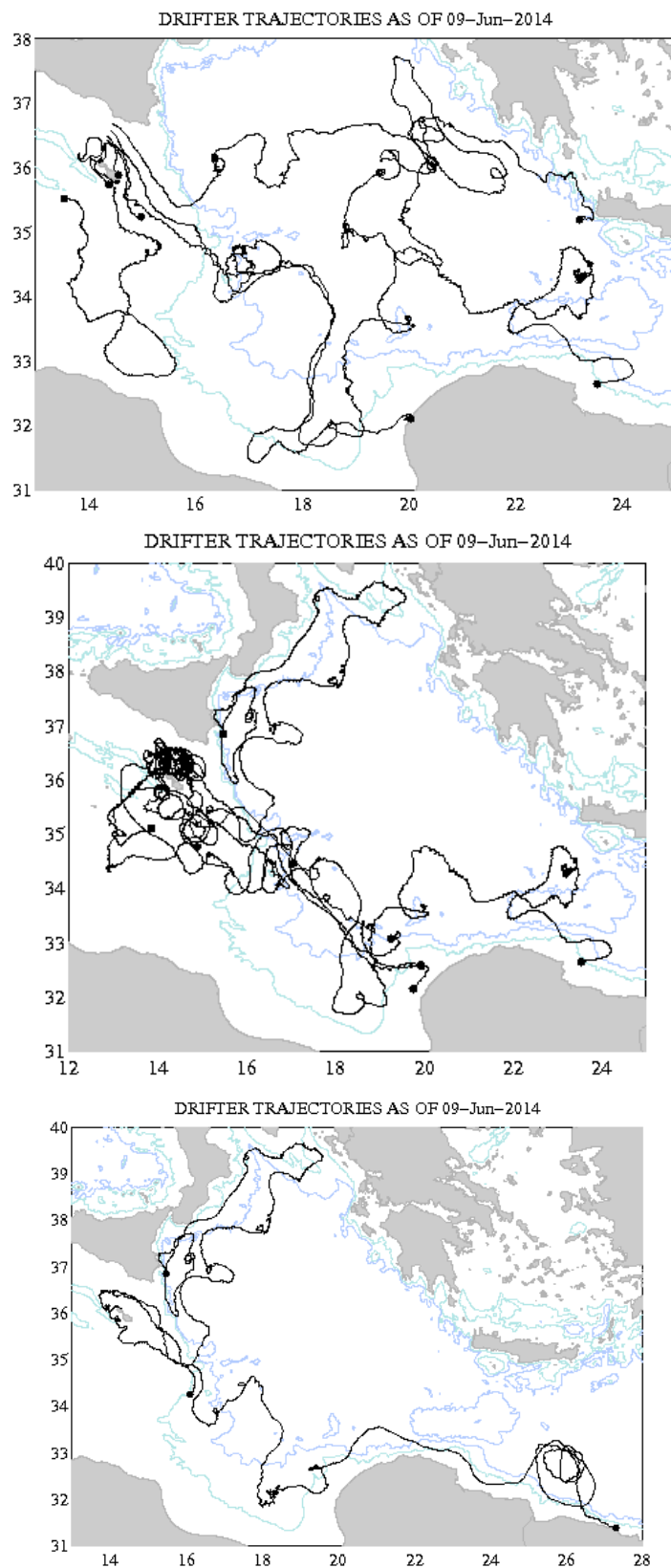


Figure 9. Trajectories and last positions (dots) of the 16 Italian drifters deployed in the Malta Channel in 2013: Deployments in June (top), late September / early October (middle) and late October (bottom).



Figure 10. Photographs of drifter deployments from R/V OGS Explora in the northern Ionian Sea (March 2013, left) and from R/V Cana off the Lebanese coast (August 2013, right).

Argos/IMEI	Deploy Date	Lat	Lon	Last Date	Lat	Lon	Status
a300234011912180	04-Mar-2013 09:58	39.6	18.5	09-Jun-2013 14:00	40.53	40.53	D
a300234011244440	04-Mar-2013 07:01	39.25	18	07-Apr-2014 17:00	40.52	40.52	D
a300234011126760	04-Mar-2013 02:44	38.72	17.43	24-Jul-2013 18:00	39.51	39.51	D
a300234011240440	03-Mar-2013 23:06	38.27	16.98	08-Oct-2013 01:00	30.84	30.84	D
a300234011932500	03-Mar-2013 20:21	37.9	16.5	03-May-2014 08:00	42.48	42.48	D
a300234011041340	03-Mar-2013 16:58	37.55	15.98	18-Feb-2014 18:00	37.49	37.49	D

Table 4. Status information for 6 Italian drifters deployed in the northern Ionian from R/V OGS Explora in March 2013.

DRIFTER TRAJECTORIES AS OF 06-May-2014

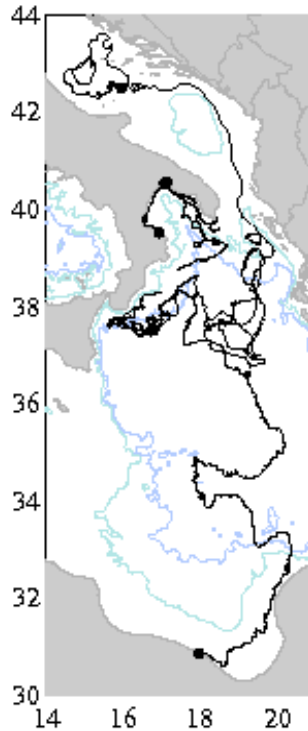


Figure 11. Trajectories and last positions (drifter symbols) of the 6 Italian drifters deployed in the northern Ionian in March 2013.

Starting in April 2013, we started to collaborate with oceanographers from the Centre National de la Recherche Scientifique du Liban (CNRSL) as part of the ENVIMED-ALTIFLOAT project. Lebanese oceanographers deployed drifters off southern Lebanon from the R/V Cana in August and December 2013 (see Table 6 and Fig. 10). Drifter IMEI a300234011933500 is still active but it has stranded on the Turkish coast since March 2014. Drifter IMEI a300234011249440 was picked up in the Gulf of İskenderun in Turkey and was redeployed of Mersin. The same fate occurred for drifter IMEI a300234011915270. The drifter tracks (Fig. 12) showed good indications of the Middle-East Coastal Current and on some sub-basin or mesoscale circulation patterns associated to it, in particular the Shikmona Eddy east of Cyprus and eddies in the Cilician Basin.

Argos/IMEI	Deploy Date	Lat	Lon	Last Date	Lat	Lon	Status
a300234011249440	27-Aug-2013 13:13	33.28	34.95	21-May-2014 07:00	36.57	36.57	D
a300234011120770	27-Aug-2013 12:51	33.28	34.98	10-Sep-2013 05:00	34.13	34.13	D
a300234011043340	27-Aug-2013 12:15	33.28	35.03	17-Sep-2013 06:00	34.88	34.88	D
a300234011247440	17-Dec-2013 13:17	33.28	35.03	17-Mar-2014 11:00	35.54	35.54	D
a300234011915270	17-Dec-2013 13:33	33.28	34.98	14-Jan-2014 10:58	36.57	36.57	D
a300234011933500	17-Dec-2013 13:47	33.28	34.94	09-Jun-2014 02:00	36.31	36.31	A

Table 5. Status information for Italian drifters deployed off Lebanon in the eastern Levantine Basin from R/V Cana in August and December 2013.

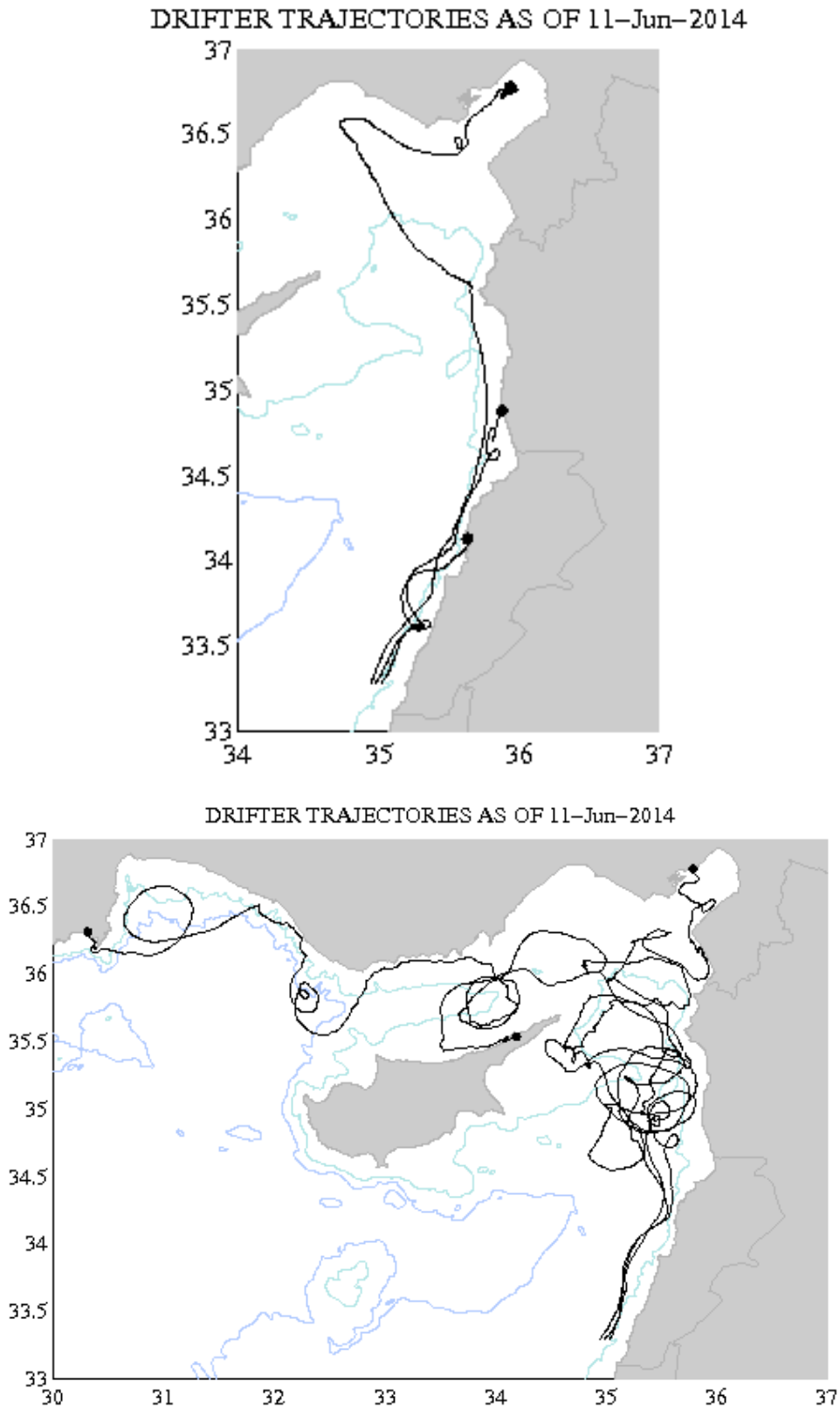


Figure 12. Trajectories and last positions (drifter symbols) of the 6 Italian drifters deployed off southern Lebanon in August (top) and December (bottom) 2013.

4. Glider activities in 2013

4.1 Glider procurement

One Teledyne Webb Research Slocum shallow water glider was purchased with ARGO-ITALY funding. This new glider was chosen so as to be used in coastal water (less than 200m depth) and was equipped with:

- Sea-Bird pumped CTD;
- Aanderaa optode sensor for the dissolved oxygen measurement;
- Wetlab sensor for the measurement of the CDOM (370/460nm), Chlorophyll-a (in the range 470/695nm) and backscatter at 700nm;
- Alkaline batteries.

Four people from OGS went to Boston (USA) to attend the Slocum training course in November 2013.

Note that a second identical glider was acquired as part as the RITMARE project. As a result, in 2013, the OGS glider fleet was increased from one unit to three units.

4.2 Glider testing

The two gliders were tested in the Gulf of Trieste on 11 December 2013. The instruments were first ballasted for the Northern Adriatic Sea water adding about 300 g with respect to the original configuration (for the Atlantic water). The standard on-land and at-sea tests were then carried out off the Marine Reserve area of Miramare (Fig. 13). All tests were completed successfully.



Figure 13. Tests of the two Slocum gliders in the Gulf of Trieste in December 2013.

4.3 OGS Glider laboratory

In 2013, OGS inaugurated a laboratory totally dedicated to the gliders. In particular, the laboratory is equipped with a seawater tank dedicated to the ballasting operations of the Slocum gliders, a small workshop where the assembly/disassembly operations and the battery replacement is feasible and a storage area for the instruments.

4.4 Glider operations

In late winter and spring 2013 the OGS SeaGlider (named “Amerigo”) was operated in the Southern Adriatic Sea as part of two missions (Fig. 14). Before deploying the glider in the Southern Adriatic Sea, several tests were carried out on land and the standard tests at sea were executed in the Gulf of Trieste.

The first South Adriatic mission was achieved in March 2013. The glider was recovered after only one day at sea mainly because of some problems with the Wetlab connector (see Gerin et al., 2013). The problem was fixed at the OGS laboratory and a second mission was carried out in May 2013. The Seaglider was operated for about one week between 15 and 22 May. The instrument was initially headed toward North-West facing the strong current and then it was steered South-East (Fig. 15). Scientific data were acquired during the campaign. Contour plots of selected scientific data are shown in Fig. 16.

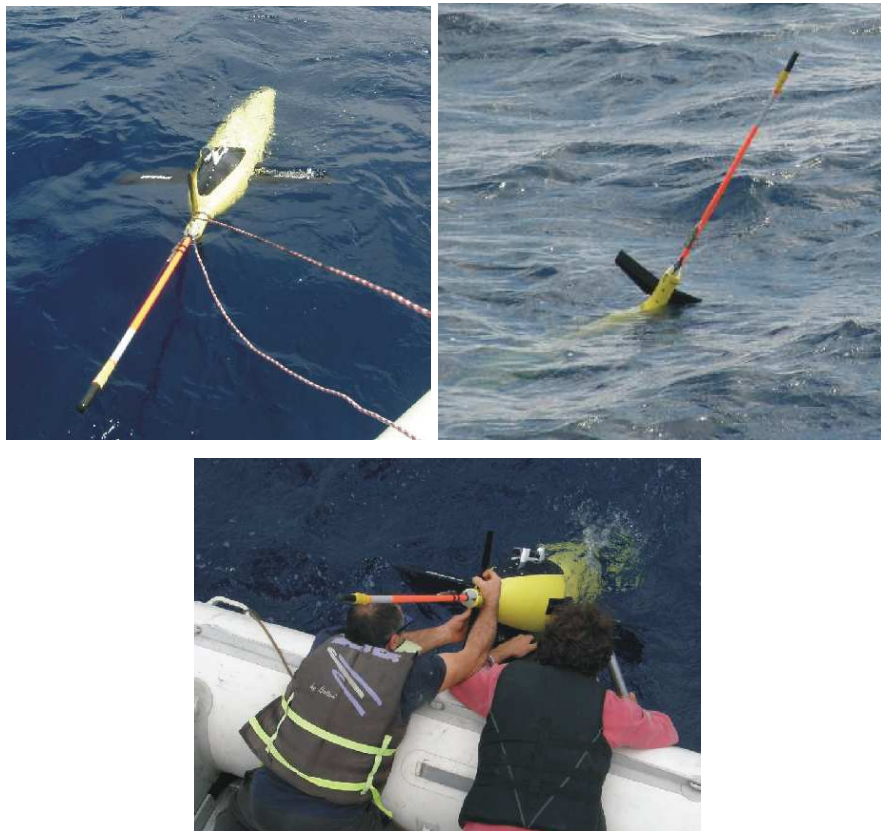


Figure 14. Photographs of the “Amerigo” Seaglider at deployment, while transmitting at the surface and upon recovery with a zodiac.



Figure 15. Track of the “Amerigo” Seaglider in the southern Adriatic Sea between 15 and 22 May 2013. The green circle indicates the last position.

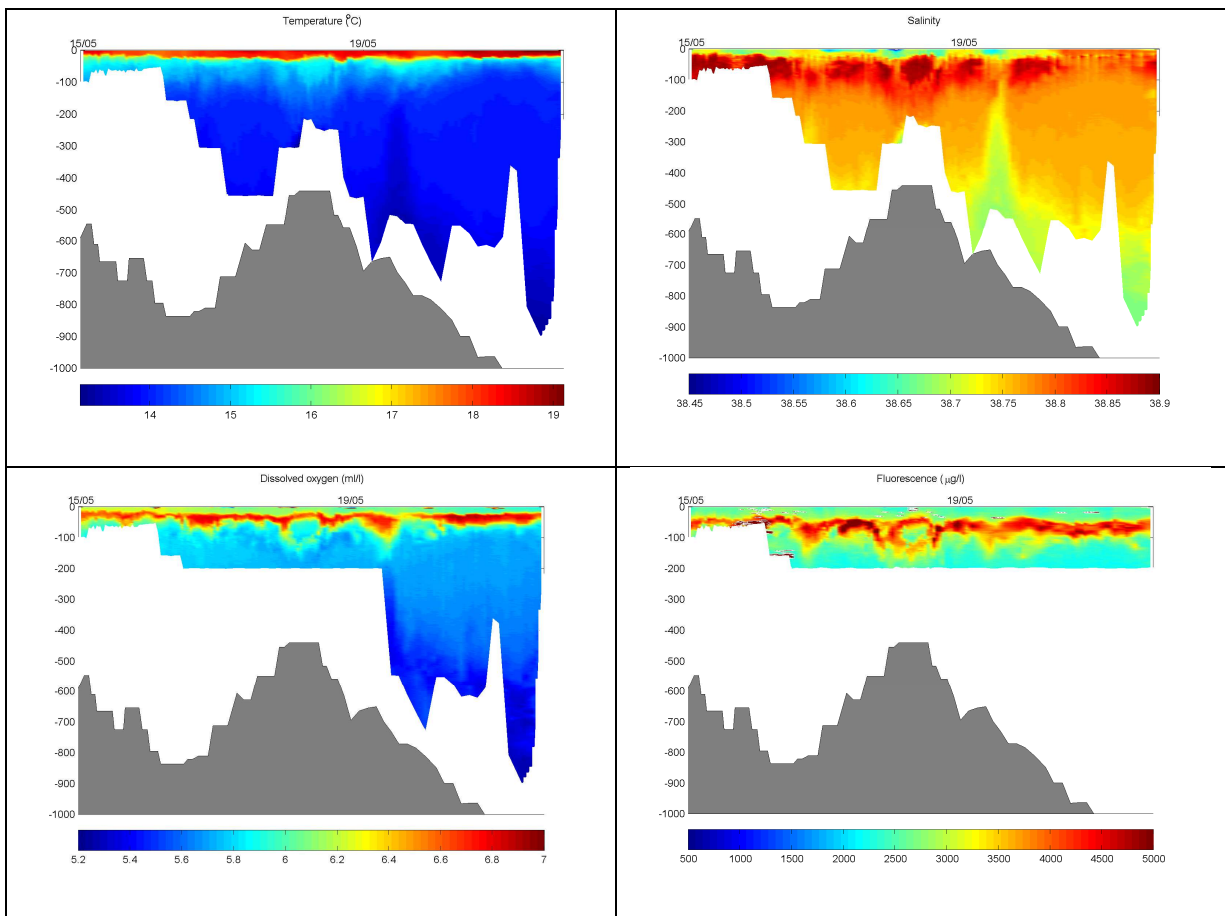


Figure 16. Track Color-coded vertical section along the glider path of temperature (top-left), salinity (top-right), dissolved oxygen (bottom-left) and chlorophyll concentration (bottom-right).

4.5 Glider data QC and webpage

The glider data acquired during the campaigns were processed and displayed on the Webpage: <http://nettuno.ogs.trieste.it/jungo/argoitaly/gliders.html>. A first QC tests of the data was set up following EGO (Everyone Glider Observatories) recommendations to provide a unique and coherent data set in terms of format and quality. A password protected webpage for pilots was created and linked to the main web page to post plots of the behaviour of the glider and of the scientific data in real time.

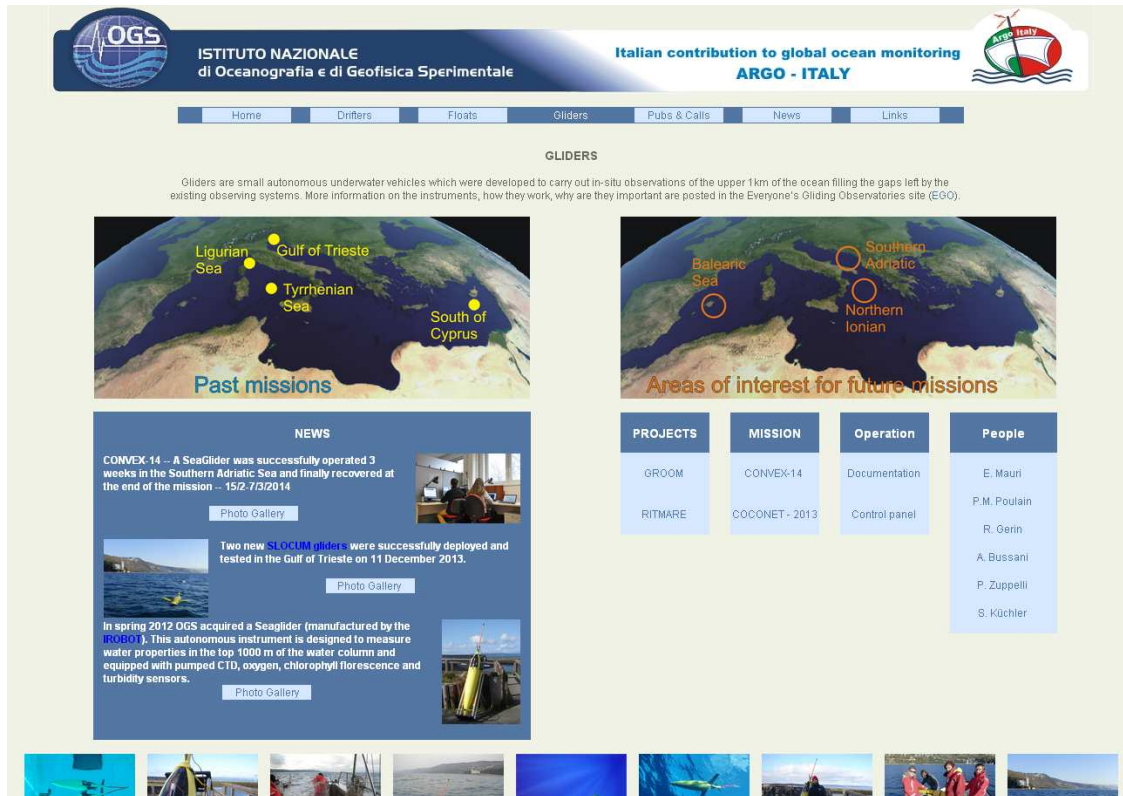


Figure 17. OGS main glider webpage.

5. Other activities in 2013

5.1 Near real-time data processing

The data of drifters, floats and gliders have been processed and archived in near real-time at OGS. This processing includes some editing and the production of graphics and tables which are posted on the ARGO-ITALY web pages. In parallel, the raw drifter and float data have been sent to global Data Assembly Centers (AOML/NOAA, Miami, Florida for the drifters and Coriolis, Ifremer, Brest, France for the floats). In addition, the drifter and float data have been distributed in near real-time on the Global Telecommunication System (GTS) and have been identified by a WMO number.

5.2 Delayed Mode quality control of Argo physical data

The delayed mode quality control (DMQC) of the physical data (pressure, temperature and salinity) provided by the Italian floats has been done for 6 floats. OGS also carried out the DMQC of all the floats operated in the Mediterranean Sea as part of the EC FP7 Sideri and MyOcean-2 projects. The temperature and salinity data of 124 have been quality controlled following the standard Argo procedure, covering the period 2000-2012. The float salinity calibration needs an accurate reference dataset and these data have to be quite close in time and space to the float measurements. The latter is necessary, in order to reduce the effects both of the inter-annual and the seasonal variability of the Mediterranean Sea, mostly in the upper and intermediate layers of the water column. The standard statistical method adopted by the Argo community for the salinity correction is strictly affected by the natural changes in the water column of the Mediterranean Sea and hence a careful interpretation of the method results is necessary. For this reason we adopt other qualitative checks (like comparison between nearby floats and analysis of the deepest portion of the temperature-salinity diagram) in order to increase reliability of the analysis.

5.4 Italian contribution to Argo bibliography in 2013.

The following papers by Italian scientists were published in 2013. They use Argo data for basic oceanographic research and operational oceanography purposes.

Bensi M., Cardin V., Rubino A., Notarstefano G., and Poulain P.-M., 2013: Effects of winter convection on the deep layer of the Southern Adriatic Sea in 2012. *Journal of Geophysical Research: Oceans*, 118, 1-12, doi:10.1002/2013JC009432

Dobricic, S., 2013: An Application of Sequential Variational Method without Tangent Linear and Adjoint Model Integrations, *Mon. Weather Rev.*, 141(1), 307-323.

Griffa, A., A. Haza, T. M. Özgökmen, A. Molcard, V. Taillandier, K. Schroeder, Y. Chang, and P. M. Poulain, 2013: Investigating transport pathways in the ocean, *Deep Sea Research Part II: Topical Studies in Oceanography*, 85(0), 81-95.

Nardelli, B. B., 2013: Vortex waves and vertical motion in a mesoscale cyclonic eddy, *Journal of Geophysical Research: Oceans*, 118 (10), 5609–5624.

5.5 OGS technical reports related to ARGO-ITALY published in 2013.

Bussani A. (2013) Installazione openvpn da ogs.trieste.it a dt.insu.cnrs.fr per backup pc di comando glider - Versione 1 Rel. OGS 2013/18 Sez. OCE 10 SIRE 19 p.

Bussani A. and Gerin R. (2013) Configurazione e gestione del flusso dati del seaglider iRobot OGS 2013/45 Sez. OCE 22 MAOS 33 p.

Gerin R. (2013) STSM Scientific Report - COST Action ES0904: Glider CTD problems and glider simulation code. REL. OGS 2013/113 OCE 42 MAOS, Trieste, Italy, 16 pp.

Gerin R., Bussani A. (2013) How to test the Arvor C, to program a mission and to check it before the deployment. Rel. OGS 2013/49 OCE 24 MAOS p. 11.

Gerin R., Bussani A. and Poulain P.-M. (2013) The internally stored data of the Arvor C: How to extract them, higher profile resolution and some missing information Rel. OGS 2013/17 OCE 9 SIRE 12 p.

Gerin R., Mauri E., Zuppelli P. and Kuchler S. (2013) Important additional notes from the 2013 Slocum Glider Training Course. REL. OGS 2013/101 OCE 39 MAOS, Trieste, Italy, 11 pp.

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6. Plans for 2014 and beyond

6.1 Floats

With the funding available so far, procedures are underway for the procurement of 20 standard Argo floats with Iridium telemetry before the end of 2014. Five of these floats will have additional oxygen sensors (Aanderaa or Sea-Bird).

The Italian deployment plans are detailed in Table 6. The main areas of interest are the Mediterranean and Black seas and the Southern Ocean.

Year	Floats with T/S		Floats with biogeochemical sensors		Total
	Quantity	Area	Quantity	Area	
2014	15	Mediterranean	3	Mediterranean	28
	2	Black Sea	1	Black Sea	
	7	Southern Ocean			
2015	15	Mediterranean	3	Mediterranean	30
	2	Black Sea			
	10	Southern Ocean			
2016	15	Mediterranean	0	Mediterranean	28
	3	Black Sea			
	10	Southern Ocean			

Table 6. Italian float deployment plans for 2014-2016.

OGS is committed to carry out DMQC on all the Argo floats of the Mediterranean and Black seas as part of the E-AIMS, PERSEUS and MyOcean-2 projects over the coming years.

6.2 Drifters

With the funding available in 2014, procedures are underway for the procurement of 60 SVP drifters with Iridium telemetry before the end of 2013.

Drifter deployment plans for 2014 and 2015 are described in Table 7.

Year	SVP drifters	
	Quantity	Area
2014	10	Ionian Sea
	10	Western Mediterranean
2015	20	Mediterranean Sea
	20	Southern Ocean

Table 7. Argo-Italy drifter deployment plans for 2014-2015.

6.3 Glider

The Seaglider is planned to be operated in the southern Adriatic in spring 2014 (April-May 2014). It will be used again in winter/spring 2015 in the southern Adriatic to monitor the dense water formation. The two Slocum gliders will be operated in the northern Adriatic in fall 2014 and in winter 2015.

6.4 Other

MIUR is committed to provide funding in order to sustain the Italian contribution to Argo beyond 2014 as a founding member of the Euro-Argo Research Infrastructure Consortium. In addition to the Italian national funding, OGS has funding from the EC FP7 PERSEUS and E-AIMS projects, for multiple activities (technical development, data management, capacity building and training, EuroArgo strategy, etc.) related to Argo.

It is planned to put out a call for Italian proposals focusing on technical development issues on floats, drifters and gliders in late 2014.

8. Distribution list

This report will be distributed, amongst others, to the ARGO-ITALY International Scientific Advisory Committee:

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