

# Argo National Data Management Report – Italy (2016)

## 1. Status

- **Data acquired from floats:** 335 floats were deployed in the Mediterranean and in Black Seas between 2001 and 2016 (the floats temporal distribution is shown in Figure 2) and more than 38700 CTD profiles were acquired. The temporal and spatial distribution of these profiles is depicted in Figure 1, sorted by the two main float models currently used (bio-Argo and core-Argo floats). Note that here bio-Argo also includes the floats with dissolved oxygen. More than 80 floats per months have been operated simultaneously in the basin in 2016 and about 5000 CTD profiles have been acquired (up to September 2016) by different float models (Figure 3).

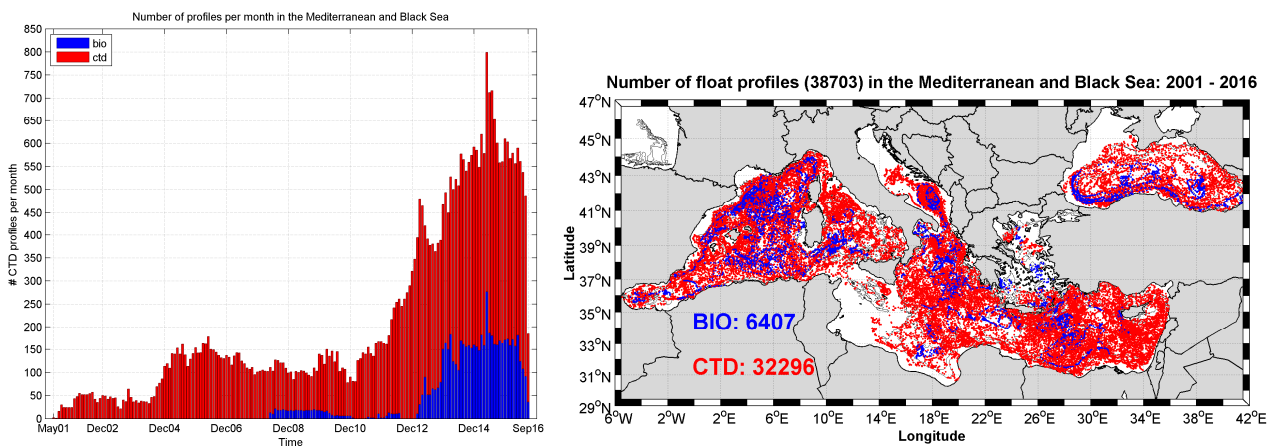


Figure 1. Temporal (left panel) and spatial (right panel) distribution of float profiles in the Mediterranean and Black Sea between 2001 and 2016.

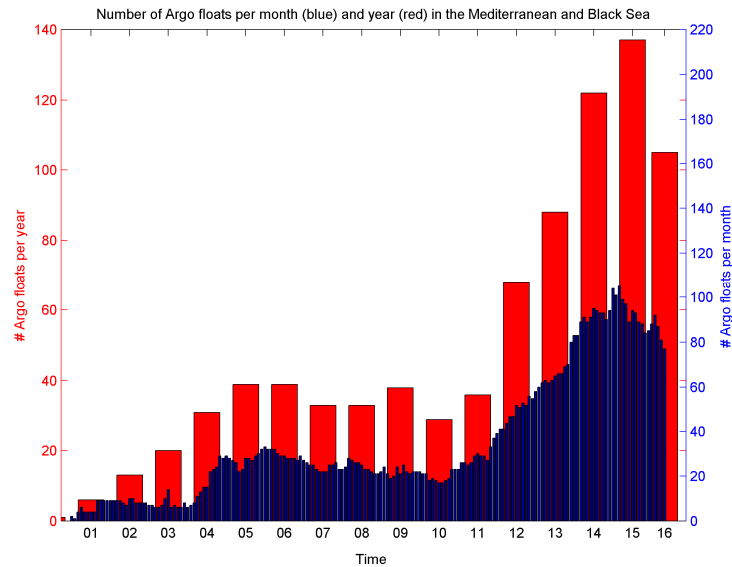


Figure 2. Monthly (blue bars) and yearly (red bars) distribution of Argo floats in the Mediterranean and Black Sea between 2001 and 2016.

The number of CTD profiles acquired by bio-Argo floats in 2016 (up to September) is about 1200 (contributors: France, Italy and Greece) and the data collected by the "standard" CTD Argo floats about 3450 profiles (up to September). The countries that contribute to maintain/increase the Argo population in 2016 are Greece, France and Italy: a total of 18 new floats (manufactured by Metocean and NKE) have been deployed both in the Mediterranean and in the Black Seas (Figure 3); 7 out of 18 platforms are equipped with biogeochemical sensors and the deployment strategy was chosen in order to replace dead floats or under-sampled areas.

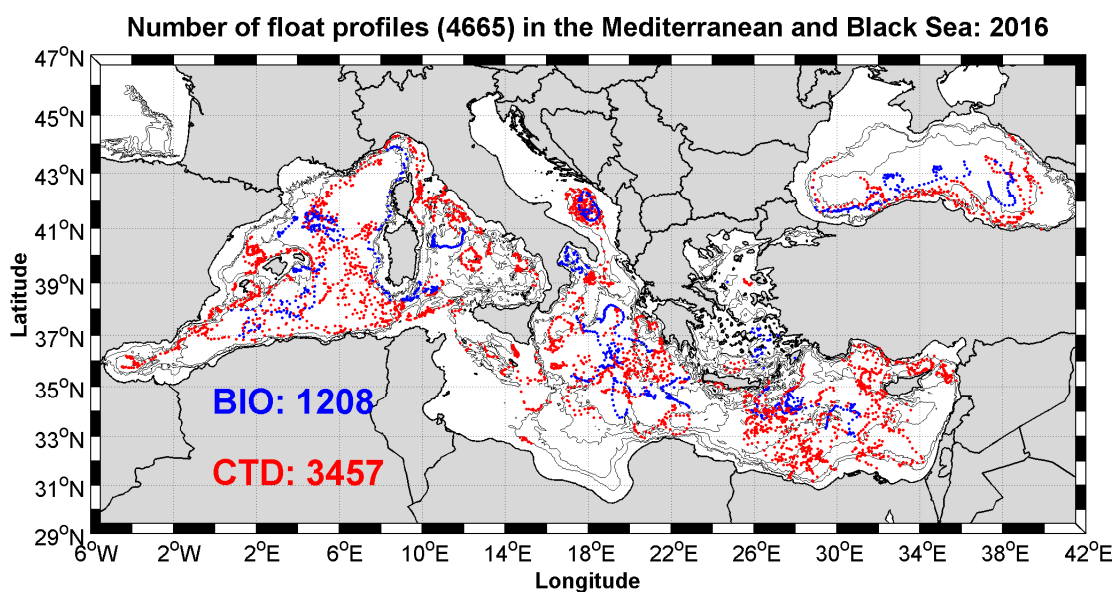


Figure 3. Spatial distribution of profiles collected by Argo floats in 2016 (January-September) in the Mediterranean and Black Sea: bio-Argo floats (blue dots) and standard Argo floats (red dots).

Statistics of the float survival rate in the Mediterranean and Black Sea were computed. The US Argo floats are excluded because many data are missing. All the floats which died before July 2016 were considered in the computation and the life time of each platform is defined as the time between the deployment (launch time) and the last available profile. The survival rate diagrams produced are separated by platform type and transmission mode (figure 4). The maximum operating life is more than 2500 days for a Provor, whilst the mean half life is about 400 days for Provor III, 500 days for Apex and Provor, and 700 days Arvor. Floats with Argos telemetry have a longer mean half life (near 500 days) compared to the floats equipped with Iridium (about 400 days), but the survival rate of platforms with Iridium is larger in the first year after the deployment.

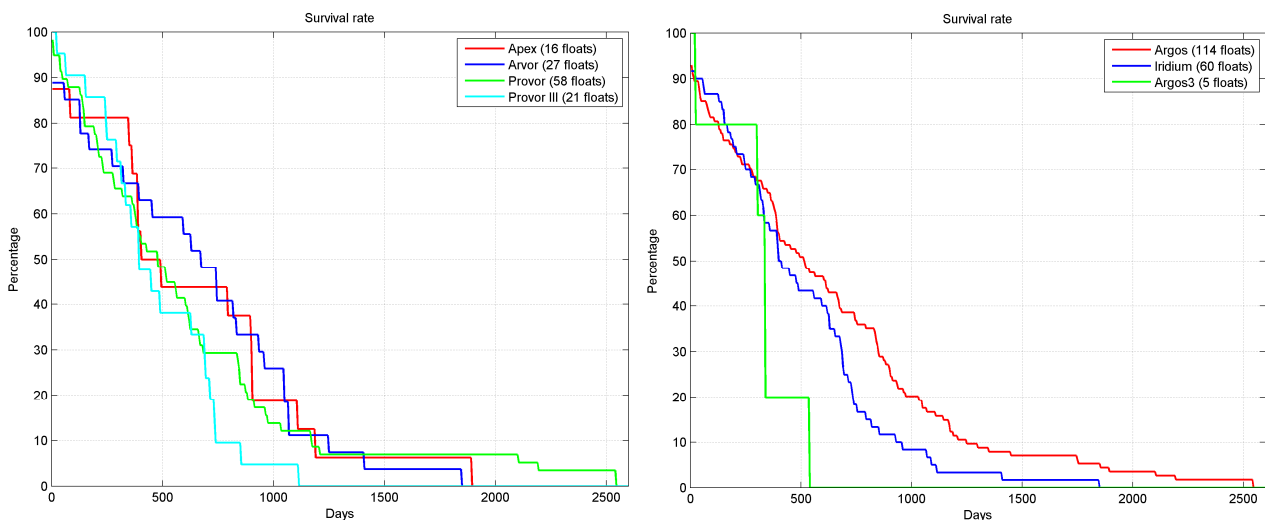


Figure 4. Survival rate diagrams separated by platform type and telemetry system.

- **Web pages:**

The MedArgo web page (<http://nettuno ogs.trieste.it/sire/medargo/active/index.php>) has been maintained and tables and graphics have been updated in near real time. The floats deployed during 2016 have been added to the web page as soon as the technical information are available. The float positions are plotted daily (Figure 5); the monthly and the whole trajectories are also provided (Figure 6). Links with the GDAC center (Coriolis) are also available for downloading both the real-time and delayed-mode float profiles. A link with the Laboratoire d'Océanographie de Villefranche (OAO - Oceanographic Autonomous Observations) can provide detailed information about Argo floats equipped with biogeochemical sensors.

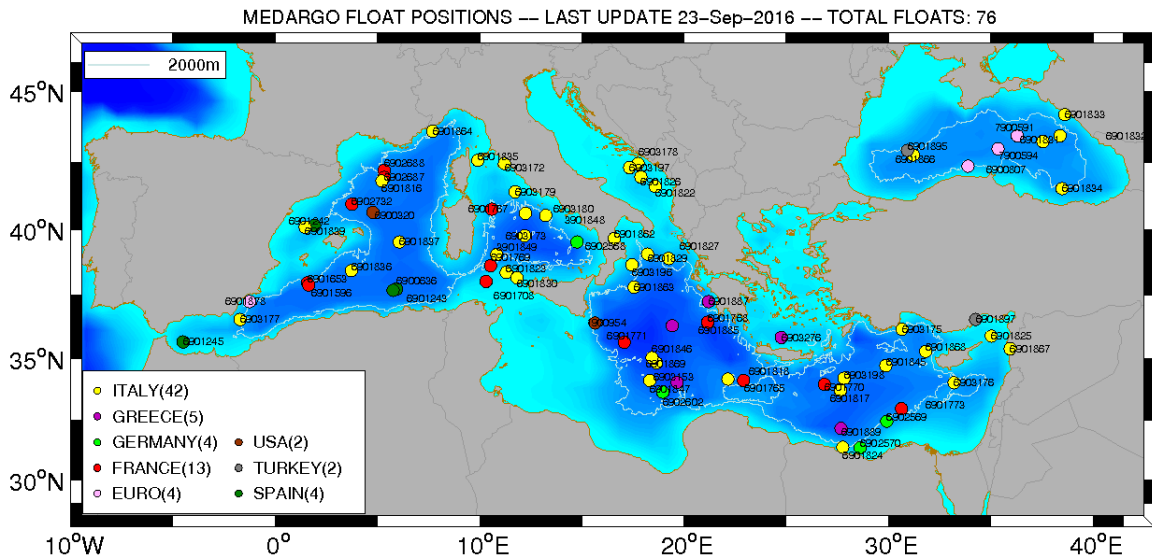


Figure 5. MedArgo float positions as of 20 September 2016 (updated daily).

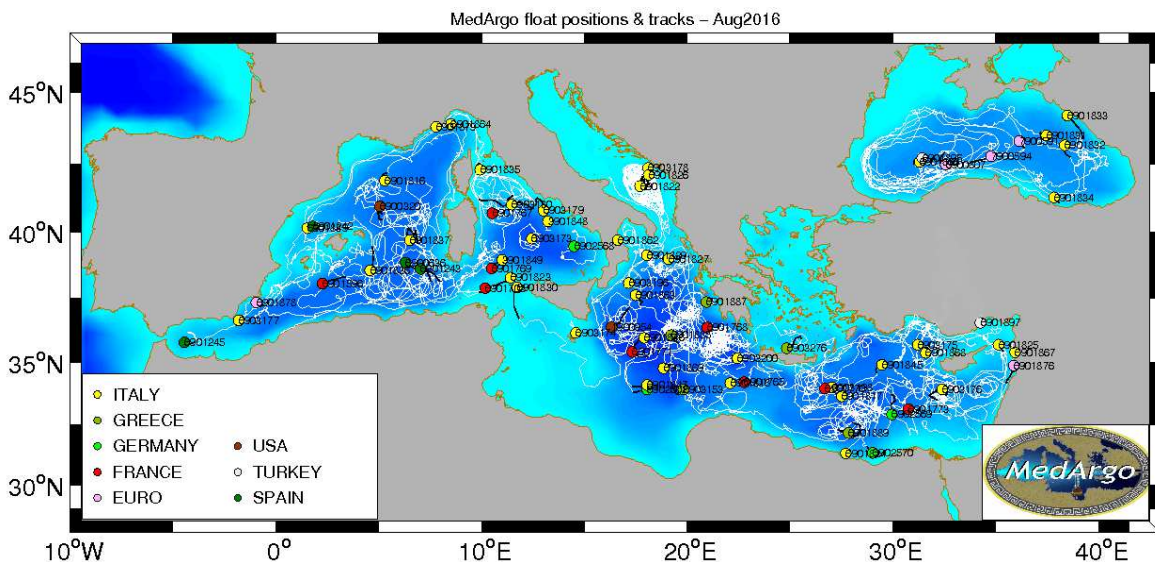


Figure 6. MedArgo float positions and tracks (August 2016). The monthly tracks are in black while the entire float trajectories are in white.

- **Statistics of Argo data usage:** ( operational models, scientific applications, number of National Pis... ):
- **Products generated from Argo data:**
  - a. Daily maps of float positions (Figure 5)
  - b. Monthly maps of float positions and track (Figure 6)
  - c. Float data are assimilated in numerical forecasting models by INGV (MFS); daily and weekly maps of Mediterranean ocean forecasting system are produced (Figure 7).

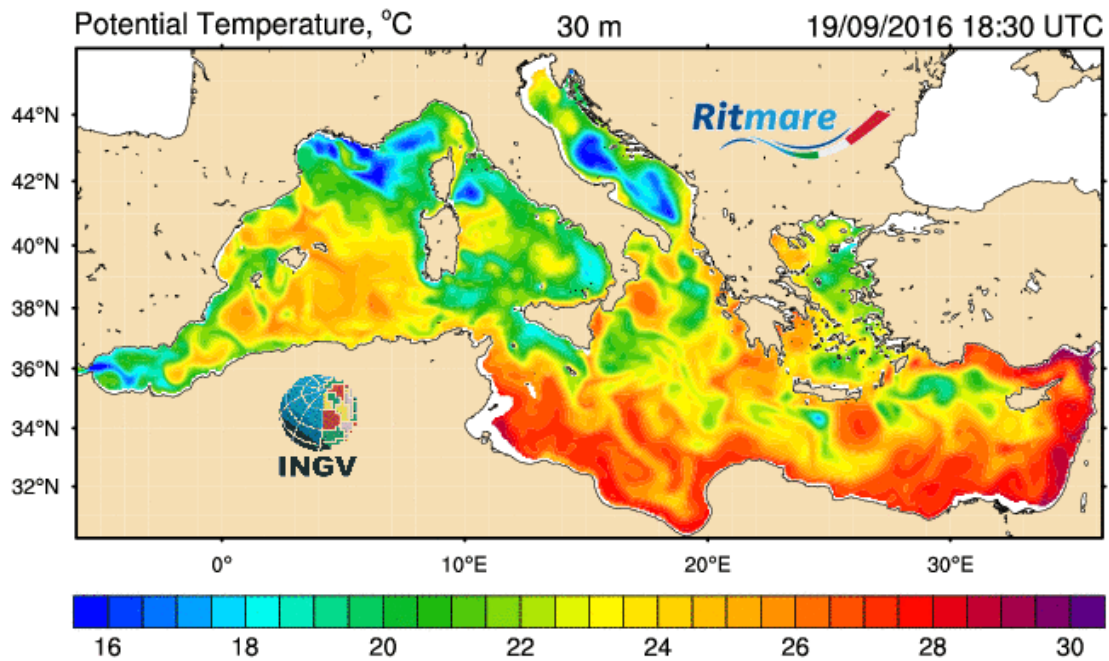


Figure 7. Forecasting model of potential temperature at surface.

## 2. Delayed Mode QC

OGS has continued to carry out the DMQC for the Argo data in the Mediterranean Sea. Any possible surface pressure offsets were examined using the Metadata and Technical data files; different procedures were applied to correct this pressure offset depending on the float type, following the standard method proposed by the Argo community. The OW method in conjunction with other procedures is adopted to conduct the quality control analysis for the salinity data. The D files of floats in the "density inversion test" list were examined and feedback was provided.

Additional Argo reference data for the Mediterranean Sea have been added to the current reference dataset

The DMQC method has been applied to the majority of the floats deployed between 2001 and 2015 in the Mediterranean Sea: they were quality controlled in delayed-mode for salinity, temperature and surface pressure and the respective D-files are gradually sent to GDAC. So far, the majority of the DM checked floats, can be considered as well calibrated. The DMQC report/info of each float can be downloaded by the MedArgo web page ([http://nettuno.ogs.trieste.it/sire/medargo/all/table\\_out\\_all.php](http://nettuno.ogs.trieste.it/sire/medargo/all/table_out_all.php)).

The DMQC of the dead US Argo NAVOCEANO (Argo equivalent project) floats in the Mediterranean Sea (62 platforms) has been completed and the mat D-files were created. Some issues have been found: several floats have empty files at the DAC; some meta and tech files are missing; there were some problems with the surface pressure correction. An action of OGS and the DAC (AOML) is required to try to solve these issues.

### **3. Regional Centre Functions**

MedArgo is the Argo Regional Centre for the Mediterranean and the Black Sea. OGS, who coordinates the MedArgo activities, established several collaborations with European and non-European countries (Algeria, Bulgaria, France, Spain, Greece, Germany, Turkey, Malta, Romania, Israel and Lebanon) in order to set the planning and the deployment coordination of floats. As part of these cooperations the float data are transferred in near real time to MedArgo and 18 new floats have been deployed in the Mediterranean and Black Sea during 2016. The first Arvor Deep was deployed in the Hellenic Trench area (Cretan Passage), a depression of about 4000 m located in the deepest area of the Mediterranean Sea.

There are 79 active Argo floats in the Mediterranean Sea and 9 in the Black Sea as of September 2016. About 30 floats (including also several floats equipped with biogeochemical sensors) will be deployed in late 2016 and in 2017 with the contributions of many countries.