



Argo FAIR services enhancements



- **Search engine API** service on Argo Data September 2020
- **Metadata API** for machine to machine access July 2020
- **Data API** for machine to machine access November 2020
- **OpenAPI description** to facilitate the use of Argo APIs July 2020
- **ERDDAP** data and metadata API Done in 2019
- **OGC services** on top of data and metadata APIs
WMS, SensorThings, WPS (ENVRI-FAIR VRE) July 2021
- **Vocabulary server** for Argo metadata September 2020
- **Argo ontology** May 2021



OpenSearch engine service on Argo Data



- The OpenSearch service for Argo data is developed (Gitlab project on Argo in situ and satellite data)
 - A Python application which queries the Argo Elasticsearch metadata
- The integration is complete on Ifremer infrastructure
 - A docker image containing the OpenSearch service (in situ and satellite)
- The initial service is online
 - <https://opensearch.ifremer.fr/granules.atom?datasetId=argo&startPage=0&timeStart=2020-09-01T00:00:00Z&timeEnd=2020-09-08T23:59:59Z&geoBox=-180.0,-90.0,180.0,90.0>





OpenSearch engine service on Argo Data



https://opensearch.ifremer.fr/gra x https://opensearch.ifremer.fr/gra x ARGO Float 6902759 - Argo Flee x Euro Argo Data Selection x Index of /dac/coriolis/6902759/p x +

dataselection.euro-argo.eu/cycle/4858794

6902759 ARVOR Profiling Float

Float
 Country: FRANCE
 Institution: IFREMER, Institut Français de Recherche pour l'Exploitation de la Mer
 Status: Active
 Cycle: Cycle number 125
 Direction: Ascending
 Datetime: 02.09.2020 18:30:00
 Number of levels: 2012
 Data Mode: Real-Time
 Position: -39.237N 75.973E

Quality: 1

Sea temperature
 Practical salinity
 Practical salinity - Sea temperature

Sea temperature - degree_Celsius
 Practical salinity - psu
 Practical salinity - degree_Celsius

Primary sampling: averaged [10 sec sampling 25 dbar average from 2000 dbar to 200 dbar; 10 sec sampling 10 dbar average from 200 dbar to 10 dbar; 10 sec sampling 1 dbar average from 10 dbar to 2.5 dbar]

Sea temperature
 Practical salinity
 Practical salinity - Sea temperature

Sea temperature - degree_Celsius
 Practical salinity - psu
 Practical salinity - degree_Celsius

ARGO DATA SELECTION TOOL

R6902759_125.nc

Tout afficher

=0&timeStart=2

nsions/geo/1.0/" xmlns:time= xmlns:gml="

01T00:00:00Z" time:end="

es/R6902759_125.nc"/> R6902759_125.nc"/> 25"/>



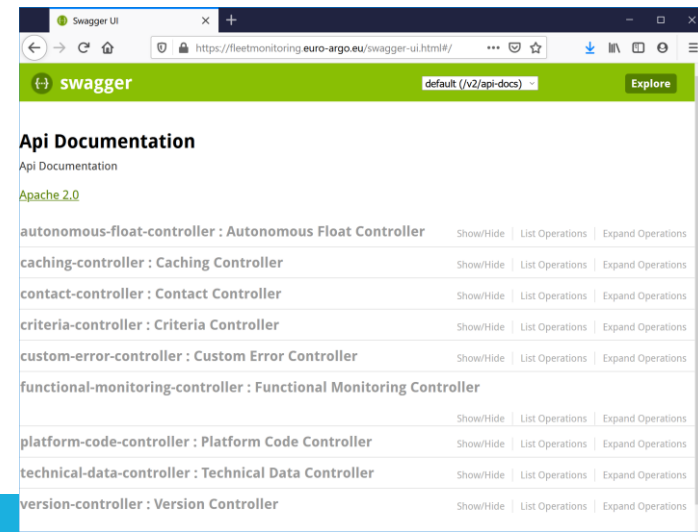
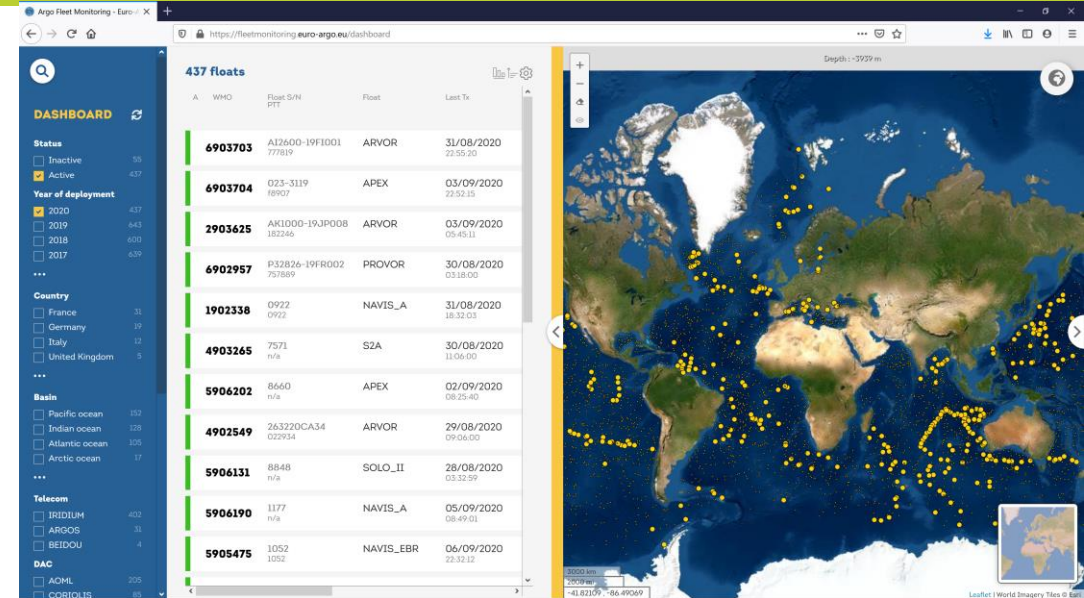
Metadata API for machine to machine access



- <https://fleetmonitoring.euro-argo.eu/dashboard>



- <https://fleetmonitoring.euro-argo.eu/swagger-ui.html#/>

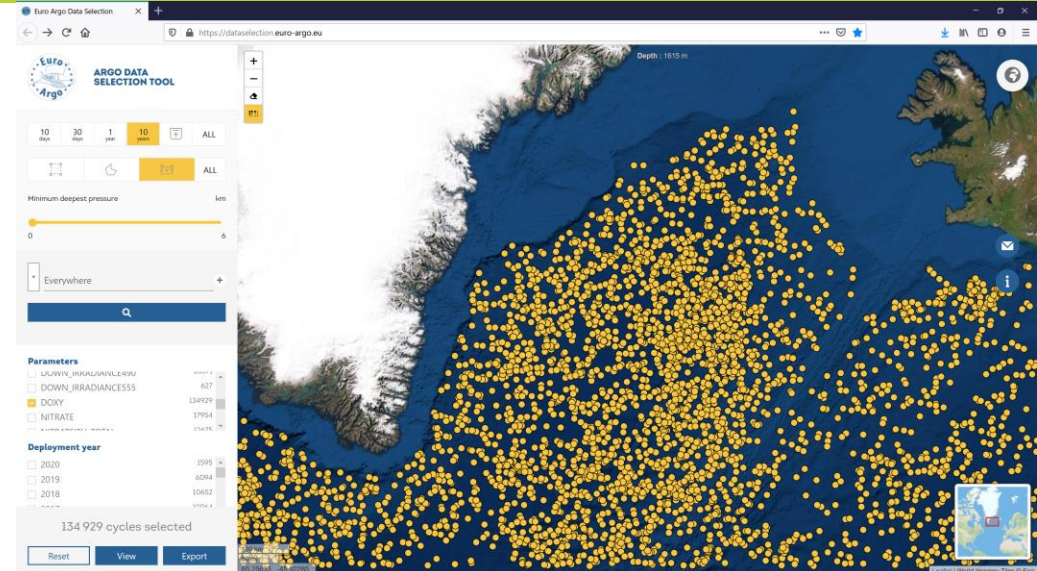




Data API for machine to machine access



- <https://dataselection.euro-argo.eu/>
- Metadata of Argo cycles
 - <https://dataselection.euro-argo.eu/swagger-ui.html#/>
- Data subsetting service : developed, integration underway
Maybe out of scope for ENVRI-FAIR



Controller	Operations
basic-error-controller : Basic Error Controller	Show/Hide List Operations Expand Operations
basin-controller : Basin Controller	Show/Hide List Operations Expand Operations
caching-controller : Caching Controller	Show/Hide List Operations Expand Operations
contact-controller : Contact Controller	Show/Hide List Operations Expand Operations
cycle-controller : Cycle Controller	Show/Hide List Operations Expand Operations
data-view-controller : Data View Controller	Show/Hide List Operations Expand Operations
export-controller : Export Controller	Show/Hide List Operations Expand Operations
search-controller : Search Controller	Show/Hide List Operations Expand Operations
version-controller : Version Controller	Show/Hide List Operations Expand Operations

[BASE URL: / , API VERSION: 1.0]



ERDDAP data and metadata API



- <http://www.ifremer.fr/erddap/index.html>
- <http://www.ifremer.fr/erddap/tabledap/ArgoFloats.graph?longitude,latitude,temp&time%3E=2015-01-01T00%3A00%3A00Z&time%3C=2020-09-08T09%3A43%3A40Z&platform%20number=%226902759%22&pres%3E=0&pres%3C=10&longitude%3E=54.46&longitude%3C=107.492&latitude%3E=-63.484&latitude%3C=-10.452&.draw=markers&.marker=5%7C5&.color=0x000000&.colorBar=%7C%7C%7C%7C%7C&.bgColor=0xffccccff&.zoom=in2>



- **Issue** : ERDDAP on top of Argo 20 000 NetCDF files is not efficient on multiple files queries. We'll investigate ERDDAP on top of Cassandra API





OGC services on top of data and metadata APIs



- WMS, SensorThings, WPS (ENVRI-FAIR VRE)
 - Work underway to implement a SensorThings API for Argo profiles
 - We are on schedule to deliver by mid-2021





Vocabulary server for Argo metadata



- The « R » collection of vocabularies created on NVS for Argo
- 25 Argo vocabulary tables are now online
 - https://www.bodc.ac.uk/resources/vocabularies/vocabulary_search/
 - https://www.bodc.ac.uk/resources/vocabularies/vocabulary_search/R03/
- NVS-VOCAPS github available for collaborative work
 - <https://github.com/nvs-vocabs>
 - <https://github.com/nvs-vocabs/ArgoVocabs>

The screenshot displays the NERC Vocabulary Server (NVS) interface. The top part shows a grid of 25 vocabulary tables, each represented by a colored cell with a table identifier (e.g., A01, B02, C03, etc.). A yellow circle highlights the R03 table. Below the grid, contact information is provided: Tel +44 (0) 782 512 0946, Fax +44 (0) 151 795 4912, and Email nvs@bodc.ac.uk. The bottom part of the screenshot shows a search results page for the R03 vocabulary. The search text is "R03, Argo parameter c". The results table lists 86 records, with the following columns: Identifier, PrefLabel, Definition, and Date.

Identifier	PrefLabel	Definition	Date
TEMP	Sea temperature in-situ ITS-90 scale	Temperature of the water body expressed against the International Temperature Scale 1990 (ITS-90) calibration standard.	2019-10-11
BISULFIDE	Bisulfide concentration	Bisulfide concentration (µmol/kg).	2020-04-04
NITRATE	Nitrate concentration	Nitrate concentration (µmol/kg).	2020-04-04
DOXY	Dissolved oxygen concentration	Dissolved oxygen concentration (µmol/kg).	2020-04-04
PH_IN_SITU_TOTAL	pH (total scale)	pH against the total scale.	2020-04-04
MOLAR_NITRATE	Molar nitrate concentration	Nitrate concentration (µmol/l).	2020-04-04
PSAL	Practical salinity	Practical salinity of the water body by conductivity psal.com and the unit used is the IUPAC/IOPE3...	2019-10-11



Argo ontology



- Nous développons l'ontologie Argo : une sémantique sur les vocabulaires Argo
- Cette ontologie RDF est conforme au modèle DCAT (UE)
Elle devrait aussi être conforme Schema.org (Google)
- Elle est moissonable par les catalogues DCAT et Google Search
- Elle est interrogeable sur un serveur Sparql endpoint
- Elle s'intègre dans la fédération des infrastructures de recherche du cluster ENVRI
- Elle est le point d'entrée Argo pour tout sur-ensemble sémantique RDF

Argo ontology

