Argo Data visualization DO-A-THON

Monitoring Argo floats – Euro-Argo

ADMT20, October 2019

Monitoring Argo floats

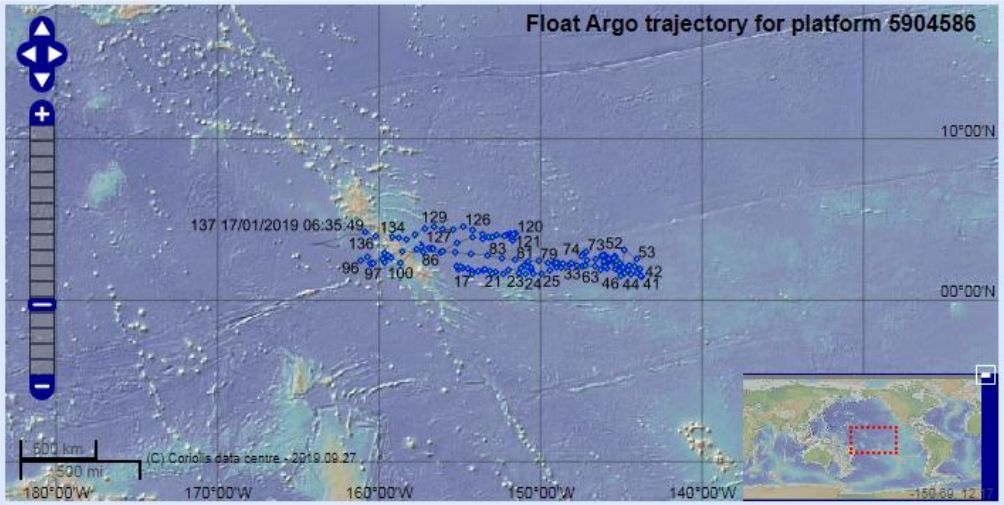
https://fleetmonitoring.euro-argo.eu

- **History**
- **Targeted audience**
- **Demo**
- **Interoperability**
- **SWOT analysis**

Monitoring Argo floats – History

- Ifremer **float webpage** + at sea monitoring for group of floats (2002 => 2017)

Login | Enter platform code | Float list

Code	5904586
Name	NAVIS_A Profiling Float
Description	Argo PMEL
Project	US ARGO PROJECT
Institution	Pacific Marine Environmental Laboratory (PMEL), National Oceanic and Atmospheric Administration (NOAA)
Data Assembly Center	AO : AOML
Activity	Inactive
Status	
Comment	
First station date	28/04/2015 14:35:58
Last station date	17/01/2019 06:35:50
Float cycles	162, 161, 160, 159, 158, 157, 156, 155, 154, 153, 152, 151, 150, 149, 148, 147, 146, 145, 144, 143, 142, 141, 140, 139, 138, 137, 136, 135, 134, 133, 132, 131, 130, 129, 128, 127, 126, 125, 124, 123, 122, 121, 120, 119, 118, 117, 116, 115, 114, 113, 112, 111, 110, 109, 108, 107, 106, 105, 104, 103, 102, 101, 100, 99, 98, 97, 96, 95, 94, 93, 92, 91, 90, 89, 88, 87, 86, 85, 84, 83, 82, 81, 80, 79, 78, 77, 76, 75, 74, 73, 72, 71, 70, 69, 68, 67, 66, 65, 64, 63, 62, 61, 60, 59, 58, 57, 56, 55, 54, 53, 52, 51, 50, 49, 48, 47, 46, 45, 44, 43, 42, 41, 40, 39, 38, 37, 36, 35, 34, 33, 32, 31, 30, 29, 28, 27, 26, 25, 24, 23, 22, 21, 20, 19, 18, 17, 16, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, 0
Stations	in Ascii, in Netcdf
Trajectory data	in Ascii, in Netcdf
Graphics of individual profiles	Verticals profiles, Immersion profiles
Map	
T/S Diagram	

http://www.ifremer.fr/co-argoFloats/float?ptfCode=5904586

Monitoring Argo floats – History

- Ifremer float webpage + **at sea monitoring for group of floats** (2002 => 2017)

Float age | Float status | Functional monitoring | Technical monitoring

Full report | WMO Correspondance | Print page

http://www.ifremer.fr/co-techMonitoring/floatMonitoring?lang=en&groupCode=632

Active Floats | Dead Floats

MOCCA
152 floats - 138 active floats at 27/09/2019

2 deployed floats, 2 new dead float(s) since last monthly bulletin at 02/08/2019

ARVOR (20) + 0 - 0 | ARVOR_I (116) + 2 - 2

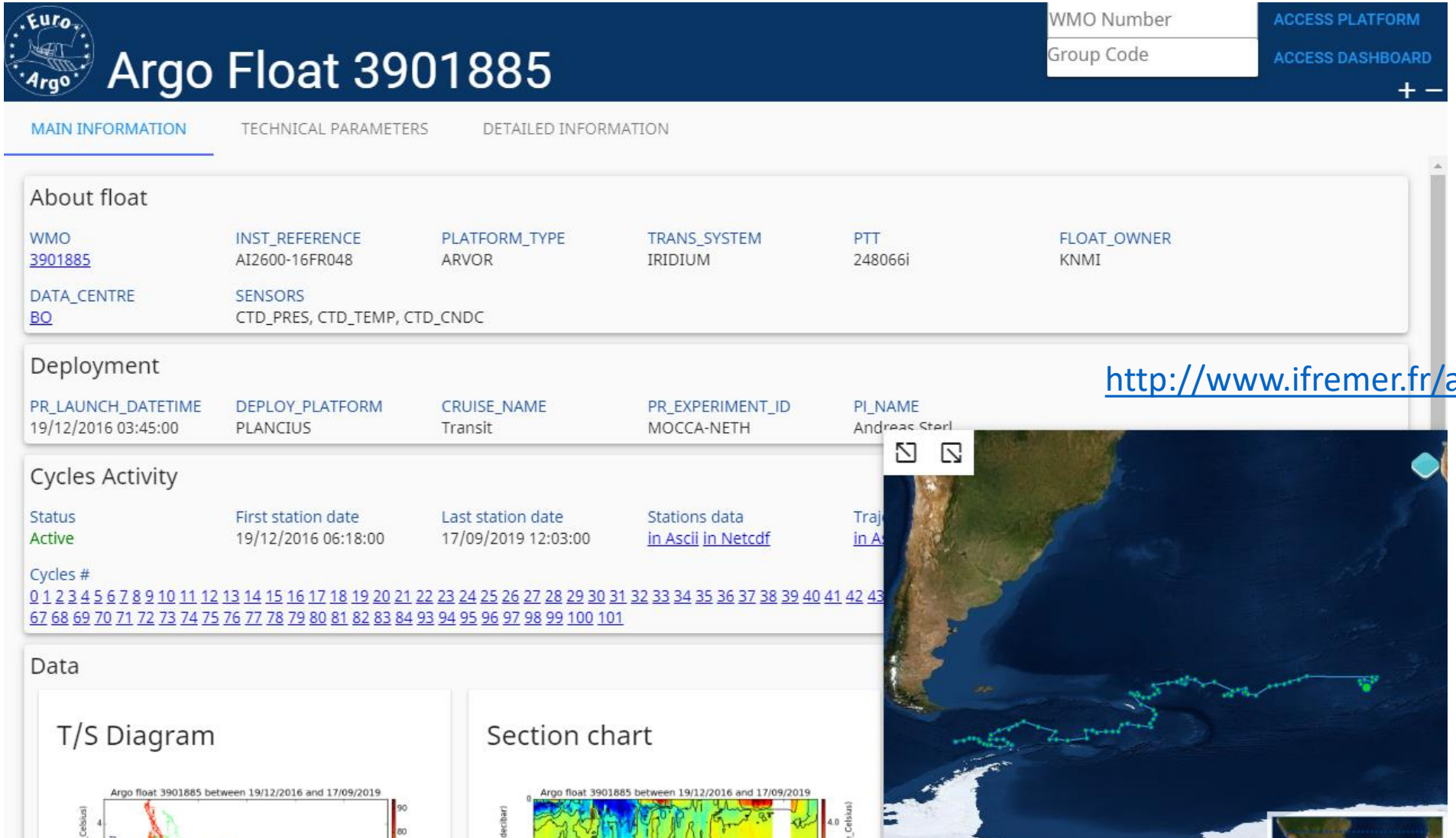
floats - 20 active floats at 27/09/2019

0 deployed floats, 0 new dead floats since last monthly bulletin at 02/08/2019

Floats	Program	Deployment data	Lastest cycle	T/S Profiles		Drift	Data Transmission			Battery Voltage	Kms		
			Missing cycles	Quality	Length	Cycles with anomaly	Cycle	Missing Frames	Missing Measurements		Kms done	kms done / previous month	Expected Kms/ previous month
3901937	MOCCA-EU	09/01/2017	**18/09/2019 #99**	OK	Too short	OK	OK			9.2	198.9	**10.0**	11.2
3901935	MOCCA-EU	08/01/2017	**17/09/2019 #99**	OK	Too short	OK	OK			9.1	196.1	**8.0**	11.2
3901934	MOCCA-EU	10/01/2017	**19/09/2019 #99**	OK	Too short	OK	OK			9.2	198.0	10.1	11.2
3901933	MOCCA-EU	31/10/2017	23/09/2019 #70	OK	Too short	OK	OK			9.3	140.7	12.1	11.2
3901932	MOCCA-EU	08/06/2018	23/09/2019 #48	OK	Too short	OK	OK			9.3	96.1	12.0	11.2
3901931	MOCCA-EU	19/01/2017	**18/09/2019 #98**	OK	Too short	OK	OK			9.1	195.7	**10.0**	11.2
3901930	MOCCA-EU	24/01/2017	23/09/2019 #98	OK Grey List: 17/03/2019 #- PSAL TEMP	Too short	OK	OK			9.4	194.2	12.1	11.2

Monitoring Argo floats – History

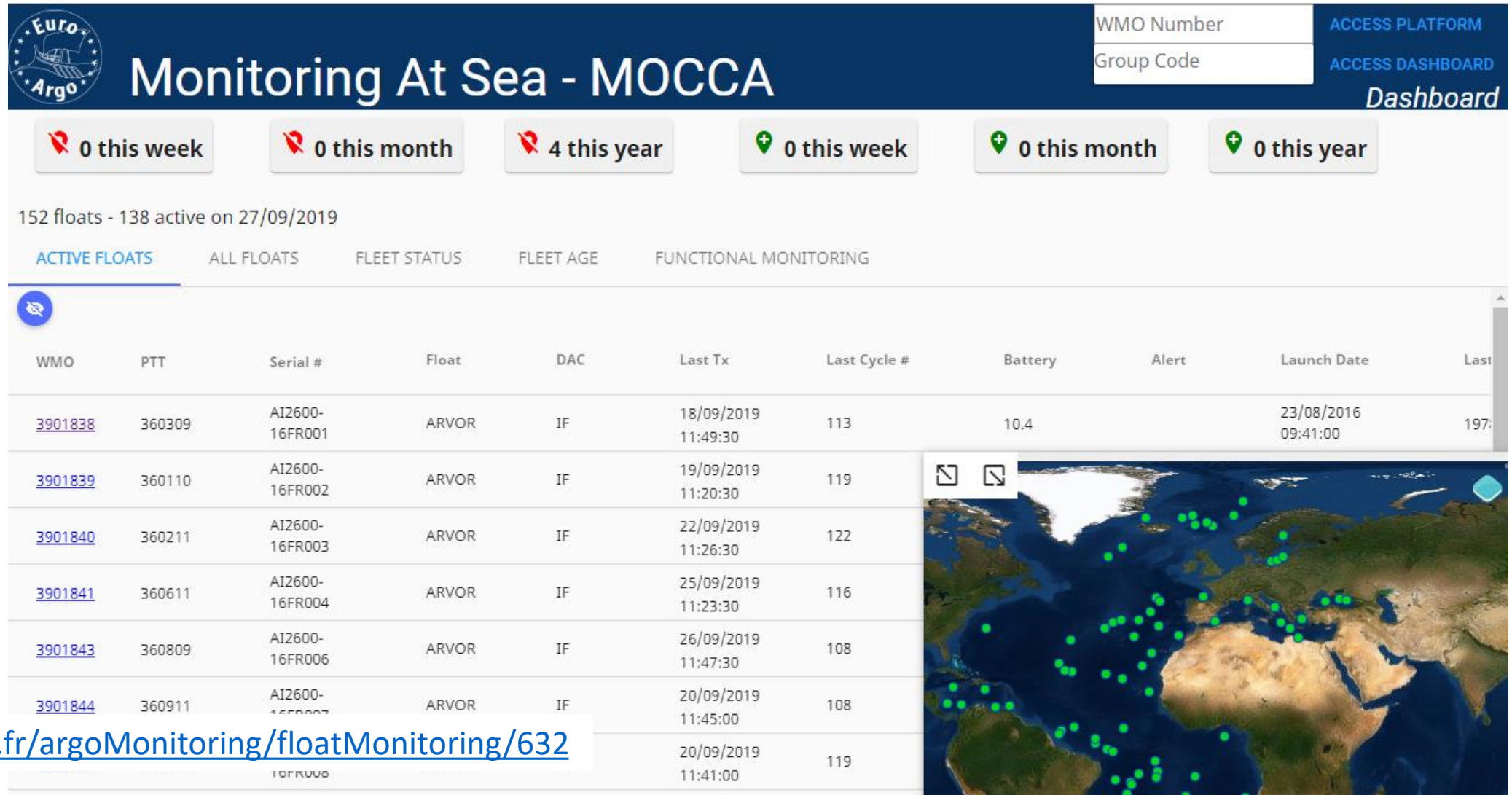
- Euro-Argo **float webpage** + dashboard for group of floats (2017 => 2019)



http://www.ifremer.fr/argoMonitoring/float/3901885

Monitoring Argo floats – History

- Euro-Argo float webpage + **dashboard for group of floats** (2017 => 2019)

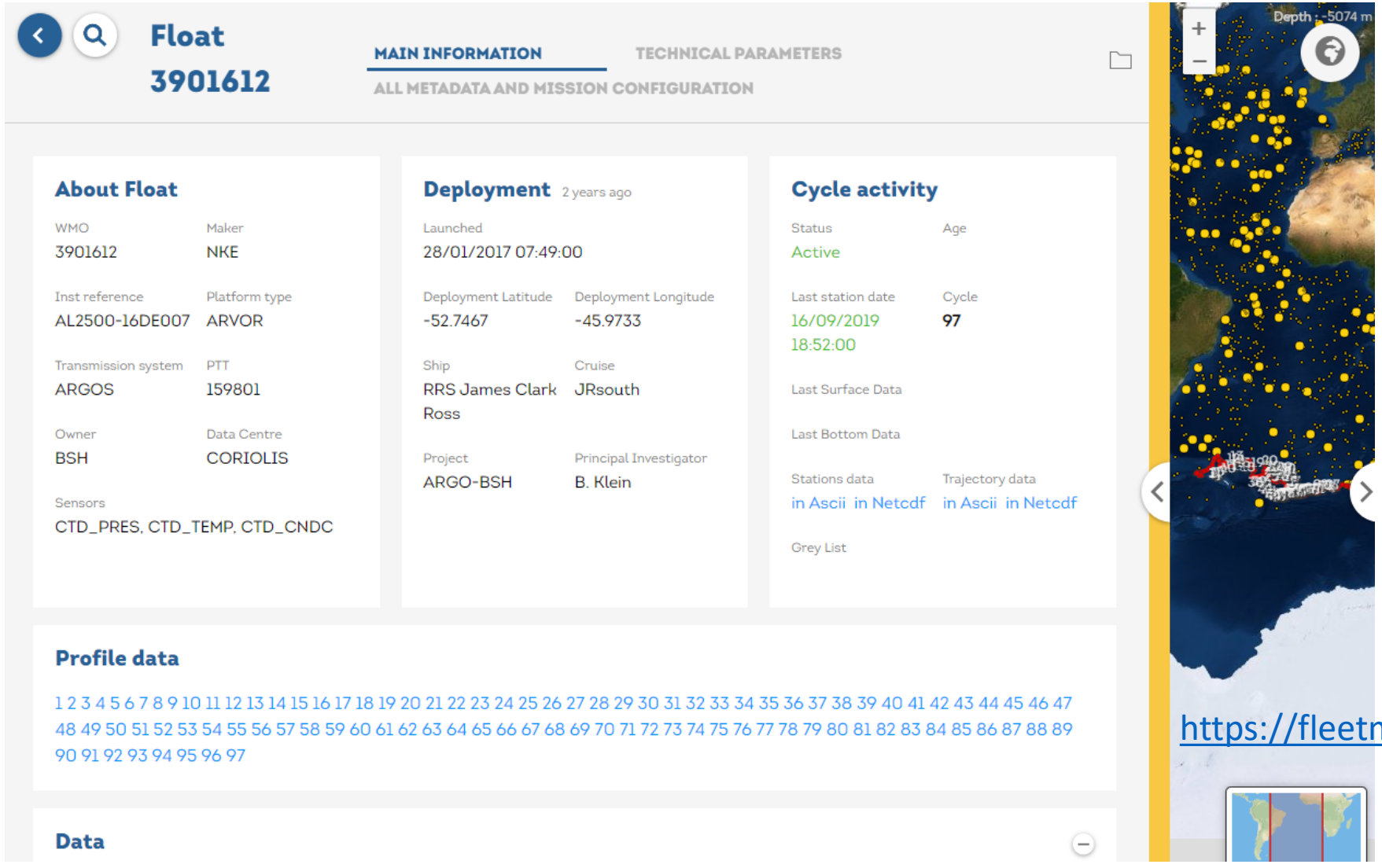


WMO	PTT	Serial #	Float	DAC	Last Tx	Last Cycle #	Battery	Alert	Launch Date	Last
3901838	360309	AI2600-16FR001	ARVOR	IF	18/09/2019 11:49:30	113	10.4		23/08/2016 09:41:00	197
3901839	360110	AI2600-16FR002	ARVOR	IF	19/09/2019 11:20:30	119				
3901840	360211	AI2600-16FR003	ARVOR	IF	22/09/2019 11:26:30	122				
3901841	360611	AI2600-16FR004	ARVOR	IF	25/09/2019 11:23:30	116				
3901843	360809	AI2600-16FR006	ARVOR	IF	26/09/2019 11:47:30	108				
3901844	360911	AI2600-	ARVOR	IF	20/09/2019 11:45:00	108				
					20/09/2019 11:41:00	119				

http://www.ifremer.fr/argoMonitoring/floatMonitoring/632

Monitoring Argo floats – History

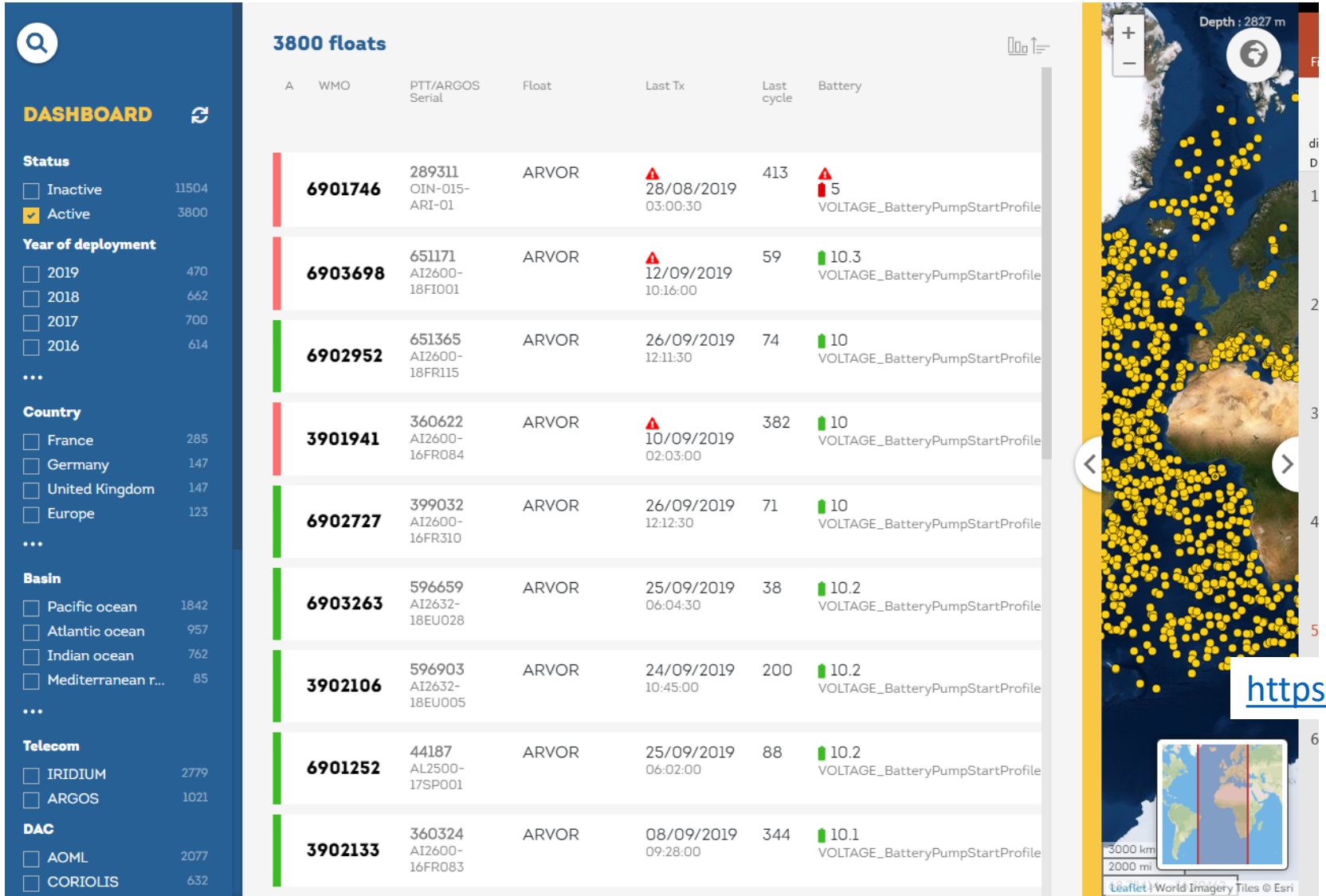
- Euro-Argo **float webpage** + dashboard all floats (update 2019-2020)



https://fleetmonitoring.euro-argo.eu/float/3901612

Monitoring Argo floats – History

- Euro-Argo float webpage + **dashboard all floats** (update 2019-2020)



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

Monitoring Argo floats – Targeted audience

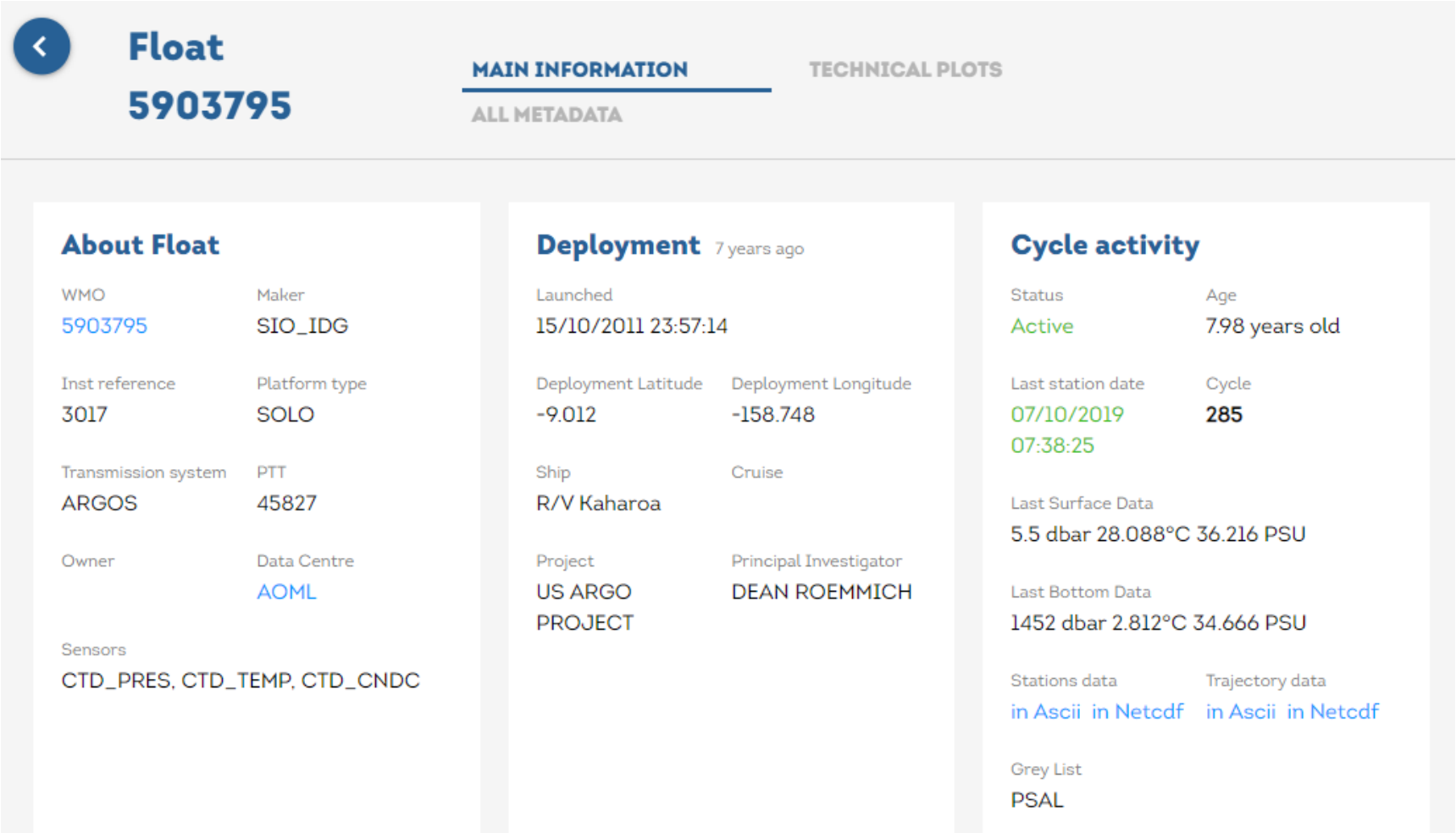
https://fleetmonitoring.euro-argo.eu/dashboard

- "Visualization of Argo profiling float metadata, ocean measurements, trajectories and technical parameters"
- For
  - **Argo fleet operators**
  - PIs
  - General public and communication activities
  - ARCs

Monitoring Argo floats – Demo

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

- “Visualization of Argo profiling **float metadata**, ocean measurements, trajectories and technical parameters”



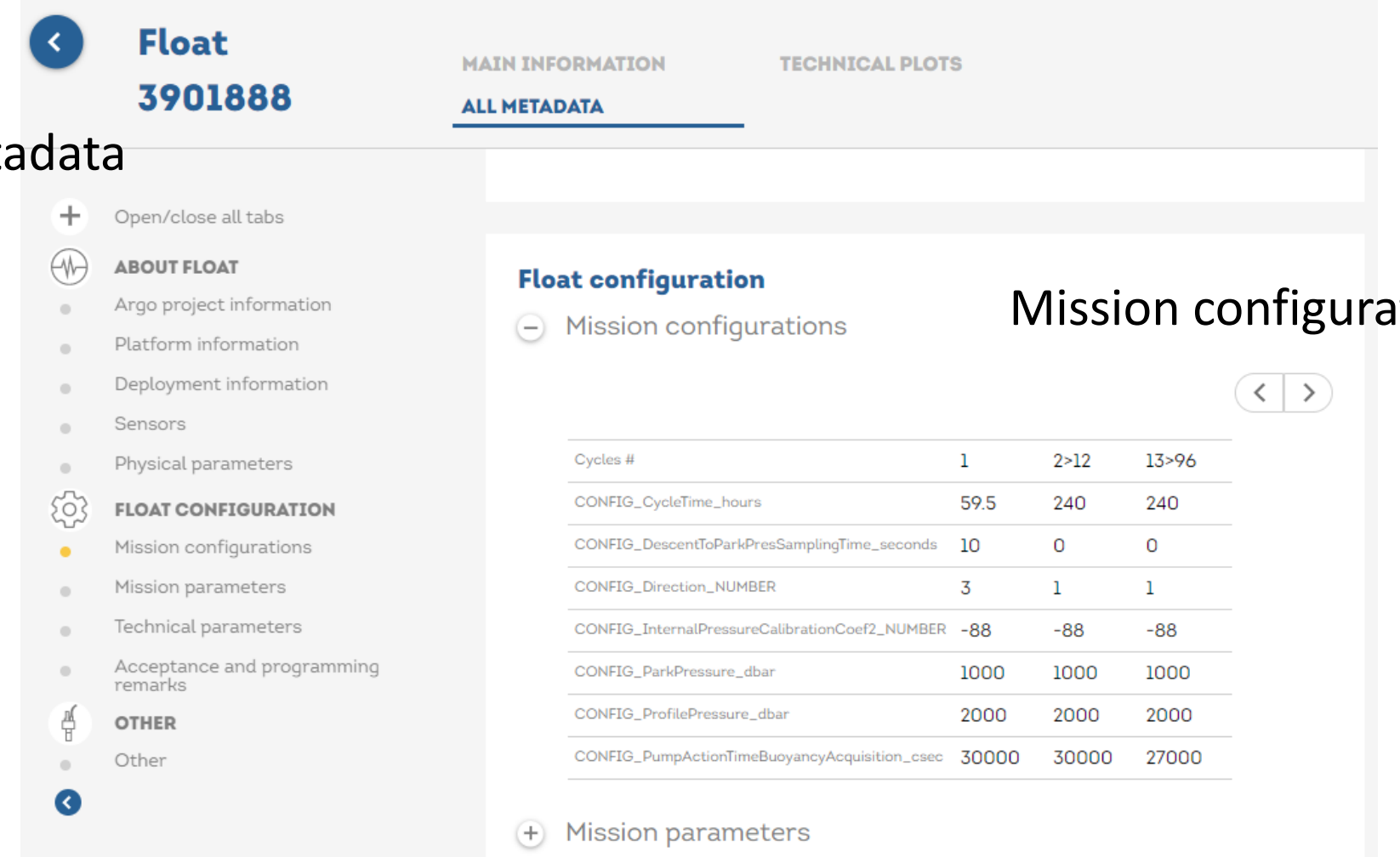
Monitoring Argo floats – Demo

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

- “Visualization of Argo profiling **float metadata**, ocean measurements, trajectories and technical parameters”

Hierarchized metadata

Mission configurations

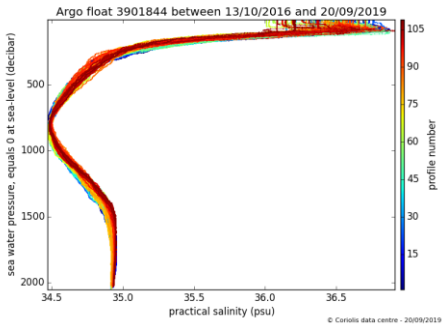


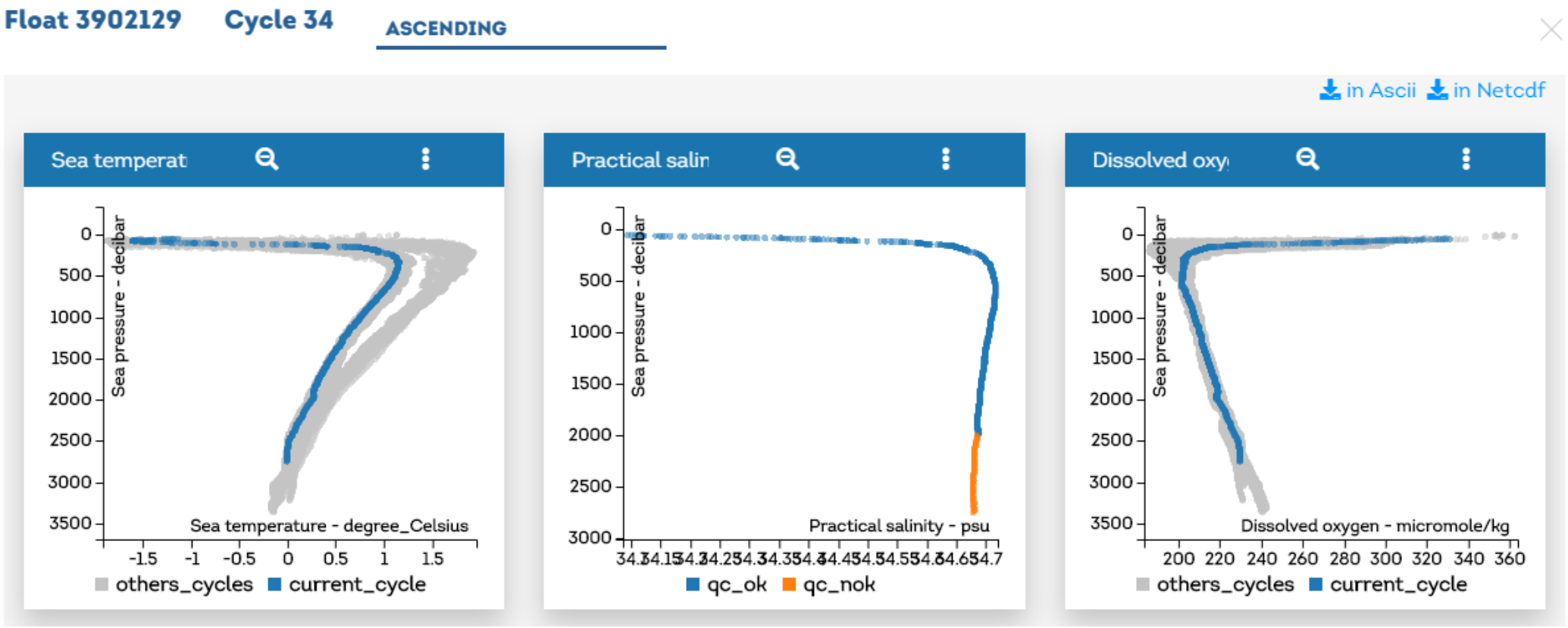
Cycles #	1	2>12	13>96
CONFIG_CycleTime_hours	59.5	240	240
CONFIG_DescentToParkPresSamplingTime_seconds	10	0	0
CONFIG_Direction_NUMBER	3	1	1
CONFIG_InternalPressureCalibrationCoef2_NUMBER	-88	-88	-88
CONFIG_ParkPressure_dbar	1000	1000	1000
CONFIG_ProfilePressure_dbar	2000	2000	2000
CONFIG_PumpActionTimeBuoyancyAcquisition_csec	30000	30000	27000

Monitoring Argo floats – Demo

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

- "Visualization of Argo profiling float metadata, **ocean measurements**, trajectories and technical parameters"
- In link with popup data selection tool

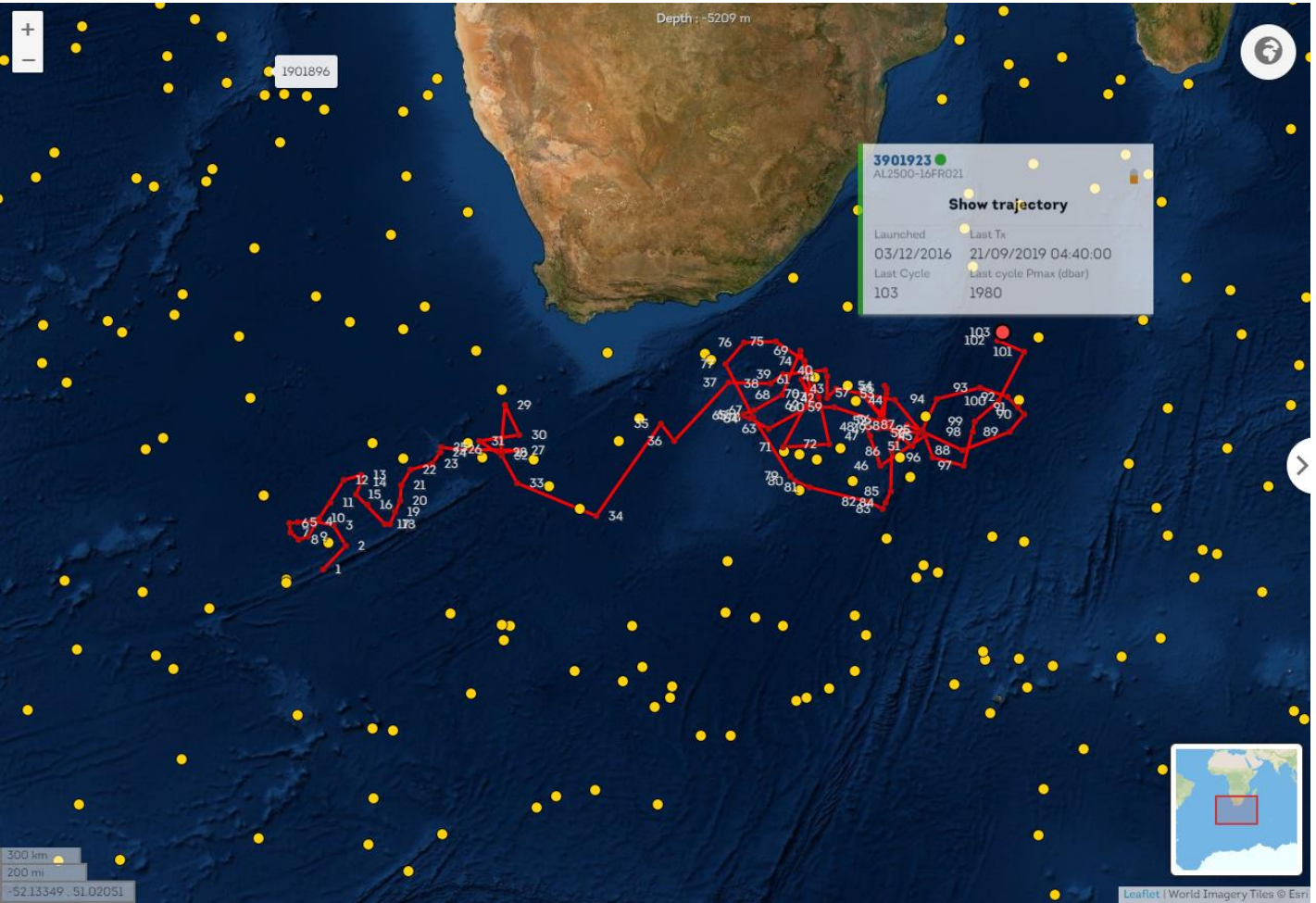




Monitoring Argo floats – Demo

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

- “Visualization of Argo profiling float metadata, ocean measurements, **trajectories** and technical parameters”

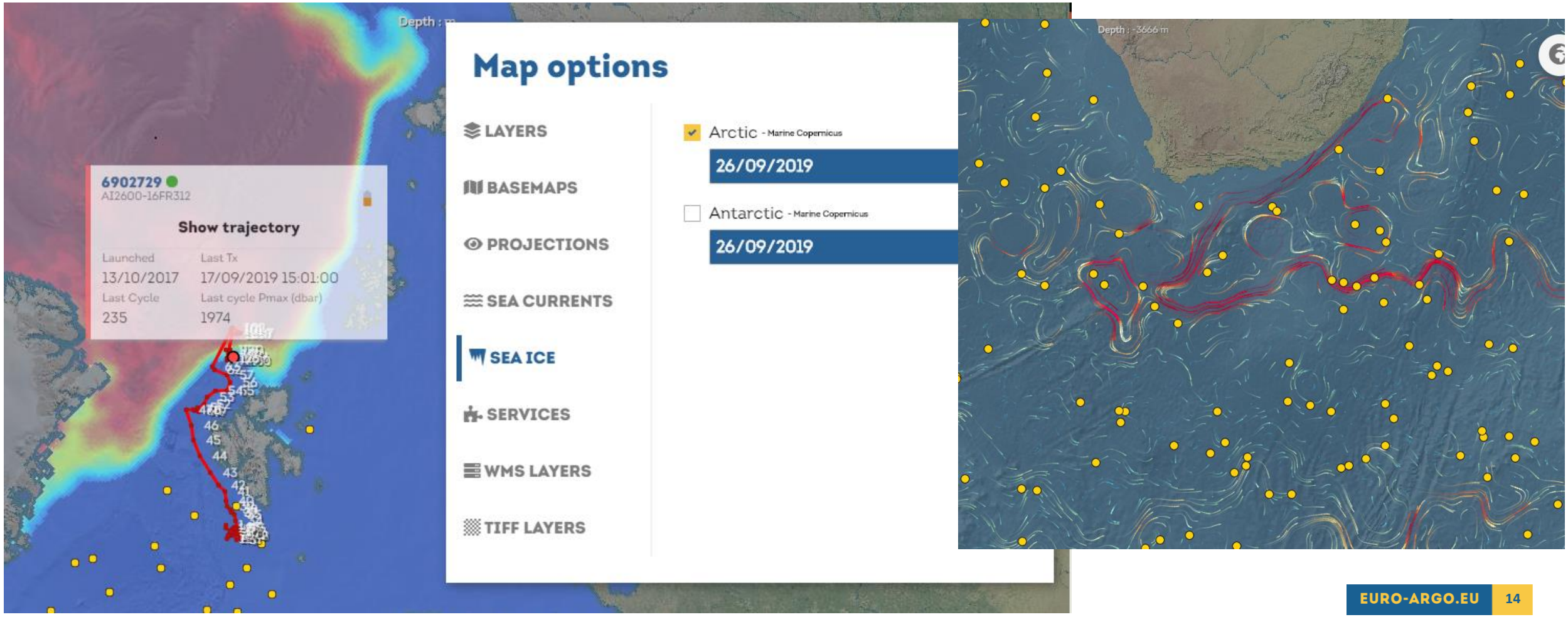


- Basemaps
- Projections
- Context (depth, sea ice, sea currents, etc.)
- Last position of all floats
- …

Monitoring Argo floats – Demo

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

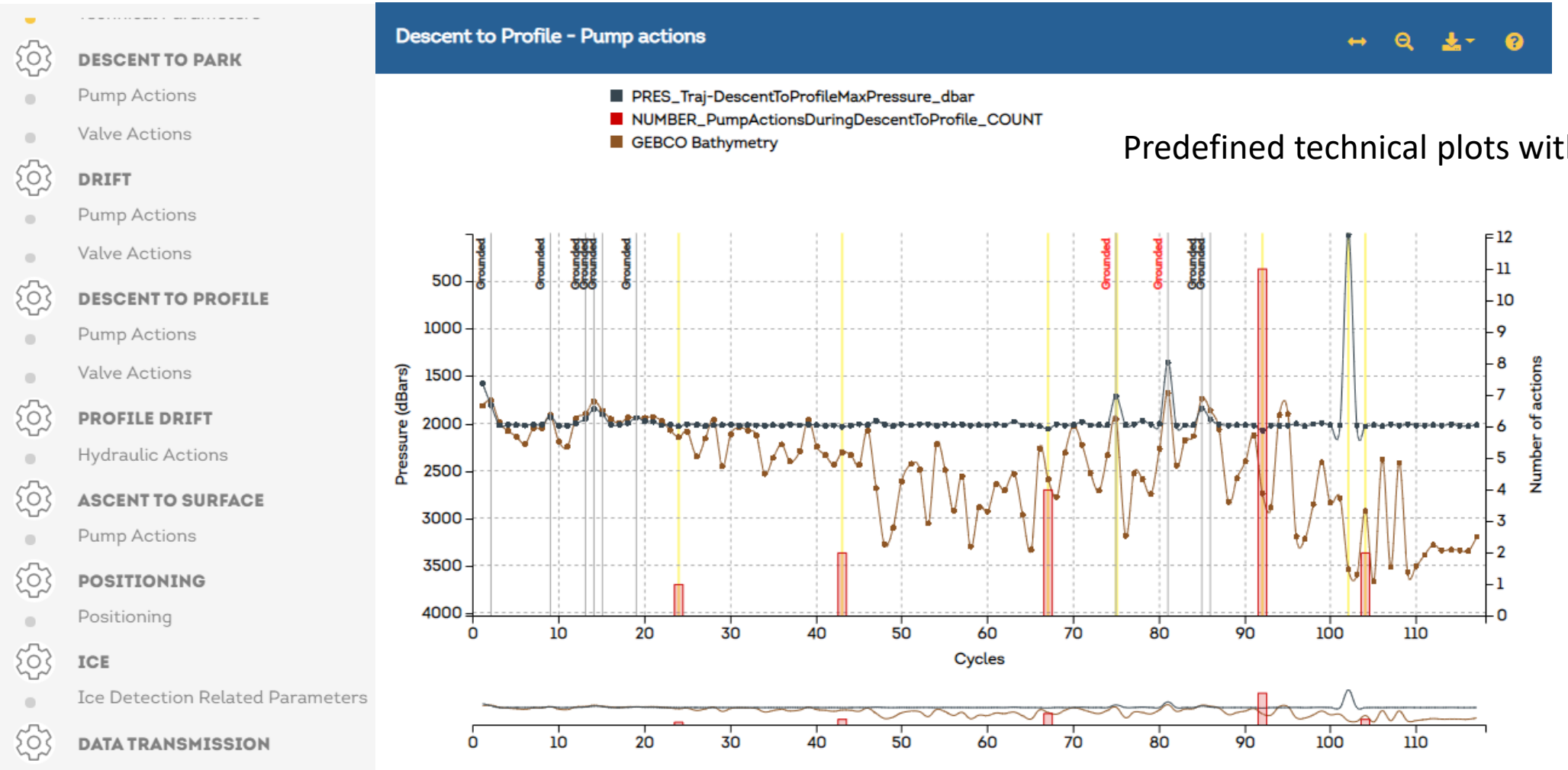
- “Visualization of Argo profiling float metadata, ocean measurements, **trajectories** and technical parameters”



Monitoring Argo floats – Demo

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

- "Visualization of Argo profiling float metadata, ocean measurements, trajectories and **technical parameters**"

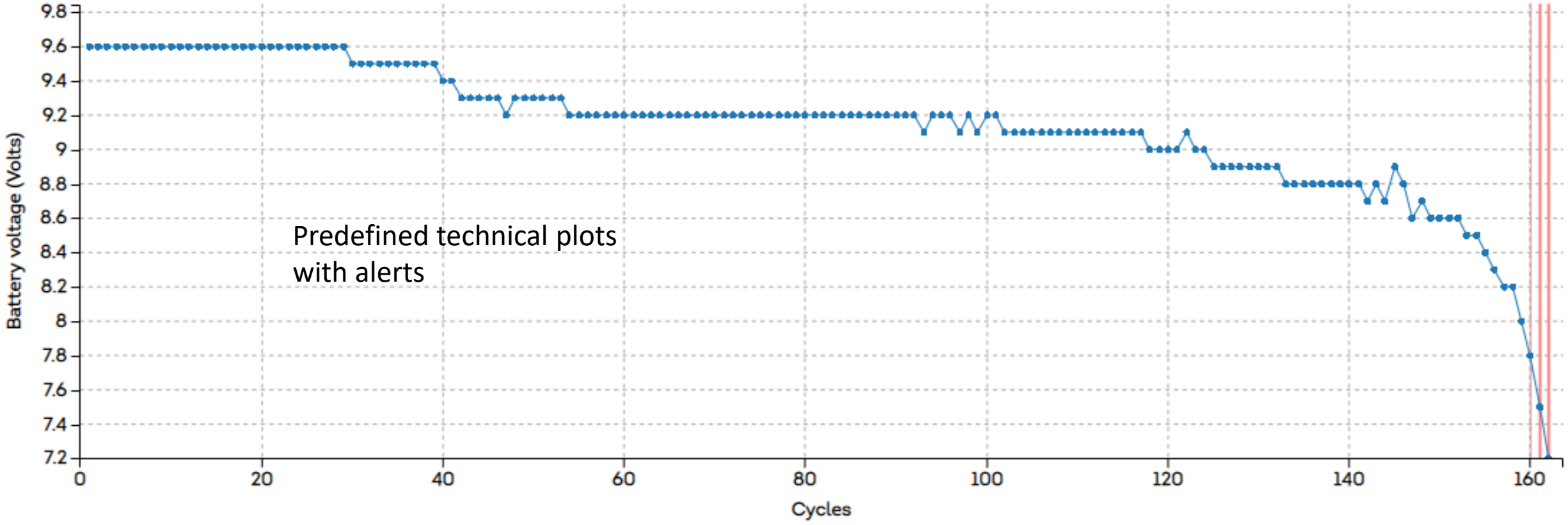


Predefined technical plots with alerts

Monitoring Argo floats – Demo

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

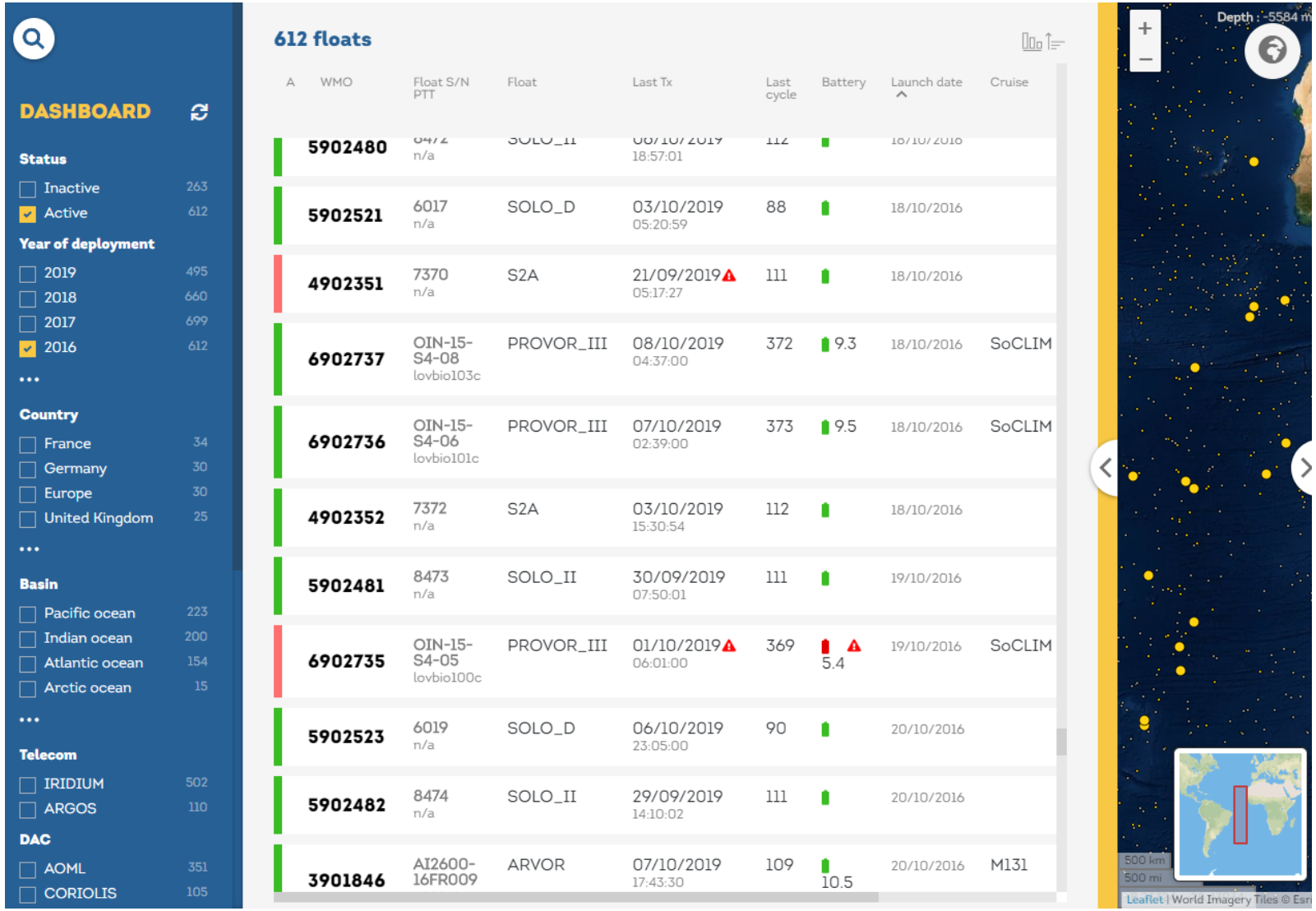
- "Visualization of Argo profiling float metadata, ocean measurements, trajectories and **technical parameters**"



Monitoring Argo floats – Demo

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

- **Dashboard**

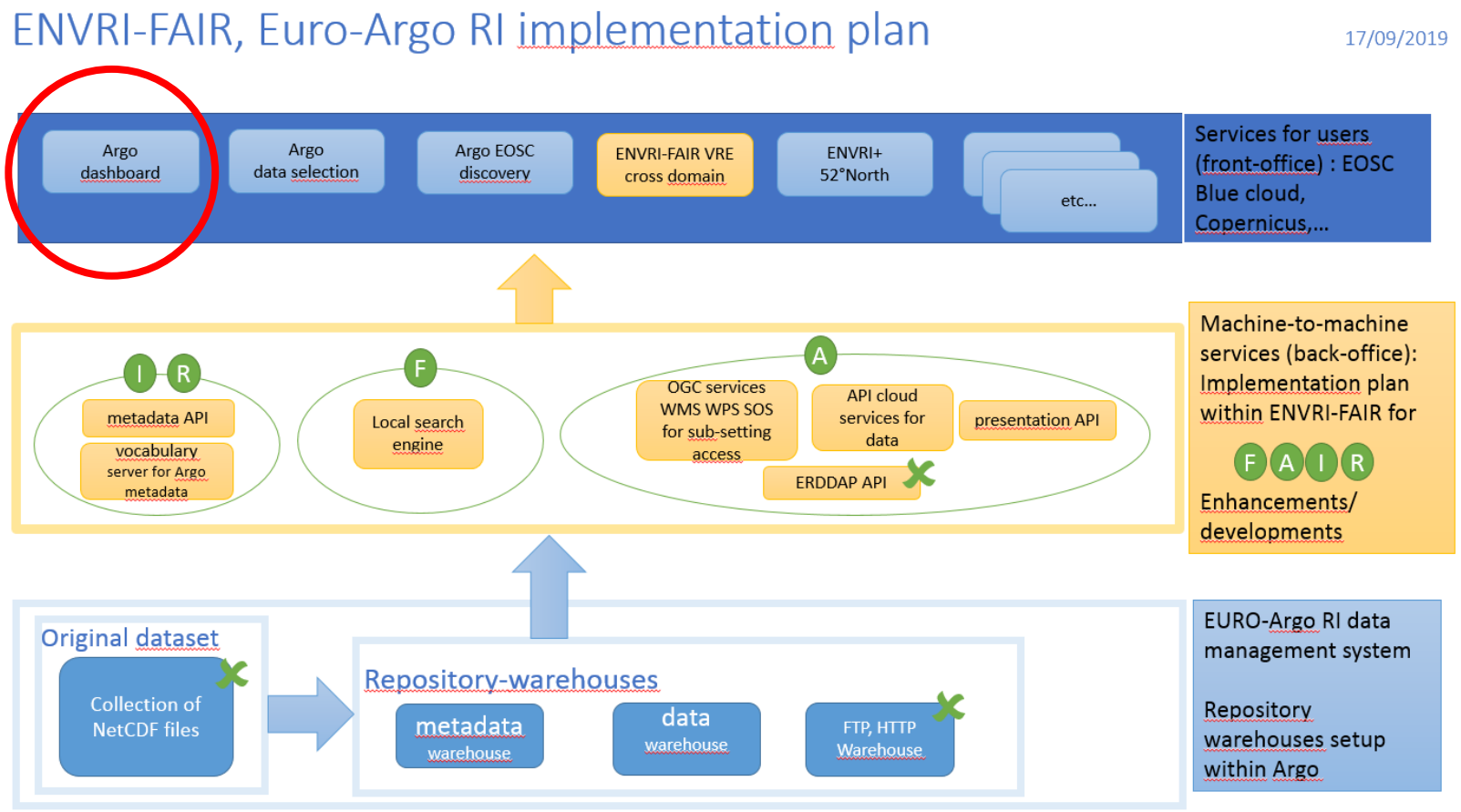


- Indexes
- Results table
- Link to float pages
- Alerts
- Map

Monitoring Argo floats – Interoperability

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

- meta / prof / tech / traj data
- alerts
  - with Coriolis database
- map / context
  - WMS
  - external sources
- API
  - all data will be accessible through API



Monitoring Argo floats – SWOT analysis

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

- **Strengths**
  - Simple visualization of meta / prof / tech / traj data of any float
  - Enhanced capabilities for technical data
    - ✓ Predefined plots of a selection of technical parameters to ease diagnostic for float operators
    - ✓ Alerts
    - ✓ Contextual data (bathymetry, sea ice, etc.)
  - Visualization of dynamic metadata (mission configurations)
  - Dashboard with all floats and “serious” alerts
  - Now responsive website
  - Coriolis DAC / Ifremer GDAC expertise

Monitoring Argo floats – SWOT analysis

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

- **Weaknesses**
  - Currently based on an export of Coriolis database
  - Not all technical/traj/aux data loaded (only EU DACs for now)
  - Need expertise to define technical plots and alerts (currently mainly for NKE floats, except generic battery and traj data)
  - No relation with AIC metadata (e.g. ship, country, program)

Monitoring Argo floats – SWOT analysis

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

- **Opportunities**
  - Will benefit from update of data selection tool (Profile data)
  - ENVRI-FAIR (back office, NERC vocab etc.)
  - Use all tech/traj data from other DACs
  - Build technical plots and alerts with expertise from other groups
  - Share graphs/plots with others (AIC, etc.)
  - Use external alerts from others (e.g. distance to shore from AIC)
  - Link mission configuration data with AIC for improved statistics

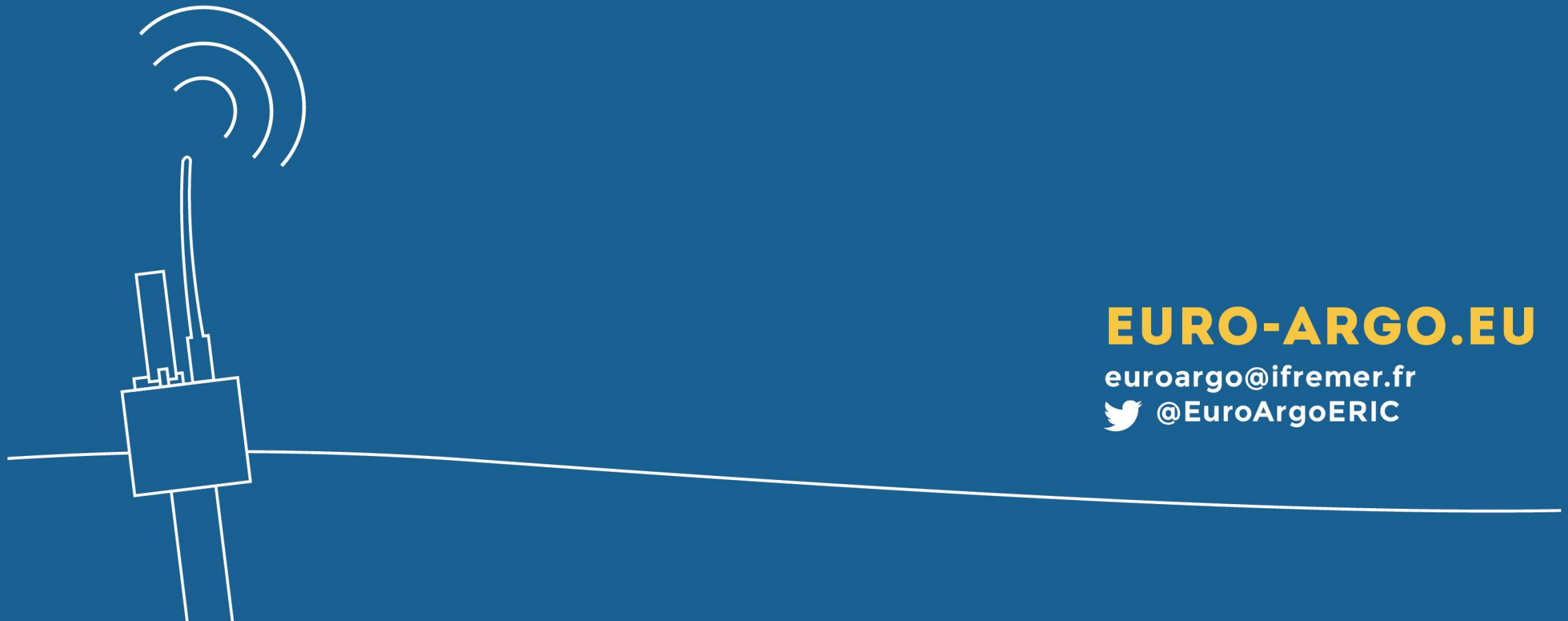
Monitoring Argo floats – SWOT analysis

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

- **Threats**
  - Technology?
  - Move towards too complicated functionalities / features
  - Leave all Argo network implementation and associated statistics on the AIC

Conclusion

- Some developments still going on (bugs, etc.)
- Feedback (ADMT, Science Meeting, etc.)
- Working groups discussions
- Working groups to enrich the technical part of the website with information from other float types?



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