



Argo National Report 2018: Ireland

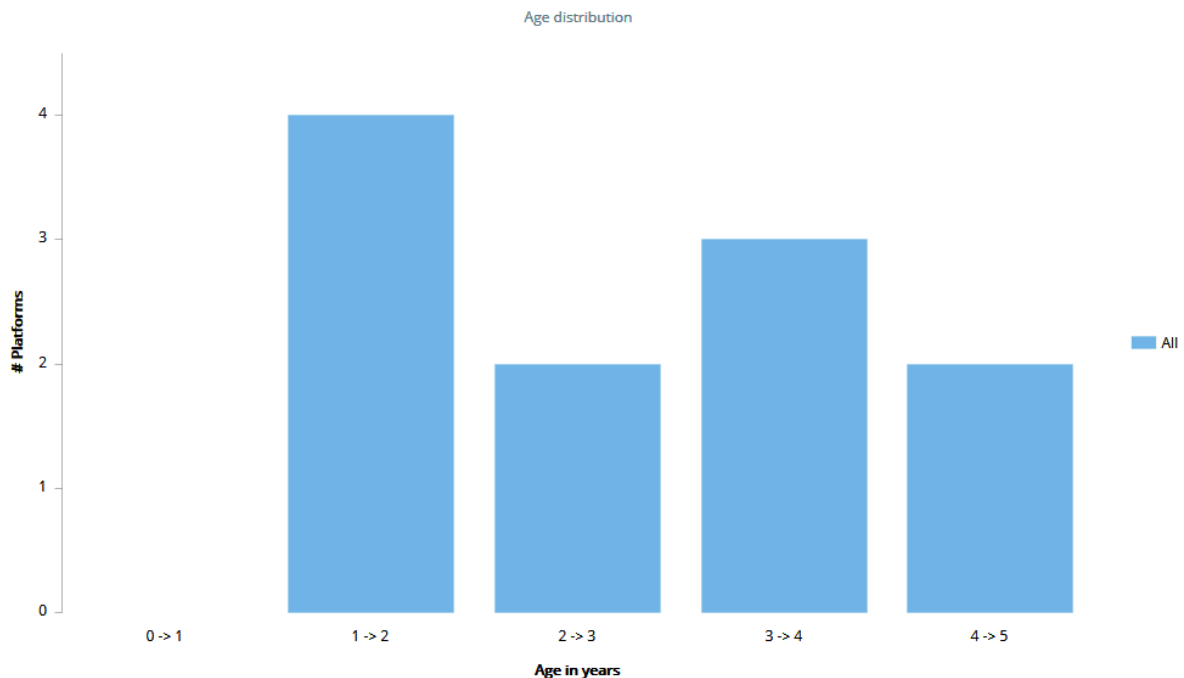
1) The status of implementation (major achievements and any issues in 2018):

a) Irish Argo float Overview

In 2018, Ireland deployed four core T&S Argo profiling floats. Four floats deployed in one year is the highest total of floats deployed by Ireland in a given year and demonstrates Ireland's commitment to National, European and International Argo programme(s).

Throughout 2018 only two floats (deployed in 2014 and 2018) returned a status of 'inactive,' however, considering the lifespan of the float deployed in 2012 was ~4 years; it demonstrated considerable longevity while sampling at sea. Unfortunately, the inactive status of the float deployed in February 2018 after ~1 month of operation is disappointing in terms of the Argo programme (both nationally and internationally) as well as from a technological perspective.

2018 seen the continued procurement of floats via the Euro-Argo ERIC centralised tender which continues to provide significant value for money as well as time saving to member states. In 2018 Ireland procured six additional floats for deployment across 2020 (three floats) 2021 and 2020 (three floats) with three floats in storage for 2019 deployment. For the first time within the Irish Argo programme, two of the floats procured in 2018 will have Oxygen (O₂) measuring capabilities as Ireland continues to develop national capacity within the Argo programme.



Above: Age distribution of all operational and registered Irish Argo profiling floats in 2018

2018 will see the Irish fleet increase to ~ 13 floats (depending on deployment weather windows, vessel accessibility and float lifecycles etc.) which would be an all-time high number of profiling floats within the Irish Argo fleet. The planned deployment of a BGC float in 2019/2020 will also add considerably to the amount of data as well as research capabilities within the Irish Argo fleet.

ARGO: Marine Institute Operational & Stock ARGO Floats (2018)					
Deployed / Operational ARGO Floats (2018)					
# of Floats	WMO (Global Identifier) #	Float Identifier #	Make/Model	Deployed	Status
1	6901917	OIN13IRARLO2	NKE/ARVOR	21/04/2014	Inactive
2	6901919	7244	Teledyne/Apex	22/03/2015	Operational
3	6901920	7245	Teledyne/Apex	22/04/2015	Operational
4	6901921	7243	Teledyne/Apex	23/03/2016	Operational
5	6901922	7242	Teledyne/Apex	14/04/2016	Operational
6	6901923	7241	Teledyne/Apex	09/04/2016	Operational
7	6901924	7240	Teledyne/Apex	10/02/2017	Operational
8	6901925	7841	Teledyne/Apex	11/02/2017	Operational
9	6901926	7842	Teledyne/Apex	20/05/2017	Operational
10	6901927	7843	Teledyne/Apex	12/02/2018	Inactive
11	6901928	7844	Teledyne/Apex	12/02/2018	Operational
12	6901929	300234065961200	NKE/ARVOR	12/02/2018	Operational
13	6901930	300234065968220	NKE/ARVOR	27/03/2018	Operational
Argo floats to be deployed in 2019					
# of Floats	WMO (Global Identifier) #	Float Identifier #	Make/Model	Deployed	
1	6901931	300234065967210	NKE/ARVOR	TBC ~December 2019	
2	6901932	300234065151700	NKE/ARVOR	TBC ~May/June 2019	
3	6901933	300234065865400	NKE/ARVOR	TBC ~May/June 2019	
ARGO Floats Awaiting Deployment (in stock)					
# of Floats	WMO (Global Identifier) #	Float Identifier (IMEI) #	Make/Model	Deployed	
1	TBC^		NKE/ARVOR	TBC throughout 2020	
2	TBC^		NKE/ARVOR	TBC throughout 2020	
3*	TBC*		TWR Apex BGC	TBC	
4	TBC		NKE/ARVOR	TBC throughout 2020	
5	TBC		NKE/ARVOR	TBC throughout 2021	
6	TBC		NKE/ARVOR	TBC throughout 2021	
7	TBC		NKE/ARVOR	TBC throughout 2021	

*Designates the procurement of Ireland's first biogeochemical Argo profiling float

^ Designates the procurement of Ireland's first Oxygen sensing Argo profiling float

b) Irish floats deployed in 2018 and their performance

WMO (Global Identifier) #	Float Identifier #	Make/Model	Deployed
6901927	7243	Teledyne/Apex	12/02/2018
6901928	7844	Teledyne/Apex	12/02/2018
6901929	300234065961200	NKE/ARVOR	12/02/2018
6901930	300234065968220	NKE/ARVOR	27/03/2018

As mentioned in the 2018 overview above a float (WMO#: 6901927) sent back a status of 'inactive'



having been deployed for ~1month. The float was deployed correctly using the manufacturers standard operating procedure (SOP) and went on to complete 3 profiles, of which; all the data looked correct, something then malfunctioned during the floats dive phase, having uploaded its data at surface after making its 3rd successful profile. The manufacturer was contacted and all information shared but unfortunately, no conclusion has been offered as to why this float stopped working.

c) Technical problems encountered and solved

Float WMO# 6901927 stopped working having only completed three profile cycles. The manufacturer was contacted and all data shared but no solution or reason for float malfunction has been provided to-date.

In 2018, Teledyne issued a notice of an error in pressure calibration of Argo Program CTDs manufactured between September 2015 and June 2018. In June of 2018, SBE 61s tested for full-scale pressure accuracy by Scripps failed to meet specifications. The investigation into the problem revealed that a bug in firmware was introduced in the development of the SBE 41plus that extended to the SBE 41N and the SBE 61. The bug is confined to one operating command, "tpr", which causes the CTD to output raw pressure sensor analogue to digital counts. Notice from Teledyne to the Marine Institute has confirmed that Argo floats supplied to MI in early 2015 are OK, but four supplied during 2016 (for deployment in 2017-2018) are amongst the affected batch. The Marine Institute has noticed some data issues with the floats deployed and will continue to monitor the situation.

d) Status of contributions to Argo data management (including status of conversion to V3 file formats, pressure corrections, etc.)

Carried out by BODC for the Marine Institute (Ireland), although discussions underway throughout 2018 as to a shared data management between the Marine Institute and BODC for floats in the North Atlantic.

e) Status of delayed mode quality control process

Carried out by BODC for the Marine Institute (Ireland), although discussions underway throughout 2018 as to a shared quality control collaboration between the Marine Institute and BODC for floats in the North Atlantic.

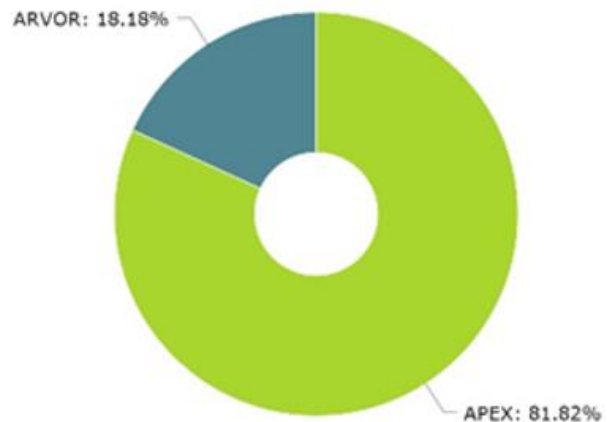
2) Present level of, and future prospects for; national funding for Argo including a summary of the level of human resources devoted to Argo.

Ireland is now an established member of the Euro-Argo ERIC and will comply with the minimum requirement of deploying 3 floats per annum. Ireland via the Marine Institute will deploy additional floats where funding allows and will also assist the ERIC in deploying project specific floats where appropriate.

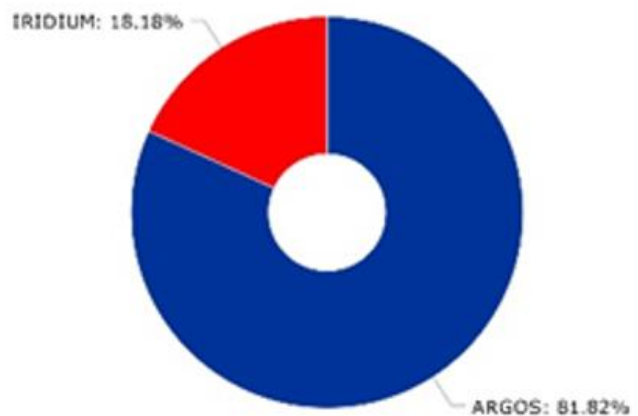
3) Summary of deployment plans (level of commitment, areas of float Deployment, low or high resolution profiles, extra sensors, Deep Argo) and other commitments to Argo (data management) for the upcoming year and beyond where possible.



The Marine Institute will ensure a minimum of three profiling floats will be deployed during 2018 in alignment with the requirements of the Euro Argo ERIC. 2018 will see the deployment of Ireland first O2 sensing float (as part of one of the min/ 3 floats deployed in 2018). Multi-annual funding for the programme remains elusive but efforts continue towards that end on the national level. Float procurement via the Euro-Argo ERIC may allow for an increased number or more sensing capabilities (i.e. O2) of floats to be procured.



Previous Page: Illustrating the breakdown of Irish floats via the model (type) of float (NKE (ARVOR) and Teledyne Webb (APEX)). With NKE being the Euro-Argo ERIC tender winning bid, Ireland should see the number of ARVOR deployed floats increase over the coming years.



Right: Graph showing the number of Irish floats using ARGOS or Iridium communications. With floats procured via Euro-Argo ERIC having Iridium communication systems the number of Irish floats with Iridium communications will increase over the coming years.

4) Summary of national research and operational uses of Argo data as well as contributions to Argo Regional Centres. Please also include any links to national program Argo web pages to update links on the AST and AIC websites.

Argo data is primarily used to validate ROMS models in the Oceanographic Services section of the Marine Institute. Argo data will also be utilised by a number of PhD students within the Marine Institute and 3rd level institutes across Ireland. Irish deployed Argo float data may also be used by researchers on an international level as all data is open and freely available.

Irish Argo National Webpage (hosted by the Marine Institute):

<https://www.marine.ie/Home/site-area/areas-activity/oceanography/euro-argo>

Irish Argo Float Data*:

<https://www.digitalocean.ie/>

*May not visualise correctly via Internet Explorer web browser

5) Issues that your country wishes to be considered and resolved by the Argo Steering Team regarding the international operation of Argo. These might include tasks performed by the AIC, the coordination of activities at an international level and the performance of the Argo data system. If you have specific comments, please include them in your national report.



N/A. Any issues can be dealt with via the Euro-Argo ERIC office.

- 6) **To continue improving the quality and quantity of CTD cruise data being added to the reference database by Argo PIs, it is requested that you include any CTD station data that was taken at the time of float deployments this year. Additionally, please list CTD data (calibrated with bottle data) taken by your country in the past year that may be added to the reference database. These cruises could be ones designated for Argo calibration purposes only or could be cruises that are open to the public. To help CCHDO track down this data, please list the dates of the cruise and the PI to contact about the data.**

No CTD data are uploaded to the CCHDO website. However, all CTD data are emailed to Else Juul Green (else@ices.dk) who checks the data before it is uploaded to the ICES Oceanographic data portal annually:

<http://ocean.ices.dk/HydChem/HydChem.aspx?plot=yes>

- 7) **Keeping the Argo bibliography (<http://www.argo.ucsd.edu/Bibliography.html>) up to date and accurate is an important part of the Argo website. This document helps demonstrate the value of Argo and can possibly help countries when applying for continued Argo funding. We reached more than 2000 papers published using Argo data! To help me with this effort, please include a list of all papers published by scientists within your country in the past year using Argo data, including non-English publications.**

N/A although anticipated during 2019.