

# Canadian National Report on Argo-2010

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## 1. Status of implementation (Major achievements and problems encountered in 2010)

### 1.1 Floats deployed and their performance

During 2010, Canada deployed 28 floats: of these 16 were deployed in the Atlantic and 12 in the Pacific. All were APEX floats with ARGOS telemetry. Eight floats had oxygen sensors, 4 in the Atlantic and 4 in the Pacific. The Atlantic effort focussed on the Slope Water and Labrador Sea, whereas the Pacific effort focussed on the Gulf of Alaska. Significant financial support (15 floats) from the Canadian Ice Service, Environment Canada, permitted enhanced coverage of the northern Labrador Sea. As of writing in February 2011 none of the floats deployed in 2010 failed.

### 1.2 Technical problem encountered

One peculiar incident with a float (WMOID 4901112, APEX sn 4503, apf9a controller) is worth sharing with other Argo groups. We set that float for launch on pressure activation and it somehow decided that it had been launched while it was still in its wooden case. It started its mission, retracted the piston to try and dive, and fully retracted because it was having difficulty getting to 2000 decibars while still in the box. The result was that when it was launched, it had started itself 4 days earlier and on launch it dropped like a stone. Miraculously it did not get beyond its crushing pressure and supplied a perfect profile 6 days later.

### 1.3 Status of contributions to Argo data management

ISDM (formerly MEDS) continues to acquire data from 127 active Argo floats. Data are issued to the GTS and GDACs every 6 hours in TESAC, BUFR and netCDF formats. We increase the frequency of acquiring data from the Argos server to hourly if we fail to access the system at a specific 6 hour interval. On average 85% of 2010 data were issued to the GTS within 24 hours of the float reporting. The observation time and location for all the profiles reported by APF9 floats since January 2011 were calculated based on Michel Ollivault's methods as discussed at ADMT11. The observation time and location of profiles reported before January 2011 has not been updated. Data are corrected for pressure and salinity drifts in real-time. The trajectory netCDF files with format version 2.3 are ready to be sent to GDACs. However, currently, GDACs only accept version 2.2. The transition of our system to handle 6 digit Argos ID numbers back in March 2010 went smoothly. We also received and processed Argo BUFR files from other data centers via GTS for GTS monitoring purposes.

Our website, <http://www.meds-sdmm.dfo-mpo.gc.ca/isdm-gdsi/index-eng.html>, is updated daily automatically. The website is currently in the process of moving to CLF2.0 to be compliant with Canada's Treasury Board requirements.

## 1.4 Delayed mode quality control

Since May 2010, a total of 62 floats were delayed-mode quality controlled (DMQC) for salinity and pressure. Prior to this DMQC, the individual profiles (over 8000) from the floats were visually and individually quality controlled for the first time since the implementation of a procedure to record changes in raw quality flags. The percentage of eligible profiles which have been DMQCed for salinity (and sometimes pressure) at least once is currently 61%. However, only 22% of all eligible floats (20% of all eligible profiles) have been corrected with the latest pressure correction method. One reason for this delay is that ISDM is currently migrating its DMQC environment to a platform with increased memory, in order to successfully run the latest DMQC software.

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

### 2.1 Funding

During 2010 the Canadian Argo program was primarily funded as a research effort. It has been our early intention to move funding to a more routine or operational basis but that has not yet occurred. We are continuing to pursue this. In the present Argo Canada funding scheme, funds to purchase floats typically appear very late in our fiscal year. The funding in 2010 including the much appreciated contribution from the Canadian Ice Service was adequate to maintain the Canadian contribution to the international Argo effort.

Funding to cover recurring Argos communications costs is not provided as a line budget item at the beginning of fiscal years. This requires frequent and time-consuming requests to Argo data users in Canada to contribute small amounts of money for satellite communications. We are thankful that the Department of National Defence and individual DFO scientists made voluntary, vital contributions to our communications costs from their operations or research budgets.

An Argo Townhall meeting was held in Ottawa on June 3, 2010 during the annual congress of the Canadian Meteorological and Oceanographic Society (CMOS). About 40 attendees from federal government departments (DFO, Environment Canada, National Defence) and universities across the country participated. Several ideas were then proposed for consolidating the Argo Canada program and we will explore some of the most promising ones in the coming years.

### 2.2 Human resources

Five persons from the Department of Fisheries and Oceans Canada (DFO) work part-time on the Argo project. Anh Tran (Ottawa, Ontario) is responsible for decoding the data, performing the real-time quality control, uploading the data to the GTS and GDACs and maintaining the Argo Canada website. Mathieu Ouellet (Ottawa, Ontario) conducts the delayed mode quality control on eligible floats. Howard Freeland (Sidney, British Columbia) plans float deployments, develops and maintains oceanographic products in the northeast Pacific. Igor Yashayaev (Halifax, Nova Scotia) plans float deployments, develops and maintains oceanographic products in the northwest Atlantic. Denis Gilbert (Mont-Joli, Québec) is the overall program coordinator.

### **3. Summary of deployment plans (levels of commitment, areas of float deployment) and other commitments to Argo (data management) for the coming year (and beyond where possible).**

We have 16 floats available for launch starting March 31<sup>st</sup>, 2011. However, 15 of them are targeted for deployment in the Labrador Sea at the request of the Canadian Ice Service that purchased these floats. This leaves us with a single float for deployment in the Gulf of Alaska and zero float available for deployment in the Slope Water region of the northwest Atlantic. But we do have ship surveys going to the latter two areas and would be happy to receive floats from other Argo groups to avoid gaps from appearing as old floats stop functioning.

### **4. Summary of national research and operational uses of Argo data**

Argo temperature and salinity data are assimilated in operational meteorological and oceanographic forecasts at Environment Canada (Dorval, Québec) and at the Department of Fisheries and Oceans. Numerous researchers at Canadian universities regularly download Argo T & S data for scientific projects.

### **5. Issues that Canada wishes to be considered and resolved by AST regarding the international operation of Argo.**

The delivery of delayed mode, quality controlled Argo data to GDACs has improved significantly in the past 12 months. Despite this, we believe that there is still some room for improvement in the timely delivery of delayed mode data.

International governance issues or programs (IPCC, GOOS, GCOS, ICES, PICES, etc.) that require Argo temperature and salinity data would need to be formally identified and clarified, as this may help consolidate Argo funding in Canada.

### **6. Bibliography**

N/A

**Appendix – summary of Canadian float launches during calendar 2010.**

	Launch Date	WMO-ID	Comms	Ocean Basin	Launching Vessel	Still Operating?
1	2010-02-08	4901135	Argos	P	Tully	Yes
2	2010-02-11	4901134	Argos	P	Tully	Yes
3	2010-04-18	4901139	Argos	A	Hudson	Yes
4	2010-04-20	4901155	Argos	A	Hudson	Yes
5	2010-04-21	4901143	Argos	A	Teleost	Yes
6	2010-05-03	4901140	Argos	A	Hudson	Yes
7	2010-05-03	4901149	Argos	A	Hudson	Yes
8	2010-05-17	4901156	Argos	A	Hudson	Yes
9	2010-05-17	4901142	Argos	A	Hudson	Yes
10	2010-05-18	4901141	Argos	A	Hudson	Yes
11	2010-05-18	4901150	Argos	A	Hudson	Yes
12	2010-05-19	4901158	Argos	A	Hudson	Yes
13	2010-05-20	4901157	Argos	A	Hudson	Yes
14	2010-05-21	4901154	Argos	A	Hudson	Yes
15	2010-05-21	4901153	Argos	A	Hudson	Yes
16	2010-05-21	4901159	Argos	A	Hudson	Yes
17	2010-05-21	4901151	Argos	A	Hudson	Yes
18	2010-05-22	4901152	Argos	A	Hudson	Yes
19	2010-06-09	4901137	Argos	P	Tully	Yes
20	2010-06-18	4901138	Argos	P	Tully	Yes
21	2010-07-08	4901136	Argos	P	Laurier	Yes
22	2010-07-09	4901144	Argos	P	Laurier	Yes
23	2010-07-10	4901145	Argos	P	Laurier	Yes
24	2010-07-11	4901146	Argos	P	Laurier	Yes
25	2010-07-28	4901112	Argos	P	Tully	Yes. Began its mission in the wooden crate
26	2010-07-29	4901117	Argos	P	Tully	Yes
27	2010-08-13	4901118	Argos	P	Tully	Yes
28	2010-08-27	4901148	Argos	P	Tully	Yes

