

Argo Information Centre

TC Report – AST10

Feb. 2009 M. Belbeoch

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1. Background

The international Argo Information Centre (AIC) is participating in the activities of the Argo Project Office and of the JCOMM in situ Observing Platform Support centre (JCOMMOPS).

The AIC is funded on a yearly basis via voluntary contributions from Australia, Canada, China, France, Germany, India, the United Kingdom and the United States.

In 2008 **Rep. of Korea** also began providing funds for the AIC.

IOC of UNESCO is also actively seeking new funding sources for the AIC.

JCOMMOPS (and its AIC component) faces the challenge of strengthening its infrastructure, integrating the existing services better and eventually extending its operations to new observing systems. In the context of the development of JCOMMOPS, it has been proposed to extend the Argo TC activities to the Ship Observation Team (VOS, SOOP), as of Feb. 2009.

In return, this permits to:

- stabilize Argo/SOT TC position (with a funding under pressure)
- hire a new I.T expert to work (half-time) for JCOMMOPS, as of September 2008.
- Develop further synergies with SOT (and SOOP in particular)

JCOMMOPS looks forward to serving Argo, DBCP, OceanSITES and SOT better than ever, thanks to this new resource.

On the other hand, the results/progress made on the extension/relocation of JCOMMOPS into a JCOMM Observing Program Support Centre will be provided in item 4.4.

From the inside perspective, JCOMMOPS identified the need for a dedicated resource (at least 1/2 time Coordinator) working on ship and cruise related information in order to capitalise on shared deployment resources and further develop cooperation between programs.

This could help in organizing more donor programmes, proactively identify new deployment opportunities and eventually assist in retrieval procedure of beached instruments.

2. AIC

TC Activities

The TC supports the Argo community on a wide range of issues that could be summarized in three keywords: **Assistance, Monitoring, and Cooperation.**

Many of these issues became routine activities:

- Network status monitoring
- Data management status monitoring
- Monthly Reporting
- Assistance to deployment planning, float retrieval, data distribution
- Assistance to national programmes (ad hoc stats, maps, ...)
- Support Centre (user desk, QC feedback relay)
- Information System technical maintenance
- Information System content management (float metadata, contacts, documents, news, ...)
- International Cooperation, Donor Programmes
- JCOMMOPS Administration, development
- Links with SOT, DBCP, OceanSITES, IOC, WMO, JCOMM
- Media needs (photos, articles)
- Assistance to new programmes (Marine Mammals, ITP)

It has gradually become difficult to free working time for new developments, network status - in depth - analyzes, technical assistance on instrumentation (see "Common Practices" below). The naturally growing Argo activities (a good sign), the new TC responsibilities on SOT, and the management of a new I.T expert did not help.

A student will work 4 months at the AIC (April-August 2008) on float lifetime statistics.

TC 2008 Missions

Brest, France, Euro Argo (January)
Exeter, UK, AST9 (February)
Paris, France, ABE-LOS (April)
Southampton, UK, Euro Argo Users Workshop (June)
St Petersburg, Russian Fed., JCOMM SOOS (July)
Honolulu, USA, ADMT9 (October)
Nice, France, GODAE final (November)

TC 2009 Missions

JCOMM OCG, Paris (March)
AST10, ASW3 Hangzhou (March)
Libreville, Gabon (April)
Geneva, SOT (May)
Euro Argo, Italy (June)
OceanObs09, Italy (September)
JCOMM III, Morocco (November)

Visit to new AIC contributors: India, Germany, Rep. of Korea when possible.

Visit AOML/SOOP chair

Monthly Report

The monthly report continues to be enhanced and improved each month. Argonauts have regularly provided feedback to the AIC between the reports.

TC starts to work on the report by the end of each month, and release it as soon as possible, after a set of checks and communications with float operators.

10 Reports were made in 2008.

It permits in particular:

- To solve regular problems of WMO/Argos Id duplicates. That is why it is important to notify deployments in advance. Once data distribution started such problems are harder to fix.
- To detect floats that distribute data without having been properly notified at the AIC (rare)
- To check that data distribution was not stopped when a float is back on line –sometimes after 2 years ...
- To keep an eye on floats that were deployed and that can't be tracked by the AIC
- To track a number of data management issues
- To relay feedback from users to data producers (Altimetry QC)

Remarks:

- The feedback on beached floats is (too) rare
- The deployment plans could be updated more often (but it is improving)
- The GTS data distribution seems de-prioritized
- The metadata files anomaly list is far too long (not really progressing)

- New issues were identified regarding Data Management (duplicates at GDACs, problems in PARAM_QC values, missing profiles) and more feedback is required to solve them.

It is planned to generate most of the content of this report automatically in order to save time (formatting) and avoid human errors.

Do not hesitate to send your inputs for this monthly report.

In addition other checks (in Argos database) permit to identify profiling floats that were not deployed under an Argo programme and attract new groups in Argo.

It permits also to detect floats deployed under a national Argo programme that were simply forgotten (no notification and no data distribution).

Information System

The logistical contract between JCOMMOPS and its host, CLS, covers now all expenses (hardware, software) and includes the maintenance and the monitoring of the whole system. This streamlined support from the host takes up less working time for the TC.

No major developments were made in 2008 but many products were slightly improved. The (Oracle) database server will be migrated to a new machine (or cluster) this year to be operational as of January 2010. The new architecture will be ready to host the next generation of JCOMMOPS web services.

In 2009-2010, the JCOMMOPS web services (and in particular the AIC) will be re-designed. Technical specifications are being written while our new I.T. resource is being trained on technologies used by our existing Information System. New web technologies are being explored as well.

One of the main difficulties is that JCOMMOPS web services target very different user communities: program managers, researchers, technical groups, operational teams, data managers, etc. In addition, whilst most of the web users know that information they are looking for exists, they have difficulties finding it on the websites. JCOMMOPS aims to clarify access to information and develop a web based toolbox that will be used for many years to come.

These issues are being addressed by:

- integrating the technical elements of the Information System better
- designing a new structure for the JCOMMOPS website
- analysing, in depth, the results of the websites audience tracking set up a year ago
- using more interactivity in navigation (thanks to new technologies)
- developing a profile based service: "*My JCOMMOPS*"

Of course the Argo community (and in particular the AST/ADMT) will be consulted as appropriate.

Network Planning & Monitoring

A few details were fixed on the planning interface and WMO Id duplicates checks were strengthened. Float operators are invited to use the AIC Planning interface as their own planning tool. The level of reliability of a plan (draft, probable, certain, confirmed, etc) will be clarified. The next version of the AIC website will definitely make this task easier.

The bi-daily generation of GIS files was fully reviewed (except for trajectories).

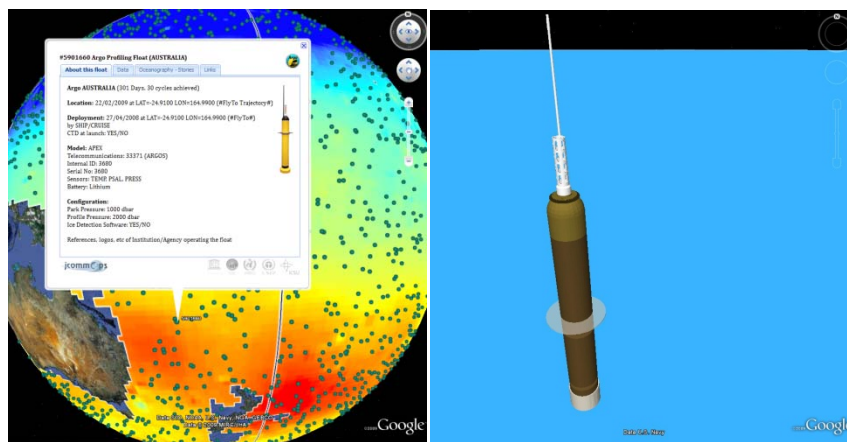
- ⇒ More metadata in GIS files
- ⇒ Intersection between Maritime Zones (polygons) and deployment plans (points)
- ⇒ New density layers (with non-grey-listed floats)
- ⇒ New monthly maps and daily GIS layers (telecom, grey-list, sensors)
- ⇒ Export in Text, GIS, GE formats: <http://argo.jcommops.org/FTPRoot/Argo/Status/>

Argo & Google Ocean

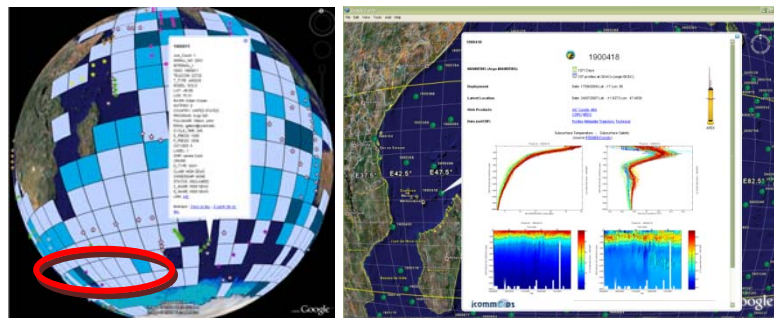
Thanks to privileged contacts between Scripps and Google, we are planning to include Argo status and products under the Google Ocean content offer. We have here an opportunity to make the Argo network highly visible within GO so we need to make quick progress and adapt our products targeting a general public audience.

Our challenge will be to make this useful also for the Argo community, as far as possible. We are basically planning to:

- 1) Provide general information on Argo on a generic 3D float,
- 2) Improve the existing Argo balloon for the 3000 floats, including all float details, data plots, links to products, oceanographers float stories and educational products (“adopted” floats),
- 3) Include T/S/Anomalies monthly (Argo only) products at key levels



The draft Argo balloon template on a T-Anomaly overlay, and the 3D float model designed by Scripps team



Existing GE layers:

http://argo.jcommops.org/FTPRoot/Argo/Status/ARGO_FULL.kmz

In addition we will make sure that all Argo national/regional initiatives will have a good space of visibility in there.

Once the Argo GO layers will be operational, JCOMMOPS will pursue the effort for the other elements of the GOOS.

This will be presented and discussed in details within the AST as part of item 8.5.

Task Team: Argo TC, M. Scanderbeg, S. Diggs, J. Gould.

New metadata

Coriolis GDAC has made available a new index file that is used by the AIC to monitor more closely the status of real-time and historical data distribution at GDACs, and to gather additional metadata.

ftp://ftp.ifremer.fr/ifremer/argo/etc/argo_profile_detailed_index.txt.gz

Additional Requirements that were submitted to Coriolis GDAC:

- ⇒ add CYCLE information so the AIC can compare these metadata with the ones gathered at the notification step, synchronize the two metadata sets and make (finally) lifetime plots based on the distance profiled.
- ⇒ add N_LEVELS (to make an inventory of “Common Practices”)
- ⇒ first/last date of netCDF file update (to monitor delays)

AIC website audience

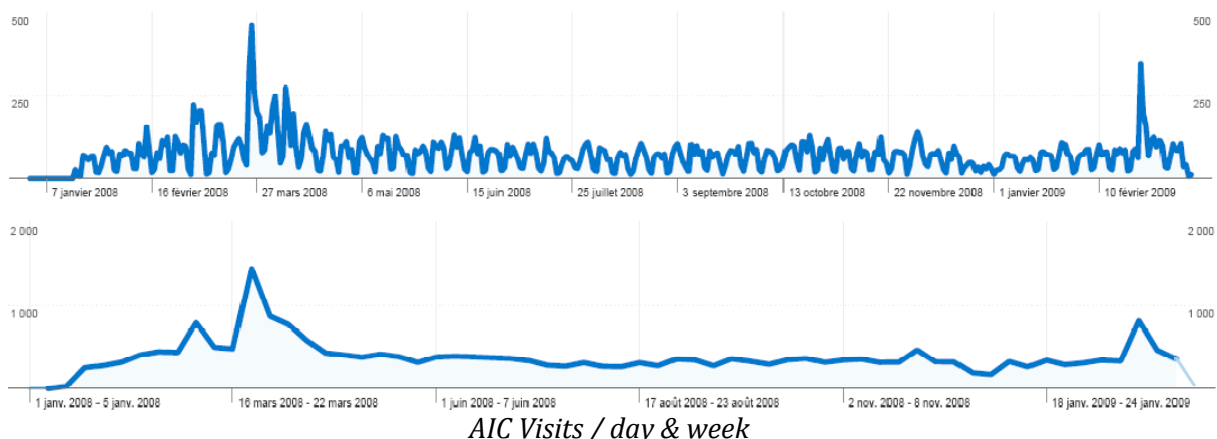
The website is rather stable, but delays can occur twice a day (6, 18 UTC) when the whole system is refreshed and fed with heterogeneous data sources. The monitoring system set up within CLS operational team has been gradually tuned and operators are now used to restarting the JCOMMOPS web services when required. This can happen a few times a week (generally at the time above) and seem to have become less frequent.

Late January 2008 an audience tracking system (Google Analytics) was set up to monitor AIC website traffic. The AIC can not intervene with this tracking which ensures its impartiality. The numbers can be interpreted in many ways, as the definition of one website user or one page view is not simple, especially on dynamic websites. However, the different trends are extremely useful for planning the next version of the AIC web services.

2008 Usage Statistics:

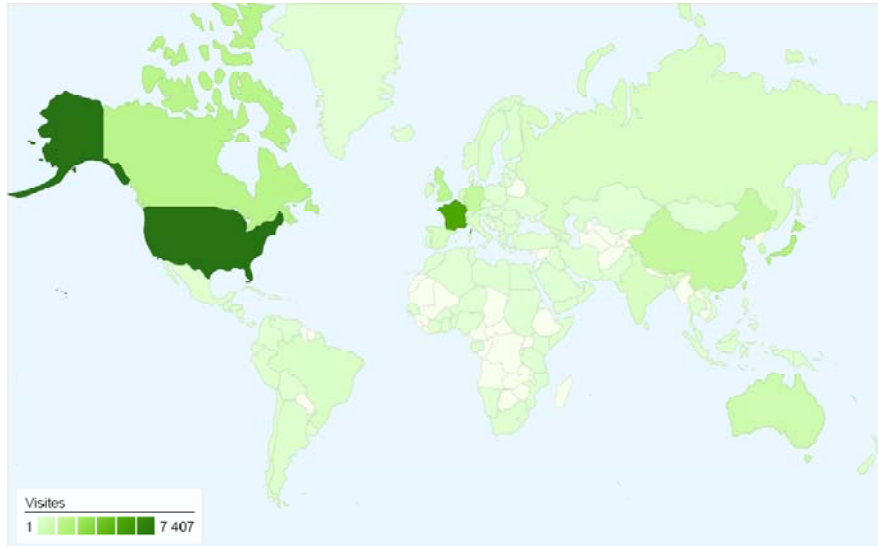
- AIC website visits: ~100 times/day, ~500/week, ~2000/month.
- 26126 visits in 2008, from 135 countries
- ~800 pages views / day, ~10000/month, ~120 000 / year.

A substantial peak was noted in March 2008; probably because of the AST meeting or the effects of the 3000th float communication campaign. Another one occurred in February 2009 when the Argo documentary (ArteTV, French/German) was programmed.

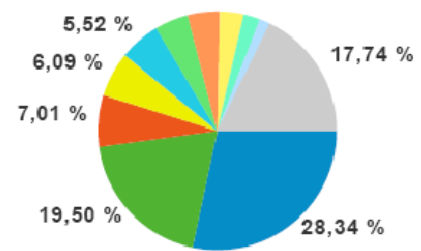


- Most of the traffic is direct (31%) or comes from referring sites (63%). Only 6% of comes from search engines. No particular efforts are made to reference the AIC site in search engines.
- 4.5 avg. pages/visit, 3.5min avg. time on site.

- User's language is mainly English (50%), then French (18%), Japanese (7%), German (5%), Chinese (5%).
- The geographic distribution of users shows a clear international audience which is surprisingly proportional to Argo national contributions. Many non-Argo countries have been visiting the site as well.



United States	7 407	28,34 %
France	5 097	19,50 %
Japan	1 832	7,01 %
Canada	1 592	6,09 %
United Kingdom	1 442	5,52 %
Germany	1 191	4,56 %
China	1 130	4,32 %
Australia	853	3,26 %
South Korea	582	2,23 %
India	375	1,43 %
Spain	363	1,39 %
Russia	334	1,28 %
Ireland	301	1,15 %



AIC Visits by country

Brazil	295	1,
Taiwan	294	1,
Netherlands	263	1,
Sri Lanka	163	0,
Italy	157	0,
Sweden	155	0,
Norway	145	0,
Argentina	134	0,
Switzerland	110	0,
New Zealand	106	0,
Belgium	105	0,
Chile	101	0

- Main features used are:
 - the float search engine
 - the deployment planning interface
 - the News section (the float of the month has great success)
 - the Map Room and Interactive Map
 - the monitoring tools (country, program, data flow)
 - the documents/meetings/contacts sections
 - the global search engine
- From the FTP logs we can notice that the Argo status files (text, Google Earth files) are regularly used.

The AIC website seems to reach its international target and is regularly used by Argonauts.

Site is sometimes used by a larger public.
There is a growing interest from developing nations, especially from Africa.

AST#9 Meeting Action List

- 1) Item 13: Altimetry QC
⇒ Done (see below)
- 2) Item 28: mission statement by basin
⇒ Waiting more guidance from AST
⇒ Waiting ASW#3 outcomes for marginal seas requirements
- 3) Item 29: Argo/Argo equivalent floats
⇒ Proposal:
to add some information in the Argo metadata files that would permit to identify official Argo floats and equivalent contributions to Argo.
Why not adding also the program name as registered at the AIC?
- 4) Automate update of float map on Wikipedia.
⇒ Impossible. Update has to be manual. Done ad hoc.
⇒ More important to work on Google Ocean.

Common Practices

The TC was requested by new and existing Argo groups to assist them in the set up of their instruments. Considering the technical constraints and interactions this is not an easy issue. We need some documentation and resources to address those needs.

As Argo is to be sustained for many decades to come, then we can assume new groups will join the program and will gradually develop their expertise, but we should provide guidance as far as possible, for those who need it, on key parameters: depth table, surface time, etc. Some contributions to Argo are (and will be) made by groups that will never develop such in-house expertise on instrumentation and that just want to deploy n units per year in contribution to a global programme, outside of any particular research project. The AST needs to ensure that it can support and encourage these contributions.

When the TC is asked to assist, it is his role to help to transfer expertise from experienced groups to those who need it. This assistance is required **today** by new countries such as South Africa, that make a lot of efforts to fund 2 floats per year, and that need guidance to fill in settings table that manufacturer send to them.

While there were some valuable inputs and valid concerns of some AST members about the need to let “oceanography guide our choices”, or some apprehension about seeing a “standard” Argo float emerging too soon, some others members, and the main float manufacturer supported the idea of attempting to document and recommend common practices in Argo.

All oceanographers in Argo know which levels they would like to sample, not all are aware of the constraints of the Argos system. You can see then some floats settings that are not adequate and resulting in poor profiles, long time at surface, and so shorter lifetimes.

A minimum of documentation on common practices could help manufacturers in the long run to reduce the costs of development and provide instruments that meet Argo requirements in terms of reliability.

As we want to strengthen the array without having to deploy more floats than expected, this initiative might allow us to improve float lifetimes, or at least to have a better view on the existing fleet.

Being part of JCOMM Argo will need to address the issue of documenting "instrument best common practices" for the JCOMM Observation Programme Area in the next few months. Argo has produced a complete set of documentation for the data management, but we have next to nothing for the instrumentation. This initiative aims simply to start filling this gap, starting with the following:

- ⇒ The TC proposes discussing this issue openly at the AST meeting
- ⇒ The TC proposes establishing an **inventory of "Common Practices"** on instrumentation
- ⇒ The TC proposes sharing further existing software used to set up floats
- ⇒ The AST could define the basins that have specific requirements in terms of oceanography (this could be related to action item 28)
- ⇒ Then we could see if some recommendations can be agreed upon. And at the very least we would have a knowledge base that will be useful.

3. Data Management

Metadata

It is planned to work on metadata related to the telecommunication raw data formats. A classification was made by CLS and Coriolis for the formats they handle and the AIC will manage this information soon. It would be good to include these metadata in the netCDF files.

Data Distribution

CLS is acting as a DAC for GTS processing for a number of programmes that have no link to a GTS centre. It is recalled that this can be done as appropriate only if CLS receives the manufacturer's manual describing the Argos data format. The same remark applies to Coriolis and AOML, processing float data from many Argo groups.

WMO IDs

AIC is now supporting WMO in allocating WMO IDs for most of Argo components. Every 3 years large ranges of IDs are reserved by the AIC, based on national requirements, and allocations are made ad hoc. Requests and allocations are archived in the AIC database. This allows another set of controls over duplicates.

WMO Id blocks were already reserved for France, China, Korea, India, Netherlands, UK, USA and Spain.

Float operators are strongly encouraged to use the AIC for WMO Id requests.

Hence Argo will have full control on this information, essential to data distribution.

It is planned to develop on-line tools to request and obtain automatically new WMO Id allocations.

Support/Feedback Centre



The AIC website HELP section was reviewed to clarify access to the support/feedback centre.

Only Coriolis (and AST website) have promoted the address <http://support.argo.net> and its email support@argo.net.

The requests received so far concern the following subjects:

- Access to regional dataset
- Technical issues with AIC, GDACs website access
- Technical issues with data access (ASCII data, large datasets, empty metadata files, netCDF format, etc)
- General question on Argo (grounding, sampling, planning, etc)

A particular request permitted to identify a problem on incorrect values for PROFILE_PARAM_QC.

All requests were generally processed within 24h.

Other feedbacks received concern:

- Grey-listed floats with incorrect flag values
- Duplicates profile at GDACs (same data / different cycle number)
- Same dates for different profiles

Altimetry QC is made every 4 months by Coriolis/CLS, loaded in the AIC database, archived as a global QC feedback and linked to each platform.

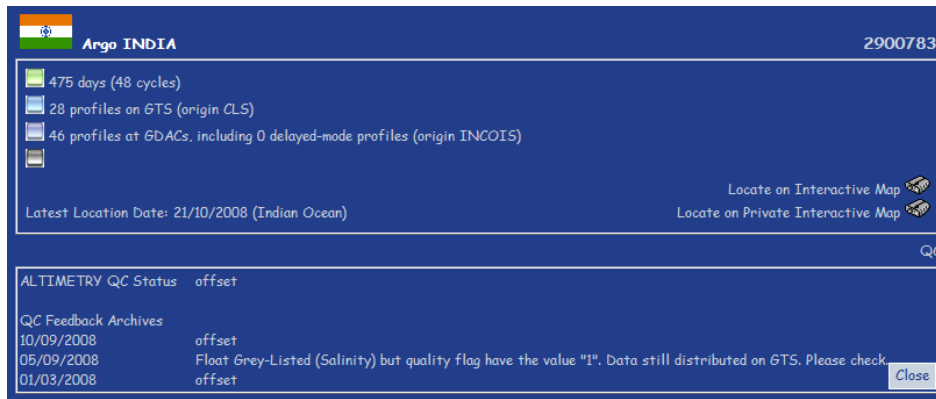
Float search engine was upgraded to take into account this information on data quality:

- [Query Page](#) has more search criteria (Altimetry QC “flagged”, “Fixed”, “Comment”)
- Results Page has more metadata (“Altimetry QC”)
- Float Detail Page summarizes all QC feedback archives

	Status	WMO ID	Telecom ID	Model	Program	Date	GDAC	GTS	Altimetry QC	Age
1		5901290	64187	SOLO	Argo SIO	13/10/2008			spike	769
2		5900975	54447	SOLO	Argo SIO	15/10/2008			spike	1242
3		5901875	75085	SOLO	Argo SIO	17/10/2008			spike	200
4		5901263	64159	SOLO	Argo SIO	18/10/2008			FIXED	716
5		5901250	64174	SOLO	Argo SIO	15/10/2008			FIXED	744
6		5901110	58903	SOLO	Argo SIO	18/10/2008			FIXED	1001
7		3900303	49918	SOLO	Argo SIO	20/10/2008			FIXED	1430
8		3900220	45764	SOLO	Argo SIO	19/10/2008			FIXED	1688
9		3900273	45808	SOLO	Argo SIO	20/10/2008			FIXED	1511
10		3900225	45769	SOLO	Argo SIO	20/10/2008			FIXED	1671

Altimetry QC status for SIO floats.

Whenever a float is no more flagged by QC it is tagged “FIXED”.



Here an example with float 2900783.

All QC feedbacks are summarized (global as "Altimetry QC" or individual).

The only missing element is the automatic forwarding of feedback records to the appropriate Argo contact points. For now, and to have more perspective on the type of feedback received, the TC forwards manually the information to the contact points.

It is proposed to automatically forward this information to DAC generic email addresses and delayed-mode operators. Should PIs or ARCs be notified as well?

Other sources of QC feedback could be interesting (e.g. GTSP).

The Support Centre will be improved gradually according to the nature of requests/feedback received.

ADMT#8 Meeting Action List:

- 1) Provide access to the support@argo.net question/answer database to AST/ADMT chairs. Completed.
All information is publicly available.
Most interesting question/answers are tagged "FAQ".
⇒ **Address TO BE PROMOTED.**
- 2) Establish an Argo user mailing list. Completed: argo-du@jcommops.org
⇒ **Need to subscribe appropriate users. To be promoted.**
- 3) Provide to AST chairs the list of operators that notify with delay their floats. Completed.
Dedicated product developed (see above). Table 3 of monthly report can be regularly checked.
- 4) Include J. Gilson report on suspicious floats/profile detected. **No input for now.**
- 5) Modify the text to the Support Centre to encourage users to report on data quality. Completed.
- 6) Argo forum to be set up. Completed. <http://groups.google.fr/group/argo-forum>

ADMT#9 Meeting Action List:

- 1) Calculate time delay for getting RT/DM files onto the GDACS. Investigate files slowly arriving
⇒ **Need to complete GDAC detailed index files**
- 2) Monitoring the floats sending good data to be included in AIC report
⇒ **Done**
- 3) Coriolis and AIC to monitor the resubmission of profiles after feedback
⇒ **Need to complete GDAC detailed index files**
- 4) ARCS and AIC to help CCHDO by providing point of contacts when they are aware of CTD cruises interesting for the Reference Database.
⇒ **Done in monthly AIC Report. New list/maps of CTD made at float launch, including contact points. Float search engine modified accordingly.**

4. International Issues

The [Resolution XLI-4](#) of the IOC Executive Council recognized Argo as a “programme” to be sustained, “acknowledged” the work of the AIC (within JCOMMOPS) and adopted the “Guidelines for the Implementation of [Resolution XX-6](#) of the IOC Assembly regarding the deployment of profiling floats in the high seas”.

While the implementation of the guidelines will be followed up by the IOC secretariat, it is strongly recommended to continue the efforts in notifying in advance the deployments plans through the AIC procedure.

Hence it is recalled to each Argo programme to:

- Designate a person (representing the Institution/Country) to enter the deployment plans in the AIC website
- Regularly update the information
- Notify the plans when they are finalized
- Make sure that the information entered is correct
- Not deploy Argo floats directly into EEZs without any kind of agreement
- ... and to not hesitate to request TC support.

To be noted that following the Resolution XLI-4, many [National Argo Focal Points](#) were updated.

Donor Programmes

These Argo initiatives, generally encouraged and coordinated by the AIC, and others led by National Argo programmes (US Argo/SIO & Pacific Islands, US Argo/AOML & Africa) are being recognized at IOC/WMO/JCOMM level. Member States will be invited to reserve a percentage of their platforms for donation purposes. Given the resources available for such initiatives, it is recommended to prepare joint initiatives between Argo, DBCP, etc.

Kenya: following the last outcomes of the DBCP XXIV Meeting, Kenya delegation confirmed that dedicated funding was identified to launch the 5 floats in 2009 (by June). If this can't be done, a US Navy ship could deploy the floats. Apparently it will be done by the US ship and UW will send an expert in Kenya to prepare and oversee the launching.

Gabon: floats being transferred. Draft deployment plans ready. TC (and US Argo program manager) will:

- Take receipt of 3 floats (transferred from a US Navy ship)
- Participate in related social event and present Argo
- Finalize deployment plan and train local staff to deployment
- Prepare 2010 Training Workshop (in French) for African countries

Morocco: Programme initiated. Letters sent to most of Departments. Still waiting official reply. (Launch of 3000th float at JCOMM III seems impossible)

⇒ No reliable contact points. TC will give up soon.

Peru, Ivory Coast, Indonesia, Cape Verde, Sri Lanka, Togo, and Rep. Dominican are waiting for a donor programme.

ADMT #10

JCOMMOPS is pleased to host the next session of the ADMT in Toulouse/France.

CLS has kindly agreed to support the meeting organization.

To be noted the potential overlap with the JCOMM III meeting to be held (in Morocco) the two first weeks of November 2009. Mid October seems to be a good time window.

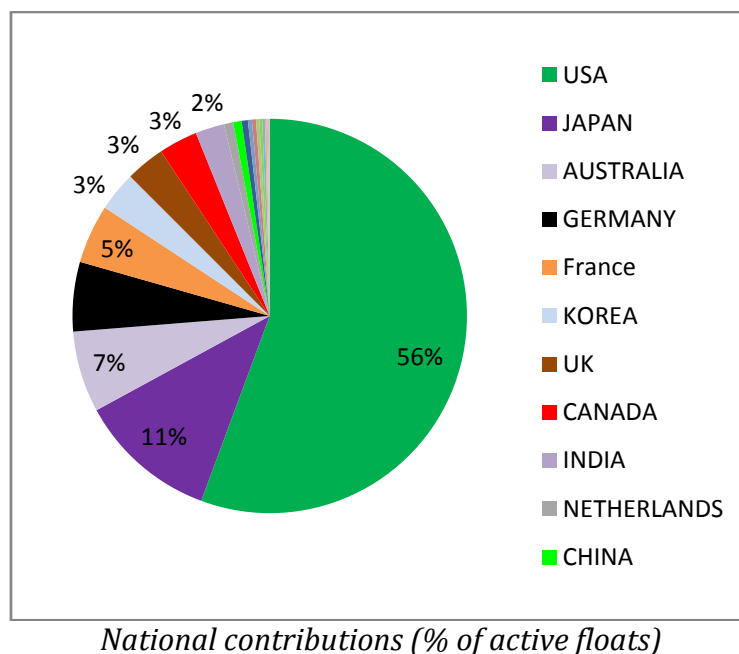
5. Planning

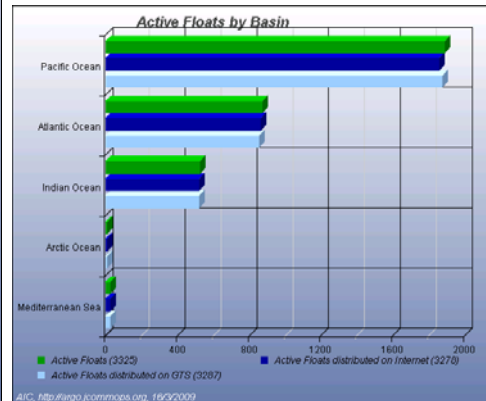
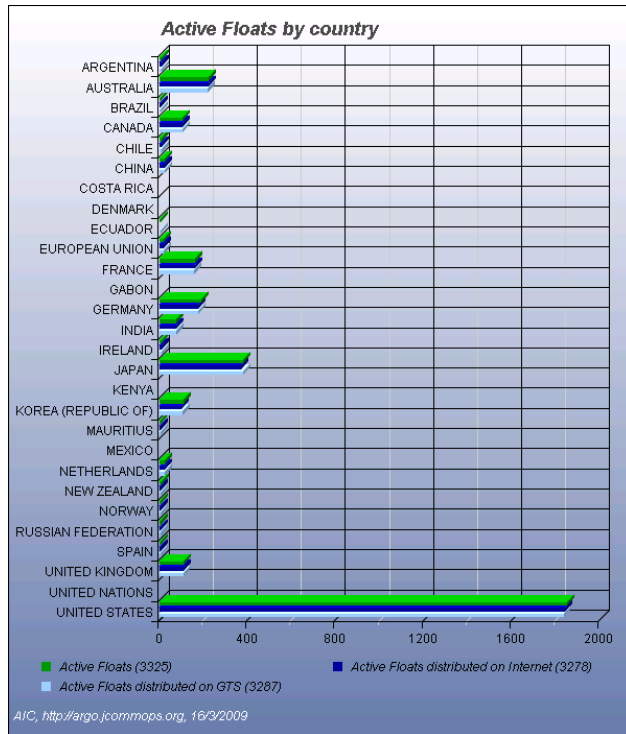
Beyond AIC routine activities, and AST/ADMT suggestions and action items, planning for 2009 can be summarized as follow:

- Continue to produce/improve the AIC Monthly Report
- Continue to encourage/assist float operators to notify of deployment plans. Think in ways to facilitate the procedure
- Develop the Google Ocean Argo Layer
- Finalize specification of new AIC/JCOMMOPS website
- Migrate JCOMMOPS database on a new server
- Start developments of new web services
- Work on new GDACs metadata: delays, cycles, data formats
- Exploit detailed index files to develop appropriate monitoring tools
- Work on Argo Common Practices
- Update documentation for JCOMM
- Work (with AST and JCOMM) on new monitoring products demonstrating how Argo is meeting its requirements.
- Continue to assist in the float retrieval activities
- Continue to foster participation by new countries through donor programmes
- Investigate possibilities to strengthen JCOMMOPS resources (ship coordinator)

Annex: Argo Status, a few metrics

- Refer to the latest AIC monthly report for additional statistics.
<http://argo.jcommops.org/FTPRoot/Argo/Doc/2009-02-AIC.pdf>
- Download the global Argo pdf status here (should be useful during AST meeting).
<http://argo.jcommops.org/FTPRoot/Argo/Maps/2009-02-all.pdf>



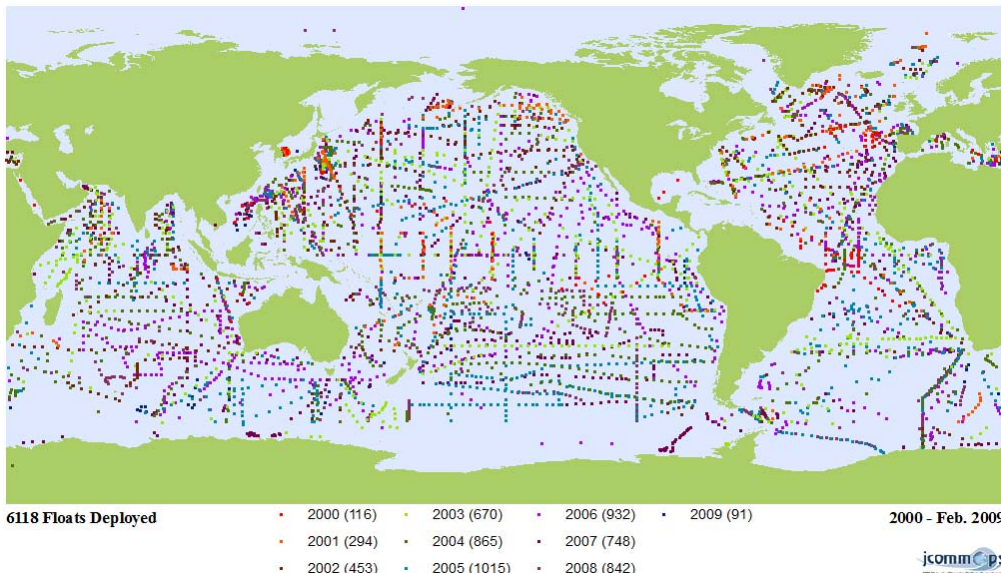


*A dozen countries are sustaining the global network,
 and another dozen takes care of regional gaps.
 1800 floats are operating in the Pacific, 800 in the Atlantic, and 400 in the Indian Ocean.*

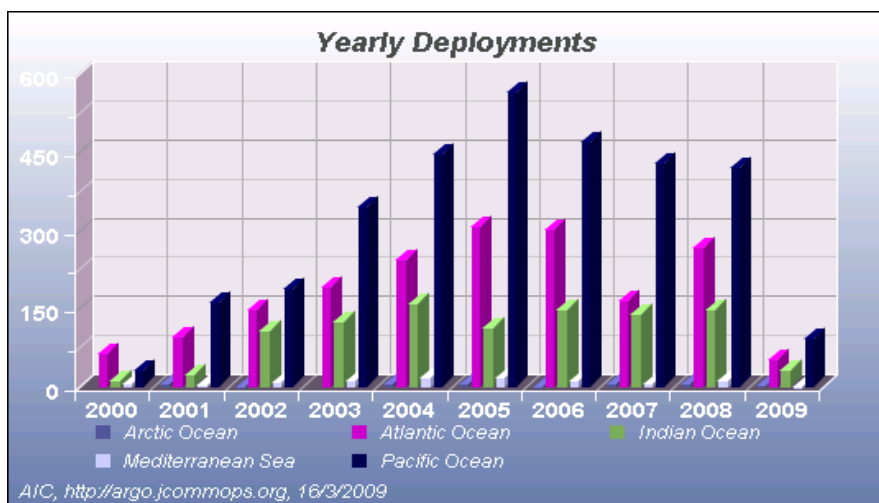
COUNTRY	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
UNITED STATES	21	10	16	70	129	150	315	443	513	520	419	390	2996
JAPAN	1	12	12	6	40	76	129	118	107	116	102	92	811
FRANCE	0	0	6	11	12	7	34	85	89	51	36	90	421
GERMANY	0	3	3	22	21	14	27	46	65	36	35	71	343
UNITED KINGDOM	0	0	0	0	30	37	37	45	28	24	33	29	263
CANADA	2	0	1	0	30	38	31	30	28	38	18	25	241
AUSTRALIA	0	0	4	6	0	12	8	5	62	46	43	68	254
KOREA (REPUBLIC OF)	0	0	0	0	16	25	32	32	37	33	9	29	213
INDIA	0	0	0	0	0	11	23	30	45	15	31	15	170
EUROPEAN UNION	0	0	0	1	10	70	4	17	16	20	8	0	146
CHINA	0	0	0	0	0	5	16	8	0	6	0	16	51
NETHERLANDS	0	0	0	0	0	0	0	3	4	4	4	13	28
NEW ZEALAND *	0	0	0	0	2	2	0	2	1	3	2	2	14
ARGENTINA *	0	0	0	0	0	0	0	0	0	12	0	0	12
NORWAY	0	0	0	0	0	3	6	0	0	2	0	0	11
SPAIN	0	0	0	0	0	0	7	2	1	1	0	0	11
BRAZIL *	0	0	0	0	0	0	0	0	4	0	4	0	8
CHILE	0	0	0	0	0	0	0	0	4	4	0	4	12
IRELAND	0	0	0	0	0	0	2	0	0	0	0	4	6
DENMARK	0	0	0	0	5	0	0	0	0	0	0	0	5

MAURITIUS *	0	0	0	0	0	0	1	2	0	2	0	0	5
RUSSIAN FEDERATION	0	0	1	0	0	2	0	2	0	0	0	0	5
ECUADOR *	0	0	0	0	0	0	0	0	0	0	3	0	3
COSTA RICA *	0	0	0	0	0	0	0	0	2	0	0	0	2
MEXICO *	0	0	0	0	0	0	0	0	2	0	0	0	2
TOTAL	24	25	43	116	295	452	672	870	1008	933	747	848	

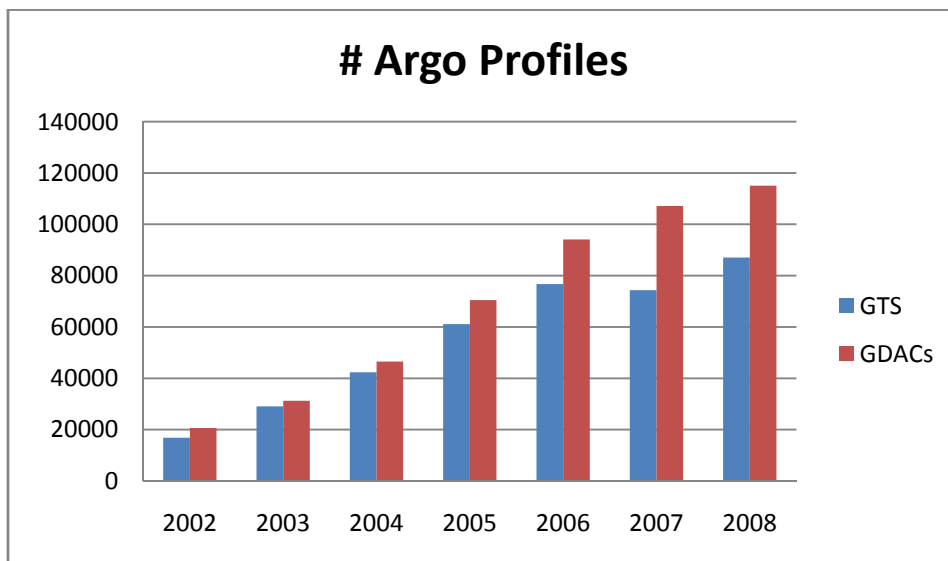
*14 countries deployed floats in 2008.
 In green the contributions that have substantially increased,
 in blue the one that have maintained the same level,
 in red the ones that decreased.
 Cross-out countries have apparently stopped their contribution (3 years without deployment).
 (*) Argo Donor Programmes.*



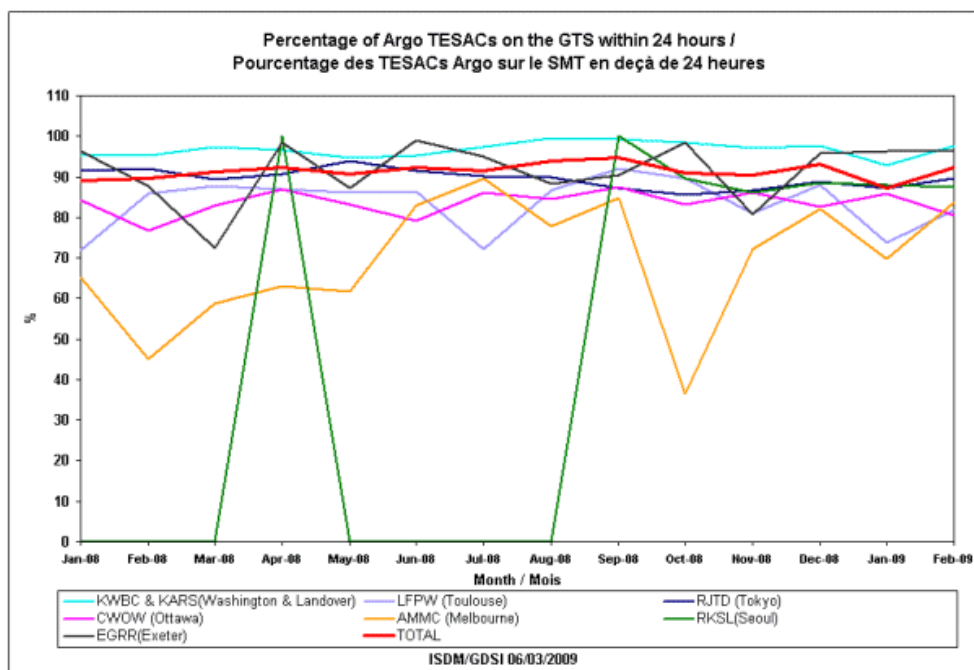
Argo yearly deployments.



2008 is a good year for Argo, especially in the Atlantic Ocean with increased contributions from France and Germany.



At least 10% of profiles in 2008 were lost for operational users: 87079 profiles were distributed on GTS, while 97574 were distributed at GDACs (no grey-list and PARAM_QC='A'). This is not so bad compared to other observing programs but there is still room for improvement.



90% of the float data were distributed with 24h in 2008 on the GTS. (Source: ISDM)

Problems on Korean and Australian nodes were resolved.

To be noted that some users requested to improve as far as possible the timeliness for ocean forecasting. New generations of telecommunications systems may be the key.