JCOMM IN-SITU OBSERVATIONS PROGRAMME SUPPORT CENTRE ARGO STATUS

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**Terms of Reference**

- to assist in the **implementation** and deployment of the observing networks through close interaction with programme managers and platform operators, and through Capacity Development and outreach;

- to assist in establishing, maintaining and verifying mechanisms for the timely **exchange of data and metadata**, including the facilitation of quality control and archival functions;

- to develop the consistent set of tools needed to **monitor the status** of the observing system and its attendant data and metadata distribution, so as to identify action areas and improve the **overall effectiveness** and development of the system.
JCOMM V

- Strong support by the commission
- Expanded ToR (to gliders, ...)
- Clarified management and governance
- Authority to allocate unique identifiers to all met/ocean systems, including ship based systems
- Responsibility and challenge to provide WIGOS with relevant metadata
- ... and to communicate on the status and performance of the observing system (Report Card e.g., see http://www.jcommops.org/reportcard )
**Collecting Metadata**

How to gather everything? (Manual / M2M)

1. Global Data Centres and GTS of WMO Statistics OBSERVATIONS
   - Data users feedback on data quality to data producers RELAYING
2. Satellite telecommunication providers R/T LOCATIONS
3. Platform operators REGISTRATION
4. Cruise operators REGISTRATION

October 2017
Enhancing the metadata

- Modelling
  - Organizing concepts

- Harmonization
  - Unified reference tables, shared entities, ontologies

- Unicity
  - Unique IDs for every platform, ship (WMO/WIGOS, ICES)

- Integrity
  - Metadata controlled and adjusted manually by experts, as necessary

Fueling an autonomous system
MANAGING THE METADATA

- Autonomous system
  - Platform lifecycle
  - Enriched data through routines
  - Geo-tracking (EEZ Warnings, ice)

- GIS processing powered by ESRI
  - Spatial analyzes (density, hotspots)
  - OGC compliant
  - 3D support (WebGL, early stages)

- High availability ensured by CLS
  - Redundancy
  - 24/7 monitoring
Distributing the metadata

- Authoritative status maps
  - www.jcommops.org/maps

- Key Performance Indicators
  - www.jcommops.org/kpi

- Data exchange
  - File exports
  - REST API under development
  - GIS REST API (ArcGIS Server) - www.jcommops.org/arcgis/rest/

- Web application(s)
  - www.jcommops.org, argo.jcommops.org, ...

What can we do with it?

October 2017
Authoritative Network Status Maps - Operational Service
DISPLAYING THE METADATA
WWW.JCOMMOPS.ORG

A window on the whole system

October 2017
PERSPECTIVE

- UI improvements
- Mobile application
- Ships, drifters, mooring and misc. platform metadata
- REST API: CSV, JSON, XML (WIGOS)
- Develop synergies and interconnectivities (OSMC’s ERDDAP)
- Develop outreach and access to gridded data (Scripps Argo Atlas, WOA, Mercator, ...)

“Future” evolutions
ARGO IMPLEMENTATION STATUS

- Activity, density, intensity appropriate globally.

- New partner: Indonesia (via French coop.)
ARGO IMPLEMENTATION STATUS

Activity

ADMT
ARGO IMPLEMENTATION STATUS

Density

ADMT 23 Oct. 2017
Argo Implementation Status

Intensity

Graphs showing time series data for different ocean regions.
IMPLEMENTATION STATUS

TP05 float age ...

For each float a spatial weight on age is calculated according to neighbours to identify spatial clusters of hot/cold spots. To be statistically significant, the hot/cold spot will have a high/low value and be surrounded by other features with high/low values. (Getis-Ord Method)
INSTRUMENTATION

**Age of failure**
- **Argo Global**
  - 2016: 3.16
  - Raw count
  - Target: 4.1

**Deployment Success**
- **Argo Global**
  - 2016: 98.43%
  - Raw count
  - Target: 95%

**Half Life**
- **Argo Global**
  - 2009: 1366.57
  - 2009: 1366
  - Target

**Life Expectancy**
- **Argo Global**
  - 2016: 3.99
  - Raw count
  - Target

**Mortality Rate**
- **Argo Global**
  - 2016: 25.58%
  - Raw count
  - Target

**Reliability (010)**
- **Argo Global**
  - 10/2017: 92.06%
  - 858
  - Target: 90%

**Reliability (025)**
- **Argo Global**
  - 10/2017: 87.78%
  - 812
  - Target: 90%

**Reliability (050)**
- **Argo Global**
  - 10/2017: 80.95%
  - 663
  - Target: 90%

**Reliability (075)**
- **Argo Global**
  - 10/2017: 75.42%
  - 755
  - Target: 90%

**Reliability (100)**
- **Argo Global**
  - 10/2017: 74.76%
  - 788
  - Target: 85%

**Reliability (125)**
- **Argo Global**
  - 10/2017: 67.65%
  - 663
  - Target: 80%

**Reliability (150)**
- **Argo Global**
  - 10/2017: 52.94%
  - Raw count
  - Target: 75%

**Reliability (200)**
- **Argo Global**
  - 10/2017: 37.59%
  - Raw count
  - Target: 50%

**Reliability (250)**
- **Argo Global**
  - 10/2017: 18.44%
  - Raw count
  - Target: 25%

**Reliability (300)**
- **Argo Global**
  - 10/2017: 10.24%
  - Raw count
  - Target: 20%

**Reliability (350)**
- **Argo Global**
  - 10/2017: 2.46%
  - Raw count
  - Target: 10%

**Reliability (400)**
- **Argo Global**
  - 10/2017: 3.58%
  - Raw count
  - Target: 5%
## Argo Data Flow Status

### Data Flow

<table>
<thead>
<tr>
<th>Data Flow</th>
<th>Delivery</th>
<th>96.86%</th>
<th>-</th>
<th>Raw count</th>
<th>95%</th>
<th>Target</th>
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<tbody>
<tr>
<td>Argo Global</td>
<td>10/2017</td>
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</table>

<table>
<thead>
<tr>
<th>Data Flow</th>
<th>Quality (DM Processing)</th>
<th>72.18%</th>
<th>-</th>
<th>Raw count</th>
<th>75%</th>
<th>Target</th>
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<tbody>
<tr>
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<table>
<thead>
<tr>
<th>Data Flow</th>
<th>Quality (PSAL)</th>
<th>89.25%</th>
<th>-</th>
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<tbody>
<tr>
<td>Argo Global</td>
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</table>

<table>
<thead>
<tr>
<th>Data Flow</th>
<th>Quality (TEMP)</th>
<th>92.47%</th>
<th>-</th>
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<th>90%</th>
<th>Target</th>
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<tbody>
<tr>
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</table>

<table>
<thead>
<tr>
<th>Data Flow</th>
<th>Timeliness (GDAC FR)</th>
<th>90.73%</th>
<th>12208</th>
<th>Raw count</th>
<th>90%</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argo Global</td>
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</table>

<table>
<thead>
<tr>
<th>Data Flow</th>
<th>Timeliness (GDAC US)</th>
<th>87.62%</th>
<th>11931</th>
<th>Raw count</th>
<th>90%</th>
<th>Target</th>
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<tbody>
<tr>
<td>Argo Global</td>
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<table>
<thead>
<tr>
<th>Data Flow</th>
<th>Timeliness (GTS FR)</th>
<th>92.22%</th>
<th>7100</th>
<th>Raw count</th>
<th>90%</th>
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<tbody>
<tr>
<td>Argo Global</td>
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</table>

<table>
<thead>
<tr>
<th>Data Flow</th>
<th>Whitelist</th>
<th>95.58%</th>
<th>3629</th>
<th>Raw count</th>
<th>95%</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argo Global</td>
<td>10/2017</td>
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</table>

### KPIs

<table>
<thead>
<tr>
<th>KPIs</th>
<th>Event name</th>
</tr>
</thead>
<tbody>
<tr>
<td># of registered units vs number of operational units (Global Argo)</td>
<td>Delivery</td>
</tr>
<tr>
<td># of DM obs vs # of DM eligible obs (&gt; 12 months)</td>
<td>Quality (DM Processing)</td>
</tr>
<tr>
<td># of monthly obs of best quality - PSAL</td>
<td>Quality (PSAL)</td>
</tr>
<tr>
<td># of monthly obs of best quality - TEMP</td>
<td>Quality (TEMP)</td>
</tr>
<tr>
<td>% of monthly observations distributed within 24h (GDAC FR)</td>
<td>Timeliness (GDAC FR)</td>
</tr>
<tr>
<td>% of monthly observations distributed within 24h (GDAC US)</td>
<td>Timeliness (GDAC US)</td>
</tr>
<tr>
<td>% of monthly observations distributed within 24h (GTS) (Global Argo)</td>
<td>Timeliness (GTS FR)</td>
</tr>
<tr>
<td>% of platforms whitelisted platforms vs operational platforms</td>
<td>Whitelist</td>
</tr>
</tbody>
</table>
**REAL-TIME**

**Pending floats, as of 2017-11-28**

- Float sample: status="REGISTERED", Depl.date <= today: 109 units

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**Graph 1:**
- United States: 36.70%
- Japan: 1.83%
- Canada: 3.67%
- European Union: 3.67%
- India: 4.59%
- France: 4.59%
- Germany: 16.51%
- United Kingdom: 25.69%

**Graph 2:**
- Argo CANADA: 1.83%
- Coriolis-BIOArgo: 1.83%
- Argo PMEL: 2.75%
- EuroArgo: 3.67%
- Argo INDIA: 4.59%
- Argo BSH: 5.50%
- BioArgo UMaine: 7.32%
- Argo eq. NAVOCEANO: 10.09%
- Argo AWI: 11.01%
- Argo SIO: 15.60%
- Argo UK: 25.69%
REAL-TIME

Delays, as of 2017-11-28
Delays

As of November 2017

ADMT
ALTIMETRY QC

November 2017
**DM Status (to be detailed later)**

By DAC

DM processing Status, November 2017

- **Observations**: 1846290
- **Delayed-Mode**: (72% achieved) 1206221
- **DM Pending**: 477646
DM Achieved = 0%

Orphan Floats

Observations

403456
(% achieved) 0
342492
Orphan Floats

DM Achieved = 0%
Orphan Floats

DM Achieved=0%
Orphan Floats

DM Achieved = 0% and Network = “Argo Equivalent”

Overview

- Float sample size: 819
- % Operational Floats: 17.58
- % Failed Deployments: 0.488
- % Blacklisted: 4.27

Instrumentation

Observations

- Total observations: 129527
- DM observations: 0
- DM pending: 117850

Distribution

- Argo eq. OIST: 1.83%
- Argo UW-APL eq.: 1.83%
- Argo UW-SPURS eq.: 2.08%
- Argo eq. AOML: 3.42%
- Argo eq. JAMSTEC: 5.01%
- Argo eq. JMA: 9.16%
- Argo eq. NAVOCEANO: 51.28%
- Argo eq. CHINA: 18.56%
# Orphan Floats

**DM Achieved=0%**, **Network=“Argo Equivalent”**

## Overview

<p>| | |</p>
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## Instrumentation

## Observations

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<tbody>
<tr>
<td>Total observations</td>
<td>129527</td>
</tr>
<tr>
<td>DM observations</td>
<td>0</td>
</tr>
<tr>
<td>DM pending</td>
<td>117850</td>
</tr>
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</table>

## Distribution

- **China**: 18.56%
- **Japan**: 18.68%
- **United States**: 60.68%
Orphan Floats

DM Achieved = 0%, Network="Argo Equivalent"

November 2017
Orphan Floats

DM Achieved=0%, Network="Argo Equivalent"
**Oprhan Floats**

**Overview**
- Float sample size: 490
- % Operational Floats: 24.9
- % Failed Deployments: 0.612
- % Blacklisted: 1.84

**Distribution**
- DM Achieved = 0%
- Network = “BGC Argo”

**Instrumentation**

**Observations**
- Total observations: 77052
- DM observations: 0
- DM pending: 67790

France: 23.06%
United States: 20.61%
Japan: 15.51%
Korea (Republic Of): 7.35%
China: 5.10%
Canada: 3.47%
United Kingdom: 3.27%
Germany: 2.45%
Norway: 2.45%
European Union: 2.24%
Italy: 2.24%
## Orphan Floats

**DM Achieved=0%, Network=“BGC Argo”**

### Overview

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### Instrumentation

### Observations

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<tr>
<td>DM observations</td>
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<tr>
<td>DM pending</td>
<td>67790</td>
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</table>
Workplan

- Review metadata reference tables in cooperation with manufacturers (& BODC)
  - Platform Types, Sensor Models, Batteries
  - Addition proposed: ARVOR_L, PROVOR_V

- Ingest BGC index file, produce EOV oriented KPIs

- Improve DMQC metrics/KPIs (working group)

- Develop further KPIs assessing Argo data quality (vs other JCOMM Networks)

- Investigate how strengthen JCOMMOPS/GDAC metadata interactions
  - GDACS to JCOMMOPS ok.
  - JCOMMOPS to GDACS?

- Open FTP account for China DACs (transit to US GDAC) and email access for communication

Suggested Actions: ADMT

November 2017
Register ... before data flows

support@jcommops.org