GOOS – GLOBAL OCEAN OBSERVING SYSTEM
GOVERNANCE

UN Agencies, Joint Commission, Observing Networks
JCOMM in situ Observations Programme Support Centre

- 7 global networks
  - Argo, DBCP, SOT, OceanSITES, GO-SHIP, GLOSS & OceanGliders

- Resources
  - Premises hosted by Ifremer (Brest - FRANCE)
  - IS powered by CLS (Toulouse - FRANCE)
  - 6-person team: 3 TCs, 1 oceanographer Sc./communication/outreach, 2 IT

- Assistance, coordination & monitoring
  - Cross-programme technical expertise & support
  - Metadata harmonization
  - Cruise planning
  - Metadata quality control
  - Tracking
  - Performance indicators
COLLECTING METADATA

How to gather everything?

- Platform operators REGISTRATION
- Cruise operators REGISTRATION
- Global Data Centres and GTS of WMO Statistics OBSERVATIONS
- Satellite telecommunication providers R/T LOCATIONS
- Data users’ feedback on data quality to data producers RELAYING
ENHANCING THE METADATA

- Modelling
  - Organizing concepts, in an integrated way

- Harmonization
  - Unified reference tables, shared entities: integration
  - Built on top of existing standards, when available (SDC P01, EV specification sheets)

- Unicity
  - Unique IDs for concepts: platforms (WMO/WIGOS), ships (ICES), agencies (EDMO)

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

Aim: fueling an autonomous system
MANAGING THE METADATA

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

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

- High availability ensured by CLS
  - 24/7 monitoring
DISTRIBUTING THE METADATA

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

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

- JCOMM Report Card
  - www.jcommops.org/reportcard

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

- Web application
  - www.jcommops.org
Distributing the metadata

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What can we do with it?

Main in situ Elements of the Global Ocean Observing System

- Profiling Floats (Argo)
  - Core (3959)
  - Deep (69)
  - BioGeoChemical (334)
- Data Buys (ORCP)
  - Surface Drifters (1442)
  - Offshore Platforms (97)
  - Ice Buys (15)
- Timeseries (OceanSITES)
  - Interdisciplinary Moorings (368)
  - Repeated Hydrography (GO-SHIP)
  - Research Vessel Lines (62)
- Ship based Measurements (SOT)
  - Automated Weather Stations (249)
  - Manned Weather Stations (1094)
  - Radiosondes (12)
- Other Networks
  - HF Radars (270)
  - Animal Borne Sensors (53)
  - Ocean Gliders (31)

Sea Level (GLOSS)

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What can we do with it?
### Implementation

<table>
<thead>
<tr>
<th></th>
<th>Argo Core</th>
<th>Argo Global</th>
<th>Argo BioGeoChemical</th>
<th>DBCP</th>
<th>Coastal/National MB</th>
<th>Tropical Moored Buoy</th>
<th>Tsunami Buoy</th>
<th>VOS</th>
<th>SOOP XBT</th>
<th>GLOSS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Activity</strong></td>
<td>86.87%</td>
<td>100.56%</td>
<td>35.42%</td>
<td>110.66%</td>
<td>103.67%</td>
<td>72.27%</td>
<td>59.38%</td>
<td>102.65%</td>
<td>84%</td>
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<tr>
<td><strong>Density</strong></td>
<td>85.01%</td>
<td>88.31%</td>
<td>44.33%</td>
<td>83.33%</td>
<td>9/2018</td>
<td>9/2018</td>
<td>9/2018</td>
<td>7/2018</td>
<td>3/2017</td>
<td></td>
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<tr>
<td><strong>Intensity</strong></td>
<td>67.63%</td>
<td>88.35%</td>
<td>56.31%</td>
<td>81.04%</td>
<td>9/2018</td>
<td>9/2018</td>
<td>9/2018</td>
<td>9/2018</td>
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</table>

### Data Flow

<table>
<thead>
<tr>
<th></th>
<th>Delivery</th>
<th>Metadata Quality - Sensor</th>
<th>Timeliness (GTS FR)</th>
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<tbody>
<tr>
<td></td>
<td>Argo Core</td>
<td>Global Ocean</td>
<td>Global Ocean</td>
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<tr>
<td><strong>Delivery</strong></td>
<td>96.91%</td>
<td>95.6%</td>
<td>86.35%</td>
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<tr>
<td></td>
<td>9/2018</td>
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<tr>
<td><strong>Metadata Quality</strong></td>
<td>98.77%</td>
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<tr>
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<td>9/2016</td>
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<tr>
<td><strong>Timeliness</strong></td>
<td>96.61%</td>
<td>95.85%</td>
<td>100%</td>
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<tr>
<td></td>
<td>9/2018</td>
<td>9/2018</td>
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</table>

### International

<table>
<thead>
<tr>
<th></th>
<th>Diversity (National)</th>
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<tbody>
<tr>
<td></td>
<td>Argo Core</td>
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<tr>
<td></td>
<td>29</td>
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<td>2017</td>
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<tr>
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<td>2016</td>
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<tr>
<td></td>
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What can we do with it?
DISPLAYING THE METADATA
WWW.JCOMMOPS.ORG

Query, map, save, compare
DISPLAYING THE METADATA
WWW.JCOMMOPS.ORG

Graphs and stats, as dynamic widgets
DISPLAYING THE METADATA
WWW.JCOMMOPS.ORG

3D engine
**PERSPECTIVE**

- Continuous improvements
  - Website: search indexing (Elasticsearch – observations), lighter forms for manual entries, 3D tools, etc.
  - Complete suite of integrated products (KPI: fill in the gaps)

- Integrate more metadata (completeness, new networks)
  - History
  - Metadata rules (format & content) not yet defined for all networks

- Release new services (WMO IDs allocation, REST metadata access, mobile app.)

- Develop and strengthen synergies and interconnectivities (WIGOS, IODE, BODC, ERDDAPs)
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.
WMO INTEGRATED GLOBAL OBSERVING SYSTEM

- Built on top of network specifications
  - JCOMMOPS will feed the WIGOS
  - WIGOS Metadata Data Representation (WMDR): XML, ISO standards (GML, O&M)

- WIGOS ID

WIGOS Identifier Series-Issuer of Identifier-Issue Number-Local Identifier
0-22000-<ppp>-<WMO ID>
**Key Performance Indicator**

Common denominator, target first