1 OVERVIEW OF THE IODE NETWORK

IOC established the International Oceanographic Data and Information Exchange (IODE) in 1961 to “enhance marine research, exploitation and development, by facilitating the exchange of oceanographic data and information between participating Member States, and by meeting the needs of users for data and information products”. To achieve these objectives the IOC Member States, under the IODE programme, established a global network of National Oceanographic Data Centres (NODCs) and, since 2013, IODE Associate Data Units (ADU’s). The latter also include the OBIS (Ocean Biogeographic Information System) nodes.

Figure 1 and Figure 2 show that there have been two peak years in the establishment of NODC: one in the period 1970-1974 and a second in the period 2000-2004. The latter was due to the Ocean Data and Information Network for Africa (ODINAFRICA), a project funded by the Government of Flanders, Kingdom of Belgium which operated between 1997 and 2014 and was instrumental in developing oceanographic data and information capacity in Africa. The possibility for projects, programmes, institutions or organizations to establish ADUs as from 2013 has increased the number of data centres by 30% (from 65 to 85) thereby demonstrating the increasing capacity of entities other than NODCs to manage oceanographic data.
Figure 1: Number of IODE NODCs/ADUs created between 1961 and 2016  
(ADUs shown in orange)

Figure 2 clearly shows a plateau in the establishment of new NODCs as from 2000-2004 but growth of the network has re-started with the possibility to establish Associate Data Units as from 2013.

2 IODE NATIONAL REPORTS 2015-2016 SURVEY

This document is based on the input received from the IODE community to the online survey (IODE-XXIV: NATIONAL REPORTS SURVEY) which was opened on 21 September 2016 and closed on 25 October 2016. In addition to the original email sent on 21 September 2016, a reminder was sent on 4 October 2016.

The results contribute to agenda items 3.3.2, 3.3.3.

2.1 DATA MANAGEMENT: RESPONSE

A total of 66 responses were received. Figure 1 shows the geographic distribution of the countries that responded and those that did not respond. The latter include countries that have or had an NODC or IODE national coordinator for data management but did not answer the survey. The email with the invitation was sent to all IODE national coordinators for data management as available from the IODE web site page: http://www.iode.org/nc-dm as well as to the ADU focal points (http://www.iode.org/adu-contact) making a total of 134 contacts.
Based on the number of emails sent out (n=134) and overall number of responses (n=66) the survey had a response rate of 49%.

If we compare this to the previous online surveys for national reporting then we see:

<table>
<thead>
<tr>
<th>Year</th>
<th>Contacts</th>
<th>Responses</th>
<th>% Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015-2016</td>
<td>134</td>
<td>66</td>
<td>49</td>
</tr>
<tr>
<td>2011-2012</td>
<td>84</td>
<td>50</td>
<td>59</td>
</tr>
<tr>
<td>2009-2010</td>
<td>86</td>
<td>57</td>
<td>66</td>
</tr>
<tr>
<td>2007-2008</td>
<td>83</td>
<td>59</td>
<td>71</td>
</tr>
</tbody>
</table>

Table 1: LIST OF RESPONDENTS
(other indicates an IODE national coordinator for data management without NODC or ADU)

- Argentina NODC
- Argentina ADU OBIS
- Australia AIMS (other data centre)
- Australia ADU OBIS
- Barbados ADU
- Belgium NODC
- Belgium NODC
- Brasil NODC
- Bulgaria NODC
- Cameroon NODC
- Canada NODC
- Canada ADU OTN
- Chile NODC
- China NODC
- Colombia ADU parques
- Colombia NODC dima
- Colombia ADU invemar
- Congo DR other
- Cote d’Ivoire NODC
- Croatia NODC
- Cyprus NODC
- Ecuador NODC
- Egypt NODC
- Estonia NODC
- Finland other
- Argentina NODC
- Argentina ADU OBIS
- Australia AIMS (other data centre)
- Australia ADU OBIS
- Barbados ADU
- Belgium NODC
- Belgium NODC
- Brasil NODC
- Bulgaria NODC
- Cameroon NODC
- Canada NODC
- Canada ADU OTN
- Chile NODC
- China NODC
- Colombia ADU parques
- Colombia NODC dima
- Colombia ADU invemar
- Congo DR other
- Cote d’Ivoire NODC
- Croatia NODC
- Cyprus NODC
- Ecuador NODC
- Egypt NODC
- Estonia NODC
- Finland other
- France NODC
- Germany NODC
- Greece NODC
- Iceland other
- India NODC
- Iran NODC
- Iraq other
- Ireland NODC
- Israel NODC
- Italy NODC
- Japan ADU jamstec
- Kazakhstan NODC
- Kenya NODC
- Malaysia NODC
- Mauritania NODC
- Mexico NODC
- Netherlands NODC
- New Zealand other
- Nigeria NODC
- Norway NODC
- Oman other
- Philippines ADU ASEAN
- Portugal other
- Romania NODC
If we look at the ADUs: out of the 20 ADUs, 12 responded (60%) which is slightly higher than the overall response rate.

So regretfully the response rate decline has continued, despite attempts of the Officers and Secretariat to reduce the number of questions and use, as much as possible, of tick box questions.

One of the reasons for the low response this year may be that a substantial number of member states did not update their information on IODE national coordinators. For reasons beyond the control of the IODE Secretariat the IOC Circular Letter No. 2645 was sent only on 8 November, i.e. after the closing date for the survey.

2.2 DATA MANAGEMENT: SURVEY ANALYSIS

The survey included 43 questions sub-divided in 8 sections:

A- INSTITUTIONAL INFORMATION
   1. Please provide some information on yourself so we can contact you again
   2. Your position (job title)
   3. Have you entered your information in OceanExpert? [http://www.oceanexpert.net]
   4. In what type of data centre do you work?
   5. Does your country formally have a centralized (single centre) data management system or a distributed (multiple centres) data management system?
   6. Does your country and/or data centre have a documented data management strategy?
   7. Has your country applied (in 2015 and/or 2016) the IOC Oceanographic Data Exchange Policy adopted as Resolution IOC-XXII-6 in 2003? (see [http://www.iode.org/policy])
   8. Does your data centre have its own data policy?
   9. Does your organization have a documented Quality Management System (QMS)?
  10. Does your organization hold ISO 9001 certification?
  11. If you are an NODC: do you plan to implement the IODE QMF accreditation process during the next inter-sessional period (2017-2018)?
  12. What type and how many staff (FTE - Full Time Equivalent) were working at your data centre in 2015/2016 (averaged);[use integers. no decimals]
  13. How has this number changed year by year since 2013-2014:
  14. What is the annual operational budget for your data centre (excluding staff cost) [converted into US Dollars]:
  15. How has this number changed year by year since 2013-2014:

B. DATA CENTRE ACTIVITIES

  16. Global IODE activities in which your data centre participated in 2015 and/or 2016 (data management): (choose one per row)
17. List the most important data activities/projects in which your centre is involved. PLEASE ADD THE URL IF AVAILABLE

C. DATA RECEIVED BY YOUR DATA CENTRE

18. For measurements from vessels (research, ships of opportunity, etc) for which data types do you manage data
19. For measurements from fixed stations/platforms for which data types do you manage data
20. For measurements from moving platforms for which data types do you manage data
21. Any other platforms, instruments, etc?
22. Did you handle (incoming) (tick one or more):
23. Did your data centre have links with, and/or manage data from major science programmes (e.g., CLIVAR, IMBER, Argo, Future Earth, SOLAS, etc) in 2015 and/or 2016?
24. Do you manage GOOS Essential Ocean Variables (EOV)? Please tick one or more EOVs of which data are managed by your data centre during 2015-2016. Note that more info (including specifications) can be found on the web page http://www.goosocean.org/eov

D. DATA MANAGEMENT PROCEDURES

25. Did you maintain a discovery metadatabase for the data received by your data centre in 2015 and/or 2016:
26. If you answered yes to the previous question, then is the database openly available online:
27. What kind of quality control procedures (if any) are used in your institution? (add bibliographic references, if possible):

E. USER SERVICES

28. What spectrum of services (e.g. data and products) were started/continued/ended by your centre in 2015 and/or 2016? (choose one per row)
29. List the most important products and services (up to 15) provided by your data centre in the period 2015-2016. These may be new (started in 2015/16) or ongoing products/services. If they are online products/services then please also provide the URL.
30. How were data made available (e.g. by request, on-line access, etc.) in 2015 and/or 2016? (you can tick multiple rows but only 1 per row)
31. Indicate the average number of requests and services your centre provides in a year:
32. Who are your users? (tick one or more)
33. What is the geographic origin of your users:

F. PROVIDING DATA THROUGH DATA NETWORKS

34. Do you participate in a national distributed data network:
35. Do you provide data through the following international data networks:
36. Did you provide data to World Data System (WDS) in 2015 and/or 2016 (you can select more than one or none):
37. Did you send data to global specialized data centres (that are not ICSU WDSs) such as GDACs in 2015-2016? (you can tick as many as relevant)

G. IODE TRAINING AND EDUCATION

38. In how many IODE training courses did you participate in 2015 and/or 2016:
39. Did the IODE training assist you in your work after you returned home?
40. In how many other training courses did you participate in 2015 and/or 2016 organized by national or other organizers:

H. ASSISTANCE TO IODE

41. At how many working days would you estimate the contribution of your data centre to IODE through participation in IODE activities (e.g. participation in IODE meetings for which your data centre or country funded your trip) during the period 2015-2016 (2015 and 2016 added together)?
42. Will your country be providing direct financial support to IODE in 2017-2018 through the IOC (confirmed)?
43. Would your country/data centre be able to provide a visiting expert/secondment to the IOC Project Office for IODE in 2016-2017 for a period of 3-12 months?

Below we provide the consolidated results at the global level starting from question 3.

SECTION A: INSTITUTIONAL INFORMATION

Question 3

Have you entered your information in OceanExpert? (http://www.oceanexpert.net)

<table>
<thead>
<tr>
<th>Answer Choices</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Remained the same</td>
<td>55.74%</td>
</tr>
<tr>
<td>- Increased</td>
<td>21.31%</td>
</tr>
<tr>
<td>- Decreased</td>
<td>14.39%</td>
</tr>
<tr>
<td>- I don't know</td>
<td>8.26%</td>
</tr>
</tbody>
</table>

Total: 100%
Question 4

In what type of data centre do you work?

Answered: 66  Skipped: 0

<table>
<thead>
<tr>
<th>Answer Choices</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>an IOC/IODE national oceanographic data centre (NODC)</td>
<td>69.70%</td>
</tr>
<tr>
<td>an IOC/IODE Associate Data Unit (ADU)</td>
<td>18.19%</td>
</tr>
<tr>
<td>another national data centre</td>
<td>7.58%</td>
</tr>
<tr>
<td>I do not work in a data centre</td>
<td>4.65%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>

Question 5

Does your country formally have a centralized (single centre) data management system or a distributed (multiple centres) data management system?

Answered: 66  Skipped: 0

<table>
<thead>
<tr>
<th>Answer Choices</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>none</td>
<td>13.64%</td>
</tr>
<tr>
<td>centralized (single centres)</td>
<td>36.36%</td>
</tr>
<tr>
<td>distributed (multiple centres)</td>
<td>46.46%</td>
</tr>
<tr>
<td>I do not know</td>
<td>4.55%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>

Additional information was provided by 19 respondents:

- **UK NODC**: Marine Environmental Data and Information Network (MEDIN) has 7 Data Archive Centres - of which BODC is one - covering water column oceanography, marine geology and geophysics, biodiversity and habitats, bathymetry, marine meteorology, fisheries and historic environment (see: www.oceannet.org). MEDIN Core Team (i.e. Secretariat) hosted by BODC.

- **Estonia NODC**: In principle our data centre is nominated for oceanographic data, but other institutions do not have obligation to submit the data to us

- **Russian Federation NODC**: RNODC is a member and operational management body of the Unified state system of information on world ocean (ESIMO), the operation of which provide 36 data centers/data providers 12 ministries/agencies in Russia.
Belgium (Federal): In fact, there are two marine data centres but no "data management system" at country level. Belgium is somewhere between centralized and distributed...

Finland (other): Former Finnish Institute of Marine Research was a designated national agency in IODE. From 2009 there has unfortunately been no nominated national oceanographic data center in Finland.

France NODC: We are developing a distributed data management system within France: ODATIS / Pole Ocean

Norway NODC: NMD is coordinating a national research infrastructure NMDC with 16 partners.

Ireland NODC: The majority is stored by the Marine Institute. Biodiversity data is stored in the National Biodiversity Data Centre. Data for certain functions are stored in other centres.

Germany NODC: Formally centralized but working in a distributed way

Argentina ADU OBIS: Starting national initiative using ODP.

Italy NODC: We are developing the National Data Committee for Italy together with ENEA, CNR, SZN, ISPRA, Conisma and IIM.

Argentina NODC: Argentina established in 2010 a National Ocean Data System

Canada NODC: Mixed data centre; centralized and distributed depending on data type (see IOC MG No.5, section 4, model 3)

Iceland (other): We would classify as a regional data node for the Arctic. Data relevant to the Arctic then also exists in many other locations and in national nodes.

Iran NODC: There are some marine governmental organization in Iran, responsible for marine activities and INIOAS is as a referral center.

Question 6

Does your country and/or data centre have a documented data management strategy?

Answered: 64  Skipped: 0

<table>
<thead>
<tr>
<th>Answer Choices</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>60.01%</td>
</tr>
<tr>
<td>No</td>
<td>33.33%</td>
</tr>
<tr>
<td>I don't know</td>
<td>6.66%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
</tr>
</tbody>
</table>

Yes  Ne  I don't know
Additional information was provided by 22 respondents:

- **USA ADU OBIS**: We are currently working on drafting a data management plan but it is not complete.
- **Brazil NODC**: The data management strategy is being written.
- **Togo NODC**: not really (pas vraiment)
- **Colombia ADU Parques**: right now we are in the stage of the strategy construccion
- **Portugal (other)**: Our National Ocean Strategy 2013-2020 refers to a "coherent national sea data system" and a "National Sea Data Policy".
- **Cameroon NODC**: Our research station has a data management strategy
- **Russian Federation NODC**: Data of marine expeditions (observation platform) are transmitted in real time (a small part of data) in an automated data transmission system Russia (GTS) and delayed mode (up to a year) in the data center on a thematic basis (oceanography, geology, etc.). There are standards (descriptions, formats) of data exchange.
- **Finland (other)**: I do not know if such is. In principle institutes have to take care of their data and put is openly accessible.
- **France NODC**: Non published
- **Italy NODC**: We follow the principle of distributed system in line with SeaDataNet/EMODnet,
- **Israel NODC**: Most of the Israel oceanographic data are collected by IOLR.
- **Australia ADU OBIS**: ANDS (http://www.ands.org.au) for national policies.
- **Georgia ADU**: There is not yet the documented DM strategy on a country level. At a moment ADU of TSU has the corresponding strategy.
- **Barbados ADU**: A data management strategy and quality management system are desired, but the ability to implement them is limited due to ongoing time commitments and human resource challenges
- **Colombia NODC**: Until 2017 the NODC is an investment project of DIMAR including archeology and rescue of oceanographic data and marine information since 1969. We are generating inputs to create the data management strategy.
- **Tanzania NODC**: There is no national strategy but we follow IODE/IOC guidelines.
- **Ecuador NODC**: We began few weeks ago implementing a document management system, buy we did not define a formal strategy.
- **Sweden ADU**: We are establishing a QMS. We have an ISO 15025:2005accredited laboratory from sampling to reporting data.
- **Iran NODC**: There isn't appropriate coordination between maritime organizations.
- **Ukraine NODC (planned)**: Document which will determine data management strategy in the National Academy of Sciences of Ukraine exchange is under development. It is expected to finish it this year.
• Slovenia NODC: I am not aware of any particular strategy existing on a national level.

**Question 7**

Has your country applied (in 2015 and/or 2016) the IOC Oceanographic Data Exchange Policy adopted as Resolution IOC-XXII-6 in 2003? (see http://www.iode.org/policy)

<table>
<thead>
<tr>
<th>Answer Choices</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>50.03%</td>
</tr>
<tr>
<td>No</td>
<td>25.70%</td>
</tr>
<tr>
<td>I don't know</td>
<td>21.21%</td>
</tr>
<tr>
<td>Total</td>
<td>66</td>
</tr>
</tbody>
</table>

Additional comments:

• Seychelles NODC: We hold some sensitive fishery Data so different data policy apply. Oceanographic data is ok and can be distributed easily.

• Colombia NODC: But we developed an institutional policy that includes policy recommendations of IOC-2003 and open data law of the National Ministry of Information Technology. We plan to have a new policy in 2017.

• Iran NODC: This center try to apply IOC policy but other national marine organizations should be trained.

**Question 8**

Does your data centre have its own data policy

<table>
<thead>
<tr>
<th>Answer Choices</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>62.01%</td>
</tr>
<tr>
<td>No</td>
<td>36.02%</td>
</tr>
<tr>
<td>Total</td>
<td>63</td>
</tr>
</tbody>
</table>
Additional comments:

- **USA NODC**: [https://www.nodc.noaa.gov/about/datapolicy.html](https://www.nodc.noaa.gov/about/datapolicy.html)
- **Brazil NODC**: Our data policy is based on the resolution IOC-XXXII-6 and will be available online soon
- **Portugal (other)**: This is the response by IH and EMEPC. IH has provided an URL: [http://www.hidrografico.pt/politica-dados.php](http://www.hidrografico.pt/politica-dados.php)
- **UK NODC**: Data Policy is at the NERC (i.e. parent body) level: [http://www.nerc.ac.uk/research/sites/data/policy/](http://www.nerc.ac.uk/research/sites/data/policy/)
- **Russian Federation NODC**: RNODC uses data policies established by the Russian Federation laws and regulations adopted in ESIMO, also IOC data policies
- **Finland (other)**: [https://en.ilmatieteenlaitos.fi/open-data](https://en.ilmatieteenlaitos.fi/open-data)
- **France (NODC)**: non published
- **Norway NODC**: IMR has a data policy and NMD is hosting IMR data. NMDC is working on establishing data policy documents for all 16 partners
- **Germany NODC**: [http://www.bsh.de/de/Meeresdaten/Beobachtungen/DOD-Datenzentrum/Forschung_u._Produkte/Nutzungsbedingungen.jsp](http://www.bsh.de/de/Meeresdaten/Beobachtungen/DOD-Datenzentrum/Forschung_u._Produkte/Nutzungsbedingungen.jsp)
- **Italy NODC**: We follow SeaDataNet Data Policy
- **Belgium (Flanders)**: [http://www.vliz.be/nl/databeleid](http://www.vliz.be/nl/databeleid)
- **Australia ADU OBIS**: To be signed before the end of 2016
- **Australia ADU CSIRO**: We have one but not sure where it is.
- **Georgia ADU**: [www.oceandna.ge](http://www.oceandna.ge)
- **Tanzania NODC**: The Data Centre follows IOC policy
- **Iceland (other)**: [http://abds.is/index.php/about-abds/data-policy](http://abds.is/index.php/about-abds/data-policy)
- **The Netherlands**: The National data policy is fully in line with the IOC Data Policy and the SeaDataNet Data Policy
- **Slovenia NODC**: Some data are restricted for a short period of time in order to publish the results, afterwards the data are unrestricted.


### Question 9

**Does your organization have a documented Quality Management System (QMS)?**

<table>
<thead>
<tr>
<th>Answer Choices</th>
<th>Responders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>40.11%</td>
</tr>
<tr>
<td>No</td>
<td>57.14%</td>
</tr>
<tr>
<td>I don't know</td>
<td>1.54%</td>
</tr>
</tbody>
</table>

**Answered: 66, Skipped: 0**

Additional comments:

- **USA NODC (NCEI)**: NCEI follows the Open Archival Information System (OAIS) model and implements ISO 19115-2 metadata and netCDF, OAI-PMH.

- **Belgium (Federal)**: The Belgian Marine Data Centre has its own Quality Management Framework, based on the ISO 9001 methodology. The BMDC is accredited by IODE since the IODE-XXIII session.

- **Finland (other)**: ISO 9001:2008

- **France NODC**: As part of the 4 year contract between Ifremer and the French Ministry for Research

- **Norway NODC**: IMR has a QMS. NMD is working on establishing this for data management.

- **Ireland NODC**: Yes for certain scientific processes but not yet for general oceanographic data management.

- **Germany NODC**: EN ISO 9001:2008.

- **India NODC**: INCOIS has obtained ISO for three services viz., Potential Fishing Zone Advisories, Ocean State Forecast and Tsunami Early Warning Centre. We have initiated process for preparation of documentation for ISO Certification for Data Services in which QMS will be part.

- **Belgium (Flanders)**: System inplace and approved by WDS

- **China NODC**: Since 2002, as the NODC of China, NMDIS has been operating with the authentication of ISO9000 Quality Management System. Qualification inspection is carried
out by professional agency for each year. The qualification authentication and validation is rechecked every five years. CNODC has developed the quality manual, procedure documents, management documents and work instructions for data processing, quality control as well as product development. Quality manual defines the scope of quality management system (QMS), and describes the interaction between the processes of the QMS. Procedure documents strictly define the control procedures of management review, human resources, infrastructure, product realization, etc. Work instructions provide the working content and required records for each operational department.

- **Chile NODC**: SHOA have a ISO certification for generation process of the nautical chart.
- **Colombia NODC**: But we are in this process. Between 2005 and 2006 we have documented most procedures, forms and manuals.
- **Tanzania NODC**: Due to the multi-disciplinary nature of the Institute each scientist applies quality management systems in his area of specialization.
- **Ecuador NODC**: As an institution we have a QMS but not cover the NODC yet, we are working on that.
- **Sweden ADU**: We have an ISO 15025:2005 accredited laboratory from sampling to reporting data.
- **Iran NODC**: Our institute financial conditions was not provided to implement QMS. We will try to apply QMS process in the next session period.
- **Kenya NODC**: KMFRI has an ISO certification, and in addition the data center has made a QMF manual.
- **USA ADU BCO-DMO**: internal document at the moment

**Question 10**

**Does your organization hold ISO 9001 certification?**

Answered: 63  Skipped: 3

<table>
<thead>
<tr>
<th>Answer</th>
<th>Responses</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>22.23%</td>
<td>14</td>
</tr>
<tr>
<td>No</td>
<td>66.67%</td>
<td>44</td>
</tr>
<tr>
<td>I don't know</td>
<td>7.91%</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
<td><strong>63</strong></td>
</tr>
</tbody>
</table>

**Yes**

- **I don't know**
**Question 11**

If you are an NODC: do you plan to implement the IODE QMF accreditation process during the next inter-sessional period (2017-2018)?

<table>
<thead>
<tr>
<th>Answer Choice</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>88.09%</td>
</tr>
<tr>
<td>No</td>
<td>11.91%</td>
</tr>
<tr>
<td>We have done it already</td>
<td>0.00%</td>
</tr>
<tr>
<td>I do not know</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

Total: 56

**Question 12**

What type and how many staff (FTE - Full Time Equivalent) were working at your data centre in 2015/2016 (averaged): [use integers, no decimals]

<table>
<thead>
<tr>
<th>Staff Type</th>
<th>Average Number</th>
<th>Total Number</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management</td>
<td>3</td>
<td>157</td>
<td>58</td>
</tr>
<tr>
<td>Scientific</td>
<td>5</td>
<td>427</td>
<td>55</td>
</tr>
<tr>
<td>Technical</td>
<td>5</td>
<td>239</td>
<td>55</td>
</tr>
<tr>
<td>IT support</td>
<td>2</td>
<td>110</td>
<td>47</td>
</tr>
<tr>
<td>Administrative</td>
<td>2</td>
<td>68</td>
<td>33</td>
</tr>
<tr>
<td>Temporary support</td>
<td>1</td>
<td>24</td>
<td>25</td>
</tr>
<tr>
<td>Students and interns</td>
<td>3</td>
<td>103</td>
<td>31</td>
</tr>
<tr>
<td>Volunteers</td>
<td>0</td>
<td>8</td>
<td>16</td>
</tr>
</tbody>
</table>

Total Respondents: 63
Question 13

How has this number changed year by year since 2013-2014:

<table>
<thead>
<tr>
<th>Answer Choices</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remained the same</td>
<td>47.72%</td>
</tr>
<tr>
<td>Increased</td>
<td>30.16%</td>
</tr>
<tr>
<td>Decreased</td>
<td>19.05%</td>
</tr>
<tr>
<td>I don't know</td>
<td>3.11%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>

Question 14

What is the annual operational budget for your data centre (excluding staff cost) [converted into US Dollars]:

Answer Choices

<table>
<thead>
<tr>
<th>Less than US$ 1,000</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.17%</td>
<td>2</td>
</tr>
<tr>
<td>between US$ 1,000 and US$ 10,000</td>
<td>19.69%</td>
</tr>
<tr>
<td>between US$ 10,001 and US$ 50,000</td>
<td>28.57%</td>
</tr>
<tr>
<td>between US$ 50,001 and US$ 100,000</td>
<td>6.15%</td>
</tr>
<tr>
<td>between US$ 100,001 and US$ 500,000</td>
<td>14.39%</td>
</tr>
<tr>
<td>between US$ 500,001 and US$ 1,000,000</td>
<td>4.76%</td>
</tr>
<tr>
<td>between US$ 1,000,001 and US$ 5,000,000</td>
<td>4.76%</td>
</tr>
<tr>
<td>more than US$ 5,000,000</td>
<td>1.50%</td>
</tr>
<tr>
<td>I don't know</td>
<td>17.48%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>
SECTION B: DATA CENTRE ACTIVITIES

Question 16

Global IODE activities in which your data centre participated in 2015 and/or 2016 (data management): (choose one per row)
Question 17

List the most important data activities/projects in which your centre is involved. (add URL if available)

**BRAZIL NODC**: The Navy Hidrographic Center, hosting the BNDO (Brazilian NODC), is involved with the following projects: GOOS, GLOSS…  
http://www.mar.mil.br/dhn/chm/meteo/prev/dados/dados.htm

**TOGO NODC**: No involvement in any data activities/projects

**COLOMBIA ADU Parques**: 1. RUNAP:  
http://runap2.parquesnacionales.gov.co / 2. SULA:  
http://sula.parquesnacionales.gov.co /

**PORTUGAL (OTHER)**: CCMAR has provided the following URL:  
IH has provided the following URL:  
www.seadatanet.org  www.emodnet.eu

**UNITED KINGDOM NODC**: List of projects at:  
http://www.bodc.ac.uk/projects/data_management/  
and UK partners at:  
http://www.bodc.ac.uk/partners/introduction/ /  
Key projects: Argo (http://www.ukargo.net/) International GEOTRACES Data Assembly Centre (http://www.bodc.ac.uk/geotrices/) GECO (www.gebco.net) Shelf Seas Biogeochemistry (www.uk-ssb.org/data/) SeaDataNet/SeaDataCloud (www.seadatanet.org) Liaison with UK Marine Research Centres (http://www.bodc.ac.uk/partners/introduction/) MEDIN (www.oceannet.org)

**CAMEROON NODC**: We are now involve in the monitoring of marine pollution along the coastline of cameroon with the technical collaboration of the International Atomic Energy Agency (IAEA)

**ESTONIA NODC**: Copernicus marine service (for the Baltic)

**RUSSIAN FEDERATION NODC**: - Unified state system of information for world ocean -  
http://portal.esimo.ru/portal/  - WMO Information System (GISC-Moscow developers and 4 GE/TT member) -  
http://portal.gisc-msk.wis.mecom.ru/portal  - Integrated information-telecomm system of Roshydromet, Data compilation and processing center as URL example -  
http://portal.gosfond.dcpp.meteo.ru/  - SAON activities (Arctic Counsell) - EC programme projects: ODIP-II, EMODNET, SDNCloud, INTAROS

**BELGIUM NODC (Federal)**: SeaDataNet:  
http://www.seadatanet.org /  EMODnet:  
http://emodnet.eu/  
4DEMON:  
http://www.4demont.be/

**Finland (other)**: ICES HELCOM SeaDataNet EMODnet (physics and chemistry) BOOS Euro-Argo

**France NODC**: http://www.ifremer.fr/sismer  

**Norway NODC**: Norwegian Marine Data Centre  
http://www.nmdc.no  SeaDataNet/SeaDataCloud  
http://www.seadatanet.org  ICES  
http://www.ices.dk  EMODNET Biology/Chemistry/Physics/Data

**Ireland NODC**: There are a wide range of activities, see  

**Germany NODC**: Data archiving Regular data submissions to ICES and WDC Working on data requests Projects: SeaDataNet EMODNET Eurofleets Copernicus
CROATIA NODC: Data management in the framework of projects: - MSFD National monitoring program - National indicators on marine, fisheries and aquaculture - Water quality at the Croatian beaches - EMODNET Chemistry - EUROFLEETS - Seadatanet2/SeaDataCloud - EMDNAET Data Ingestion ....


NIGERIA NODC: Coastal Marine Atlas

INDIA NODC: Data Management including data reception in real-time both from in-situ and remote sensing, processing, quality control, dissemination and web-based data services http://www.incois.gov.in/portal/datainfo/datainfohome.jsp

TUNISIA NODC: FP7 INCOMMET project: www.incommet.org FP7 Seadatanet: www.seadatanet.org

BELGIUM NODC (Flanders): Main activities are Lifewatch, EurOBIS, EMODNET, Seadatanet. For a complete list see: http://www.vliz.be/nl/projecten


NEW ZEALAND (other): Activity is ongoing with data sharing through the OBIS, WOD, GTSSP (Argo) and AODN networks


ARGENTINA NODC: Implementation of ODP at local level

AUSTRALIA ADU: Publication of data from the Marine National facility voyages (http://www.mnf.csiro.au/) via inhouse data portal called the Data Trawler (http://www.cmar.csiro.au/data/trawler/). The data is published to AODN via OGC web services and to OBIS/ALABIF via the OBISAU IPT (http://ogc-act.csiro.au/IPT/).Several staff participate on MNF voyages, managing IT services and the acquisition of adcp, ctd, underway and multibeam data. The ongoing management of the local taxonomic database called CAAB (http://www.cmar.csiro.au/data/caab/) with links to WoRMS.


http://ioos.github.io/animal-telemetry/acoustic_tags_standard  OBIS (tier III node)
http://www.iobis.org/explore/#/institute/13471  Whale Habitat and Listening Experiment (WHaLE)
http://whalelab.geog.uvic.ca/wahe  MEOPAR Ocean Data Management Expert Forum
(http://meopar.ca/partnering/workshop/856/)  Community of Practice, National Data Management
Policy and Canadian Integrated Ocean Observing System
https://dalspace.library.dal.ca/bitstream/handle/10222/72192/ODM_whitepaper.pdf?sequence=1
Ocean Frontier Institute https://www.dal.ca/research/centres_and_institutes/ofi/ocean-research-infrastructure.html  MERIDIAN (Marine Environment Research Infrastructure for Data Integration and Application Network) a CFI Cyber Infrastructure funded project.
https://www.computecanada.ca/research-portal/grant-support/cfi-cyberinfrastructure-initiative/

COLOMBIA ADU Invemar: We are Regional Training Centre for Latin America RTC-OTGA We participated in ICAN meetings (2013-2015) We coordinate Caribbean Marine Atlas CMA2 project We participated in SPINCAM project We are National cooridunator of Marine Information Management MIM

CHILE NODC: Nationally, CENDHOC is involved of Cimar Project. This Project develops oceanographic research cruises, in remote areas of the country.


BARBADOS ADU: The Coastal Risk Assessment and Management Program  

COLOMBIA NODC: ENSO Oceanographic Cruises (CPPS) IOC Sea Level Station Monitoring Facility GRASP of IOG-GOOS

TANZANIA NODC: 1) African Coastal and Marine Atlas 2) ODINAFRICA 3) Data Management 4)

PHILIPPINES ADU ASEAN: OBIS

ICELAND (other): The CAFF secretariat is the biodiversity working group of the Arctic Council. We maintain a geo-network, Geo-server and an IPT that communicates with both OBIS and GBIF. IPT: http://geo.abds.is/ipt/ We also publish data under our geo-network, often times more processed data http://geo.abds.is/geonetwork/srv/eng/catalog.search#/home

BULGARIA NODC: SEADATANET EMODNET CHEMISTRY BLACK SEA CHECKPOINT


ECUADOR NODC: We proposed a new Data Center Infrastructure project because our current physical infrastructure is not adequate. This project cover physical and technical infrastructure to begin growing for the next decade. We proposed a new program called SOME (Equatorial Sea Observation System in spanish) wch defined a system architecture based on TOGAF and DODAF. This will define a system of systems: SA (Sensing and Acquisition), DM (Data Management), MP (Mission Planning and Execution), AM (Analysis and Modeling), and, Visualization, Discovering implementing a MSDI.

JAPAN ADU jamstec: Archiving biogeological observation data for OBIS
CYPRUS NODC: SeaDataNet2 EMODNET Chemistry II

SWEDEN ADU: Copernicus SeaDataCloud EMODnet JERICO Next

NETHERLANDS NODC: - Archiving and managing data from national research cruise program - SeaDataNet - EMODnet - Managing the data from the national Sea and Coastal Research Program (ZKO) - Data management for the National Polar Programme (NPP)

SENEGAL NODC: - National and sub regional cruise campaigns (hydrology & fish stock biomass evaluation, etc) - Regional training center (RTC) - Climate change thru coastline survey and impacts on human activities

IRAN NODC: 1- Developing of oceanographic metadata management system 2- Data standardization of existing data in the INCOD 3- Quality control of existing data in the INCOD 4- Management of Argo floats parameters in the Indian ocean

COTE D'IVOIRE NODC: Océan Data Portal OceanDocs Ocean Teacher


MEXICO NODC: CMA2 PROJECT caribbeanmarineatlas.net CIIMARGOMC http://climargomc.org / Consortium of Universities and Research Centers of the Gulf of Mexico

USA ADU OBIS: We are the US node for OBIS so our most important activity/project is OBIS.

Ocean heat content: http://www.nodc.noaa.gov/OC5/3M_HEAT_CONTENT/
Regional climatologies: http://www.nodc.noaa.gov/OC5/regional_climatologies/
Global 4 km AVHRR Pathfinder Project: http://www.nodc.noaa.gov/SatelliteData/pathfinder4km/

SLOVENIA NODC: The staff is involved in Emodnet Chemistry project, EU Data ingestion project and EU Seadatascoud project

USA ADU bco-dmo: management of US NSF OCE and PLR funded research data (http://bco-dmo.org/data ); Research Data Alliance (http://rd-alliance.org ); Earth Science Information partners (http://esipfed.org ); Ocean Data Interoperability Platform II (http://odip.org ); GeoLink (http://geolink.org )
SECTION C: DATA RECEIVED BY YOUR DATA CENTRE

Question 18

For measurements from vessels (research, ships of opportunity, etc) for which data types do you manage data:

Answered: 61  Skipped: 5

Question 19

For measurements from fixed stations/platforms for which data types do you manage data:

Answered: 62  Skipped: 14
Question 20

For measurements from moving platforms for which data types do you manage data:

Responses:

- **Togo NODC**: we got two platforms (wharf and port) but our equipments (SST) were out of use
- **Portugal NODC**: HF Radar, ADCP, Multibeam, ROV
- **France NODC**: Gliders, AUVs
- **Germany NODC**: Offshore Wind-farms
- **Italy NODC**: Gliders
- **India NODC**: UCTD, Gliders, AWS onboard Ships
- **Tunisia NODC**: Ferrybox
- **Canada ADU OTN**: Passive Acoustic Monitoring (e.g. whale calls & ocean noise) using hydrophones (Geospectrum, DMON, Ocean Sonics)
- **Barbados ADU**: HOBO temperature gauges
- **Kenya NODC**: Hydro-acoustics using EK60 echosounder
- **USA ADU bco-dmo**: Manned submersible Alvin
Question 22

Did you handle (incoming) (tick one or more):

- Data of mode data
- Real-time data

<table>
<thead>
<tr>
<th>Answer Choices</th>
<th>Responses</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>delayed-mode data</td>
<td>60</td>
<td>93.91%</td>
</tr>
<tr>
<td>real-time data</td>
<td>38</td>
<td>6.09%</td>
</tr>
<tr>
<td>Total Respondents</td>
<td>66</td>
<td>100%</td>
</tr>
</tbody>
</table>

Question 23

Did your data centre have links with, and/or manage data from major science programmes (e.g., CLIVAR, IMBER, Argo, Future Earth, SOLAS, etc) in 2015 and/or 2016?

- Yes
- No

<table>
<thead>
<tr>
<th>Answer Choices</th>
<th>Responses</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>delayed-mode data</td>
<td>60</td>
<td>93.91%</td>
</tr>
<tr>
<td>real-time data</td>
<td>38</td>
<td>6.09%</td>
</tr>
<tr>
<td>Total Respondents</td>
<td>66</td>
<td>100%</td>
</tr>
</tbody>
</table>

Additional information:

- **Portugal NODC**: This YES is given by CCMAR and specifies: IODP, PANGEA, NOAA Paleoclimate WOA

- **UK NODC**: Argo, GEOTRACES, GLOSS, GEBCO...

- **Finland (other)**: Argo

- **France NODC**: ARGO, COPERNICUS, CLIVAR, GOOS
- **Norway NODC**: IMBER/Argo
- **Germany NODC**: Argo
- **Italy NODC**: EuroArgo, LTER
- **India NODC**: Argo, SIBER, Geotraces, OBIS, IIOE-2 etc.
- **Belgium NODC (Flanders)**: European projects: Atlantos, Jerico Next, EMODNET, Lifewatch
- **China NODC**: Argo, GTSP, GOOS, GLOSS, MCDS
- **New Zealand (other)**: Co-fund and deploy Argo floats around the southern Pacific and Indian Oceans
- **Canada ADU (OTN)**: Link with AtlantOS via EAATN
- **Chile NODC**: Argo PSMSL Sea level station monitoring facility
- **Canada NODC**: Argo, CLIVAR
- **Tanzania NODC**: Coral Reef Targeted Research project database
- **Iceland (other, CAFF)**: Arctic Biodiversity Assessment, Circumpolar Biodiversity Monitoring Programme, GBIF, GEO, GEOBON, Arctic Spatial Data Infrastructure, Sustained Arctic Observation Networks,
- **Bulgaria NODC**: Argo
- **Cyprus NODC**: SeaDataNet II EMODNET Chemistry II
- **Netherlands NODC**: GEOTRACES OceanSITES
- **Senegal NODC**: CLIVAR ARGO
- **Turkey NODC**: Argo
- **USA NODC (NCEI)**: GTSP
- **USA ADU bco-dmo**: IMBER
Question 24

Do you manage GOOS Essential Ocean Variables (EOV)? Please tick one or more EOVs of which data are managed by your data centre during 2015-2016. Note that more info (including specifications) can be found on the web page http://www.gooscean.org/eov

Answer Choices
- PHYSICS: Sea state
  - PHYSICS: Ocean surface vector stress
    - PHYSICS: Sea ice
      - PHYSICS: Sea ice height
        - PHYSICS: Sea surface temperature
          - PHYSICS: Subsurface temperature
            - PHYSICS: Surface currents
              - PHYSICS: Subsurface salinity
                - PHYSICS: Heat transfer
                  - BIODECHEMISTRY: Dissolved oxygen
                    - BIODECHEMISTRY: Inorganic nutrient elements
                      - BIODECHEMISTRY: Carbon cycle
                        - BIODECHEMISTRY: Dissolved organic carbon
                          - BIOLOGY AND ECOSYSTEMS: Phytoplankton biomass and productivity
                            - BIOLOGY AND ECOSYSTEMS: Harmful Algal Blooms (HAB) incidence
                              - BIOLOGY AND ECOSYSTEMS: Zooplankton diversity
                                - BIOLOGY AND ECOSYSTEMS: Fish abundance and distribution
                                  - BIOLOGY AND ECOSYSTEMS: Apex predator abundance and distribution
                                    - BIOLOGY AND ECOSYSTEMS: Live coral cover
                                      - BIOLOGY AND ECOSYSTEMS: Sea grass cover
                                        - BIOLOGY AND ECOSYSTEMS: Mangrove cover
                                          - BIOLOGY AND ECOSYSTEMS: Married past canopy cover
                                            Total Respondents: 47
SECTION D: DATA MANAGEMENT PROCEDURES

Question 25

Did you maintain a discovery metadatabase for the data received by your data centre in 2015 and/or 2016:

Answered: 66  Skipped: 6

<table>
<thead>
<tr>
<th>Answer Choices</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>77.27%</td>
</tr>
<tr>
<td>No</td>
<td>21.51%</td>
</tr>
<tr>
<td>I don't know</td>
<td>1.22%</td>
</tr>
<tr>
<td>Total</td>
<td>66</td>
</tr>
</tbody>
</table>

Question 26

If you answered yes to the previous question, then is the database openly available online:

Answered: 52  Skipped: 14

<table>
<thead>
<tr>
<th>Answer Choices</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>43.46%</td>
</tr>
<tr>
<td>No</td>
<td>32.08%</td>
</tr>
<tr>
<td>I don't know</td>
<td>3.08%</td>
</tr>
<tr>
<td>Total</td>
<td>52</td>
</tr>
</tbody>
</table>

Additional information:
Note: only responses including URL to metadata bases are included.

- UK NODC: NERC level: [http://data-search.nerc.ac.uk/](http://data-search.nerc.ac.uk/)
• Russian Federation NODC: http://portal.esimo.ru/portal/portal/esimo-user/data - and in Search Menu select RIHMI-WDC as Data Source

• France NODC: http://data.ifremer.fr

• Norway NODC: www.nmdc.no

• Ireland NODC: www.isde.ie

• Germany NODC: http://www.bsh.de/en/Marine_data/Observations/DOD_Data_Centre/index.jsp

• Croatia NODC: www.izor.hr/medas


• Italy NODC: http://nodc.ogs.trieste.it/nodc/

• Israel NODC: http://isramar.ocean.org.il/isramar2009/

• Belgium NODC (Flanders): http://www.vliz.be/en/search-datasets

• New Zealand (other): http://dc.niwa.co.nz

• Australia ADU: www.marlin.csiro.au

• Canada ADU (orn): http://members.oceantrack.org/

• Colombia ADU (invemar): http://siam.invemar.org.co/

• Colombia NODC: https://cecoldo.dimar.mil.co/geonetwork/

• Iceland (other CAFF): http://geo.abds.is/geonetwork/srv/eng/catalog.search#/home

• Greece NODC: http://hnodc.hcmr.gr/services/

• Netherlands NODC: www.nioz.nl/dmg

• Iran NODC: http://incod.inio.ac.ir

• USA NODC (NCEI): http://data.nodc.noaa.gov/geoportal/catalog/search/search.page

• USA ADU (bco-dmo): data access: http://bco-dmo.org/data and Linked Data: http://www.bco-dmo.org/linked-open-data

**Question 27**

What kind of quality control procedures (if any) are used in your institution? (add bibliographic references, if possible):

• Togo NODC: we need to learn about quality control procedures. can you help on this matter

• Portugal NODC: IH provided na URL: http://www.eurogoos.eu/download/publications/rtqc.pdf

• UK NODC: QC procedures are documented but not online yet. Generally in line with SeaDataNet (www.seadatanean.org), EuroGOOS (http://eurogoos.eu/data-management-
exchange-quality-working-group-data-meg/ ) and IOC/IODE procedures. Also involved in AtlantOS WP7 which includes QC (https://www.atlantos-h2020.eu/structure/wp7/task-7-1/ )

- **Cameroon NODC**: None
- **ESTONIA NODC**: According to EVS-EN ISO standards; for autonomous (real-time) data Copernicus marine service QA/QC procedures
- **Russian Federation NODC**: RNODC uses: - for ocean T/S data - the modified GTSPPP QC procedure as basic QC manual - for coastal hydrometeo data - national QC manual based on local min/max control procedure - for chemical data - min/max control
- **Belgium NODC (Federal)**: Besides classical range tests and the like, mainly expert judgement.
- **Finland (other)**: Automatic and manual quality control procedures following IODE guidelines and partially own procedures.
- **France NODC**: Mainly rely on international standards
- **Norway NODC**: Inhouse QC manuals
- **Ireland NODC**: Various depending on the scientific process
- **Brazil NODC**: The Navy Hidrographic Center, hosting the BNDO (Brazilian NODC), use GTSPPP for QC temperature and salinity data.
- **Germany NODC**: Own programmes
- **Croatia NODC**: IODE, Seadatanet PERSEUS procedures
- **Malaysia NODC**: Malaysia Information Security management System Standard (ISMS)
- **Italy NODC**: SeaDataNet QC Manual http://www.seadatanet.org/Standards-Software/Data-Quality-Control
- **Israel NODC**: http://www.seadatanet.org/Standards-Software/Data-Quality-Control
- **India NODC**: Pl see the URL http://www.incois.gov.in/portal/datainfo/qcmanuals.jsp
- **Tunisia NODC**: QC control procedures adopted in seadatanet
- **Spain NODC**: Delayed mode protocols specified by MEDAR/MEDATLAS european projects. Updated by Seadatanet/Seadatanet-II projects (online information on www.seadatanet.org)
- **Argentina NODC**: Internal QC procedures
- **Australia ADU (obis)**: As mentioned before, the specific data we receive are QCed by those groups. We do ask for data reports and check that locations and times of observations are valid and consistent with the voyage.
- **Georgia ADU**: Below is the summary of quality control procedures routinely employed within the Georgian institutions, that ADU TSU serves as a collator centre: • Development and
implementation of quality assurance procedures in accordance with requirements of ISO 17025; • Internal audit and quality control; • Personal training; • Use of certified analytical standards for instrument calibration; • Use of high quality glassware, acids and other reagents and equipment; • Routine internal and external calibration of laboratory equipment; • Routine performance tests including complete procedural blank analyses and spikes; • Use of certified reference material and performance of quality control chart; • Use of replicate samples; • Use of standard methods; • Development of Standard Operation Procedures for sampling, pre-treatment, field and laboratory analysis; • Regular participation in international and local Proficiency Testing and Intercalibration works.

- **Canada ADU (otn):** Limited cleaning on spatial/temporal metadata submissions. Logical (marine animal) speed checks per Mihoff/White on detection output.

- **Colombia ADU (invemar):** We have our own protocols for data quality filter (outlier data) on oceanographic data (automatic stations).

- **Chile NODC:** Basic quality control, compare with hystorical data.


- **Barbados ADU:** None

- **Colombia NODC:** Primary Level of quality flag scheme proposed by IOC-Unesco, 2013 (IOC Manuals and Guides, 54, Vol. 3.)

- **Tanzania NODC:** Varies depending on area of specialization

- **Iceland (other CAFF):** Information is subject to peer review prior to release and appropriate standards applied

- **Greece NODC:** HNODC performs quality checks on e data and metadata for vertical profiles and time series of physical, chemical, biological data according to: 1) UNESCO/IOC/IODE and MAST, 1993, Manual and Guides 26, 2) Data Type guidelines - ICES Working Group of Marine Data Management 3) SeaDataNet guidelines 4) NOAA/NCEI (former NODC) guidelines 5) "Medar-Medatlas protocol: Exchange format and quality checks for observed profiles", 2000

- **DR Congo (other):** You have not quality control procedures

- **Cyprus NODC:** SeaDataNet, Upgrade Black Sea Scene, EMODNET Chemistry II

- **Sweden ADU:** Performancy tests QUASIMEME. Interkalibrations onboard R/V. HELCOM & ICES guidelines. OVD - Visual Control plots. In house procedures. Described in the Copernicus Marine Service (MyOcean) publication: Quality information document for near real time in situ products and recommended by EuroGOOS

- **Senegal NODC:** Ewoce; ODV quality control

- **Iran NODC:** We decide to implement the GTSP procedures automatically to quality control the data. The IODE, GTSP, Seadatanet and ICES documents are considered to our metadata management information system to inform users.

- **Cote d'Ivoire NODC:** This response is reserved for the professional group of the documentation, but the ideal would be that a common standard is adopted so that everyone complies with it, not that each data center has a technique of their own personal management working environment. It is time that one single document management software is
recommended to all of us and one code for all data management centers to identify the literature, all must have the same way of identifying periodicals, publications, theses ... this is my contribution to the dyamique

- **Turkey NODC**: SeaDataNet WODB IOC IHO Procedures are being applied
- **USA ADU obis**: We conduct quality control procedures based on taxonomy and geolocation.
- **USA NODC (NCEI)**: Objective and subjective analysis: [http://www.nodc.noaa.gov/OC5/WOD/docwod.html](http://www.nodc.noaa.gov/OC5/WOD/docwod.html)
- **USA ADU (bco-dmo)**: visual inspection of data and metadata; min-max range and valid values checks by scripts

**SECTION E: USER SERVICES**

**Question 28**

What spectrum of services (e.g. data and products) were started/continued/ended by your centre in 2015 and/or 2016? (choose one per row)

<table>
<thead>
<tr>
<th>Service Details</th>
<th>Started in 2015 or 2016</th>
<th>Continued in 2015 and 2016</th>
<th>Stopped in 2015 or 2016</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality control test</td>
<td>12.77%</td>
<td>87.23%</td>
<td>0%</td>
<td>47</td>
</tr>
<tr>
<td>Access to real-time data</td>
<td>6.48%</td>
<td>93.52%</td>
<td>0%</td>
<td>31</td>
</tr>
<tr>
<td>Maps</td>
<td>11.11%</td>
<td>88.89%</td>
<td>0%</td>
<td>45</td>
</tr>
<tr>
<td>GIS layers</td>
<td>13.05%</td>
<td>86.95%</td>
<td>0%</td>
<td>43</td>
</tr>
<tr>
<td>Statistics</td>
<td>13.22%</td>
<td>86.78%</td>
<td>0%</td>
<td>37</td>
</tr>
<tr>
<td>Data services</td>
<td>6.97%</td>
<td>93.03%</td>
<td>0%</td>
<td>24</td>
</tr>
<tr>
<td>Numerical modeling outputs</td>
<td>3.79%</td>
<td>96.21%</td>
<td>0%</td>
<td>27</td>
</tr>
</tbody>
</table>

**Question 29**

We are listing only the responses that include a URL. Other responses can be consulted online.

**Colombia ADU (parques):**
- [http://mapas.parquesnacionales.gov.co/](http://mapas.parquesnacionales.gov.co/)
- [http://sula.parquesnacionales.gov.co/](http://sula.parquesnacionales.gov.co/)
- [http://runap2.parquesnacionales.gov.co/](http://runap2.parquesnacionales.gov.co/)

**Russian Federation NODC:**
- More 1800 information resource (type - data) are available online from ESIMO Portal: [http://portal.esimo.ru/portal/portal/esimo-user/data](http://portal.esimo.ru/portal/portal/esimo-user/data) (pls select Data in horizontal menu, and use Search Menu to select "Search on DataSource" and RIHMI-WDC in "Data sources" list
• More 600 resource (type - services) are available on-line from ESIMO Portal: [http://portal.esimo.ru/portal/portal/esimo-user/data](http://portal.esimo.ru/portal/portal/esimo-user/data) (please use Services in Horizontal Menu and Service type from vertical menuon DataSource* and RIHMI-WDC in “Data sources” list

**Estonia NODC:**

**Finland ADU:**
- Ice service [http://en.imlatieelahtos.fi/ice-conditions](http://en.imlatieelahtos.fi/ice-conditions)
- Surface waves (data and forecasts) [http://en.imlatieelahtos.fi/wave-height](http://en.imlatieelahtos.fi/wave-height)

**France NODC:**
- [http://www.data.ifremer.fr](http://www.data.ifremer.fr)
- [http://www.coriolis.eu.net](http://www.coriolis.eu.net)
- In situ activities for Copernicus [http://marine.copernicus.eu](http://marine.copernicus.eu/)
- [http://www.seadatanet.org](http://www.seadatanet.org)
- [http://www.seanoe.org](http://www.seanoe.org/)
- [http://www.sextant.ifremer.fr](http://www.sextant.ifremer.fr)
- [https://www.catds.fr](https://www.catds.fr)
- [http://quadrige.eaufrance.fr/](http://quadrige.eaufrance.fr/)
- [http://www.odatis-ocean.fr/Le-Pole-Odatis](http://www.odatis-ocean.fr/Le-Pole-Odatis)
- [http://campagnes.flotteoceanographique.fr/](http://campagnes.flotteoceanographique.fr/)

**Norway NODC**
- Data catalogue portal NMDC [http://prod1.nmdc.no/UserInterface/#](http://prod1.nmdc.no/UserInterface/#)
- Mareano map portal [http://mareano.no/kart/mareano.html](http://mareano.no/kart/mareano.html)
- IMR geoportal [http://www.imr.no/geodata/geodataH1.html](http://www.imr.no/geodata/geodataH1.html)
- IMR research data [http://www.imr.no/forskning/forskningsdata/nb-no](http://www.imr.no/forskning/forskningsdata/nb-no)
- Salmon sea lice infection pressure [http://www.imr.no/forskningsdata/smitepress_lakselus/](http://www.imr.no/forskningsdata/smitepress_lakselus/)
- Coastal current statistics [http://www.imr.no/forskningsdata/stromkatalogen/stromkatalogen/nb-no](http://www.imr.no/forskningsdata/stromkatalogen/stromkatalogen/nb-no)
- ArcticROOS data portal [http://webprod1.nodc.no/arctic-roos/arctic-roos.html](http://webprod1.nodc.no/arctic-roos/arctic-roos.html)
- NorArgo [http://webprod1.nodc.no/NorArgo/map](http://webprod1.nodc.no/NorArgo/map)

**Ireland NODC**
- [http://atlas.marine.ie/](http://atlas.marine.ie/)
- [http://smartbay.marine.ie](http://smartbay.marine.ie)
- [www.digitalocean.ie](http://www.digitalocean.ie)

**Brazil NODC**
- [http://www.mar.mil.br/dhn/chm/meteo/prev/dados/dados.htm](http://www.mar.mil.br/dhn/chm/meteo/prev/dados/dados.htm)
- [https://www.mar.mil.br/dhn/chm/meteo/prev/modelos/modelagem.htm](https://www.mar.mil.br/dhn/chm/meteo/prev/modelos/modelagem.htm)
- [http://www.goosbrasil.org/pnboia/dados/](http://www.goosbrasil.org/pnboia/dados/)

**Germany NODC**
- North West Shelf data portal [http://nwsportal.bsh.de/](http://nwsportal.bsh.de/)
- Cruise Summary Report portal [http://seadata.bsh.de csr/retrieve/V1_index.html](http://seadata.bsh.de csr/retrieve/V1_index.html)
• WMS
  http://www.bsh.de/en/Marine_data/Observations/DOD_Data_Centre/WebMapService.jsp
• GeoSeaPortal https://www.geoseaportal.de/mapapps/?lang=de

Croatia NODC
• http://jadran.izor.hr/roscop/eng/roscop.html
• http://jadran.izor.hr/hazadr/index_eng.htm
• http://baltazar.izor.hr/azopub/bindex
• http://baltazar.izor.hr/plazepub/kakvoca?p_jezik=eng

Malaysia NODC
• http://www.mynodc.gov.my/my/app/search
• http://www.mynodc.gov.my/my/app/visualisation
• http://www.mynodc.gov.my/my/app/datamanagement

Italy NODC
• Real-time data with SOS service http://nodc.ogs.trieste.it/sosWeb/#map
• Data access service http://nodc.ogs.trieste.it/cocoon/data/parameters
• Metadata distribution service http://nodc.ogs.trieste.it/nodc/data/distribution
• DOI archive http://nodc.ogs.trieste.it/nodc/metadata/doi
• Adriatic climatology http://nodc.ogs.trieste.it/nodc/data/divaclimatology
• Medar climatology http://nettuno.ogs.trieste.it/medar/climatologies/index.html

Israel NODC
• Mediterranean Cruises profiles: http://isramar.ocean.org.il/isramar_data/CastMap.aspx
• Time Series of Coast stations: http://isramar.ocean.org.il/isramar_data/TimeSeries.aspx
• Currents, temperature and salinity forecast for the Israeli shelf:
  http://isramar.ocean.org.il/isramar2009/selips/
• Biological Data Management System: http://isramar.ocean.org.il/isramarbio/default.aspx
• Dead Sea NRT data (graphics only):

Belgium NODC (Flanders)
• http://www.vliz.be/en/datasystems
• http://www.marinespecies.org/
• http://www.lifewatch.be/
• http://ioc-sealevelmonitoring.org/
• http://www.emodnet.eu/

China NODC
• Monthly report of sea level and climate change of China, http://www.cmoc-china.cn/web/guest/access-to-metadata
• Marine meteorological and oceanographic climatologic graphics, http://www.cmoc-china.cn/web/guest/access-to-metadata
• Annual report of sea level and climate change of China, http://www.cmoc-china.cn/web/guest/access-to-metadata
• Integrated temperature and salinity datasets, http://www.cmoc-china.cn/web/guest/access-to-metadata
• DBCP drifter data and metadata, http://www.cmoc-china.cn/web/guest/access-to-metadata
• Graphic products of global monthly mean current fields at surface with resolution of 2°×2° and 5°×5°, http://www.cmoc-china.cn/web/guest/access-to-metadata
New Zealand (other)

- Weather forecasts - [https://www.niwa.co.nz/online-services/niwa-forecast](https://www.niwa.co.nz/online-services/niwa-forecast)
- Coastal cameras - [https://www.niwa.co.nz/our-services/online-services/cam-era](https://www.niwa.co.nz/our-services/online-services/cam-era)
- Satellite data - [https://www.niwa.co.nz/our-services/online-services/satellite-data-services-0](https://www.niwa.co.nz/our-services/online-services/satellite-data-services-0)
- Tide forecasts - [https://www.niwa.co.nz/services/online-services/tide-forecaster](https://www.niwa.co.nz/services/online-services/tide-forecaster)
- Coastal and Marine data portal - [https://marinedata.niwa.co.nz/](https://marinedata.niwa.co.nz/)
- Wave conditions - [https://www.niwa.co.nz/our-services/online-services/canterbury-wave-conditions](https://www.niwa.co.nz/our-services/online-services/canterbury-wave-conditions)
- Sea levels - [https://www.niwa.co.nz/our-services/online-services/sea-levels](https://www.niwa.co.nz/our-services/online-services/sea-levels)
- Marine invertebrate collection - [https://www.niwa.co.nz/our-services/online-services/nic](https://www.niwa.co.nz/our-services/online-services/nic)

Spain NODC

- AGL buoy. [www.boya_agl.st.ieo.es](http://www.boya_agl.st.ieo.es)
- SST. [www.ieo-santnader.net/teledeteccion](http://www.ieo-santnader.net/teledeteccion)
- Upwelling index. [www.indicedeaploramiento.ieo.es/index_UI_es.html](http://www.indicedeaploramiento.ieo.es/index_UI_es.html)
- Beaches temperature. [http://playas.ieo.es](http://playas.ieo.es)

Australia ADU


Canada ADU (OTN)

- OTN Data Portal (public metadata/data access) [http://members.oceantrack.org/data/discovery/bypublic.htm](http://members.oceantrack.org/data/discovery/bypublic.htm)
- OTN Private Repository (private individual project data access) [http://members.oceantrack.org/data/pblctn_data](http://members.oceantrack.org/data/pblctn_data)
- OTN Publication Data Repository [http://members.oceantrack.org/data/otn-tool-box](http://members.oceantrack.org/data/otn-tool-box)
- OTN ERDDAP (under development) [http://members.devel.oceantrack.org/erddap](http://members.devel.oceantrack.org/erddap)
- OTN gitlab (shared code repository) [https://gitlab.oceantrack.org](https://gitlab.oceantrack.org)

Chile NODC

- Metadata Cathalog [http://www.shoa.cl/n_cendhoc/](http://www.shoa.cl/n_cendhoc/)
- Data Reports of CIMAR Project [http://www.shoa.cl/n_cendhoc/](http://www.shoa.cl/n_cendhoc/)

Canada NODC

- Canadian oceanographic profile data to the World Ocean Database
- Copernicus Marine Environment Monitoring Service - in situ real-time observations [http://marine.copernicus.eu/services-portfolio/access-to-](http://marine.copernicus.eu/services-portfolio/access-to-
products/?option=com_csw&view=details&product_id=INSITU_GLO_TS_OA_NRT_OBSERVATIONS_013_002_a


Colombia NODC
- Metadata Catalog: [https://cecoldo.dimar.mil.co/geonetwork](https://cecoldo.dimar.mil.co/geonetwork)

Greece NODC
- [http://seadatanetm.hcmr.gr/portal/](http://seadatanetm.hcmr.gr/portal/)
- [http://hndonc.hcmr.gr/roscop/](http://hndonc.hcmr.gr/roscop/)

Ecuador NODC

Japan ADU (JAMSTEC)
- [http://www.godac.jamstec.go.jp/bismal/e/index.html](http://www.godac.jamstec.go.jp/bismal/e/index.html)

Sweden ADU
- Oppna data: [http://www.smhi.se/klimatdata](http://www.smhi.se/klimatdata)
- BAWs: [http://www.smhi.se/en/weather/sweden-weather/1.11631](http://www.smhi.se/en/weather/sweden-weather/1.11631)
- SMHI products to BOOS: [http://www.smhi.se/hfa_coord/BOOS/boos.html](http://www.smhi.se/hfa_coord/BOOS/boos.html)

Iran NODC
- Metadata: [http://incod.inio.ac.ir](http://incod.inio.ac.ir)
- Argo Atlas: [http://incod.inio.ac.ir](http://incod.inio.ac.ir)
- WOCA Atlas: [http://incod.inio.ac.ir](http://incod.inio.ac.ir)
- MODIS Atlas: [http://incod.inio.ac.ir](http://incod.inio.ac.ir)
- Measurement data catalog: [http://incod.inio.ac.ir](http://incod.inio.ac.ir)
- Satellite data catalog: [http://incod.inio.ac.ir](http://incod.inio.ac.ir)
- Developed metadata tool: [http://incod.inio.ac.ir](http://incod.inio.ac.ir)

**Kenya NODC**
- mapping of fisheries resources - [https://41.89.141.2/arcsis/home/](https://41.89.141.2/arcsis/home/)

**USA ADU (OBIS)**

**USA NODC (NCEI)**

- Global 4 km AVHRR Pathfinder Project: [http://www.nodc.noaa.gov/SatelliteData/pathfinder4km/](http://www.nodc.noaa.gov/SatelliteData/pathfinder4km/)
- Global ARGO repository: [http://www.nodc.noaa.gov/argo/index.htm](http://www.nodc.noaa.gov/argo/index.htm)

**Kazakhstan NODC**
- Forecasts of a condition of a surface of the water of the Caspian Sea ([http://kazhydromet.kz/ru/obzor_vody](http://kazhydromet.kz/ru/obzor_vody))

**USA ADU (BCO-DMO)**
- NSF award data: [http://bco-dmo.org/data](http://bco-dmo.org/data)
- Linked Data: [http://www.bco-dmo.org/linked-open-data](http://www.bco-dmo.org/linked-open-data)
- Published data (DOI): [https://darchive.mblwholibrary.org/handle/1912/4135](https://darchive.mblwholibrary.org/handle/1912/4135)
Question 30

How were data made available (e.g. by request, on-line access, etc.) in 2015 and/or 2016? (you can tick multiple rows but only 1 per row)

Answered: 65  Skipped: 1

<table>
<thead>
<tr>
<th>Type of Availability</th>
<th>Started in 2015 or 2016</th>
<th>Continued in 2015 and 2016</th>
<th>Stopped in 2015 or 2016</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>online without charge</td>
<td>13.64%</td>
<td>84.79%</td>
<td>1.57%</td>
<td>41</td>
</tr>
<tr>
<td>online with charge</td>
<td>30.00%</td>
<td>48.00%</td>
<td>6.99%</td>
<td>5</td>
</tr>
<tr>
<td>offline upon request without charge</td>
<td>10.64%</td>
<td>55.11%</td>
<td>4.28%</td>
<td>47</td>
</tr>
<tr>
<td>offline upon request with charge</td>
<td>6.67%</td>
<td>88.96%</td>
<td>3.33%</td>
<td>15</td>
</tr>
<tr>
<td>net at all</td>
<td>75.59%</td>
<td>9.99%</td>
<td>3.40%</td>
<td>4</td>
</tr>
</tbody>
</table>

Additional information:

**Brazil NODC**: Offline upon request without charge: for non-commercial use by the research and education communities.

**Germany NODC**: With charge only for product 2.5, if requested by industry.

**Argentina ADU**: Data collected in oceanographic cruise can be delivered on line after two-five years depending of the agreement. The scientific groups shared data off line until they can be delivered.

**Italy NODC**: Data are made available on-line following the data policy defined by the data providers.

**Canada ADU (otn)**: offline requests for currently embargoed data, approval required from Project Lead(s)

**Colombia ADU (invemar)**: Data on line, to consult, not available to download but could be asked by letter request.

**DR Congo NODC**: No data made available.

**Netherlands NODC**: Multibeam data via the EMODnet Bathymetry portal are only offline available, due to the size of the multibeam data files.
Question 31

Indicate the average number of requests and services your centre provides in a year:

Answered: 65  Skipped: 1

<table>
<thead>
<tr>
<th>Year</th>
<th>Category</th>
<th>Less than 1,000</th>
<th>between 1,001 and 10,000</th>
<th>between 10,001 and 50,000</th>
<th>between 50,001 and 100,000</th>
<th>between 100,001 and 500,000</th>
<th>over 500,000</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>Number of requests per year (online and offline combined)</td>
<td>74.69%</td>
<td>9.52%</td>
<td>3.17%</td>
<td>4.76%</td>
<td>4.76%</td>
<td>3.57%</td>
<td>453</td>
</tr>
<tr>
<td></td>
<td>For online requests</td>
<td>45.65%</td>
<td>19.37%</td>
<td>16.87%</td>
<td>10.87%</td>
<td>6.52%</td>
<td>6.52%</td>
<td>46</td>
</tr>
<tr>
<td>2016</td>
<td>Number of requests per year (online and offline combined)</td>
<td>66.87%</td>
<td>17.46%</td>
<td>3.17%</td>
<td>4.76%</td>
<td>4.76%</td>
<td>3.17%</td>
<td>453</td>
</tr>
<tr>
<td></td>
<td>For online requests</td>
<td>38.13%</td>
<td>23.91%</td>
<td>16.97%</td>
<td>13.94%</td>
<td>6.52%</td>
<td>6.52%</td>
<td>46</td>
</tr>
</tbody>
</table>
Additional comments:

Note: some comments refer to the numbers provided by the data centre. These individual numbers can be obtained from the IODE project office upon request.

- **UK NODC**: Does not include visits to NERC Vocabulary Server (~30,000 per month)
- **Russian Federation NODC**: Above given the number of data or services requests via ESIMO Portal - to view, download, subscription. Number of visits to ESIMO portal per year - about 1.2 million visits
- **Finland (other)**: The number of visits web pages per service was: marine weather 1 567 500 coastal weather 2 116 900 sea level 2 634 006 wave height 581 700 wave forecast 254 800 ice conditions 882 300
- **Germany NODC**: 120 offline requests for products
- **Spain NODC**: Only the requests done through seadatanet portal are directly evaluated. There are other systems (i.e. WMS) that are not included in these numbers.
- **Canada ADU (otn)**: Total online hits both Public and Restricted data access. Offline requests not tracked.
- **Canada NODC**: Our department does not provide online request / visit statistics
- **USA ADU (bco-dmo)**: we don't require a login or authentication; data are freely available and open access; but the form required an answer so I estimated based on Google Analytics

**Question 32**
Question 33

What is the geographic origin of your users:

- National: 64%
- Regional: 39%
- International: 19%
- I don’t know: 1%

Total respondents: 64

SECTION F: PROVIDING DATA THROUGH NETWORKS

Question 34

Do you participate in a national distributed data network:

- Yes: 63%
- No: 37%

Total respondents: 63

Additional information:

- Portugal NODC: EMEPC: SNIMAR. IH: SNIMAR, SIMOCEAN, SNIG
- UK NODC: MEDIN (www.oceannet.org)
- Russian Federation NODC: RNODC is a member and operational management body of the Unified state system of information on world ocean (ESIMO), the operation of which provide 36 data centers/data providers 12 ministries/ agencies in Russia.
- France NODC: http://www.odatis-ocean.fr/Le-Pole-ODatis (under development)
- Germany NODC: MaNIDA Network of marine institutions
- Argentina ADU: http://www.datosdelmar.mincyt.gob.ar/
• **China NODC**: China Oceanic Information Network

• **Argentina NODC**: Sistema Nacional de datos del Mar

• **Australia ADU (obis)**: Australian Ocean Data Network, Australian National Data Service

• **Canada ADU (otn)**: OTN is a national distributed data network also participating in other national data networks including MEOPAR & IORE. Also participating in international collaborations, for example with VLIZ on EAATN (AtlantOS), FURG-Brazil Node (IORE).

• **Canada NODC**: Some institutes share their data with us on a network and we harvest the network to create a national database of oceanographic profile data. We use ad hoc exchange methods for with some other institutes.

• **Tanzania NODC**: Tanzania applies the distributed data network to allow specialized institutions who are sources of data to directly manage their data and provide details to the Data Centre.

• **Philippines ADU (asean)**: Department of Environment

• **Netherlands NODC**: National Oceanographic Data Commission (NL-NODC)

• **Cote d'Ivoire NODC**: yes at the university we attended workshops on managing data across large data banks to set up and exchanged the adequate equipment to store data

• **Turkey NODC**: There’s no national distributed data network yet. But it is in progress to establish

• **USA ADU (bco-dmo)**: DataONE: [https://search.dataone.org/](https://search.dataone.org/)

**Question 35**

Do you provide data through the following international data networks:

- **SeabirdNet**: 24.17% 26
- **OceanDataPortal**: 29.49% 32
- **OBIS**: 52.93% 55
- **WORLD OCEAN DATABASE (WODS)**: 9.06% 10
- **ICRU WORLD DATA SYSTEM**: 15.42% 16

Additional comments:

• **Portugal NODC**: IH specified EMODNET

• **Norway NODC**: ICES DC EMODNET ArcticROOS

• **Germany NODC**: EMODNET, ICES programmes, OSPAR, HELCOM

• **New Zealand (other)**: AODN
• **Canada ADU (otn):** Indirectly SeaDataNet via international OTN projects, for example in Portugal and Norway. OTN is an OBIS Node (tier III providing data thru OBIS Canada’s IPT). WODB: Indirect contribution. Our (glider) data is uploaded on the GTS by our NODC, and from there it is harvested by GTSP, and it is harvested by WODB.

• **Colombia ADU (invemar):** About OBIS, we bring intermittently

• **Canada NODC:** Scientists from the Bedford Institute of Oceanography (BIO) provide data to OBIS, scientists from both BIO and the Institute of Ocean Sciences provide data to CCHDO and CDIAC. We as NODC otherwise coordinate with ICES to update Canadian holdings in their cruise summary reports, platform and oceanographic databases. We also curate Canadian data that have been made discoverable through SeaDataNet through partnerships with European institutes and maintain Canadian entries in the associated European Directory of Marine Organizations.

• **Iceland (other, caff):** GBIF, GEO, Arctic Spatial Data Infrastructure, Arctic Polar Catalog

• **Mexico NODC:** No, but through CMA2 project

## SECTION G: COOPERATION WITH WORLD/GLOBAL DATA CENTRES

**Question 36**

Did you provide data to World Data System (WDS) in 2015 and/or 2016 (you can select more than one or none):

Answered: 27  Skipped: 39

<table>
<thead>
<tr>
<th>Answer Choices</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silver Spring</td>
<td>48.95%</td>
</tr>
<tr>
<td>Obninsk</td>
<td>11.11%</td>
</tr>
<tr>
<td>Tianjin</td>
<td>3.70%</td>
</tr>
<tr>
<td>Other (please specify):</td>
<td>40.74%</td>
</tr>
</tbody>
</table>

Total Respondents: 23
SECTION H: IODE TRAINING AND EDUCATION

Question 37

Did you send data to global specialized data centres (that are not ICSU WDSs) such as GDACs in 2015-2016? (you can tick as many as relevant)

Answered: 33  Skipped: 32

<table>
<thead>
<tr>
<th>Answer/Choice</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argo</td>
<td>36.36%</td>
</tr>
<tr>
<td>CDiac</td>
<td>0.00%</td>
</tr>
<tr>
<td>CIXAR</td>
<td>6.06%</td>
</tr>
<tr>
<td>GLOSS</td>
<td>33.33%</td>
</tr>
<tr>
<td>GOSUD</td>
<td>18.18%</td>
</tr>
<tr>
<td>GTSP</td>
<td>18.18%</td>
</tr>
<tr>
<td>Others</td>
<td>12.12%</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>39.39%</td>
</tr>
<tr>
<td>Total Respondents: 33</td>
<td></td>
</tr>
</tbody>
</table>

Question 38

In how many IODE training courses did you participate in 2015 and/or 2016:

Answered: 65  Skipped: 1

<table>
<thead>
<tr>
<th>Answer Choice</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>none</td>
<td>70.77%</td>
</tr>
<tr>
<td>1</td>
<td>15.38%</td>
</tr>
<tr>
<td>2</td>
<td>10.17%</td>
</tr>
<tr>
<td>3</td>
<td>3.08%</td>
</tr>
<tr>
<td>more than 3</td>
<td>3.08%</td>
</tr>
<tr>
<td>Total</td>
<td>65</td>
</tr>
</tbody>
</table>
Question 39

Did the IODE training assist you in your work after you returned home?

Answered: 65  Skipped: 1

Yes

Not applicable

No

Answer Choices

<table>
<thead>
<tr>
<th>Answer</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>39.77%</td>
</tr>
<tr>
<td>No</td>
<td>4.42%</td>
</tr>
<tr>
<td>Not applicable</td>
<td>54.81%</td>
</tr>
</tbody>
</table>

Total: 65

Comments:

• “The course improve our metadata and data management method”
• “Short time elapsed from the training course in september 2016, in INVEMAR (Administration of biogeographic marine data) to see results. However the same candidate, very enthusiastic with the learning, is applying to the Aggregating Oceanographic Data for Science using World Ocean Database and World Ocean Atlas tools (November 2016) to develop a multidisciplinary profile as marine data manager.”
• “OBIS - much easier to understand and use data distribution system (IPT) with hands-on/inperson training than on my own as previously done (DiGIR). QMR - assisted in understanding the intensive process we will need to go thru when time comes for our certification.”

Question 40

In how many other training courses did you participate in 2015 and/or 2016 organized by national or other organizers:

Answered: 65  Skipped: 1

Answer Choices

<table>
<thead>
<tr>
<th>Answer</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>none</td>
<td>53.06%</td>
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<tr>
<td>1</td>
<td>21.46%</td>
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<tr>
<td>2</td>
<td>9.21%</td>
</tr>
<tr>
<td>3</td>
<td>5.00%</td>
</tr>
<tr>
<td>more than 3</td>
<td>18.77%</td>
</tr>
</tbody>
</table>

Total: 65
Additional information:

- **Portugal NODC**: IH specified: 1- Copernicus Marine Service Regional User and Training Workshop 2- SOPHIA: Knowledge to the Management of the Marine Environment

- **Brazil NODC**: Oceanographic Sampling Course and Marine Spatial Data Infrastructure Course provide by Hydrographic and Navigation Directory.

- **Germany NODC**: GIS training

- **Croatia NODC**: HF radars, modeling with data assimilation

- **Malaysia NODC**: My employees have participated in following training courses: 1) Hands-On Workshop on Ocean Data View Software 2) IODE-OTGA Training Course on Marine GIS

- **Argentina ADU**: First Argentina-US Ocean Data Stewardship and Management Meeting-Organized by Instituto Nacional de Investigación y Desarrollo Pesquero de Argentina (INIDEP) and United States National Oceanic and Atmospheric Administration (NOAA). August 26-27 Mar del Plata Argentina

- **Italy NODC**: INSPIRE workshop

- **Israel NODC**: Glider operation

- **Argentina NODC**: SNDM capacity development courses

- **Canada ADU (otn)**: OTN Data Centre Provided Training: Annual OTN Data Workshops (OTN National Symposiums). OTN Node Training sessions (to date: July 2015 participants from US, South Africa, Australia and Belgium; August 2016 participants from Brazil). BIO (Bedford Institute of Oceanography) - OTN Datashops Processes Exchange Wednesday April 2016.

- **Colombia ADU (invemar)**: Most of our participation was on training courses of RTC for Latin America

- **Chile NODC**: Training course of underwater acoustic program (WADER 32)

- **Cyprus NODC**: EMODNET

- **Sweden ADU**: 2 * SeaDataNet training course

- **Netherlands NODC**: DIVA course

- **Iran NODC**: We organized 2 training courses in our organization: 1- Regional ocean governance, Dec 2015, Tehran, Iran (as a trainer) 2- Fundamental of marine data management. Jan 2016, Tehran, Iran (as a trainer)

- **Kenya NODC**: NFP alumni training on GIS-RS and sediment management - Nairobi

- **Turkey NODC**: SeaDataNet

- **Kazakhstan NODC**: Regional workshop “Public weather services” (World bank, WMO, Central Asia Regional Centre of Hydrology, Almaty, Kazakhstan, February 29 – March 4, 2016). Researchers Links Workshop funded by the British Council Climate Change, Water Resources and Food Security in Kazakhstan 06.-09.02.2015
SECTION I: ASSISTANCE TO IODE

Question 41

In how many other training courses did you participate in 2015 and/or 2016 organized by national or other organizers:

Answer Choices

- none
- 1
- 2
- 3
- more than 3

Responses

- 52.05%
- 22.00%
- 9.23%
- 3.89%
- 16.67%

Total

65

Answered: 65 Skipped: 1

Question 42

Will your country be providing direct financial support to IODE in 2017-2018 through the IOC (confirmed)?

Answer Choices

- I don't know
- no
- less than US$ 1,000
- between US$ 1,001 and US$...
- between US$ 10,001 and US$...
- between US$ 50,001 and US$...
- more than US$ 500,000

Responses

- 58.39%
- 29.69%
- 3.15%
- 1.96%
- 4.09%
- 8.00%
- 8.00%
- 1.00%

Total

64

Answered: 64 Skipped: 2
Question 43

Would your country/data centre be able to provide a visiting expert/secondment to the IOC Project Office for IODE in 2016-2017 for a period of 3-12 months?

Answered: 64  Skipped: 2

- I don't know: 40.63% (26)
- No: 32.61% (21)
- Yes, for 3 months, cost partially covered by IOC: 20.31% (13)
- Yes, for 3 months, cost fully covered by your country: 8.80% (6)
- Yes, for 6 months, cost fully covered by your country: 3.12% (2)
- Yes, for 6 months, cost partially covered by IOC: 8.80% (6)
- Yes, for 6 months, costs of travel and local expenses to be covered by IOC: 1.56% (1)
- Yes, for 12 months, cost fully covered by your country: 9.09% (6)
- Yes, for 12 months, costs of travel and local expenses to be covered by IOC: 9.09% (6)

Total: 64