

Report of the Technical Committee on Data Exchange

The meeting of the Technical Committee on Data Exchange (hereafter TCODE) was held from 18:00 to 20:00 on September 24 and 14:00 to 18:00 on September 27, 2017. All member countries were represented. The United States members were not present at the Day 1 meeting, but Ms. Jeanette Gann attended the Day 2 meeting as a temporary representative of the USA. Ms. Fangfang Wan attended as a representative of China on behalf Mr. Jinkun Yang. One member from Canada and one members from Korea were also not present. Dr. Joon-Soo Lee, Chair of TCODE, welcomed members and other participants to the meeting (*TCODE Endnote 1*). The agenda was reviewed by members and a revised agenda was adopted (*TCODE Endnote 2*). Mr. Peter Chandler was appointed rapporteur by the Chair.

AGENDA ITEM 3

Report of POMA 2017

Dr. Lee explained the procedure for selection of POMA and the responsibilities of TCODE. He reported that 11 of 14 TCODE members had replied to his request to evaluate the 2017 POMA nominations, and that “No response” was interpreted to mean that he was entrusted to recommend the POMA nomination at the 2017 Inter-sessional Science Board (ISB-2017) meeting in April, in Honolulu, USA. As a result, TCODE recommended the Newport Hydrographic (NH) Line Observations for the 2017 POMA at ISB-2017.

AGENDA ITEM 4

Review of procedure for Best Presentation Awards

TCODE co-sponsored 1 topic session at PICES-2017, but TCODE was not the primary sponsor and was not appointed by the Science Board Chair to evaluate presenters for a TCODE Best Presentation Award.

AGENDA ITEM 5

Review of PICES data policies and data management inventory

Dr. Lee reviewed the development progress of PICES data policy. Following the GC Decision (2016/A/15) PICES Executive Secretary, Mr. Robin Brown, drafted a Data Management Policy and an inventory of data and data products that PICES has the responsibility to manage. He circulated the policy and inventory to TCODE members before PICES-2017 and a very small number of members presented their comments. Dr. Lee showed the review results for the inventory at the Day 1 meeting and discussed this issue with Mr. Brown and TCODE members, but a more detailed discussion was postponed to the Day 2 meeting for a full review by members.

At the Day 2 meeting, TCODE made a revision that adds “3. Annual review of data inventory” for the roles and responsibilities of TCODE (*TCODE Endnote 3*), and assigned a responsible person for each inventory item (*TCODE Endnote 4*). TCODE also decided to continually improve the policy.

As an active way to manage the inventory of PICES data and data products, Dr. Lee drafted a workshop proposal for PICES-2018 (*TCODE Endnote 5*) from an early idea of Prof. Yutaka Michida, IODE Co-Chair. Through this workshop, TCODE expects to clearly identify the PICES data and data products and to seek appropriate management measures. In order to invite Prof. Michida as a co-convenor of this workshop, Science Board Chair, Dr. Hiroaki Saito, suggested TCODE to appoint him as an *ex-officio* member.

AGENDA ITEM 6

Report of summary of inter-sessional workshop and supported topic sessions/workshops in PICES-2017

Mr. Chandler presented a review of the WG 35 meetings on *North Pacific Ecosystem Status Report* held April 9–11, 2017, in Honolulu, USA, and September 23, 2017 at PICES-2017.

Review of the workshop W1 on “*The role of the northern Bering Sea in modulating the arctic II: International interdisciplinary collaboration*” was briefly described by Dr. Matthew Baker, a co-convenor of W1, at the Day 2 meeting.

TCODE was a co-sponsor Topic Session S4 on “*Adverse impacts on coastal ocean ecosystems: How do we best measure, monitor, understand and predict?*”. S4 took place after the TCODE meeting, so was unable to be reported on. Dr. Lee briefly reported about Topic Session S10 on “*Emerging issues in understanding, forecasting and communicating climate impacts on North Pacific marine ecosystem*”.

AGENDA ITEM 7

Status of FUTURE

Dr. Ryan Rykaczewski, FUTURE SSC liaison to TCODE, reported the status of FUTURE Science Program. He reviewed the FUTURE research themes and activities since PICES-2016. Dr. Igor Shevchenko commented about the possible role of TCODE for FUTURE products.

AGENDA ITEM 8

Summary of AP-NPCOOS meeting

Dr. Sung Yong Kim, Co-Chair of AP-NPCOOS (Advisory Panel on *North Pacific Coastal Observation Systems*), presented a summary of its meeting on September 24, including a co-sponsored topic session (S4) and activities since PICES-2016. He also announced a PICES Summer School on “*Coastal ocean observing systems and ecosystem monitoring*” will be held at the University of Victoria, Canada, July 9–13, 2018, and explained that a Topic Session will be proposed for PICES-2019 to accommodate the outcomes of the successful participants.

AGENDA ITEM 9

Relations with specific international organizations/programs

Dr. Lee provided a report with details about the work being undertaken by NOWPAP/DINRAC and NEAR-GOOS.

On behalf of Mr. Jinkun Yang, Ms. Fangfang Wan announced the establishment of the ODINWESTPAC (Ocean Data and Information Network in the Western Pacific region) project at the 24th session of IODE and reported on a new ODINWESTPAC marine data and information sharing system (www.odinwestpac.org).

Dr. Yutaka Michida, Co-Chair of IOC-IODE, reported the outcomes of the 24th Session of IODE held March 28–31, 2017, in Kuala Lumpur, Malaysia. He explained the “Decision IODE-XXIV.4 Ocean Data and Information System (ODIS)” to improve the accessibility and interoperability of existing data and information and to contribute the development of a global ocean data and information system. He stressed

that the ODIS will not build infrastructure but promote interoperability between existing systems, and an inter-sessional working group was established to develop a concept paper for the system. He also introduced the “Recommendation IODE-XXIV.5 IODE Associate Information Unit (AIU)” to establish a new structural element of IODE for wider information exchange, and suggested possible participation of PICES as a collaboration between PICES and IOC/IODE.

AGENDA ITEM 10

Review of proposed topic sessions and workshops of PICES-2018, Vladivostok, Russia

As the deadline for submission of proposed topic sessions and workshops of PICES-2018 was September 27, TCODE members were not able to get a final list of proposals before Day 2 meeting. So, Dr. Lee requested the members to send the evaluation results later by e-mail.

AGENDA ITEM 11

Review of progress of TCODE Workplan 2016/2017

TCODE Workplan activities for 2016/2017 (*TCODE Endnote 6*) were reviewed by members tasked for their respective items. Details can be found under relevant Agenda Items in this report.

AGENDA ITEM 12

Discussion of TCODE Workplan 2017/2018

Following discussion in previous Agenda Items, TCODE adopted a revised Workplan 2017/2018 (see *TCODE Endnote 7*).

AGENDA ITEM 13

Presentation of country reports

Due to lack of meeting time, Dr. Lee requested to submit documentation after the meeting immediately in order to insert them to TCODE Annual Report (*TCODE Endnote 8*).

AGENDA ITEM 14

Other business

There was no other business.

AGENDA ITEM 15

Closing

Dr. Lee closed the meeting at 18:00.

TCODE Endnote 1

TCODE participation list

Members

Daisuke Ambe (Japan)
Peter Chandler (Canada, Vice-Chair)
Joon-Soo Lee (Korea, Chair)
Manchun Chen (China)
Sang-Hwa Choi (Korea)
Jeanette Gann (USA, representing USA, Nov. 9)
Georgiy S. Moiseenko (Russia)
Igor I. Shevchenko (Russia)
Fangfang Wan (China, on behalf of Jinkun Yang)
Tomowo Watanabe (Japan)

Observers

Matthew Baker (NPRB)
Sung Yong Kim (AP-NPCOOS Co-Chair)
Yutaka Michida (IOC-IODE)
Ryan R. Rykaczewski (FUTURE SSC liaison)

PICES

Robin Brown (PICES Executive Secretary)
Hiroaki Saito (Science Board Chair)

Members unable to attend

Canada: Bruce Patten
China: Jinkun Yang
Korea: Jung No Kwon
USA: Lynn M. deWitt, Hernan Eduardo Garcia, Tony Koslow

TCODE Endnote 2

TCODE meeting agenda

Day 1: Sunday, September 24

1. Welcome and introduction of members (All)
2. Adoption of agenda (All)
3. Report of POMA 2017 (Lee)
4. Review of procedure for Best Presentation Awards (Lee)
5. Review of PICES data policies and data management inventory (Shevchenko, Brown, Lee)
6. Report of summary of inter-sessional workshop and supported topic sessions/workshops in PICES-2017
 - WG 35 on NPESR3 (Chandler)
 - W1 on “*The role of the northern Bering Sea in modulating the arctic II: International interdisciplinary collaboration*”
 - W2 on “*Coastal ecosystem services in the North Pacific and analytical tools/methodologies for their assessment*”
 - S4 on “*Adverse impacts on coastal ocean ecosystems: How do we best measure, monitor, understand and predict?*”
 - S10 on “*Emerging issues in understanding, forecasting and communicating climate impacts on North Pacific marine ecosystems*”
7. Status of FUTURE (Rykaczewski, liaison for FUTURE SSC)
8. Summary of AP-NPCOOS meeting (Co-Chair of AP-NPCOOS)

Day 2: Wednesday, November 9

9. Relations with specific international organizations/programs
 - NOWPAP/DINRAC, NEAR-GOOS (Lee)
 - ODINWESTPAC (Wan)
 - IOC/IODE (Prof. Michida, IODE Co-Chair)
 - Others
10. Review of proposed topic sessions and workshops of PICES-2018 (All)
11. Review of progress of TCODE Workplan 2016/2017 (All)
12. Discussion of TCODE Workplan 2017/2018 (All)
13. Presentation of country report (representative of member countries)
14. Other business
15. Closing

TCODE Endnote 3

Draft Data Management Policy

Initiated: August 30, 2017 (Drafted by Mr. Robin Brown)

Revised: September 27, 2017 (by TCODE)

Preamble

This policy is developed to ensure that data gathered as a result of PICES activities is responsibly managed to guard against loss and to ensure continued accessibility.

Roles and Responsibilities:

The **Technical Committee of Data Exchange** (TCODE) is responsible to:

1. Maintain an inventory of data and/or data products generated by PICES activities;
2. Track/verify that the identified items continue to be managed and accessible;
3. Annual review of data inventory to ensure its integrity and determine if new data and data products need to be added;
4. Assisting Expert Groups in identification of data or data products developed;
5. Assisting Expert Groups in the development of data management options and strategies;
6. Make recommendations to Science Board on PICES data management and priorities, with particular emphasis on correcting or mitigating any known or anticipated deficiencies.

The **PICES Secretariat** is responsible to:

1. Support TCODE in the maintenance of the inventory;
2. Support TCODE in the development of options to correct or mitigate correcting or mitigating any known or anticipated deficiencies.

Science Board is responsible to:

1. Add a Term of Reference for each existing and new PICES expert group requiring the identification of any data or data products developed during the course of the expert group. and forwarding this information to TCODE;
2. Reviewing the recommendation made by TCODE and formulating recommendations to Governing Council, as required.

Expert Groups are responsible to:

1. Identify any data or data products developed during the course of the expert group;
2. Forwarding this information to TCODE for inclusion in the inventory;
3. (with assistance from TCODE as required) development of strategies or options for managing these data during the course of the expert group and upon completion.

TCODE Endnote 4

PICES data inventory and TCODE person in charge

Dataset/Data Product Name	Person in charge
Non-indigenous species database	Peter Chandler
PACIFICA	Toru Suzuki, Ambe Daisuke
PICES Metadata Federation	Igor shevchenko
CPR Survey	Peter Chandler
NPESR data portal	Peter Chandler, Jeanette Gann
Micronekton sampling intercalibration data	Sangwha Choi
Marine Ecosystem Model Inter-Comparison Project	Joon-Soo Lee
ADRIFT – Hawaiian Islands Marine Debris Aerial Imagery Surveys (2015–2016)	Ambe Daisuke
ADRIFT - Webcam monitoring of marine/tsunami debris (2014–2017)	Ambe Daisuke
ADRIFT - Development of life history database for Japanese Tsunami Marine Debris (JTMD) biota (2015–2016)	Ambe Daisuke
ADRIFT - Japan Tsunami Debris species database	Ambe Daisuke
ADRIFT - BC Coast Marine Debris Aerial Imagery Surveys	Ambe Daisuke
Coral and sponge data	Jinkun Yang, Manchun Chen
Key environmental data	Jinkun Yang, Manchun Chen
MarWeB - Well-being analysis in PICES member countries and Indonesia	Ambe Daisuke, Toru Suzuki
MarWeB - data from 2014, 2015 and 2016 Indonesian Pond Aquaculture Experiments	Ambe Daisuke, Toru Suzuki
MarWeB - Clicker survey data – Las Lisas, Guatemala	Ambe Daisuke, Toru Suzuki
MarWeB - Clicker survey data – Monterrico, Guatemala	Ambe Daisuke, Toru Suzuki
MarWeB - Bibliographies (2) on the key concepts used in the project	Ambe Daisuke, Toru Suzuki

TCODE Endnote 5**Proposal for a Workshop on
“Development of a systematic approach to data management in PICES” at PICES-2018**

Duration: 1 day

Proposed co-sponsor: IOC/IODE

Convenors: Joon-Soo Lee (Korea), Peter Chandler (Canada), Igor Shevchenko (Russia), Toru Suzuki (Japan), Yutaka Michida (IOC/IODE, proposed)

Invited Speaker: Robin Brown (PICES Executive Secretary)

Since its establishment in 1992, PICES has produced observation data, experimental data, and model data for scientific purposes through expert group activities and projects, and analyzed the results to produce papers, reports, and data products. Some of the data are also available online. However, PICES data and data products have not been systematically managed and are expected to increase more and more in an unmanaged status in the future. In this regard, it is in urgent need to discuss how to manage the current PICES data and data products as well as how to manage them in the future. Therefore, this workshop aims to identify problems in the sustainable management and use of PICES data and data products, to seek better management structure and system, and to improve the linkage among PICES data producers, scientists and data managers.

TCODE Endnote 6**TCODE Work Plan 2016/2017 (adopted on November 9, 2016)**

1. Maintain a dialogue and collaborate with international organizations and scientific programs
Responsibility
 - Chair for ICES DIG
 - Lee for IODE, NOWPAP/DINRAC, NEAR-GOOS
 - Representative of China for ODINWESTPAC
 - All for new proposed SCOR WGs evaluation
2. Propose and support topic sessions and workshops, intersessional meetings, symposia, and training course/education activities
 - 2-1. Support co-sponsored topic sessions/workshops of PICES 2017 Annual Meeting in Vladivostok, Russia
Responsibility – All
 - 2-2. Propose topic sessions/workshops at PICES 2018 Annual Meeting
Responsibility – All
 - 2-3. Prepare and support PICES/AP-NPCOOS summer school 2018 hosted by Canada
Responsibility – Shevchenko and Chandler
3. Maintain and promote PICES TCODE Geospatial Portal
 - 3-1. Update technical report
 - 3-2. Support to register metadata of database of WG 21 “Non-indigenous Aquatic Species”
 - 3-3. Support to register metadata of products of WG 23 “Comparative ecology of Krill in coastal and oceanic waters around the Pacific Rim”
 - 3-4. Support to register products of S-MBM
 - 3-5. Support to register scientific products of PICES scientific and technical committees and expert groups
 - 3-7. Continue to administer TierPoint server

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- 3-8. Metadata publishing in China
Responsibility – Shevchenko in collaboration with representative of China
4. Support for the use of shared information technologies
 - 4-1. Maintain TCODE website
Responsibility – Shevchenko
 - 4-2. Maintain and update FUTURE website
Responsibility – Shevchenko
 - 4-3. Support and Advice using cloud/online storages
Responsibility – Shevchenko and representative of China
5. Support to development of North Pacific Ecosystem Status Report III
Responsibility – Chandler and Koslow
6. POMA 2017 nomination and rank
 - 6-1. Propose new nominations by March 2017
 - 6-2. Rank/evaluate nominations in April 2017
Responsibility – All
7. Support AP-NPCOOS
Responsibility - Chandler and Koslow
8. Develop PICES data policies
Responsibility – All

TCODE Endnote 7

TCODE Workplan 2017/2018 (adopted on September 27, 2017)

1. Maintain a dialogue and collaborate with international organizations and scientific programs
Responsibility
 - Chair for ICES DIG
 - Lee for NOWPAP/DINRAC, NEAR-GOOS
 - Representative of China for ODINWESTPAC
 - All for new proposed SCOR WGs evaluation
2. Propose and support topic sessions and workshops, inter-sessional meetings, symposia, and training course/education activities
 - 2-1. Support co-sponsored topic sessions/workshops of PICES 2018 Annual Meeting in Yokohama, Japan
Responsibility – All
 - 2-2. Propose topic sessions/workshops at PICES 2019 Annual Meeting
Responsibility – All
 - 2-3. Prepare and support PICES/AP-NPCOOS summer school 2018 hosted by Canada
Responsibility – Shevchenko and Chandler
3. Prepare Workshop in PICES 2018
 - 3.1. Presentation about PICES TCODE Geospatial Portal with examples
 - 3.2. Validate the data and data product inventory
 - 3.3. Communicate with PICES committees and expert groups
Responsibility – All

4. Maintain the PICES TCODE Geospatial Portal
 - 4-1. Continue to administer TierPoint server
 - 4-2. Metadata publishing in China
Responsibility – Shevchenko in collaboration with representative of China
5. Support for the use of shared information technologies
 - 5-1. Maintain TCODE website
Responsibility – Shevchenko
6. Support to development of North Pacific Ecosystem Status Report III
Responsibility – Chandler
7. POMA 2018 nomination and rank
 - 7-1. Propose new nominations by March 2018
 - 7-2. Rank/evaluate nominations in April 2018
Responsibility – All
8. Support AP-NPCOOS
Responsibility – Chandler, Patten
9. Review the PICES data management policy
Responsibility – All

TCODE Endnote 8

Country Report of Canada

by Peter Chandler

Fisheries and Oceans Canada

The Government of Canada believes it is important to provide access to the data that is produced, collected, and used by departments and agencies across the federal government. It is equally important that the data is made available through a single and searchable window. Canada has now become an international Open Data leader, currently chairing an international Open Data Working Group through its involvement in the Open Government Partnership.

Open Data is defined as structured data that is machine-readable, freely shared, used and built on without restrictions. To summarize the most important points:

- **Availability and Access:** the data must be available as a whole and at no more than a reasonable reproduction cost, preferably by downloading over the internet. The data must also be available in a convenient and modifiable form.
- **Re-use and Redistribution:** the data must be provided under terms that permit re-use and redistribution including the intermixing with other datasets.
- **Universal Participation:** everyone must be able to use, re-use and redistribute. There should be no discrimination against fields of endeavour or against persons or groups.

The Government of Canada follows the Open Data principle that datasets should be as complete as possible, reflecting the entirety of what is recorded about a particular subject. All raw information from a dataset should be released to the public, unless there are Access to Information or Privacy issues. Metadata that defines and explains the raw data should be included, along with explanations for how the data was calculated.

Country Report of China

by Jinkun Yang
NMDIS/SOA

1. Working Progresses related to TCODE PICES Metadata Federation Project

Efforts have been made to metadata sharing through GeoNetwork in 2017. However, it was unsuccessful due to technical difficulties and the current internet environment of China. To solve the problem and make step forward, we bring with us the metadata for submission at the TCODE meeting, and wish that a mechanism could be developed for operational submission and sharing of metadata of China. As an experiment, monthly sea level metadata records, hourly sea level metadata records, and marine meteorology wave, temperature and salinity metadata records (temporal range:2010-2014) of some Chinese oceanographic stations are provided this time. Details see the table below.

Metadata	Station	Time period	No. of Records
Metadata of monthly mean sea level	Dalian, Kamen, Lvsi, Zhapo, Nasha, Xisha	2009.01–2014.07	6
Hourly sea level metadata	Lianyungang, Dalian	2009.01–2014.07	2
Metadata of meteorological data, wave, temperature and salinity data	Dalian, Xiaochangshan, Yantai, Xiaomaidao, Lianyungang, Lvsi, Shengshan, Zhenhai, Dachen, Nanji, Beishuang, Dongshan, Zhelang	2010.01–2014.08	13

2. Data Exchange and Cooperation with Other Related International or Regional Programs

As the responsible body of the State Oceanic Administration (SOA) for international marine data and information exchange and cooperation, NMDIS has participated in a number of international and regional programs, such as CMOCs, Argo, ODINWESTPAC, NEAR-GOOS, DBCP etc., and has becoming an important part of international marine data and information exchange and cooperation over the years. In the year 2017, progresses have been made in regional data sharing and capacity building.

2.1 Release of the ODINWESTPAC marine data and information sharing system

During May16–18 2017, a *Regional Workshop on the contribution of oceanographic data and information management and exchange to Ocean and Coastal Sustainability and SDG-14* was convened in Tianjin, China, co-organized by NMDIS and IODE Secretariat. More than 30 participants from national oceanographic data centers, marine research and/or academic institutions of Australia, Bangladesh, Cayman Islands, Indonesia, Japan, Malaysia, Russia, Sri Lanka, Thailand, United States of America and Vietnam, as well as representatives of international organizations/projects such as UNESCO/IOC, IOC Project Office for IODE, IOC Sub-commission for Western Pacific, Partnerships in Environmental Management for the Seas of East Asia (PEMSEA), Southeast Asian Fisheries Development Center (SEAFDEC), IODE/Oceandocs, and Pacific Community participated in the event.

The workshop mainly focused on the marine data and information management and service, capacity building on the data and information management, and the importance of international cooperation. In the same time, the participants also had a hot discussion on how to promote the implementation of GOAL 14 ‘Conserve and sustainably use the oceans, seas and marine resources for sustainable development’ in 2030 Agenda for Sustainable Development through national and regional ocean related cooperation.

On the first day of the workshop, under the witness of high officials of IOC, IODE, and IOC/WESTPAC together with national representatives of WESTPAC member states, the first ODINWESTPAC data and information sharing system developed by NMDIS was released.

The system is the data sharing and information releasing portal within the framework of ODINWESTPAC project. It integrates environmental data, regional products and marine information of member states of Western Pacific Region with customized services, thus promote the data exchange and regional collaboration in Western Pacific Region and its surrounding areas.

2.2 *Operational running of the CMOC/China*

In the first half of 2017, wave, temperature, sea level, marine-meteorological data collected from Chinese Oceanographic station were operationally decoded, quality controlled and reviewed at the CMOC/China. Duplicate remove and integration of the Argo, GTSP, and WOD temperature and salinity data were conducted. And the process and integration of the GLOSS, ICOADS and DBCP data were completed. Datasets that have been shared globally through the official website of the CMOC/China including 203 MB of NEAR-GOOS data, 26.3GB Argo profile data, 25.3GB GTSP S&T data, 3.57 GB DBCP drifting buoy data, 7.93GB integrated temperature and salinity data., 84.8 GB China Ocean Reanalysis products, and 42.5MB data on sea level and climate change of China in 2015.

2.3 *Co-organized the DBCP capacity construction workshop*

Co-organized by WMO/IOC and NMDIS, the *Fifth Capacity Building Workshop of the WMO/IOC Data Buoy Cooperation Panel (DBCP) for the North Pacific Ocean and Its Marginal Seas (NPOMS-5)* was held during 4-7 July 2017 in Tianjin, China. The purpose of the workshop is to enhance coordination and cooperation between the DBCP Task Team for the Regional Capacity Building as well as the long-term ocean-climate monitoring capacity for cyclogenesis and forecasting.

More than 50 participants from national oceanographic data centers, marine research and/or academic institutions of China, United States of America, Japan, Thailand, Indian, Indonesia, Malaysia, Pakistan, Sri Lanka and Cook Islands, as well as representatives of international organizations/projects such as WMO and DBCP participated in the event.

2.4 *Share of the Chinese Voluntary Observing Ship (VOS) data*

Another important activity on data exchange and sharing in China in 2017 would be sharing of the Chinese VOS data with the international community. With the strong support from the WMO secretariat, JCOMM, and with coordination of China Administration of Meteorology (CAM), SOA selected 8 voluntary observing ships to share their observing data with the international community. Real time observation data collecting from the 8 vessels have been uploading to the GTS since April and the number of the selected ships will be increased gradually.

Country Report of Korea

by Joon-Soo Lee
NIFS/KODC

Major governmental organizations and research institutes related to marine science in Korea such as NIFS (National Institute of Fisheries Science), KMA (Korea Meteorological Administration), KHOA (Korea Hydrographic and Oceanographic Agency), and KIOST (Korea Institute of Ocean Science and Technology) monitor the Korean Seas for their own role or research purposes and provide oceanographic data and information to support the national open data policy for creating new value.

The Korea Oceanographic Data Center (KODC), which is operated by the National Institute of Fisheries Science (NIFS), acts as Korea's National Oceanographic Data Center. As an effort to guarantee the quality of the oceanographic data and information provided, KODC established the Quality Management System (QMS) and acquired ISO 9001:2015 Certification on September 26, 2016. KODC also renewed its website on March 2017, to provide better services, including a metadata service based on GeoNetwork open source. KODC further achieved the status of "Accredited IODE National Oceanographic Data Centre" from IOC/IODE on August 24 2017.

Country Report of Japan

not reported

Country Report of Russia

by Georgiy Moiseenko, VNIRO and Igor Shevchenko, TINRO-Center

In 2017, Russian members participated in the following TCODE activities:

- Updating of the the Key Institutions/Key Persons information (see Appendix)
- Maintaining of the PICES GeoNetwork portal, <http://67.212.128.197/geonetwork/srv/en/main.home>
System administration of the TierPoint rented server
- Maintaining of TCODE web pages, <https://sites.google.com/site/picestc/>
- Participation in the preparation of a draft PICES data management policy

Appendix

1. Key Institutions/Key Persons

Fisheries Institutes

Pacific Fisheries Research Center (TINRO-Center)

<http://www.tinro-center.ru>

Igor Shevchenko

Russian Federal Research Institute of Fisheries and Oceanography (VNIRO)

<http://www.vniro.ru>

Georgiy Moiseenko

Khabarovsk Branch of Pacific Fisheries Research Center (KhOTINRO)

<http://www.tinro.khv.ru/>

Ekaterina Kurilova

Magadan Institute of Fisheries and Oceanography (MagadanNIRO)

<http://www.magadanniuro.ru>

Chukotka Institute of Fisheries and Oceanography (ChukotNIRO)

Sakhalin Institute of Fisheries and Oceanography (SakhNIRO)

<http://www.sakhniuro.ru>

Kamchatka Research Institute of Fisheries and Oceanography (KamchatNIRO)

<http://www.kamniuro.ru/en>

Russian Federal Fisheries Agency

<http://fish.gov.ru>

Atlantic Research Institute of Marine Fisheries and Oceanography (AtlantNIRO)

<http://www.atlantniuro.ru>

Caspian Institute of Fisheries (KaspNIRKH)

<http://www.kaspnirh.ru/en/>

Azov Institute of Fisheries (AzNIIRKH)

<http://azniirkh.ru/>

Polar Marine Fisheries Institute (PINRO)

<http://www.pinro.ru>

Centre for Fishery Monitoring and Communications (CFMC)

<http://www.cfmc.ru>

National Fishery Resources

<http://www.nfr.ru/en>

Hydrometeorological Institutes

All-Russian Research Institute of Hydrometeorological Information – World Data Center (RIHMI-WDC)

<http://www.meteo.ru/english/>

Nickolay Mikhailov

State Oceanographic Institute (SOI)

<http://www.oceanography.ru>

Igor Zemlyanov

Arctic and Antarctic Research Institute (AARI)

<http://www.aari.ru/main.php?lg=1>

Far Eastern Regional Hydrometeorological Research Institute (FERHRI)

<http://en.ferhri.org/>

Academy of Science

Pacific Oceanological Institute (POI)

<https://www.poi.dvo.ru/drupal/>

Vyacheslav Lobanov

<http://www.pacificinfo.ru/en/>

Igor Rostov

Institute of Marine Biology (IMB)

<http://www.imb.dvo.ru>

Space Research Institute (IKI)

<http://www.iki.rssi.ru/eng/>

Evgeny Loupian

P.P. Shirshov Institute of Oceanology of the Russian Academy of Sciences

<http://www.ocean.ru/en/>

2. Existing Data and Metadata Sets

Agency	Division	Data/Metadata Description	URL
Federal Service for Hydrometeorology and Environmental Monitoring	Hydrometeorological Centre of Russia	Climate temperature and precipitation data Weather forecasts	http://wmc.meteoinfo.ru
	AARI	Ice charts and forecasts	http://www.aari.ru/main.php?lg=1
	SOI	Hydrographic, meteorology and pollution data for Russian seas	http://www.oceanography.ru/
Russian Academy of Science	IKI	Satellite data (NOAA, GOMS, RESURS)	http://smiswww.iki.rssi.ru/
	POI	Hydrographic observations (national and foreign) in the Northern Pacific	http://www.pacificinfo.ru/en/

The Russian Federal Program ESIMO portal <http://www.esimo.ru> is an entry point to sites maintaining governmental information funds of data on the state of the World Ocean and coastal areas.

Country Report of USA

not reported