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 19:30 h on October 19 and 14:00 to 18:15 on October 23, 2014. All member countries were represented; only one member from Canada and two members from USA could not attend; six observers were present (*TCODE Endnote 1*). Dr. Tony Koslow, was appointed rapporteur by Dr. Toru Suzuki, TCODE Chairman. Several changes were made to the draft agenda and the revised agenda was adopted (*TCODE Endnote 2*).

AGENDA ITEM 3
Status of E-Poster session

Dr. Suzuki, one of the co-conveners of the TCODE-sponsored E-Poster Session on "*Tools, approaches and challenges for accessing and integrating distributed datasets*" reported that it had been cancelled because of the withdrawal of one of two contributed papers; the other was moved to General Papers.

AGENDA ITEM 4
Review of procedure for Best Presentation Award

At this year's Annual Meeting, TCODE was responsible for judging two sessions. Seven members volunteered to act as judges and Dr. Suzuki instructed them to choose a recipient for Best Oral Presentation among four early career scientists presenting in the FIS/TCODE/FUTURE sponsored Topic Session on "*Recent assessments of climate change impacts on marine ecosystems*" (S7; October 22, 23) and for Best Poster Presentation among five papers in the BIO/MONITOR/TCODE sponsored Topic Session on "*Use of long time series of plankton to inform decisions in management and policy concerning climate, ecosystems and fisheries*" (S4; October 24). Dr. Suzuki aggregated the judges' scores and reported the TCODE selection to the Secretariat before the Closing Session.

AGENDA ITEM 5
Report of POMA 2014

Dr. Suzuki expressed regret that two TCODE members did not rank nominations for the 2014 PICES Ocean Monitoring Service Award (hereafter POMA) by 11 April 2014 and he reported that the TCODE recommendation of POMA was selected at the inter-sessional Science Board meeting in Kohala Coast, Hawaii, USA, in April. He further encouraged the members to submit a new nomination for the 2015 POMA because just one nomination remained at present. Dr. Koslow expressed that USA is planning to submit new nomination for the 2015 POMA.

AGENDA ITEM 6
Relations with specific international organizations/programs

Prof. Yutaka Michida, Vice-Chairman of the Intergovernmental Oceanographic Commission (IOC) of UNESCO, presented JCOMM/IODE Ocean Data Standard (ODS) and Ocean Data Standard and Best Practices (ODSBP). He provided a background of JCOMM/IODE activities and announced that published three of nine identified standard will be published as IOC Manuals and Guides. Recommendations on ODSBP were adopted at IODE-XXII which will require three actions for ODSBP.

Dr. Maciej Telszewski, Project Director of the International Ocean Carbon Coordination Project (IOCCP), presented IOCCP updated for PICES/TCODE. He showed background of IOCCP, surface carbon observation

and data synthesis which is called SOCAT, interior carbon observation and data synthesis which is called GLODAP version 2, time series observation, ocean acidification, instruments and sensors, nutrients, and data management. He especially remarked a training course on biogeochemical sensors held in June 2015 and desired to attend from PICES member countries. TCODE members realized that training course is interested for biogeochemical data management and capacity development is important issue of PICES so that they agreed to request travel support to Science Board to participant from PICES member countries.

Dr. Suzuki presented first planning workshop for IODE ODINWESTPAC (Oceanographic Data and Information Network for Western Pacific region) in Tianjin, China, March 4–6, 2014, hosted by the National Marine Data and Information Service (NMDIS), where TCODE member, Mr. Jinkun Yang, is affiliated. Dr. Joon-Soo Lee also attended the workshop and three work packages were adopted: (1) training on metadata/GeoNetwork and data entry for e-repositories and establishment of an ODP (Ocean Data Portal) node, (2) training on data assimilation and reanalysis, and (3) training in data/information management for new regional NODCs/ADUs through the Ocean Teacher Global Academy. Mr. Yang and Ms. Ting Yu commented that NMDIS has actively carried out several items of work in the agreed to work plan: one is that National Focal Point of each member states and Chinese ocean related institutes/organizations and ocean experts, has been updated on the ODINWESTPAC website; the other is to link center/institution/agency URL data in each member state on an available data server. NMDIS will apply for accreditation as China's National Oceanographic Data Center (NODC) under the IODE Quality Management Framework (QMF) and will submit the accreditation request to the Steering Group for the IODE Quality Management Framework (SG-QMF) in October in order to promote implementation IODE QMF and to attain Accredited NODC member state status in ODINWESTPAC.

Dr. Suzuki reported on progress for TCODE applying to become an IODE Associate Data Unit (ADU), and mentioned that PICES has no database or data center, and there is no overall PICES data exchange policy because each PICES member country already has its own. Dr. Igor Shevchenko proposed to develop a PICES data exchange policy before submitting the application to IODE. TCODE members agreed with his proposal and Dr. Shevchenko and Mr. Robin Brown volunteered to develop a policy which was added to the workplan of next year.

The meeting adjourned at 19:30 h and resumed at 14:00 h on October 23.

Day 2: Wednesday, October 22

AGENDA ITEM 7
Status of FUTURE

Dr. Suzuki reported that the FUTURE Open Science Meeting and joint Inter-sessional Science Board/FUTURE Evaluation Panel (EP) Meeting was held in Kohala Coast, Hawaii, USA, in April, 2014. A report and recommendations of FUTURE Evaluation Panel (EP) were presented (these were discussed at PICES-2014 at the joint FUTURE Advisory Panel (AP) meeting on October 19). The EP reported mid-term progress on FUTURE as follows: there was excellent progress, especially on ocean climate forecasting, under AP-COVE, spotty progress on AP-SOFE, weak progress on AP-AICE, and lack of commitment to FUTURE from some areas of PICES. The FUTURE EP recommended a change to the governance structure of FUTURE in which the three FUTURE Advisory Panels would be replaced by a new FUTURE Scientific Steering Committee (SSC). TCODE nominated Mr. Brown, Dr. Shevchenko and/or Dr. Koslow for membership to the FUTURE SSC.

AGENDA ITEM 8
Review of proposed topic sessions/workshops of PICES-2015, Qingdao, China

Nearly all TCODE members evaluated the proposals. TCODE was prepared to co-sponsor three topic sessions that it ranked highly: "*Ocean Acidification Observation Network for the Arctic and sub-Arctic Pacific Oceans*" (PS-10), "*The 2014/15 El Niño and anomalous warming of the North Pacific: What happened?*" (PS-1) and "*Advances in the Coupled General Circulation Models (CGCMs)*" (PS-9), and requested that the following co-conveners be added at the Science Board meeting: Dr. Suzuki (PS-10), Dr. Koslow (PS-1), and Mr. Brown (PS-9), in order to build good communication between TCODE and the topic sessions. TCODE agreed co-sponsor two workshops: "*Monitoring and assessment of environmental quality of radioactivity in the North Pacific*" (PW-5) and "*Best Practices for and scientific progress from Coastal Ocean Observing Systems*" (PW-6, which was submitted after the deadline of proposal), with Dr. Tomowo Watanabe (PW-5) and Dr. Koslow (PW-6) to be added as co-conveners.

AGENDA ITEM 9
Review progress of TCODE workplan 2013/2014

TCODE workplan 2013/2014 (*TCODE Endnote 3*) was reviewed as follows.
1-1   TCODE co-sponsored three topic sessions: S4, S7, and S10 at PICES-2014.
1-2   TCODE did not propose a topic session or workshop for PICES-2015; TCODE co-sponsored three topic sessions and two workshops (see Agenda Item 8).
1-3   No training course was organized in 2013 and 2014.
1-4   No training course was organized in 2014 and 2014.
2.   There is no new information on ICES DIG. IODE GE-BICH will be closed in early 2015. China, Japan and Korea have established IODE ODP nodes. Some national nodes of OBIS joined IODE as ADU. For ODINWESTPAC, see Agenda Item 6). Three proposed SCOR Working Groups were approved since 2015. Ocean surface nutrients monitoring by the Center for Global Environmental Research of National Institute for Environmental Studies (CGER-NIES, Japan) and IOS (Canada) is in progress and they submitted one scientific paper to JGR-Oceans which was accepted for publication.
3.   HAEDAT/S-HAB has made no significant progress. PACIFICA, maintained by S-CC will be involved in GLODAP version 2 which will be released by the end of 2014. No data and information was submitted by WGs 21 and 29.
4.   PICES TCODE GeoSpatical Portal (GeoNetwork) was maintained by Dr. Shevchenko.
5.   FUTURE and S-CCME websites have not been updated.
6.   Mr. Brown continued to support development of next North Pacific Ecosystem Status Report (NPESR).
7.   Dr. Shevchenko and his colleague are maintaining the TCODE website.
8.   See Agenda Item 5 for status of POMA 2014.

AGENDA ITEM 10
Discussion and adoption on TCODE workplan 2014/2015

Following review of TCODE workplan 2013/2014, TCODE members agreed to adopt revised workplan 2014/2015 (*TCODE Endnote 4*). Most items were carried over from 2013/2014, and new items: develop PICES data exchange policy and support AP-COOS, were added.

TCODE-2014

Presentations of country report

Mr. Brown (Canada) reported Canadian deepwater ocean network data for VENUS and NEPTUNE can be accessed at http://venus.uvic.ca/ and http://www.neptunecanada.ca/. Dr. Koslow (USA) reported that CalCOFI data was now more publicly available on the ERDDAP (Environmental Research Division's Data Access Program) website. Dr. Watanabe (Japan) discussed monitoring of marine environmental radioactivity and data. There was no presentation from China but a country report was submitted after the meeting (*TCODE Endnote 5*).

AGENDA ITEM 12
Review AP-COOS proposal

Drs. Jack Barth, member of MONITOR, and Kim Juniper from Ocean Network Canada, presented a draft proposal to establish an Advisory Panel on Coastal Ocean Observing Systems (AP-COOS) and request to support. TCODE members discussed with its membership and suggested to revise terms of reference, and agreed with co-sponsored AP-COOS and requested to add Dr. Koslow as co-chair of AP-COOS.

AGENDA ITEM 13
Other business

Dr. Suzuki reviewed again an application of IODE ADU and TCODE member confirmed to develop a PICES data exchange policy by TCODE. He also showed a table of comparison with free or charged online file storage in order to store massive data derived from activities of other expert groups such as WG 27 or 29. He advised the Secretariat to use the storage if expert groups require data storage in PICES website.

AGENDA ITEM 14
Closing

The meeting was closed at 18:15.

TCODE Endnote 1
TCODE participation list

Members	Observers

Members	Observers
Robin Brown (Canada)	Jack Barth (USA, MONITOR, Day 2)
Sang-Hwa Choi (Korea)	S. Kim Juniper (Oceans Networks Canada, Day 2)
Tony Koslow (USA)	Yutaka Michida (IOC, Day 1)
Joon-Soo Lee (Korea)	Maciej Telszewski (IOCCP, Day 1)
Georgiy Moiseenko (Russia)	Shanshan Xu (China)
Igor Shevchenko (Russia)	Ting Yu (China; Day 1)
Toru Suzuki (Japan, Chairman)	
Tomowo Watanabe (Japan)	
Jinkun Yang (China)	

TCODE Endnote 2

TCODE meeting agenda

Day 1: 18:00-20:00, Sunday, October 19
1. Welcome and introduction of members and observers
2. Change and adoption of agenda and nomination rapporteur
3. Status of E-Poster session on "Tools, approaches and challenges for accessing and integrating distributed datasets"
4. Review of procedure for Best Presentation Award
5. Report of POMA2014
6. Relations with specific international organizations/programs

Day 2: 14:00-18:00, Wednesday, October 22
7. Status of FUTURE
8. Review of proposed topic sessions/workshops of PICES 2015, Qingdao, China
9. Review progress of TCODE workplan 2013/2014
10. Discussion and adoption on TCODE workplan 2014/2015
11. Presentations of country report
12. Review AP-COOS proposal
13. Other business
14. Closing

TCODE Endnote 3

TCODE workplan 2013/2014

1. Support meetings, workshops, symposia and training course/education activities (AP Goals 1, 2, 6, 7, 8 and 9)
   1-1 Support and co-convene topic session and workshop of PICES 2014 Annual Meeting in Yeosu, Korea
       Responsibility - All
   1-2 Propose topic sessions/workshops at PICES 2015 Annual Meeting
       Responsibility - All
   1-3 Propose metadata unit for inclusion in PICES sponsored training courses
       Responsibility - All
   1-4 Support training course/education activities of international programme/organizations, for example IODE, SOLAS, IMBER, ODINWESTPAC, etc.
       Responsibility - All
2. Maintain a dialogue and collaborate with international organizations and scientific programs (AP Goal 4)
   Responsibility - T. Suzuki/ICES DIG
                  - H. Garcia and T. Suzuki/IODE, GEBICH
                  - T. Suzuki and J.S. Lee/ODP
                  - T. Suzuki/OBIS
                  - J. Yang/ODINWESTPAC
                  - All/new proposed SCOR WGs
                  - R. Brown and T. Suzuki/ocean surface nutrients monitoring
3. Strengthen communication and engagement with users of PICES scientific products (AP Goals 4 and 5)
   Responsibility - I. Shevchenko and R. Brown for HAEDAT/S-HAB
                  - T. Suzuki for PACIFICA/S-CC
                  - I. Shevchenko for WG-21 and 29

TCODE-2014

4. Maintain and promote PICES TCODE GeoSpatial Portal (AP Goals 4, 6, 7 and 8)
    4-1 Update technical report
    4-2 Support to register metadata of database of WG-21 "Non-indigenous Aquatic Species"
    4-3 Support to register metadata of products of WG-23 "Comparative ecology of Krill in coastal and oceanic waters around the Pacific Rim"
    4-3 Support to register scientific products of PICES scientific and technical committees and expert groups
    4-4 Renew remote server contract
    4-5 Continue to administer AdHost server
        Responsibility - I. Shevchenko
5. Promote to use of shared information tools (AP Goals 4, 6, 10)
    5-1 Update FUTURE Website
        Responsibility - I. Shevchenko
    5-2 Maintain S-CCME website
        Responsibility - T. Suzuki
6. Support to development of next North Pacific Ecosystem Status Report (AP Goals 3, 5 and 10)
    Responsibility - R. Brown
7. Maintain TCODE website
    Responsibility - All
8. POMA 2014 nomination and rank
    8-1 Propose a recommendation of new nomination until February 2014
    8-2 Rank nominations in April 2014
    Responsibility - All

TCODE Endnote 4

TCODE workplan 2014/2015

1. Support meetings, workshops, symposia and training course/education activities (AP Goals 1, 2, 6, 7, 8 and 9)
    1-1 Support co-sponsored topic sessions/workshops of PICES 2015 Annual Meeting in Qingdao, China
        Responsibility - Koslow, Brown, Watanabe and Suzuki
    1-2 Propose topic sessions/workshops at PICES 2016 Annual Meeting
        Responsibility - All
    1-3 Propose metadata unit for inclusion in PICES sponsored training courses/summer school
        Responsibility - All
    1-4 Support training course/education activities of international programme/organizations: WESTPAC, ODINWESTPAC, IMBER, IOCCP (training course on biogeochemical sensors) etc.
        Responsibility - All
2. Maintain a dialogue and collaborate with international organizations and scientific programs (AP Goal 4)
    Responsibility - Suzuki for ICES DIG
                    - Garcia and Suzuki for IODE
                    - Yang, Lee, and Suzuki for ODINWESTPAC/ODP/GeoNetwork
                    - All for new proposed SCOR WGs
                    - Brown and Suzuki for ocean surface nutrients monitoring
3. Strengthen communication and engagement with users of PICES scientific products (AP Goals 4 and 5)
    Responsibility - Brown for HAEDAT/S-HAB
                    - Suzuki for PACIFICA/S-CC
                    - Shevchenko for WG-21 and 29
4. Maintain and promote PICES TCODE GeoNetwork (GeoSpatial Portal) (AP Goals 4, 6, 7 and 8)
    4-1 Update technical report
    4-2 Support to register metadata of database of WG-21 "Non-indigenous Aquatic Species"

4-3 Support to register metadata of products of WG-23 "Comparative ecology of Krill in coastal and oceanic waters around the Pacific Rim"

4-3 Support to register scientific products of PICES scientific and technical committees and expert groups

4-4 Renew remote server contract

4-5 Continue to administer AdHost server
Responsibility - Shevchenko

5. Promote to use of shared information tools (AP Goals 4, 6, 10)
5-1 Update FUTURE Website
Responsibility Shevchenko
5-2 Advice using cloud/online storages
Responsibility - Shevchenko

6. Support to development of next North Pacific Ecosystem Status Report (AP Goals 3, 5 and 10)
Responsibility - Brown and Koslow

7. Maintain TCODE website
Responsibility - All

8. POMA 2015 nomination and rank
8-1 Propose new nomination by March 2015
8-2 Rank nominations in April 2015
Responsibility - All

9. Develop PICES data exchange policy
Responsibility - Shevchenko and Brown

10. Support AP-NPCOOS
Responsibility - Koslow

TCODE Endnote 5

Country report of China
by Jinkun Yang, NMDIS/SOA, China

1. Working progress related to TCODE "PICES Metadata Federation Project"

All the updated metadata records from the former PICES-NMDIS node are ready to be submitted to the AdHost server, to become one metadata source of the GeoNetwork portal. There are 21 metadata records, including 6 monthly sea level metadata records for Chinese oceanographic stations, 2 hourly sea level metadata records, and 13 metadata records for marine meteorology wave, temperature and salinity. (see the table below). Meanwhile, China hopes to get more technical information and instruction on GeoNetwork.

Metadata	Station	Time period	No. of Records
Metadata of monthly mean sea level from Chinese oceanographic stations	Dalian, Kanmen, Lvsi, Zhapo, Nasha, Xisha.	2009.01–2014.07	6
Hourly sea level metadata from Chinese coastal stations	Lianyungang, Dalian	2008 2009.01–2014.07	2
Metadata of meteorological data, wave, temperature and salinity data from 13 Chinese coastal stations	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

The National Marine Data and Information Service (NMDIS) is the responsible body of the State Oceanic Administration (SOA), China, for international marine data and information exchange and cooperation. NMDIS has participated in the activities of many international and regional programs, such as Argo, GTSPP, NEAR-GOOS, ODINWESTPAC, ODP, *etc*. It plays an active role in the international community of marine data and information exchange and cooperation. The ODINWESTPAC, ODP, and the CMOC China node on the trial basis, are reported in the following sub-sections.

2.1 Ocean Data and Information Network for the Western Pacific Region (ODINWESTPAC)
The first planning workshop for the Ocean Data and Information Network for the WESTPAC region (ODINWESTPAC) was held in Tianjin, China, between March 4 and 6, 2014. Co-sponsored by the Government of China (NMDIS) and the IOC, the meeting was attended by 22 participants from 9 WESTPAC Member States. Mr. Peter Pissierssens, IOC secretary, and Mr. Somkiat Khokiattiwongand, Chair of IOC Sub-commission for the WESTPAC region, attended the meeting and and reported on behalf of the IOC and IOC Sub-commission for the WESTPAC region, respectively. Nine Member States presented their national reports (altogether 15 reports) on ocean-related economy, marine development and management, marine data and information management and service. Discussions at the meeting included the current status of data and information exchange and cooperation in the region, where currently only 5 of the 9 participating Member States have established an IODE NODC. A work plan for 2014–2016 that focused on the establishment of a regional metadatabase, e-repository, quality management systems, as well as related training was discussed and adopted. The meeting facilitated the exchange and cooperation between WESTPAC Member States and improved the marine data and information sharing in the region.

2.2 IODE ODP China Node
NMDIS acts as the IODE NODC of China. It participated in the IODE Ocean Data Portal program on behalf of the SOA. In October 2010, with the instruction from two experts from Russia, Dr. Sergey Belov and Dr. Sergey Sukhonosov, the installation of ODP software, configuration and metadata extraction were completed at NMDIS. The ODP China Node was operated at NMDIS.

During April 21–25, 2014, three experts of the Partnership Centre for the IODE Ocean Data Portal (PC ODP), acting on the basis of RIHMI–WDC, Dr. Sergey Belov, head of PC ODP, Dr. Sergey Sukhonosov, lead developer, and Mr. Aleksandr Kolesnikov, system engineer (network and telecommunications), visited the NMDIS to provide technical training for the establishment of an ODP regional node at NMIDS. During the training course, an ODP regional node and WESTPAC regional node were deployed. As a result, the ODP regional node was installed on a brand new enterprise server and participants were able to provide access to seven real data sets via the NMDIS data provider. The established node is intended to coordinate and expand a distributed information network under the auspices of ODINWESTPAC. The regional node portal is available at http://portal-odp.nmdis.gov.cn.

2.3 JCOMM CMOC China node on a trial basis
At the Fourth Session of JCOMM (JCOMM-IV, Yeosu, Korea, May 23–31, 2012) it was decided that the NMDIS could begin filling the role of CMOCs on a trial basis immediately. Since then, the NMDIS has taken the following actions: strengthening and streamlining the former JOCMM/ODASMS in the management of CMOC China; standardization processing and high level quality control of the data from JCOMM observation programs and projects; a study on metadata management and standards; research and development of marine meteorological and climatic data and data products and provision of data and data product service.

After two years, CMOC China has gained experience on collection, processing, product research of global oceanographic and marine meteorological data. on The trial basis website for CMOC China is available at www.cmoc-china.cn, where data from Chinese coastal stations, China Argo data and products, *etc*. are offered. Three experts on behalf of JCOMM and IODE will visit the NMDIS on November 3–5, 2014 to assess the CMOC China.