NSDI-CAP Final Report

Title: North Pacific Ecosystem Metadata Federation: Japan Component
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Final Report
Organization: National Oceanic and Atmospheric Administration
               National Marine Fisheries Service
               Alaska Fisheries Science Center
               7600 Sand Point Way NE
               Seattle, WA 98115
               http://www.afsc.noaa.gov/
Project leader: Dr. Bernard A. Megrey
               206-526-4147
               bern.megrey@noaa.gov

1. Project Narrative

NSDI supported the entry of Japan's Marine Information Research Center (MIRC) into a federation of Pacific Rim countries supplying marine ecosystem metadata. The federation effort is led by personnel of the North Pacific Ecosystem Metadatabase (NPEM). This final report contains information from our two MIRC-NPEM Metadata Federation organizational and planning meetings which took place at the Alaska Fisheries Science Center (AFSC), Seattle, WA 98115-6349, USA, August 14-15, 2006 and at the Marine Information Research Center (MIRC), Tokyo Japan, October 14-15, 2007.

1.1. First Planning Meeting

Participants: Dr. Toru Suzuki, (MIRC), Mr. S. Allen Macklin, (NOAA/PMEL), Dr. Bernard A. Megrey, (NOAA/AFSC), and Ms. Kimberly Bahl, (UW/JISAO).

Dr. Suzuki traveled to Seattle in August 2006 for the first planning meeting (Fig 1 and 2). The meeting began with an overview of NPEM, Isite (an application of the Z39.50 protocol) and a history of the NPEM and PICES federation project. The overview was based on a presentation given at the annual PICES meeting in Vladivostok, October 2005. An overview of MIRC's data holding and metadata needs followed. Dr. Suzuki informed participants of the hierarchical structure of MIRC, JODC, and Japan Hydrographic Association (JHA). He then discussed the varied types of data holdings available through JODC. JODC's data holdings are extremely valuable to scientists working in the North Pacific. They maintain data from several million stations dating back to the early 1800s. JODC Cruise Summary Reports (CSR) provide information for each observational cruise including date/time, research area, abstract, purpose, and contact information. Therefore the CSR contains much of the core metadata elements that will serve as the basic source of PICES-MIRC metadatabase.

The first requirement for federation is to produce FGDC-compliant metadata. Kimberly Bahl, who received training from FGDC last spring, introduced the FGDC metadata content standard and its sections

and elements. This gave Dr. Suzuki the metadata rules to write FGDC-compliant metadata records from MIRC information. Ms. Bahl also demonstrated several open-source metadata creation and validation tools, Metavist 2005 and Metadata Parser (MP). These tools allow easy creation of individual metadata records in XML file format (required for any clearinghouse node) and validation that they are FGDC-compliant. Participants used Metavist and MP to create and validate an XML metadata record from a JODC Cruise Summary Report.

The second requirement for PICES federation is to supply a common communication protocol: Z39.50. Ms. Bahl provided specific instructions of how to install and configure the Isite application that allows the use of Z39.50 protocol. The Isite software suite is a free, open-source application available from the FGDC website.

The remainder of the meeting was spent discussing strategies for implementing a Japanese clearinghouse node and dealing with the problems and challenges of locating ongoing funding for the PICES federation. PICES has been very supportive but has limited resources. At present, funding from within NOAA is unlikely. Despite numerous efforts, attracting money from international funding organizations has not been successful. There is a possibility that NOWPAP (Northwest Pacific Action Plan) may be able to provide support for a federation. This year, MIRC will request proposals for three-year projects to begin in April 2007. Participants of this meeting will work with Dr Suzuki to develop a MIRC proposal to their funding agency, the Nippon Foundation. The proposal will provide support for ongoing MIRC participation in the PICES federation, primarily through development of a MIRC metadatabase. The meeting ended with MIRC plans to develop a demonstration site using Isite and the XML record created at this meeting and to register the node at the clearinghouse.

1.2. Second Planning Meeting

Participants: Norio Baba (NOWPAP RCU), Kimberly Bahl (UW/JISAO), S. Allen Macklin (NOAA/PMEL), Dr. Bernard A. Megrey (NOAA/AFSC), and Dr. Toru Suzuki (MIRC/JHA)

The second planning meeting was held in Japan in October 2006 in conjunction with the annual PICES meeting. Meetings were held at the Redbrick Warehouse in Yokohama and at the MIRC offices in Tokyo (Fig. 3). Mr. Norio Baba of NOWPAP also joined the discussions.

Participants reviewed issues raised at the TCODE meeting which took place a day earlier. These included the advantages of promoting the metadatabase in NOWPAP DINRAC (NOWPAP's Data and Information Network Activity Center). Participants discussed the relationship between PICES TCODE and NOWPAP DINRAC activities and new opportunities for capacity building, and investigating the utility of an Asian-side metadatabase mirror server. Norio Baba said that NOWPAP has worked on metadata capacity building and might be able to invite a specialist from NPEM to collaborate. Dr. Suzuki also said that representatives from Korea and Japan may also assist the DINRAC activity.

Toru Suzuki introduced the new PICES-MIRC node registered to the NSDI clearinghouse. He reported that Isite had been installed on MIRC's site and registered as 'PICES-MIRC metadatabase' on Oct.18. He reported that some small problems were encountered during installation and configuration of the site. Participants discussed technical issues related to resolving them.

Participants reviewed the progress on the Seattle meeting action plan and amended the action based on the Japan meeting discussions. Dr. Suzuki plans to develop a proposal on October 23. 2006, to the Nippon Foundation for metadata translation.

1.3. Summary of Project Accomplishments

Meetings:

- NSDI-CAP 2006 Orientation Workshop, Boulder, CO, May 12, 2006.

- First NPEM-MIRC Workshop, Seattle, WA, August 14-15, 2006.

- Second NPEM-MIRC Workshop, Yokohama/Tokyo Japan, October 19-20, 2006.
- PICES Annual Meeting, October 12-22, 2006, Yokohama, Japan.

Presentations:

- Bahl, K. Steps To Developing A Clearinghouse Node. Presented at the First NPEM-MIRC Workshop, Seattle, WA, August 14, 2006.

- Toru Suzuki. MIRC-JODC data overview. Presented at the First NPEM-MIRC Workshop, Seattle, WA, August 14, 2006.

- Megrey, B.A., S.A. Macklin, and K. Bahl. North Pacific Ecosystem Metadatabase. Presented at the First NPEM-MIRC Workshop, Seattle, WA, August 14, 2006.

- Kimberly Bahl, Dan Klawitter, S. Allen Macklin, Bernard A. Megrey. 2006. Current status of the PICES Metadata federation. Presented at the Second NPEM-MIRC Workshop, Tokyo, Japan, October 19, 2006.

- Kimberly Bahl, Dan Klawitter, S. Allen Macklin, Bernard A. Megrey. 2006. North Pacific Ecosystem Metadata Federation: Japan Component. NSDI-CAP 2006 Orientation Workshop, Boulder, CO, May 12, 2006.

- S. Allen Macklin, Bernard A. Megrey, Kimberly Bahl and Toru Suzuki. "A Federation of PICES Member Country Metadatabases". Presented at the PICES Annual Meeting, Working Group 6, "Data management, delivery, and visualization products from Ocean Observing Systems in major boundary currents, PICES Annual Meeting, October 12-22, 2006, Yokohama, Japan.

- Macklin, S.A. Megrey, B.A., and K. Bahl. North Pacific Ecosystem Metadata Federation: Japan Component OR Federated Metadata of PICES Member Nations: Information Sharing Across International Borders. Presented at the PICES Technical Committee on Data Exchange (TCODE) annual Meeting, October 14, 2007, Yokohama, Japan.

Publications:

- Megrey, B.A., Macklin, S. A., and T. Suzuki. 2007. Japan joins PICES Marine Metadata Federation. PICES Press 15(1): 30-33.

- Megrey, B.A., Macklin, S. A., Bahl, K. and P. Daniel Klawitter (eds). 2007. Metadata Federation of PICES Member Countries. 2007. PICES Technical Report 1. 159 pp. (web version - http://www.pices.int/publications/tech_reports/tech_rep_1/tech_rep_1.aspx

2. Metadata training and outreach assistance

2.1. List organizations and number of individuals receiving metadata training and outreach assistance as appropriate: We trained, Dr. Toru Suzuki, the general manager of the research division of the Marine Information Research Center and Japan Hydrographic Association who also trained his staff. We believe up to six individuals were directly or indirectly trained. We believe the training has been extended to individuals within the Japan Oceanographic Data Center (JODC) as the MIRC and JODC are co-located on the same floor of the same building in Tokyo.

2.2. At what level of proficiency are the trainees or training: We consider the trainees have a good working knowledge of FGDC metadata standards and metadata creation and validation tools.

2.3. Indicate the number and character of workshops conducted as appropriate: Two training and planning technical workshops were conducted during this project. These are described in the narrative.

3. Status of Metadata Service

3.1. Site names where metadata is served; clearinghouse node or Geospatial One-Stop harvestable web folder: All MIRC metadata are being served from the NSDI Clearinghouse Node (Figure 4) which can be searched by going to http://clearinghouse1.fgdc.gov/fgdc/EDCgateway.html

3.2. Approximately how many metadata entries have resulted from this project? We cannot determine this information at this time.

3.3. Do you need assistance in providing for metadata service to organizations you have assisted? No.

4. Next Steps

4.1. Will this project's activities continue in the future: Minimally on a volunteer basis unless we can locate additional monies to help translate Japanese metadata records into English. MIRC has made a formal request to the All Nippon agency for ongoing support.

4.2. Describe the next phase in your project: Through PICES TCODE, efforts continue to increase the number of metadata records supplied by Korea, Russia and Japan. We have approached NSDI-CAP to assist with bringing the Chinese National Data and Information Management Service into the PICES Marine Metadata federation. Work on this project is just beginning to get underway.

4.3. Are there issues in metadata management and service: Many international metadata records require translation to English and FGDC format.

4.4. Requirements (more technical assistance, software, other?): NSDI-CAP grant monies ($20,000) essentially provided startup funds. We estimate that the real cost of the project, including matching monies supplied by PICES, NOAA/PMEL and

NOAA/AFSC were close to $63,000. The opportunity to compete for additional follow-up monies to help sustain the initial efforts of a successful project would be most useful.

4.5. What areas need work? English translation of metadata records recorded in a foreign language.

5. Feedback on Cooperative Agreements Program

5.1. What are the program strengths and weaknesses? Strength – the opportunity to engage international collaborators and make international marine metadata accessible to US marine scientists. Weaknesses – insufficient funding level to accommodate the real costs of the project. The requirement to attend a NSDI-CAP Kickoff meeting was of minimal benefit (opinion based on two separate experiences).

5.2. Where does the program make a difference? Providing the opportunity to make metadata available from international marine data laboratories accessible to US researchers. Typically this information is completely inaccessible. The opportunity to train non-US scientists in metadata standards, preparation etc is an extremely valuable contribution to true international data sharing.

5.3. Was the assistance you received sufficient or effective? The monies supplied by NSDI-CAP were appreciated and made a definite impact but per 4.4 above, they barely covered the real cost of implementing our specific project. A higher funding level for the program would be a useful change.

5.4. What would you recommend doing differently? Provide higher levels of funding for the program.

5.5. Are there factors that are missing or need to consider that were missed? No.

5.6. Are there program management concerns that need to be addressed? Time frame? No.

5.7. If you were to do this again, what would you do differently? We would try to more effectively leverage the NSDI-CAP funds to prepare a proposal to another funding agency to help support metadata translation. Operating on a one year time frame made this difficult.

Prepared by:
Bernard A. Megrey

Appendix 1. MIRC-NPEM meeting agendas and minutes

Seattle Meeting agenda, August 14-15, 2006

Time	Event	Facilitator
Day 1		
09:00	Introductions; Overview of NPEM and Isite.........................	B. Megrey, A. Macklin
09:45	MIRC's data overview and metadata needs	T. Suzuki
10:30	Walking tour of AFSC and PMEL	All
11:30	LUNCH	
13:00	FGDC Content Standard for Digital Geospatial Metadata	K. Bahl
14:00	NSDI Clearinghouse Network overview	K. Bahl
15:00	Comment, discussion	All
Day 2		
09:00	Isite implementation overview	K. Bahl
11:30	LUNCH	
13:00	MIRC metadata and node development strategy....................	All
15:30	Preparation for October meeting	All

Seattle meeting minutes, August 14–15, 2006

Participants

Kimberly Bahl, UW/JISAO
Allen Macklin, NOAA/PMEL
Bernard Megrey, NOAA/AFSC
Toru Suzuki, MIRC

Introductions

Overview of NPEM and Isite. Bernard Megrey and Allen Macklin opened the meeting by introducing all participants and presenting a history and overview of the NPEM and PICES federation project. The overview was based on a presentation given at the annual PICES meeting in Vladivostok, October 2005. Two elements are needed for federation: metadata in a standard format and a common communication protocol. The PICES federation uses FGDC metadata standard and Z39.50 protocol.

Locating ongoing funding for NPEM and federation is a challenge

PICES has been very supportive but has limited resources. At present, NOAA funding is unlikely. We have been unsuccessful in attracting money from international funding organizations. There is a possibility that NOWPAP can provide support for federation. Also, a new 3-year funding cycle at MIRC will start next year.

MIRC's Data Overview and Metadata Needs

Toru Suzuki informed participants of the hierarchical structure of MIRC, JODC, and Japan Hydrographic Association (JHA). He then discussed the varied types of data holdings available through JODC. JODC's data holdings are extremely valuable to scientists working in the North Pacific. They maintain data from several million stations dating back to the early 1800s. Although there is no formal metadatabase, metadata information are extensive in the form of header records, etc.

Walking Tour of AFSC and PMEL

Toru Suzuki was introduced to leadership at AFSC and PMEL and viewed essential laboratory spaces.

FGDC and NPEM Websites: Overview and Search Demo. Kimberly Bahl introduced FDGC and NPEM websites and provided a live metadata search demonstration. Presently the NSDI Clearinghouse legacy search gateway fails to connect with the NPEM Clearinghouse node. The legacy search gateway is built with propriety

software that is no longer maintained and supported by the vendor, Blue Angel Software. The legacy interface will eventually be replaced with GeoNetwork, a user-maintained and open-source solution with similar and enhanced capabilities compared to the legacy interface. The GeoNetwork gateway (beta version of the new search gateway that is in development) will be implemented in 6 months to a year. A demonstration of GeoNetwork (via a demonstration sever) provided successful search results. NPEM will work with NSDI to determine the cause of the legacy search gateway failure.

FGDC Metadata Content Standard

Kimberly Bahl, who received training from FGDC last spring, introduced the FGDC metadata content standard and its sections and elements. This gave Toru Suzuki the metadata rules to write FGDC-compliant metadata records from MIRC information.

Metadata Creation and Validation Tools

Kimberly Bahl demonstrated several open source metadata creation and validation tools, Metavist 2005 and Metadata Parser (MP). These tools allow easy creation of individual metadata records in XML file format (required for any clearinghouse node) and validation that they are FGDC compliant. Participants used Metavist and MP to create and validate an XML metadata record from a JODC Cruise Summary Report.

This completes the first requirement for federation: FGDC compliant metadata.

Isite Implementation

The second requirement for PICES federation is to supply a common communication protocol: Z39.50. Kimberly Bahl provided specific instructions of how to install and configure the Isite application that allows the use of Z39.50 protocol. The Isite software suite is a free, open-source application available from the FGDC website.

MIRC Metadata and Node Development Strategy

This year MIRC will request proposals for three-year projects to begin April 2007. Participants of this meeting will work with Toru Suzuki to develop a MIRC proposal to their funding agency, the Nippon Foundation. The proposal will provide support for ongoing MIRC participation in the PICES federation. A primary component will be development of a MIRC metadatabase. As soon as possible, MIRC will develop a demonstration site using Isite and the XML record created at this meeting. This will be a registered node of the PICES federation.

In addition we discussed the strategies for long term funding and progress reports on this project and overall PICES federation:

Priority	Task	NPEM	MIRC	Due Date
1	Develop proposal to Nippon Foundation to assist with metadata transcription and translation.	x	X	Sept 30, 2006
1	Configure Isite server, register PICES-MIRC node with NSDI, test sample XML record.		X	Oct. 1, 2006
2	Prepare project meeting minutes.	X		Sept. 1, 2006
2	Check with NOWPAP office in Toyama to see if UNEP has a program that could help fund federation.		X	Sept. 1, 2006
2	Check NODC and CDMP as possible sources of support.	X		Sept. 1, 2006
3	Prepare project report for PICES TCODE	X	x	Sept. 1, 2006
3	Prepare article for PICES Press after Tokyo meeting.	X	x	April 1, 2007
4	Determine proper Japanese affiliation (MIRC/ JHA, JODC)		X	Oct. 1, 2006

Preparation for October meeting: Participants developed the following draft agenda for the next meeting to bring MIRC into the PICES federation.

The meeting will be held on Thursday and Friday, October 19 and 20, in Yokohama and Tokyo, respectively. The agenda will be finalized at the TCODE meeting on Wednesday, October 18.

Tokyo meeting agenda, October 19–20, 2006

Start	Event	Participants
Thursday, October 19, 2006 at Yokohama		
14:00	Review TCODE meeting	MIRC-NPEM-NOWPAP
14:30	Discussion of the MIRC-NPEM federation, including metadata mapping, node registration, etc.	MIRC-NPEM-NOWPAP
15:30	Review progress on tasks	MIRC-NPEM-NOWPAP
Friday, October 20, 2006 at Tokyo		
10:30	Walking tour of Tukiji Fish Market	MIRC-NPEM-NOWPAP
11:00	Walking tour of JODC/JHOD	MIRC-NPEM-NOWPAP-JODC
12:00	LUNCH	
13:30	Introduction and Overview	MIRC-NPEM-NOWPAP
14:00	PICES-MIRC Metadatabase demo	MIRC-NPEM-NOWPAP
15:00	Comment, discussion	MIRC-NPEM-NOWPAP
16:00	Review tasks and draw up future plans	MIRC-NPEM-NOWPAP
18:00	Dinner in Tokyo (Tsukiji)	
20:00	Train to Yokohama	

Tokyo, meeting minutes, October 19–20, 2006

Participants

Norio Baba, NOWPAP RCU
Kimberly Bahl, UW/JISAO
Allen Macklin, NOAA/PMEL
Bernard Megrey, NOAA/AFSC
Toru Suzuki, MIRC/JHA

Participants reviewed TCODE meeting on October 18 and discussed with (1) promotion using metadatabase in NOWPAP DINRAC, (2) capacity building, (3) investigation utility of Asian-side metadatabase mirror server, and (4) review and revise a PICES TCODE technical report.

Toru Suzuki introduced that a PICES-MIRC metadatabase registered to NSDI clearinghouse and he reported that there were some problems for installation and configuration on the site. Participants discussed to resolve them.

Participants reviewed the progress on tasks described in Seattle meeting (see Sec. 15.2.2). Toru Suzuki promised to develop a proposal to Nippon Foundation on October 23. He also reported that Isite had been installed on MIRC's site and registered it as a node to NSDI clearinghouse named 'PICES-MIRC metadatabase' on October 18. Kimberly Bahl finished a meeting minutes of Seattle meeting on August 25. Participants discussed about relationship between PICES TCODE and NOWPAP DINRAC activities and new program for capacity building.

Toru Suzuki introduced a summary of MIRC and JODC activities. Allen Macklin asked about running cost of MIRC after termination support by Nippon Foundation and Toru Suzuki answered that MIRC profit from distribution of value adding data products and commission from Fisheries Research Agency, National Institute for Environmental Studies and so on.

Toru Suzuki demonstrated to entry two sample metadata to PICES-MIRC metadatabase and pointed out some problems in searching results. Toru Suzuki also reported that Isite compiled from source package on Solaris machine successfully but searching results was not correct, nevertheless Linux binary package show the correct results using the same sample metadata. Participants discussed about them and Kimberly Bahl and Toru Suzuki decided to keep contact and ask to Isite support by email after this meeting. Toru Suzuki also tried to register with Geonetwork.

Participants drew up future plans. Participants deeply discussed about NSDI CAP 2007 proposal relation with NPEM-China federation and decided to contact China delegation of TCODE. Norio Baba said that the different agency in China delegate to DINRAC and therefore it may require any help to establishment of metadatabase in NOWPAP. Norio Baba also said that NOWPAP has worked on capacity building of metadata and might be able to invite a specialist from NPEM. Toru Suzuki said that representatives of Korea and Japan may also assist the DINRAC activity.

Priority	Task	NPEM	MIRC	Due Date
2	Contact FGDC about Geonetwork Beta-version	X		Oct. 30, 2006
1	Contact FGDC about Isite issues	X	x	Oct. 30, 2006
1	Revise PICES technical report No.1 (NOWPAP to review)	X	x	Nov. 22, 2006
1	NSDI CAP 2007 proposal Category I	X		Jan. 19, 2007
1	Contact China delegation of TCODE	X		asap
1	Develop proposal to Nippon Foundation		X	Oct. 23, 2006
1	Prepare article of PICES press	X	X	Nov. 23, 2006
1	Minutes of this meeting	x	X	Oct. 30, 2006
2	Prepare conversion to FGDC standard from CSR stored in JODC		X	Mar. 30, 2007

Fig. 1   The MIRC-NPEM Federation Team inside the Pacific Marine Environmental Laboratory, Seattle, WA, August 2006; l to r: Kimberly Bahl, Toru Suzuki, Allen Macklin, and Bernard Megrey.
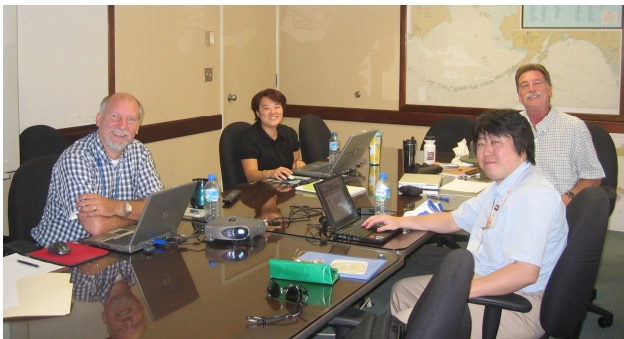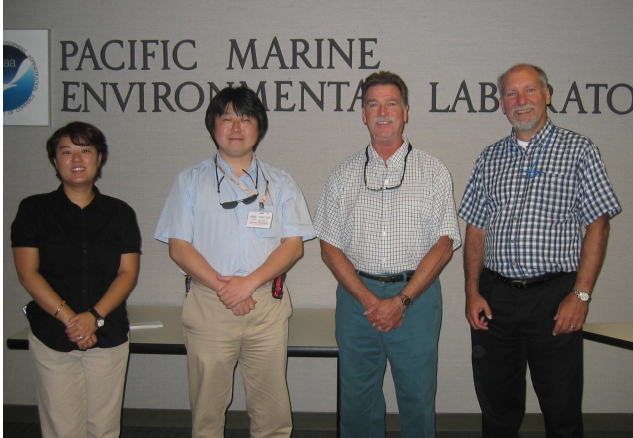

Fig. 2   MIRC and NPEM representatives working at the Alaska Fisheries Science Center in Seattle, August 2006; l to r: Bernard Megrey, Kimberly Bahl, Toru Suzuki and Allen Macklin.

Fig. 3   Top: Working session at MIRC headquarters in Tokyo Japan, October 2006. L to r: Allen Macklin, Toru Suzuki, Norio Baba and Bernard Megrey. Kimberly Bahl (not shown) Bottom: Group photo including l to r: Toru Suzuki, Norio Baba, Kimberly Bahl Allen Macklin and Bernard Megrey.

Fig. 4   The arrow points to the current PICES nodes (KODC, MIRC, NFRDI, NPEM, and TINRO) of the Clearinghouse registry. The symbols describe connectivity statistics for all registered sites. At this time, there were 405 sites participating in the clearinghouse (not all shown).