REPORT OF STUDY GROUP ON GOOS

Due to scheduling conflicts, a pre-meeting was held to brief Dr. Jeffrey M. Napp, MONITOR Chairman, on the report of the Study Group to develop a strategy for GOOS (hereafter SG-GOOS). Two SG-GOOS members, Drs. Vyacheslav Lobanov and Dong-Young Lee, were unable to attend the Annual Meeting but participated by e-mail for the preparation of the report (*SG-GOOS Endnote 1*). This report was discussed and recommended for submission to MONITOR.

Activities in 2007

- Reports for 2006 and 2007 activities are posted on the SG- GOOS web page.
- In January 2007, Dr. Lobanov represented PICES at the 11th Session of the IOC/WESTPAC Coordinating Committee for the North-East Asian Regional Global Ocean Observing System (NEAR-GOOS) in Bangkok, Thailand (*SG-GOOS Endnote 2*).
- In March 2007, Dr. Phillip R. Mundy, SG-GOOS Chairman, presented a report on activities of MONITOR at the 10th GOOS Scientific Steering Committee (GOOS SSC) meeting in Seoul, Korea (*SG-GOOS Endnote 3*). Dr. Dong-Young Lee also attended this meeting as GOOS SSC Vice Chairman and a member of SG-GOOS. The results of the meeting are described in *SG-GOOS Endnote 4.* The Study Group wishes to thank GOOS SSC members and its Chairman, Dr. John Field, for their consideration of the issues and for their invitation for PICES to participate in the GOOS SSC meeting. Special thanks to Dr. Dong-Young Lee, for his support and hospitality during the SSC meeting.

Recommendations

It is recommended that:

- Starting in 2007, MONITOR, in cooperation with TCODE, focus its activities on providing a forum for representatives of the existing North Pacific observing systems in which cross-GRA (GOOS Regional Alliance) observing projects (inter-regional and international), observing technologies, and data and information sharing protocols would be developed.
- The terms of reference of MONITOR be modified to explicitly include facilitation of cooperation, communication, and coordination among North Pacific ocean observing systems. This affects existing terms of reference 1, 2, 3, and 7. These four terms of reference should be replaced by the following two:
  a. Identify principal monitoring needs of the PICES region and approaches to meet these needs by serving as a forum for coordination and development of inter-regional and international components of the North Pacific ocean observing systems, including the Global Ocean Observing System (GOOS) and including method development and inter-comparison workshops to facilitate calibration, standardization and harmonization of data sets;
  b. Provide Annual Reports to Science Board and the PICES Secretariat on monitoring activities in the PICES area.
- A representative of MONITOR be sent annually to GOOS SSC meetings to exchange reports on North Pacific monitoring activities, emphasizing projects that span observing regions and international boundaries (*e.g.*, such as the Continuous Plankton Recorder surveys), progress in establishing sensor technologies for scientifically sound observing systems, and progress in the use of common information exchange methods (*e.g.*, such as the Global Telecommunications System, GTS). Having a MONITOR representative to attend this meetings will:
  a. Meet the PICES mission of promoting cooperation and collaboration in marine sciences among member countries; a

forum for international collaboration within each region is much needed;

b. Clarify MONITOR's terms of reference to facilitate international cooperation in the development of observing projects, observing systems and means of data gathering and information exchange;
c. Provide a forum to assist in the production of the North Pacific Ecosystem Status Report, which is among the responsibilities of PICES.

Identification of North Pacific observing systems

The identification of specific data types by observing systems has been deferred pending the results of the Intergovernmental Oceanographic Commission (IOC) Circular Letter No. 2199 requesting that member states provide "National contributions to the Global Ocean Observing System" which will be available at PICES XVII, and subsequent reports of MONITOR. Two summary information tables were provided in the 2006 SG-GOOS report.

SG-GOOS Endnote 1

Participation list

Members

William R. Crawford (Canada)
Phillip R. Mundy (U.S.A., Chairman)
Sei-Ichi Saitoh (Japan)

Participants by correspondence

Dong-Young Lee (Korea)
Vyacheslav Lobanov (Russia)

SG-GOOS Endnote 2

11th Session of the IOC/WESTPAC Coordinating Committee for the North-East Asian Regional Global Ocean Observing System (provided by Dr. Vyacheslav Lobanov)

Introduction

In accordance with the recommendation of MONITOR that PICES should play a strong role in the coordination and facilitation of North Pacific regional GOOS projects and to advance contacts with the relevant GOOS Regional Alliances to explore ways in which PICES can enable their development, Dr. Vyacheslav Lobanov (Russia) was present as an observer at the 11th Session of the IOC/WESTPAC Coordinating Committee for the North-East Asian Regional Global Ocean Observing System (NEAR-GOOS-CC-XI). The meeting was held on January 18–19, 2007, in Bangkok, Thailand, and was organized by the IOC/UNESCO Regional Secretariat for the Western Pacific (IOC/WESTPAC), with support from the Department of Marine and Coastal Resources (DMCR) of the Ministry of Natural Resources and Environment (MNRE), Thailand. The meeting was attended by the Coordinating Committee (CC) members from participating countries, NEAR-GOOS working group leaders, observers from regional programs/organizations, and representatives of related Thailand agencies.

NEAR-GOOS was initiated in 1996 upon the formal adoption of its Implementation Plan and Operational Manual by the 29th Executive Council of IOC. As a regional pilot project of GOOS, it has been undertaken in partnership between the Japan, People's Republic of China, the Republic of Korea and the Russian Federation as a WESTPAC activity. The most important successes of NEAR-GOOS in its first phase (1996–2003) have been the consolidation of a functional two-mode distributed Internet-based database structure in the partner countries, and the linkage of this structure with one Regional Real-Time Database (RRTDB) and one Regional Delayed-Mode Database

(RDMDB) responsible for the receipt and merging of data in this region. The data in the RRTDB include only major physical parameters, while information available through the RDMDB is more diverse. At its 9th Session in 2004, the CC approved the Strategic Plan for the second phase of NEAR-GOOS (2004–2008), with the goal to provide the "Development of a basic integrated ocean observing and operational forecasting system in the NEAR-GOOS area adhering to the GOOS Principles and building on the data management and exchange mechanisms developed in the first phase through the inclusion of additional parameters, increased coverage in space and time, the generation of a generic suite of data products and adequate quality control and quality assurance procedures".

Objectives of the 11th Session

NEAR-GOOS is governed by the CC which consists of two representatives from each member country and holds its meetings annually. The major tasks of the 11th Session were to:

- review the status of NEAR-GOOS and the progress made during the inter-sessional period, including activity of regional and national databases and related national activities;
- review the activities of NEAR-GOOS Working Groups (WG on *New Generation Sea Surface Temperature* and WG on *Data management*) and to make recommendations for their plans as well as to discuss formation of two new Working Groups (WG on *Monitoring Using Drifter and Buoys* and WG on *Regional Sea Projects*);
- discuss the follow-up activities towards the goals of NEAR-GOOS in its second phase (2004–2008);
- identify the role of NEAR-GOOS in global GOOS development and effective ways to interact with other GRAs (the 3rd GOOS Regional Forum, the Global Coastal Network, GSSC-X Scientific Workshop, SEA-GOOS, *etc.*)
- exchange information on related programs in the region to identify possible areas in cooperation with other related regional programs and projects, such as the ODIN-WESTPAC, NOWPAP, Yellow Sea LME, PICES, *etc.*

Status of NEAR-GOOS

The NEAR-GOOS data exchange system, consisting of regional and national databases, continued its operation over the reporting year quite successfully. The number of registered uses of the RRTDB has been around 105 while the number of FTP accesses varied from 3,000 to 10,000 hits/month. The total number of accesses to the RDMDB top page in 2006 has increased by almost 4,000 hits compared with that in 2005. Forty different types of data are being handled by RDMDB: 37 types from RRTDB and 3 types from other sources. As of December 31, 2006, 35 GB of oceanographic/ marine and meteorological data are available – an increase of 10 GB in comparison with the amount reported to the previous session. Further improvements and modifications in national NEAR-GOOS databases in China, Korea and Russia were reported. An increase in the amount of data, number of data providers, sources of information and their accessibility were presented for most data holdings, however, with varying success. Extensive development of the observing system involved in NEAR-GOOS was demonstrated in Korea, where a growing network of coastal stations, moorings, buoys and open-sea platforms are to be found. A joint Korean–China activity, the development of a Yellow Sea Operational Oceanography System (YOOS), will essentially contribute to NEAR-GOOS. In addition to regional data sets, most of the databases are linked with other international projects, such as Argo, GTSPP, and JCOMM. In addition to data, there is a large amount of metadata and other oceanographic products available from the databases.

Some problems, however, exist in the NEAR-GOOS data exchange system. The restrictions on data exchange, especially in real-time mode, particularly in China and Russia, result in a limited number and sources of available data. Each of the member countries still has no complete integrated system which would operationally acquire, hold and provide to users all oceanographic data on a national level, but

progress toward construction of such a system is going on in every country. Information on NEAR-GOOS databases is listed in Table 1 below.

As a capacity building activity, a training course on *NEAR-GOOS Data Management* was organized by the Japan Oceanographic Data Center (JODC). This is the eighth training course that has been hosted biannually by JODC for oceanographic data managers and researchers from WESTPAC countries.

Two Working Groups established at the 10th Session of the NEAR-GOOS CC – WG on *Data Management* and WG on *New Generation SST* – reported on their activities and plans. One of the major tasks of the WG on *Data Management* is to include chemical and biological parameters in NEAR-GOOS databases. As the first step, an inventory of *in situ* chlorophyll and total suspended materials data available in the region will be prepared along with recommendation of their incorporation into an existing data exchange system.

Further development of NEAR-GOOS

A brief discussion was focused on establishing other working groups as discussed at previous CC meeting, WG on *Monitoring Using Drifters and Buoys* and WG on *Regional Sea Projects*. However, these issues were not properly prepared for CC consideration, and it was suggested to postpone the discussion until the next CC meeting.

Another suggestion on the further promotion of NEAR-GOOS is related to the development of satellite ocean color remote sensing. The Ocean Color Project is one of the major activities of the IOC/WESTPAC Ocean Remote Sensing Program. It was agreed to support an initiative of NOWPAP to organize in 2007 the Remote Sensing Training Course on *Data Analysis for Oceanography* and to recommend co-sponsorship of this activity by IOC/WESTPAC.

Collaboration with related programs in the region

Progress in other GOOS Regional Alliances (GRAs) and related regional programs/projects such as SEA-GOOS, UNEP/NOWPAP, PICES, YSLME, was presented by the observers. There was consensus on the importance of closer collaboration with these organizations and programs/projects in order to share efforts and resources for developing a sustained oceanographic observing system in the region. In particular, the importance of closer networking among GRAs and support for the recommendations of the 3rd GOOS Regional Forum was noted.

Joint activity with YSLME on database development and linking of databases with NOWPAP was welcomed. The newly established partnership of IOC/WESTPAC with YSLME and PEMSEA was also highlighted. A Memorandum of Understanding with the YSLME Project Management Office and a Letter of Cooperation with the PEMSEA Regional

Table 1 NEAR-GOOS databases

Country	Database	Responsible organization	Address
Japan	Regional RTDB	JMA	http://goos.kishou.go.jp
Japan	Regional DMDB	JODC	http://near-goos1.jodc.go.jp
China	National RTDB	NMEFC	http://www.nmefc.gov.cn
China	National DMDB	NMDIS	
Korea	National RTDB	KORDI	http://near-goos.kordi.re.kr
Korea	National DMDB	NFRDI	http://kodc2.nfrdi.re.kr:8001/home/eng/near-goos
Russia	National RTDB	FERHRI	http://rus.ferhri.ru/esimo/Projects/Neargoos
Russia	National DMDB	POI	http://www.pacificinfo.ru

Program Office were signed at the 3rd Meeting of Project Steering Committee of YSLME in November 2006 and at the Inaugural Partnership Meeting of the East Asian Seas Congress in December 2006, respectively. Considering the expertise of NOWPAP, YSLME, IOC/ WESTPAC, it was noted that regional cooperation needs to be further promoted on remote sensing. It was suggested that IOC/WESTPAC co-sponsor with NOWPAP the Remote Sensing Training Course on *Data Analysis for Oceanography* which would be based on the existing training course currently hosted by JODC, with its extension toward inclusion of remote sensing.

Recognizing that ocean data and information related activities and networking of the participating organizations that carry out major NEAR-GOOS activities will further the efficient development and improvement of ocean data and information capability in the region, the NEAR-GOOS CC supported a pilot project proposal of an Ocean and Data Information Network for the WESTPAC region (ODIN-WESTPAC-PP) and invited all NEAR-GOOS participating organizations to take part in the pilot project when it will be approved by IODE.

A presentation was given on PICES and major activities of its Technical Committee on Monitoring (MONITOR). PICES' intention to support and coordinate monitoring activity in the northern North Pacific and recommendations of PICES Study Group on GOOS were reported. Also explained was PICES' vision of its possible participation in GOOS at the current stage as a coordinating body and forum for development of cross-GRAs observing projects, observing technologies, and data and information sharing protocols. Other monitoring-related activity by PICES, such as the North Pacific Continuous Plankton Recorder Project, Ecosystem Status Report and outcomes of PICES XV scientific sessions were also presented. The NEAR-GOOS CC expressed its intention to keep close contact with PICES on developing ocean monitoring in the North Pacific and its marginal seas.

Other issues

With the completion of the 2-year term of Mr. Takashi Yoshida, Ms. Shaohua Lin, Director-General of National Marine Data and Information Services, State Oceanic Administration, P.R. China was elected as a new chairperson of the Coordinating Committee for NEAR-GOOS for next two years.

Conclusions

1. NEAR-GOOS provides access to various oceanographic data that are useful for the PICES community. Some problems in easy and fast international data exchange still exist. However, the volume of available data, number of parameters, data providers and users have been steadily increasing. The growing number of database accesses proves the usefulness of the data.
2. To include chemical/ecological parameters into NEAR-GOOS databases, as requested by PICES and other organizations, would take some time. However, several products, such as graphical information, metadata, *etc.* useful to marine chemists and biologists, in addition to physical parameters, is becoming available on the web pages of NEAR-GOOS partner-organizations. In some cases it is done jointly with PICES under TCODE-supported projects.
3. Over its more than 10-year history, NEAR-GOOS has developed technology in oceano-graphic data management, data exchange and services, and communication with data providers and users. This experience would be useful for new ocean observing systems developing in the eastern PICES area.
4. The experience gained in developing observing systems on the American side of the Pacific using comprehensive modern instruments would help NEAR-GOOS in improving its observational network.
5. NEAR-GOOS is an official component of GOOS endorsed by IOC, WMO and UNEP. As one of 13 officially recognized GRAs, it has a well established political background on an international level. However, practical support on a national level for

NEAR-GOOS in some countries is seriously lacking. It may be expected that with increasing GRA consolidation and sharing resources with related organizations and programs in the region, this would be improved.

6. Further development of NEAR-GOOS would require an increased public awareness of involving more partners/data providers as organizations and individual scientists. PICES could help in this area by promoting NEAR-GOOS in the PICES community.

More details about NEAR-GOOS and its 11th CC Session can be found at www.ioc-goos.org and westpac.unescobkk.org.

SG-GOOS Endnote 3

PICES report to the 10th GOOS Scientific Steering Committee
(provided by Dr. Phillip Mundy)

Dr. Phillip R. Mundy, SG-GOOS Chairman, presented the following report at the 10th Session of the Global Ocean Observing System Scientific Steering Committee (GSSC-X) held March 13–16, 2007, in Seoul, Korea.

Background

The North Pacific Marine Science Organization (PICES) is an international intergovernmental scientific organization established by convention in 1992 to promote and coordinate marine scientific research in the northern North Pacific and adjacent seas. Its current members are Canada, Japan, People's Republic of China, Republic of Korea, the Russian Federation, and the United States of America. This report initiates an exchange of information between the Global Ocean Observing System Scientific Steering Committee (GSSC) and PICES. The expectation is that the exchange of information will be mutually beneficial by furthering the shared goal of developing ocean observing capabilities in the North Pacific region. The report is also intended to serve GSSC as a reference to ocean observing activities of PICES.

MONITOR Technical Committee

Following the first PICES–GOOS workshop on October 8, 1999, in Vladivostok, Russia, it was proposed that the terms of reference for the MONITOR Task Team of the PICES/GLOBEC CCCC (Climate Change and Carrying Capacity) Program be modified to include the requirement for the Task Team to develop an Action Plan for how PICES should take an active and leading role in further development and implementation of GOOS at a North Pacific level. The Action Plan would:

- identify existing ocean observations in the coastal and open North Pacific that are relevant to GOOS;
- develop a PICES–GOOS implementation plan based on existing routine observations and augmented by new observations as appropriate; and
- provide a structured plan on how to transfer relevant CCCC Program activities to a PICES–GOOS program.

At the recommendation of its Science Board, a Technical Committee on Monitoring (MONITOR) was established by PICES in October 2004 to replace the MONITOR Task Team with a standing committee. MONITOR (http://www.pices.int/members/committees/MONITOR.aspx) is charged with identifying principal monitoring needs of the PICES region and developing approaches to meet these needs, including training and capacity building. The terms of reference call for MONITOR to serve as a forum for coordination and development of the PICES components of the Global Ocean Observing System (GOOS), including possible method development and inter-comparison workshops. In cooperation with the Technical Committee on Data Exchange (TCODE), MONITOR is to facilitate calibration, standardization and harmonization of data sets. Its members serve as the senior editorial board of the North Pacific Ecosystem Status Report (NPESR). MONITOR also recommends meetings to address monitoring needs, PICES–

GOOS activities, and development of the NPESR. MONITOR is also responsible for overseeing the ocean observing activities of PICES on vessels of opportunity.

SG-GOOS, MONITOR Study Group to develop a strategy for GOOS

The Study Group was approved in October 2005 for a term of two years. The terms of reference (http://www.pices.int/members/study_groups/SG-GOOS.aspx) call for SG-GOOS to identify and describe the major observing systems (present and proposed) in the PICES region, including description of general data types, contact information, and data transmission (real-time *vs*. delayed), and to provide a recommendation and justification to MONITOR on whether or not PICES should propose a North Pacific GOOS pilot project to I-GOOS. In its October 2006 report to MONITOR, SG-GOOS recommended against the pilot project, but presented a number of recommendations for closer relations between PICES and I-GOOS. Those recommendations identified a need to contact the Chairman of GSSC (Dr. John Field) to make him aware of PICES' wish for a closer working relationship. A recommendation was also made to continue to improve working relationships with existing observing systems in the North Pacific (*i.e.*, NEAR-GOOS and IOOS). Dr. Vyacheslav Lobanov of SG-GOOS attended the (most recent) Eleventh Session of IOC/WESTPAC Coordinating Committee for NEAR-GOOS (NEAR-GOOS-CC-XI) held January 18–19, 2007, in Bangkok, Thailand as a PICES representative. A further recommendation was for PICES to be represented at Tenth Session of GSSC to be held March 13–16, 2007, in Seoul, Korea., which is the impetus for this report. The Vice-Chairman of GSSC (Dr. Dong-Young Lee) is aware of these recommendations, as he is also a member of SG-GOOS.

Advisory Panel on the *Continuous Plankton Recorder Survey in the North Pacific* (CPR-AP)

In the late 1990s, funding for a pilot project to operate a continuous plankton recorder (CPR) survey in the North Pacific was obtained from the Exxon Valdez Oil Spill Trustee Council. PICES formed the CPR Advisory Panel in October 1998 (http://www.pices.int/members/advisory_panels/CPR.aspx) to review and advise PICES on the most appropriate locations, timing and frequency of CPR routes for "A Continuous Plankton Recorder Monitoring Program for the eastern North Pacific and Southern Bering Sea". The terms of reference call for CPR-AP to provide technical advice on parameters to be measured for additional monitoring initiatives and to advise on linkages to other potential initiatives in the North Pacific and elsewhere. The experts on CPR-AP have been influential in securing funding for the project, an element which has been crucial to its success, as the sources of funding have changed several times since the survey was initiated 1997 by the Sir Alister Hardy Foundation for Ocean Science, SAHFOS. In addition, the Panel has been consulted by program scientists on developing routes and the types of observations collected.

PICES has facilitated the funding and operation of the North Pacific CPR, which is operated by SAHFOS (Sonia Batten) and funded from a number of sources, including the Exxon Valdez Oil Spill Trustee Council and the North Pacific Research Board. Established in 1997, the NPCPR currently occupies two routes, the AT and the VJ. The AT route lies between Tacoma (Washington) and Anchorage (Alaska). In 2005, the *Horizon Kodiak* made six sets of three tows each on this route, with a total of 7946 nautical miles being logged. The VJ route from Vancouver (Canada) to Japan, as towed by the *Skaubryn* in 2005, executed seven 500-nautical mile tows. At 3500 nautical miles VJ is the longest CPR route in the world. In 2005, total length of VJ tows was 10.500 nautical miles. Information on the NPCPR project can be found on the SAHFOS and PICES websites (http://192.171.163.165/pacific_project.htm and http://www.pices.int/projects/tcprsotnp/CPR_Description.pdf.

North Pacific Ecosystem Status Report

PICES will be reporting on North Pacific marine ecosystems periodically to review and summarize their status and trends, and to consider the factors that are causing, or are expected to cause, change

in the near future. The first report, "Marine Ecosystems of the North Pacific" was published in late 2004 (http://www.pices.int/publications/special_publications/NPESR/2005/npesr_2005.aspx). It is based largely on geographic locations and subjects for which time series data or information was readily available. In addition, the report identifies locations and subjects where data were collected but are not yet available.

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SG-GOOS Endnote 4

Results of representation by PICES at the 10th GOOS Scientific Steering Committee

Background

Following the recommendations of MONITOR, as adopted by the PICES Science Board at PICES XV, the Chairman of SG-GOOS, Dr. Phillip R. Mundy, contacted Dr. John Field, Chairman of GSSC, to inform him of the activities of PICES relevant to international GOOS (I-GOOS). Dr. Field subsequently issued an invitation for PICES to send a representative to GSSC-X to brief its members on PICES and its activities. In consultation with the Chairman of MONITOR, Dr. Jeffrey Napp, the Secretariat arranged for Dr. Mundy to represent PICES at

GSSC-X. The representation was based on the contents of a report that is now available on the SG-GOOS page of the PICES website, and on the GSSC-X website (http://www.ioc-goos.org/gssc10), along with all of the documents and presentations made at the meeting.

Summary

The GSSC-X meeting was preceded by a workshop to review global and regional issues in developing networks for collecting and distributing observations on the open ocean and coastal regions. The presentations from the workshop provided an overview of 1) coastal observations, 2) regional marine environment and ecosystem modeling, and 3) data management and assimilation. In keeping with the location of the meeting, there was a focus on the Asia-Pacific region. The presentations confirmed the pattern of relatively advanced observing capabilities in the open ocean and relatively uncoordinated coastal observing systems. Nonetheless, significant advances in observing systems were apparent for the coasts of China, Korea and Japan, and the west coast of Africa.

To cite one example, Dr. Changsheng Chen presented a small-scale model of circulation appropriate to complex coastal environments. His presentation, "*Ecosystem environment in the East China Sea: Dense algal bloom and its impacts on local and remote ocean systems*", was an example from among several applications of the model, which also include an application in the Gulf of Alaska. To cite another example, rapid advances in coastal Africa have been made possible by the World Bank's support of the Benguela Current Large Marine Ecosystem program (BCLME) off the coast of South Africa. Some of the work in BCLME is part of an international initiative, the Chlorophyll Ocean Globally Integrated Network (ChloroGIN). ChloroGIN aims to improve quality and availability of surface measurements of chlorophyll and temperature to support identification of harmful algal blooms, and enhanced fisheries management off the coasts of South America, Africa and India. Further details on advances in developing observing systems are available in the documents on the GSSC-X website.

Two outcomes from the GSSC-X meeting are of particular relevance to PICES:

- an endorsement of the North Pacific CPR (Continuous Plankton Recorder) survey as an ocean observing tool for measuring long-term changes, and
- a standing invitation for PICES to be present as an observer in future GSSC meetings.

The endorsement of the North Pacific CPR survey was not specifically requested by Dr. Mundy, but came as an outgrowth of the PICES presentation. GSSC members were impressed with this project, enthusiastic about its continuation, and disappointed to learn of the uncertain nature of the funding. The GSSC had previously endorsed the CPR as an ocean observing method, so the extension of the endorsement to the PICES CPR project was readily acceptable to all members.

The GSSC extended its invitation to PICES to participate as an observer in future GSSC meetings in recognition of PICES' role in establishing and coordinating the operation of observing projects, such as the CPR, that cross the boundaries of existing GOOS Regional Alliances in Northeast Asia and North America. Participation by PICES in I-GOOS, at the level of scientific discourse, was acceptable to all committee members and Dr. Keith Alverson, Director of GOOS Project Office. ICES was also invited to provide a permanent observer to the GSSC in the same action of the GSSC. Details on all the GSSC actions, as well all the information presented at the workshop are available on the website cited above.