



12th NORTH INDIAN OCEAN HYDROGRAPHIC COMMISSION CONFERENCE



Colombo, Sri Lanka
20 – 23 March 2012

Minutes

1. Opening

1.1 Opening Remarks by Hosts

The director of the National Aquatic Resources Research and Development Agency (NARA) Dr.S.G Samarasundara, welcomed the delegates to the meeting. He stated that NARA were pleased to host the conference and hoped that there would be meaningful discussions. He also said that Sri Lanka wished to develop their hydrographic capability and become an economic hub for the region with development of new ports.

Dr.Samarasundara then thanked the Sri Lankan National Hydrographic Office (NHO) for their hard work in preparation of the conference.

1.2 Opening Remarks by the Chairman

Rear Admiral Nick Lambert (UK) thanked NARA and the Sri Lankan delegation for their assistance in hosting the 12th NIOHC conference. He then discussed the importance of raising the profile of hydrography; the economic significance within island nations. The increase in attendance at the meeting of some fifteen nations shows the way in which governments are recognizing the need for improved surveying and charting of their waters. Some of the important topics that will be discussed at the conference will be the issues surrounding piracy within the region, how to increase capacity building and the technical issues on how to best provide products to the mariner.

Admiral Lambert then highlighted that this was the last Regional Hydrographic Commission (RHC) before the International Hydrographic Conference (IHC) and any issues raised here could be followed up on the wider international forum provided there.

1.3 Opening Remarks by the President of the Directing Committee of the IHB

Vice Admiral Alexandros Maratos stated that it has been 100 years since the Titanic disaster and there has been a great deal of resources devoted to surveying the seas and producing products to ensure safe passage. He would like to increase IHO membership, and attendance as an observer at an RHC was an excellent start, it increases technical support and enables access to increase funding through schemes such as capacity building.

The IHO strengthens hydrographic capabilities in developing nations, assists in technical matters and provides capacity building funding and training. RHC's are the backbone of the IHO; the connecting link to member states and the IHO. The NIOHC covers a major marine operating area along with natural disaster prone areas and piracy.

He then thanked NARA, NHO, nations and stakeholders for attending.

1.4 Address by Chief Guest

The Hon. Dr. Rajitha Senarathne, Minister of Fisheries & Aquatic Resources Development said that he was pleased to attend the opening of the conference. As an island nation the maritime environment is important to them and they had already seen the benefits of IHO membership. Hydrography impacts upon all maritime sciences and plays a key role in the policy creation of the sea area. Sri Lanka is in close proximity to major shipping lanes from which they benefit, and the government is looking to increase ports and associated infrastructure in order to regain much of their former maritime glory.

Sri Lanka has invested in a new research vessel that is due for commission in the next few months to assist in their long term plans for the use of their maritime resources.

Dr Senarathne then wished the delegates a successful conference.

1.5 Agenda and Timetable approval

The delegates adopted the timetable and agenda for the meeting.

1.6 List of Documents

The delegates adopted the list of documents and documentation provided for the conference.

1.7 Administrative Arrangements

Mr Premachandra of NHO discussed the administrative arrangements for the meeting for delegates.

2. 11th NIOHC Minutes approval

The delegates approved the minutes of the 11th NIOHC as a true reflection of the conference.

3. 11th NIOHC Actions List review

No.	NIOHC11 Agenda Item	11 th NIOHC Action	Action By	Deadline	Status
11.1	8.1	Review NIOHC Statutes to include clause that will enable inclusion / exclusion of industry from NIOHC meetings and on what terms	Chair, MS	12 th NIOHC	Action complete. Statutes revised at 12 th NIOHC
11.2	8.1	Egypt has yet to sign NIOHC Statutes. IHB to send letter of encouragement and remind them to sign	IHB	02-Apr-11	Action complete. Letter sent.
11.3	8.1	Mauritius has yet to sign NIOHC statutes. Chair to provide copy for them to sign at NIOHC11	Chair, Mauritius	02-Mar-11	Action complete. Mauritius signed NIOHC Statutes 2nd March 2011
11.4	12	MS to update C-55 regularly	All MS	Ongoing	Ongoing
11.5	18	MS to update NIOHC Disaster plan points of contact. Chair will distribute by CL	Chair, All MS	31-May-11	NIOHC CL6-2011 distributed - 8 April 2011. Updated version on NIOHC website.
11.6	14.1	UK to provide feedback on Indian INT chart proposals	UK	Apr-11	Action complete
11.7	14.2	MS to discuss formation of NIOCCWG at NIOHC12 in response to action HSSC 1/24	All MS	12 th NIOHC	NIOCCWG formed and ToR established
11.8	14.3	Bangladesh and India to liaise with regard INT 7425	Bangladesh, India	01-Oct-11	To be discussed at relevant agenda item.
11.9	15.1	UK and India to liaise with regard ENC coverage issues	UK, India	Ongoing	Ongoing

No.	NIOHC11 Agenda Item	11 th NIOHC Action	Action By	Deadline	Status
11.10	15.2	Chair to feedback status report on ENC coverage in NIOHC region to IRCC3 and WEND-WG chair	Chair	13-May-11	Action complete
11.11	16.5	MS to advise CB coordinator if they wish to attend Shallow Water and Port Survey in conjunction with SAIHC	MS, CB coordinator	02-Mar-11	Action complete
11.12	16.3	Pull together CB bullet points from MS requiring assistance and training noting the deadline for submission 1 st April 2011 and develop CB NIOHC work plan. To include Sri Lanka MSDI proposal	CB Coordinator	01-Apr-11	Action complete
11.13	16.3	CB coordinator provide submission to CBSC	CB Coordinator	01-Apr-11	Action complete
11.14	16.6	Letter to IHB commending the work of the IOC and encouraging further involvement	NIOHC Chair	14-Mar-11	Action complete. Letter sent by NIOHC Chair to IHB
11.15	21	Date and venue of next meeting	Chair	31-May-11	Action complete

4. NIOHC Statutes

The chair highlighted that Saudi Arabia is yet to sign the NIOHC statutes and enquired if this was possible during this conference. Saudi Arabia requested that a letter be sent to encourage them to sign the NIOHC statutes along with a signing sheet; action on the chair (action item).

No.	NIOHC12 Agenda Item	12 th NIOHC Action	Action By	Deadline	Status
12.01	4	Chair to send letter to Saudi Arabia to encourage signing of NIOHC Statutes	Chair	30-Apr-12	

The IHB agreed to send a letter to Egypt and Malaysia as members to participate in the NIOHC conferences (action item).

No.	NIOHC12 Agenda Item	12 th NIOHC Action	Action By	Deadline	Status
12.02	4	IHB to write to Egypt and Malaysia encouraging their participation in NIOHC	IHB	01-Apr-12	

The chair raised the issue of a possible change in name of the NIOHC to reflect the area covered by the commission to encourage wider participation by Red Sea states. There are many states within the area that do not currently participate. Saudi Arabia stated that it would good for them and they supported a change to include the Red Sea.

India stated that there was no need to rename the NIOHC.

Oman stated that it could possibly cause a situation similar to that of S-23 if too many names were included.

Saudi stated that if it causes too many problems they could possibly create a Red Sea commission. The matter was left for members to think about for another time.

4.1 NIOHC Membership Applications

Australia indicated that they would like to become associate members of the commission as some of their charting responsibility included the Indian Ocean, they are members of the adjacent SWPHC and they are INT chart coordinator of region "L".

UK, Oman, US and India backed the proposal and Australia were voted in as associate members. (Post meeting note – Australia signed the statutes during the 18th IHC at Monaco in Apr 12)

4.2 Review NIOHC Statutes to include clause that will enable inclusion / exclusion of industry from NIOHC meetings and on what terms (NIOHC Action11.1)

UK supported industry participation and stated that other RHC's had benefited especially in the activity of capacity building. They also stated that limiting the number of delegates to 1 or 2 was an option on a purely practical nature. Australia backed the idea of limiting the attendance due to some host nations are on a limited budget and we could possibly request that industry support in the way of financing their attendance (with regard lunches).

India are expressed concern with industry participation in the working groups. Saudi Arabia agreed that participation should be by invitation only.

The IHB stated that they are keen to see industry participation at RHC's as they have shown their worth over time and have real benefit in certain areas. If they need to be excluded from certain parts of the conference that was acceptable.

Kongsberg stated that the delegates needed to be aware that they are happy to attend but if excluded from the majority of the meeting then many companies would not deem their attendance worthwhile.

The statutes were revised so that member states were happy with the wording of industry participation.

Thailand raised the point that other Commissions have wording within the statutes for the succession on vice chair to chair. The statutes were also amended to include this wording.

5. IHO / IHB Matters

5.1 Status of the ratification of the protocol of amendments to the IHO Convention.

The protocol of amendments was drafted in 2005 and needs a 2/3 majority for ratification. Updates are sent to member states each year and currently 34/48 member states had ratified the amended Convention.

5.2 NIOHC to adopt objectives to accelerate the process of ratification of the protocol of amendments to the IHO Convention.

Admiral Maratos (IHB) encouraged member states who are yet to ratify the protocol of amendments to urgently address this issue. The chair requested that all member states encourage their governments to approve.

No.	NIOHC12 Agenda Item	12 th NIOHC Action	Action By	Deadline	Status
12.03	5.2	Chair to send letter to appropriate member states to encourage ratification of the protocol of amendments	Chair	30-Apr-12	

5.3 NIOHC to encourage the approval of pending applications for IHO membership.

Admiral Maratos updated the member states on the status of each of the four pending applications to the IHO.

Brunei Darussalam – 1 vote received /52 required (IHO CL 27-2012)

Haiti – 48/52

Montenegro – Has received the needed two-thirds majority and has been asked to deposit the Instrument of Accession in order to become Member State of the Organization.

Vietnam – 6/52

Admiral Maratos then encouraged member states to progress the approval through their respective governments. The Chair stated that Haiti were so close to being accepted and that they are keen to become IHO members; if half of the nations in the NIOHC region who have yet to vote did so, Haiti would be accepted.

5.4 Status of pending Member States in the region for depositing the instrument of accession.

Admiral Maratos stated that the Monaco government had been in touch with the relevant nations and encouraged them to deposit their instrument of accession.

5.5 Forthcoming International Hydrographic Conference (IHC)

All documents relating to the forthcoming IHC were available on the IHO website. There will be reports from S-23 WG, Staff Regulations WG and the implementation of a strategy plan.

5.6 HSSC Report

Captain Vaughan Nail (UK) the HSSC chair provided the following report:

HSSC has two main work efforts; the maintenance of existing standards and creation of new ones. Recently discovered shortcomings in ECDIS performance have very much increased the work required to improve the consistency within and between existing standards. In general, new systems perform as required, but the older type-approved ECDIS are in use at sea without the necessary software upgrades necessary to reflect changes in IHO standards. There is current work on S-100 and S-101 to improve the issue and it will include and impact upon ENC producers and equipment manufacturers.

S-64 now includes a revised test dataset for ECDIS and a simplified data set is available from the IHO for ENC users, which will focus on known areas of poor performance. IEC 91174 (Type Approval standard for ECDIS which reflects the IMO requirements) is being reviewed and HSSC is having an influence upon the review.

Captain Nail commented that it was good to see so many national authorities and OEMs represented at the NIOHC; industrial participation in the development of S-100 has been beneficial and would have not progressed as far without their input. S-100 will provide a more flexible environment for the maintenance of IHO standards and the development of any new maritime spatial data management standards.

The transition to the new ENC product standard will be implemented over several years to allow ENC producers to plan an orderly transition; dual running of both S-57 and S-101-based ENCs will be required, as some older ECDIS may not be able to display S-101 data. S-101 is anticipated to run in conjunction with S-57 and S-58 for approximately 10 years. Michael Bergmann of Jeppesen also commented that ECDIS performance standards are also being reviewed at IMO to examine better methods of ensuring software updates.

Captain Nail stated that S-100 is in use now and that S-101 is expected to be approved in 2013. There is a document available from the HSSC website that shows the progression of new standards and proposed implementation dates.

5.7 IRCC Report

V. Adm Gilles Bessero (France) IRCC chair provided the following report:

IRCC main focus is on the coordination of RHC activities, progression of capacity building and the involvement of inter organisational bodies. It collates reports from RHC's as to their activities,

recommends agenda items and instils best practice across RHC's. It encourages a relationship between IHO and stakeholders.

The WEND-WG is under IRCC and its work is based around adequate ENC coverage and the WEND principles framework. The work programme for IRCC is decided at IHC.

Active issues are covered by items in the agenda of the Conference.

6. National Reports

National Reports were presented by the following countries and are available on the IHO NIOHC website. Any additional comments are recorded below:

- Bangladesh

Bangladesh raised the issue of updating S-11 for INT 7425 as per limits supplied by Bangladesh to the INT chart co-ordinator. India (INT chart co-ordinator) agreed to update this document as requested, and also asked all concerned to provide inputs for other updates by the end of Apr 12.

- France
- India

26 new INT charts have been included in the INT scheme. Chair asked if the survey data collected by India outside their national waters could be released to producer nations. India stated conditions would apply for release of such data depending upon discussions between all concerned. The chair also asked for clarification on items found that at significant to navigation – are they passed for action; India stated that they are.

Sri Lanka requested that they be sent the data from the surveys completed by India. India stated that if Sri Lanka provided the details of the data format that they require, the data will be supplied based on a bilateral agreement. The chair commended India on their extensive work within the region and enquired where there were opportunities for national surveyors to gain experience aboard Indian survey vessels. India stated that they already offer this opportunity and are willing for their resources to be used by all nations in NIOHC region for training.

- Oman
- Saudi Arabia
- Sri Lanka
- Sudan
- Thailand

India enquired about the changes to the coastline along the Andaman Sea post tsunami; Thailand stated that they are due to re-survey the area next year. Thailand also thanked the UK for their cooperation and assistance on ENC's.

- UK

7. NIOHC Committees, Working Groups, and Commission Representatives Reports

7.1 Electronic Chart Workshop

Minutes of the Electronic Chart Workshop can be found in Annex A and were reported back to the plenary.

India requested that nations desirous of ENC production should pass their plans for ENC coverage to the NICCWG chair (India) and Vice Chair (UK) for inclusion in the NIOHC ENC scheme.

7.2 INT Chart Working Group

The INT Chart coordinator (India) provided an update on the INT Chart scheme for region J.

7.3 Discussion on the adoption of HSSC proposal (Action HSSC1/24) for NIOHC Paper INT Charting coordinator to take on the NIOHC ENC coordinator role and rename as the North Indian Ocean International Charting Coordination Working Group (NIOICCWG)

Discussions relating to the NICCCWG are detailed in the minutes of the Electronic Chart workshop and can be found in Annex A. The HSSC proposal to establish a NIOICCWG was accepted by the members present. Mauritius proposed and Australia seconded that India should be chair of the NICCCWG and UK vice chair. This was accepted by the remaining delegates.

A meeting of the NICCCWG was called to establish the Terms of Reference (ToR) and first steps. They discussed:

1. Terms of reference were reviewed point by point and amended by consensus resulting in ToR document for MS approval
2. Rename to NICC WG as NIOICCWG is too cumbersome.
3. Proposed work plan:
 - a. collect information from producers
 - b. suggests implementations to concerned MS to solve the issue
 - c. keep the planning and schemes up to date
4. Coordinator role:
 - a. inventory/collation
 - b. dissemination
 - c. identification of problem areas
 - d. WG to produce a guide line document for new ENC producers (1 page)
 - e. coordinator suggests solutions to the WG

Members were asked to vote on these proposals and the working group was established. The NICCCWG ToR are included at Annex B. An action was placed on the WG to work within the limits of the ToR.

No.	NIOHC12 Agenda Item	12 th NIOHC Action	Action By	Deadline	Status
12.04	7.3	NICCCWG to work within the agreed ToR for the WG to progress ENC coverage, INT charting and to submit a work plan	NICCCWG	15-Jul-12	

7.4 Capacity Building

7.4.1 Update on Capacity Building activities and submissions since the last meeting.

At the 11th NIOHC conference in New Delhi the following requirements for 2012 were identified:-

- Technical visits to Bangladesh, Sri Lanka, Mauritius and Seychelles
- MSDI and Database Management Workshop (5 days)

Both activities were approved by the CBSC

2012 A submission was made to the CBSC for funding to run a Workshop on the Development of a Regional Marine Spatial Data Infrastructure (MSDI) training course for NIOHC and SAIHC members

The following nations were identified for this training – *Bangladesh, India, Oman, Saudi Arabia, Sri Lanka*

7.4.2 Report on the Port and Shallow Water Survey workshop

In November 2011 a workshop on Port & Shallow Water Surveys in conjunction with SAIHC, took place in Simon's Town, South Africa. It was attended by the following NIOHC members: Bangladesh, Mauritius, Sri Lanka and Thailand and was funded by the CBSC.

7.4.3 Update on the 5 year Capacity Building plan

The five year plan was introduced to the NIOHC as per IRCC3 action 23

Highlighting the types of training available and also focussing on the assessment of NIOHC coastal state capabilities measured against the 3 Phases of Capacity Building

From this assessment the following training activities were identified for 2013:-

- Technical visits to Eritrea and Sudan
- Basic ENC and ENC Production Course (10 days)
- Advanced Chart production for NHO, Sri Lanka (5 days)
- MBES Processing (5 days)

The NIOHC CB Plan 2013-2017 will be reviewed annually at NIOHC meetings and any emerging requirements for the other training initiatives listed (reference section 2) can be discussed by NIOHC members for inclusion into the next years plan, noting that submissions made to the CBSC for funding consideration are for the succeeding year.

The five year plan is on the NIOHC website under miscellaneous items (bottom of the main page) and has created the following actions:

No.	NIOHC12 Agenda Item	12 th NIOHC Action	Action By	Deadline	Status
12.05	7.4	CB coordinators to update 5 year plan	CB coordinators	23-Mar-12	Completed
12.06	7.4	CB coordinators to submit NIOHC CB requirements to CBSC chair	CB coordinators	01-Apr-12	Completed
12.07	7.4	CB coordinators to liaise with Saudi Arabia and Sri Lanka to identify possible course venue.	CB coordinators, Saudi Arabia, Sri Lanka	13th NIOHC	

8. Relevant International Organizations' Report.

8.1 PERSGA (Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden)

No representatives to PERSGA attended the conference.

8.2 IMO (International Maritime Organisation)

No representatives to IMO attended the conference.

8.3 GEBCO (General Bathymetric Chart of the Oceans)

GEBCO was represented at the conference by Dr. Rochelle Wigley; she informed delegates that GEBCO are intending to update the maps of the India Ocean. They are looking for new data for the update and are ideally looking to produce a 1000m grid but understand that nations may only be prepared to supply small scale data. For example South Africa have provided access to all their data but it can only be used in products, the data cannot be released. GEBCO are looking for all data that

nations are willing to be included in the project; from shallow waters to oceanic depths. The initial project is for one year on data collection and then ongoing maintenance of the database.

Chair requested that GEBCO provide their requirements for data including format and the chair will circulate; the chair also requested that GEBCO attend the 13th NIOHC to provide and update on the project.

8.4 Report by EUNAVFOR (European Union Naval Force).

A presentation on the problems being faced by EUNAVFOR in combating piracy in the region was presented by the representatives. Lack of information flow was highlighted. India brought out that they had issued a number of NAVAREA VIII warnings pertaining to piracy in the region and highlighted the contribution of France (Reunion Is) in this effort.

9. Status of Hydrographic Surveying and Nautical Charting Worldwide C-55

Delegates agreed to retain the standing action item on the updating of C-55.

No.	NIOHC12 Agenda Item	12 th NIOHC Action	Action By	Deadline	Status
12.08	8	MS to update C-55 regularly	All MS	Ongoing	

9.1 Development of C-55

UK provided a presentation on the status of the development of C-55 and showed examples of other RHC C-55 solutions.

Australia stated that there are many parallel developments of C-55 from the RHC's and feels that due to the IHO's limited resources that member states should support PRO6 at the forthcoming IHC and to provide support to the IHO to develop.

IRCC chair stated that this is to be included in the new work programme and budget. Jeppesen and Caris stated that it should be built from a generic GIS and be able to have interrogation of the data; tool creation is the simple part, obtaining data for ingestion is the problem. The UK stated that two universities one in the UK and one in the US are currently looking at the problem of data input and they are trying to populate using source data diagrams/CATZOC rather than inputting from original data.

HSSC chair indicated that if it were a more flexible GIS then other data could be imported such as AIS to highlight areas of traffic and poor data coinciding.

10. Marine Spatial Data Infrastructure (MSDI)

The UK provided a presentation on the basics of MSDI and examples from around the UK. The Chair highlighted that survey data can be used by more than just the mariner – Survey once, use many times.

There was consensus that nations could see a benefit from MSDI but they were constrained by government as the majority of datasets are held within different government departments.

The Chair talked about the Marine Economic Infrastructure Programme (MEIP) that the MACHC region was developing. It will include available datasets for the region and show nations the benefits of having MSDI – at which time they may develop their own or carry on with the MEIP but with their own internal layers. Member states requested that the UK update them on the progress of the MEIP during the year to see if it can be a benefit to this region.

HSSC chair advised member states interested in MSDI to examine IHO publication C-17 which is available as a download from the IHO website. It provides useful background information and a starting point for MSDI.

India stated that they have an advanced SDI programme and marine element is a part of the national SDI. The integration of marine database at NHO is at an initial stage of implementation.

11. Experience in dealing with maritime disasters in relation with IHO guidelines

US provided a presentation on their experience in dealing with maritime disasters in the Caribbean with special reference to the Haiti earthquake. Australia enquired how they obtained survey authorization just 4 days after the earthquake. US stated that the whole government infrastructure had collapsed and thus no government – they provided a humanitarian response to enable NGO's access to the port.

Australia provided an update from Indian Ocean Tsunami Monitoring and Warning System (IOTWS) and the report can be found in Annex C. India reported that they have problems similar to that found by the IOTWS with fishing/shipping interfering with buoys. Oman is currently installing a tide gauge network that may be of use in warning of disasters.

Admiral Maratos encouraged member states to read IHC PRO 1 "Revision of the Resolution on the IHO Response to Disasters" put forward by Japan.

The NIOHC Disaster Plan and Points of Contact were updated by member states and placed on the IHO NIOHC webpage.

12. Strategy to involve non-Member States in RHC's activities

The Chair asked member states how we can increase attendance at the conferences; the UK can help with travel costs and are happy to encourage attendance. Australia stated they have a similar problem in the SWPHC due to lack of resources and money to attend.

13. NIOHC representative to the IHR Editorial Board

Chair requested that a member state other than UK volunteer as UK already represents MACHC and SWPHC. Admiral Vasan of Saudi Arabia agreed to be the representative from the NIOHC.

Admiral Maratos stated that they have a page every 2 months in Hydro International to highlight the work of the IHO and the various committees and working groups.

14. Crowd Sourcing Survey Techniques

ESRI provided a presentation on the theory of crowd sourcing to delegates. Crowd Sourcing (CS) or Volunteer Geographic Information (VGI) is becoming more common due to the availability of low cost mobile devices along with web interfaces creating "community maps" with the information being kept in a cloud.

India stated that CS has been used by them and has proved successful. HSSC chair stated that there is a use for CS in areas where mariners currently enter and there are poor surveys.

Caris stated that a small number of vessels are currently using a low cost system (ARGUS) as a trial in areas of no data. As cruise ships tend to use the same routes data will build up over time and theoretically self check data captured. Australia said that AIS information is useful for seeing the areas used/not used by merchant traffic. The more information obtained the greater the accuracy of the data.

There were general reservations amongst member states about the quality of the data and who would deem it fit for use but, data collected in this way is better than no data or that collected historically. Australia said that if CS data is to be used then we would possibly need to expand CATZOC categories.

15. Satellite Bathymetry

Presentation on Spacecharts by France.

Saudi Arabia stated that it had been approached by DigitalGlobe with regard to using satellite bathymetry along its coastline but they had reservations about the positional accuracy and that it does not currently meet IHO S-44 standards.

France stated that if control points fitted correctly then discrepancies are within acceptable limits. Yes it does have limitations but in areas of clear waters and with a steep gradient at sea it is a useful tool for reconnaissance survey.

India stated that they have completed a survey of the Maldives in the same area as the presentation spacechart and the survey data could be used to verify the accuracy if required by France.

The Chair requested that the HSCC chair task the working groups with looking at introducing a CATZOC standard

16. IMO Member State Audits

Presentation by UK on behalf of the IMO on the Voluntary IMO Member State Audit Scheme (VIMSAS)

Australia stated that they were audited on 2006 and the report was used to amend national legislation although they found it was not critical enough.

India undertook an internal audit prior to their VIMSAS audit.

Admiral Maratos stated that they had offered to work with IMO to ensure that the hydrographic aspects of the audit met requirements; the offer was not accepted. IHO is currently in discussion with IMO's MSC and NAV Committee's with the objective to be involved and possibly introduce text/questionnaire on hydrographic aspects.

India proposed that member states who have undertaken an audit include a summary at the end of their national reports and that VIMSAS should be an agenda item next meeting; this was agreed by member states present (action item) and that the IMO self assessment questionnaire should be attached to these minutes for reference (Annex F).

No.	NIOHC12 Agenda Item	12 th NIOHC Action	Action By	Deadline	Status
12.09	16	Include copy of IMO self assessment document in 12th Minutes	Chair	31-May-12	Completed
12.10	16	Include VIMSAS as agenda item at 13th NIOHC	Chair	13th NIOHC	

17. Any Other Business

India provided an update on Maritime Safety Information (MSI) within NAVAREA VIII Region and sought details of proposed national NAVTEX chains from the member states – the report can be found on the NIOHC website. India requested the member states to update contact details of their respective National Coordinators.

With no other items raised, the chair requested feedback from the conference and the industry/stakeholder day.

UK stated that if the conference is large then microphones would help delegates communicate more effectively.

Australia stated that this was a high standard conference and it was not expected at this level each time; a more basic approach is acceptable. Saudi Arabia stated that it was up to the host on how

elaborate they wished the conference to be and dependant on funds. UK stated that if a host nation wished, it was acceptable to charge a conference fee to cover costs.

The chair asked delegates their thoughts on the Industry/Stakeholder day. Fugro stated that having the day within the plenary enabled delegates a soft landing and allowed Industry time to aim their presentations at the correct level. Oman agreed with this as it allows discussion of industry/stakeholder topics in plenary.

Jeppesen suggested that presentation topics could be suggested by the chair and theme's based around the agenda, important topics etc (action item).

Australia stated that it may be prudent to include an agenda item and presentation on RENC's at the next meeting; member states agreed (action item).

IRCC Chair noted that an agenda item on the WEND-WG and its current activities would also be beneficial (action item).

No.	NIOHC12 Agenda Item	12 th NIOHC Action	Action By	Deadline	Status
12.11	17	Include RENC presentation and agenda item at 13th NIOHC	Chair	13th NIOHC	
12.12	17	Include agenda item on WEND-WG at 13th NIOHC	Chair	13th NIOHC	
12.13	17	Chair to provide theme to Industry to guide their presentations at 13th NIOHC industry day	Chair	13th NIOHC	

18. Date and Venue of the next meeting

The 13th NIOHC conference will be in February/March 2013.

Myanmar offered to host the next conference and will confirm by the end May 2012 their intention to host. Oman offered to be a back up if for any reason Myanmar are unable to host the 13th NIOHC (subject to Omani authorities' approval).

No.	NIOHC12 Agenda Item	12 th NIOHC Action	Action By	Deadline	Status
12.14	18	Myanmar to confirm to NIOHC Chair by letter hosting of 13th NIOHC	Myanmar	31-May-12	
12.15	18	Date and venue of next meeting	Chair	30-Jun-12	

19. Election of Chair and Vice Chair

The chairmanship shall be passed to India as set down in the NIOHC statutes four months from the end of the conference.

Thailand agreed to be vice chair.

20. Approval of the Action List

The following actions were agreed:

No.	NIOHC12 Agenda Item	12 th NIOHC Action	Action By	Deadline	Status
12.01	4	Chair to send letter to Saudi Arabia to encourage signing of NIOHC Statutes	Chair	30-Apr-12	
12.02	4	IHB to send letter to Egypt and Malaysia encouraging their participation in the NIOHC	IHB	01-Apr-12	
12.03	5.2	Chair to send letter to appropriate member states to encourage ratification of the protocol of amendments	Chair	30-Apr-12	
12.04	7.3	NICCCWG to work within the agreed ToR for the WG to progress ENC coverage, INT charting and to submit a work plan	NICCCWG	15-Jul-12	
12.05	7.4	CB coordinators to update 5 year plan	CB coordinators	23-Mar-12	Completed
12.06	7.4	CB coordinators to submit NIOHC CB requirements to CBSC chair	CB coordinators	01-Apr-12	Completed
12.07	7.4	CB coordinators to liaise with Saudi Arabia and Sri Lanka to identify possible course venue.	CB coordinators, Saudi Arabia, Sri Lanka	13th NIOHC	
12.08	8	MS to update C-55 regularly	All MS	Ongoing	
12.09	17	Include copy of IMO self assessment document in 12th Minutes	Chair	31-May-12	Completed
12.1	17	Include VIMSAS as agenda item at 13th NIOHC	Chair	13th NIOHC	
12.11	17	Include RENC presentation and agenda item at 13th NIOHC	Chair	13th NIOHC	
12.12	17	Include agenda item on WEND-WG at 13th NIOHC	Chair	13th NIOHC	
12.13	17	Chair to provide theme to Industry to guide their presentations at 13th NIOHC industry day	Chair	13th NIOHC	
12.14	18	Myanmar to confirm to NIOHC Chair by letter hosting of 13th NIOHC	Myanmar	31-May-12	
12.15	18	Date and venue of next meeting	Chair	30-Jun-12	

21. Closing Remarks from the Chair

The chair thanked delegates for attending the conference and their hard work; he then thanked Admiral Maratos of the IHB for all his hard work over the last 10 years, as this would be his last RHC.

The chair thanked the Sri Lankan National Hydrographic Office for organising such an excellent conference, commending their hard work, hospitality and professionalism; he presented them with a print of a hydrographic survey of Sri Lanka dating from 1813.

Annex A

12th NORTH INDIAN OCEAN HYDROGRAPHIC COMMISSION MEETING

Colombo, Sri Lanka,
20 – 23 March 2012

ENC Workshop Minutes

Chaired by Captain Vaughan Nail, UK RN

This is the report to the 12th NIOHC conference of the ENC workshop held 20th March 2012 in Colombo, Sri Lanka.

1. Agreement of NIOHC region ENC scheme for Bands 3, 4, 5 and 6

Chair commended the region for good coverage at bands 1 & 2 which provides coverage for maritime traffic through the region. Agreement needs to be reached on the ENC scheme in the larger scale bands.

2. Reduction of overlaps within cells

It was decided that the issue of overlaps within the region was a matter between the nations concerned (India and UK) and that it would be discussed at a technical meeting between the two nations (date tbc)

3. Reduction of gaps in coverage within usage band 3

The current gaps within band 3 will be addressed by India by July as they are producing the remaining cells. India reiterated the need for examining clipping of data/overlap issues while planning ENC's.

4. Analysis of coverage for emerging ports

Credibility of the port statistics needs to be established and then sent to nations concerned for analysis for possible consideration for both paper and ENC requirements.

5. EPNM's: their implications and outstanding items in NIOHC region. These will be sent individually to nations and if not resolved prior to meeting can be discussed here

A presentation was provided by the UK on examples found between paper and ENC's that could cause the mariner to question the quality of either product.

Members were requested to review any feedback from the UK on discrepancies and resolve at their earliest convenience.

6. WEND-WG correspondence and feedback of coverage status to chair

The IRCC chair reported that on the IHO website there is a report by the IRCC on status of ENC coverage. The WEND-WG is there to ensure worldwide coverage and to resolve gap and overlap issues.

The WEND-WG has put forward two proposals to IHC:

1. Improve ENC coverage
2. Additional guidelines to WEND principles

The IHB emphasised that member states should ensure they read the proposals put before IHC prior to attending the conference.

7. Discussion on the adoption of HSSC proposal (Action HSSC1/24) for NIOHC Paper INT Charting coordinator to take on the NIOHC ENC coordinator role and rename as the North Indian Ocean International Charting Coordination Working Group (NIOICCWG)

It was decided that India would remain INT Chart coordinator and chair the NIOICCWG with UK as Vice Chair, during the period of development of the regional ENC scheme. Over time India would assume role of CWG Chair as envisaged by HSSC1 action 24.

Nations planning to produce ENC's would liaise with the CWG as to their proposed scheme and what remedial action will be required to the existing ENCs. Assistance was also requested by those MS to ensure they learn from the existing producer nations on the pitfalls of ENC production.

Report to be presented to 12th NIOHC plenary session

Annex B

TERMS OF REFERENCE AND RULES OF PROCEDURE for the NORTH INDIAN OCEAN INTERNATIONAL CHARTING COORDINATION WORKING GROUP (NICCWG for *REGION J*)

1. Background

1.1 The North Indian Ocean Hydrographic Commission recognizes the need to actively develop and maintain official nautical charts, in both paper and digital formats, that support ships engaged on international voyages in its region. Accordingly, it appoints and directs a working group to undertake this task. The working group shall be named the *North Indian Ocean International Charting Coordination Working Group (NICCWG)*.

1.2 The NICCWG is a subsidiary body of the North Indian Ocean Hydrographic Commission. It shall conduct its work in accordance with these Terms of Reference and Rules of Procedure. Its work is subject to the North Indian Ocean Hydrographic Commission's approval.

2. Terms of Reference

2.1 To study issues related to nautical charting of the region, in particular to coordinate the allocation of production responsibilities for paper and electronic charts (INT charts and ENC), that support ships engaged on international voyages.

2.2 To develop and maintain an integrated international chart scheme for the region.

2.3 To reach decisions on the maintenance and updating of the documents for which it is responsible.

2.4 To provide advice on chart schemes to individual Member States, in order to encourage adherence to IHO charting regulations, specifications and standards, and to promote and coordinate the production of international (INT) charts and ENC.

2.5 To develop proposals for new or amended INT chart schemes to meet evolving user needs (for example, the introduction of new or amended routing measures, the confirmed developments of international ports).

2.6 To coordinate the development and maintenance of small / medium scale ENC schemes to ensure consistent parameters are used in the compilation of ENCs.

2.7 To act as the custodian and maintainer of official, version-controlled catalogues, depicting the status of published and planned charts, subject to formal review and approval by Member States of the North Indian Ocean Hydrographic Commission.

2.8 To provide advice to IHB on any amendments required to maintain S-11 Part B: Catalogue of International Charts (for example, scale, limits, numbering) and, as appropriate, any corresponding ENC catalogue.

2.9 To provide advice to Chairman CSPCWG and IHB on any amendments required to maintain S-11 Part A '*Guidance for the Preparation and Maintenance of International Chart Schemes*', in particular its Annexes (Annex A: Potential Printer Nations; Annex B: Use of A0 Paper).

2.10 To provide advice to Chairman CSPCWG and IHB on any amendments required to maintain the '*Guidelines for the Preparation and Maintenance of Small / Medium Scale ENC Schemes*' (when published).

3. Rules of Procedure

3.1 Membership is open to all members and associate members (Member States) of the North Indian Ocean Hydrographic Commission wishing to be represented. Each Member State shall be represented through a single point of contact. Noting the technical nature of the Group's work, participation should be limited to representatives of Hydrographic Offices concerned with INT chart or ENC production.

3.2 The Coordinator role shall be held by a Member State participating in the NICCWG. The election of the Coordinator, or the reconfirmation of the existing Coordinator, shall be decided by the North Indian Ocean Hydrographic Commission at an ordinary meeting or, where a meeting is not convened, by correspondence. Election shall be determined by a simple majority of Member States present and voting (or responding, where determined by correspondence).

3.3 Normally, a Vice-Coordinator is not required to be appointed. However, if a Vice-Coordinator is appointed by the North Indian Ocean Hydrographic Commission:

- Election to the post will be by the same method as for the Coordinator;
- The Vice-Coordinator shall act as the Coordinator, with the same powers and duties, in the event that the Coordinator is unable to carry out the duties;
- The Coordinator and Vice-Coordinator will decide between them the organization of the work entailed in these posts, or these may be defined by the North Indian Ocean Hydrographic Commission.

3.4 Conduct of business will be primarily by correspondence. If meetings are required, these should be planned with due regard to efficiency and obtaining the fullest membership support (for example, by holding meetings in association with meetings of the North Indian Ocean Hydrographic Commission). All members shall inform the Coordinator in advance of their intention to attend meetings of the NICCWG. The working language shall be English.

3.5 Draft proposals will be circulated for review and comment to:

- All members of the NICCWG and, where appropriate, all members of the North Indian Ocean Hydrographic Commission;
- Coordinators of adjoining regional ICCWG, if the scheme impacts on those regions (for example, to ensure consistency and coherence of coverage across regional boundaries, for the allocation of chart numbers);

3.6 Decisions shall be made by consensus within the NICCWG.

3.7 Where required, a Work Plan should be developed and maintained. This should include task priorities and the expected time frames for progressing tasks. The Regional Hydrographic Commission may delegate tasks to the NICCWG as it sees fit; it is also available to provide guidance on request (for example, in respect of priorities).

3.8 The Coordinator will report progress to meetings of the North Indian Ocean Hydrographic Commission and at other reasonable times, on request. Reports shall include but are not limited to:

- An updated Regional INT Chart Catalogue;
- An update of the ENC Catalogue relevant to the Region;
- Changes made to the scheme of INT Charts and to the small / medium scale ENC scheme for the Region, approved by the NICCWG since the last report, together with a summary of reasons;
- An updated Work Plan (if used).

3.9 All participants, including North Indian Ocean Hydrographic Commission members and associate members where not directly represented in the NICCWG, shall keep the Coordinator informed of any information relevant to the NICCWG. This may include:

- Submitting proposals for new INT Charts and ENCs, or amendments (for example, to limits, scale of portrayal) to existing INT Charts and ENCs in the Region;
- Requesting new INT Chart numbers for new charts that are planned;
- Reporting the status of production of international charts and ENCs.

3.10 The work shall be done in accordance with:

- IHO Resolution 1/1997 as amended [K2.19]: '*Principles of the Worldwide Electronic Navigational Chart Database (WEND)*', to ensure a world-wide consistent level of high-quality, updated ENC's;
- S-57: '*IHO Transfer Standard for Digital Hydrographic Data*';
- S-??: '*Guidelines for the Preparation and Maintenance of Small / Medium Scale ENC Schemes*' (when published);
- S-11 Part A: '*Guidance for the Preparation and Maintenance of International Chart Schemes*';
- S-4: '*Chart Specifications of the IHO and Regulations for International (INT) Charts*', which provides the internationally-agreed product specification for both national and international (INT) charts.

Annex C

Briefing on Indian Ocean Tsunami Monitoring and Warning System Developments to the 12th Meeting of the North Indian Ocean Hydrographic Commission (NIOHC), Colombo, Sri Lanka, 19-23 March 2012

*Prepared by Rick Bailey
Head of Tsunami Warning & Ocean Services
Australian Bureau of Meteorology*

Indian Ocean Tsunami Warning and Mitigation System (IOTWS)

Australia is a founding member of the IOTWS and actively participates through the Intergovernmental Coordination Group (ICG). Mr Rick Bailey from the Australian Bureau of Meteorology is currently the Chair of the ICG. Australia hosts the ICG Secretariat office in Perth, staffed by Mr Tony Elliott (see following details). The ICG meets regularly. Reports from its eight Sessions can be downloaded from the site of the Intergovernmental Oceanographic Commission (IOC) of UNESCO at <http://www.ioc-tsunami.org/>. There are 28 countries involved in the IOTWS, being states in and bordering the Indian Ocean basin.

New Service for Regional Tsunami Threat Information Launched for Indian Ocean

The 8th Session of the ICG/IOTWS was hosted by the Bureau and Geoscience Australia at Bureau's Head Office, 3-6 May 2011. A significant outcome was the endorsement by 28 Indian Ocean Rim Member States of a new, enhanced system of three Regional Tsunami Service Providers (RTSPs) to be operated by Australia, India and Indonesia.

The new system of RTSPs successfully commenced on 12 October 2011 during an international tsunami warning exercise for the Indian Ocean (Exercise IOWave'11). Test bulletins were issued by the RTSPs to each country's National Tsunami Warning Centres (NTWCs) during the exercise, simulating the tsunami of 26th December 2004.

Prior to 2005 there was no regional tsunami advisory service for the Indian Ocean. In comparison, the Pacific Tsunami Warning & Mitigation System became operational in 1962 following the 1960 Chilean earthquake and ocean-wide tsunami.

An Interim Advisory Service (IAS) for the Indian Ocean has been provided by the Pacific Tsunami Warning Centre (PTWC) in Hawaii and the Japan Meteorological Agency (JMA) in Japan since 2005. It was established after the devastating Indian Ocean Tsunami of 26 December 2004, and has been supported by the US and Japan while Indian Ocean countries developed their own capability. The system of RTSPs will eventually completely replace the IAS, following an overlap evaluation period.

The new RTSPs will each provide much more detailed tsunami threat information for Indian Ocean countries than the current Interim Advisory Service (see example in Figure 1). This will help countries to better prepare national tsunami warnings, save lives and reduce the frequency of false alarms. Although the assessments are independent, the three RTSPs have worked together under the ICG/IOTWS to ensure the information provided for agreed coastal zone for each country is the same type and in standard formats.

To avoid potential for conflicting information from the three RTSPs and the IAS, the RTSPs and IAS will not be responsible for deciding on national warning status for each country. That is the sovereign role of the nationally designated 28 National Tsunami Warning Centres (NTWCs), who will utilise the independent assessments to make their own decisions about the level of threat and inform their own communities. The RTSPs will only reflect the warning status decided by each NTWC.

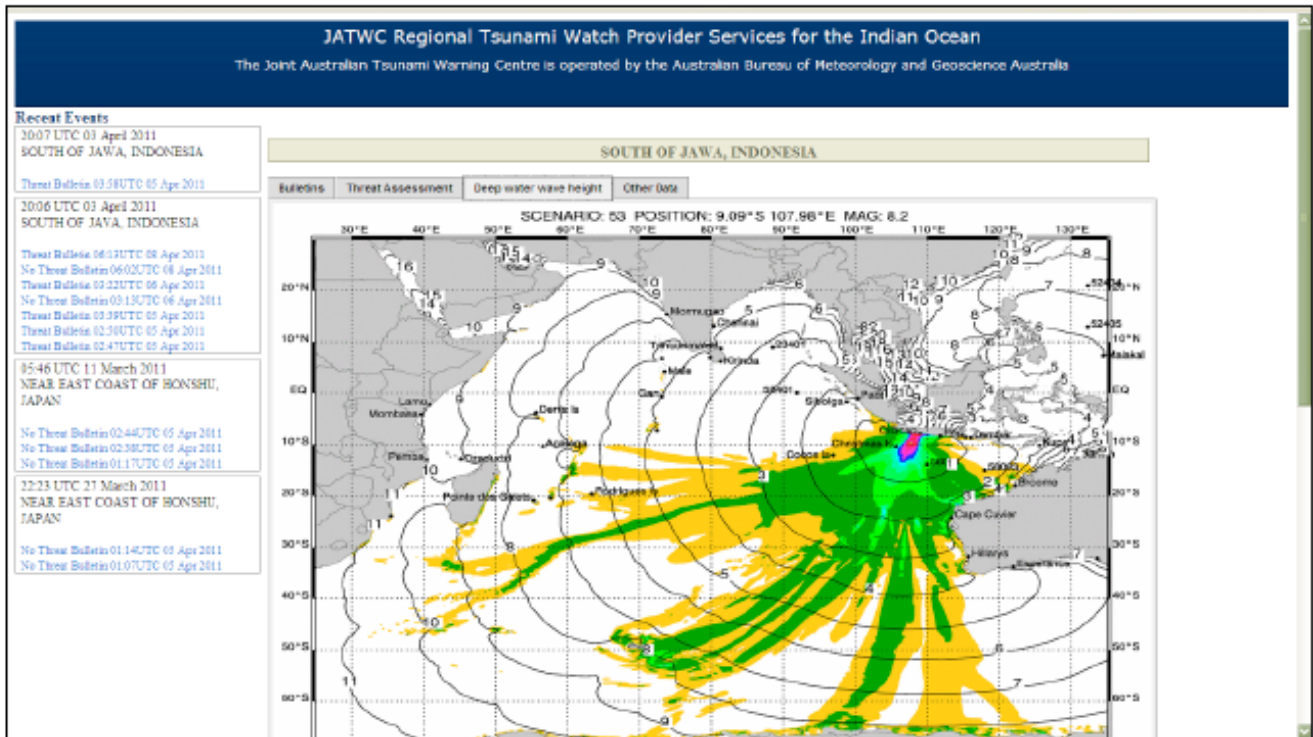


Figure 1. Example of more detailed tsunami threat information being provided to National Tsunami Warning Centres (NTWCs) in the Indian Ocean by Regional Tsunami Service Providers (RTSPs).

Australia's contribution as a RTSP is provided through the Joint Australian Tsunami Warning Centre (JATWC), which commenced operations in 2008 and is operated by the Bureau of Meteorology and Geoscience Australia. Over the past 18-24 months the JATWC has been developing the capability to extend the state-of-the-art, comprehensive tsunami warning advice it now provides for Australia to other countries bordering the Indian Ocean.

Coastal and Deep-Ocean Sea Level Data

The IOTWS relies on sea level data provided in real-time from coastal and deep-ocean sea level stations around the Indian Ocean to verify if a tsunami may have been generated by undersea earthquakes (see Figure 2 and Figure 3). Not all earthquakes generate tsunamis, so it's vitally important (if time permits) to verify if a tsunami was generated before warnings are issued. This helps reduce the possibility of false alarms.

Vandalism of Deep-Ocean Tsunami Monitoring Buoys

Damage to ocean observing systems takes many forms including ship impact damage, incidental damage (e.g., fouling from fishing lines, nets or cables), damage from direct exploitation of moorings as fish aggregation devices, intentional damage, and theft of entire systems or component parts.

The tsunami warning community are deeply concerned that the rate of damage is highest in the Indian Ocean, with over half of the 36 tsunameters in the newly established Indian Ocean Tsunami Warning System and Adjacent Seas network suffering at least one damage event in the last four years, resulting in over 18 platform-years of data loss. The damaged ocean observing systems cause loss of critical ocean data, degraded weather and marine forecast capabilities, high cost of repair or replacement, and undermined confidence in the tsunami warning system, which could result in significant loss of life and property as well as costly evacuations in response to false tsunami warnings.

Sealevel stations
Status at 2012-03-16 07:16 GMT

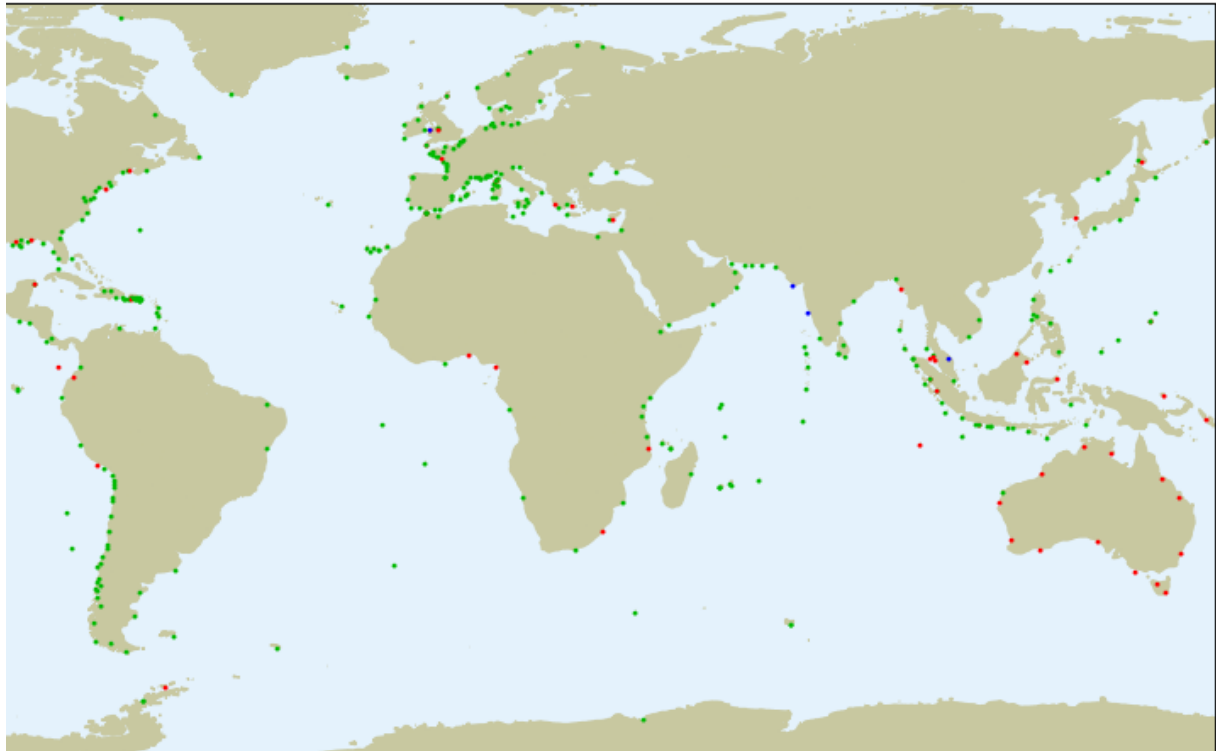


Figure 2: Coastal sea level stations reporting in real-time to RTSPs and NTWCs on the WMO Global Telecommunication System (GTS)

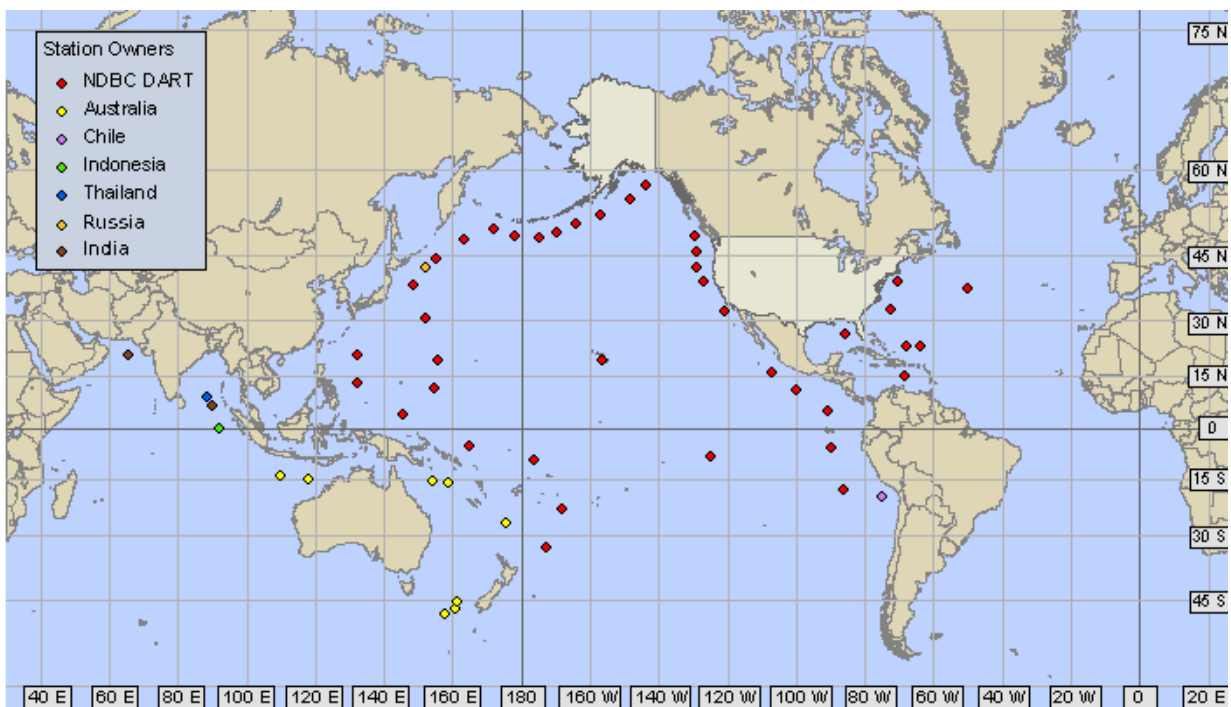


Figure 3: Locations of deep-ocean tsunami buoys providing sea level data in real-time to RTSPs and NTWCs

The 2009 UN General Assembly Resolutions on Oceans and Law of the Sea (64/71, para 172) and on Sustainable Fisheries (64/72 para 109) called on States and appropriate UN agencies to take appropriate action to address intentional and unintentional damage to ocean observing systems. The community is encouraged by recent action of the Western and Central Pacific Fisheries Commission and the Inter-American Tropical Tuna Commission to protect moored ocean observing systems.

The IOC of UNESCO has urged Member States to recognize damage to ocean observing systems in national statutes, harmonize their approaches as appropriate, and cooperate to prevent, detect, deter, report, investigate and prosecute such acts of damage. The 26th Session of the IOC Assembly, Paris, 22 June - 5 July 2011 invited:

- The IOC and WMO to promote the systematic capture and exchange of records of damage to ocean observing systems and to conduct comprehensive cost benefit assessments taking into account both economic and social impacts of damage to ocean observing system;
- The FAO and regional fisheries management organizations, especially those with the competence to manage highly migratory fisheries, to adopt binding measures to prevent and minimize damage to ocean observing systems;
- The FAO, IOC and WMO to cooperate directly to develop means to promote effective enforcement of measures adopted by regional fisheries management organizations to protect ocean observing platforms, and to develop education and outreach programs to bring greater awareness to fishing communities of this problem.
- UN agencies, including IOC, WMO, IMO, and FAO, working with Member States and industry, to share information and foster education and outreach to safeguard human lives and property through protecting the ocean observing system.

Other Inter-Regional Coordination

After the 2004 tsunami disaster the International Maritime Organization (IMO) decided that it needed to provide better dissemination of tsunami advices to shipping through official channels that are coordinated globally as part of the Global Maritime Distress & Safety System (GMDSS) including satellite broadcasts via INMARSAT and the coast radio NAVTEX service. That decision cut across existing coordination arrangements already in place under the auspices of WMO and IOC. The Expert Team on Maritime Safety Services of the IOC/WMO Joint Technical Commission for Oceanography and Marine Meteorology (JCOMM) has been reviewing arrangements. A deal of additional coordination has been required to subsequently provide the IMO with a more helpful and practical inter-agency operational framework for implementing its decision.

IOTWS Contacts for Further Information:

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Annex D

12th NORTH INDIAN OCEAN HYDROGRAPHIC COMMISSION CONFERENCE Colombo, Sri Lanka 20th – 23rd March 2012

NIOHC12 Actions

No.	NIOHC12 Agenda Item	12 th NIOHC Action	Action By	Deadline	Status
12.01	4	Chair to send letter to Saudi Arabia to encourage signing of NIOHC Statutes	Chair	30-Apr-12	
12.02	4	IHB to send letter to Egypt and Malaysia encouraging their participation in the NIOHC	IHB	01-Apr-12	
12.03	5.2	Chair to send letter to appropriate member states to encourage ratification of the protocol of amendments	Chair	30-Apr-12	
12.04	7.3	NICCCWG to work within the agreed ToR for the WG to progress ENC coverage, INT charting and to submit a work plan	NICCCWG	15-Jul-12	
12.05	7.4	CB coordinators to update 5 year plan	CB coordinators	23-Mar-12	Completed
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12.12	17	Include agenda item on WEND-WG at 13th NIOHC	Chair	13th NIOHC	
12.13	17	Chair to provide theme to Industry to guide their presentations at 13th NIOHC industry day	Chair	13th NIOHC	
12.14	18	Myanmar to confirm to NIOHC Chair by letter hosting of 13th NIOHC	Myanmar	31-May-12	
12.15	18	Date and venue of next meeting	Chair	30-Jun-12	



Annex E

11th NORTH INDIAN OCEAN HYDROGRAPHIC COMMISSION CONFERENCE

Colombo, Sri Lanka
20 – 23 March 2012
List of Delegates

Members			
Country	Organisation	Representative	Email
Bangladesh	Bangladesh Navy	Cdr Sheikh Firoz Ahmed	dhydro@bangladeshnavy.org firoz1006@yahoo.com
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	UK Navy/ HSSC Chair	Cpt Vaughan Nail	vaughan.nail842@mod.uk

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Mauritius		Mr Abdool Nooraneer Oozeer	anoozeer@mail.gov.mu
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	Oman Royal Navy	Cdr. Thani al Mahrouki	los@omantel.net.om
	Oman Royal Navy	Lt Cdr. Yahya Al Balushi	Nhooman@omantel.net.om
	Oman Royal Navy	Lt Cdr. Nasser Al Harthi	Alkhta61@hotmail.com
	Oman Royal Navy	Ms Ahlam Al Kharousia	aklam@omanrsahc.com
Pakistan		Cdr. Shahid Hafeez	hydroPk@paknavy.gov.pk
		Lt Cdr. Fayyaz UI Hassan Bhatti	
USA	US Navy	Mr Calvin Martin	Calvin.martin2@fe.navy.mil

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