THIRD INTERNATIONAL WORKSHOP FOR PORT METEOROLOGICAL OFFICERS

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N O T E

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EXECUTIVE SUMMARY

This CD-ROM contains information regarding the outcome of the Third International Port Meteorological Officers (PMO) Workshop (PMO-III-INT), sponsored by the Deutscher Wetterdienst (DWD), and which was held at Bundesamt für Seeschiffahrt und Hydrographie (BSH), Hamburg, Germany, 23-24 March 2006.

The Ship Observations Team (SOT) was created to investigate synergies between the three principal JCOMM ship-based observing panels with a view to the possible integration of the ship-based observing systems on commercial and research vessels. These include the Ship of Opportunity Programme Implementation Panel (SOOPIP), the Voluntary Observing Ship Panel (VOSP), and the Automated Shipboard Aerological Programme Panel (ASAPP).

At its third session, Brest, 7-12 March 2005, the SOT reinforced the view that the work of PMOs was crucial for voluntary ship observations and to the work of the VOSP. PMOs play a fundamental and very essential role in the programmes coordinated under the SOT, therefore harmonizing the way in which PMOs operate is crucial to achieving the aims of SOT.

Thirty-nine delegates from twenty-four countries attended PMO-III-INT. The overarching aims of the workshop were to convey important recent developments (e.g. regarding WMO Publication No. 47, enhanced PMO communications), as well as promoting global standards of service.

The workshop made a number of recommendations (Annex VII) dealing with (i) ship security (Annex VIII), (ii), migration to table driven code forms (Annex IX), (iii) updating procedures for WMO Publication No. 47 (e.g. deleting inactive ships, consolidated ship routes, web based system proposed by USA, copyright issues for pictures), (iv) proposed actions to recruit more ships, (v) education and outreach, (vi) improvement of VOSClim data submission, (vii) proper installation of instruments on ships, (viii) updating the list of Inmarsat Land Earth Stations (LES) that accept Special Access Code 41, (ix) ship inspection form for foreign VOS visits, (x) reporting of observing practices, (xi) monitoring, quality information, and feedback, (xii) web tools (e.g. map showing PMO network and contact details), and (xii) requirements for national reports.

All the technical presentations and national presentations that were made at the workshop have been compiled on the attached CD-ROM and published by WMO within the JCOMM Technical Report series.

Annex I

LIST OF PARTICIPANTS

ARGENTINA

Mr Mario Jorge García
Jefe Dto. Redes
Servicio Meteorológico Nacional
25 de Mayo 658 (C1002ABN)
BUENOS AIRES
Argentina
Telephone: +54-11 4514 1525
Telefax: +54-11 5167 6717
E-mail: garcia@meteofa.mil.ar

AUSTRALIA

Mr Graeme Ball
Chairperson, JCOMM Ship Observations Team
Chairperson of the International Buoy Programme for the Indian Ocean
Manager, Marine Operations Group
Bureau of Meteorology
GPO Box 1289
MELBOURNE, Vic. 3001
Australia
Telephone: +61-3 9669 4203
Telefax: +61-3 9669 4168
E-mail: g.ball@bom.gov.au
smmo@bom.gov.au
marine_obs@bom.gov.au
(group address)

CANADA

Mrs Yvonne Cook
Surface Weather, Climate and Marine Networks Section
Meteorological Service of Canada
Environment Canada
4905 Dufferin Street
DOWNSVIEW, Ontario M3H 5T4
Canada
Telephone: +1-416 739 4468
Telefax: +1-416 739 4261
E-mail: Yvonne.Cook@ec.gc.ca

Mr Gary Rink
Surface Weather, Climate and Marine Networks Section
Meteorological Service of Canada
Environment Canada
4905 Dufferin Street
DOWNSVIEW, Ontario M3H 5T4
Canada
Telephone: +1-416 739 4561
Telefax: +1-416 739 4261
E-mail: Gary.Rink@ec.gc.ca

CROATIA

Captain Željko Šore
The Meteorological Office
Marine Meteorological Center - Split
P.O. Box 370
Glagoljaska 11
HR-21000 SPLIT
Croatia
Telephone: +385-21 347 399 or 343 785
Telefax: +385-21 347 399
E-mail: sore@cirus.dhz.hr

DENMARK

Cmdr Roi Jespersen
Port Meteorological Officer
Danish Meteorological Institute
Observation Department
Surface and Upper Air Observations Division
Lyngbyvej 100
DK-2100 COPENHAGEN
Denmark
Telephone: +45 3915 7337
Telefax: +45 3915 7390
E-mail: rj@dmi.dk
pmo@dmi.dk

Cmdr Harald R. Joensen
Port Meteorological Officer
Danish Meteorological Institute
Observation Department
Surface and Upper Air Observations Division
Lyngbyvej 100
DK-2100 COPENHAGEN
Denmark
Telephone: +45 3915 7343
Telefax: +45 3915 7390
E-mail: hrj@dmi.dk
pmo@dmi.dk

FRANCE

Mr Pierre Blouch
E-SURFMAR Programme Manager
Météo-France
Centre de météorologie marine
13, rue du Chatellier
BP 90411
29604 BREST Cedex
France
Telephone: +33-2 98 22 18 52
Telefax: +33-2 98 22 18 49
E-mail: pierre.blouch@meteo.fr

Mr André Péries
PMO Supervisor
Météo-France DSO/RESO/PMO

42, Avenue Gustave Coriolis
31057 TOULOUSE Cedex
France
Telephone: +33-5 67 69 87 29
Telefax: +33-5 67 69 87 09
E-mail: andre.peries@meteo.fr

Ms Vinciane Unger
Responsible of Ocean Division
Observation Systems Department
Météo-France (DSO/DOS/OCE)
7 rue T. de Bort
BP 202
78195 TRAPPES Cedex
France
Telephone: +33-1 30 13 61 22
Telefax: +33-1 30 13 60 20
E-mail: vinciane.unger@meteo.fr

GERMANY

Mr Klaus-Jürgen Schreiber
Deutscher Wetterdienst
Dept. Observing Networks and Data
Kaiserleistrasse 29/35
D-63067 OFFENBACH
Germany
Telephone: +49-69 8062 2814
Telefax: +49-69 8062 3809
E-mail: Klaus-Juergen.Schreiber@dwd.de

Mr Horst von Bargen
Port Meteorological Officer
Deutscher Wetterdienst
Bernhard-Nocht-Strasse 76
D-20359 HAMBURG
Germany
Telephone: +49-40 6690 1411 / 12
Telefax: +49-40 31 6690 1496
E-mail: pmo@dwd.de

Mr Volker Weidner
PMO Advisor
Deutscher Wetterdienst
Bernhard-Nocht-Strasse 76
D-20359 HAMBURG
Germany
Telephone: +49-40 6690 1410
Telefax: +49-40 6690 1496
E-mail: pmo@dwd.de

GREECE

Mr Michael Myrsilidis
Marine Meteorology Section
Hellenic National Meteorological
Service (HNMS)
El. Venizelou 14
16777 ATHENS
Greece
Telephone: +30-210 9699013
Telefax: +30-210 9628952, 9649646
E-mail: mmirsi@hnms.gr

INDIA

Mr Sheo Kumar Prasad
Deputy Director General of Meteorology
India Meterological Department
Shivaji Nagar
Maharashtra
PUNE - 411008
India
Telephone: +91-20 2589 3330, 2553 5886
Telefax: +91-20 2553 3201, 2589 3330
E-mail: s_k_prasad50@rediffmail.com
imdpune@pn3.vsnl.net.in

Dr V.V. Gopalakrishna
Principal Investigator
Indian XBR Programme
National Institute of Oceanography
Dona-Paula - 403 004
GOA
India
Telephone: +91-832 245 0302
Telefax: +91-832 2450602
E-mail: gopal@nio.org

IRELAND

Mr Brian Doyle
Principal Meteorological Officer
Met Eireann
Cork Airport
CORK
Ireland
Telephone: +353-21 4917753
Telefax: +353-21 4317405
E-mail:

ITALY

Mr Franco Reseghetti
ENEA
P.O. Box 224
I-19100 LA SPEZIA
Italy
Telephone:
Telefax: +39-0187 827213
E-mail:

JAPAN

Mr Toshifumi Fujimoto
Marine Division
Global Environment and Marine Department
Japan Meteorological Agency (JMA)
1-3-4 Otemachi, Chiyoda-ku
TOKYO 100-8122
Japan
Telephone: +81 3 3211 6906
Telefax: +81 3 3211 6908
E-mail: vos-office@climar.kishou.go.jp

KENYA

Mr David Mwaruma
Port Meteorologist
Kenya Meteorological Department
Ngong Road
P.O. Box 30259, 00100 GPO
NAIROBI
Kenya
Telephone: +254-20 387 6957
Telefax: +254-20 3876955
E-mail: dmwaruma@yahoo.co.uk

MALAYSIA

Mr Alui bin Bahari
Director of Marine Meteorology and
Oceanography Division
Malaysian Meteorological Department
Jalan Sultan
46667 PETALING JAYA
Malaysia
Telephone: +60-3 7967 8080
Telefax: +60-3 7955 0964
E-mail: alui@kjc.gov.my

NETHERLANDS

Mr Bert de Vries
Port Meteorological Officer
KNMI PMO-Office
Wilhelminalaan 10
Postbus Box 201
3730 AE DE BILT
Netherlands
Telephone: +31-30 2206391
Telefax: +31-30 2210849
E-mail: vriesdea@knmi.nl
PMO-OFFICE@knmi.nl

Mr Frits B. Koek
Royal Netherlands Meteorological
Institute (KNMI)
Wilhelminalaan 10
P.O. Box 201
3730 AE DE BILT
Netherlands
Telephone: +31-30 220 6860
Telefax: +31-30 220 6401
E-mail: koek@knmi.nl

Mr René Rozeboom
Port Meteorological Officer
KNMI PMO-Office
Wilhelminalaan 10
Postbus Box 201
3730 AE DE BILT
Netherlands
Telephone: +31-30 2206391
Telefax: +31-30 2210849
E-mail: rozeboom@knmi.nl
PMO-OFFICE@knmi.nl

Mr Theo van Stijn
Royal Netherlands Meteorological
Institute (KNMI)
Wilhelminalaan 10
P.O. Box 201
3730 AE DE BILT
Netherlands
Telephone: +31-30 2206471
Telefax: +31-30 2210407
E-mail: Theo.van.Stijn@knmi.nl

NEW ZEALAND

Ms Julie Fletcher
Chairperson, JCOMM VOS Panel
Manager Marine Observations
Meteorological Service of New Zealand Ltd
P.O. Box 722
WELLINGTON
New Zealand
Telephone: +64-4 4700 789
Telefax: +64-4 4700 772
E-mail: fletcher@metservice.com

NORWAY

Mr Tor Ivar Mathisen
Norwegian Meteorological Institute
P.O. Box 43
Blindern
N-0313 OSLO 3
Norway
Telephone: +47 22 96 30 00
Telefax:
E-mail: tor.ivar.mathisen@met.no

PAKISTAN

Mr Muhammad Arif Khan
Pakistan Meteorological Department
Room No. 3106
JIAP
KARACHI
Pakistan
Telephone: +92-21 467 1322, 1302
Telefax: +92-21 924 8282
E-mail: pmdmokar@khi.paknet.com.pk

SINGAPORE

Mr Amran Osman
Port Meteorological Officer
Meteorological Services Division, NEA
P.O. Box 8
Singapore Changi Airport
SINGAPORE 918141
Singapore
Telephone: +65 6545 7198
Telefax: +65 6545 8633
E-mail: amran_osman@nea.gov.sg

SPAIN

Mr D. Angel I. Torres Medina
Instituto Nacional de Meteorologيa
Spain
Telephone: +34 928 43 0600
Telefax: +34 928 43 0601
E-mail: angel@inm.es

SWEDEN

Mr Greger Bergman
Swedish Meteorological and Hydrological Institute (SMHI)
Folkborgsvنgen 1
S-60176 NORRKOPING
Sweden
Telephone: +46 11 495 8217
Telefax:
E-mail: greger.bergman@smhi.se

Ms Kerstin Svensson
Swedish Meteorological and Hydrological Institute (SMHI)
Universitetshallén 34
SE-85171 Sundsvall
Sweden
Telephone: +46 (0) 60 785 8830
Telefax:
E-mail: kerstin.svensson@smhi.se

THAILAND

Mr Wattana Kanbua
Thai Meteorological Department
4353 Sukhumvit Road
Bang-Na
BANGKOK 10260
Thailand
Telephone: +66-2 399 4561
Telefax: +66-2 366 9375
E-mail: watt_kan@hotmail.com
watt_kan@yahoo.com

UNITED KINGDOM

Captain Harry H. Gale
Port Meteorological Officer
Met Office
Trident House
21 Berth, Tilbury Dock
TILBURY, Essex RM18 7HL
United Kingdom
Telephone: +44-1375 859 970
Telefax: +44-1375 859 972
E-mail: pmolondon@metoffice.gov.uk
harry.gale@metoffice.gov.uk

Ms Sarah C. North
Interim Chairperson, ASAP Panel
Chairperson, JCOMM Task Team on the VOSClim Project
Marine Networks Manager
Met Office
Observations Supply - Marine Networks
FitzRoy Road
EXETER
Devon EX1 3PB
United Kingdom
Telephone: +44-1392 885 617
Telefax: +44-1392 885 681
E-mail: sarah.north@metoffice.gov.uk

TANZANIA

Mr Abidan Jesse Mlaki
Tanzania Meteorological Agency
P.O. Box 3056
DAR ES SALAAM
United Republic of Tanzania
Telephone: +255-22 2460706/8
Telefax: +255-22 2460735
E-mail: met@meteo.go.tz
amlaki@meteo.go.tz

USA

Mr Robert A. Luke
National Data Buoy Center (W/OPS51)
Building 3203, Room 305-B
National Weather Service/NOAA
1100 Balch Boulevard
STENNIS SPACE CENTER, MS 39529-6000
USA
Telephone: +1-228 688 1457
Telefax: +1-228 688 3923
E-mail: Robert.Luke@noaa.gov

SECRETARIAT

Mr Edgard Cabrera
Chief
Ocean Affairs Division
Applications Programme Department
World Meteorological Organization
7 bis, Avenue de la Paix
Case postale No 2300
CH-1211 GENEVE 2
Switzerland
Telephone: +41-22 730 82 37
Telefax: +41-22 730 81 28
E-mail: ecabrera@wmo.int

Mr Etienne Charpentier
Ocean Affairs Division
Applications Programme Department
World Meteorological Organization
7 bis, Avenue de la Paix
Case postale No 2300
CH-1211 GENEVE 2
Switzerland
Telephone: +41-22 730 82 23
Telefax: +41-22 730 81 28
E-mail: echarpentier@wmo.int

Annex II

PROGRAMME

Time	Day 1
09:00:00	Welcome
09:15:00	Introduction
09:45:00	Ship recruitment
10:30:00	Morning Tea
11:45:00	VOSClim
11:30:00	Coding issues
12:00:00	Metadata and VOS database demonstration
13:00:00	Lunch
14:30:00	Observations
15:00:00	Afternoon Tea
15:15:00	Electronic logbook software
16:00:00	Telecommunications
16:30:00	Ship inspections
17:30:00	Close day 1
Time	**Day 2**
09:00:00	Monitoring procedures
09:45:00	Ship security issue
10:30:00	Morning Tea
10:45:00	Information exchange
11:15:00	Other PMO Activities
12:00:00	General discussion
13:00:00	Lunch
14:30:00	National presentations
15:00:00	Afternoon Tea
15:15:00	National presentations (continued)
17:30:00	Close workshop

Annex III

WORKSHOP OBJECTIVES

The chairperson outlined the following objectives of the workshop:

1. Facilitate networking amongst PMOs.
2. Understanding the role of JCOMM, the SOT and the VOS Panel.
3. Understanding of VOSClim, its goals and requirements.
4. Understanding the role and changing functions of PMOs.
5. Understanding the need for common standards.
6. Increasing awareness of changes in technology and the methods used by other PMOs or countries.
7. Increasing awareness of planned changes to WMO Publication No. 47.
8. Increasing awareness of the range of VOS monitoring tools.
9. Increasing awareness of inter-PMO methods of communications.
10. Increasing awareness of VOS promotional material.

Annex IV

WORKSHOP OPENING
by Graeme Ball

On behalf of the executive of the Ship Observations Team, I would like to welcome the Port Meteorological Officers of the world and many national VOS Programme managers to this, the third International Port Meteorological Officer Conference.

This meeting follows three days of meetings dedicated to harmonizing the surface marine programme, in particular the VOS, in Europe under EUCOS. The SOT has the same goal but on the global stage. Port Meteorological Officers play a fundamental and very essential role in the programmes coordinated under SOT, so therefore harmonizing the way in which PMOs operate is crucial to achieving the aims of SOT.

I would like take this opportunity to thank Deutsche Wetterdienst for hosting this meeting, and in particular Mr Klaus-Jurgen Schreiber, Chief of Division, Observing Networks, for his opening remarks, and a special thank you to Mr Volker Wiedner for the local organisation and facilities provided for this, and indeed the 3 meetings this week.

Thank you to Mr Edgard Cabrera, Chief Ocean Affairs Division, for his welcome on behalf of WMO. I also wish to publicly thank WMO for supporting this meeting, and for providing the financial assistance to enable the attendance of some delegates.

A special vote of thanks must also go to my fellow SOT members who will assist me with the presentations over these two days.

For this meeting to be truly effective it must be interactive - you must participate by asking questions either during the designated question times or in private discussion with the presenters. This conference is for your benefit so please make the most of the opportunity.

In closing, I'd again welcome everybody to Hamburg for PMO-III-INT and I trust that this conference is successful in achieving its many objectives.

Annex V

VOS CHAIRPERSON WELCOME

Julie Fletcher, chairperson of VOS Panel, welcomed PMOs and PMO Managers to the third International Workshop of Port Meteorological Officers. She noted that without the dedicated work of the PMO network, the VOS fleet would not exist. As a PMO herself, she commented that while much of the PMO work is stimulating and interesting, it is also physically demanding and the out of office work hours can impact on family and social life.

As VOSP chairperson, Julie explained the VOS Panel is trying to coordinate and promote activities that will enhance the Global VOS and the work of PMOs. The aim is to improve international coordination and raise the monitoring and reporting procedures of VOS to a level similar to that of SOOP and DBCP. The excellent work done by PMOs underpins the VOS programme and the Panel is providing guidance on operational issues such as how to recruit more ships to VOS and VOSClim, and addressing issues relating to day-to-day PMO operational concerns such as security and port access.

The VOSP chairperson endorsed the objectives for PMO-III-INT as outlined by the SOT chairperson, and hoped that all PMOs would learn something from the meeting that they can take home to improve their VOS.

Annex VI

ROLE AND RESPONSIBILITIES OF THE PMO

1. To recruit ships of any nationality into, and maintain a national VOS fleet.

2. To maintain accurate records of ships recruited into the national VOS:
   2.1. Full ship details, as required for WMO Publication No. 47.
   2.2. All instrumentation supplied and recovered.
   2.3. All instrument checks and calibrations dates.

3. To regularly visit ships recruited into the national VOS fleet, to:
   3.1. Maintain contact with the Observers;
   3.2. Provide ongoing training to Observers;
   3.3. Maintain and inspect the meteorological and selected oceanographic instruments;
   3.4. Check the presence and condition of supplied handbooks, meteorological tables and charts;
   3.5. Maintain the ship's supply of logbooks, autographic charts, muslin, wicks and other mandatory consumables; and
   3.6. Recover and inspect completed logbooks, autographic charts and electronic logbook data.

4. To provide the following services, regardless of the ship’s nationality and country of recruitment:
   4.1. Perform a barometer check;
   4.2. Check meteorological code tables;
   4.3. Check instructions for Observers; and
   4.4. Provide advice on bulletins, including a list of areas for which forecasts are issued and to update the relevant facsimile broadcast schedules.

5. At the request of the Master of any ship, regardless of country of recruitment, perform the following services:
   5.1. Check the meteorological and selected oceanographic instruments; and
   5.2. Provide advice or assistance on meteorological matters.

6. To promote and maintain liaison with:
   6.1. NMHS;
   6.2. Neighbouring PMOs;
   6.3. Harbour authorities & shipping companies; and
   6.4. Merchant marine schools and yacht clubs.

7. To enquire with the ship's officers about any problems that may be experienced with regard to:
   7.1. The transmission of meteorological and oceanographic observations to a Land Earth Stations or other facility; and
   7.2. The reception and adequacy of forecasts, bulletins and facsimile broadcasts, and to bring this information to the attention of the national meteorological service.

8. To support complementary national, regional and international marine meteorological and oceanographic programmes, such as:
   8.1. The deployment of drifting buoys and profiling floats;
   8.2. The Ship-of-Opportunity Programme; and
   8.3. The Automated Shipboard Aerological Programme

Annex VII

RECOMMENDATIONS FROM THE MEETING

No.	Recommendation	to/action by	Target date
1	Recommendations regarding ship security are given in annex VII.	WMO EC	30/6/2006
2	Recommendations regarding migration from SHIP to BUFR code form are given in annex VIII.	Ad hoc TT	2012
3	to write to Member Countries to ask them to delete ships that are no longer active from their list of VOS and from their regular submissions to WMO Publication No. 47.	WMO	30/6/2006
4	to write to the International Chamber of Shipping to encourage recruitment of vessels and to ask it to contact shipping associations and make specific recommendations in this regard.	WMO	30/6/2006
5	to approach maritime colleges at the national level and promote SOT & PMO activities.	Member Countries	Ongoing
6	to provide delayed mode VOSClim data in the current format (IMMT-3) which includes the additional VOSClim elements. Minimum Quality Control Standards (MQCS-V) should be applied.	Contributing Members	Ongoing
7	to take steps to recruit more ships within available resources (as ship recruitment is slow); Member Countries to promote SOT and VOS and to explain data requirements.	Member Countries	asap
8	Installation of instruments and observing equipment on VOSClim recruited ships should be made with due attention paid to their exposure and location. Simple arrangement drawings should be made to better document instrument location and exposure.	PMOs	Ongoing
9	JCOMM-II approved changes to WMO Publication No. 47. These changes included a range of new fields, improved field description and better documentation. The new version of WMO Pub. 47 (version 3) is planned for introduction on 1/7/2007 (Database structure, semi-column and XML formats). Member Countries to provide their input for WMO Pub. 47 in the new format after this date.	Member Countries	1/7/2007
10	The list of consolidated ship routes for inclusion in Pub 47 must be proposed for adoption at SOT-IV.	SOT-IV	1/3/2007
11	USA offered a web based ship metadata collection/editing and display system. A beta version will be available soon. Interested Member Countries were invited to contact Robert Luke.	Member Countries & NOAA/NDBC	asap
12	Information on additional phenomena (e.g. meteors, lightning, cetacea etc) could be inserted on E-SURMAR wikipedia web site. PMOs are invited to check the web site.	PMOs	asap
13	Member Countries must be careful with copyright of pictures made available via the web (e.g. ship's pictures, observed phenomena). Observers storing	PMOs	Ongoing

No.	Recommendation	to/action by	Target date
	pictures in electronic logbooks should be aware that such pictures will then belong to the public domain. Electronic logbooks should include a specification requesting the person entering pictures in the system to agree with picture sharing e.g. by clicking on a "yes, agreed" button.		
14	to contact Inmarsat to request that they provide regular updates of the Inmarsat list of Land Earth Stations (LES) that accept special access code 41.	WMO	30/6/2006
15	A copy of proposed foreign VOS ship inspection form presented at the meeting will be distributed by email to all PMOs. PMOs are invited to check the form and provide feedback to the chairperson of SOT by 1 June 2006.	PMOs	1/6/2006
16	PMOs, are urged to use the foreign VOS inspection form which will be made available from the VOS website, and return details about such inspections to the VOS Focal Point in the country of recruitment.	PMOs	asap
17	NMHSs are urged to provide Robert Luke, chairperson of the SOT Task Team on Instrument Standards, with details about the type of barometer and barograph used on their VOS as well as the instrument pressure setting.	Member Countries	asap
18	PMOs are urged (i) to familiarise themselves with observing instruments and practices used on foreign vessels, and (ii) to use monitoring tools available via the web (listed under JCOMMOPS and VOS web sites).	PMOs	asap
19	KNMI has developed software to detect formatting errors in observations, and will contact the NFP of VOS to provide them with a list of such errors. KNMI is also invited to consider producing statistics on such errors and to provide the information to NFP. KNMI can offer this software to other Met Services if requested. Interested Member Countries are invited to contact KNMI.	Member Countries & KNMI	asap
20	Member Countries are invited to volunteer to publish a SOT newsletter on behalf of the Task Team on VOS Recruitment and Programme Promotion. Newsworthy material for use by all NMHS publishing a marine-based newsletter will be available from a Wiki website hosted by E-SURFMAR which will act a s a repository for such material.	Member Countries	Ongoing
21	Australia, E-SURFMAR, and JCOMMOPS are invited to collaborate to produce a dynamic web map showing the PMO network and providing associated contact information on PMOs and the ports they service (e.g. PMO references by clicking on a port).	Australia, E-SURFMAR, JCOMMOPS	31/12/2006
22	PMO networks impacts on the quantity and quality of recruited ships. For NWP applications, it is not necessarily the number of ships that counts but the number of observations, their quality and timeliness. The number of observations can be raised either by	Member Countries	Ongoing

No.	Recommendation	to/action by	Target date
	increasing the number of ships, or increasing the number of observations from each ship through the use of automated observing systems and the transmission of hourly data. However, for climate applications, increasing the number of ships is more relevant (bias reduction).		
23	Member Countries are invited to inform Graeme Ball of URLs of National VOS or PMO web sites they are maintaining for inclusion on the VOS web site.	Member Countries	asap
24	Member Countries are urged to complete their SOT national reports for 2005 as soon as possible and to submit them to the WMO Secretariat (ECharpentier@wmo.int), including VOSP, ASAPP, and SOOPIP sections. Only 7 countries have submitted input to WMO so far. Details on format can be found on WMO web site (http://www.wmo.ch/web/aom/marprog/Programme-Areas-and-Activities/SOT/national-reports-fmt.htm).	Member Countries	asap
25	The meeting agreed to organize International PMO workshops every 3 to 4 years.	WMO	2009
26	USA has tentatively offered to host the next International PMO workshop.	USA & WMO	2009

Annex VIII

RECOMMENDATIONS ON SHIP SECURITY ISSUE

Ship security remains a concern for shipping companies and Member Countries, mainly because of the high number of ship piracy acts (more than 300 attacks every year, 30 crew members killed in 2004). The publication of a ship's identification and more importantly its position via web sites, is regarded with great concern by shipping companies and can lead to some companies requesting that their ships be de-recruited from the VOS. This has already happened in several instances, e.g. since mid-2003, Australia has lost more than 5000 ship reports per year because of such concerns from a fishing company, and Japan has lost more than 300 VOS between March 2005 and December 2005.

A short-term solution could be to use a generic callsign, e.g."SHIP", although this (i) impacts on the integrity and usefulness of WMO Publication No. 47, (ii) prohibits the relay of quality information from monitoring centres back to ship operators because identification of the relevant ship operator becomes practically impossible, and (iii) does not address ship security concerns for those ships sailing in regions where the traffic is low.

A longer-term solution arising from discussions at SOT-III, JCOMM-II, and PMO-III-INT is being proposed for adoption by the WMO Executive Council, that: "WMO recommends that NMHSs reclassify ship data transmitted in FM-13 SHIP format from essential data to additional data". This would limit distribution of the data beyond NMHSs and would require special agreement with third parties regarding the specific use of the data. For this proposal to succeed it will require the support of all NMHSs due to the question of who owns the original data

The PMO-III-INT also recommended that "WMO recommend that NMHSs remove ships' call signs from charts distributed to ships via the radio-facsimile or other means.

Other possible options that could be implemented nationally or regionally were as follows:

Japan proposed a solution where a ship's call signs transmitted via Inmarsat code 41 could optionally pass through a filter at LES Yamaguchi, whereby the real call sign would be replaced by letters "SHIP" before GTS insertion. Decisions whether or not to replace the ship's call sign by "SHIP" would be the responsibility of the ship or the NMHS of the recruiting country. Countries adopting such a solution were urged to maintain a private database to help resolve monitoring problems.

The E-SURFMAR Programme Manager proposed a scheme of generic call signs to identify particular ship categories (Minos, Batos, TurboWin etc). This would have the benefit of hiding the true identity of a ship but would not solve the problem in low traffic areas. This would also assist with the compensation scheme established under E-SURFMAR. For example, ships' call signs could be coded Qttccnn where Q is letter "Q" (not used by any country at present), tt represents the ship category, cc the country operating the ship, and nn a sequential number (from 00 to ZZ).

Annex IX

RECOMMENDATIONS ON MIGRATION FROM SHIP TO BUFR CODE FORM ISSUE

1) Frits Koek and Sarah North undertook to review the required data and metadata elements that would be required in a VOS (including VOSClim) BUFR template. The resultant list would then be submitted to a new informal ad hoc SOT task team on VOS migration to BUFR (Frits Koek, Sarah North, Pierre Blouch, Graeme Ball, Julie Fletcher, Etienne Charpentier) by 1 June 2006. Comments submitted by the team by 1 July 2006.

2) WMO will liaise with CBS ET/DRC and ET/MTDCF and advise that the SOT is working on revisiting the list of elements for inclusion in the VOS BUFR template for ship data and is seeking ET/DRC help.

3) The SOT and ET/DRC will liaise to develop a draft BUFR template suitable for VOS and VOSClim which will be submitted for endorsement by SOT-IV.

The meeting considered possible implementation scenarios as follows:

(i) Phase 1, target 2007: Member countries to work on software that converts SHIP to BUFR (1 to 1 conversion) and implement it on a case by case basis.
(ii) Phase 2, target 2006 to SOT-IV: analyze requirements and consider possible solutions (e.g. (proprietary format + metadata) to BUFR, or ("SOT" format + metadata) to BUFR. "SOT" format is a format inspired on FM-13 SHIP format and should be regarded as proprietary; it is not intended for direct GTS distribution but as a practical way of using existing software slightly modified to achieve BUFR distribution of the data on the GTS.
(iii) Phase 3, target 2008: Implementation of proposed recommendations.
(iv) Phase 4, target 2012: Operational system in place.

Annex X

GROUP PHOTO

Annex XI

USEFUL LINKS

Programmes	
JCOMM	www.wmo.ch/web/aom/marprog/
SOT	www.jcommops.org/sot/
VOS	www.bom.gov.au/jcomm/vos/
SOOP	www.ifremer.fr/ird/soopip/
Data Monitoring	
Météo France	www.meteo.shom.fr/vos-monitoring/
Met Office	www.metoffice.com/research/nwp/observations/monitoring/marine
Bureau of Meteorology	www.bom.gov.au/nmoc/Docs/Data_Monitoring/Global_monthly.shtml
Ship recruitment	
WMO-No. 47	www.wmo.ch/web/www/ois/pub47/pub47-home.htm
List of duplicate recruitments	www.meteo.shom.fr/vos-monitoring/multi-recruit.html
Miscellaneous	
List of LES that accept SAC 41	www.wmo.ch/web/aom/marprog/Operational-Information/inmarsat-code41-stations.htm
JCOMMOPS	www.jcommops.org
Marine Observers' Log	esurfmar.meteo.fr/wikilog

Annex XII

LIST OF ACRONYMS

AP	Atmospheric Pressure
AT	Air Temperature
asap	As soon as possible
ASAP	Automated Shipboard Aerological Programme
ASAPP	Automated Shipboard Aerological Programme Panel
AVOF	Australian Voluntary Observing Fleet
AVOS	Automated Voluntary Observing Ship
AWS	Automatic Weather Station
BBXX	FM-13 SHIP GTS code format
BUFR	Binary Universal Form for Representation of Meteorological Data
BSH	Bundesamt für Seeschifffahrt und Hydrographie
CBS	Commission for Basic Systems (WMO)
COOP	Coastal Ocean Observations Panel
CREX	Character form for the Representation and EXchange of data
DAC	Data Assembly Centre
DBCP	Data Buoy Cooperation Panel (WMO-IOC)
DCP	Data Collecting Platform
DWD	Deutscher Wetterdienst
E-ASAP	EUMETNET ASAP
E-SURFMAR	EUCOS Surface Marine Programme
ENEA	Ente per le Nuove tecnologie, l'Energia e l'Ambiente
ET	Expert Team
ETMC	Expert Team on Marine Climatology
ET/DRC	Expert Team on Data Representation and Codes
ET/MTDCF	Expert Team on Migration to Table Driven Code Forms
EUCOS	EUMETNET Composite Observing System
EUMETNET	The Network of European Meteorological Services
EUMETSAT	European Organization for the Exploitation of Meteorological Satellites
EuroGOOS	European Global Ocean Observing System
FP	Focal Point
GCC	Global Collecting Centre (for the MCSS)
GCOS	Global Climate Observing System
GEBICH	Group of Experts on Biological and Chemical Data Management and Exchange Practices
GLOSS	the Global Sea Level Observing System
GLOSS-GE	GLOSS Group of Experts
GMDSS	Global Maritime Distress and Safety System
GMES	Global Monitoring for Environment and Security
GOOS	Global Ocean Observing System
GOSUD	Global Ocean Surface Underway Data Pilot Project
GPS	Global Positioning System
GTS	Global Telecommunication System (WWW)
GTSPP	Global Temperature Salinity Profile Programme
IABP	International Arctic Buoy Programme
IBPIO	International Buoy Programme for the Indian Ocean
IMMT	International Maritime Meteorological Tape format
IMO	International Maritime Organization
INMARSAT	International MobileSatellite Organization
IOC	Intergovernmental Oceanographic Commission (of UNESCO)
IOCCP	International Ocean Carbon Coordination Project
IODE	International Data and Information Exchange (IOC)

IPAB	WCRP International Programme for Antarctic Buoys
ISABP	International South Atlantic Buoy Programme
ISPS	International Ship and Port Facility Security Code
JCOMM	Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology
JCOMMOPS	JCOMM in situ Observing Platform Support Centre
JMA	Japan Meteorological Agency
KNMI	Royal Netherlands Meteorological Institute
LES	Land Earth Station (Inmarsat)
MedGOOS	Mediterranean Global Ocean Observing System
MFS	Mediterranean Forecasting System
MFSPP	Mediterranean Forecasting System Pilot Project
MFSTEP	Mediterranean Forecasting System Toward Environmental Predictions
MQCS	Minimum Quality Control Standards
MSC	Mediterranean Shipping Company
MSL	Mean Sea Level
NAVTEXT	NAVigational Warnings by TEleX
NDBC	National Data Buoy Centrer (NOAA)
MCSS	Marine Climatological Summaries Scheme
MERSEA	Marine Environment and Security for the European Area
NMHS	National Meteorological and Hydrological Service
NOAA	National Oceanographic and Atmospheric Administration (USA)
NOC	National Oceanography Centre (U.K.) – formerly the Southampton Oceanography Centre
MQCS	Minimum Quality Control Standards
NWS	National Weather Service (NOAA)
OceanSITES	OCEAN Sustained Interdisciplinary Timeseries Environment observation System
ODAS	Ocean Data Acquisition Systems
OIT	Oceans Information Technology Pilot Project
PMA	Port Meteorological Agent
PMO	Port Meteorological Officer
Pub47	WMO Publication No. 47 (VOS ship metadata)
QC	Quality Control
QM	Quality Monitoring
RA	Regional Association (of WMO)
RH	Air Relative Humidity
RTMC	Real Time Monitoring Centre
SAC	Special Access Code
SafetyNET	SafetyNET™ is an international automatic direct-printing satellite -based service for the promulgation of navigational and meteorlogical warnings, meteorological forecasts and other urgent safety related messages - Maritime Safety Information (MSI) - to ships
SD	Standard Deviation
SHIP	Report of Surface Observation from Sea Station (FM-13)
SLP	Sea Level Pressure
SMHI	Swedish Meteorological and Hydrological Institute
SOLAS	International Convention for the Safety of Life at Sea
SOO	Ship-of-Opportunity
SOOP	Ship-of-Opportunity Programme
SOOPIP	Ship-of-Opportunity Programme Implementation Panel
SOT	Ship Observations Team
SST	Sea Surface Temperature
SVP	Surface Velocity Programme
TDCF	Table Driven Code Form

TEMP-SHIP	Upper-level temperature, humidity and wind report from a sea station
TOR	Terms of Reference
TSG	Thermosalinograph
TT	Task Team
UKMO	United Kingdom Metoffice
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
URL	Universal Resource Locator
USA	United States of America
VOS	Voluntary Observing Ship
VOSP	Voluntary Observing Ship Panel
VOSClim	Voluntary Observing Ship Climate Project
WD	Wind Direction
WMO	World Meteorological Organization
WS	wind Speed
WWW	World Weather Watch (WMO)
XBT	Expendable Bathythermograph
XML	Extensible Markup Language