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OCEANOGRAPHY AND MARINE METEOROLOGY
(JCOMM)

SHIP OBSERVATIONS TEAM (SOT)

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PMO STATUS AND ACTIVITIES

(Submitted by Sarah North (United Kingdom))

Summary and purpose of the document

This document provides information on the current status of Port Meteorological Officer (PMO) activities and on the future role of the PMO in the light of increased automation of the VOS. It also contains proposals for developing uniform PMO work instructions and for the development of an international AWS inspection report.

ACTION PROPOSED

The Team will review the information contained in this report, and comment and make decisions or recommendations as appropriate. See part A for the details of recommended actions.

- Appendices:**
- A. Role of the Port Meteorological Officers
 - B. PMO Inspection Details Extracted From 2013 and 2014 SOT Reports

- A - DRAFT TEXT FOR INCLUSION IN THE FINAL REPORT

8.4.1 Role of the PMO

8.4.1.1 The Panel recalled that the Port Meteorological Officers (PMOs) play an important role in all of the observing programs of the SOT. Their roles are described in Chapter 6 of WMO Publication No. 471 (see excerpt in **Appendix A**). In terms of the VOS Scheme, they play a vital role in maintaining the strength of the VOS Scheme, as well as contributing to the volume and frequency of accurate observations.

8.4.1.2. The Panel reviewed the status of PMO Global network and noted that there are currently 116 PMO contacts listed on the JCOMM website¹. However many of these contacts are part time PMOs and may only have limited contact with the VOS. In addition some national PMO contacts limit their involvement to automated VOS. In order to gain a clearer understanding of the true level of PMO activity the Panel agreed that the SOT national report format should be amended to include field to report the percentage of PMO time actually spent on PMO related activities and VOS ship inspections, and requested the WMO Secretariat to update the template accordingly (**action; SOT Chair & WMO Secretariat; Nov. 2015**).

8.4.1.3. The Panel further noted that the PMO contact details currently include the address, telephone number and fax number. As very few people use fax nowadays, and because most ships now use email for their communications with ships, the Panel recommended that the PMO listing on the JCOMM website should be amended to also include email addresses, and requested the WMO Secretariat to request email addresses from the PMOs when the information is unknown, and to update the website accordingly (**action; WMO Secretariat; Nov. 2015**).

8.4.1.4. The Panel also noted that the SOT Chair had recently updated the Google Earth **Find-a-PMO** facility that is accessible via the VOS website². The Panel generally liked this facility, which also includes images of the PMOs, and felt that it should be continued when the VOS website transfers to JCOMMOPS.

8.4.1.5 The VOSP Chair reminded the Panel that since 2013 the annual national VOS reports now required members to report on their PMO inspection activities and drew the meetings attention the details she had extracted from the 2013 and 2014 reports (**Appendix B**). In undertaking this exercise she had noted that several members were still using the old VOS reports that didn't include this PMO information. Some members appeared to have simply failed to fill in the necessary details. Furthermore not all members had reported in both years, and fewer members reported in 2014.

8.4.1.6 For these reasons it was difficult to draw any clear conclusions from the information provided, although close analysis of the data suggested that there had been a small increase in the overall number of PMO inspections of VOS since December 2013. The VOSP Chair suggested that a better method of reporting PMO inspections needed to be developed, possibly using an online VOS national form which could auto-generate the PMO inspection statistics and provide the necessary instructions on how to enter the data. This would then allow metrics to be developed to more clearly monitor the level of international PMO activity. The Panel requested the SOT Technical Coordinator to investigate whether an on line National VOS form could be developed to allow metrics to more clearly monitor the level of international PMO activities (**action; M. Kramp; Jan. 2016**).

8.4.1.7 Analysis of the routine inspection numbers provided in the VOS national reports also appeared to reveal a reduction in the number of manned VOS inspections and an increase in the number of AWS inspections – although inconsistent reporting year on year again made it very difficult to draw any clear conclusions.

1 http://www.jcomm.info/index.php?option=com_oe&task=viewGroupRecord&groupID=151
 2 http://www.bom.gov.au/jcomm/vos/find_pmo.html

8.4.1.8 The VOSP Chair pointed out that the expected increase in the automatic component of the VOS fleet would inevitably have an impact on the future of the PMO role and the skills sets they will require. Although increased technical competencies would probably be needed the level of technical knowledge needed would depend on the type of AWS system being used. In the case of the small 'autonomous' systems the PMO would only need limited technical knowledge because the whole unit could be simply replaced in the event of a major failure, and the old unit returned to the technicians for repair ashore. In the case of complex 'integrated' AWS systems, which need to be interfaced with the ships own systems, substantially greater and more specialized and technical competence would be needed for routine maintenance and failure resolution.

8.4.1.9 Because the procedures involved with inspecting a manual observing ship are largely universal it is relatively easy for a PMO from one VOS operating country to inspect a ship from another, thereby helping to foster increased cooperation between PMOs and encouraging continued participation in the VOS Scheme. However in the case of automated systems it is likely be much harder to maintain the currently levels of cooperation because each AWS system is likely to require specialist technical knowledge and experience, and replacement sensors are unlikely to be readily available in other inspecting countries.

8.4.1.10 Nevertheless, the traditional PMO competencies would still be needed for complex AWS systems that employ a visual display on the bridge and require ships officers to manually add the visual observed elements (e.g. waves, swell, weather, cloud types/heights etc) to the measured automated AWS observations. In addition, to verify the quality of the AWS data, the PMO will still need to use transfer standard instruments to check the accuracy of the AWS sensor output - but may now also need to be equipped with an internet enabled notebook to connect to the AWS systems' configuration port

8.4.1.11 Consequently there is a growing need for future PMOs to be trained in the basic technical skills necessary to maintain an AWS in service. The Panel was therefore pleased to note that such issues were now being addressed by the Task Team on Training and that E-SURFMAR was planning to hold a Workshop next year to train PMOs on the functionality of the EUCAWS AWS system. In order to enhance technical cooperation and exchange, the Panel requested E-SURFMAR to consider also inviting interested PMOs and technicians from outside E-SURFMAR to attend their planned Workshop in 2016 (**action; P. Blouch; March 2016**).

8.4.1.12 The Panel noted that in accordance with the SOT Implementation Strategy³, the Team was committed to capacity building through the development of partnerships between developed countries and developing countries. Moreover it recognized that organizing regular PMO workshops was an efficient mean of realizing the Partnerships for New GEOSS Applications (PANGEA) concept established by JCOMM. The forthcoming Fifth International Workshop of Port Meteorological Officers (PMO-5) to be held in Chile from 20 to 24 July 2015 therefore fits well with the PANGEA concept.

8.4.1.13 In considering this item The VOSP Chair also reminded the Panel that SOT Terms of Reference called for coordination of Port Meteorological Officer (PMO)/ship greeting operations globally, and for actions to be proposed to enhance PMO standards and operations, and to contribute as required to PMO and observers training. She also drew the Panels attention to the SOT Implementation Strategy³ document which calls for the development of simple metrics to calculate the intensity of PMO effort in maintenance of the observing networks.

8.4.1.14 Similarly the Panel recognised that the PMO "buddy" system being established under the VOS Drifter Donation programme provided a good opportunity for increasing the number of contributors to the global observing effort, and for enhancing the scope of the VOS Scheme.

3 JCOMM Technical Report No. 61 - http://www.jcomm.info/index.php?option=com_oe&task=viewDocumentRecord&docID=9936

8.4.1.15 The Panel also recognised that programme integration could also have an impact on the future role of the PMO as they are increasingly called upon to provide a ship-greeting service to ships engaged in other programme activities, and in particular for oceanographic observations. PMO support for regional buoy and float deployment programmes would for instance directly support the objectives of the Data Buoy Cooperation Panel (DBCP) and its Regional Action Groups, and also the Argo Science Team (AST). The PMOs therefore have an important role to ensure that volunteer ships are not being over-tasked by demands imposed by various programmes.

8.4.1.16 In view of the increasing scope of demands being placed on PMOs themselves the VOSP Chair suggested that, where possible, efforts should be made to harmonise and standardise PMO practices by developing uniform international work instructions and guidance. To some extent the quick reference guide on the VOS website⁴ already provided an overview of the key activities undertaken by a PMO but didn't go into detail. For instance there was a need to properly address the health and safety issues associated with visiting recruited ships, and to ensure that PMOs are fully trained.

8.4.1.17 the Panel agreed that having a level of uniformity in the procedures carried out by PMOs would help to ensure that ships are inspected and maintained to a common, high standard, and would also help to ensure that the message given to ships observers is consistent. In addition, having comprehensive work instructions would help other countries to establish a PMO presence in their ports and to encourage their participation in the VOS Scheme. The Panel therefore recommended that work should commence on developing a new JCOMM guidance document to address, in so far as is practicable, the full scope of PMO work instructions, duties and responsibilities, and requested the Task Team on Training, and the Task Team on VOS Recruitment and Programme Promotion to jointly develop such a document (**action; S. North, P. Rychtar, PMOs; SOT-9**). The Team also agreed to amend the two Task Teams' Terms of Reference accordingly (**action; SOT; SOT-8**).

8.4.2 VOS & AWS inspection reports - implications of automation

8.4.2.1 The Panel noted that the whilst there were a variety of VOS inspection and recruitment forms in use by national VOS operators for manned VOS many of the details collected were common. A list of the details used had already been collated within E-SURFMAR with a view to establishing a common inspection form that could possibly be linked directly to the E-SURFMAR metadata database.

8.4.2.1 The Panel also noted that E-SURFMAR was establishing new 'Rules for collaboration on PMO activities' between its European member nations with a view to financially compensating members who undertake more than 15 courtesy inspections of VOS from other E-SURFMAR member countries. Whilst it was recognized that this arrangement would be limited to E-SURFMAR it was nevertheless considered that there was a need to keep closer track of courtesy inspections undertaken internationally.

8.4.2.3 In this respect it was further noted that to qualify for compensation in the E-SURFMAR scheme the inspecting nation was required to upload a completed a copy of the VSOP001- Report of Inspection to Foreign VOS form⁵ to the E-SURFMAR metadata database as a permanent record of the inspection. The Panel suggested that it would be good practice for all international PMOs to upload completed copies of their foreign VOS inspection forms to the E-SURFMAR database (**action; PMOs; asap & ongoing**).

8.4.2.4 The Panel recalled that at the last session it was agreed that consideration should be given to developing new 'Shipborne AWS – VOS' inspection, and site inspection forms. In this regard it was noted that E-SURFMAR were considering the development of a new inspection form for ships

4 http://www.bom.gov.au/jcomm/vos/quick_reference_pmo.html

5 <http://www.bom.gov.au/jcomm/vos/documents/vosp001.doc>

with AWS that could be uploaded to the E- SURFMAR metadata database and which would link, where appropriate, with the appropriate metadata fields. The Panel requested E-SURFMAR to keep the Panel advised on their development of a new AWS inspection form for ships with AWS. (**action; P. Blouch; SOT-9**).

Appendices: 2

APPENDIX A**ROLE OF THE PORT METEOROLOGICAL OFFICERS**

The role of the PMO is described in WMO 471, Chapter 6. Below is an excerpt from this Chapter.

6.9 Port Meteorological Officers (PMOs)

In recruiting voluntary observing ships and assisting them in their meteorological work, direct contact with ships' officers is often needed to provide them with instructive material and other documents, to inspect meteorological instruments on board ships, to collect completed hardcopy logbooks and to download log files from electronic logbooks, and to provide feedback on the quality of their observations. For this purpose, Port Meteorological Officers (PMOs) ideally with seagoing experience should be appointed at the main ports routinely visited by observing ships.

PMOs are representatives of the Meteorological Service of the country as far as the local contact with maritime authorities is concerned. The role of PMOs is a very important one and the efficiency of the voluntary system of ships' observations often depends on the initiative displayed by these officers. They are in a good position to discuss with ships' officers any problems they have encountered and offer suggestions, bring to their attention any changes in procedures that may have taken place and give them the latest information which they may wish for. Opportunity should also be taken to explain various meteorological and/or oceanographic programmes whenever observations are specially needed from ships. Meteorological instruments on board ships should be checked and other advice or assistance in meteorological matters should be given by PMOs upon request by the master of any ship.

PMOs should also report to the meteorological authorities in their country if the meteorological work carried out on board the ship has not been entirely satisfactory. Members should immediately respond to these reports; when they concern the work carried out under the authority of another Member, the latter should be informed. If action has to be taken following complaints this can best be done through the PMOs who can play a very important role by a tactful approach to the masters and, if constructive criticism is expressed in positive terms, goodwill can be maintained all round. The scope of the work of PMOs depends largely on the importance of the marine traffic in the particular area served. Before deciding to establish a PMO in a given port, a study must be made of the various services which should be provided. As marine activities develop, a review should be made from time to time to see whether new services should be provided. Guidelines for organizing PMO activities are given in Annex 6.D of this Chapter, and are also available on the VOS website (<http://www.bom.gov.au/jcomm/vos/>). A list of PMOs with their addresses and telephone numbers is available on the JCOMM website (<http://www.jcomm.info/pmos>).

APPENDIX B

PMO INSPECTION DETAILS EXTRACTED FROM 2013 AND 2014 SOT REPORTS

Routine Inspections				
	SOT Report 2014		SOT Report 2013	
	Manned	AWS	Manned	AWS
South Africa	10	3		
New Zealand	14	1	14	1
Australia	79	0	71	6
Japan	126	0	106	0
Ireland	18	0		
Brazil	0	0		
Italy	x	x	x	x
Singapore	4	0		
Eumetnet	0	16	0	16
Ecuador	x	x		
Greece	4	0	4	0
Germany	625	36	624	36
Netherlands	[59]	0	61	0
France	3	212	0	211
United Kingdom	67	25	179	33
USA	931	25	173	28
China	0	135		
Sweden	x	x	2	0
Hong Kong	25	5	23	3
Canada	x	x	x	x
Portugal			x	x
Russia			x	x
Malaysia			x	x
Korea			38	0
Indonesia			x	x
Croatia			x	x
Chile			x	x
DR Congo			x	x

Recruitment Visits

	SOT Report 2014		SOT Report 2013	
	Manned	AWS	Manned	AWS
South Africa	1	0		
New Zealand	4	0	3	0
Australia	4	0	5	0
Japan	0	0	0	0
Ireland	1	0		
Brazil	0	0		
Italy	x	x	x	x
Singapore	0	0		
Eumetnet	0	2	0	5
Ecuador	x	x		
Greece	0	0	0	0
Germany	6	1	8	0
Netherlands	0	0	0	0
France	0	2	0	2
United Kingdom	7	5	14	6
USA	1052	0	83	0
China	0	12		
Sweden	x	x	0	0
Hong Kong	9	0	5	1
Canada	x	x	x	x
Portugal			x	x
Russia			x	x
Malaysia			x	x
Korea			0	0
Indonesia			x	x
Croatia			x	x
Chile			x	x
DR Congo			x	x

De -Recruitment Visits

	SOT Report 2014		SOT Report 2013	
	Manned	AWS	Manned	AWS
South Africa	0	0		
New Zealand	0	0	2	0
Australia	10	1	9	0
Japan	0	0	0	0
Ireland	0	0		
Brazil	0	0		
Italy	x	x	x	x
Singapore	0	0		
Eumetnet	0	2	0	2
Ecuador	x	x		
Greece	0	0	2	0
Germany	9	0	15	0
Netherlands	0	0	0	0
France	1	0	0	1
United Kingdom	9	5	3	2
USA	0	0	13	0
China	0	0		
Sweden	x	x	0	0
Hong Kong	0	0	0	0
Canada	x	x	x	x
Portugal			x	x
Russia			x	x
Malaysia			x	x
Korea			0	0
Indonesia			x	x
Croatia			x	x
Chile			x	x
DR Congo			x	x

VOS Courtesy or Foreign Visits

	SOT Report 2014		SOT Report 2013	
	Manned	AWS	Manned	AWS
South Africa	3	0		
New Zealand	9	0	2	0
Australia	4	0	16	0
Japan	1	0	1	0
Ireland	1	0		
Brazil	0	0		
Italy	x	x	x	x
Singapore	12	0		
Eumetnet	0	0	0	0
Ecuador	x	x		
Greece	1	0	0	0
Germany	12	2	16	2
Netherlands	0	0	4	0
France	0	0	0	0
United Kingdom	0	0	2	0
USA	272	0	63	0
China	0	0		
Sweden	x	x	0	0
Hong Kong	0	0	1	0
Canada	x	x	x	x
Portugal			x	x
Russia			x	x
Malaysia			x	x
Korea			0	0
Indonesia			x	x
Croatia			x	x
Chile			x	x
DR Congo			x	x

TOTAL PMO VISITS

	SOT Report 2014			SOT Report 2013		
	VOS	Other	TOTAL	VOS	Other	TOTAL
South Africa	17	22	39			0
New Zealand	28	4	32	22	2	24
Australia	96	53	149	107	68	175
Japan	127	0	127	107	0	107
Ireland	20	0	20			0
Brazil	0	0	0			0
Italy	x	x	0	x	x	0
Singapore	16	0	16			0
Eumetnet	20	0	20	23	0	23
Ecuador	2	0	2			0
Greece	5	0	5	6	0	6
Germany	691	73	764	701	54	755
Netherlands	[59]	6	65	61	4	65
France	218	0	218	214	0	214
United Kingdom	118	2	120	239	6	245
USA	2280	3	2283	360	0	360
China	147	0	147			0
Sweden	x	x	0	2	0	2
Hong Kong	39	0	39	33	0	33
Canada	x	x	x	x	x	x
Portugal			x	x	x	x
Russia			x	x	x	x
Malaysia			x	x	x	x
Korea			x	38	0	38
Indonesia			x	x	x	x
Croatia			x	x	x	x
Chile			x	x	x	x
DR Congo			x	x	x	x
		<i>Total</i>	4046			2047
		<i>Total (Excl US)</i>	1763			1687