

JOINT WMO/IOC TECHNICAL COMMISSION FOR
OCEANOGRAPHY AND MARINE METEOROLOGY
(JCOMM)

SHIP OBSERVATIONS TEAM (SOT)

EIGHTH SESSION

CAPE TOWN, SOUTH AFRICA, 20-24 APRIL 2015

SOT-8 / Doc. 10.1.1
(02.04.2015)

ITEM: 10.1.1

Original: ENGLISH

REGIONAL SPECIALIZED METEOROLOGICAL CENTRE (RSMC), EXETER, VOS MONITORING REPORT

(Submitted by Colin Parrett (United Kingdom), RSMC, Exeter)

Summary and purpose of the document

This document provides information on the VOS data quality monitoring conducted by the Regional Specialized Meteorological Centre (RSMC) operated by the United Kingdom Met Office in Exeter.

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.** Met Office on-line monthly VOS suspect list for February 2015
 - B.** Criteria for monthly monitoring of marine surface observations
 - C.** Timeliness of VOS observations received at the Met Office, February 2015
 - D.** Met Office on-line time of receipt statistics for individual ships, February 2015
 - E.** Met Office on-line time of receipt statistics for national fleets, February 2015
 - F.** Met Office monthly national fleet ranking for manual VOS, February 2015
 - G.** Met Office monthly ranking for automatic VOS, February 2015

- A - DRAFT TEXT FOR INCLUSION IN THE FINAL REPORT**10.1.1 - Regional Specialized Meteorological Centre (RSMC) Exeter VOS monitoring report**

10.1.1.1 Ms Sarah North (United Kingdom) reported on the activities of the Regional Specialized Meteorological Centre (RSMC) Exeter, acting as CBS Lead Centre for monitoring the quality of surface marine observations. It routinely produces monthly and biannual quality reports and provides feedback to VOS operators regarding the quality of the data delivered by VOS ships.

10.1.1.2 The Met Office (RSMC Exeter) continues to compile lists of ships that have produced 'suspect' observations each month (e.g. see Appendix A) which are available via the Met Office web site¹ and are also sent to the WMO Secretariat. Following action item 105 from SOT-7, the Met Office contacted other monitoring centres regarding the new monitoring criteria for labeling ships as 'suspect' and obtained agreement on implementing them in monthly monitoring reports.

10.1.1.3 The new monitoring criteria (shown in Appendix B) started to be used from January 2015 (action 106 from SOT-7) in monthly monitoring reports. These criteria are substantially tighter for ships that report with automatic observing systems, because these systems are seen to be more reliable and less prone to errors than manual observing systems. Some of the criteria for ships with manual observing systems were also tightened slightly. Consequently, there will be more ships on the suspect lists than in previous months and years; the increases for pressure and temperature for February 2015 can be seen by comparing the two lists in Appendix A. Following guidance from WMO (Dr Steve Foreman, Chief, Data Representation, Metadata and Monitoring) it has been agreed that the old criteria will be used to produce 'parallel' suspect lists that will be compared with the new lists by the Met Office. The changes in criteria will be noted in the RSMC's Biannual Report and any changes in the time-series of suspects will be reported. The Team requested the WMO Secretariat to confirm with the CBS that the new monitoring criteria are fit for purpose (**action; WMO Secretariat; Sep. 2016**), and the RSMC to produce separate tables for suspect manual and automatic ships on the Met Office marine monitoring website (**action; RSMC; Sep. 2015**).

10.1.1.4 The Met Office also produces monthly lists of monitoring statistics for all VOS, which are sent to the VOS focal points and are also available from the Met Office web site. To maintain up to date lists of ships, the Met Office advised that it continues to use the latest data downloaded from the online E-SURFMAR metadata database, rather than from the WMO Pub47 database. In addition, the Met Office uses the masked call sign data available from the JCOMMOPS FTP site³.

10.1.1.5 It was noted that the SHIP masking scheme implemented by JMA in 2007 continues to prevent the Met Office from monitoring data from individual Japanese and some US and Canadian ships. There has been a slight increase in the number of these reports over the last two years, with 27199 reports of pressure received in January 2015 from VOS with call-sign "SHIP", compared to 23457 reports in January 2013 (automatic reports account for 85% of these).

10.1.1.6 Timeliness information for VOS reports received at the Met Office is also made available from the observation monitoring web site² (see Appendices D and E). This information shows that the majority of ship reports continue to be received promptly, with more than 90% received within 60 minutes of the observation time. The Met Office apologized for not completing action 107 to separate timeliness information for automatic and manual ships.

10.1.1.7 The Met Office continues to make monthly VOS ranking scheme results available on their website for all VOS and for the national VOS fleets. Separate monthly lists of scores are produced for automatic and manual ships. An example from the February 2015 monthly scores and national fleet rankings are shown in Appendix F. VOS operators are asked to consider the

1 : <http://research.metoffice.gov.uk/research/nwp/observations/monitoring/index.html>

2 : <http://research.metoffice.gov.uk/research/nwp/observations/monitoring/marine/TOR/index.html>

3 : <ftp://mask2real.vosmask@ftp.jcommops.org/mask2real.csv>

value of these monthly and annual performance rankings and provide feedback.

10.1.1.8 The Team also decided on the following action items:

- (i) RSMC to produce a report on time-series of ‘suspect’ ships, to show impact of the change in selection criteria (**action; RSMC; Feb. 2016**);
- (ii) RSMC to separate timeliness information for manual and automatic ships (**action; RSMC; Apr. 2016**); and
- (iii) PMOs to contact ships on monthly suspect lists to rectify any problems (**action; PMOs; ongoing**).

- B - BACKGROUND INFORMATION

Monitoring the quality and timeliness of VOS observations

- 1 The Met Office (RSMC Exeter), as WMO-designated lead centre for monitoring the quality of surface marine meteorological data (observations from ships, buoys and other in situ marine platforms), compares observations from individual platforms with the Met Office’s global model background 6-hour forecast fields for each variable. Platforms for which the observed values differ from the background by a significant amount are flagged as suspect.
- 2 Monthly lists of suspect marine platforms are sent to the WMO Secretariat and also exchanged among other monitoring centres (including JMA, NCEP, MeteoFrance and ECMWF) for comparison. Generally there is considerable agreement between the different centres, both in terms of suspect platforms (using the same criteria) and mean and standard deviation of differences from the background fields. The Met Office monthly suspect lists are available via the Met Office web site at <http://research.metoffice.gov.uk/research/nwp/observations/monitoring/index.html>. A recent example of our on-line VOS suspect list for February 2015 is shown in Appendix A. Monthly QC plots are also available from the website for each ship that is listed as suspect.
- 3 Originally only mean sea level pressure was monitored, but wind speed, wind direction, sea surface temperature, air temperature and relative humidity have been added to the information being exchanged on a monthly basis. The new monthly monitoring criteria for the 6 variables that were agreed at SOT-7 are shown in Appendix B, together with the previous selection criteria. The selection criteria for labeling ships as ‘suspect’ had previously remained unchanged for about 25 years (for pressure), during which time there have been large improvements in data assimilation, numerical modeling and data coverage, resulting in more accurate short-range background forecasts and smaller observation-background (o-b) differences overall. Consequently, some of the monitoring criteria for manual observations have been tightened slightly.
- 4 Also, over recent years there has been a large increase in the number of ships that send in reports from automatic weather stations, which are generally more accurate and less prone to errors than manual reports. Therefore the monitoring of ‘automatic ships’ has been separated from the monitoring of ‘manual ships’ and tighter limits imposed for automatic ships, as shown in Appendix B (numbers in brackets). The splitting of the ships into manual and automatic reports is helped if “i_x” is set correctly in all reports; although the Met Office also uses lists of manual and automatic ships compiled using “atm” from the ship metadata, but these are only updated monthly.
- 5 Due to the stricter monitoring criteria, there will be more ‘suspect’ ships than previously and the increases for pressure and temperature for February 2015 can be seen by comparing the two lists in Appendix A. For pressure, there were 16 VOS ships on the suspect list using the old criteria, compared to 38 using the new criteria (35 manual and 3 automatic ships). [N.B. If

the new criteria are applied to all reporting ships, we get 57 'suspect' ships (seen in Table 1 of the 'Global Monthly Monitoring Report', available from the Met Office web site); so there are 19 suspect ships (or an extra 50%) that are not in any national VOS fleet, or at least not in the E-SURFMAR database of 'active VOS'.] The old criteria will be used to produce 'parallel' suspect lists that will be compared with the new lists by the Met Office and the changes in criteria will be noted in the RSMC's Biannual Report, with a report on any changes in the time-series of suspects.

- 6 The Met Office also produces monthly lists of monitoring statistics for the VOS fleets recruited by certain countries. To maintain up to date lists of the VOS fleets for each country concerned, the Met Office uses the meta-data available from the E-SURFMAR web-site.
- 7 Masked call sign data available from the JCOMMOPS Mask vs Real database is also taken into account when preparing the lists of VOS monitoring statistics.
- 8 National focal points are notified when the latest VOS monthly monitoring reports and suspect lists become available on the Met Office website by means of an email sent by the Met Office to the SOT, VOS and PMO mailing lists, which are maintained by JCOMMOPS. It is important therefore that focal points wishing to receive this monitoring information check that their mailing list information is kept up to date. However, national monthly monitoring statistics continue to be emailed directly to major VOS operating countries, and as mentioned in reports to previous SOT meetings, any other national focal points who may wish to receive directly emailed copies of the monthly monitoring lists or 'suspect' ship lists should advise the Met Office of their email address.
- 9 Every 6 months more detailed monitoring reports, for all platforms, are produced and made available to the WMO Secretariat via the Met Office web site. The statistics relating to suspect VOS operated by specific members are extracted from the report and distributed by the Secretariat to national focal points for the members concerned, under a covering letter requesting that remedial action be taken to correct the problems. Unfortunately, there have been problems producing the latest report for July-December 2014 (for which the Met Office apologizes) and the format may have to change somewhat, with the individual time-series plots for each suspect platform being removed. There are in any case doubts as to the usefulness of these time-series for correcting problems, considering the more timely monthly information available (mentioned above).
- 10 Timeliness statistics for VOS reports received at the Met Office are available on our web site at <http://research.metoffice.gov.uk/research/nwp/observations/monitoring/marine/TOR/index.html> where monthly timeliness data for individual VOS is available as well as tables and graphs showing the relative timeliness of national VOS fleets. A graphical example for February 2015 data is shown in Appendix C, where it can be seen from the upper graph that the majority of ship reports were received promptly, with about 70% received within 15 minutes and more than 90% received within 60 minutes of the observation time. The cut-off time for operational NWP global data assimilation is typically 90-150 minutes after the analysis times of 00, 06, 12 and 18 UTC, so that about 95% of global VOS data are being received in time to be assimilated. Examples of timeliness information for February 2015 for individual call-signs and for national fleets are shown in Appendices D and E, respectively. The overall timeliness continues to improve due to increased automation. The Met Office plans to separate the automatic ships from the manual ships to produce two sets of timeliness statistics for national VOS fleets.
- 11 For the last 5 years the Met Office has been producing annual lists of all VOS ships, ranked in order of importance to the numerical weather prediction (NWP) system, available from the Met Office web-site at <http://research.metoffice.gov.uk/research/nwp/observations/monitoring/marine/VOSranking/index.html> . The ships are ranked in terms of their quantity, quality and timeliness of reports,

largely to assist in presenting awards to the best performing ships (initially in the UK VOS fleet). This system was extended about 3 years ago to produce monthly scores and ranking lists, separately for automatic and manual ships and for national VOS fleets, and these monthly lists are also available from the above link. Extracts of the monthly results for February 2015 are shown in Appendices F and G.

- 12 As mentioned at previous SOT meetings, the Met Office's role as CBS Lead Centre for monitoring marine data is incomplete, with Japanese ships not being monitored individually, due to JMA's adoption of the 'SHIP' masking scheme. The Met Office continues to collect the original data from JMA's FTP server, but this data is not routed into our meteorological database due to issues concerning its security. Consequently, to ensure that the VOS can continue to be monitored efficiently, the Met Office (RSMC Exeter) would prefer that all countries adopt a masking method with a unique masked identifier for each ship, until a new ENCODE masking scheme is rolled out.

Appendices: 7

APPENDIX A

MET OFFICE ON-LINE MONTHLY VOS SUSPECT LIST FOR FEBRUARY 2015 (extracts)

1. USING OLD CRITERIA

Pub47 VOS Suspects for Feb 2015

To view the suspect threshold for each variable and statistic, hover your cursor over the relevant column. Please note that the bias and standard deviation statistics listed below exclude observations having gross errors.

PRESSURE (hPa)							
CTRY CODE	SHIP NAME	CALL SIGN	TOTAL	GE (%)	BIAS	SD	Graph
		VRCS2	49	0	5.0	2.6	QC plot
		VRIA4	25	0	5.6	1.2	QC plot
GB	AL BAHUYA	V7QF5	30	0	-4.3	0.5	QC plot
HK	Min Lu	VRFI7	64	0	5.0	1.8	QC plot
IT	COSTA DELIZIOSA	IBJD	77	5	-10.4	4.1	QC plot
JP	TOYO	H3ZA	30	0	-4.4	1.0	QC plot
RU	KAPITAN KREMS	UFLT	32	0	10.7	0.9	QC plot
RU	PURGA	UASU	25	24	-3.8	8.0	QC plot
US	ALGOSTEEL	VDJB	21	100	0.0	0.0	QC plot
US	DISNEY DREAM	C6YR6	51	2	-5.1	0.9	QC plot
US	HOOD ISLAND	C6LU4	47	0	4.8	1.6	QC plot
US	HORIZON ENTERPRISE	KRGB	62	2	-5.2	0.7	QC plot
US	NIEUW AMSTERDAM	PBWQ	179	0	-4.5	0.9	QC plot
US	OKEANOS EXPLORER (AWS)	WTDH	195	6	10.9	5.1	QC plot
US	PRINSENDAM	PBGH	72	1	6.7	0.7	QC plot
US	SEVEN SEAS NAVIGATOR	C6Z19	38	0	-5.6	1.8	QC plot
TEMPERATURE (deg C)							
CTRY CODE	SHIP NAME	CALL SIGN	TOTAL	GE (%)	BIAS	SD	Graph
GB	HMS Protector	GXRK	416	0	-4.8	3.7	QC plot
RU	ABAKAN	UISD	36	0	4.2	2.5	QC plot
US	OKEANOS EXPLORER (AWS)	WTDH	188	76	-2.9	4.9	QC plot
US	OVERSEAS MARTINEZ	WPAJ	28	46	-0.2	1.5	QC plot
US	WHITTIER RESEARCH (AWS)	KXI29	669	0	4.9	1.9	QC plot
WIND SPEED (m s-1)							
CTRY CODE	SHIP NAME	CALL SIGN	TOTAL	GE (%)	BIAS	SD	Graph
HK	Dapeng Moon	VRDW2	39	0	5.4	5.1	QC plot
WIND DIRECTION (deg)							
CTRY CODE	SHIP NAME	CALL SIGN	TOTAL	GE (%)	BIAS	SD	Graph
		7JGY	22	0	-69.4	63.2	QC plot
		VRNF8	22	0	50.4	72.6	QC plot
DE	H-G BUELOW	A8YF5	25	4	-1.3	81.1	QC plot
GB	Mozu Arrow	C6N18	39	0	44.6	30.6	QC plot
GB	Seago Antwerp	OZDB2	27	0	10.3	92.7	QC plot
GB	Spruce Arrow	C6SD9	26	0	3.1	101.8	QC plot
NL	FLINTERSKY	PBHZ	39	0	0.6	109.8	QC plot
US	NORWEGIAN DAWN	C6FT7	34	0	-32.1	19.4	QC plot
US	NORWEGIAN EPIC	C6XP7	40	3	14.2	90.2	QC plot
RELATIVE HUMIDITY (%)							
CTRY CODE	SHIP NAME	CALL SIGN	TOTAL	GE (%)	BIAS	SD	Graph
CA	CCGS CAPE ROGERS	VCBT	311	0	31.6	11.5	QC plot
CA	DARA DESGAGNES	VCBW	519	3	-23.2	16.7	QC plot
CA	GORDON REID	CGBR	181	0	18.2	7.0	QC plot
DE	CHICAGO EXPRESS	DCUJ2	26	0	-15.4	14.2	QC plot
DE	CMA CGM DON GIOVANNI	A8IE7	33	0	17.2	12.4	QC plot
DE	CONTI GREENLAND	A8QM9	35	0	19.4	12.2	QC plot
DE	GRAL. MANUEL BELGRANO	D5FS6	26	0	22.4	8.8	QC plot
GB	AL MAFYAR	V7QG5	21	0	28.3	8.7	QC plot
GB	Maersk Bentonville	OZCZ2	34	0	17.4	13.8	QC plot
GB	Oceana	ZCDN9	65	0	-18.5	18.5	QC plot
HK	Star Pisces	C6AV5	27	0	18.0	12.3	QC plot
NO	THUAN HUBERT	UDC1	506	0	55.0	4.6	QC plot

2. USING NEW CRITERIA

PRESSURE (hPa)							
CTRY CODE	SHIP NAME	CALL SIGN	TOTAL	GE (%)	BIAS	SD	Timeseries
		OVDW2	20	0	4.3	1.3	QC plot
		VRCS2	49	0	5.0	2.6	QC plot
		VRIA4	25	0	5.6	1.2	QC plot
AU	PAPUAN CHIEF	VRRC	16	0	3.8	0.7	QC plot
CA	ALGOMA ENTERPRISE	VCJM	606	0	-2.2	0.6	QC plot
DE	CALEDONIA	9HCX7	18	0	5.2	1.7	QC plot
DE	MSC ALICANTE	A8YN7	25	0	3.2	0.9	QC plot
GB	AL BAHIIYA	V7QF5	30	0	-4.3	0.5	QC plot
HK	Min Lu	VRFI7	64	0	5.0	1.8	QC plot
HK	OOCL Singapore	VRMX7	28	0	-3.5	3.2	QC plot
IS	HELGAFELL	OZ2049	58	0	-3.9	1.7	QC plot
IT	COSTA DELIZIOSA	IBJD	77	5	-10.4	4.1	QC plot
JP	TOYO	H3ZA	30	0	-4.4	1.0	QC plot
NL	EMMA MAERSK	OYGR2	18	0	0.8	5.1	QC plot
NZ	SHANSI	9V9710	19	0	3.1	1.1	QC plot
RU	KAPITAN KREMS	UFLT	32	0	10.7	0.9	QC plot
RU	PURGA	UASU	25	24	-3.8	8.0	QC plot
US	ALGOSTEEL	VDJB	21	100	0.0	0.0	QC plot
US	ALLIANCE FAIRFAX	WLMQ	17	0	-5.8	1.9	QC plot
US	CARNIVAL ELATION	3FOC5	17	0	-4.2	0.6	QC plot
US	CARNIVAL VICTORY	3FFL8	24	0	-3.4	2.3	QC plot
US	CHARLES ISLAND	C6JT	19	0	-6.9	1.7	QC plot
US	DISNEY DREAM	C6YR6	51	2	-5.1	0.9	QC plot
US	EAGLE KUANTAN	9V8376	36	0	-4.0	2.2	QC plot
US	EVER LIVING	9V9791	20	0	-3.2	1.0	QC plot
US	EXCELSIOR	ONCD	18	0	3.3	2.4	QC plot
US	HOOD ISLAND	C6LU4	47	0	4.8	1.6	QC plot
US	HORIZON ENTERPRISE	KRGB	62	2	-5.2	0.7	QC plot
US	HYDRA VOYAGER	C6AB8	42	0	-3.1	1.2	QC plot
US	LAURENCE M. GOULD (AWS)	WCX7445	151	1	-1.6	4.2	QC plot
US	MAERSK MISSOURI	WAHV	50	0	3.5	1.6	QC plot
US	MAERSK NIAGARA	VREO9	18	0	3.8	2.2	QC plot
US	NIEUW AMSTERDAM	PBWQ	179	0	-4.5	0.9	QC plot
US	OKEANOS EXPLORER (AWS)	WTDH	195	6	10.9	5.1	QC plot
US	PRINSENDAM	PBGH	72	1	6.7	0.7	QC plot
US	SEVEN SEAS NAVIGATOR	C6ZI9	38	0	-5.6	1.8	QC plot
US	STAR ISMENE	LANT5	19	0	-3.1	0.6	QC plot
US	TANGGUH HIRI	C6XC2	43	0	3.7	2.4	QC plot
TEMPERATURE (deg C)							
CTRY CODE	SHIP NAME	CALL SIGN	TOTAL	GE (%)	BIAS	SD	Timeseries
CA	ARCTIC	VCLM	624	0	3.0	3.7	QC plot
CA	BELLA DESGAGNES	CZJG	669	0	2.9	1.9	QC plot
CA	DES GROSEILLIERS	CGDX	669	0	2.9	1.7	QC plot
CA	PIERRE RADISSON	CGSB	637	0	2.9	1.7	QC plot
DE	HELGOLAND TRADER	A8XA3	18	0	3.8	2.0	QC plot
GB	HMS Protector	GXRK	416	0	-4.8	3.7	QC plot
NL	NEDLLOYD BARENTSZ	PHKL	35	0	3.8	2.1	QC plot
RU	ABAKAN	UISD	36	0	4.2	2.5	QC plot
US	ADVANTAGE	WPPO	17	0	-3.4	1.2	QC plot
US	HI\IALAKAI (AWS)	WTEY	569	0	1.6	4.9	QC plot
US	OKEANOS EXPLORER (AWS)	WTDH	188	76	-2.9	4.9	QC plot
US	OVERSEAS MARTINEZ	WPAJ	28	46	-0.2	1.5	QC plot
US	ROGER REVELLE (AWS)	KAOU	477	0	3.2	1.6	QC plot
US	VALDEZ RESEARCH (AWS)	WXJ63	669	0	3.6	3.7	QC plot
US	WHITTIER RESEARCH (AWS)	KXI29	669	0	4.9	1.9	QC plot
ZY	APL CHONGQUING	9V9373	51	0	3.1	1.7	QC plot

APPENDIX B

CRITERIA FOR MONTHLY MONITORING OF MARINE SURFACE OBSERVATIONS

Monitoring procedures

Period	: One calendar month.
Data monitored	: Reports from each unique identifier for ships, fixed buoys and platforms, split into manual and automatic observing systems.
Standard of comparison	: Background field from Exeter global model.
Observation times	: All hours
Elements monitored	: Mean sea level pressure (hPa). : Wind speed (ms^{-1}). : Wind direction (degrees). : Air temperature ($^{\circ}\text{C}$). : Relative Humidity (%). : Sea surface temperature ($^{\circ}\text{C}$).
Parameters monitored	
NOBS	: Number of observations received, excluding duplicates.
%GE	: Percentage of observations with gross errors.
%REJ	: Percentage of observations flagged, excluding those with gross errors.
SD	: Standard deviation of difference of observations from background values, excluding those with gross errors.
BIAS	: Mean difference of observations from background values, excluding those with gross errors (N.B. a positive bias indicates the wind observation is veered to the background).
RMS	: Root Mean Square difference of observations from background values, excluding those with gross errors.
Gross Error Limits :	15 hPa (pressure) 25 ms^{-1} (vector wind) 15 $^{\circ}\text{C}$ (air temperature) 50% (relative humidity) 10 $^{\circ}\text{C}$ (sea surface temperature)

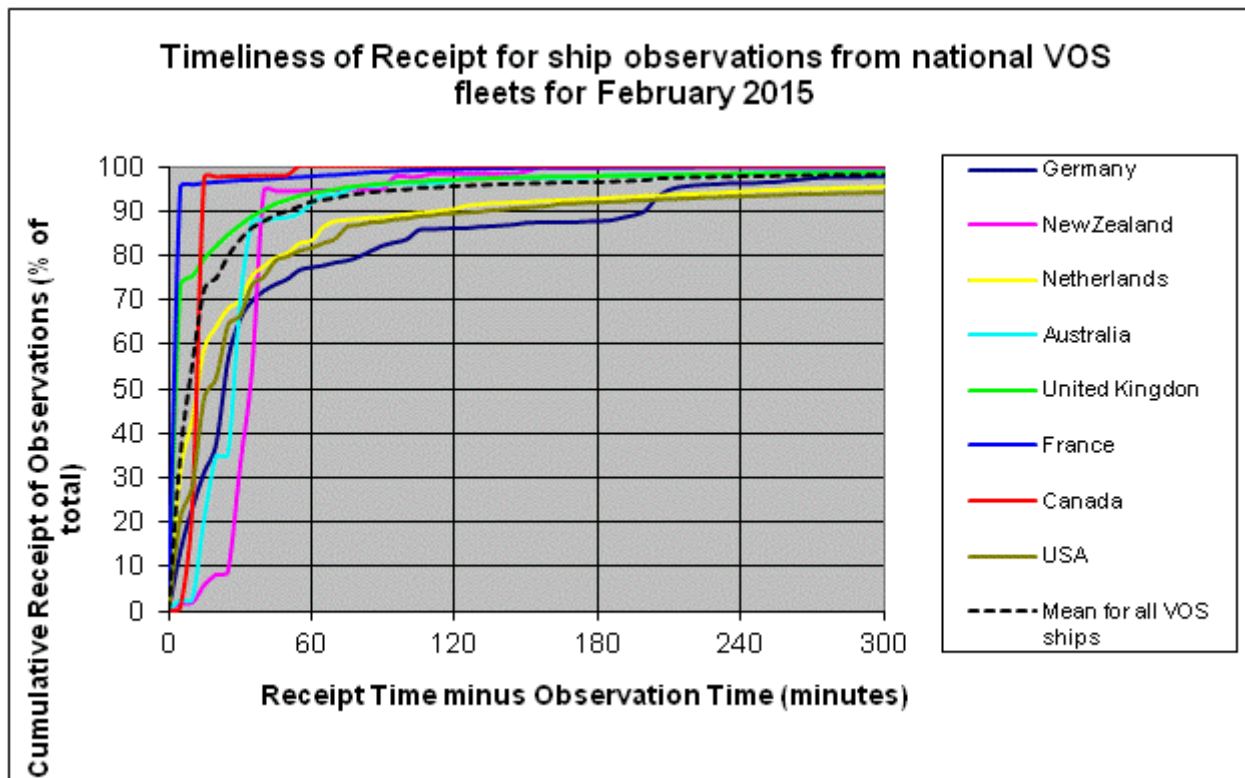
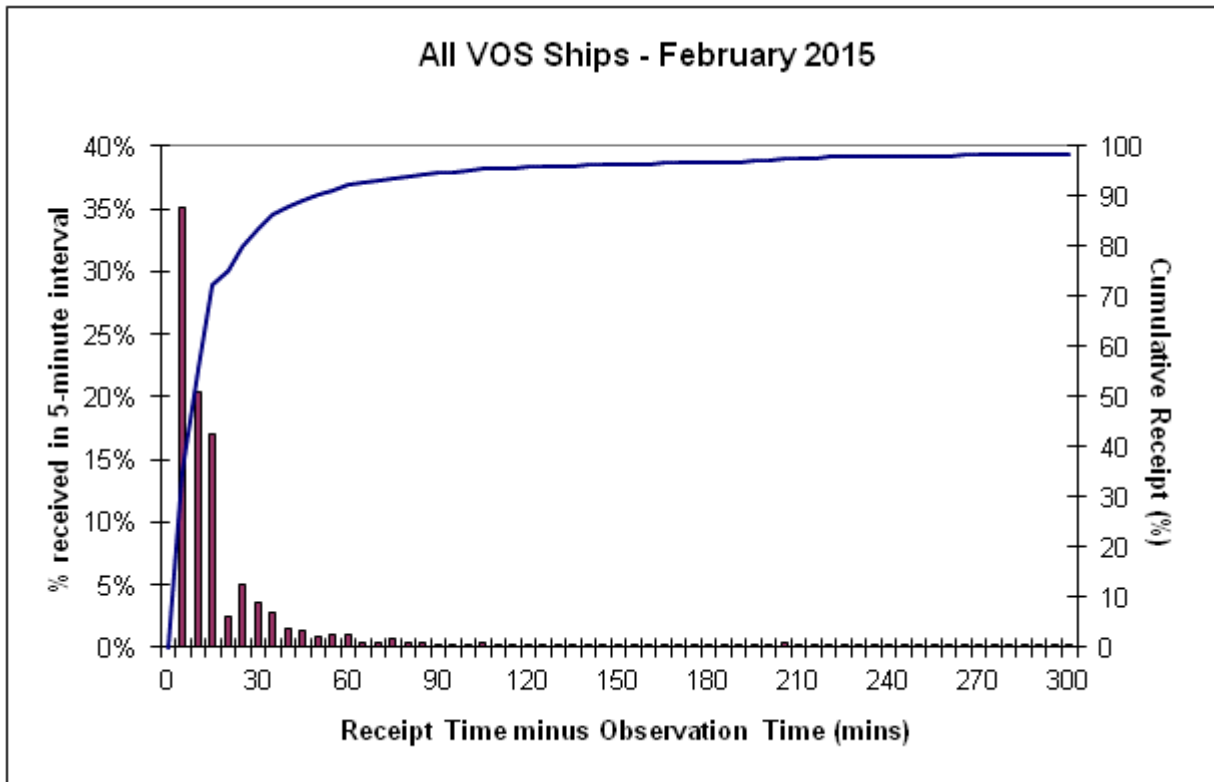
Selection Criteria (*split into manual/automatic from January/February 2015*)

Manual (Automatic)	: NOBS \geq [20] 15 (50), + one or more of the following: [Previous]
1. Bias	\geq [4] 3 (2) hPa (pressure) \geq [5] 4 (4) ms^{-1} (wind speed) \geq [30] 30 (25) degrees (direction) \geq [4] 3 (2.5) $^{\circ}\text{C}$ (air temperature) \geq [15] 15 (12) % (relative humidity) \geq [3] 2.5 (2) $^{\circ}\text{C}$ (SST)
2. SD	\geq [6] 5 (4) hPa (pressure) \geq [80] 70 (50) degrees (direction) \geq [6] 5 (4) $^{\circ}\text{C}$ (air temperature) \geq [25] 25 (20) % (relative humidity) \geq [5] 4 (3) $^{\circ}\text{C}$ (SST)
3. PGE	\geq [25] 25 (15) %

N.B. Observations of wind direction are only included in the wind direction statistics if the observed or background wind speed is greater than 5 ms^{-1}

APPENDIX C

TIMELINESS OF VOS OBSERVATIONS RECEIVED AT THE MET OFFICE, FEB 2015



APPENDIX D

MET OFFICE ON-LINE TIME OF RECEIPT STATISTICS FOR INDIVIDUAL SHIPS, FEB 2015
(extract)

Pub47 Time of Receipt Statistics by SHIP for February

CTRY	CALLSIGN	NAME	Observations	N<30	N<60	N<120	N>360	Average (R-O) (mins)
	N8Z001		4	2	3	3	0	68.2
	TBWZZ00		15	8	14	15	0	24.4
NL	PCAM	AALSMEERGRACHT	22	21	22	22	0	4.0
NL	PHHD	ARNEBORG	17	16	17	17	0	15.6
NL	2EZE5	BERGE STAHL	28	9	13	18	2	142.7
NL	A8IP4	COMOROS STREAM	51	48	49	50	0	0.0
NL	PDKK	COOL EXPRESO	74	73	73	73	0	7.2
NL	PCFW	CORAL CARBONIC	3	3	3	3	0	7.7
NL	ELXG9	CORAL PAVONA	23	4	5	5	11	610.1
NL	PBOF	DAMGRACHT	49	44	44	46	0	11.9
NL	PBSY	DONAUGRACHT	6	6	6	6	0	14.8
NL	PDWZ	EDAMGRACHT	18	16	16	16	1	40.2
NL	OXOR2	EDITH MAERSK	6	1	2	3	0	143.8
NL	PDXQ	EEMSGRACHT	2	2	2	2	0	9.0
NL	PDVN	EENDRACHT	22	18	22	22	0	18.0
NL	PDWT	EGELANTIERSGRACHT	8	8	8	8	0	1.2
NL	PDYI	ELANDSGRACHT	53	5	7	22	13	225.0
NL	OXHY2	ELLY MAERSK	87	69	80	83	1	28.5
NL	A8IO2	ELSEBETH	48	46	48	48	0	15.4
NL	9HA3770	EMERALD	36	30	35	36	0	18.8
NL	OYGR2	EMMA MAERSK	23	8	14	16	4	244.5
NL	9HA3564	ESMERALDA	35	30	35	35	0	14.5
NL	PDZS	EUROPA	22	17	20	22	0	22.3
NL	PHEC	FAIRPARTNER	2	2	2	2	0	11.0
NL	PEBT	FLINTERDUIN	34	12	13	15	2	170.7
NL	PBHZ	FLINTERSKY	54	51	51	52	1	16.7
NL	PBEN	FLINTERSUN	5	3	4	5	0	29.0
NL	PEND	HAPPY BUCCANEER	21	9	9	20	0	42.0
NL	PCER	HAPPY RANGER	6	0	6	6	0	35.7
NL	PCAW	HAPPY RIVER	6	6	6	6	0	6.3
NL	PCBZ	HAPPY ROVER	13	9	9	12	0	27.1
NL	ZDND7	IVER EXACT	20	19	20	20	0	12.2
NL	PECF	IVER EXPERIENCE	66	58	65	65	1	24.9
NL	PCEX	IVER EXPERT	2	2	2	2	0	6.5
NL	PFBF	IVER EXPORTER	27	24	26	26	1	58.1
NL	OWFD2	JOHANNES MAERSK	29	16	19	19	8	494.1
NL	OWKI2	LAURA MAERSK	36	28	31	32	2	68.0
NL	OWAY2	LICA MAERSK	17	7	13	15	1	133.0
NL	9V2003	MAERSK INNOSHIMA	1	0	0	1	0	84.0
NL	9V2005	MAERSK INVERNESS	48	29	41	47	1	37.7
NL	9V2004	MAERSK IZMIR	35	34	35	35	0	0.5
NL	PDHP	MAERSK KALMAR	106	40	82	96	2	62.6
NL	PFDH	MAERSK KAMPALA	287	160	243	280	0	27.0

APPENDIX E

MET OFFICE ON-LINE TIME OF RECEIPT STATISTICS FOR NATIONAL FLEETS, FEB 2015

Pub47 Time of Receipt Statistics by COUNTRY for February

COUNTRY	Ships	Observations	Average (Obs/Ships)	N<30 mins	N<60 mins	N<120 mins	N>360 mins	%<30 mins	%<60 mins	%<120 mins	%>360 mins	Average (R-O) (mins)
AU	42	2447	58.3	1690	2249	2373	26	69%	92%	97%	1%	38.5
DK	2	515	257.5	515	515	515	0	100%	100%	100%	0%	3.0
ES	1	110	110.0	93	99	102	6	85%	90%	93%	5%	50.9
EU	21	7900	376.2	7896	7897	7897	3	100%	100%	100%	0%	3.1
FR	51	15595	305.8	15104	15256	15507	0	97%	98%	99%	0%	5.1
GB	236	28405	120.4	24650	26698	27556	334	87%	94%	97%	1%	23.5
GR	1	42	42.0	41	42	42	0	98%	100%	100%	0%	10.4
HK	45	2171	48.2	32	1645	2146	4	1%	76%	99%	0%	72.9
NL	70	2370	33.9	1657	1974	2142	78	70%	83%	90%	3%	56.1
NZ	17	779	45.8	252	736	766	1	32%	94%	98%	0%	36.5
US	403	24329	60.4	16175	19897	21778	1191	66%	82%	90%	5%	81.5
ZZ	10	249	24.9	127	190	215	17	51%	76%	86%	7%	120.2
CA	48	27537	573.7	26887	27506	27521	15	98%	100%	100%	0%	12.3
DE	336	18921	56.3	12368	14601	16259	387	65%	77%	86%	2%	73.8
IE	2	34	17.0	23	28	29	1	68%	82%	85%	3%	54.6
IL	3	27	9.0	27	27	27	0	100%	100%	100%	0%	4.8
IN	1	2	2.0	0	0	2	0	0%	0%	100%	0%	101.0
IS	3	108	36.0	94	95	96	3	87%	88%	89%	3%	42.3
IT	1	78	78.0	51	73	75	1	65%	94%	96%	1%	29.6
JP	23	1284	55.8	1059	1233	1256	14	82%	96%	98%	1%	43.9
KR	3	4	1.3	0	0	0	2	0%	0%	0%	50%	706.0
MY	2	41	20.5	0	30	37	2	0%	73%	90%	5%	100.2
NO	4	2250	562.5	2242	2243	2249	0	100%	100%	100%	0%	11.2
RU	30	785	26.2	460	692	719	33	59%	88%	92%	4%	58.5
SE	18	2071	115.1	505	2016	2039	13	24%	97%	98%	1%	38.8
ZY	15	757	50.5	144	690	720	15	19%	91%	95%	2%	56.9
XX	1	25084	25084.0	23305	24324	24786	165	93%	97%	99%	1%	19.6
un	94	5968	63.5	4180	5447	5696	94	70%	91%	95%	2%	39.9
Total	1483	169863	114.5	139577	156203	162550	2405	82%	92%	96%	1%	35.0

APPENDIX F

MONTHLY VOS NATIONAL FLEET RANKINGS FOR FEBRUARY 2015 – MANUAL SHIPS
(extract)

February 2015 national VOS fleet scores for manual ship reports [lower scores are better quality]

(Note: 'manual' ship reports are those based on the reported ix value; all reports with call-sign 'SHIP' are included together)

Country	NumShip	Combine _Score	NumObs _Total	Pressur _Score	NumObs_ P	WindSpd _Score	NumObs _Spd	WindDir_ Score	NumObs _Dir ...
NO	4	0.149	12148	0.067	2239	0.169	2250	0.095	1200
"SHIP"	1	0.173	23092	0.222	3513	0.176	3545	0.191	2329
CA	1	0.186	1310	0.075	222	0.323	222	0.073	200
GR	1	0.468	289	0.457	42	0.532	42	0.413	37
SE	14	0.548	3406	0.506	576	0.546	574	0.511	374
IT	1	0.581	508	0.838	77	0.442	78	0.431	51
GB	193	0.598	42074	0.585	6518	0.624	6515	0.621	4067
NL	69	0.609	14274	0.586	2302	0.620	2290	0.597	1476
FR	1	0.612	48	0.551	8	0.717	8	0.551	3
DE	294	0.614	45644	0.600	7200	0.622	7152	0.586	4186
NZ	15	0.649	1582	0.639	259	0.661	262	0.606	151
IS	3	0.653	545	0.595	106	0.681	107	0.532	93
Ancillary	10	0.654	1471	0.655	231	0.648	232	0.605	170
AU	38	0.665	5868	0.616	913	0.674	924	0.630	579
US	366	0.687	101791	0.682	16718	0.648	17217	0.606	11369
IL	3	0.720	158	0.733	27	0.685	27	0.521	23
HK	42	0.730	5232	0.773	824	0.711	825	0.682	431
JP	18	0.767	1983	0.808	330	0.772	331	0.738	189
Unknown	177	0.774	29935	0.775	5129	0.707	5167	0.669	2725
Unknown	52	0.784	11198	0.754	1712	0.707	1712	0.720	923
ZY	12	0.797	1541	0.831	253	0.709	251	0.652	167
RU	29	0.797	3674	0.765	695	0.712	686	0.639	442
IE	2	0.798	203	0.730	33	0.860	33	0.644	27
MY	1	0.818	250	1.016	37	0.684	37	0.728	27
IN	1	0.934	12	1.010	2	0.779	2	MISSING	0 ...

APPENDIX G

MONTHLY VOS RANKINGS FOR FEBRUARY 2015 – AUTOMATIC REPORTS
(extract of best ships)

February 2015 VOS scores for automatic ship reports

(Note: 'automatic' ship reports are those based on the reported ix value)

		Min:	0.119	3	0.036	0	0.070	0	0.050	0	0.045	0	0.056	0	0.000	0	0.012	0	0.000
		Max:	1.764	4099	1.618	672	1.674	670	1.263	545	1.748	672	1.416	672	1.072	669	1.271	671	2.000
		Ave:	0.778	1912	0.466	451	0.535	317	0.506	155	0.467	425	0.501	362	0.489	20	0.494	184	0.119
Country	ShipId	Combined Score	NumObs	Pressure Score	NumObs	Wind Speed Score	NumObs	Wind Direction Score	NumObs	Temperature Score	NumObs	Relative Humidit Score	NumObs	Visibility Score	NumObs	Sea Surface Terr Score	NumObs	ToR Score	
DE	DBLK	0.119	3897	0.110	662	0.172	662	0.143	452	0.099	662	0.118	662	0.058	127	0.111	670	0.166	
US	WKWB	0.132	3457	0.056	669	0.079	669	0.650	92	0.068	669	0.092	669	0.729	20	0.073	669	0.031	
DE	DBBH	0.136	3670	0.115	660	0.140	660	0.288	356	0.119	660	0.133	660	0.046	78	0.162	596	0.179	
##	BATFR0	0.167	3560	0.181	600	0.210	585	0.121	439	0.182	600	0.193	600	0.020	136	0.117	600	0.000	
##	BATFR5	0.177	3499	0.134	623	0.221	623	0.289	363	0.136	623	0.187	623	0.643	22	0.095	622	0.000	
DE	DBEA	0.179	3837	0.101	662	0.130	662	0.091	528	0.102	662	0.142	662	MISSINC	0	0.075	661	0.236	
DE	DBKR	0.204	3619	0.115	651	0.145	651	0.268	364	0.118	651	0.129	651	MISSINC	0	0.108	651	0.169	
DE	DBKV	0.217	3641	0.113	662	0.199	662	0.305	349	0.149	654	0.156	653	MISSINC	0	0.085	661	0.241	
DE	DBBC	0.218	3558	0.095	662	0.179	662	0.474	253	0.101	662	0.119	658	MISSINC	0	0.152	661	0.237	
DE	DBCK	0.220	3625	0.118	659	0.140	659	0.265	388	0.117	659	0.235	652	MISSINC	0	0.176	608	0.310	
DE	DBBU	0.227	3761	0.135	660	0.195	660	0.180	463	0.148	660	0.158	659	MISSINC	0	0.153	659	0.391	
DE	DBJM	0.233	3745	0.150	653	0.193	653	0.189	475	0.175	653	0.169	652	MISSINC	0	0.124	659	0.411	
US	WXJ63	0.255	4099	0.170	662	0.268	669	0.991	128	0.327	669	0.225	669	0.115	669	0.108	633	0.000	
CA	CFN303	0.256	3268	0.088	662	0.188	662	0.274	352	0.118	662	0.115	662	MISSINC	0	0.531	268	0.000	
DE	DBBI	0.263	3317	0.128	661	0.182	661	0.494	210	0.119	661	0.129	661	MISSINC	0	0.351	463	0.237	
US	WTEY	0.270	3204	0.232	604	0.185	617	0.522	187	0.507	569	0.270	557	0.235	60	0.134	610	0.045	
CA	CGJK	0.275	3005	0.088	657	0.126	657	0.554	156	0.115	657	0.120	657	MISSINC	0	0.605	221	0.000	
DE	DBFH	0.283	3397	0.191	628	0.239	628	0.444	264	0.202	628	0.193	628	MISSINC	0	0.151	621	0.298	
CA	CGDT	0.292	3216	0.152	670	0.174	670	0.444	253	0.143	661	0.266	618	MISSINC	0	0.442	344	0.000	
AU	FHZI	0.293	3368	0.204	609	0.264	609	0.280	361	0.251	609	0.309	571	MISSINC	0	0.135	609	0.161	
CA	CGCX	0.297	3033	0.071	666	0.126	666	0.329	306	0.153	666	0.411	557	MISSINC	0	0.752	172	0.000	
DE	DBFR	0.305	3555	0.244	618	0.287	613	0.201	461	0.222	618	0.251	618	MISSINC	0	0.176	627	0.423	
CA	VCLM	0.312	2757	0.112	660	0.144	660	0.592	139	0.396	624	0.597	446	0.748	17	0.615	211	0.009	
CA	CZJG	0.322	2788	0.084	669	0.070	669	0.657	109	0.219	669	0.215	669	MISSINC	0	0.838	3	0.000	
##	BATFR3	0.328	2958	0.307	532	0.395	522	0.355	287	0.349	532	0.337	532	0.591	21	0.191	532	0.000	
CA	CG2960	0.329	2956	0.199	629	0.157	646	0.597	137	0.159	646	0.166	646	MISSINC	0	0.551	252	0.000	
AU	VNSZ	0.349	2855	0.133	636	0.255	636	0.501	207	0.183	636	0.172	636	MISSINC	0	0.802	104	0.055	

...