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

SHIP OBSERVATIONS TEAM

FIFTH SESSION

GENEVA, SWITZERLAND, 18-22 MAY 2009

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ITEM III-2.4

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MONITORING TOOLS

(Submitted by Julie Fletcher, VOSP Chairperson)

Summary and purpose of the document

This document summarises the tools available for the VOS Programme Managers and Port Meteorological Officers (PMOs) to use to monitor VOS data.

ACTION PROPOSED

The Panel will review the information contained in this report, and comment on the recommendations as appropriate.

Appendix: None

- A - DRAFT TEXT FOR INCLUSION IN THE FINAL REPORT

III-2.4.1 Julie Fletcher, Chairperson of the VOS Panel, presented an update on the Monitoring Tools available for VOS Programme Managers and PMOs.

III-2.4.2 The Panel was advised that there was a good set of web-based tools available to monitor the quality, quantity and timeliness of VOS data. The tools developed by Meteo France provide near real-time monitoring, whilst the UK Regional Specialised Meteorological Centre (RSMC) and the UK Real-Time Monitoring Centre (RTMC) provide monthly and biannual monitoring for VOS and VOSClim respectively. The JCOMMOPs monthly VOS status map displays the quantity and global coverage of all Ship observations. The Quality Information Relay mechanism based at JCOMMOPs enables monitoring centres and NMSs to send VOS FPs advisory messages about suspect Ship data so corrective action can be taken.

III-2.4.3 The Team encouraged NMHSs to advise the RTMC (email to obsmon@metoffice.gov.uk) of investigations undertaken into the causes of bad data identified on the VOSClim Suspect List and to report on the corrective actions taken (***action, SOT members, ongoing***).

III-2.4.4 Ms Fletcher reported that the monitoring tools could all be accessed through the JCOMM VOS Scheme website:

http://www.bom.gov.au/jcomm/vos/resources.html#operational6

III-2.4.5 MeteoFrance has recently developed some new tools, which provide comparisons for new variables such as humidity, wave height and wave period, against ECMWF and Meteo-France model outputs. Other initiatives include; improvements to the model outputs, such as the use of sea/land masks, and the ability to access ship metadata to determine the anemometer height for wind speed data comparisons.

III-2.4.6 Ms Fletcher stressed that routine use of the Monitoring Tools and timely feedback to ships to correct problems will improve the quality and quantity of observations provided by VOS ships.

- B - BACKGROUND INFORMATION

1. Background

There is now a good set of web based tools to monitor the quality, quantity and timeliness of VOS data. The tools developed by Meteo France provide near real-time monitoring, whilst the UK Regional Specialised Meteorological Centre (RSMC) and the UK Real-Time Monitoring Centre (RTMC) provide monthly and biannual monitoring for VOS and VOSClim respectively. The JCOMMOPs monthly VOS status map displays the quantity and global coverage of all Ship observations. The Quality Information Relay mechanism based at JCOMMOPs enables monitoring centres and NMSs to send VOS FPs advisory messages about suspect Ship data so corrective action can be taken.

2. Location of the Monitoring Tools

The JCOMM VOS Scheme website has a 'VOS Monitoring' section
http://www.bom.gov.au/jcomm/vos/resources.html#operational6

Select from the list:

a. Surface Marine Data Monitoring by Met Office, UK
http://www.metoffice.gov.uk/research/nwp/observations/monitoring/marine/index.html

This site is password protected, so NMS and PMOs should apply for access.

This site provides:

- VOS Monthly Monitoring Reports
  - For all VOS based on pub 47 list
  - List of SUSPECT ships with time series plots

- VOS Time of Receipt Statistics
  - TOR graph for all VOS
  - TOR graph showing national VOS fleets
  - TOR statistics for individual callsigns
  - TOR statistics by Country by month

- Biannual Report on the Quality of Marine Surface Observations

b. VOSClim Monthly Statistics
http://www.ncdc.noaa.gov/oa/climate/vosclim/vosclim-stats.html

c. VOS Quality Monitoring tools from Meteo France
http://www.meteo.shom.fr/vos-monitoring/

This site provides:

- VOS Information
- VOS QC Statistics
- Data & QC Plots
- List of ships reporting dubious AP values
- Obs counters

Enhancements on Data and QC Plots
In Q1, 2009, MeteoFrance developed some new tools to monitor both buoy and ship data, so the 'Data and QC Plots' link will soon point to:
http://www.meteo.shom.fr/qctools/dataplotsurfmar.htm

The new tools include the following:

1. New parameters of humidity, wave height and wave period are compared to model outputs.

2. Wind speed results are presented in the form of "obs/model" rates rather than "obs-model" biases. Biases are reserved for air pressure, temperatures and wind direction.

3. Information from more numerical models was used. Comparisons are now performed against ECMWF analysis in addition to Meteo-France model outputs. Two graphs are displayed for each QC plot.
Mercator analysis (http://www.mercator-ocean.fr/html/mod_actu/public/welcome_en.php3) will soon be used to compare sea surface temperature and sea surface salinity.

4. Better use of model outputs. A sea/land mask is now systematically used on model grids for all parameters except air pressure, in order to avoid "land contamination" in the interpolation of model data for stations close to the shore. This is good for looking at sea surface temperature, and the technique improves comparisons for wind speed, which is stronger at sea than on land.

5. Use of metadata. For ships, which have the height of the anemometer in their

metadata (E-SURFMAR database), comparisons against model outputs are now performed on wind speed after applying a correction (neutral atmosphere being assumed). Both QC plots (without and with correction) are displayed separately.

d. Search for Multiple Recruitments from Meteo France
http://www.meteo.shom.fr/vos-monitoring/

The multi-recruit tool is currently obsolete and has not been updated since Q4, 2007, because the quarterly metadata has not been available for upload from the WMO Pub47 site. A new application must be written because the metadata is now in XML format. MeteoFrance could re-write the multi-recruitment tool to provide lists of all double recruited ships in the world, if the global VOS fleet was in the E-SURFMAR database.

Previously the Multi-Recruit tool showed a list of any VOS ships that appeared as 'recruited' on more than one National VOS list. VOS operators then liaised to determine which country should be assigned future responsibility for ships on the 'Multiple Recruitment' list. A VOS Ship should be the responsibility of only one country. This prevents duplicate quality monitoring and ensures that only one set of metadata is prepared for WMO Pub 47 per vessel.

3. VOS Status Maps

3.1 The JCOMMOPs monthly map series contains a VOS status map.
http://wo.jcommops.org/cgi-bin/WebObjects/JCOMMOPS.woa/wa/map?type=GTSM_VOS

3.2 This monthly map displays the number of ships that reported in the month, and the total number of BBXX messages disseminated on GTS. The positions of all ships are displayed on a global map with different colours denoting the GTS originating centres. VOS operators are encouraged to use this map to identify the data sparse areas and prioritise the recruitment of any ships that sail in these waters.

4. Quality Information Relay Mechanism

4.1 The JCOMMOPS Quality Information Relay Mechanism address is
http://wo.jcommops.org/cgi-bin/WebObjects/QCRelay

4.2 Select the VOS programme option and enter your username and password to access the site. Monitoring Centres and National Meteorological Centres can then use the QCRelay form to enter the callsign and details of a ship that is sending suspect data. Using WMO Pub 47, the QCRelay software links the callsign to the country of recruitment and sends the VOS FP an email detailing the problem. VOS operators are requested to take appropriate action such as replacing an instrument or providing observer training.

5. VOSClim Suspect List Feedback

5.1 Operators are encouraged to advise the RTMC (email to obsmon@metoffice.gov.uk) of investigations undertaken into the causes of bad data identified on the VOSClim Suspect List and to report on the corrective actions taken.

5.2 An example of feedback to the RTMC is given below.
G'day Colin (Sarah for info)

Re: SEAKAP (VNNM) cited for RH.
I inspected this vessel on 09/01/07, and I noted that the clip supporting the reservoir in the screen had

corroded and broken off. It is possible that the reservoir may have toppled over and readings taken when the wick was dry. A new clip was fitted during the inspection including a fresh wick on the wet thermometer. RH should be OK now.
Cheers
Taffy (PMA Sydney)

6. Onboard Quality Monitoring TurboWin Tool

6.1 One of the advantages of the electronic logbook software, e.g. TurboWin, is that it contains many error-checking routines to recognise an incorrect value and prompt the observer to amend the entry. However, prior to TurboWin Version 3.6, PMOs visiting a ship could not easily review the recent observations because they were only stored in IMMT format. Since TurboWin version 3.6, a PMO can view the Obs on the screen in the traditional logbook coded format.

6.2 From the TurboWin *Maintenance* Menu, select *Move ship coded log (internal use).* A list of the latest observations can then be moved to the PC desktop or a USB memory stick for viewing.

6.3 This is a useful feature as it allows the PMO to discuss the coding of the most recent observations with the duty officers and provide training on elements which observers find difficult.

7. Quality Monitoring Feedback to Ships

It is important that NMS provide feedback on observation quality and quantity to its national VOF Real-time feedback via a PMO visit, email, or phone call is the most effective as this, targets the current observer(s). Feedback on problems should be given in a manner that encourages and assists the observer. Most ships view feedback, whether good or bad, as positive as it demonstrates their observations are being used and are valued. When providing corrective feedback on the coding of a particular element, always include some thanks and encouragement in the message.

8. Summary

Routine use of the Monitoring Tools and timely feedback to ships to correct problems will improve the quality and quantity of observations provided by VOS ships.

9. Recommendations

It is recommended that VOS Programme Managers and PMOs:

- Make regular use of the available tools to monitor the quality of VOS data and to provide feedback to ships on how to improve their data
- Use the monthly VOS status maps to identify data sparse areas where more ship observations are required.

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Appendix: None