VOS Report for 2014 **Country =** **United Kingdom**

a. Programme description:

Category	No. of ships at 31 Dec 2014	Recruitments in 2014	De-recruitments In 2014	Comments
Selected	64	5	17	- Size of the UK selected fleet was further reduced during 2014, as a consequence of upgrading suitable ships to VOSClim standards. - New ships are usually recruited to Selected class initially, and then upgraded to VOSClim class depending on performance - Inactive UK selected ships are being gradually withdrawn - Selected UK Ships operate in all ocean regions.
Selected AWS	0	0	0	-
VOSClim	185	2*	13	- Although only two ships were recruited direct to the VOSClim class, additional 'Selected' ships were upgraded to VOSClim standard during the year - with a view to achieving a target of 200 actively reporting UK VOSClim ships
VOSClim AWS	1	0	2*	**two ships that were recruited by the Met Office as E-SURFMAR VOSClim AWS ships were withdrawn in 2014*
Supplementary	0	0	0	-
Supplementary AWS	42	5	3	- Rolled out a smaller number of Met Office AMOS AWS systems this year - AMOS Systems are primarily aimed at ships operating in UK or near continental waters (but with a few research ships operating in Southern Oceans). - Gradually replacing other existing AWS systems with AMOS systems - Target, eventually, of ~ 100 AMOS systems
Auxiliary	0	0	0	- Auxiliary ships were withdrawn from UK Fleet during period 2005 to 2008. However, very occasionally, the Auxiliary class is used as a pre-cursor to formal VOS recruitment. e.g. on a trial basis to confirm the willingness of the ships officers to observe

Auxiliary AWS	**0**	**0**	**0**	**-**
Other	**0**	**0**	**0**	**- The 3 remaining manually reporting mobile rigs supplied with Met Office equipment are now included within our Selected fleet. [Third party systems on rigs and platforms are not included]**
National VOS Total	**292**			

National VOS Target	**~300**
National VOSClim Target	**~200**

b. Data management:	
Total number of ship observations (BBXX) distributed on the GTS in 2014	• **88296 – real time observations from manually reporting UK VOS & VOSClim ships (81311 obs within HH+120 minutes)** • **262541 –real time observations from shipborne AWS installed on UK VOS (256260 obs within HH+120 minutes).** ***(Note - excludes moored buoy ship coded observations and observations from third party offshore rigs and platforms)***
Dates when VOS data submitted to the GCCs in 2014	**Delayed mode data from UK VOS are submitted to GCC in Edinburgh as soon as received**

c. Shipboard Automatic Weather System				
Type	**No. of ships at 31 Dec 2014**	**Manual Input Yes / No**	**Method of Comms**	**Year1 Plans**
MINOS - GP	2	No	Argos	MINOS systems gradually being decommissioned and replaced by new Met Office AMOS AWS systems
MINOS GPW	1	No	Argos	" " " " "
BATOS	1	Yes	Inmarsat (Data Reporting Service)	BATOS systems gradually being decommissioned and replaced by new Met Office AMOS AWS systems
AMOS	39	No	Iridium (SBD)	Further AMOS systems will be installed during 2015 with a view to eventually recruiting ~100 systems System design to be further refined during 2015 e.g. to include a visual display

d. Electronic logbooks: (TurboWin, SEAS, OBSJMA)		
Software & version	**No. of ships at 31 Dec 2014**	**Implementation plans**
TurboWin Version 5 .0 (& 5.01)	164	Will gradually be replaced by Version 5 or higher (or Turboweb) during 2015
TurboWin Version 4.5 & 4.6	16	Will gradually be replaced by Version 5 or higher (or Turboweb) during 2015
TurboWin Version 4 .0	66	Will gradually be replaced by Version 5 or higher (or Turboweb) during 2015
TurboWin Version 3.6 or earlier	2	Ships and mobile rigs that have been difficult to contact/upgrade to newer versions
TurboWeb	2	Plan to roll out TurboWin to suitable ships in 2015 (Consideration will be given to using TurboWin+ when it becomes available)
BATOS (Version 4.4)	1	

e. Standard Meteorological Equipment: (Types and Settings)		
Equipment Type / Element	**Manual Instrumentation**	**AWS Instrumentation**
Barometer	• **Mk2 Precision Aneroid Barometer (N&Z)**	• **Vaisala PTB 330 Digital Barometer (single cell)**
	• **Vaisala PTB 330 Digital Barometer (single cell)**	• **Druck digital Barometer**
	• **Vaisala PTB 220 Barometer (triple cell)**	• **Vaisala 110 barometer**
Default national setting	***Station Level***	***Station Level***
Barograph	• **N&Z Mk2 Barograph (open scale/7 day)**	**N/A (tendency derived from hourly barometer output)**
	• **Fischer Mk3 Marine Barograph**	
Default national setting	***Mean Sea Level***	
Thermometers	• **2/C, Mercury Thermometers (BS 692 Spec -30C To +45C) fitted in port and starboard marine screens**	• **Rotronic Hygroclip 2 Temp/Humidity sensor**
	• **Rotronic hand held Hygropalm HP22-A Temp/Humidity sensor**	
Sea Surface Temperature	• **Engine room hull sea water intake temperatures now used for most UK VOS**	• **Sensing Devices Limited (IEC:EN:60751:2008 Class 'B' housed in potting compound with copper conductors)**
	• **Mk 2 Mercury Sea Thermometer (-5C to +35C) with Mk3 sea bucket (only supplied to low freeboard ships)**	

Wind Speed	**Anemometers not provided to UK VOS (Wind speed estimated from sea state)**	• **Gill Windsonic (if wind system used)**
Wind Direction	**Anemometers not provided to UK VOS (Wind speed estimated from sea state)**	• **Gill Windsonic (if wind system used)**

f. PMO ship visit activities: (if a visit is for dual purposes, include all purposes)

Activity	Manual Ship	AWS Ship	Comment
Routine VOS inspections	**67***	**25**	**Substantially reduced number of inspections in 2014 due to lack of available PMO resources** ***(Excludes 19 inspections of UK VOS kindly made by overseas PMOs on our behalf)**
VOS recruitment visits	**7**	**5**	**Substantially reduced number of inspections in 2014 due to lack of available PMO resources**
VOS de-recruitment visits	**9***	**5****	***** A further 26 ships were withdrawn overseas** *****two ships that were recruited by the Met Office as E-SURFMAR VOSClim AWS ships were withdrawn in 2014 and are now part of the E-SURFMAR AWS fleet***
VOS courtesy or foreign visits	**0**	**0**	
Total visits to VOS	**118**		
Routine ASAP inspections	**0**		**UK Involvement in ASAP activities is now integrated into E-ASAP. Inspections are only undertaken if so requested by the E-ASAP Programme Manager**
ASAP recruitment visits	**0**		

ASAP de-recruitment visits	**0**		
ASAP courtesy visits	**0**		
Total visits to ASAP	**0**		
Routine SOOP visits	**0**		
SOOP recruitment visits	**0**		
SOOP de-recruitment visits	**0**		
SOOP courtesy visits	**0**		
Total visits to SOOP	**0**		
Visits in support of DBCP (drifting buoys)	**2**		**Arranged ships for deployment of 8 drifters for E-SURFMAR (in North Atlantic) and 3 drifters for the Met Office (for deployment in Atlantic tropical regions and Southern Oceans)**
Visits in support of Argo (profiling floats)	**0**		**Argo floats are usually shipped direct to research ships for subsequent deployment (PMO visits rarely required)** **Argo floats rarely deployed from other VOS ships**
Total visits to other programs	**2**		
Total visits by national PMOs	**120**	*Sum of all ship visits (VOS + ASAP + SOOP) + visits to other program (DBCP + Argo)*	

g. Major challenges and difficulties:

- **Lack of PMO resources had a marked impact on the number of VOS inspections and the availability/quality of observations during 2014. Two new PMOs have recently been recruited and it is hoped that the situations will be reversed in 2015**

- **A large percentage of the UK Voluntary Fleet is trading on a worldwide basis and, as a consequence, it is often difficult to ensure routine inspection of these ships without the assistance of overseas PMO's. Each year there can be up to 100 ships in the UK fleet that we are unable to inspect for this reason. Muster check lists are emailed to these ships to determine the condition of their instruments and to request the download of TurboWin log files. Quality monitoring and performance feedback is also provided by**

PMOs on a regular quarterly basis. However, failure to routinely visit recruited ships has implications for the quality of the observations and for the ongoing training of the observing officers.

- At the end of 2014 a total of 41 manually reporting UK VOS were sending their observations using masked call signs (for a variety of commercial, legal, and security reasons). Use of masked call signs complicates database access and data quality monitoring procedures.

- Coding/transmission problems arising from the use of Code 41 to sent observations via Goonhilly Inmarsat Land Earth Station are monitored on an ongoing basis (for both UK and overseas VOS) . Such problems are followed up with UK VOS , while details are also promulgated internationally via the JCOMMOPS mailing lists for non UK VOS focal points to take action as necessary. The number of such problems is however decreasing due in part to the increasing use of Email to send observations from manned VOS.

- Whilst the increased use of ships own email to send observations has many benefits, including cost savings, routine monitoring is required to ensure that emailed observations that emails are not stored up on board prior to transmission, thereby preventing them from being received in time for our forecast models. Some ships are also changing their email settings on TurboWin, which can prevent the observations from automatically passing through our message switching systems. [Note – 135 UK VOS are now using ships own email systems to send their TurboWin observations]

- Met Office requirements for the encryption of data held on laptop computers has an impact on our ability to loan such computers to ships. As a consequence we now only recruit ships that are willing to load the TurboWin software onto their own bridge computers. Dedicated laptops computers continue to be gradually withdrawn from use, and only 10 were remaining onboard in Dec 2014.

- Data Protection concerns have been expressed by a very small number of ships officers about the use of their personal data recorded in the TurboWin program. This could have implications for VOS award schemes

- Tracking down non active observing ships and recovering their equipment can be a time consuming task and some equipment has had to be written off when ships have gone to scrap without giving prior notice. Use of the Dirkzwager Ship2Report system and other AIS systems has helped with tracking some of these ships. However concentrating on a smaller number of major shipping companies and establishing closer links with these companies has helped with the recovery of equipment

- Stocks of Precision Aneroid Barometers currently on board UK VOS are starting to decline. As these barometers are now effectively obsolete they will be gradually withdrawn from use on manually reporting VOS and replaced by new digital devices, such as the Vaisala PTB 330 barometer (subject to budgetary constraints).

- Manual transcription of observations to the Sat C transmitters can often result in coding errors. Sometimes it is necessary to provide external floppy disk drives to allow data to be transferred. However GMDSS Sat C equipment fitted to some new ships may not accommodate floppy disk drives, while others are now fitted with SD card ports. The increasing use of TurbWeb software will help overcome this problem on suitable ships in the coming year

- Migration to use of BUFR templates for the UK VOS has presented a major operational challenge during 2014

h. Research / development / testing:

- **Trials of the new AMOS shipborne AWS systems developed by the Met Office are continuing and further enhancements and improvements are planned for 2015. A new data format was introduced in 2013 and has now been rolled out to more than half our AMOS ships. Work is in hand to achieve formal Met Office Operational Acceptance of the system during 2015. The system is now also being used on remote island systems and for use on certain open ocean moored buoys. At the request of the Hong Kong Observatory a trail AMOS system has also been placed on a Hong Kong VOS ship, so that they can evaluate the system. Consideration is also being given to developing a visual display interface for the system to provide readouts on the ships bridge**

- **A new Met Office marine data gateway project is in hand to more efficiently handle and process the various incoming marine format messages from our buoys, ships, offshore rigs and AWS systems. In due course this work will lead to a system for blocking poor quality data from manually reporting VOS**

- **The Met Office continues to assist KNMI/E-SURFMAR with its ongoing efforts to enhance the TurboWin+ and TurboWin V5.5 logbook software. We will be rolling the latest software out to UK VOS as soon as our data systems can successfully handle the 101 data format generated by the software. We also intend to roll out the TurboWeb software to an increasing number of UK VOS during 2015 (subject to shipping company agreement)**

- **Each UK PMO now takes responsibility for routinely vetting the performance of a set number of shipping companies and ships. Monitoring and other feedback is emailed to individual ships on a quarterly basis, and the activity of our ships has increased as a consequence. Visits to UK based shipowners are arranged on an annual basis to provide feedback on performance of company fleets and to encourage increased shipowner/manager participation and involvement**

- **All manually reporting UK VOS are requested to endeavour to return not less than 350 observations per year. Ships which fail to achieve this level are likely to be withdrawn from the fleet (or transferred to the new VOS Ancillary Pilot Project if the companies are supportive).**

- **Subject to available finance, Vaisala PTB 330 barometers are increasingly being rolled out to the UK fleet to replace the ageing Precision Aneroid Barometers that have traditionally been loaned to our ships [57 manned VOS are now fitted with these barometers]. This is helping to improve pressure data quality from the UK VOS**

- **Investigations into the use of alternatives to mercury in glass thermometers are currently on hold, as mercury thermometry continues to be available in the UK. Nevertheless, hand held digital temperature/humidity sensors are now being trialled on a number of suitable ships and it is intended to increasingly roll such systems out in the coming year**
- **A new Met Office oracle-based marine metadata database is being beta tested for recording UK VOS & AWS inspection data and metadata.**

i. Other comments

- **The goals and objectives for the UK voluntary fleet are also considered within the wider context of the EUMETNET Surface Marine Programme (E-SURFMAR) which aims to optimise the surface-marine observations from VOS, moored and drifting buoys. Closer cooperation and integration with other European VOS networks helps to reduce unnecessary duplication of effort, and permit objectives to be delivered in the most cost-efficient manner**

- **Drifting buoys are routinely deployed from UK observing ships on behalf of the E-SURFMAR Programme, and also for the UK contribution Global Drifter Programme in the Southern Oceans. UK VOS are also used for ARGO Float deployments (most are deployed from UK research ships)**

- **In addition to the VOS observation numbers in this report, the Met Office also had access to third party data from a further ~110 offshore platforms on the UK Continental shelf that host automatic weather stations – which amounted to more than 784374 observations on the GTS in 2014. Because these automatic stations are not owned or operated by the Met Office, they have not been counted in the above observation figures. The volume of such data increased significantly in the past couple of years due to civil aviation authority guidelines for the availability of meteorological data for offshore helicopter operations.**