VOS Report for 2013 **Country =** United Kingdom

a. Programme description:

Category	No. of ships at 31 Dec 2013	Recruitments in 2013	De-recruitments In 2013	Comments
Selected	85	10	15	- Size of the UK selected fleet was further reduced during 2013. -New ships are initially recruited to Selected class and then upgraded to VOSClim class depending on performance - Inactive UK selected ships are being gradually withdrawn from the fleet and all suitable ships upgraded to VOSClim standards. - Selected UK Ships operate in all ocean regions.
Selected AWS	0	0	1	-
VOSClim	187	28*	8	-Additional UK ships were upgraded to VOSClim standard in 2013 with a view to achieving a target of 200 actively reporting UK VOSClim ships ** 4 recruitments direct to VOSClim standard and a further 24 ships upgraded from Selected to VOSClim standard during the course of the year*
VOSClim AWS	3*	0	0	**Includes two UK VOS that have been recruited as E-SURFMAR VOSClim AWS ships*
Supplementary	0	0	0	-
Supplementary AWS	39	5	1	- Rolled out a smaller number of Met Office AMOS AWS systems this year - AMOS Systems 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 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Auxiliary	0	0	0	- Auxiliary ships were withdrawn from UK Fleet during period 2005 to 2008.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 status is used as a pre-cursor to recruitment to 'Selected' category 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Other	**0**	**0**	**0**	**- Manually reporting offshore units, mobile rigs and FPSO's on UK Continental Shelf were withdrawn during 2012** **-The 8 remaining manually reporting mobile rigs have now been included within our Selected fleet**
National VOS Total	**314**			

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

b. Data management:	
Total number of ship observations (BBXX) distributed on the GTS in 2013	• **91470 – real time observations from manually reporting UK VOS & VOSClim ships** • **221174 – real time observations from shipborne AWS installed on UK VOS (excludes observations for 3 E-SURFMAR shipborne AWS installed on UK VOS).** ***(Note - excludes moored buoy Ship coded observations and observations from third party offshore rigs and platforms)***
Date when VOS data submitted to the GCCs in 2013	**Delayed mode data submitted to GCC in Edinburgh as soon as received**

c. Shipboard Automatic Weather System				
Type	**No. of ships at 31 Dec 2013**	**Manual Input Yes / No**	**Method of Comms**	**2014 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	3 *	Yes	Inmarsat (Data Reporting Service)	BATOS systems gradually being decommissioned and replaced by new Met Office AMOS AWS systems ** Figure includes 2 systems installed on behalf of E-SURFMAR on UK VOS*
AMOS	37	No	Iridium (SBD)	- Further AMOS systems will be installed during 2014 with a view to eventually recruiting ~100 systems -System design to be further refined during 2014 with consideration given to linking system to a visual display

d. Electronic logbooks: (TurboWin, SEAS, OBSJMA)		
Software & version	**No. of ships at 31 Dec 2013**	**Implementation plans**
TurboWin Version 4 .0 & 4.1	101	Gradually being replaced by Version 5 during 2013
TurboWin Version 4.5 & 4.6	26	Gradually being replaced by Version 5 during 2013
TurboWin Version 5 .0	129	Version 5 was gradually rolled out on a case by case basis throughout 2013
TurboWin Version 3.6 or earlier	7	Ships and mobile rigs that have been difficult to contact/upgrade to newer versions
BATOS (Version 4.3+)	3*	** includes 2 BATOS systems funded by E-SURFMAR and deployed on UK VOS*
TurboWeb	1	(Consideration will be given to using TurboWin+ when it becomes available)

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
	• Vaisala PTB 330 Digital Barometer (single cell)	• Druck digital Barometer
	• Vaisala PTB 220 Barometer (triple cell)	
Default national setting	*Station Level*	*Station Level*
Barograph	• N&Z Mk2 Barograph (open scale/7 day)	N/A (tendency derived from 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 (only supplied to low freeboard ships)**	• **Rotronic Hygroclip 2 Temp/Humidity sensor**
	• **Engine room hul sea water intake temperatures now used for most UK VOS**	
Sea Surface Temperature	• **Mk 2 Mercury Sea Thermometer (-5C to +35C) with Mk3 sea bucket**	
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	179	33	Excludes inspections made by marine engineers or technicians
VOS recruitment visits	14	6	Excludes inspections of UK VOS made by overseas PMOs
VOS de-recruitment visits	3*	2	* A further 22 ships were withdrawn overseas
VOS courtesy or foreign visits	2	0	
Total visits to VOS	239		
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)	6		Arranged ships for deployment of 9 drifters for E-SURFMAR (in North Atlantic) and 14 drifters for the Met Office 9 for deployment in Atlantic tropical regions and Southern Oceans)
Visits in support of Argo (profiling floats)	0		Argo floats 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	6		
Total visits by national PMOs	245	*Sum of all ship visits (VOS + ASAP + SOOP) + visits to other program (DBCP + Argo)*	

g. Major challenges and difficulties:

- **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 have been unable to inspect for this reason. Muster letters or emails are routinely sent to each of 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 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 2013 a total of 42 manually reporting UK VOS were sending their observations using masked call signs (for a variety of commercial, legal, and security reasons). In addition 43 automated systems currently active in the UK fleet also transmit using masked call signs. Use of masked call signs complicates database access and data monitoring procedures**

- **Code 41 observations sent via Goonhilly Land Earth Station are monitored on an ongoing basis. Such monitoring often reveals transmission and coding errors. Where these involve UK ships they are followed up with the ships concerned. For non UK VOS details are promulgated internationally via the JCOMMOPS mailing lists.**

- **The increased use of ships own email to send observations has many benefits, including cost savings [Note – 117 VOS are now using ships own email systems to send their TurboWin observations]. However we are noting that several ships are now changing their email settings on TurboWin which can prevent the observations from automatically passing through our message switching systems. Routine monitoring is therefore required to check that emailed observations are not being lost due to changes made on board. Similarly it is necessary to ensure that emails are not stored up on board prior to transmission, thereby preventing the observations being received in time for our forecast models**

- **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 loaded with TurboWin software are therefore being gradually withdrawn from use (17 remaining in Dec 2013). Whenever possible and acceptable to shipowner's TurboWin software is now loaded onto the ship's own bridge computers**

- **Data Protection concerns have been expressed by some 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 obsolete they will be gradually withdrawn from use on manually reporting VOS and replaced by new digital devices (subject to budgetary**

constraints).

- EU Restrictions on the use, export and transport of mercury thermometry means that alternative organic spirit or digital alternatives may need to be sourced in the coming years (unless hand held digital devices are used in lieu).

- 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.

- Migration to use of BUFR templates for the UK VOS is likely to be a major operational challenge during the coming year – assuming the November 2014 migration date is to be achieved. It is anticipated that BUFR encryption of the ships call signs to comply with ENCODE proposals will be trialled 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 2014. A new data format was introduced in 2013 and is being rolled out to all AMOS ships. Work is in hand to achieve formal Met Office Operational Acceptance of the system during 2014. The system is now also being used on remote island systems and for use on certain open ocean moored buoys. Two enhanced AMOS systems were also despatched for use on vessels operating in Lake Victoria. 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 being initiated 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

- Investigations into the use of digital thermometry have continued with a view, eventually, to a phased withdrawal of mercury in glass thermometers. However, these investigations are currently on hold as mercury thermometry continues to be available in the UK. Nevertheless, for Health and Safety reasons alternatives to mercury will need to be sourced, and hand held sensors have been loaned to a research ship to trial. To some extent this issue will also be resolved by our plans to increase the use of shipborne AMOS AWS systems with digital temp/humidity sensors

- The Met Office continues to assist KNMI/E-SURFMAR with its ongoing efforts to enhance the TurboWin+ logbook software. We have successfully trialled TurboWeb on a UK research ship. The system works well and observations are ingested into the KNMI server

before being inserted on the GTS

- 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 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

- A new Met Office oracle-based database is being developed for recording UK VOS & AWS inspection data and metadata. It is planned to migrate to this new database during 2014

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 occasionally also used for ARGO Float deployments (although none were performed in 2013)

- In addition to the VOS observation numbers in this report, the Met Office also had access to third party data in 2013 from a further ~59 offshore platforms that host automatic weather stations – which amounted to more than 496691 observations. Because these automatic stations are not owned or operated by the Met Office, they have not been counted in the above figures. The volume of such data has increased significantly due to new guidelines for the availability of meteorological data for offshore helicopter operations and is set to increase further in 2014