Marine Networks

Sarah North – ***Observing Systems and Data Appreciation***

September 2010

Marine Networks
- *Scope of Observing Networks*

Voluntary Observing Ships (VOS) and VOS Climate Ships

Argo Floats

ASAP ships

Moored Buoys

Offshore Platforms and Rigs

Drifting Buoys

Shipborne AWS

Contents

This presentation covers the following areas….

1. **PMO Network and Marine Staff**

2. **Overview of Marine Networks**
   - **Voluntary Observing Ships (VOS)**
   - **VOS Climate Ships (VOSClim)**
   - **Offshore Platforms and Rigs**
   - **Shipborne AWS**
   - **Upper Air (ASAP) ships**

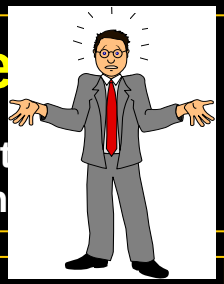
3. **Current Issues & Future plans**

1. PMO Network and Marine Staff

Marine Networks Staff 2010

Met Office

Live



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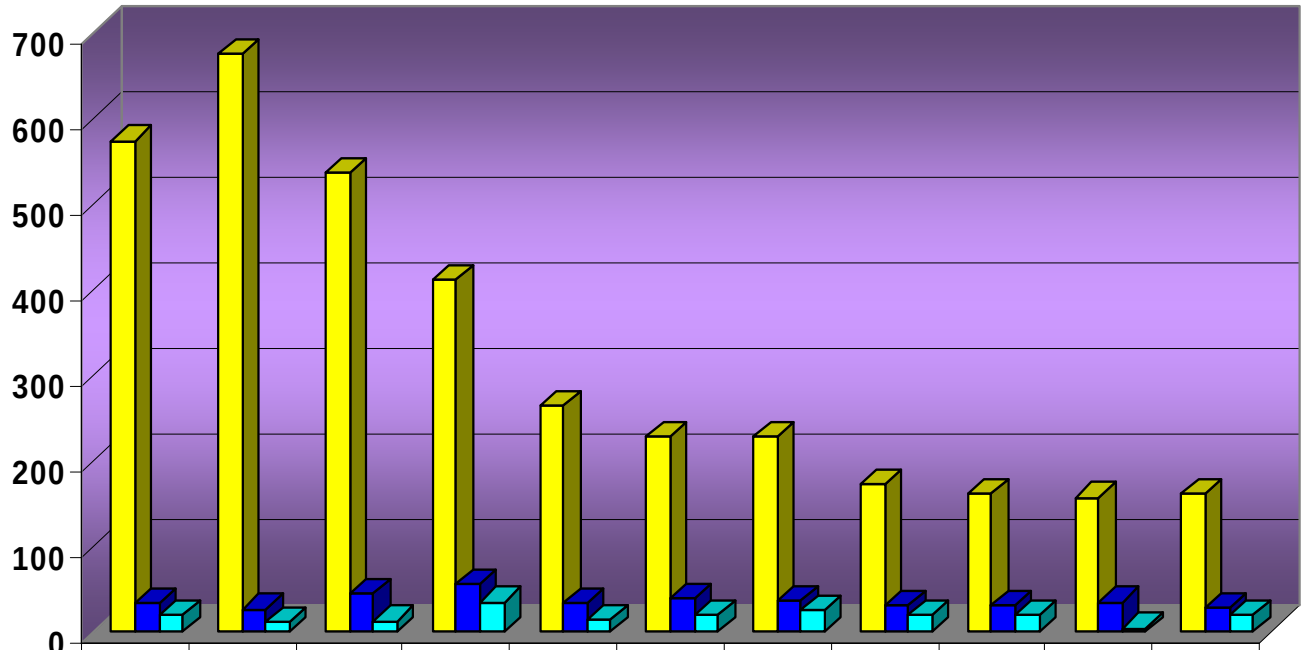
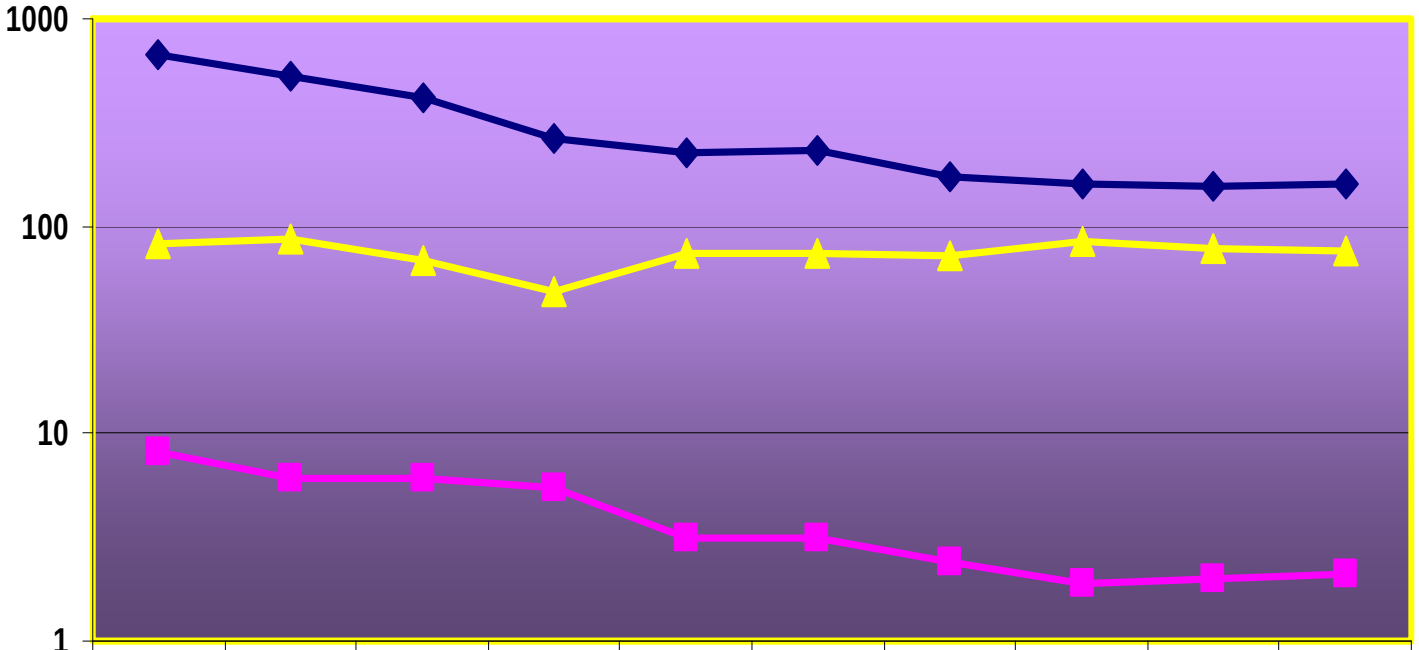
PMO Activity 2000 - 2010



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Inspections	573	675	535	412	263	228	229	173	162	157	161
Withdrawals	33	27	44	55	33	40	36	32	30	35	29
Recruitments	21	11	13	35	14	20	25	19	19	5	19

PMO Activity 2000 - 2010



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Inspections	675	535	412	263	228	229	173	162	157	161
Approx Active PMOs FTE	8.1	6.1	6.1	5.5	3.1	3.1	2.4	1.9	2	2.1
Average Inspections/PMO	83.33	87.70	67.54	47.82	73.55	73.87	72.08	85.26	78.50	76.67

2. Overview of our Marine Networks

UK VOS Fleet - New VOS Classes

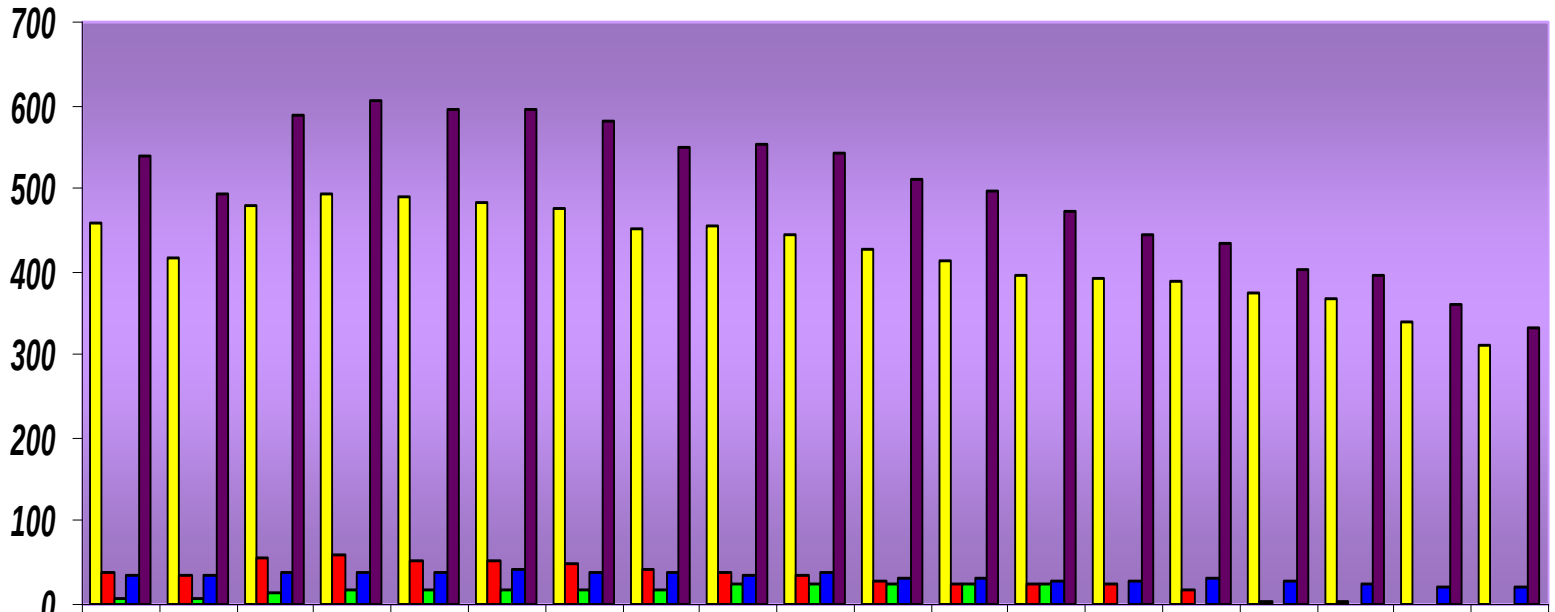
	Dec 2010
Selected	209 <
Selected (AWS)	0
VOSClim	104 >
VOSClim (AWS)	3
Auxiliary	0
Auxiliary (AWS)	0
Supplementary	0
Supplementary (AWS)	9 >

[=325]

We also maintain 20 < manually reporting offshore installations and have access to data from 38 > automated offshore installations

UK VOS - Manually Reporting Fleet

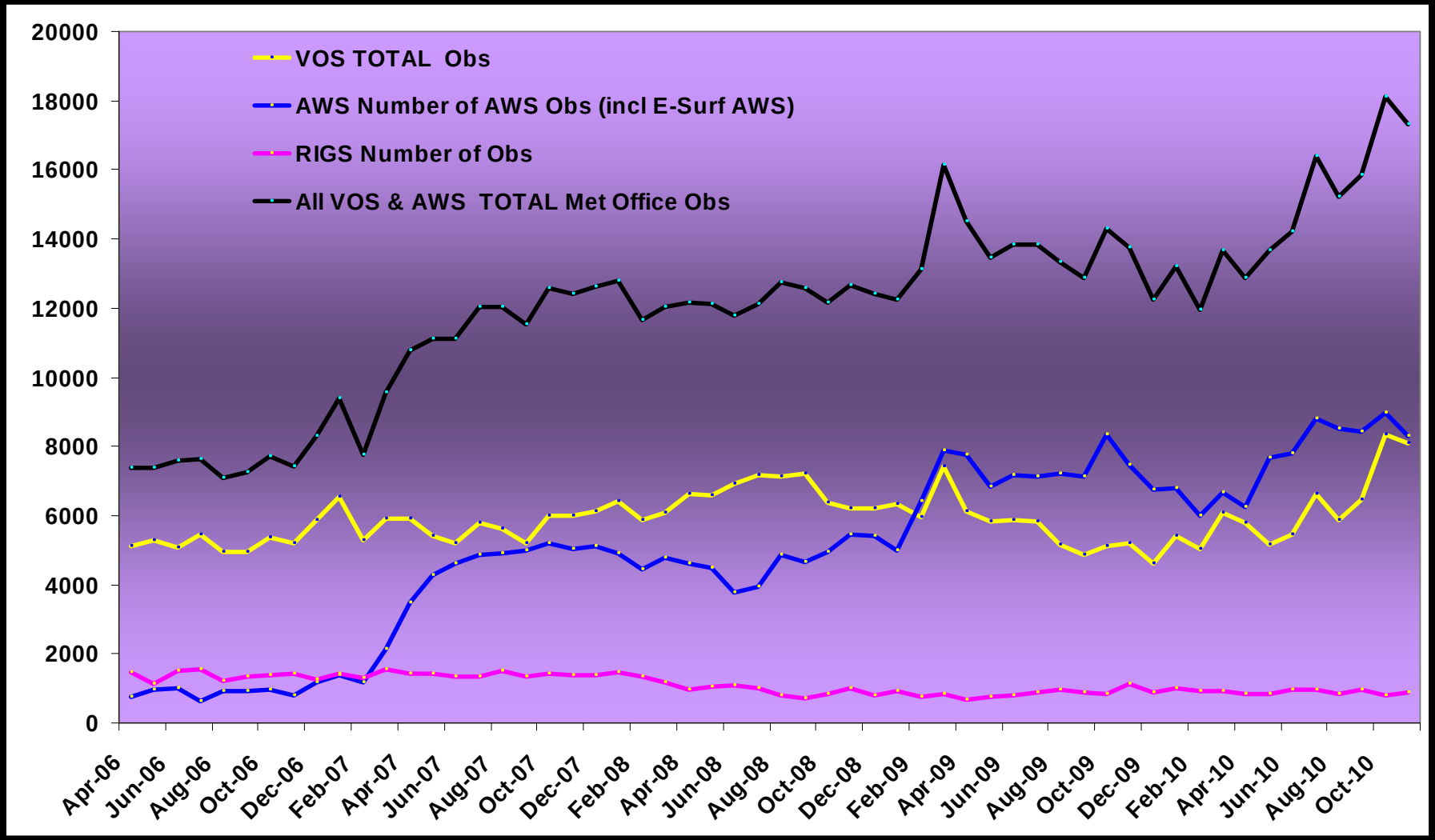
Trend 1992 - 2010



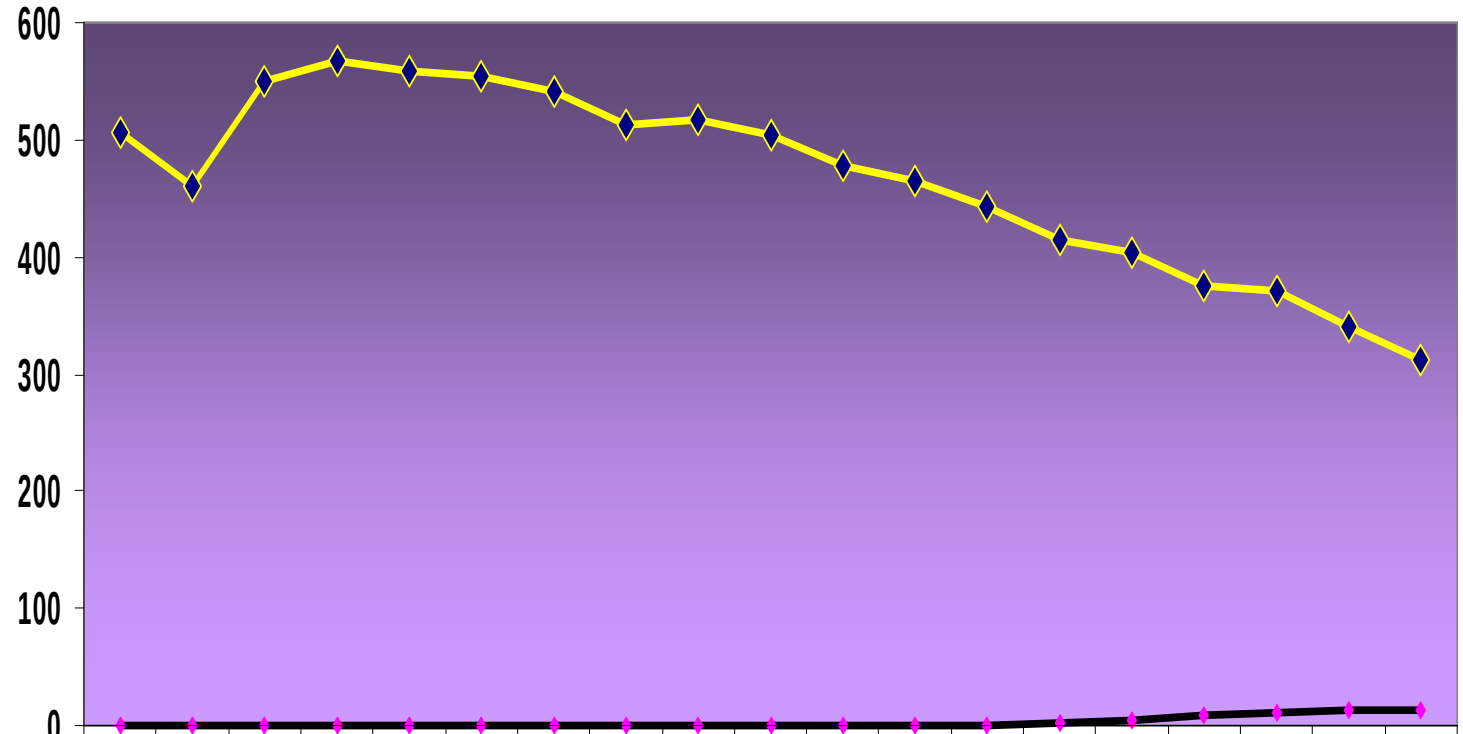
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Selected (& VOSCLIM)	460	417	480	493	489	483	475	453	454	445	426	413	395	392	387	373	368	340	313
MARIDs	39	36	55	59	52	53	49	43	39	34	28	26	25	23	17	2	2	0	0
Auxiliary ships	7	8	14	16	17	18	17	16	24	24	23	26	24	0	0	0	0	0	0
Offshore [manual]	34	34	38	37	37	41	39	39	35	40	33	31	29	29	30	28	25	22	20
Totals all types	540	495	587	605	595	595	580	551	552	543	510	496	473	444	434	403	395	362	333

UK VOS Fleet - Observations

Trend 2006 - 2010



Growth of Automation in UK Fleet



	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Manually reporting Ships	506	461	549	568	558	554	541	512	517	503	477	465	444	415	404	375	370	340	313
Automated Ships	0	0	0	0	0	0	0	0	1	1	1	1	1	2	4	9	12	13	14

Instruments for manually reporting ships









Measured parameters

- **Atmospheric pressure**
- **Air temperature**
- **Humidity**
- **Sea Surface Temperature**

Visual parameters

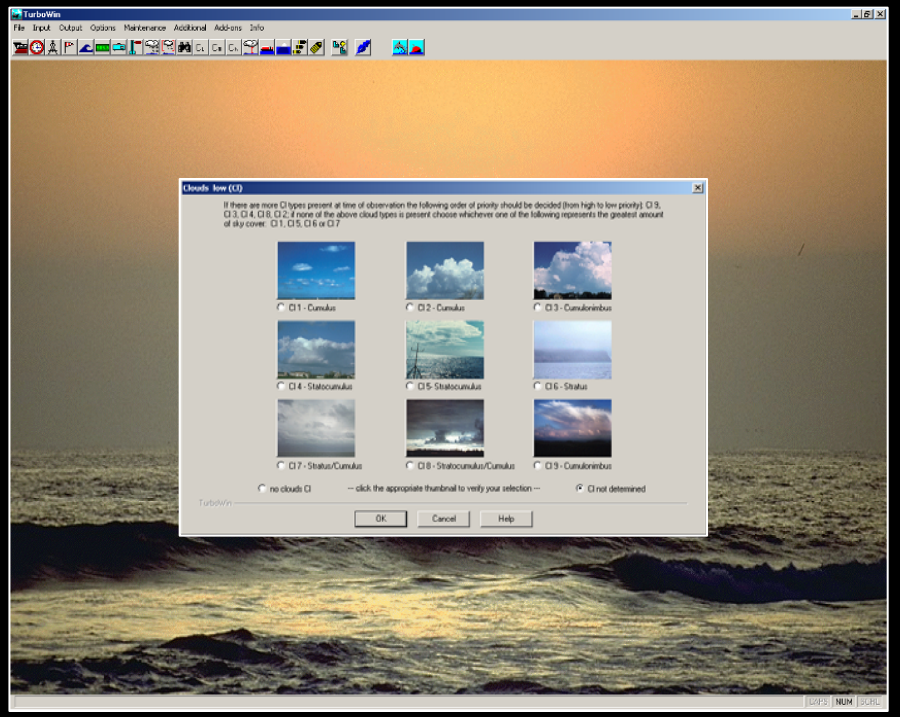
- **Present & Past Weather**
- **Cloud Type, Height & Amount**
- **Sea & Swell.**
- **Wind Speed & Direction**
- **Visibility**

The UK VOS Fleet

Electronic Logbooks

- **‘TurboWin’ software is issued to all UK VOS**
- **‘TurboWeb’ is being trialled successfully on one ship**

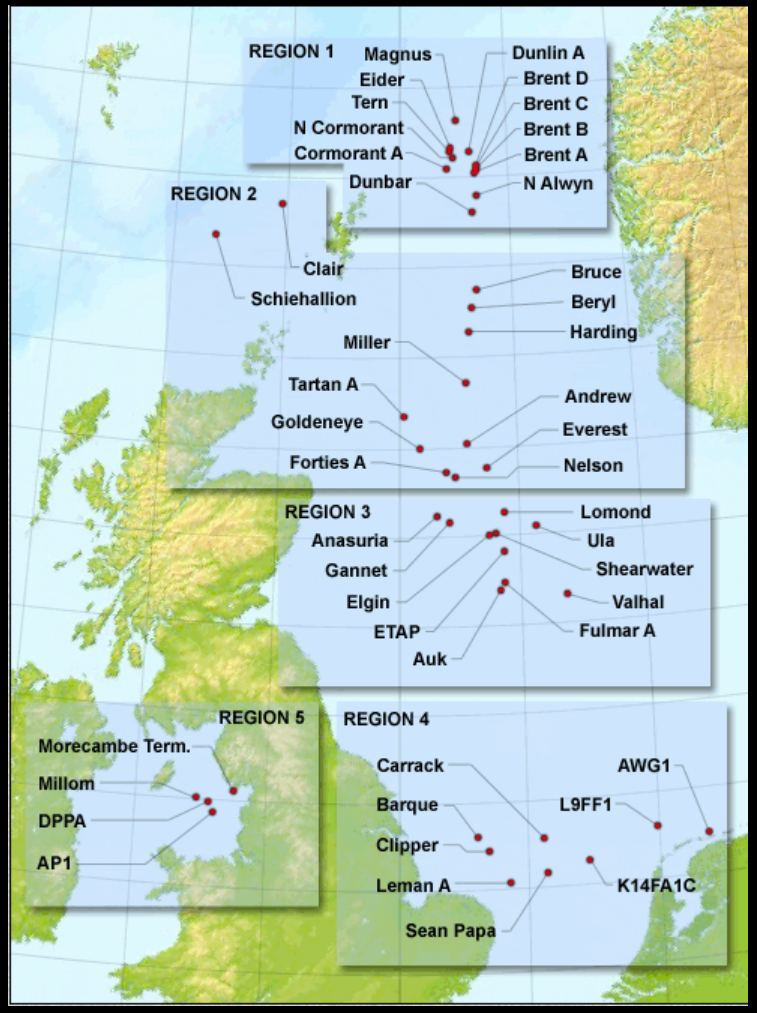
- Ships own computers used (laptops being gradually withdrawn)
- TurboWin automatically prepares a coded FM-13 message for real time transmission via Inmarsat C or e-mail.
- stores the delayed mode observation in IMMT code
- includes extensive Quality Control checks
- includes photos to assist in selecting the correct cloud types or estimating sea state.
- Includes training information



The UK VOSClim Fleet

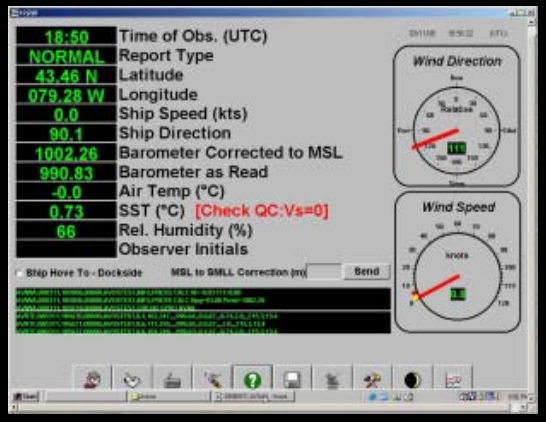
- **We aim to move to a core UK fleet of 200 actively reporting VOS Climate standard ships within a 3 year time frame - to replace the existing ‘Selected’ class ships**
- **This manually reporting VOSClim fleet will compliment, and add value to the shipborne Automatic Weather Stations (AWS).**
- **In 3 years time we aim to have deployed ~ 50 autonomous shipborne AWS systems providing hourly observations**

Offshore Installations Platforms & Rigs



- We also have access – at minimal cost - to third party data from a further ~38 offshore installations (more than 280,000 observations a year)
- The number of offshore AWS systems is set to increase in the next couple of years

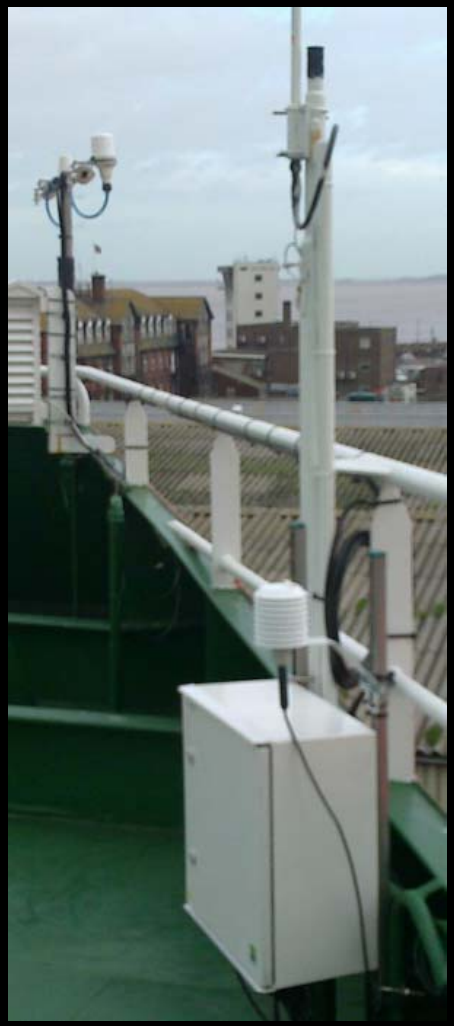
Shipboard Automatic Weather Stations



AWS Developments

- **We have deployed and evaluated a variety of different shipborne AWS systems e.g. BATOS, MILOS, MINOS, AUTOMET, METPOD, AVOS**
- **We looked at the Data Availability, Timeliness and Quality of the various AWS systems, together with issues related to their ease of installation**
- **Our evaluation highlighted the need to develop a simple 'plug and play' AWS for the basic parameters (Pressure, Air Temp, Humidity) but with sufficient modularity to add other parameters when required (SST and Wind).**
- **We are about to roll out a new Met Office AWS**

Met Office Shipborne AWS



Systems have been deployed on a ferry *('Pride of Bilbao')* and a Research ship *('Ernest Shackleton')*

ASAP

Automated Shipboard Aerological Programme

- UK ASAP Ship *'Mississauga Express'* will be fully integarated into the E-ASAP programme (mangerially and financially) from 2011

4. Current Issues & Future plans for the VOS

The Future of the UK VOS Fleet

The future of the UK VOS in the next few years will be dependant upon several key factors, including….

- Increasing levels of Automation (rolling out autonomous AWS)
- Increased European / International collaboration
- Maintenance of a core fleet for climate purposes (~200 VOSClim ships)
- Maintenance of funding streams during the economic downturn
- Reduction of transmission costs (Iridium, data compression etc)
- Replacing traditional PAB's with more stable/accurate/reliable barometers (e.g. Viasala 330)
- Overcoming data security issues (needs a harmonised approach)
- Phasing out use of mercury thermometry and replacing with digital systems or AWS
- Enhancement of ship design standards (e.g. SOLAS Regs)
- Increased 'buy-in' and support from shipowners

Questions