WORLD METEOROLOGICAL ORGANIZATION

INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION (OF UNESCO)

JCOMM SHIP OBSERVATIONS TEAM SECOND SESSION

London, United Kingdom, 28 July – 1 August 2003

NATIONAL REPORTS

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http://www.wmo.ch/web/aom/marprog/Publications/publications.htm

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C O N T E N T S

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N O T E

The designations employed and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariats of the Intergovernmental Oceanographic Commission (of UNESCO), and the World Meteorological Organization concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Ship Observations Team

SOT-II, 28th July – 1st August 2003, London, UK.

Country: Argentina

1.

Contact: Mario Jorge García

2.

3. Participating national marine organizations (see Appendix 1): SOT – VOS - PMO

4. Focal Points (see Appendix 2):

5. VOS:

a. **Programme description**:

Category	Number of ships at 31 Dec 2002	Comments
Selected	5	
Supplementary	-	
Auxiliary	-	
Other (specify)	-	
Total VOS fleet	5	

Number of VOS vessels recruited in 2002	1
Number of VOS vessels decommissioned in 2002	0
Percentage of the VOS (selected ships only) that did not report in Dec 2002 (to nearest whole percent)	20%
Total number of SHIP messages sent on the GTS in 2002	453

b. **Specific goals and objectives**:

Since 1960 an annual award scheme for the VOS through our Organization rewards the collaboration and contribution of ship companies, ship Masters and crews to the meteorological science.

c. **Major challenges and difficulties**:

Due to severe budgetary constrains, our institution has been forced to transfer his trained personnel (Met Inspectors trained like PMOs) to other bases such as land surface synoptic stations, reducing to a minimun the number of PMOs in active duty.

d. **Description of VOS equipment**:

i. **Standard meteorological equipment supplied by the NMS**:

Met instruments on board ships are in all cases property of the ship's owner.

e. **Observation transmission systems** (method / transmission problems / comments):

INMARSAT -C

f. **Data management** (monitoring / archival / quality control / exchange):

SHIP messages input in real time into operational data base and into the WMO GTS.

g. **Coordination and collaboration** (national / international):

Meteorological Bulletins issued by RSMC Buenos Aires via Safetynet-INMARSAT NAVTEX system (518 khz).-
internet through the web site at (HYPERLINK htta://www.meteofa.mil.ar)

h. **Research and development:**

i. **Instrument testing and comparison facilities**:

The SMN repairs, contrast and provide maintenance services to all the met instruments used on board the recruited ships at the WMO Regional Instruments Center (RIC)-Buenos Aires.

j. **Capacity building** (national / international):

k. **VOS promotion** (award schemes / publications & literature):

Since 1960 an annual award scheme for the VOS through our Organization rewards the collaboration and contribution of ship companies, ship Masters and crews to the meteorological science

l. **List of Port Meteorological Officers** (see Appendix 3):

m. **Ship inspections and regime**:

Appendix 1. Participating national marine organizations.

Organization	SERVICIO METEOROLOGICO NACIONAL
Programmes (1)	SOT – VOS - PMO
Website URL	http://www.meteofa.mil.ar

(1) Programmes: List the programmes (VOS, SOOP, ASAP) that each organization participates in.

Include additional details, e.g (data management) where appropriate.

Appendix 2: National Focal Points.

Focal Point (1)	**SOT - VOS**		
Name	My Mario Jorge Garcia		
Title	Jefe Departamento Redes		
Agency	SERVICIO METEOROLOGICO NACIONAL		
Postal Address	25 de Mayo 658 – C1002ABN Buenos Aires- Republica Argentina		
Email	garcia@meteofa.mil.ar		
Telephone	(+ 54 –11) 4514-1525		
Facsimile	(+ 54 – 11) 5167-6709		

(1) Focal Point: Insert SOT, VOS, VOSClim, PMO, SOOP or ASAP as appropriate for each national contact.

Appendix 3: List of Port Meteorological Officers.

Port	Buenos Aires		
Name	Departamento Redes		
Title	Servicio Meteorologico Nacional		
Postal Address	25 de Mayo 658 – C1002ABN Buenos Aires- Argentina		
Email	redes@meteofa.mil.ar		
Telephone	(+54-11) 4514-1525		
Facsimile	(+54-11) 5167-6709		
Comment			

Ship Observations Team

SOT-II, 28th July – 1st August 2003, London, UK.

Country: Australia

1.

Contact: Graeme Ball

2.

3. Participating national marine organizations (see Appendix 1, includes acronyms):

4. Focal Points (see Appendix 2):

5. VOS:

a. **Programme description**:

Category	Number of ships at 31 Dec 2002	Comments
Selected	87	
Supplementary	3	
Auxiliary	1	
Selected (confidential)	2	Omitted from WMO Pub 47
Total VOS fleet	93	

Number of VOS vessels recruited in 2002	23
Number of VOS vessels decommissioned in 2002	21
Percentage of the VOS (selected ships only) that did not report in Dec 2002 (to nearest whole percent)	17 %
Total number of SHIP messages sent on the GTS in 2002	50380

b. **Specific goals and objectives**:

To maintain an Australian Voluntary Observing Fleet (AVOF) of 100 vessels, with a mean of 2 observations per day per vessel.

To provide real-time surface marine meteorological data of a high quality to support the BoM's marine forecasting and warning service.

c. **Major challenges and difficulties**:

To sustain the AVOF despite short-term charters; changing shipping routes; reduced crewing levels; language difficulties between English-speaking PMOs and non-English speaking crews.

d. **Description of VOS equipment**:

i. **Standard meteorological equipment supplied by the NMS**:

Digital aneroid barometer
Marine barograph
Mercury-in-glass thermometers
Marine instrument screen
Seawater bucket and sea thermometer

ii. **Shipboard AWS systems**:

Name	Number of ships at 31 Dec 2002	Manufacturer and model
ShipAWS	8	Vaisala Milos 500
AMDCP	1	Argos PAB

iii. **Electronic logbooks** (using either ship's own or NMS supplied computer):

Software	Number of ships at 31 Dec 2002	Comments
Turbo1	4	
TurboWin	22	Versions 1.71, 2.0 and 2.12

e. **Observation transmission systems** (method / transmission problems / comments):

BBXX messages from the AVOF, as well as the compressed binary messages prepared by the ShipAWS, are transmitted via Inmarsat.

The BoM pays the transmission cost of all BBXX messages received by the Perth LES using Special Access Code 41.

The AMDCP is based on drifting buoy technology, including the Argos system for the transmission of the data. The data are processed by CLS Argos in France and inserted on the GTS by Météo France.

With regard to transmission problems, some ships in the AVOF show a reluctance to make and transmit observations near the coast or outside of Australian waters, believing their observation are of little value in these situations, despite assurances to the contrary.

f. **Data management** (monitoring / archival / quality control / exchange):

Surface marine meteorological data received on the GTS from the AVOF are archived by the BoM and routinely forwarded in IMMT-2 format to the Global Collection Centre (GCC) in the UK for the Marine Climate Summary Scheme (MCSS). The BoM applies minimum QC standards (MQCS) before submitting the data to the GCC.

It is estimated that the BoM receives approximately 95% of all AVOF observations in real-time on the GTS. The remaining observations are recorded in a meteorological logbook, which in turn is archived, but due to resource limitations these observations are not keyed into the AVOF dataset.

g. **Coordination and collaboration** (national / international):

The BoM collaborates with:

- RAN which operates its own marine meteorological programme and deploys drifting buoys and profiling floats for the BoM and CMR,
- MetService (NZ) on VOS and meteorological drifting buoy matters, and PMO training,
- KNMI on TurboWin development,
- MetOffice (UK) for the supply of stationery, contributions to the Marine Observer and VOS database development,
- South African Weather Service on VOS and drifting buoy matters,
- International PMOs, in particular PMO Singapore, for the recovery and return of BoM equipment installed on VOS and SOOP vessels that have left Australian waters.

h. **Research and development:**

i. **Instrument testing and comparison facilities**:

The BoM's Regional Instrument Centre (RIC) houses the regional pressure standard, and provides calibration and testing facilities for meteorological instruments and electronic sensors. Test results are published in Instrument Test Reports.

j. **Capacity building** (national / international):

The BoM conducts a biennial Port Meteorological Officer Training Workshop for Australian PMOs, and Regional staff involved in providing PMO services. The Manager, Marine Observations (MetService, New Zealand) occasionally assists with the training.

At the international level, the BoM organised the Second WMO Regional PMO training Workshop (RAs II and V, 1999, Melbourne), and assisted with the training at the Third WMO Regional PMO Training Workshop (RA I, 2000, Cape Town), as well as the Second WMO International PMO Conference (2003, London).

k. **VOS promotion** (award schemes / publications & literature):

The BoM produces a biannual newsletter *Ocean Views* that is distributed primarily to ships of the AVOF and the BoM's XBT SOOP.

The BoM confers Ships Excellence Awards to nominated long-serving ships of the AVOF that have shown a commitment to take routine voluntary weather observations. The award usually takes the form of a plaque or a framed print.

l. **List of Port Meteorological Officers** (see Appendix 3):

m. **Ship inspections and regime**:

A total of 209 visits (comprising routine ship inspections, courtesy visits, recruitments and de-recruitments) were made to ships of the AVOF during 2002. A further 27 courtesy visits were made to foreign VOS or non-VOS vessels.

n. **VOSClim**:

i. **Contribution to the VOSClim project**:

Number of ships participating in VOSClim as at 31 Dec 2002	6
Number of VOSClim recruitments during 2002	1
Number of VOSClim recruitments planned for 2003	0
Target number of ships to participate in VOSClim	12

ii. **Standard VOSClim observing equipment** (including details of AWS systems or electronic logbook used):

All VOSClim vessels use TurboWin 2.12, and are equipped with the standard suite of meteorological equipment supplied to regular vessels of the AVOF.

Wind speed and wind direction are estimated from the state of sea.

iii. **Comments** (data issues / instrumentation / difficulties experienced):

The target of 12 VOSClim vessels is dependent on modifications to the ShipAWS to allow output in IMMT-2 format.

iv. **Catalogue of VOSClim ships** (see Appendix 4):

o. **Other comments**:

The Port Meteorological Officers support the BoM's Drifting Buoy Programme and the Joint BoM/CMR Australian Argo Project, by:

- Identifying suitable AVOF and foreign VOS vessels to deploy the devices,
- Representing the BoM at the loading of the device on the vessel to (1) review the deployment requirements and methods with the crew, and (2) perform post-transport checks on the profiling floats.

6. XBT SOOP:

a. **Programme description**:

Operator	BoM
Number of XBT SOOP ships at 31 Dec 2002	6
Total number of XBT profiles in 2002	2115
Total number of unique BATHY messages sent on the GTS in 2002	1532

Operator	CMR
Number of XBT SOOP ships at 31 Dec 2002	6
Total number of XBT profiles in 2002	1097
Total number of unique BATHY messages sent on the GTS in 2002	85

Operator	RAN
Number of XBT SOOP ships at 31 Dec 2002	6
Total number of XBT profiles in 2002	778
Total number of unique BATHY messages sent on the GTS in 2002	480

b. **Catalogue of SOOP vessels** (see Appendix 5):

c. **Specific goals and objectives**:

To sample the high density, low density and frequently repeated XBT lines in accordance with the recommendations of the Upper Ocean Thermal Review, Melbourne, 1999.

To provide timely and quality oceanographic data to support climate monitoring, research

and forecasting; defence; fisheries; and oceanographic research.

To meet Australia's national and international obligations and advance Australia's interest in and through the exchange of physical oceanographic data.

d. **Major challenges and difficulties**:

The volatile nature of the shipping industry contributes to a high turnover of XBT SOOP vessels and the unavoidable loss of XBT data.

The bridge on newly recruited vessels is higher than recommended for the deployment of XBT probes, and this may contribute to increased fouling, electrical interference or probe failure.

The BoM's and CMR's sampling programmes were reviewed as a consequence of the RAN's decision to supply Sippican T4 XBT probes instead of Sippican Deep Blue XBT probes as in previous years. This will result in shallower profiles.

e. **Description of XBT equipment**:

i. **XBT instrumentation and probes**:

The BoM uses the Sippican Mk 9 interface card and the Sippican Deep Blue XBT probes.

CMR use the Sippican Mk12 interface card and the Sippican Deep Blue XBT probes.

The RAN uses the Sippican Mk12 interface card and Sippican T4 and T10 XBT probes.

ii. **XBT acquisition software**:

The BoM and CMR use MS DOS based XBT acquisition software, adapted by CMR and further adapted by the BoM.

The RAN uses Windows based software developed under contract by Sippican.

f. **Related sampling programmes**:

A joint Australian/French programme commenced in October 2002 on IX28 using the R.S.V. L'Astrolabe to measure atmospheric and surface ocean carbon and bio-optical ecosystem parameters (fluorescence, phytoplankton pigments and phytoplankton species composition). This section will be done 6 times each Austral summer.

The BoM and CMR jointly deploy profiling floats as part of the Australian Argo project.

g. **Observation transmission systems** (method / transmission problems / comments):

Real-time BATHY messages from the BoM's XBT SOOP are transmitted via the Argos system. Météo France inserts the messages on the GTS after initial processing by Service Argos.

A subset of the real-time BATHY messages from the CMR high density XBT SOOP are placed on the GTS by SIO at the end of each voyage.

Real-time BATHY messages from the RAN's XBT SOOP are forwarded through the Naval communications system to the BoM and inserted on the GTS.

h. **Data management** (monitoring / archival / quality control / exchange):

The delayed-mode full-resolution BoM and CMR XBT data are quality controlled using QUEST (QUality Evaluation of Subsurface Temperatures) software developed by

BoM/CMR. The QUEST quality flags are stored with the original data in MEDS-ASCII format and archived. The datasets are distributed to national and international data centres on an annual basis.

The delayed-mode full-resolution RAN XBT data are quality controlled by AODC using MarineQC, developed in-house by AODC. The RAN XBT data are submitted annually to the WDC-A through the IODE.

The JAFOOS operates the Indian Ocean Data Assembly Centre for the JCOMM/IODE Global Temperature and Salinity Profile Programme (GTSPP) and provides scientific quality control on the entire Indian Ocean Upper Ocean Thermal data set.

CMR's delayed-mode biogeochemical data are quality controlled and archived by CMR.

i. **Coordination and collaboration** (national / international):

A national XBT SOOP Coordination Meeting, involving BoM, CMR, RAN, AODC and JAFOOS, is held annually. The most recent was in April 2003.

Australia collaborates with these agencies to operate or implement its SOOP;

- Scripps Institution of Oceanography (SIO), USA
- National Institute of Water and Atmospheric Research (NIWA), NZ
- Atlantic Oceanographic Marine Laboratory (AOML), USA
- National Oceanic Atmospheric Administration (NOAA), USA
- Institut Français pour la Recherche et la Technologie Polaires, France
- Institut de Recherche pour le Development (IRD), New Caledonia
- Centre National d'Etudes Spaciales (CNES), France
- National Institute of Oceanography (NIO), India
- National Institute for Environmental Studies (NIES), Japan
- Universite Pierre et Marie Curie, France

j. **Research and development**:

The BoM and CMR are developing a Windows based XBT acquisition system that can interface to a Sippican Mk 9 or a CMR developed USB interface. The system will offer satellite-based communications to transmit the data in real-time. Initially only the low-resolution data (30 inflection points) will be distributed on the GTS, although it is anticipated that the full-resolution dataset will eventually be distributed.

The BoM, CMR and AODC are working together to develop a national quality control software application for processing upper ocean thermal data. The platform independent, Java-based program will be based on AODC's MarineQC, but adapted to include many of the features of QUEST (currently used by BoM and CMR), such as multi-ship datasets, historical 'buddy-checking' and international quality flags and standards.

k. **Instrument testing and comparison facilities**:

CMR undertakes regular sea trials to test oceanographic instruments and systems using its research vessels on an opportunity basis. This includes extensive scientific analysis and evaluation of XBT recorder and sensor systems in collaboration with other members of the international SOOP.

A sea trial of the new BoM/CMR XBT system was conducted in April 2002 on CSIRO's R.V.Franklin. The JAFOOS is currently analysing the data, through comparison with co-sampled data from CTD and Sippican Mk9 and Mk12 systems.

l. **Other comments**:

7. ASAP:

a. **Catalogue of ASAP vessels in 2002** (Refer to separate WRAP report):

b. **ASAP performance in 2002** (Refer to separate WRAP report):

c. **Data management** (monitoring / archival / quality control / exchange):

d. **Coordination and collaboration** (national / international):

The BoM collaborates with the MetOffice (UK) and NOAA (USA) to operate the WRAP.

e. **Research and development**:

As reported and documented at SOT-I, the BoM completed an Impact Analysis of the WRAP upper air data. With the exception of Macquarie Island, the WRAP data generally had a greater impact on the upper air analyses than any individual mainland Australian station.

f. **Instrument testing and comparison facilities**:

g. **Other comments**:

Appendix 1. Participating national marine organizations.

Organization	Commonwealth Bureau of Meteorology (BoM)
Programmes (1)	VOS, SOOP, ASAP
Website URL	http://www.bom.gov.au/inside/oeb/networks/marine_obs.shtml

Organization	CSIRO Marine Research (CMR)
Programmes (1)	SOOP
Website URL	http://www.dmr.csiro.au/

Organization	Royal Australian Navy (RAN)
Programmes (1)	SOOP
Website URL	http://www.navy.gov.au/

Organization	Australian Oceanographic Data Centre (AODC)
Programmes (1)	SOOP (data management)
Website URL	http://www.aodc.gov.au/

Organization	Joint CMR/BoM Australian Facility for Ocean Observing Systems (JAFOOS)
Programmes (1)	SOOP (data management)
Website URL	http://www.bom.gov.au/bmrc/ocean/JAFOOS/index.html

(1) Programmes: List the programmes (VOS, SOOP, ASAP) that each organization participates in. Include additional details, e.g (data management) where appropriate.

Appendix 2: National Focal Points.

Focal Point (1)	SOT, VOS, PMO, SOOP	VOS, VOSClim, ASAP	SOOP
Name	Graeme Ball	David Evans	Ann Gronell
Title	Manager, Marine Operations Group	Manager, Observations Operations	Data Analyst, Ocean Observing Networks
Agency	Commonwealth Bureau of Meteorology	Commonwealth Bureau of Meteorology	CSIRO Marine Research
Postal Address	GPO Box 1289K Melbourne 3001, Victoria Australia	GPO Box 1289K Melbourne 3001, Victoria Australia	GPO Box 1538 Hobart 7001, Tasmania Australia
Email	g.ball@bom.gov.au	d.evans@bom.gov.au	Ann.Thresher@csiro.au
Telephone	+61 3 9669 4203	+61 3 9669 4205	+61 3 6232 5419
Facsimile	+61 3 9669 4168	+61 3 9669 4168	+61 3 6232 5123

(1) Focal Point: Insert SOT, VOS, VOSClim, PMO, SOOP or ASAP as appropriate for each national contact.

Appendix 3: List of Port Meteorological Officers.

Port	Fremantle	Melbourne	Sydney
Name	Mr. Mal Young	Mr. Michael Hills	Mr. Einion (Taffy) Rowlands
Title	Port Meteorological Agent - Fremantle	Port Meteorological Agent - Melbourne	Port Meteorological Agent - Sydney
Postal Address	c/- Commonwealth Bureau of Meteorology PO Box 1370 Perth 6872, WA Australia	c/- Commonwealth Bureau of Meteorology GPO Box 1636M Melbourne 3001,Vic Australia	c/- Commonwealth Bureau of Meteorology GPO Box 413 Darlinghurst 1300, NSW Australia
Email	malyoung@iinet.net.au	m.hills@bom.gov.au	e.rowlands@bom.gov.au
Telephone	+61 8 9474 1974	+61 3 9669 4982	+61 2 9296 1547
Facsimile	+61 8 6210 1801	+61 3 9663 2059	+61 2 9296 1589
Comment	Part-time contractor, XBT ship greeter	Part-time contractor, XBT ship greeter	Part-time contractor, XBT ship greeter

Appendix 4. Catalogue of ships participating in VOSClim in 2002.

Ship name	Callsign	IMO Number	VOSClim recruitment date (yyyymmdd)	VOSClim withdrawal date (yyyymmdd)	Comments (e.g. details of name and/or callsign changes)
Al Messilah	9KWH	7924425	20011101		
Arafura	MZHC8	8917778	20011128		
Japonica	C6SU3	8613281	20011117		Formerly Australian Pride, VNVJ (changed 20021009)
Kimberley	V2FM	8912912	20011122		
Nivosa	VJNV	8300602	20011220		
Pacific Triangle	ELSX8	9189158	20020130		

Appendix 5. Catalogue of ships participating in SOOP in 2002.

Ship name	Callsign	Operating Agency	SOOP recruitment date (yyyymmdd)	SOOP withdrawal date (yyyymmdd)	XBT line and (sampling mode)	Sampling systems (e.g. XBT, TSG, CTD, XCTD, pCO_2)
Iron Kembla	VJDK	BoM	19980303		IX22 (LD) & PX11 (LD)	XBT
Iron Yandi	VNVR	BoM	19990621		IX22 (LD) & PX11 (LD)	XBT
P&ONL Salerno	ELYE9	BoM	20000812	20020628	IX12 (LD) & PX32 (LD)	XBT
P&ONL Adelaide	C6RJ6	BoM	20001228		IX01 (FR) & PX02 (LD)	XBT
Contship Action	DLHV	BoM	20010105		IX12 (LD) & PX32 (LD)	XBT
Contship Ambition	P3GU7	BoM	20010216	20021220	IX12 (LD) & PX32 (LD)	XBT
Montreal Senator	9MCN6	BoM	20010615	20020306	IX01 (FR)	XBT
Bay Bridge	ELES7	BoM	20020307		IX01 (FR)	XBT
P&ONL Encounter	ELZZ4	BoM	20021211		IX12 (LD)	XBT
L'Astrolabe	FHZI	CMR	19921222		IX28 (HD)	XBT, TSG, pCO_2, Phytoplankton
Coral Chief	VROC	CMR	Sampling on an opportunity basis		PX30 (HD)	XBT
P&ONL Nelson	A8AI6	CMR	Sampling on an opportunity basis		PX34 (HD)	XBT
Capitaine Tasman	P3CV9	CMR	Sampling on an opportunity basis		PX30 (HD)	XBT
Wellington Express	MWSD3	CMR	Sampling on an opportunity basis		PX34 (HD)	XBT
Forum Samoa II	5WDC	CMR	Sampling on an opportunity basis		PX30 (HD)	XBT

Ship Observations Team

SOT-II, 28th July – 1st August 2003, London, UK.

Country: Canada

1.

Contact: J.R. Keeley (MEDS)
R. W. Fordyce (MSC)

2.

3. Participating national marine organizations (see Appendix 1):

4. Focal Points (see Appendix 2):

5. VOS:

a. **Programme description**:

Category	Number of ships at 31 Dec 2002	Comments
Selected	220	
Supplementary		
Auxiliary		
Other (specify)		
Total VOS fleet	220	

Number of VOS vessels recruited in 2002	0
Number of VOS vessels decommissioned in 2002	6
Percentage of the VOS (selected ships only) that did not report in Dec 2002 (to nearest whole percent)	43%
Total number of SHIP messages sent on the GTS in 2002	69,949

b. **Specific goals and objectives**: steady modernization of the Canadian Fleet including more commercial vessels..

c. **Major challenges and difficulties**: we are working through the teething period of the development of our new automatic system for shipboard platforms.

d. **Description of VOS equipment**:

i. **Standard meteorological equipment supplied by the NMS**: We supply the following instruments to Canadian VOS vessels: Anemometer, Air and Sea Thermometers, Bucket, Wind Computer, Thermometer Screen, Barometer, Barograph, Stationary, Log Books.

ii. **Shipboard AWS systems**:

Name	Number of ships at 31 Dec 2002	Manufacturer and model
AVOS	13	AXYS Environmental Systems (Automatic Voluntary Observing System – AVOS)

iii. **Electronic logbooks** (using either ship's own or NMS supplied computer):

Software	Number of ships at 31 Dec 2002	Comments
SEAS	2	Will replace with AVOS systems
TURBO	6	Will replace with AVOS systems

e. **Observation transmission systems** (method / transmission problems / comments):
AVOS system uses INMARSAT C, SEAS system uses GOES, INMARSAT C, TURBO uses INMARSAR C

f. **Data management** (monitoring / archival / quality control / exchange):

AVOS – Monitoring provided by U.K, MSC, NOAA / Archival – done by MSC Headquarters. Quality Control – MQCS IV – done on board the vessel by AVOS computer. It is then QC'd again by MSC. Archive before moving the data to the GCC in Germany and U.K. The AVOS data will be supplied to the world through the VOS Clim Project data-base.

g. **Coordination and collaboration** (national / international):
The automation program is a national program with all 5 Regions in Canada participating. The development of the system has been introduced to the international community through our contractor and also through such events as TECO METEOREX in Bratislava (CIMO), SOT I in GOA India, VOS Clim I, II, III and AMS conference in the U.S. in both 2002 and 2003. The system can be purchased from our contractor AXYS as a commercial product.

h. **Research and development:**

We continue to improve the AVOS system as we gain experience with several modifications already in place. A new version of the software is about to be released in the next few weeks.

i. **Instrument testing and comparison facilities**:

All of our development is subject to rigorous testing by our Test and Evaluation Division with the results available on request. The system has also undergone extensive testing

by our contractor along with extensive field testing of the early prototypes in the Arctic. We hope to have a final evaluation of the system ready by this coming fall.

j. **Capacity building** (national / international):

k. **VOS promotion** (award schemes / publications & literature):

We maintain an broad VOS scheme awards program across the country. Awards are given to the vessels in recognition of their contribution and we also provide an individual award to the officers who provide significant numbers of observations or good quality.

l. **List of Port Meteorological Officers** (see Appendix 3):

m. **Ship inspections and regime**:

We have 4.5 PMO's across the 5 Regions in Canada. Three of them are full time and three are part time. The PMO's are highly trained technicians that are completely familiar with the VOS Program and are capable in maintaining, installing and calibrating automatic weather stations. The Program is further augmented by 4 PMO/Buoy Specialists, 3 full time and two part time. All technicians are familiar with all the systems in the Marine Program – Buoys, VOS and Coastal Automatic Weather Stations.

n. **VOSClim**:

i. **Contribution to the VOSClim project**:

Number of ships participating in VOSClim as at 31 Dec 2002	14
Number of VOSClim recruitments during 2002	5
Number of VOSClim recruitments planned for 2003	5
Target number of ships to participate in VOSClim	23

ii. **Standard VOSClim observing equipment** (including details of AWS systems or electronic logbook used):

All VOS Clim Vessels will be equipped with the AVOS Automatic System. The systems uses the following instruments…Wind measurement RM Young Model 05103, Water Temperature, AXYS (HATS) Sensor, Temperature and Relative Humidity Sensor, Rotronics MP 101A-T7, Fluxgate compass, KVH Model Autocomp 1000, Digital Barometer, Vaisala Model PTB210B1T1B, GPS Receiver, Garmin Model GPS-36, INMARSAT Transceiver, Trimble Galaxy Model TNL 7001, Bridge PC – intuitive touch screen technology.

iii. **Comments** (data issues / instrumentation / difficulties experienced):

We have had compass difficulties with magnetic north in the Canadian Arctic and sea temperature when the ship is a rest. We have solutions to both these issues that are in the final stages of implementation.

iv. **Catalogue of VOSClim ships** (see Appendix 4):

o. **Other comments**:

We will make a presentation at the VOS Clim Meeting, the SOT meeting and PMO Workshop were we will give more details on the development of the AVOS platform.

6. SOOP:

a. **Programme description**:

Operator	
Number of XBT SOOP ships at 31 Dec 2002	
Total number of XBT profiles in 2002	
Total number of BATHY messages sent on the GTS in 2002	
Total number of TESAC messages sent on the GTS in 2002	

Operator	
Number of XBT SOOP ships at 31 Dec 2002	
Total number of XBT profiles in 2002	
Total number of BATHY messages sent on the GTS in 2002	

b. **Catalogue of SOOP vessels** (see Appendix 5):

c. **Specific goals and objectives**:

d. **Major challenges and difficulties**:

e. **Description of XBT equipment**:

i. **XBT instrumentation and probes**:

ii. **XBT acquisition software**:

f. **Related sampling programmes**:

Canada does not collect data along SOOP lines. However, it does contribute a significant number of observations in real-time collected by research vessels, mostly from our east coast and mostly on or near the continental shelves. By May, 2003 there were 4165 stations observed in 2002 in MEDS archives. There are an additional 782 stations that were reported in real-time, but have not yet come in delayed mode form to MEDS. This gives a total of 4947 stations received at MEDS so far for 2002. Of these, 1501 were sent on the GTS as BATHYs (~300) or TESACs (~1200). Data from an additional 1889 stations were received at MEDS but were too late to be sent on the GTS.

A researcher on Canada's west coast is deeply involved in the development of routine measurements of pCO2.

g. **Observation transmission systems** (method / transmission problems / comments):

Many of the data from Canada are forwarded to MEDS for insertion onto the GTS. At

MEDS we carry out some preliminary QC before sending data to the GTS. If data arrive too late, we archive the real-time data but do not send them for international distribution. Many of the data provided to MEDS are encoded and sent after the ship comes back from the cruise. Although many cruises are of short enough duration that there should be sufficient time to meet the 30 day cut off for GTS distribution, there is still a significant number of data that were received too late. We are looking into trying to improve this situation.

h. **Data management** (monitoring / archival / quality control / exchange):

Canada contributes to SOOP largely through its activities and leadership of the GTSPP. A report of GTSPP results for 2002 is included as another document for this meeting. This Project handles all of the SOOP data including real-time and delayed mode. It also handles profile data contributed by other projects, such as Argo, and so permits an integration of SOOP data with data from these other projects.

There is a new project starting called the Global Ocean Surface Underway Data Project or GOSUD. This is intended to handle ocean data collected by underway instrumentation such as thermosalinographs and pCO_2 sensors. The project has a web site (http://www.ifremer.fr/sismer/program/gosud/) which explains the details. We encourage anyone interested to visit the web site and make contact with the Project. An annual report for this project has also been prepared and is available for this meeting. It would be helpful to get JCOMM support for the project to encourage participation.

i. **Coordination and collaboration** (national / international):

As explained in the report, the GTSPP is an international project to manage ocean profile data with international partners contributing to the effort.

j. **Research and development**:

k. **Instrument testing and comparison facilities**:

l. **Other comments**:

7. **ASAP**: not applicable

Appendix 1. Participating national marine organizations.

Organization	Marine Environmental Data Service (MEDS)
Programmes (1)	SOOP data management
Website URL	http://www.meds-sdmm.dfo-mpo.gc.ca

Organization	Meteorological Service of Canada
Programmes (1)	VOS Program
Website URL	http://weatheroffice.ec.gc.ca.

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

(1) Programmes: List the programmes (VOS, SOOP, ASAP) that each organization participates in. Include additional details, e.g (data management) where appropriate.

Appendix 2: National Focal Points.

Focal Point (1)			
Name	Bob Keeley		
Title	Chief, Ocean Systems Division		
Agency	Marine Environmental Data Service (MEDS)		
Postal Address	Department of Fisheries and Oceans 1202 - 200 Kent St Ottawa, Ontario Canada, K1A 0E6		
Email	keeley@meds-sdmm.dfo-mpo.gc.ca		
Telephone	(613) 990-0246		
Facsimile	(613) 993-4658		

Focal Point (1)			
Name	Ron Fordyce		
Title	Supt. Marine		
Agency	Meteorological Service of Canada		
Postal Address	Port Meteorological Office 100 East Port Blvd Hamilton, Ontario L8H 7S4		
Email	Ron.Fordyce@ec.gc.ca		
Telephone	(905) 312-0900/0933		
Facsimile	(905) 312-0730		

(1) Focal Point: Insert SOT, VOS, VOSClim, PMO, SOOP or ASAP as appropriate for each national contact.

Appendix 3: List of Port Meteorological Officers.

Port	Halifax, Nova Scotia.	Hamilton, Ontario	Hamilton, Ontario
Name	Randy Sheppard	Ron Fordyce	Rick Shukster
Title	Port Meteorological Officer	Supt. Marine	Port Meteorological Officer/ Buoy Specialist
Postal Address	Meteorological Service of Canada 16th Floor, 45 Aldernay Drive Dartmouth, Nova Scotia B2Y 2N6	Meteorological Service of Canada Port Meteorological Office 100 East Port Blvd Hamilton, Ontario L8H 7S4	Meteorological Service of Canada Port Meteorological Office 100 East Port Blvd Hamilton, Ontario L8H 7S4
Email	Randy.Sheppard@ec.gc.ca	Ron.Fordyce@ec.gc.ca	Rick.shukster@ec.gc.ca
Telephone	(902) 426-6703	(905) 312-0900/0933	(905) 312-0900/0933
Facsimile	(902) 426-6404	(905) 312-0730	(9050 312-0730
Comment			

Port	St. John's, Newfoundland	Hamilton, Ontario	
Name	Jack Cossar	Roland Kleer	
Title	Port Meteorological Officer	Port Meteorological Officer	
Postal Address	Meteorological Service of Canada 6 Bruce Street St. John's, Newfoundland A1N 4T3	Meteorological Service of Canada Port Meteorological Office 100 East Port Blvd Hamilton, Ontario L8H 7S4	
Email	Jack.cossar@ec.gc.ca	Roland.Kleer@ec.gc.ca	
Telephone	(709) 722-4798	(905) 312-0900/0933	
Facsimile	(709) 722-5097	(905) 312-0730	
Comment			

Port	Vancouver, British Columbia	Montreal, Quebec	
Name	Mike Riley	Eric Gola	
Title	Port Meteorological Officer	PMO/Technical Services Specialist	
Postal Address	Meteorological Service of Canada 700-1200 West 73rd Avenue Vancouver, British Columbia V6P 6H9	Meteorological Service of Canada 100 Alexis Nihon Blvd, 3rd Floor Ville St. Laurent, Quebec H4M 2N8	
Email	Mike.riley@ec.gc.ca	Eric.gola@ec.gc.ca	
Telephone	(604) 6649136	(514) 283-1644	
Facsimile	(604) 664-9195		
Comment			

Port			
Name			
Title			
Postal Address			
Email			
Telephone			
Facsimile			
Comment			

Appendix 4. Catalogue of ships participating in VOSClim in 2002.

Ship name	Callsign	IMO Number	VOSClim recruitment date (yyyymmdd)	VOSClim withdrawal date (yyyymmdd)	Comments (e.g. details of name and/or callsign changes)
Terry Fox	CGTF	7517507	01/01/2002		
Leif Ericson	VOCJ	8917388	01/03/02		
Sir John Franklin	CGDT	7510846	01/08/03		Name of vessel will likely change this summer – she is a research vessel which will be going to the Arctic for the CASES Experiment Project (5 years)
GSI Admiral	VOCC	7384314	01/03/02		
Peter R Cresswell	VCBZ	8016641	01/07/03		
Nunakput	VC6750	7003556	01/10/03		
W.E. Ricker	CG2965	7809364	01/10/03		
Peirre Radisson	CGSB	7510834	01/03/02		
Arctic	VCLM	7517507	01/03/02		
DesGroseilliers	CGDX	802160	01/03/02		
Limnos	CG2350	6804903	01/03/01		
Samuel Risley	CG2960	8322442	01/03/01		
Griffon	CGDS	7022887	01/03/02		
Nunakput	VC6750	7003556	01/10/03		
Sir Wilfred Laurier	CGJK	8320456	01/03/01		
J.P. Tully	CG2958	8320420	01/03/02		
W.E. Ricker	CGSQ		01/10/03		
Louis St. Laurent	CGBN	6705937	01/03/03		
Dumit	CG2522	7902192	01/03/02		
Eckaloo	CG2992	8712465	01/03/02		
Newfoundland Otter	CFD3659	8915782	01/03/02		

Ship Observations Team

SOT-II, 28th July – 1st August 2003, London, UK.

Country: CROATIA

1.

Contact: Dr. MILAN HODŽIĆ

2.

3. Participating national marine organizations (see Appendix 1):

4. Focal Points (see Appendix 2):

5. VOS:

a. **Programme description**:

Category	Number of ships at 31 Dec 2002	Comments
Selected	4	
Supplementary	15	
Auxiliary	22	
Other (specify)	-	
Total VOS fleet	41	

Number of VOS vessels recruited in 2002	2
Number of VOS vessels decommissioned in 2002	-
Percentage of the VOS (selected ships only) that did not report in Dec 2002 (to nearest whole percent)	25%
Total number of SHIP messages sent on the GTS in 2002	1237

b. **Specific goals and objectives**:

More SHIP messages for Adriatic sea

c. **Major challenges and difficulties**:

number of SHIP decreasing; reduced crew; accuracy of observations

d. **Description of VOS equipment**:

i. **Standard meteorological equipment supplied by the NMS**:

standard meteorological equipment supplied by owner's

ii. **Shipboard AWS systems**:

Name	Number of ships at 31 Dec 2002	Manufacturer and model

iii. **Electronic logbooks** (using either ship's own or NMS supplied computer):

Software	Number of ships at 31 Dec 2002	Comments
Turbowin 1.71	2	

e. **Observation transmission systems** (method / transmission problems / comments):

FM 13-XI Ext SHIP, ship's deck officers make communications work, automation of the observations

f. **Data management** (monitoring / archival / quality control / exchange):

All made by MARINE METEOROLOGICAL CENTER – SPLIT
Quality control by software MQCS (Deutschen Wetterdienstes (DWD)

g. **Coordination and collaboration** (national / international):

With institution related for marine safety

h. **Research and development:**

Climate – Adriatic sea;

i. **Instrument testing and comparison facilities**:

By MARINE METEOROLOGICAL CENTER – SPLIT

j. **Capacity building** (national / international):

k. **VOS promotion** (award schemes / publications & literature):

ORIGINAL SCIENTIFIC MAGAZINE OF MARINE METEOROLOGY AND ECOLOGY
ADRIATIC METEOLOLOGY

l. **List of Port Meteorological Officers** (see Appendix 3):

m. **Ship inspections and regime**:

In main port SPLIT, RIJEKA

n. **VOSClim**:

not applicable

o. **Other comments**:

-

6. SOOP:

not applicable

7. ASAP:

not applicable

Appendix 1. Participating national marine organizations.

Organization	MARINE METEOROLOGICAL CENTER – SPLIT
Programmes (1)	VOS
Website URL	www.dalmatianet.com/cmms

Organization	HIDROLOGICAL AND METEOROLOGICAL SERVICE
Programmes (1)	
Website URL	METEO.HR

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

(1) Programmes: List the programmes (VOS, SOOP, ASAP) that each organization participates in. Include additional details, e.g (data management) where appropriate.

Appendix 2: National Focal Points.

Focal Point (1)	**PMO, VOS**		
Name	Dr Milan Hodžić		
Title	**MARINE METEOROLOGICAL CENTER**		
Agency	THE METEOROLOGICAL OFFICE		
Postal Address	P.O.Box 370 Glagoljaška 11 HR-21000 SPLIT CROATIA		
Email	hodzic@cirus.dhz.hr		
Telephone	++385 21 347 399		
Facsimile	++385 21 347 465		

Focal Point (1)			
Name			
Title			
Agency			
Postal Address			
Email			
Telephone			
Facsimile			

(1) Focal Point: Insert SOT, VOS, VOSClim, PMO, SOOP or ASAP as appropriate for each national contact.

Appendix 3: List of Port Meteorological Officers.

Port	SPLIT		
Name	ŽELJKO ŠORE		
Title	Captain		
Postal Address	P.O.Box 370 Glagoljaška 11 HR-21000 SPLIT CROATIA		
Email	sore@cirus.dhz.hr		
Telephone	++385 21 347 403		
Facsimile	++385 21 347 465		
Comment	working hours 07:00-15:00 LT-5 day week		

Port	RIJEKA		
Name	SMILJAN VISKOVIĆ		
Title	Mr		
Postal Address	Riva 20 HR-51000 RIJEKA CROATIA		
Email	viskovic@cirus.dhz.hr		
Telephone	++385 51 215 548		
Facsimile	++385 51 215 574		
Comment			

Ship Observations Team

SOT-II, 28th July – 1st August 2003, London, UK.

Country: France

1.

Contact:
François GERARD
Directeur Délégué pour l'Outre-Mer
Météo-France
1, quai Branly
75340 PARIS cédex 07
Tel : +33 1 4556 **7011**
Fax : +33 1 4556 7005
Mail : francois.gerard@meteo.fr

2.

3. **Participating national marine organizations** (see Appendix 1):

4. **Focal Points** (see Appendix 2):

5. **VOS**:

a. **Programme description**:

Category	Number of ships at 31 Dec 2002	Comments
Selected	69	
Supplementary	0	
Auxiliary	0	
Other (specify)	0	
Total VOS fleet	69	

Number of VOS vessels recruited in 2002	10
Number of VOS vessels decommissioned in 2002	12
Percentage of the VOS (selected ships only) that did not report in Dec 2002 (to nearest whole percent)	23 %
Total number of SHIP messages sent on the GTS in 2002	40,444

b. **Specific goals and objectives**:

Météo France contribute to the WMO VOS, specially to increase the number of observations over east Atlantic ocean and west Mediterranean sea areas, but also over south Indian ocean where Météo France has in charge the hurricane forecasting.

c. **Major challenges and difficulties**:

d. **Description of VOS equipment**:

i. **Standard meteorological equipment supplied by the NMS**:

POMMAR system : measurements are automatically concentrated (from barometer, thermometer for air and SST, humidity sensor and anemometer) but computing and transmission are not automated. Logbook are used
conventional : Barograph and Barometer (or use and calibrate ships own), Whirling Psychrometer, Sea bucket and thermometer, hand-held anemometer. Logbook are used

ii. **Shipboard AWS systems**:

Name	Number of ships at 31 Dec 2002	Manufacturer and model
BATOS	19	Sensors, PC and transmission system from several manufacturers, assembled by Météo France. software developed by Météo France

iii. **Electronic logbooks** (using either ship's own or NMS supplied computer):

Software	Number of ships at 31 Dec 2002	Comments
BATOS	19	

e. **Observation transmission systems** (method / transmission problems / comments):

Coast Radio Stations and satellite (IMMARSAT C)

f. **Data management** (monitoring / archival / quality control / exchange):

Monitored, plotted and model assimiled if received within HH+3h, archived. Quality controlled approximately 1 to 2 months later.

g. **Coordination and collaboration** (national / international):

h. **Research and development:**

i. **Instrument testing and comparison facilities**:

j. **Capacity building** (national / international):

k. **VOS promotion** (award schemes / publications & literature):

Some awards for several observations (more than 400 per year or more than 1800 during a minimum of 3 years…) and transmissions.
Each observation and transmission is paid to the mariner by Météo France (0.69 €), increased for a transmission at 00, 03 and 06 UTC in the area between 32° East and 92° West in the north hemisphere (1.65 €).

Publication: METMAR (a maritime meteorology magazine, quarterly published and free distributed on board of VOS and to the ships-owners)

l. **List of Port Meteorological Officers** (see Appendix 3):

m. **Ship inspections and regime**:

n. **Ship inspections and regime**:

All ships visited 1 or 2 times per year. Extra visits also when maintenance of instruments required.

o. **VOSClim**:

i. **Contribution to the VOSClim project**:

Number of ships participating in VOSClim as at 31 Dec 2002	0
Number of VOSClim recruitments during 2002	0
Number of VOSClim recruitments planned for 2003	6
Target number of ships to participate in VOSClim	8

ii. **Standard VOSClim observing equipment** (including details of AWS systems or electronic logbook used):

iii. **Comments** (data issues / instrumentation / difficulties experienced):

iv. **Catalogue of VOSClim ships** (see Appendix 4):

p. **Other comments**:

6. SOOP:

a. **Programme description**:

Operator	IRD - BREST
Number of XBT SOOP ships at 31 Dec 2002	5
Total number of XBT profiles in 2002	882

Total number of BATHY messages sent on the GTS in 2002	860

Operator	IRD - NOUMEA
Number of XBT SOOP ships at 31 Dec 2002	4
Total number of XBT profiles in 2002	1190
Total number of BATHY messages sent on the GTS in 2002	

Operator	
Number of XBT SOOP ships at 31 Dec 2002	
Total number of XBT profiles in 2002	
Total number of BATHY messages sent on the GTS in 2002	

Operator	
Number of XBT SOOP ships at 31 Dec 2002	
Total number of XBT profiles in 2002	
Total number of BATHY messages sent on the GTS in 2002	

b. **Catalogue of SOOP vessels** (see Appendix 5):

c. **Specific goals and objectives**:

Maintain a network fit to meet the needs of GODAE

d. **Major challenges and difficulties**:

- On the line AX 05, the vessels Fort Royal and Fort Fleur d'Epée will be replaced by new vessels in July 2003. The XBT equipment will be placed on board these new vessels, but from January 2003 to July 2003, no data will be collected.
- The pCO_2 sampling programme (manual) ended in 2002. Nothing planned before 2004.
- Indian Ocean line IX03 still not covered.
- Programme highly dependent on NOAA's probes allocation

e. **Description of XBT equipment**:

i. **XBT instrumentation and probes**:

Instrumentation: CLS/ARGOS electronic interface
Probes: Sippican Deep Blue XBT

ii. **XBT acquisition software**:

IRD acquisition software, version XBT 2-7

f. **Related sampling programmes**:

CLIVAR, GODAE

g. **Observation transmission systems** (method / transmission problems / comments):

ARGOS + GTS (Météo-France)

h. **Data management** (monitoring / archival / quality control / exchange):

QC: manual and IGOSS tests by Météo-France for real time data
Archival and QC (*Manual and guides 26, 1993, UNESCO*) : IFREMER/SISMER

i. **Coordination and collaboration** (national / international):

IFREMER, CNRS, NOAA

j. **Research and development**:

Development of an automatic pCO_2 sensor planned in 2004. Could be used in the Atlantic line AX 20 to test the impact of the Amazon outflow on pCO_2.

k. **Instrument testing and comparison facilities**:

l. **Other comments**:

7. ASAP:

a. **Catalogue of ASAP vessels in 2002** (see Appendix 6):

b. **ASAP performance in 2002** (see Appendix 7):

c. **Data management** (monitoring / archival / quality control / exchange):

d. **Coordination and collaboration** (national / international):

e. **Research and development**:

f. **Instrument testing and comparison facilities**:

g. **Other comments**:

Appendix 1. Participating national marine organizations.

Organization	IRD 2113, rue La Fayette, 75010 Paris
Programmes (1)	SOOP
Website URL	http://www.ird.fr/

Organization	Météo France 1, quai Branly 75340 Paris Cedex 07
Programmes (1)	VOS, ASAP
Website URL	www.meteo.fr

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

(1) Programmes: List the programmes (VOS, SOOP, ASAP) that each organization participates in. Include additional details, e.g (data management) where appropriate.

Appendix 2: National Focal Points.

Focal Point (1)	SOOP	VOS, VOSClim,	ASAP
Name	Dessier	Périès André	Gaumet Jean-Louis
Title	Dr		
Agency	IRD	Météo-France	Météo-France
Postal Address	Centre IRD de Bretagne BP 70 29280 PLOUZANE, France	DSO/QMR/PMO 42, avenue G. Coriolis 31057 Toulouse CEDEX	DSO/DOA/D 7, rue Teisserenc de Bort -BP 202- 78195 Trappes
Email	Alain.dessier@ird.fr	Andre.peries@meteo.fr	Jean-louis.gaumet@meteo.fr
Telephone	33 (0)2 98 22 45 07	33- 5 61 07 98 54	33- 1 30 13 64 70
Facsimile	33 (0)2 98 22 45 14	33- 5 61 07 98 69	33- 1 30 13 60 68

Focal Point (1)			
Name			
Title			
Agency			
Postal Address			
Email			
Telephone			
Facsimile			

(1) Focal Point: Insert SOT, VOS, VOSClim, PMO, SOOP or ASAP as appropriate for each national contact.

Appendix 3: List of Port Meteorological Officers.

Port	Boulogne sur mer	Brest Port	Caen
Name	Christian Ravenel	Louis Stephan	Jean-Olivier Gires
Title			
Postal Address	Station météorologique 17, BD SAINTE BEUVE 62200 BOULOGNE SUR MER	Station météorologique 16, quai de la douane 29200 BREST	Station météorologique Route de Caumont B.P. 20101 14652 CARPIQUET CEDEX
Email	christian.ravenel@meteo.fr	louis.stephan@meteo.fr	jean-olivier.gires@meteo.fr
Telephone	33-3 21 33 24 25	33-2 98 44 60 21	33-2 31 71 12 61
Facsimile	33-3 21 33 33 12	33-2 98 44 60 21	33-2 31 26 00 37
Comment			

Port	La Réunion Port	Le Havre	Aix en Provence
Name	Yves Morville	Gérard Doligez	Norbert Aouizerats
Title			
Postal Address	Station météorologique Port de la Pointe des Galets 97420 LE PORT	Station météorologique Nouveau Sémaphore Quai des Abeilles 76600 LE HAVRE	Station météorologique 2, Bd Château double 13098 AIX EN PROVENCE CEDEX 02
Email	meteo.france.leport@wanadoo.fr	gerard.doligez@meteo.fr	norbert.aouizerats@meteo.fr
Telephone	33- 262 92 11 07	33-2 32 74 03 65	33-4 42 95 90 21
Facsimile	33- 262 92 11 47	33-2 32 74 03 61	33-4 42 95 90 29
Comment			

Port	Nouméa	Saint-Nazaire
Name	Corinne Moinaux	Jean-Pierre Favris
Title		
Postal Address	Station météorologique BP 151 98845 NOUMEA PORT	Station météorologique Aérodrome de Saint-Nazaire-Montoir 44550 MONTOIR DE BRETAGNE
Email		jean-pierre.favris@meteo.fr
Telephone	687 27 30 04	33-2 40 17 13 17
Facsimile	687 27 42 95	33-2 40 90 39 37
Comment		

Appendix 4. Catalogue of ships participating in VOSClim in 2002.

Ship name	Callsign	IMO Number	VOSClim recruitment date (yyyymmdd)	VOSClim withdrawal date (yyyymmdd)	Comments (e.g. details of name and/or callsign changes)

Appendix 5. Catalogue of ships participating in SOOP in 2002.

Ship name	Callsign	Operating Agency	SOOP recruitment date (yyyymmdd)	SOOP withdrawal date (yyyymmdd)	XBT line and (sampling mode)	Sampling systems (e.g. XBT, TSG, CTD, XCTD, pCO_2)
FORT ROYAL	FNOR	IRD BREST	2001/06/01	2002/12/28	AX 05 – LDX	XBT + METEO
FORT FLEUR D'EPEE	FNOU	IRD BREST	2001/06/14	2002/12/14	AX 05 – LDX	XBT + METEO
SEDERBERG	ZTSG	IRD BREST	1997/09/02		AX 15 – LDX	XBT
WINTERBERG	ZSPP	IRD BREST	1997/08/05		AX 15 – LDX	XBT
TOUCAN	FNAV	IRD BREST	1997/05/02		AX 20 – LDX	XBT + TSG
CS LONDON	ELVX4	IRD NOUMEA	22/09/1998		AX03,PX17,PX28,PX30,IX01,IX10	XBT + TSG + pCO_2
CS ROME	ELVZ6	IRD NOUMEA	22/02/1999		AX03,PX17,PX28,PX30,IX01,IX10	XBT + TSG
DIRECT TUI	ELXZ5	IRD NOUMEA	12/05/1998		PX18,PX28	TSG
CORAL ISLANDER	3EVS	IRD NOUMEA	18/08/1994	14/09/2002	PX05,PX04,PX12	XBT + TSG
PACIFIC ISLANDER	HPEW	IRD NOUMEA	06/11/1981	31/01/2003	PX05,PX04,PX12	XBT + TSG

Appendix 6. Catalogue of ships participating in ASAP in 2002.

4 ASAP units operated during the year on 4 ships

Type of ship (1)	Ship name	Callsign	Comms method (2)	Windfind method / sonde type (3)	Launch method (4)	Launch height (5)	Area of operation (6)	ASAP unit ID No.
Merchant	Fort Royal	FNOR	DCP (IDCS)	GPS/Modem	Container (manual)	13m	North Atlantic	FASAP1
Merchant	Fort Fleur d'Epée	FNOU	DCP (IDCS)	GPS/Modem	Container (manual)	13m	North Atlantic	FASAP2
Merchant	Douce France	FNRS	DCP (IDCS)	GPS/Modem	Deck launcher (fixed)	27m	North Atlantic	FASAP3
Merchant	Fort Desaix	FNPH	DCP (IDCS)	GPS/Modem	Deck launcher (fixed)	27m	North Atlantic	FASAP4

(1) Type of ship: Merchant, research, supply
(2) Comms method: Inmarsat C or others
(3) Windfind method / sonde type: eg. GPS/Vaisala RS80-G, Loran/Vaisala RS80-L, VIZ GPS Mark II Microsonde, etc
(4) Launch method: deck launcher (portable), deck launcher (fixed), container (manual), container (semi automatic), other
(5) Launch height: height above sea level from where the sonde is released
(6) Ocean area: North Pacific, North Atlantic, Indian Ocean, variable

Appendix 7. ASAP performance in 2002.

Callsign	Total number of sondes launched	Number of TEMP SHIP transmitted	Number of relaunches	Average terminal sounding height (km)	Balloon size (gm)	Percentage on GTS (see note)
FNOR	349	316	33	21.4	300	91.8
FNOU	294	279	15	22.5	300	96.8
FNRS	294	266	28	20.3	300	65.5
FNPH	372	340	28	21.7	300	99.1

Percentage on the GTS is the ratio of reports received against reports transmitted, and is based upon reports received at a data centre or GTS insertion point (name)

Ship Observations Team

SOT-II, 28th July – 1st August 2003, London, UK.

Country: GERMANY

1.

Contact:

VOS, VOSClim, ASAP
Deutscher Wetterdienst
(German Weather Service)
Klima und Umwelt Fe26
P.O. Box: 30 11 90
D-20304 Hamburg
Germany

SOOP
Bundesamt für Seeschifffahrt und Hydrographie
(Federal Maritime and Hydrographic Agency)
P.O. Box 30 12 20
D-20305 Hamburg
Germany

2.

3. **Participating national marine organizations** (see Appendix 1):

4. **Focal Points** (see Appendix 2):

5. **VOS**:

a. **Programme description**:

Category	Number of ships at 31 Dec 2002	Comments
Selected	720	
Supplementary	42	
Auxiliary	49	
Other (specify)	2	Research Vessels
Total VOS fleet	813	

Number of VOS vessels recruited in 2002	62
Number of VOS vessels decommissioned in 2002	40
Percentage of the VOS (selected ships only) that did not report in Dec 2002 (to nearest whole percent)	55 %
Total number of SHIP messages sent on the GTS in 2002	230.000

b. **Specific goals and objectives**:
Enhance the use of electronic logbooks and/or respective software on board computers.

c. **Major challenges and difficulties**:
The mean percentage of non observing ships in 2002 was ca. 30%. The goal is to improve the ratio of number of ships to number of observations by eiher reactivating observers or

discard VOS without demotivating the nautical community in their principle willingness of weather observing.

d. **Description of VOS equipment**:

i. **Standard meteorological equipment supplied by the NMS**:

Precision aneroid barometer
Marine barograph
Sling psychrometer with wet and dry thermometers
Sea temperature bucket with thermometers

ii. **Shipboard AWS systems**:

Name	Number of ships at 31 Dec 2002	Manufacturer and model
MILOS 500	23	Vaisala

iii. **Electronic logbooks** (using either ship's own or NMS supplied computer):

Software	Number of ships at 31 Dec 2002	Comments
Turbo DOS/WIN	300	notebooks provided by Deutscher Wetterdienst
Turbo DOS/WIN	10 -15	software on board computers

e. **Observation transmission systems** (method / transmission problems / comments):

1. Ship –> INMARSAT-C –> nearest Code41accepting LES –> message switching system of NMS
Problem: Acceptance of messages if FM13-Format is not exactly correct (in case of manual logbooks only); some automated systems put it to the dregs and so they are not inserted onto GTS; semi automated systems ars able to correct format errors and inserting them onto GTS; this usually requires manual ressources which are being reduced at NMSs more and more.

2. Ship -> GlobeWireless -> US NMS -> GTS (email link)
Problem: Insertion onto the GTS is not reliable. A considerable number of Obs from German VOS do not circulate on the GTS (according to monitoring results of Telecmmunication Hub Offenbach)

3. AWS, automated sytems: Ship -> METEOSAT/DCP -> ESA/ESOC -> NMS –> GTS
Problem: Transmission problems in special geographical regions.

f. **Data management** (monitoring / archival / quality control / exchange):

- internal monitoring of VOS efficiency and data archival
- internal quality check and feedback to observers
- use of international monitoring results (e.g. UK MetOfiice lead centre for surface marine data)
- data contribution to Responsible Members (MCSS) via GCCs

g. **Coordination and collaboration** (national / international):
Long-standing colaboration with PMO services of the Netherlands, New Zealand through ship visits and observer care on demand.

h. **Research and development:**

i. **Instrument testing and comparison facilities**:
Calibration with precision reference instruments and/or replacement of instruments if neccessary when visiting VOS ships in German ports
In case of AWS: regular routine exchange (once a year) of all instruments and/or on demand.

j. **Capacity building** (national / international):
Internal training of PMOs and observers; attending international PMO conferences if possible.

k. **VOS promotion** (award schemes / publications & literature):
Manuals, code tables and other interesting written information about VOS. Issuing the periodical publication “Der Wetterlotse” for specific observer related issues.
The national award system depends on the observation period of each observer on German VOS and the amount of observations taken. Valuable multi-colour ballpoints and books are presented to the observers. The highest award is a person related plaque, dedicated by the responsible ministry.

l. **List of Port Meteorological Officers** (see Appendix 3):

m. **Ship inspections and regime**:
Inspection on a regular basis by national PMO system as soon as VOS are available in German ports. Service through international PMO partners on demand.

n. **VOSClim**:

i. **Contribution to the VOSClim project**:

Number of ships participating in VOSClim as at 31 Dec 2002	3
Number of VOSClim recruitments during 2002	3
Number of VOSClim recruitments planned for 2003	11
Target number of ships to participate in VOSClim	14

ii. **Standard VOSClim observing equipment** (including details of AWS systems or electronic logbook used):

Precision aneroid barometer
Marine barograph
Sling psychrometer with wet and dry thermometers
Sea temperature bucket with thermometers, sometimes engine intake or through hull sensor

In case of AWS: standard instrument equipment from Vaisala within Milos 500 package;
Sea surface temperature by through hull sensor
Electronic logbook (Notebook) with TurboWin

iii. **Comments** (data issues / instrumentation / difficulties experienced):
Problem: maintenance and calibration of ship's anemometer types not owned or used by German Weather Service, due to type variety.

iv. **Catalogue of VOSClim ships** (see Appendix 4):

o. **Other comments**:

6. SOOP:

a. **Programme description**:

Operator	BSH
Number of XBT SOOP ships at 31 Dec 2002	3
Total number of XBT profiles in 2002	1027
Total number of BATHY messages sent on the GTS in 2002	8610

Operator	BSH
Number of XBT SOOP ships at 31 Dec 2002	1
Total number of T/S profiles in 2002	134
Total number of TESAC messages sent on the GTS in 2002	134

Operator	BSH
Number of other SOOP ships at 31 Dec 2002	6
Total number of TRACKOB daily reports sent on the GTS in 2002	777

Operator	IfM Kiel
Number of other SOOP ships at 31 Dec 2002	1
Total number of TRACKOB daily reports sent on the GTS in 2002	56

b. **Catalogue of SOOP vessels** (see Appendix 5):

c. **Specific goals and objectives**:
Heat content anomalies of the upper ocean along AX-3 and its fluctuations on inter-annual time scales
Monitoring of the ocean climate variability and change in the North Atlantic because of its impact on European climate.

d. **Major challenges and difficulties**:
Budget restrictions may reduce BSH activities within the SOOP.

e. **Description of XBT equipment**:

i. **XBT instrumentation and probes**:
Sippican MK-12 unit
Sippican Fast Deep (mod. T-5 probes) (1200 m depth range)
Sippican Deep Blue XBT (800 m depth range)

ii. **XBT acquisition software**:
NOAA SEAS IV (rev. 4.54)

f. **Related sampling programmes**:
TESAC, TRACKOB

g. **Observation transmission systems** (method / transmission problems / comments):
Ship → METEOSAT → EUMETSAT (Darmstadt., Germany) → DWD (Offenbach, Germany) → BSH (Hamburg, Germay)

h. **Data management** (monitoring / archival / quality control / exchange):
- Internal monitoring of SOOP efficiency and data archival
- Internal quality control (BSH) of real-time data and feedback to observers
- Data transfer to GTS
- Delayed mode data have been submitted to the responsible data center after data processing and quality check (NOAA/NODC and DOD of BSH)
- Delayed real-time data have been submitted to MEDS in Ottawa, Canada

i. **Coordination and collaboration** (national / international):
Institut für Meereskunde der Universität Kiel (EU-project CAVASSOO, TSG on CC “Falstaff”)

Active participation in JCOMM in cooperation with the German Weather Service (DWD)

j. **Research and development**:
Evaluation of autonomous profiling floats within ARGO as a successor of the extremely cost-effective use of XBTs.

k. **Instrument testing and comparison facilities**:
On research cruises XBT/XCTD versus CTD comparison.
Laboratory calibration facilities at BSH

l. **Other comments**:
Because of budget restrictions we have to end our activities on the Europe - Brazil line AX 11 by end of 2003.
We would like to encourage other groups to step in and keep the data flow running. By providing XBTs for this purpose to the BSH we would be able to continue our previous work.

7. ASAP:

a. **Catalogue of ASAP vessels in 2002** (see Appendix 6):

b. **ASAP performance in 2002** (see Appendix 7):
In switching from Meteosat to Inmarsat transmission ("Hornbay" in Feb 2002, "Meteor" in Mai 2002) it was expected to achieve better ratios of GTS available Temps. The station logs report 100% successful transmissions to Goonhilly, although the GTS availability is below this figure .

c. **Data management** (monitoring / archival / quality control / exchange):
Monitoring of German ASAP Temps on GTS. Archiving of GTS Temps and back up (high resolution). Quality control and data correction for research purposes.

d. **Coordination and collaboration** (national / international):
Cooperation with national VOS management e.g. for ship recruitment and system maintenance. Contribution of data and annual reports to the ASAP panel.

e. **Research and development**:

f. **Instrument testing and comparison facilities**:

g. **Other comments**:
In 2003 Germany took over the responsibility for E-ASAP within EUMETNET/EUCOS, just starting with the first operational period 2003 – 2006. Seven European National Agencies coordinate their ASAP activities with respect to the goals of EUCOS. Germany will substitute 3 ASAP units into this programme.

Appendix 1. Participating national marine organizations.

Organization	Deutscher Wetterdienst (DWD)
Programmes (1)	VOS, ASAP, VOSClim
Website URL	http://www.dwd.de/

Organization	Bundesamt für Seeschifffahrt und Hydrographie (BSH)
Programmes (1)	SOOP / GOOS
Website URL	http://www.bsh.de/de/Meeresdaten/Beobachtungen/Klima/bsh_soop_status.pdf

Organization	Institut für Meereskunde an der Universität Kiel (IfM Kiel)
Programmes (1)	CAVASSOO
Website URL	http://www.ifm.uni-kiel.de/fb/fb2/ch/research/cavassoo/index.htm

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

(1) Programmes: List the programmes (VOS, SOOP, ASAP) that each organization participates in. Include additional details, e.g (data management) where appropriate.

Appendix 2: National Focal Points.

Focal Point (1)	SOT, VOS, VOSClim, (ASAP, PMO)	ASAP	PMO
Name	Wagner, Volker	Schreiber, Klaus-Jürgen	Weidner, Volker
Title	Dr.	Observation Network Manager	PMO supervisor
Agency	Deutscher Wetterdienst	Deutscher Wetterdienst	Deutscher Wetterdienst
Postal Address	Bernhard-Nocht-Str. 76 20359 Hamburg	Kaiserleistr. 42 63067 Offenbach	Bernhard-Nocht-Str. 76 20359 Hamburg
Email	volker.wagner@dwd.de	kalus-juergen.schreiber@dwd.de	volker.weidner@dwd.de
Telephone	+49 (0)40 6690 1430	+49 (0)69 8062 2814	+49 (0)40 6690 1410
Facsimile	+49 (0)40 6690 1499	+49 (0)69 8062 3809	+49 (0)40 6690 1496

Focal Point (1)	SOOP	SOOP	
Name	Mittelstaedt, Ekkehard	König, Peter	
Title	Dr.		
Agency	Bundesamt für Seeschifffahrt und Hydrographie	Bundesamt für Seeschifffahrt und Hydrographie	
Postal Address	P.O. Box 30 12 20 D-20305 Hamburg Germany	P.O. Box 30 12 20 D-20305 Hamburg Germany	
Email	ekkehard.mittelstaedt@bsh.de	peter.koenig@bsh.de	
Telephone	+49 40 3190 3220	+49 40 3190 3212	
Facsimile	+49 40 3190 5000	+49 40 3190 5000	

(1) Focal Point: Insert SOT, VOS, VOSClim, PMO, SOOP or ASAP as appropriate for each national contact.

Appendix 3: List of Port Meteorological Officers.

Port	Hamburg	Hamburg	Hamburg
Name	Volker Weidner (Mr)	Peter Gollnow (Mr)	Host von Bargen (Mr)
Title	PMO Supervisor	PMO	PMO
Postal Address	Deutscher Wetterdienst Hafendienst Bernhard-Nocht-Str. 76 D-20359 Hamburg	Deutscher Wetterdienst Hafendienst Bernhard-Nocht-Str. 76 D-20359 Hamburg	Deutscher Wetterdienst Hafendienst Bernhard-Nocht-Str. 76 D-20359 Hamburg
Email	volker.weidner@dwd.de	pmo@dwd.de	pmo@dwd.de
Telephone	+49 (0) 6690 1410	+49 (0) 6690 1411	+49 (0) 6690 1412
Facsimile	+49 (0) 6690 1496	+49 (0) 6690 1496	+49 (0) 6690 1496
Comment			

Port	Bremen	Bremerhaven	Rostock
Name	Ulrich Ranke (Mr)	Henning Hesse (Mr)	Christel Heidner (Ms)
Title	PMO	PMO	PMO
Postal Address	Deutscher Wetterdienst Hafendienst Flughafendamm 45 D-28199 Bremen	Deutscher Wetterdienst Hafendienst An der neuen Schleuse D-27570 Bremerhaven	Deutscher Wetterdienst Hafendienst Seestr. 15a D-18119 Rostock
Email	pmo@dwd.de	pmo@dwd.de	pmo@dwd.de
Telephone	+49 (0)421 5372 493	+49 (0)471 700 40 18	+49 (0)381 54388 30/31
Facsimile	+49 (0)421 5372 498	+49 (0)471 700 40 17	+49 (0)381 54388 63
Comment			

Port	Rostock		
Name	Christine Bergs (Ms)		
Title	PMO		
Postal Address	Deutscher Wetterdienst Hafendienst Seestr. 15a D-18119 Rostock		
Email	pmo@dwd.de		
Telephone	+49 (0)381 54388 30/31		
Facsimile	+49 (0)381 54388 63		
Comment			

Port			
Name			
Title			
Postal Address			
Email			
Telephone			
Facsimile			
Comment			

Appendix 4. Catalogue of ships participating in VOSClim in 2002.

Ship name	Callsign	IMO Number	VOSClim recruitment date (yyyymmdd)	VOSClim withdrawal date (yyyymmdd)	Comments (e.g. details of name and/or callsign changes)
POHANG SENATOR	DQVN	9147071	01 Sept. 2002		
PUDONG SENATOR	DQVI	9141261	01 Sept. 2002		
PUGWASH SENATOR	DQVL	9141297	01 Nov. 2002		

Appendix 5. Catalogue of ships participating in SOOP in 2002.

Ship name	Callsign	Operating Agency	SOOP recruitment date (yyyymmdd)	SOOP withdrawal date (yyyymmdd)	XBT line and (sampling mode)	Sampling systems (e.g. XBT, TSG, CTD, XCTD, pCO_2)
CMS Bonn Express	DGNB	BSH	20001101	2003 ???	AX-3 (HDX)	XBT
CMS Cap Finisterre	DACF	BSH	19960601	End of 2003 ?	AX-11 (FRX)	XBT
CC Falstaff	SLCO	IfM Kiel	20020201		AX-3	TSG, pCO_2
RV Gauß	DBBX	BSH	19930501		AX-3 (HDX)	CTD

Appendix 6. Catalogue of ships participating in ASAP in 2002.

2 ASAP units operated during the year on 2 ships

Type of ship (1)	Ship name	Callsign	Comms method (2)	Windfind method / sonde type (3)	Launch method (4)	Launch height (5)	Area of operation (6)	ASAP unit ID No.
Research	Meteor	DBBH	Inmarsat - C	GPS RS80-15G	Container (semi-automatic)	8 m	worldwide	2
Merchant	Hornbay	ELML7	Inmarsat - C	GPS RS80-15G	Container (semi-automatic)	10 m	North Atlantic	5

(1) Type of ship: Merchant, research, supply
(2) Comms method: Inmarsat C or others
(3) Windfind method / sonde type: eg. GPS/Vaisala RS80-G, Loran/Vaisala RS80-L, VIZ GPS Mark II Microsonde, etc
(4) Launch method: deck launcher (portable), deck launcher (fixed), container (manual), container (semi automatic), other
(5) Launch height: height above sea level from where the sonde is released
(6) Ocean area: North Pacific, North Atlantic, Indian Ocean, variable

Appendix 7. ASAP performance in 2002.

Callsign	Total number of sondes launched	Number of TEMP SHIP transmitted	Number of relaunches	Average terminal sounding height (km)	Balloon size (gm)	Percentage on GTS (see note)
DBBH	412	412	2	20	200	80
ELML7	625	625	34	20	200	77

Percentage on the GTS is the ratio of reports received against reports transmitted, and is based upon reports received at a data centre or GTS insertion point (name)

Ship Observations Team

SOT-II, 28th July – 1st August 2003, London, UK.

Country: Greece

1.

Contact: Hellenic National Meteorological Service
El. Venizelou 14 Helliniko
16777 ATHENS
Greece

2.

3. Participating national marine organizations (see Appendix 1):

4. Focal Points (see Appendix 2):

5. VOS:

a. **Programme description**:

Category	Number of ships at 31 Dec 2002	Comments
Selected	10	
Supplementary	-	
Auxiliary	8	
Other (specify)	-	
Total VOS fleet	18	

Number of VOS vessels recruited in 2002	-
Number of VOS vessels decommissioned in 2002	2
Percentage of the VOS (selected ships only) that did not report in Dec 2002 (to nearest whole percent)	50%
Total number of SHIP messages sent on the GTS in 2002	1.376

b. **Specific goals and objectives**:

To improve the quality of ship reports using respective software. That depends on onboard pc, since HNMS for the time being doesn't supply laptop.

c. **Major challenges and difficulties**:

Maintain the number of VOS and reactivating observers. Increase the number of observations since past years duties of deck officers have increased and they have less and less time for observation.

d. **Description of VOS equipment**:

i. **Standard meteorological equipment supplied by the NMS**:

Precision aneroid barometer
Marine Barograph (Selected)
Sling thermometers (Auxiliary)
Screen psychrometer with wet and dry thermometers (Selected)

ii. **Shipboard AWS systems**:

Name	Number of ships at 31 Dec 2002	Manufacturer and model
	NIL	

iii. **Electronic logbooks** (using either ship's own or NMS supplied computer):

Software	Number of ships at 31 Dec 2002	Comments
TurboWin	2	Software on board computers

e. **Observation transmission systems** (method / transmission problems / comments):

Ship -> Inmarsat-C -> Code 41 accepting Thermopylae LES -> HNMS's Message Switching System. All messages are inserted GTS after format error correction if needed. No significant transmission problems occurred.

f. **Data management** (monitoring / archival / quality control / exchange):

Monitoring of VOS and data archival
WMO monitoring results are used to correct observational errors.
Data contribution to Responsible Members (GCCs) is expected that will start in 2003.

g. **Coordination and collaboration** (national / international):

h. **Research and development:**

i. **Instrument testing and comparison facilities**:

When visiting the ship, check and calibrate using precision instruments and If needed replacement with other.

j. **Capacity building** (national / international):

Training of observers with sort time seminars organized by HNMS and if necessary sometimes on board. Training of PMO attending international workshops when it is possible.

k. **VOS promotion** (award schemes / publications & literature):

The national award system depends on the annual contribution (total number of observations made by each VOS). Ship related plaque accompanied with person related paper award both dedicated by HNMS are given.
Code tables and relevant material are given every VOS.

l. **List of Port Meteorological Officers** (see Appendix 3):

m. **Ship inspections and regime**:

Inspection on regular basis twice a year

n. **VOSClim**:

i. **Contribution to the VOSClim project**:

Number of ships participating in VOSClim as at 31 Dec 2002	NA
Number of VOSClim recruitments during 2002	NA
Number of VOSClim recruitments planned for 2003	NA
Target number of ships to participate in VOSClim	NA

ii. **Standard VOSClim observing equipment** (including details of AWS systems or electronic logbook used):

iii. **Comments** (data issues / instrumentation / difficulties experienced):

iv. **Catalogue of VOSClim ships** (NA)

o. **Other comments**:

Appendix 1. Participating national marine organizations.

Organization	Hellenic National Meteorological Service
Programmes (1)	VOS
Website URL	www.hnms.gr

(1) Programmes: List the programmes (VOS, SOOP, ASAP) that each organization participates in. Include additional details, e.g (data management) where appropriate.

Appendix 2: National Focal Points.

Focal Point (1)	**VOS, PMO**		
Name	Myrsilidis Michael		
Title	Marine Meteorology Section		
Agency	Hellenic National Meteorological Service		
Postal Address	El. Venizelou 14 Hellinikon 16777 ATHENS Greece		
Email	mmirsi@hnms.gr		
Telephone	+302109699013		
Facsimile	+302109628952, +302109649646		

(1) Focal Point: Insert SOT, VOS, VOSClim, PMO, SOOP or ASAP as appropriate for each national contact.

Appendix 3: List of Port Meteorological Officers.

Port	Piraeus		
Name	Myrsilidis Michael		
Title	PMO		
Postal Address	Hellenic National Meteorological Service El. Venizelou 14 Hellinikon 16777 ATHENS Greece		
Email	mmirsi@hnms.gr		
Telephone	+302109699013		
Facsimile	+302109628952, +302109649646		
Comment			

Ship Observations Team

SOT-II, 28th July – 1st August 2003, London, UK.

Country: Hong Kong, China

1. Contact: Dr W T Wong, Hong Kong Observatory

2. Participating national marine organizations (see Appendix 1): Hong Kong Observatory

3. Focal Points (see Appendix 2): Dr W T Wong, Hong Kong Observatory

4. VOS:

a. **Programme description**:

Category	Number of ships at 31 Dec 2002	Comments
Selected	46	
Supplementary	7	
Auxiliary	0	
Other (specify)	0	
Total VOS fleet	53	

Number of VOS vessels recruited in 2002	0
Number of VOS vessels decommissioned in 2002	14
Percentage of the VOS (selected ships only) that did not report in Dec 2002 (to nearest whole percent)	41 %
Total number of SHIP messages sent on the GTS in 2002	4569

b. **Specific goals and objectives**:

To obtain quality meteorological observations from ships to enable accurate weather forecasts and effective warnings on inclement weather to be made for the purpose of reducing loss of life and property

c. **Major challenges and difficulties**:

Decline in the number of serving VOS due to difficulty in recruiting new ships

d. **Description of VOS equipment**:

i. **Standard meteorological equipment supplied by the NMS**:

Barographs and precision aneroid barometers.

ii. **Shipboard AWS systems**: Nil

Name	Number of ships at 31 Dec 2002	Manufacturer and model

iii. **Electronic logbooks** (using either ship's own or NMS supplied computer): Nil

Software	Number of ships at 31 Dec 2002	Comments

e. **Observation transmission systems** (method / transmission problems / comments):

Method: Radio-telex and INMARSAT
Transmission problems: No problem is reported by Hong Kong VOS
Comments: As use of email is getting more popular on ships, transmission of weather observations from VOS via email may become feasible in the near future.

f. **Data management** (monitoring / archival / quality control / exchange):

Weather observations recorded by Hong Kong VOS are quality checked by the Hong Kong Observatory (HKO) and then exchanged with the Global Collection Centres in the United Kingdom and Germany quarterly. HKO currently keeps a data bank of over 1.9 million ship weather observations for marine climatology studies and applications.

g. **Coordination and collaboration** (national / international):

Hong Kong, China is one of the Responsible Members to prepare marine climatological summaries under the Marine Climatological Summaries Scheme (MCSS) and continues international cooperation regarding the collection, archiving and exchange of marine data.

h. **Research and development:**

A review of the operation of MCSS and the development of oceanographic and marine meteorological products is being conducted in collaboration with other members of the Expert Team in Marine Climatology under JCOMM.

i. **Instrument testing and comparison facilities**:

Meteorological instruments of Hong Kong VOS are checked regularly onboard by the PMO during ship visit. Ship barometers are also checked and compared against the station barometer at HKO.

j. **Capacity building** (national / international):

HKO offers training courses on marine meteorology to local and overseas trainees. Two international courses were organised in 2002.

k. **VOS promotion** (award schemes / publications & literature):

HKO publishes a newsletter for Hong Kong VOS annually to keep the VOS fleet and shipping companies informed of the latest developments in the Hong Kong marine meteorological service and to foster feedback from ships.

VOS information is published on the HKO web site.

l. **List of Port Meteorological Officers** (see Appendix 3):

m. **Ship inspections and regime**: Nil

n. **VOSClim**: Not applicable

o. **Other comments**:

A web site on port meteorological services in Hong Kong was established in 1998 under the HKO homepage. The web site provides the marine community with information on weather forecasts and warnings, code for ship weather reports, the Hong Kong VOS scheme and web version of the newsletter for Hong Kong VOS. The URL of the web site is:

http://www.hko.gov.hk/wservice/tsheet/pms/index_e.htm

Appendix 1. Participating national marine organizations.

Organization	Hong Kong Observatory
Programmes (1)	VOS – recruitment and management of VOS; collection, archive, quality control of data and international data exchange
Website URL	http://www.hko.gov.hk/

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

(1) Programmes: List the programmes (VOS, SOOP, ASAP) that each organization participates in. Include additional details, e.g (data management) where appropriate.

Appendix 2: National Focal Points.

Focal Point (1)	VOS		
Name	Dr W T Wong		
Title	Senior Scientific Officer		
Agency	Hong Kong Observatory		
Postal Address	134A Nathan Road, Kowloon Hong Kong		
Email	wtwong@hko.gov.hk		
Telephone	+852 2926 8430		
Facsimile	+852 2311 9448		

Focal Point (1)	PMO		
Name	Dr W T Wong		
Title	Senior Scientific Officer		
Agency	Hong Kong Observatory		
Postal Address	134A Nathan Road, Kowloon Hong Kong		
Email	wtwong@hko.gov.hk		
Telephone	+852 2926 8430		
Facsimile	+852 2311 9448		

(1) Focal Point: Insert SOT, VOS, VOSClim, PMO, SOOP or ASAP as appropriate for each national contact.

Appendix 3: List of Port Meteorological Officers.

Port	Hong Kong, China		
Name	Mr C F Wong		
Title	Port Meteorological Officer		
Postal Address	134A Nathan Road, Kowloon Hong Kong		
Email	hkopmo@hko.gov.hk		
Telephone	+852 2926 3113		
Facsimile	+852 2311 9448		
Comment			

Port			
Name			
Title			
Postal Address			
Email			
Telephone			
Facsimile			
Comment			

Ship Observations Team

SOT-II, 28th July – 1st August 2003, London, UK.

Country: ICELAND

1.

Contact: Hjartarson, Hreinn

2.

3. Participating national marine organizations (see Appendix 1):

4. Focal Points (see Appendix 2):

5. VOS:

a. **Programme description**:

Category	Number of ships at 31 Dec 2002	Comments
Selected	10	
Supplementary		
Auxiliary		
Other (specify)	3	Coast guard - no callsign reported
Total VOS fleet	13	

Number of VOS vessels recruited in 2002	1
Number of VOS vessels decommissioned in 2002	1
Percentage of the VOS (selected ships only) that did not report in Dec 2002 (to nearest whole percent)	%
Total number of SHIP messages sent on the GTS in 2002	

b. **Specific goals and objectives**:

c. **Major challenges and difficulties**:

d. **Description of VOS equipment**:

i. **Standard meteorological equipment supplied by the NMS**:

Sling Thermometer, Aneroid Barometer

ii. **Shipboard AWS systems**:

Name	Number of ships at 31 Dec 2002	Manufacturer and model

iii. **Electronic logbooks** (using either ship's own or NMS supplied computer):

Software	Number of ships at 31 Dec 2002	Comments

e. **Observation transmission systems** (method / transmission problems / comments):

Telex- to nearest Coastal Radiostation

f. **Data management** (monitoring / archival / quality control / exchange):

g. **Coordination and collaboration** (national / international):

h. **Research and development:**

i. **Instrument testing and comparison facilities**:

Yearly calibration of barometers

j. **Capacity building** (national / international):

k. **VOS promotion** (award schemes / publications & literature):

l. **List of Port Meteorological Officers** (see Appendix 3):

m. **Ship inspections and regime**:

n. **VOSClim**:

i. **Contribution to the VOSClim project**:

Number of ships participating in VOSClim as at 31 Dec 2002	
Number of VOSClim recruitments during 2002	
Number of VOSClim recruitments planned for 2003	
Target number of ships to participate in VOSClim	

ii. **Standard VOSClim observing equipment** (including details of AWS systems or electronic logbook used):

iii. **Comments** (data issues / instrumentation / difficulties experienced):

iv. **Catalogue of VOSClim ships** (see Appendix 4):

o. **Other comments**:

6. ASAP:

a. **Catalogue of ASAP vessels in 2002** (see Appendix 6): App. 6

b. **ASAP performance in 2002** (see Appendix 7): App.7

c. **Data management** (monitoring /archival /quality control / exchange):

Automatic transmission into GTS via INMARSAT-C Email.

d. **Coordination and collaboration** (national / international):

In collaboration with Swedish Meteorological and Hydrological Institute

e. **Research and development**:

f. **Instrument testing and comparison facilities**:

Standard baseline predeployment testing of Radiosondes

g. **Other comments**:

Appendix 1. Participating national marine organizations.

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

(1) Programmes: List the programmes (VOS, SOOP, ASAP) that each organization participates in. Include additional details, e.g (data management) where appropriate.

Appendix 2: National Focal Points.

Focal Point (1)	**VOS and ASAP**		
Name	Hjartarson, Hreinn		
Title	Mr.		
Agency	Icelandic Met. Office		
Postal Address	Vedursofa Islands, Bustadavegur 9, IS-150 Reykjavik, ICELAND		
Email	hreinn@vedur.is		
Telephone	+354 5226000		
Facsimile	+354 5226004		

Focal Point (1)			
Name			
Title			
Agency			
Postal Address			
Email			
Telephone			
Facsimile			

(1) Focal Point: Insert SOT, VOS, VOSClim, PMO, SOOP or ASAP as appropriate for each national contact.

Appendix 6. Catalogue of ships participating in ASAP in 2002.

…1….. ASAP units operated during the year on 2 ships

Type of ship (1)	Ship name	Callsign	Comms method (2)	Windfind method / sonde type (3)	Launch method (4)	Launch height (5)	Area of operation (6)	ASAP unit ID No.
Merchant	Lagarfoss	V2XO	Inmarsat-C	LoranC/VaisRS80	Container/Manual	13	North Atlantic	IS-1
Merchant	Skogafoss	V2XM	Inmarsat-C	LoranC/VaisRS80	Container/Manual	13	North Atlantic	IS-1

(1) Type of ship: Merchant, research, supply
(2) Comms method: Inmarsat C or others
(3) Windfind method / sonde type: eg. GPS/Vaisala RS80-G, Loran/Vaisala RS80-L, VIZ GPS Mark II Microsonde, etc
(4) Launch method: deck launcher (portable), deck launcher (fixed), container (manual), container (semi automatic), other
(5) Launch height: height above sea level from where the sonde is released
(6) Ocean area: North Pacific, North Atlantic, Indian Ocean, variable

M/v Lagarfoss operating January – August. Skogafoss operating August – December. The rotation time is 4 weeks on the route Reykjavik- Argentia – Norfolk - Argentia – Reykjavik. Most of the soundings are between Reykjavik and Argentia 0000 and 1200 UTC.

Appendix 7. ASAP performance in 2002.

Callsign	Total number of sondes launched	Number of TEMP SHIP transmitted	Number of relaunches	Average terminal sounding height (km)	Balloon size (gm)	Percentage on GTS (see note)
V2XO	122	111	2	19.3	300	77%
V2XM	54	47	0	21.7	300	92%

Percentage on the GTS is the ratio of reports received against reports transmitted, and is based upon reports received at a data centre or GTS insertion point (name) BIRK

Ship Observations Team

SOT-II, 28th July – 1st August 2003, London, UK.

Country: Ireland

1.

Contact:

Ms Evelyn Murphy

Marine Unit,
Met Eireann,
Glasnevin Hill,
Dublin 9,
Ireland.

Tel: 00353-1-8064290, Fax: 00353-1-806427,
Email: evelyn.murphy@met.ie

2.

3. **Participating national marine organizations** (see Appendix 1):

4. **Focal Points** (see Appendix 2):

5. **VOS**:

a. **Programme description**:

Category	Number of ships at 31 Dec 2002	Comments
Selected	16	
Supplementary		
Auxiliary		
Other (specify)		
Total VOS fleet	16	

Number of VOS vessels recruited in 2002	8
Number of VOS vessels decommissioned in 2002	2
Percentage of the VOS (selected ships only) that did not report in Dec 2002 (to nearest whole percent)	56 %
Total number of SHIP messages sent on the GTS in 2002	?

b. **Specific goals and objectives**:

To contribute to the WMO VOS and to increase the number of observations around

Ireland and in the NE Atlantic

c. **Major challenges and difficulties**:

Transmission of many of the reports is by Fax and phone to HQ Met Eireann where they are put onto the GTS by hand. Many of the reports are missed.

d. **Description of VOS equipment**:

i. **Standard meteorological equipment supplied by the NMS**:

Barograph and Barometer (or use and calibrate ships own), Whirling Psychrometer, Sea bucket and thermometer and sheath, hand-held anemometer, stationary e.g. log books and spares e.g. extra thermometers

ii. **Shipboard AWS systems**:

Name	Number of ships at 31 Dec 2002	Manufacturer and model
EIQN	1	Vaisala ship AWS

iii. **Electronic logbooks** (using either ship's own or NMS supplied computer):

Software	Number of ships at 31 Dec 2002	Comments
0	0	0

e. **Observation transmission systems** (method / transmission problems / comments):

Coast Radio Stations, Email, Phone and Fax, satellite

f. **Data management** (monitoring / archival / quality control / exchange):

Monitored and plotted if received within HH+75, automatically archived and exchanged. Quality controlled approximately 6 weeks later.

g. **Coordination and collaboration** (national / international):

Transmission of other Countries ship observations close to the Irish coast, these are mainly UK ships

h. **Research and development:**

none

i. **Instrument testing and comparison facilities**:

On-going comparisons of MSL readings and subsequent adjustments of instruments

j. **Capacity building** (national / international):

On-going

k. **VOS promotion** (award schemes / publications & literature):

Some small awards for long time observers.

l. **List of Port Meteorological Officers** (see Appendix 3):

m. **Ship inspections and regime**:

All ships visited 1 or 2 times per year. Extra visits also when maintenance of instruments required. Automatic station serviced every 4 months including sensor change, overhaul once per year.

n. **VOSClim**:

i. **Contribution to the VOSClim project**:

Number of ships participating in VOSClim as at 31 Dec 2002	0
Number of VOSClim recruitments during 2002	0
Number of VOSClim recruitments planned for 2003	0
Target number of ships to participate in VOSClim	0

Appendix 1. Participating national marine organizations.

Organization	Met Eireann, Glasnevin Hill, Dublin 9, Ireland
Programmes (1)	VOS
Website URL	www.met.ie

(1) Programmes: List the programmes (VOS, SOOP, ASAP) that each organization participates in. Include additional details, e.g (data management) where appropriate.

Appendix 2: National Focal Points.

Focal Point (1)	**VOS**		
Name	Ms Evelyn Murphy		
Title	Marine Meteorologist		
Agency	Met Eireann		
Postal Address	Marine Unit Met Eireann Glasnevin Hill Dublin 9 Ireland		
Email	evelyn.murphy@met.ie		
Telephone	+353-1-8064290		
Facsimile	+353-1-8064247		

(1) Focal Point: Insert SOT, VOS, VOSClim, PMO, SOOP or ASAP as appropriate for each national contact.

Appendix 3: List of Port Meteorological Officers.

Port	Dublin		
Name	Mr Columba Creamer		
Title	Port Meteorological Officer		
Postal Address	Marine Unit Met Eireann Glasnevin Hill Dublin 9 Ireland		
Email	columba.creamer@met.ie		
Telephone	+353-1-8064228		
Facsimile	+353-1-8064247		
Comment	Office hours Monday, Tuesday, Thursday.		

Port	Rosslare		
Name	Denis O' Mahony		
Title	Port Meteorological Officer		
Postal Address	Station Manager Meteorological Office Rosslare Harbour Co. Wexford		
Email	metrosslare@eircom.net		
Telephone	+353-53-33113		
Facsimile			
Comment	24 hours		

Port	Cork/Waterford		
Name	Mr Brian Doyle		
Title	Port Meteorological Officer		
Postal Address	Station Manager Met Eireann Cork Airport Co. Cork		
Email	metcorkapt@eircom.net		
Telephone	+353-21-4917753		
Facsimile	+353-21-4317405		
Comment	24 hours		

Appendix 4. Catalogue of ships participating in VOS in 2002.

Ship name	Callsign	IMO Number	VOS recruitment date (yyyymmdd)	VOS withdrawal date (yyyymmdd)	Comments (e.g. details of name and/or callsign changes)
Ulysses	EICB	?	20020416		
Seahorse Supporter	EIQK		19960601		
Seahorse Supplier	EIFC		19960601		
Normandy	EINF		?		Few reports
Isle of Inishmore	EIDX		?		Few reports
L.E. Eithne	EIYS		20021101		Not yet reporting in full ships code(training).Expected on GTS soon.
L.E. Roisin	EIWN		20021101		Not yet reporting in full ships code(training).Expected on GTS soon.
L.E. Niamh	EIYN		20021101		Not yet reporting in full ships code(training).Expected on GTS soon.
L.E.. Aisling	EIYP		20021101		Not yet reporting in full ships code(training).Expected on GTS soon.
L.E. Aoife	EIYM		20021101		Not yet reporting in full ships code(training).Expected on GTS soon.
L.E. Emer	EIYX		20021101		Not yet reporting in full ships code(training).Expected on GTS soon.
L.E. Orla	EIYQ		20021101		Not yet reporting in full ships code(training).Expected on GTS soon.
L.E. Ciara	EIYT		20021101		Not yet reporting in full ships code(training).Expected on GTS soon.
I.L.V.Granuaile	EIPT		20000131		New ship commissioned on this date-Old ship (same name) reported for several years previously.
Asgard	EIQJ		Unknown		
Celtic Voyager	EIQN		19991202		Automatic station which reports fewer parameters hourly
M.V. Bligh	J8TW9			200206--	Contracts completed in early June, 2002. Not now reporting for Irish VOS.
M.V. Siren	J8UA2			200206--	Contracts completed in early June, 2002. Not now reporting for Irish VOS.

Ship Observations Team

SOT-II, 28th July – 1st August 2003, London, UK.

Country: Israel

Contact: Matti Weiss, Israel Met. Service

Participating national marine organizations (see Appendix 1):

Focal Points (see Appendix 2):

VOS:

Programme description:

Category	
Number of ships at 31 Dec 2002	23
Comments	

Selected: 23

Supplementary: none

Auxiliary: none

Other (specify) none

Total VOS fleet: 23 ships

Number of VOS vessels recruited in 2002: 3

Number of VOS vessels decommissioned in 2002: 1

Percentage of the VOS (selected ships only) that did not report in Dec 2002 (to nearest whole percent):
5%

Total number of SHIP messages sent on the GTS in 2002: not known

Specific goals and objectives:

Major challenges and difficulties:
Some of our ships arrive to their home port only once a year or less

Description of VOS equipment:
Standard meteorological equipment supplied by the NMS:
Marine meteorological shed, thermometers, barometer, barograph, anemometer.

Shipboard AWS systems:

Name
Number of ships at 31 Dec 2002
Manufacturer and model

Electronic logbooks (using either ship's own or NMS supplied computer):

Software
Number of ships at 31 Dec 2002
Comments: **no electronic logbooks in the Israeli ships.**

Observation transmission systems (method / transmission problems / comments):

Data management (monitoring / archival / quality control / exchange):

Yes	yes	yes	?

Coordination and collaboration (national / international):

Research and development:

Instrument testing and comparison facilities:
Pressure calibration with aneroid barometer.

Capacity building (national / international):

VOS promotion (award schemes / publications & literature):

List of Port Meteorological Officers (see Appendix 3):
Mrs. Hani Arbel

Ship inspections and regime:
All the ships are inspected 4 – 6 times a year.

VOSClim**: no participation**

Contribution to the VOSClim project:

Number of ships participating in VOSClim as at 31 Dec 2002

Number of VOSClim recruitments during 2002

Number of VOSClim recruitments planned for 2003

Appendix 1. Participating national marine organizations.

Organization Israel Meteorological Service

Programmes (1) VOS
The data is quality-controlled twice by our PMO and in the marine department of IMS And then archived in the IMS` central computer. Once a year it is sent to the regional centers in Germany and England.

Website URL www.ims.gov.il

Organization

Programmes (1)

Website URL

Organization

Programmes (1)

Website URL

Organization

Programmes (1)

Website URL

Organization

Programmes (1)

Website URL

Organization

Programmes (1)

Website URL

(1) Programmes:
List the programmes (VOS, SOOP, ASAP) that each organization participates in. Include additional details, e.g (data management) where appropriate.

Appendix 2: National Focal Points.

Focal Point (1)

Name: Mrs. Hani Arbel

Title Port Meteorological Officer Haifa port.

Agency: IMS office in the port of Haifa.

Postal Address P.O. Box 33572 Haifa Israel

Email _

Telephone 972 4 8664427

Facsimile 972 4 8664427

Focal Point (1)

Name

Title

Agency

Postal Address

Email

Telephone

Facsimile

(1) Focal Point:
Insert SOT, VOS, VOSClim, PMO, SOOP or ASAP as appropriate for each national contact.

Appendix 3: List of Port Meteorological Officers.

Port Haifa

Name Hani Arbel

Title Head Haifa station, IMS

Postal Address: P.O. Box 33572, Haifa

Email

Telephone 972 4 8664427

Facsimile 972 4 8664427

Ship Observations Team

SOT-II, 28th July – 1st August 2003, London, UK.

1. Country: Japan

2. Contact: Jun'ichi HIROSAWA

3. Participating national marine organizations (see Appendix 1):

4. Focal Points (see Appendix 2):

5. VOS:

a. **Programme description**:

Category	Number of ships at 31 Dec 2002	Comments
Selected	356	
Supplementary	51	
Auxiliary	28	
Other (specify)	-	
Total VOS fleet	435	

Number of VOS vessels recruited in 2002	145
Number of VOS vessels decommissioned in 2002	184
Percentage of the VOS (selected ships only) that did not report in Dec 2002 (to nearest whole percent)	75%*
Total number of SHIP messages sent on the GTS in 2002	58,810

* as of Apr. 30, 2003

b. **Specific goals and objectives**:

To provide precise forecasts and warnings to ships.

c. **Major challenges and difficulties**:

The Japan Meteorological Agency (JMA) has upgraded the software named "OBSJMA" (see paragraph 5.d), which helps ship officers/crew to make weather reports on a personal computer, and distributed it to Japanese VOSs. In addition, JMA also give technical supports to development of Automated Weather System (AWS) for Japanese VOSs (see paragraph 5.h).

d. **Description of VOS equipment**:

i. **Standard meteorological equipment supplied by the NMS**:

In Japan, ships are obligated to be equipped with meteorological instruments for themselves. JMA supplies them with guidebooks on marine meteorological observations/reporting and some other related materials. They are available not only in Japanese but also in English for non-Japanese ship officers/crew.

ii. **Shipboard AWS systems**:

Name	Number of ships at 31 Dec 2002	Manufacturer and model
Integrated System for Marine Meteorological Observation	9	Koshin Denki Kogyo Co., Ltd. (Japan)
Meteorological and Oceanographic Observation System	2	Ogasawara Keiki Seisakusho Co., Ltd. (Japan)
Weather Observation System	1	Nippon Electric Instrument Inc. (Japan)
SOAR (Shipboard Oceanographic and Atmospheric Radiation)	1	Brookhaven National Laboratory (USA)

iii. **Electronic logbooks** (using either ship's own or NMS supplied computer):

In 2002, JMA upgraded the OBSJMA, which was originally developed in 1997, for easy and accurate compilation of weather reports using a personal computer. JMA has distributed the upgraded OBSJMA and its operating manuals to about 850 ships.

Software	Number of ships at 31 Dec 2002	Comments
OBSJMA	unspecified	upgraded in 2002

e. **Observation transmission systems** (method / transmission problems / comments):

Almost all the SHIP messages are transmitted via INMARSAT. Five JMA research vessels use Data Collection Platform (DCP) on Geostationary Meteorological Satellite (GMS).

f. **Data management** (monitoring / archival / quality control / exchange):

Besides the real-time SHIP messages, JMA received ships' weather reports either hand-written in JMA's logbooks or on floppy disks recorded by OBSJMA on a delayed mode basis. JMA operationally digitizes the reports on the logbooks and sends them with data recorded by OBSJMA to the Global Collecting Centres (GCCs) after the Minimum Quality Control procedure of the Marine Climatological Summaries Scheme (MCSS).

g. **Coordination and collaboration** (national / international):

Upon request of PMOs in U.K. and Netherlands, Japanese PMOs deliver weather observational materials of their countries, such as barogram paper and logbooks, to U.K. and Netherlands VOSs at ports in Japan.

h. **Research and development:**

The Japan Weather Association, Tokyo University of Mercantile Marine, and some manufactures have started a project to develop cooperatively low-cost and maintenance-free AWS from FY2002 as a 3-year project with full support of JMA.

i. **Instrument testing and comparison facilities**:

PMOs at six ports in Japan provide the barometer comparison check service. After checking a barometer, they put a tag named "Barometer Correction Card", on which a total correction value (instrumental error and sea level correction) is written, on the barometer. In the case of the port being too far to visit, the barometer comparison check services can be provided via facsimile.

j. **Capacity building** (national / international):

In 2000, VOS training videotape in the English version was produced by the Japan Weather Association under the supervision of JMA with financial supports of Sasakawa Peace Foundation Grant and distributed to WMO Members operating VOS. In 2002, the Korea Meteorological Administration (KMA) translated some copies of the videotape into Korean for their own use.

k. **VOS promotion** (award schemes / publications & literature):

The Ministry of Land, Infrastructure and Transport (MLIT), to which JMA is affiliated, and JMA make annual awards to several ships for excellence in observations/reporting for encouragement. In 2002, one ship (*DAIO ROBIN (3FKD6)*) was awarded by the Minister of MLIT and six ships (*TAIO FRONTIER (3EZF5)*, *NIKKEI EAGLE (3FIG5)*, *AQUARIUS ACE (3FHB8)*, *SHIRASE (JSVY)*, *AKASHI BRIDGE (H3QM)* and *LNG FLORA (JPBY)*) by the Director-General of JMA.

l. **List of Port Meteorological Officers** (see Appendix 3):

Besides Yokohama, Nagoya and Kobe where PMOs are officially assigned, port meteorological services are available at Hakodate, Nagasaki and Maizuru. PMOs checked a total of 960 ships' barometers during 2002.

m. **Ship inspections and regime**:

MLIT inspects ships at ports in Japan, detains some of them due to serious deficiency and posts the list of them on its web site (http://www.mlit.go.jp/english/psc/psc.html).

n. **VOSClim**:

i. **Contribution to the VOSClim project**:

Number of ships participating in VOSClim as at 31 Dec 2002	none
Number of VOSClim recruitments during 2002	none
Number of VOSClim recruitments planned for 2003	5
Target number of ships to participate in VOSClim	5 (in the meantime)

ii. **Standard VOSClim observing equipment** (including details of AWS systems or electronic logbook used):

Integrated Systems for Marine Meteorological Observation made by Koshin Denki Kogyo Co., Ltd. (see paragraph 5.d.ii) are installed on the 5 research vessels of JMA.

iii. **Comments** (data issues / instrumentation / difficulties experienced):

JMA does not usually supply meteorological instrument to VOS as described in paragraph 5.d.i.

iv. **Catalogue of VOSClim ships** (see Appendix 4):

o. **Other comments**:

6. SOOP:

a. **Programme description**:

Operator	JMA/NOAA
Number of XBT SOOP ships at 31 Dec 2002	1
Total number of XBT profiles in 2002	369
Total number of BATHY messages sent on the GTS in 2002	369

Operator	JMA/JAMSTEC
Number of XBT SOOP ships at 31 Dec 2002	2
Total number of XBT profiles in 2002	608 *
Total number of BATHY messages sent on the GTS in 2002	608 *

Operator	Tohoku University
Number of XBT SOOP ships at 31 Dec 2002	1
Total number of XBT profiles in 2002	342
Total number of BATHY messages sent on the GTS in 2002	342

Operator	JMA
Number of XBT SOOP ships at 31 Dec 2002	2
Total number of XBT profiles in 2002	291 **
Total number of BATHY messages sent on the GTS in 2002	291 **

* The number includes that of XCTD sampling (TESAC messages).
** The number is that of CTD/XCTD sampling (TESAC messages) .

b. **Catalogue of SOOP vessels** (see Appendix 5):

c. **Specific goals and objectives**:

(see paragraph 6.i)

d. **Major challenges and difficulties**:

As shown in 6.a, JMA/JAMSTEC continue XBT/XCTD sampling using automated data acquisition and transmission system.

e. **Description of XBT equipment**:

i. **XBT instrumentation and probes**:

Sealand Defender (callsign: KGJB): Sippican MK-12 with probe TSK T-7
MOL Wellington (H9TO) and KATORI (3FRY5):
TSK MK-130 with probe TSK T-7/XCTD
Miyagi Maru (JGBL): TSK MK-130 with probe TSK T-7
Ryofu Maru (JGQH): FSI ICTD
Keifu Maru (JPBN): SBE SBE911plus

ii. **XBT acquisition software**:

MOL Wellington (H9TO) and KATORI (3FRY5):
XBT/XCTD system software by TSK

Ryofu Maru (JGQH): Original software based on Millard and Yang (1993)
Keifu Maru (JPBN): SeaSoft-DOS by SBE

f. **Related sampling programmes**:

Some research vessels of domestic institutes other than those above carry out XBT/XCTD/CTD sampling in the western Pacific and other seas and transmit the data by BATHY/TESAC messages. (see attached table in Appendix 5)

g. **Observation transmission systems** (method / transmission problems / comments):

Almost all the BATHY/TESAC messages are transmitted via INMARSAT. Five JMA vessels use DCP on GMS. Sealand Defender (KGJB) is equipped with SEAS system. MOL Wellington (H9TO) and KATORI (3FRY5) are installed automated XBT/XCTD acquisition and transmission system. BATHY messages of Miyagi Maru (JGBL) are encoded and transmitted onto GTS by JMA after the ship calls at a port in Japan.

h. **Data management** (monitoring / archival / quality control / exchange):

All the data are archived in the Japan Oceanographic Data Center of the Japan Coast Guard. JMA sends the data of MOL Wellington (H9TO) and KATORI (3FRY5) to the WOCE UOT Data Assembly Centre/IFREMER, Brest in France.

i. **Coordination and collaboration** (national / international):

i. JMA/NOAA

JMA had carried out XBT samplings in the North Pacific in cooperation with NOAA as a 5-year project from FY1997 to FY2001 named “Subarctic Gyre Experiment in the North Pacific (SAGE)” which was aimed to observe and investigate the North Pacific subarctic gyre system. After this project, Sealand Defender (KGJB) continued to carry out XBT samplings until the end of 2002 on PX26 using the probes provided by this project.

ii. JMA/JAMSTEC

JMA/JAMSTEC carries out XBT/XCTD samplings to elucidate ocean variation mechanism in the western Pacific (PX05) by MOL Wellington (H9TO) and in the Indian Ocean (northern part of IX09 and eastern part of IX10) by KATORI (3FRY5).

iii. Tohoku University

Tohoku University carries out the project named “Japan Hawaii Monitoring Programme (JAHMP)”. In this project, a fisheries training ship Miyagi Maru (JGBL), carries out XBT samplings from Hawaii to Japan (PX40) three times a year. Miyagi Maru has been replaced with a new vessel (callsign: JCHQ) in March 2003. An Acoustic Doppler Current Profiler (ADCP) is installed on the new Miyagi Maru in cooperation with JAMSTEC.

j. **Research and development**:

k. **Instrument testing and comparison facilities**:

l. **Other comments**:

7. ASAP:

a. **Catalogue of ASAP vessels in 2002** (see Appendix 6):

b. **ASAP performance in 2002** (see Appendix 7):

c. **Data management** (monitoring / archival / quality control / exchange):

Upper-air observation data are published by JMA in a CD-ROM of “DATA REPORT OF OCEANOGRAPHIC AND MARINE METEOROLOGICAL OBSERVATIONS” every year. The CD-ROM include data observed by JMA research vessels, Ryofu Maru, Keifu Maru, Kofu Maru, Seifu Maru, and Chofu Maru.

d. **Coordination and collaboration** (national / international):

i. Special observation of Baiu front over the East China Sea and Kyushu in 2002 (X-BAIU-02) promoted by the Meteorological Research Institute (MRI) of JMA

JMA research vessels, Chofu Maru and Seifu Maru participated in this project and made upper-air observations in the East China Sea in June 2002.

ii. Winter Mesoscale Convective Systems Observations over the Japan Sea-2002 (WMO-02) promoted by MRI of JMA

JMA research vessels, Chofu Maru, Seifu Maru and Kofu Maru, made upper-air observations in the Japan Sea in January and Feburuary 2002 in this project.

e. **Research and development**:

f. **Instrument testing and comparison facilities**:

g. **Other comments**:

Appendix 1. Participating national marine organizations.

Organization	JMA (Japan Meteorological Agency)
Programmes (1)	VOS, SOOP, ASAP
Website URL	http://www.jma.go.jp/JMA_HP/jma/indexe.html, http://goos.kishou.go.jp/

Organization	JAMSTEC (Japan Marine Science and Technology Center)
Programmes (1)	SOOP, ASAP
Website URL	http://www.jamstec.go.jp/forsgc/index_e.html

Organization	Tohoku University
Programmes (1)	SOOP
Website URL	http://www.pol.geophys.tohoku.ac.jp/

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

(1) Programmes: List the programmes (VOS, SOOP, ASAP) that each organization participates in. Include additional details, e.g (data management) where appropriate.

Appendix 2: National Focal Points.

Focal Point (1)	SOT	VOS	VOSClim
Name	Jun'ichi HIROSAWA	Akiko SHOUJI	Akiko SHOUJI
Title	Senior Scientific Officer	Scientific Officer	Scientific Officer
Agency	Japan Meteorological Agency	Japan Meteorological Agency	Japan Meteorological Agency
Postal Address	Marine Division Climate and Marine Department Japan Meteorological Agency 1-3-4, Otemachi, Chiyoda-ku TOKYO 100-8122 Japan	Marine Division Climate and Marine Department Japan Meteorological Agency 1-3-4, Otemachi, Chiyoda-ku TOKYO 100-8122 Japan	Marine Division Climate and Marine Department Japan Meteorological Agency 1-3-4, Otemachi, Chiyoda-ku TOKYO 100-8122 Japan
Email	VOS@climar.kishou.go.jp	VOS@climar.kishou.go.jp	VOS@climar.kishou.go.jp
Telephone	+81-3 3211 6909	+81-3 3211 6909	+81-3 3211 6909
Facsimile	+81-3 3211 6908	+81-3 3211 6908	+81-3 3211 6908

Focal Point (1)	PMO	SOOP	ASAP
Name	Akiko SHOUJI	Jun'ichi HIROSAWA	Jun'ichi HIROSAWA
Title	Scientific Officer	Senior Scientific Officer	Senior Scientific Officer
Agency	Japan Meteorological Agency	Japan Meteorological Agency	Japan Meteorological Agency
Postal Address	Marine Division Climate and Marine Department Japan Meteorological Agency 1-3-4, Otemachi, Chiyoda-ku TOKYO 100-8122 Japan	Marine Division Climate and Marine Department Japan Meteorological Agency 1-3-4, Otemachi, Chiyoda-ku TOKYO 100-8122 Japan	Marine Division Climate and Marine Department Japan Meteorological Agency 1-3-4, Otemachi, Chiyoda-ku TOKYO 100-8122 Japan
Email	VOS@climar.kishou.go.jp	VOS@climar.kishou.go.jp	VOS@climar.kishou.go.jp
Telephone	+81-3 3211 6909	+81-3 3211 6909	+81-3 3211 6909
Facsimile	+81-3 3211 6908	+81-3 3211 6908	+81-3 3211 6908

(1) Focal Point: Insert SOT, VOS, VOSClim, PMO, SOOP or ASAP as appropriate for each national contact.

Appendix 3: List of Port Meteorological Officers.

Port	Yokohama	Nagoya	Kobe
Name	Willie UWABE	Masazou KUMAGAI	Tadayoshi UTSUNOMIYA
Title	Port Meteorological Officer	Port Meteorological Officer	Port Meteorological Officer
Postal Address	Technical Division Yokohama Local Meteorological Observatory 99 Yamate-cho, Naka-ku YOKOHAMA 231-0862 Japan	Observations Division Nagoya Local Meteorological Observatory 2-18 Hiyori-cho, Chigusa-ku NAGOYA 464-0039 Japan	Maritime Meteorological Division Kobe Marine Observatory 1-4-3 Wakinohamakaigan-dori, Chuo-ku KOBE 650-0073 Japan
Email	pmo@climar.kishou.go.jp	pmo@climar.kishou.go.jp	pmo@climar.kishou.go.jp
Telephone	+81-45 621 1991	+81-52 752 6364	+81-78 222 8918
Facsimile	+81-45 622 3520	+81-52 762 1242	+81-78 222 8946
Comment	Telex: 2222163		

Port	Hakodate	Nagasaki	Maizuru
Name	Miyoki IWAMOTO	Satoshi IMAMURA	Kenzou ISA
Title	Maritime Meteorological Officer	Maritime Meteorological Officer	Maritime Meteorological Officer
Postal Address	Maritime Meteorological Division Hakodate Marine Observatory 3-4-4, Mihara, HAKODATE 041-0806 Japan	Maritime Meteorological Division Nagasaki Marine Observatory 11-51, Minami-yamate, NAGASAKI 850-0931 Japan	Maritime Meteorological Division Maizuru Marine Observatory Maizuru Kowan Building, 901, Shimofukui MAIZURU 624-0946 Japan
Email			
Telephone	+81-138 46 2213	+81-95 826 6141	+81-773-76-4114
Facsimile	+81-138 47 7682	+81-95 823 3080	+81-773-76-4114
Comment			

Appendix 4. Catalogue of ships participating in VOSClim in 2002.

Ship name	Callsign	IMO Number	VOSClim recruitment date (yyyymmdd)	VOSClim withdrawal date (yyyymmdd)	Comments (e.g. details of name and/or callsign changes)
Ryofu Maru	JGQH	134996	2003/*		
Keifu Maru	JPBN	136935	2003/*		
Kofu Maru	JDWX	8716112	2003/*		
Chofu Maru	JCCX	8602438	2003/*		
Seifu Maru	JIVB	9053452	2003/*		

***** These vessels are planned to participate in VOSClim during 2003.

Appendix 5. Catalogue of ships participating in SOOP in 2002.

Ship name	Callsign	Operating Agency	SOOP recruitment date (yyyymmdd)	SOOP withdrawal date (yyyymmdd)	XBT line and (sampling mode)	Sampling systems (e.g. XBT, TSG, CTD, XCTD, pCO_2)
Ryofu Maru	JGQH	Japan Meteorological Agency (JMA)	1995/6/30	Now participating	PX45, PX46	CTD/XCTD/XBT/TSG/pCO_2/ADCP
Keifu Maru	JPBN	JMA	2000/9/27	Now participating	PX45, PX46	CTD/XCTD/XBT/TSG/pCO_2/ADCP
Miyagi Maru*	JGBL	Tohoku Univ.	1998/10	2002/12	PX40	XBT
Miyagi Maru*	JCHQ	Tohoku Univ./ JAMSTEC	2003/03	Now participating	PX40	XBT/ADCP
MOL Wellington	H9TO	JMA/JAMSTEC	2000/10	Now participating	PX05	XCTD/XBT
KATORI	3FRY5	JMA/JAMSTEC	2000/9	Now participating	IX09(northern part), IX10(eastern part)	XCTD/XBT
Sealand Defender	KGJB	JMA/NOAA	2000/11 (before Nov 2000, NOAA had operated the ship)	2002/12 (after Dec 2002, NOAA continues to operate the ship)	PX26	XBT

*Miyagi Maru (JGBL) has been replaced with a new vessel (JCHQ) in March 2003.

Other Japanese research vessels which reported BATHY/TESAC messages in 2002.

Ship name	Callsign	Operating Agency	Number of messages
Kofu Maru	JDWX	JMA	428
Chofu Maru	JCCX	JMA	363
Seifu Maru	JIVB	JMA	305
Kaiyo Maru	JNZL	Japan Fisheries Agency (JFA)	93
Shoyo Maru	JLOJ	JFA	314
Hokko Maru	8LRY	JFA	107
Wakataka Maru	JQIX	JFA	174
Soyo Maru	JGKL	JFA	563
Mizuho Maru	JJEB	JFA	194
Yoko Maru	7KDD	JFA	29
Wakatake Maru	JLOV	JFA	170
Torishima	JROY	JFA	217
Fukui Maru	JIVN	JFA	82
Wakatori Maru	7JJX	JFA	39
Shirase	JSVY	Japan Defense Agency	4
Hakuho Maru	JDSS	Univ. of Tokyo	188
Keiten Maru	JGDW	Kagoshima Univ.	47
Mirai	JNSR	Japan Marine Science and Technology Center (JAMSTEC)	502
Ogasawara Maru	JHLO	Tohoku Univ./ JAMSTEC	144

Appendix 6. Catalogue of ships participating in ASAP in 2002.

6 ASAP units operated during the year on 6 ships

Type of ship (1)	Ship name	Callsign	Comms method (2)	Windfind method / sonde type (3)	Launch method (4)	Launch height (5)	Area of operation (6)	ASAP unit ID No.
Research ship	Ryofu Maru	JGQH	Others (DCP via the GMS)	GPS/Vaisala RS80-G	Container (semi automatic)	8m	North Pacific	708514
Research ship	Kofu Maru	JDWX	Others (DCP via the GMS)	GPS/Vaisala RS80-G	Container (semi automatic)	6m	Seas adjacent to Japan	191678
Research ship	Seifu Maru	JIVB	Others (DCP via the GMS)	GPS/Vaisala RS80-G	Container (semi automatic)	6m	Seas adjacent to Japan	458533
Research ship	Chofu Maru	JCCX	Others (DCP via the GMS)	GPS/Vaisala RS80-G	Container (semi automatic)	6m	Seas adjacent to Japan	126155
Research ship	Keifu Maru	JPBN	Others (DCP via the GMS)	GPS/Vaisala RS80-G	Deck launcher (portable)	8m	North Pacific	-
Research ship	Mirai	JNSR	Inmarsat-C	GPS/Vaisala RS80-G	Container (semi automatic)	16m	Variable	-

(1) Type of ship: Merchant, research, supply
(2) Comms method: Inmarsat C or others
(3) Windfind method / sonde type: eg. GPS/Vaisala RS80-G, Loran/Vaisala RS80-L, VIZ GPS Mark II Microsonde, etc
(4) Launch method: deck launcher (portable), deck launcher (fixed), container (manual), container (semi automatic), other
(5) Launch height: height above sea level from where the sonde is released
(6) Ocean area: North Pacific, North Atlantic, Indian Ocean, variable

Appendix 7. ASAP performance in 2002.

Callsign	Total number of sondes launched	Number of TEMP SHIP transmitted	Number of relaunches	Average terminal sounding height (km)	Balloon size (gm)	Percentage on GTS (see note)
JGQH	178 *	177	6	26.9	350	99.4
JDWX	159 *	159	7	24.1	350	100
JIVB	186 *	186	13	24.9	350	100
JCCX	175 *	166	12	24.5	350	94.8
JPBN	19 *	19	7	20.3	350	68.4
JNSR	361 *	277	6	22.7	350	76.7
Percentage on the GTS is the ratio of reports received against reports transmitted, and is based upon reports received at a data centre or GTS insertion point (name: JMA)						

* The number of successful observation.

Ship Observations Team

SOT-II, 28th July – 1st August 2003, London, UK.

Country: KENYA

1.

Contact:
Director,
Kenya Meteorological Department
P. O. Box 30259 Nairobi
e-mail: director@lion.meteo.go.ke

2.

3. Participating national marine organizations (see Appendix 1):

As in Appendix 1

4. Focal Points (see Appendix 2):

As in Appendix 2

5. VOS:

a. **Programme description**:

Category	Number of ships at 31 Dec 2002	Comments
Selected	-	-
Supplementary	-	-
Auxiliary	-	-
Other (specify)	2	Kenya Navy Ships
Total VOS fleet	2	Lack of equipments hinders recruitment.

Number of VOS vessels recruited in 2002	-
Number of VOS vessels decommissioned in 2002	-
Percentage of the VOS (selected ships only) that did not report in Dec 2002 (to nearest whole percent)	%
Total number of SHIP messages sent on the GTS in 2002	-

b. **Specific goals and objectives**:

a) Enhance the National VOS programme through ship recruitment
b) Participate fully in the proposed regional WIOMAP project for the Western Indian Ocean (WIO) region
c) Build capacity in marine management from VOS ships

c. **Major challenges and difficulties**:

a) The development and implementation of the WIOMAP project in the WIO region.
b) Development of the regional VOS/SOOP programme as the observational module of the WIOMAP.
c) The acquisition of state of the art instruments and electronic logbooks software to loan to ships
d) Acquisition of skills in data management.
e) Acquisition of data rescue and archiving facilities, like computers.

d. **Description of VOS equipment**:

i. **Standard meteorological equipment supplied by the NMS**:

None issued by NMS. We use the instruments fitted by the ship owners.

ii. **Shipboard AWS systems**: Not Available

Name	Number of ships at 31 Dec 2002	Manufacturer and model
-	-	-
-	-	-
-	-	-

iii. **Electronic logbooks** (using either ship's own or NMS supplied computer): Not Available

Software	Number of ships at 31 Dec 2002	Comments
-	-	-
-	-	-
-	-	-

e. **Observation transmission systems** (method / transmission problems / comments):

Radio Teletype in use and physical visits/this leads to poor reception due to poor propagation and delays in receiving the data/there is need to establish NAVTex services in the country.

f. **Data management** (monitoring / archival / quality control / exchange):

- Marine data rescue and archival ongoing.
- Exchange restricted to national and regional institutions.
- Quality control skills not well developed.

g. **Coordination and collaboration** (national / international):

There exists good coordination and collaboration among national marine institutions. However coordination and collaboration internationally is minimal due to lack of proper networking facilities.

h. **Research and development:**

- Research is hindered by lack of marine data in the region.
- Successful data acquisition, rescue and archival within the WIO region should improve availability of data sets and promote research.

i. **Instrument testing and comparison facilities**:

The Port office is poorly equipped with facilities for instrument testing and comparisons.

j. **Capacity building** (national / international):

- The one PMO at Mombasa has had extensive training through WMO funded Workshops/Seminars internationally and this knowledge is passed to the staff at the Port and other seafarers on board ships or on training in maritime colleges.
- Implementation of the WIOMAP project will be a major capacity building exercise both nationally and internationally.

k. **VOS promotion** (award schemes / publications & literature):

Promotion is through availing of literature on available marine meteorological services and the institutions' data requirements for the provision of these services.

l. **List of Port Meteorological Officers** (see Appendix 3):

As in Appendix 3

m. **Ship inspections and regime**:

- There is normally free access to ships for inspections.
- Inspections are done every time a ship calls at the port.

n. **VOSClim**: Not Applicable.

i. **Contribution to the VOSClim project**:

Number of ships participating in VOSClim as at 31 Dec 2002	
Number of VOSClim recruitments during 2002	
Number of VOSClim recruitments planned for 2003	
Target number of ships to participate in VOSClim	

ii. **Standard VOSClim observing equipment** (including details of AWS systems or electronic logbook used):

Not Applicable.

iii. **Comments** (data issues / instrumentation / difficulties experienced):

Not Applicable.

iv. **Catalogue of VOSClim ships** (see Appendix 4): Not Applicable.

o. **Other comments**:

More third world countries should be encouraged and enabled to participate in this project so as for them to gain insight of the whole concept.

Appendix 1. Participating national marine organizations.

Organization	KENYA METEOROLOGICAL DEPARTMENT (KMD)
Programmes (1)	VOS/SOOP. Data management undergoing development.
Website URL	www.lion.meteo.go.ke

Organization	KENYA MARINE FISHERIES RESEARCH INSTITUTE. (KEMFRI)
Programmes (1)	SOOP. Have a marine data management centre, Kenya National Oceanographic Data Centre (KeNODC).
Website URL	kemfri@kemfri.co.ke

Organization	KENYA NAVY
Programmes (1)	VOS/SOOP. Working with KMD to develop data management.
Website URL	-

(1) Programmes: List the programmes (VOS, SOOP, ASAP) that each organization participates in. Include additional details, e.g (data management) where appropriate.

Appendix 2: National Focal Points.

Focal Point (1)	**VOS/PMO/SOT/SOOP**		
Name	Ali J. Mafimbo		
Title	Port Meteorologist		
Agency	KENYA METEOROLOGICAL DEPARTMENT		
Postal Address	P. O. Box 98512 Mombasa, Kenya		
Email	mafimbo@yahoo.com director@lion.meteo.go.ke		
Telephone	+254 41 433789 +254 41 225685		
Facsimile	+254 41 433689		

(1) Focal Point: Insert SOT, VOS, VOSClim, PMO, SOOP or ASAP as appropriate for each national contact.

Appendix 3: List of Port Meteorological Officers.

Port	MOMBASA		
Name	Ali J. Mafimbo		
Title	Port Meteorologist		
Postal Address	P. O. Box 98512 Mombasa, Kenya		
Email	mafimbo@yahoo.com director@lion.meteo.go.ke		
Telephone	+254 41 433789 +254 41 225685		
Facsimile	+254 41 433689		
Comment	Active		

Ship Observations Team

SOT-II, 28th July – 1st August 2003, London, UK.

Country: MALAYSIA

1.

Contact:
Alui bin Bahari
Director of Marine Meteorology Division
Malaysian Meteorological Service
Jalan Sultan
46667 P. JAYA
MALAYSIA

2.

3. Participating national marine organizations (see Appendix 1):

4. Focal Points (see Appendix 2):

5. VOS:

a. **Programme description**:

Category	Number of ships at 31 Dec 2002	Comments
Selected	30	
Supplementary	37	
Auxiliary	30	
Other (specify)		
Total VOS fleet	97	

Number of VOS vessels recruited in 2002	0
Number of VOS vessels decommissioned in 2002	6
Percentage of the VOS (selected ships only) that did not report in Dec 2002 (to nearest whole percent)	13 %
Total number of SHIP messages sent on the GTS in 2002	4313

b. **Specific goals and objectives**:

To collect more ocean data and other information of the ships routes in order to provide better forecasts

c. **Major challenges and difficulties**:

Less cooperation from the shipping company/ officers. Ships sold or scrapped with instruments on board

d. **Description of VOS equipment**:

i. **Standard meteorological equipment supplied by the NMS**:

Marine Barographs, Marine Screens, Sea Thermometers, Sea Buckets, Dry and Wet Bulb Thermometers.

ii. **Shipboard AWS systems**:

Name	Number of ships at 31 Dec 2002	Manufacturer and model
-		

iii. **Electronic logbooks** (using either ship's own or NMS supplied computer):

Software	Number of ships at 31 Dec 2002	Comments
-		

e. **Observation transmission systems** (method / transmission problems / comments):

Inmarsat C/ Good coorperation from CES but no ship observation received.

f. **Data management** (monitoring / archival / quality control / exchange):

Difficulties in monitoring data with wrong call signs and checking raw data with no latitude and longitude.

g. **Coordination and collaboration** (national / international):

Good coordination between the three ports, namely Port Klang, Port Kota Kinabalu dan Port Bintulu.

h. **Research and development:**

-

i. **Instrument testing and comparison facilities**:

Only for the pressure reading.

j. **Capacity building** (national / international):

In-house training.

k. **VOS promotion** (award schemes / publications & literature):

Monthly Letter of Appreciation to the ship with minimum 20 observations. Certificates to all principal observing officers. Supply Departmental publications to the ship with highest total number of observations.

l. **List of Port Meteorological Officers** (see Appendix 3):

m. **Ship inspections and regime**:

Every three months.

n. **VOSClim**:

i. **Contribution to the VOSClim project**:

Number of ships participating in VOSClim as at 31 Dec 2002	
Number of VOSClim recruitments during 2002	
Number of VOSClim recruitments planned for 2003	
Target number of ships to participate in VOSClim	

ii. **Standard VOSClim observing equipment** (including details of AWS systems or electronic logbook used):

iii. **Comments** (data issues / instrumentation / difficulties experienced):

iv. **Catalogue of VOSClim ships** (see Appendix 4):

o. **Other comments**:

6. SOOP:

a. **Programme description**:

Operator	
Number of XBT SOOP ships at 31 Dec 2002	
Total number of XBT profiles in 2002	
Total number of BATHY messages sent on the GTS in 2002	

Operator	
Number of XBT SOOP ships at 31 Dec 2002	
Total number of XBT profiles in 2002	
Total number of BATHY messages sent on the GTS in 2002	

Operator	
Number of XBT SOOP ships at 31 Dec 2002	
Total number of XBT profiles in 2002	
Total number of BATHY messages sent on the GTS in 2002	

Operator	
Number of XBT SOOP ships at 31 Dec 2002	
Total number of XBT profiles in 2002	
Total number of BATHY messages sent on the GTS in 2002	

b. **Catalogue of SOOP vessels** (see Appendix 5):

c. **Specific goals and objectives**:

d. **Major challenges and difficulties**:

e. **Description of XBT equipment**:

i. **XBT instrumentation and probes**:

ii. **XBT acquisition software**:

f. **Related sampling programmes**:

g. **Observation transmission systems** (method / transmission problems / comments):

h. **Data management** (monitoring / archival / quality control / exchange):

i. **Coordination and collaboration** (national / international):

j. **Research and development**:

k. **Instrument testing and comparison facilities**:

l. **Other comments**:

7. ASAP:

a. **Catalogue of ASAP vessels in 2002** (see Appendix 6):

b. **ASAP performance in 2002** (see Appendix 7):

c. **Data management** (monitoring / archival / quality control / exchange):

d. **Coordination and collaboration** (national / international):

e. **Research and development**:

f. **Instrument testing and comparison facilities**:

g. **Other comments**:

Appendix 1. Participating national marine organizations.

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

(1) Programmes: List the programmes (VOS, SOOP, ASAP) that each organization participates in. Include additional details, e.g (data management) where appropriate.

Appendix 2: National Focal Points.

Focal Point (1)	**VOS PROGRAMME**		
Name	ALUI BIN BAHARI		
Title	DIRECTOR OF MARINE METEOROLOGY DIVISION		
Agency	MALAYSIAN METYEOROLOGICAL SERVICE		
Postal Address	JALAN SULTAN 46667 P. JAYA MALAYSIA		
Email	alui@kjc.gov.my		
Telephone	603 – 7967 8080		
Facsimile	603 – 7957 8046		

(1) Focal Point: Insert SOT, VOS, VOSClim, PMO, SOOP or ASAP as appropriate for each national contact.

Appendix 3: List of Port Meteorological Officers.

Port	BINTULU		
Name	PAUL CHOG AH POH		
Title	Mr		
Postal Address	PMO, MALAYSIAN METEOROLOGICAL SERVICE, METEOROLOGICAL STATION BINTULU, P.O. BOX 285, 97007 BINTULU, SARAWAK, EAST MALAYSIA		
Email	marine@kjc.gov.my		
Telephone	0 86 - 334148		
Facsimile	0 86 - 314 386		
Comment			

Port	PORT KLANG		
Name	MOHD SHAH BIN ANI		
Title	Mr		
Postal Address	Malaysian Meteorological Service Jalan Sultan 46667 P. JAYA MALAYSIA		
Email	marine@kjc.gov.my		
Telephone	603 – 7967 8084		
Facsimile	603 – 7957 8046		
Comment			

Port	PORT KOTA KINABALU		
Name	Muhamad Sha Ebung		
Title	Port Meteorological Officer		
Postal Address	PMO, MALAYSIAN METEOROLOGICAL SERVICE, 7TH FLOOR, WISMA DANG BANDANG, 88000 Kota Kinabalu, SABAH, EAST MALAYSIA		
Email	marine@kjc.gov.my		
Telephone	(088)-265719 , (088)-234873, (088)-256054		
Facsimile	088-211019		
Comment			

Ship Observations Team

SOT-II, 28th July – 1st August 2003, London, UK.

Country: **NEW ZEALAND**

1.

Contact: Julie Fletcher, Manager Marine Observations, MetService NZ

2.

3. Participating national marine organizations (see Appendix 1):

4. Focal Points (see Appendix 2):

5. VOS:

a. **Programme description**:

Category	Number of ships at 31 Dec 2002	Comments
Selected	30	
Supplementary	6	
Auxiliary	8	
Other (specify)	0	
Total VOS fleet	44	

Number of VOS vessels recruited in 2002	4
Number of VOS vessels decommissioned in 2002	11
Percentage of the VOS (selected ships only) that did not report in Dec 2002 (to nearest whole percent)	3%
Total number of SHIP messages sent on the GTS in 2002	18852 *

* Count is of Obs sent from NZ VOS south of Equator only.

b. **Specific goals and objectives**:

To maintain a NZ VOS fleet of about 40 selected vessels to provide timely and accurate real-time coded SHIP data for use in National Forecasting models and processes.

To exchange the SHIP data internationally in real-time bulletins to provide input into global models and to make the data available for archiving for climatology and research purposes.

c. **Major challenges and difficulties**:

The constant change in the shipping industry, change of routes, charters, crews, makes it difficult to get stability in the VOS programme.

Decreasing manning levels and higher work demands make it increasingly difficult to interest ships' crews to take on the additional work of doing Obs.

d. **Description of VOS equipment**:

i. **Standard meteorological equipment supplied by the NMS**:

Precision Aneroid Barometer
Marine Barograph with 7 day clock
Marine screens
Mercury thermometers
Sea bucket

ii. **Shipboard AWS systems**:

Name	Number of ships at 31 Dec 2002	Manufacturer and model
Tangaroa AWS	1	AWS based on Sutron 9000 RTU plus MetService data processing and data entry enhancements.

iii. **Electronic logbooks** (using either ship's own or NMS supplied computer):

Software	Number of ships at 31 Dec 2002	Comments
	nil	

e. **Observation transmission systems** (method / transmission problems / comments):

Most NZ VOS ships send via Inmarsat C using Special Access Code 41. Ships are encouraged to send Obs via the Perth LES, but some ships send to LESs further afield. This means that NZ has to receive GTS SHIP bulletins from far and wide to ensure all Obs are received in NZ.

A few coastal ships phone or fax Obs to MetService using an 0800 number.

Although ships are requested to maintain their Obs while on the NZ coast, the reality is that few international traders do.

f. **Data management** (monitoring / archival / quality control / exchange):

NZ VOS Obs are monitored for accuracy and receipt. The hard copies of logbooks are archived.

QC – using BMO monthly monitoring statistics, locally produced lists of 'flagged data' and Forecaster feedback, ships with problems are identified and training on the correct procedures is given.

g. **Coordination and collaboration** (national / international):

National: Shipping Companies, Port Authorities, RNZN, NZ Coastguard

International: WMO, JCOMMOPS, BOM, BMO, DWD, KNMI, US NOAA, Singapore Met Service, SAWB, Meteo France and other international PMOs as required.

h. **Research and development:**

Plans to trial French MINOS system (marine AWS based on SVPB concept) in the future.

i. **Instrument testing and comparison facilities**:

All barometers for VOS ships and the transfer standard barometer used by PMO to check VOS barometers are issued by MetService's calibration Laboratory and are traceable to National/International/WMO RAV standards.

All NZ VOS ships are supplied with calibrated,certified instruments and PMO's inspection programme ensures standards are maintained.

j. **Capacity building** (national / international):

MetService's Manager Marine Observations (MMO also known as PMO) has attended PMO seminars at the Bureau of Meteorology and provided input into training of new Australian POMs.

MMO has participated as a Lecturer at WMO's regional PMO Training Workshops, RAII & V in Melbourne in 1999 and RAI in Cape Town in 2000.

k. **VOS promotion** (award schemes / publications & literature):

The WMO VOS pamphlet is used to promote the VOS programme.

NZ VOS ships receive the quarterly 'Marine Observer' magazine, and caps and met calendars are issued to encourage and reward VOS participation.

l. **List of Port Meteorological Officers** (see Appendix 3): 1 PMO based in Wellington to cover all NZ Ports.

m. **Ship inspections and regime**:

All NZ VOS are inspected at least once per year. Some ships receive 4 or 5 visits per year. PMO also visits a large number of overseas VOS ships, targeting those that don't routinely return to their country of recruitment, to offer encouragement and support for the continuation of their Obs programmes.

n. **VOSClim**: NZ has not commenced VOSCLIM yet.

Appendix 1. Participating national marine organizations.

Organization	Meteorological Service of New Zealand Limited
Programmes (1)	VOS
Website URL	www.metservice.com

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

(1) Programmes: List the programmes (VOS, SOOP, ASAP) that each organization participates in. Include additional details, e.g (data management) where appropriate.

Appendix 2: National Focal Points.

Focal Point (1)	**SOT, VOS, PMO**		
Name	Julie Fletcher		
Title	Manager Marine Observations		
Agency	Meteorological Service of New Zealand Limited		
Postal Address	P O Box 722 Wellington New Zealand		
Email	fletcher@metservice.com		
Telephone	64 4 4700789		
Facsimile	64 4 4700772		

Focal Point (1)			
Name			
Title			
Agency			
Postal Address			
Email			
Telephone			
Facsimile			

(1) Focal Point: Insert SOT, VOS, VOSClim, PMO, SOOP or ASAP as appropriate for each national contact.

Appendix 3: List of Port Meteorological Officers.

Port	All NZ ports, but based in Wellington		
Name	Julie Fletcher		
Title	Manager Marine Observations		
Postal Address	Meteorological Service of New Zealand Ltd P O Box 722 Wellington New Zealand		
Email	fletcher@metservice.com		
Telephone	64 4 4700789		
Facsimile	64 4 4700772		
Comment			

Port			
Name			
Title			
Postal Address			
Email			
Telephone			
Facsimile			
Comment			

Ship Observations Team

SOT-II, 28th July - 1st August 2003, London, UK.

1. **Country**: POLAND
2. **Contact:** INSTITUTE OF METEOROLOGY AND WATER MANAGEMENT, MARITIME BRANCH in GDYNIA
3. **Participating national marine organizations (see Appendix 1):**
4. **Focal Points** (see Appendix 2):
5. **VOS:**

a) **Programme description**:

Category	Number of ships at 31 Dec 2002	Comments
Selected	8	
Supplementary	29	
Auxiliary	30	
Other (specify)		
Total VOS fleet	67	

Number of VOS vessels recruited in 2002	1
Number of VOS vessels decommissioned in 2002	4
Percentage of the VOS (selected ships only) that did not report in Dec 2002 (to nearest whole percent)	50%
Total number of SHIP messages sent on the GTS in 2002	The Polish INMARSAT land station does not accept SHIP reports so we can not estimate it

b) **Specific goals and objectives**: Only standard VOS observations as component of the WWW.

c) **Major challenges and difficulties**: Majority of the Polish VOS sail in ocean tramping without visiting the Polish ports. Very limited contact with observers results often in temporary breaking of observations. Inspections are irregular and they depend on frequency of visit of Polish ports by ships. Mean annual number of inspections equals 100.

d) **Description of VOS equipment**:

Standard meteorological equipment is generally supplied by a yard constructing a ship. It causes that there are different types of instruments in use. On the base of 46 years of personal experience as PMO I can determine that barometers working onboard are of very various quality. Some of them work very well for many years, others need frequent attention, because they are sensitive to vibrations or sea swells.

e) **Observation transmission systems** (method/transmission problems/comments): All Polish ships are equipped with INMARSAT C.

f) **Data management** (monitoring / archival / quality control / exchange):

Usually all log-books are manually controlled before digitalization. Digitized data are controlled according to MQCS and next dispatched to GCCs in 6 months intervals. Log-books are stored in traditional archive too.

g) **Coordination and collaboration** (national / international):

The is routine cooperation with the Polish shipping companies and other companies owning nowadays the former Polish ships.

h) **Research and development**: Part of data collected by VOS is regulary used for scientific research carried out by the Polish Meteorological Service and other research's institutes of the Polish Academy of Science.

i) **Instrument testing and comparison facilities**: All onboard barometers are controlled with the VAISALA digital barometer during each inspection.

j) **Capacity building** (national / international):

k) **VOS promotion** (award schemes / publications § literature): All ships are equipped with standard literature and supporting materials in Polish and in English (if available).

l. List of Port Meteorological Officers (see Appendix 3):

m) **Ship inspections and regime**: As mentioned under item c. inspection are irregular and they depend on frequency of visit of Polish ports especially by tramping ships. Mean annual number of inspections by PMO equals 100.

n) **VOSClim**:

i. Contribution to the VOSClim projekt:

Number of ships participating in VOSClim as at Dec 2002	-
Number of VOSClim recruitments during 2002	-
Number of VOSClim recruitments planned for 2003	3
Target number of ships to participate in VOSClim	

Appendix 3: List of Port Meteorological Officers.

Port	Gdynia and Gdańsk		
Name	Józef Kowalewski		
Title	MSc.		
Postal Address	81-342 Gdynia Waszyngtona 42 POLAND		
Email	Meteo.gdynia@imgw.pl		
Telephone	+48 58 6288 151		
Facsimile	+48 58 6288 155		
Comment	24 h		

Appendix 2: National Focal Points.

Focal Point (1)	PMO		
Name	Józef Kowalewski		
Title	MSc		
Agency	Institute of Meteorology and Water Management		
Postal Adres	81-342 Gdynia Waszyngtona 42 POLAND		
Email	meteo.gdynia@imgw.pl		
Telephone	+48 58 6288 151		
Facsimile	+48 58 6288 155		

(1) Focal Point: Insert SOT, VOS, VOSClim, PMO, SOOP or ASAP as appropriate for each national contact.

Present state of meteorological, oceanographic and aerological observations in Russia

Country: The Russian Federation
Contact: Ravil S. Fakhrutdinov,
VOS National Coordinator,
Roshydromet

Participating national marine organizations.

Organization	Murmansk Area Department for Hydrometeorology and Environmental Monitoring, Murmansk port
Programmes (1)	VOS
Website URL	E-mail: Leader@kolgimet.murman.ru

Organization	Northern Area Department Hydrometeorology and Environmental Monitoring, Arkhangelsk port
Programmes (1)	VOS, SOOP, ASAP
Website URL	E-mail: adm@arhn.mecom.ru

Organization	North-West Department for Hydrometeorology and Environmental Monitoring, Sankt-Peterburg
Programmes (1)	VOS
Website URL	http: //www.nwmet.nw.ru
Organization	Northern-Caucas Area Department for Hydrometeorology and Environmental Monitoring, Rostov-na-Donu
Programmes (1)	VOS
Website URL	E-mail: admin@rost.mecom.ru
Organization	Kamchatka Area Department for Hydrometeorology and Environmental Monitoring, Petropavlovsk-Kamchatskiy port
Programmes (1)	VOS
Website URL	E-mail: adm@ptug.hbrw.mecom.ru

Organization	Kolyma Area Department for Hydrometeorology and Environmental Monitoring, Magadan port
Programmes (1)	VOS
Website URL	E-mail: adm@mgug.mgdn.mecom.ru

Organization	Sakhalin Area Area Department for Hydrometeorology and Environmental Monitoring, Yuzhno-Sakhalinsk
Programmes (1)	VOS
Website URL	http://www.sakhalin.ru/sakhalin/meteo

Organization	Primorsk Area Area Department for Hydrometeorology and Environmental Monitoring, Vladivostok port
Programmes (1)	VOS
Website URL	E-mail: head@wdwk.mecom.ru

Organization	AARI, The Arctic and Antarctic Research Institute, Sankt-Peterburg port
Programmes (1)	VOS, SOOP, ASAP
Website URL	http://www.aari.nw.ru

Organization	FERHRI, Far Eastern Regional Hydrometeorological Research Institute, Vladivostok port
Programmes (1)	VOS, SOOP, ASAP
Website URL	http://www.hydromet.com

National Focal Points.

Focal Point (1)	**SOT, VOS, PMO**		
Name	Ravil S. Fakhrutdinov		
Title	Mr.		
Agency	Roshydromet		
Postal Address	Roshydromet, Novovagan´kovsky Street, 123242, Moscow		
Email	marine@mcc.mecom.ru fakhrutdinov@rhmc.mecom.ru		
Telephone	+7 095 255 23 88		
Facsimile	+ 7 095 255 20 90		

Focal Point (1)	**SOOP**		
Name	Alexander Postnov		
Title	Dr.		
Agency	Roshydromet State Oceanographic Institute		
Postal Address	6, Kropotkinskii Lane, 119034 Moscow, Russia		
Email	a_postnov@mail.ru		
Telephone	+7 095 246 28 89		
Facsimile	+7 095 246 72 88		

VOS Program

As on 31 December 2002, the russian Voluntary Observing Fleet has 290 ships. Included in them are both merchant vessels (164), fishery vessels (80) and specialized (9) and scientific research vessels (37) belonging to different agencies and companies. All these VOS are selected ships. During the year 3 ships were recruited for making observations and one ship was excluded from the VOS. Every day 50-60 vessels transmitted weather reports in the SHIP code. That is, about 65% of vessels did not perform observations.

Over the course of the year 8652 reports were delivered onto GTS, this is less than 1 per cent from the total SHIP code reports flow. A monitoring of the ship reports data incom revealed that there are monthly losses of information ranging from 1,5 to 2%.

In this connection, we try to find out the causes of these losses and points where the SHIP information perish along its traffic line.

At the present time, there are three main causes of the loss of information - an inaccurate message compilation by the observers, errors made by the radio-operators when transmitting and financial problems connected with the payment for receipt\transmission of reports.

NMS of Russia provide the VOS with domestic standard meteorological equipment. The vessels have the following units:

Barometer БРС-1;

Aneroid barometers М-67, М-98, МД-49-А, БАММ-1;

Barograph for week М-22;

Anemorumbometer М-138, М-63, М-1;

Anemometers: digital portable АП-1, contact М-92, hand-held induction anemometer АРИ-49, cup anemometer МС-13, ship´s anemometer М-61;

Mercury (alcohol) meteorological thermometers ТМ-4, ТМ-6, ТМ-10, ТМ-14;

Sea mercury thermometer ТМ-10, ТМ-14;

Aspirated psychrometer МВ-4М.

Most vessels are equipped with units from the above list. Only about 20 VOS have AWS (automated ship stations) MIDAS and MILOS on board.

Electronic logbooks available on most of VOS are provided by shipowners.

All VOS of Russia use the satellite communication facilities and transmit the reports via INMARSAT-C system.

Some of the ship observational data are transmitted through the usual channels of communication. The main problem is that it does not always happen that the shipowners are in position to meet the requirements of coastal radio-centers on the payment for the communication services. As a consequence, there were cases when operators refuse receipt\transmission the ship observations reports. A situation took place when the information forwarded via a satellite hanging over the Indian ocean and the LES BURUM to the Regional Prognostic Center (Murmansk) from VOS belonging to this center did not arrive at the RPC. The reasons of this are not yet elucidated. Data management is a traditional procedure. An operative monitoring of quality and quantity of SHIP code information is performed by the Hydrometeorological Center of Russia (Moscow), therewith the meteorological work on board of each VOS is considered.

If there are some errors or observation program is not properly carried out, these facts are brought to the attention of the PMO concerned. Local PMOs keep track of the activity of their VOS and, if it is necessary, they connect with the ship to provide advice and assistance.

All SHIP information recorded in meteorological logbooks and on computer-compatible carriers is forwarded to the World Data Center (Moscow), where it undergoes the quality control, systematization and archiving. Archived data are delivered to users and for the data exchange. For the purposes of checking, processing and archiving of the SHIP observational data an automated system METEOSEA was worked up and now it is used by this RPC.

In regard to the international coordination and cooperation, it should be said that they are totally lacking. Since 1990s we failed to promote a profitable cooperation even with NMS of the neighboring countries. Within Russia such an activity is quite satisfactory.

All problems concerning the VOS function and PMOs activity are resolved by the National Coordinator, who maintain liaisons with administrations of NMS, PMOs, scientific institutions under NMS and marine agencies.

At present, some difficulties and shortcomings still remain in the work of the Russian VOS scheme and there are some problems concerning the participation in the SOOP and ASAP programs. However, in recent years some encouraging prospects appeared in this area due to the VOS recruiting for the implementation of the Program «The World Ocean » on monitoring of the marine environment quality in Russia. Because of disadvantageous economic conditions this activity is concentrated in the Arctic and Far East adjacent seas and the southern seas of Russia.

To ensure the more complete and qualitative implementation of the VOS, SOOP, ASAP and other programs in Russia, developments in the area of methodic support and automatization of observations continue, procedures of coding and decoding, collection, transmission and data management are elaborated. In 2002 such developments include the testing and improvement of the guidance: «Automated workstation of «Navigator-meteorologist» and «Meteorologist for actinometry»» and the design of «METEOSEA» - an automated system of control, processing and archiving of observational data from VOS.

Further measures were taken to improve the procedures of collection, exchange and distribution of all kinds of information, including ship information, information on environment and one transmitted from satellites.

In the current year we entirely remade «Methodic directives on pre-processing of results of measurements of meteorological, actinometrical and optical values performed on board a ship», taking into account the use of PC. These directives will be used by PMOs and VOS for an initial data assimilation.

The revision of the out-dated methodic guidances will continue.

The domestic samples of measurement equipment for ships – automated ship stations, non-mercury digital barometer, devices for measurement of air temperature, relative humidity, wind speed, visibility and height of the lower cloud boundary were designed. A difficulty in this area is how to make the manufacturer produce this equipment.

According to the present our Technical regulations, the testing and comparison procedures for the above mentioned standard equipment for observations onboard a ship were performed on a regular basis by the Bureau of calibration in regional Department for Hydrometeorology and Environmental Monitoring (DHEM) or by the similar Bureau of State Standards of Russia.

A capacity building for VOS, SOOP and ASAP has been restricted by economic conditions.

Our NMS uses only moral measures to encouragement of the voluntary observers. The PMOs, masters of ships, navigators and radio-operators which had the best results in the observational work over the year are awarded on behalf of the authorities of NMS of Russia by breastplates of the agencies, honour diploma, thanksgiving letters. Orders issued are brought to the attention of administrations of shipping companies which in their turn issue orders about awarding. The facts of such an encouragement of the observers is taken into account during the attestations of seamen and help to their promotion.

Further tasks are to provide the appearance of notices dedicated to the best crews of ships in the marine press and to find the ways of financial encouragement of the observers.

There are 14 PMO in Russia with the offices situated in marine DHEMs in different regions. As a rule, they are located in major ports.

Principal duties of these PMOs are basically those given in the Guidance for Port Meteorological Offices worked up by captain G. Mackie.

The main their changes are to provide the methodic guidance, organization and performance of observations on board a ship, to control of instruments state, quality of observations, offer instructions and to train the observers.

Inspections of VOS activity are made every time when the ship returns to the port. Such a supervision is a problem when the ship is in freight and goes under the flag of other country, because these ships do not call at their port of registration for years.

VOSCLIM

Russia has not ships destined to realization of the VOSClim Program. At the same time, there is an institution responsible for implementation of international obligations of Russia within the framework of «Marine Program» of WMO on participation in «Marine Climatological Summaries Scheme» - the RIHMI -WDC. For this subprogram the RIHMI-WDC perform collection, assimilation, control and transmission of the ship meteorological reports from 290 russian VOS to Global Collecting Centers (Germany, UK). All necessary information is transferred to these centers one time in three months. In turn, the german GCC forward to the member-participants a ship meteorological data summary massive. During the last years, Russia received in 7-8 times more data than transmitted.

SOOP

During 2002 2 ships belonging to FERHRI - «Pavel Gordienko» UHIQ and «Professor Khromov» UWEC took part in the implementation of SOOP. In collaboration with a number of russian and foreign agencies and companies 6 expedition cruises in the Sea of Okhotka, the Sea of Japan, the Sea of Chukotka and the Bering Sea were made. At the 228 oceanographic stations measurements sea temperature and salinity by CTD were made.

159 bathometric series of measurements were carried out. 387 BATHY reports were inserted onto GTS and transmitted to the regional oceanographic data center.

On the other hand, during the year Russia got the 1539 BATHY, 12283 TESAC and 4227979 BOUY reports.

Due to the economical reasons in 2003 the expedition researches, among them those of SOOP, will be carried out in the above seas.

The quantity of participating vessels will increase to 5: «Professor Khromov» UWEC, «Mirazh» UEFZ, «Academik Shokalskiy» UBNF, «Valerian Uryvaev» UEAK, «Pavel Gordienko» UHIQ. Each of the vessels will made several cruises.

At the arctic seas 2 vessels will operate: «Mikhail Somov» UCLD and «Ivan Petrov» UFNP, which will made 1 and 4 cruises respectively.

As it was said, due to financial constraints our VOS are made to operate only in in the Arctic and Far East adjacent seas and on their shelf. Because of the same reasons, there is a shortage in XBT and XCTD equipment.

SOOP information is transmitted via the same channels of communications as SHIP reports. The problems are also similar ones.

The collected data ungergo the quality control procedure in scientific research institutes and then they are distributed for storage and usage for scientific purposes in the regional centers and forwarded to the National Oceanographic Data Center in Moscow. Further the SOOP data are delivered on users demand and for the international data exchange.

Organizations responsible for coordination of activity under SOOP are the Arctic, Antarctic and marine department of Roshydromet and regional marine institutions.

These institutions operate in close cooperation between themselves and foreign institutions and companies.

Using the results of the activity in frameworks of SOOP the investigations are performed and the recommendations are prepared for the marine branch of economics.

The calibration and testing of oceanographic instrumentation is made in the Measurement facilities Services of regional DHEMs.

ASAP

11 scientific research vessels of Roshydromet included in VOS are fitted with aerological equipment, usual and automated units. These vessels are «Akademik Korolyov» UHQS, «Priliv»

UHIR, «Priboy» UHIP, «Okean» UHIS, «Professor Khromov» UWEC, «Mirazh» UEFZ, «Akademik Shokalskiy» UBNF, «Valerian Uryvaev» UEAK, «Pavel Gordienko» UHIQ, «Akademik Fedorov» UCKZ, «Mikhail Somov» UCCLD, «Ivan Petrov» UFNP.

The ASAP can be realized by all these vessels.

However, at present, the equipment on board most of them is very worn out. Besides there is a deficit of consumables. Due to these causes the ASAP implementation have not been included into the expedition cruises programs in the last years.

In 2002 the ASAP was carried out only by the vessel «Akademik Fedorov» during its cruise to the Antarctic and back. The data were transmitted via INMARSAT-C. The report of these fieldworks is not yet presented. Total amount of the TEMP SHIP reports transmitted through the year is 8115, among them are also the data from this ship.

The ASAP data management is the same as the SHIP and SOOP data management. Monitoring of the data incom, quality control and archiving are performed by the Hydrometeorological Center of Russia and the Data Assembly Center «Moskva». The data exchange is made both within the country on users demands and between Russia and other countries. The ASAP data are used for scientific purposes and for the weather forecasting. The aerological equipment is tested, calibrated and repaired by specialists of regional DHEMs and in the Central Aerological Observatory.

Problems.

Some of them were listed above. The next problems are

Recruiting of vessels for making observations, because the principle of voluntary participation works badly;

Lack of suitable for use and compact handbooks for observers (State of sea card< Cloud Types for Observers, Tables of Codes);

Deficit of new meteorological devices for marine conditions, automated systems, new oceanographic and aerological equipment;

High precision equipment and instruments are not produced.

Plans

To enhance the PMOs status;

To enlarge Voluntary Observing Fleet;

To emphasize the importance of VOS activity in the Black, Sea of Azov, Caspian Sea and Arctic seas directed to data collection and improvement of weather forecasting in these areas;

To introduce domestic new technical developments on VOS and in PMO offices.

To increase activity on the ASAP and SOOP implementation.

Ship Observations Team

SOT-II, 28th July – 1st August 2003, London, UK.

1.

Country: Singapore

2.

Contact: Amran Osman (see Appendix 3)

3. Participating national marine organizations (see Appendix 1):

4. Focal Points (see Appendix 2):

5. VOS:

a. **Programme description**:

Category	Number of ships at 31 Dec 2002	Comments
Selected	32	
Supplementary	Nil	
Auxiliary	Nil	
Other (specify)	Nil	
Total VOS fleet	32	

Number of VOS vessels recruited in 2002	3
Number of VOS vessels decommissioned in 2002	2
Percentage of the VOS (selected ships only) that did not report in Dec 2002 (to nearest whole percent)	97 %
Total number of SHIP messages sent on the GTS in 2002	13,807

b. **Specific goals and objectives**:

Goal: To recruit at least two ships per year in VOS programme.
Objectives: To encourage more vessels to make & report weather observations.

c. **Major challenges and difficulties**:

Major difficulties is keeping track of local VOS ship status e.g. ownership, routes & etc. and to convince captains of the benefits of making weather reports.

d. **Description of VOS equipment**:

i. **Standard meteorological equipment supplied by the NMS**:

Barometer, Barograph, Thermometers(air & sea)

ii. **Shipboard AWS systems**:

Name	Number of ships at 31 Dec 2002	Manufacturer and model
NIL		
NIL		
NIL		

iii. **Electronic logbooks** (using either ship's own or NMS supplied computer):

Software	Number of ships at 31 Dec 2002	Comments
NIL		
NIL		
NIL		

e. **Observation transmission systems** (method / transmission problems / comments):

INMARSAT-C and sometime by e-mail though not encouraged.

f. **Data management** (monitoring / archival / quality control / exchange):

Ship weather reports are checked for errors and sent to GCC in IMMT format.

g. **Coordination and collaboration** (national / international):

Supplying of instruments & stationaries to UK & Netherlands's VOS on their behalf.

h. **Research and development:**

Nil

i. **Instrument testing and comparison facilities**:

Onboard aneroid barometer calibration.

j. **Capacity building** (national / international):

Towards automations & computerization.

k. **VOS promotion** (award schemes / publications & literature):

Award to ship which actively contributes the most weather observation reports.

l. **List of Port Meteorological Officers** (see Appendix 3):

m. **Ship inspections and regime**:

Routine inspections and on-call inspections.

n. **VOSClim**:

i. **Contribution to the VOSClim project**:

Number of ships participating in VOSClim as at 31 Dec 2002	NA
Number of VOSClim recruitments during 2002	NA
Number of VOSClim recruitments planned for 2003	NA
Target number of ships to participate in VOSClim	NA

ii. **Standard VOSClim observing equipment** (including details of AWS systems or electronic logbook used):

NA

iii. **Comments** (data issues / instrumentation / difficulties experienced):

NA

iv. **Catalogue of VOSClim ships** (NA):

Appendix 1. Participating national marine organizations.

Organization	Meteorological Services Division, National Environment Agency
Programmes (1)	VOS
Website URL	www.nea.gov.sg

(1) Programmes: List the programmes (VOS, SOOP, ASAP) that each organization participates in. Include additional details, e.g (data management) where appropriate.

Appendix 2: National Focal Points.

Focal Point (1)	VOS	
Name	Amran Osman	
Title	Port Meteorological Supervisor	
Agency	Meteorological Services Division National Environment Agency	
Postal Address	PO Box 8 Singapore Changi Airport Post Office Singapore 918141	
Email	Amran_OSMAN@nea.gov.sg	
Telephone	(65) 65457198	
Facsimile	(65) 65458633	

(1) Focal Point: Insert SOT, VOS, VOSClim, PMO, SOOP or ASAP as appropriate for each national contact.

Appendix 3: List of Port Meteorological Officers.

Port	Singapore	
Name	Amran Osman	
Title	Port Meteorological Supervisor	
Postal Address	PO Box 8 Singapore Changi Airport Post Office Singapore 918141	
Email	Amran_OSMAN@nea.gov.sg	
Telephone	(65) 65457198	
Facsimile	(65) 65458633	
Comment		

Ship Observations Team

SOT-II, 28th July – 1st August 2003, London, UK.

Country: South Africa

1.

Contact:
Mr Ian T Hunter
South African Weather Service
Private Bag X097
Pretoria 0001
Tel +27 12 367 6032
Fax 367 6042
E-mail : ian@weathersa.co.za

2.

3. Participating national marine organizations (see Appendix 1):

4. Focal Points (see Appendix 2):

5. VOS:

a. **Programme description**:

Category	Number of ships at 31 Dec 2002	Comments
Selected	18	
Supplementary		
Auxiliary		
Other (specify)		
Total VOS fleet	18	

Number of VOS vessels recruited in 2002	0
Number of VOS vessels decommissioned in 2002	10
Percentage of the VOS (selected ships only) that did not report in Dec 2002 (to nearest whole percent)	~ 30 %
Total number of SHIP messages sent on the GTS in 2002	Data not yet available

b. **Specific goals and objectives**:

- Improvement of equipment supplied to vessels
- Partnerships relating to the fitting of shipboard AWS
- recruitment of diamond-mining vessel operating off west coast
- Improvement of data capture from ship logs

- Installation of TurboWin software on more vessels

c. **Major challenges and difficulties**:

- Lack of up-to-date equipment
- Major changes in the local shipping industry – e.g. take over by Maersk of Safmarine and selling off of bulker division
- PMO's only part-time
- Limited capacity for log data capture

d. **Description of VOS equipment**:

i. **Standard meteorological equipment supplied by the NMS**:

Shipboard Stevenson screen
Wet and dry bulb thermometers
Aneroid barometer
Barograph
Stationery

ii. **Shipboard AWS systems**:

Name	Number of ships at 31 Dec 2002	Manufacturer and model

iii. **Electronic logbooks** (using either ship's own or NMS supplied computer):

Software	Number of ships at 31 Dec 2002	Comments
TurboWin	5	

e. **Observation transmission systems** (method / transmission problems / comments):

Mainly InmarsatC via Goonhilly and UKMO

f. **Data management** (monitoring / archival / quality control / exchange):

All data collection is centralised in Cape Town where logs are keyed in and electronic data ex TurboWin are stored for onpass to Pretoria

Climate Section : Pretoria checks and archives all this data and also maintains a ship database.

SAWS sends VOS data on a regular basis to the Southern African Data Centre for Oceanography (SADCO) – to keep their VOS data base up-to-date (their holdings go back to 1865)

SAWS also provides its VOS data to the Global Data Collection Centres in Bracknell and Hamburg

g. **Coordination and collaboration** (national / international):

PMO's in Durban and Cape Town have working agreements with PMO's in UK and other countries to service their vessels locally. SA PMO's also work closely with NOAA in the local supply of SOOP vessels – and the loading of drifting buoys

h. **Research and development:**

i. **Instrument testing and comparison facilities**:

j. **Capacity building** (national / international):

A PMO Workshop for RA1 was held in Cape Town in November 2000

k. **VOS promotion** (award schemes / publications & literature):

Short case studies in VOS-related publications such as Mariners Weather Log etc

l. **List of Port Meteorological Officers** (see Appendix 3):

m. **Ship inspections and regime**:

Mainly on request – PMO's have many other duties in SAWS

n. **VOSClim**:

i. **Contribution to the VOSClim project**:

Number of ships participating in VOSClim as at 31 Dec 2002	
Number of VOSClim recruitments during 2002	
Number of VOSClim recruitments planned for 2003	
Target number of ships to participate in VOSClim	

ii. **Standard VOSClim observing equipment** (including details of AWS systems or electronic logbook used):

iii. **Comments** (data issues / instrumentation / difficulties experienced):

iv. **Catalogue of VOSClim ships** (see Appendix 4):

o. **Other comments**:

6. **SOOP**: not applicable

7. **ASAP**: not applicable

Appendix 1. Participating national marine organizations.

Organization	South African Weather Service
Programmes (1)	VOS – data collection – archiving – dissemination to GCC's etc
Website URL	www.weathersa.co.za

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

(1) Programmes: List the programmes (VOS, SOOP, ASAP) that each organization participates in. Include additional details, e.g (data management) where appropriate.

Appendix 2: National Focal Points.

Focal Point (1)	**VOS – PMO - SOOP**		
Name	Ian T Hunter		
Title	Mr		
Agency	South African Weather Service		
Postal Address	Private Bag X097 Pretoria 0001 South Africa		
Email	ian@weathersa.co.za		
Telephone	+27 12 367 6032		
Facsimile	+27 12 367 6042		

Focal Point (1)			
Name			
Title			
Agency			
Postal Address			
Email			
Telephone			
Facsimile			

(1) Focal Point: Insert SOT, VOS, VOSClim, PMO, SOOP or ASAP as appropriate for each national contact.

Appendix 3: List of Port Meteorological Officers.

Port	Durban		
Name	Fergus McKay		
Title	Mr		
Postal Address	South African Weather Service Durban International Airport Durban 4029 South Africa		
Email	mckay@weathersa.co.za		
Telephone	+27 31 4081446		
Facsimile	+27 31 4081445		
Comment	part time PMO		

Port	Cape Town		
Name	Sidney Marais		
Title	Mr		
Postal Address	South African Weather Service Cape Town International Airport Cape Town 7525 South Africa		
Email	maritime@weathersa.co.za		
Telephone	+27 12 934 0836		
Facsimile	+27 12 934 3296		
Comment	Part time PMO		

Ship Observations Team

SOT-II, 28th July – 1st August 2003, London, UK.

Country: Spain

1.

Contact: INSTITUTO NACIONAL DE METEOROLOGÍA (INM)

2.

3. Participating national marine organizations (see Appendix 1):

4. Focal Points (see Appendix 2):

5. VOS:

a. **Programme description**:

Category	Number of ships at 31 Dec 2002	Comments
Selected	1	
Supplementary		
Auxiliary		
Other (specify)		
Total VOS fleet	1	

Number of VOS vessels recruited in 2002	0
Number of VOS vessels decommissioned in 2002	0
Percentage of the VOS (selected ships only) that did not report in Dec 2002 (to nearest whole percent)	100 %
Total number of SHIP messages sent on the GTS in 2002	0

b. **Specific goals and objectives**:

To put into operation, with regard to meteorological observations, the Spanish ship "Esperanza del mar" (call sign: EBUQ)

c. **Major challenges and difficulties**:

To solve communications problems between the AWS and the Inmarsat-C unit.

d. **Description of VOS equipment**:

i. **Standard meteorological equipment supplied by the NMS**:

None

ii. **Shipboard AWS systems**:

Name	Number of ships at 31 Dec 2002	Manufacturer and model
Milos	1	Vaisala

iii. **Electronic logbooks** (using either ship's own or NMS supplied computer):

Software	Number of ships at 31 Dec 2002	Comments
Vaisala	1	CD-R

e. **Observation transmission systems** (method / transmission problems / comments):

Inmarsat-C unit transmitting to Land Earth Stations

f. **Data management** (monitoring / archival / quality control / exchange):

Data monitoring will be based on the quality control result that the INM Numerical Weather Prediction Service carries out over all available meteorological bulletins.

g. **Coordination and collaboration** (national / international):

To be established between the INM and the Met Office.

h. **Research and development:**

i. **Instrument testing and comparison facilities**:

As the INM applies routinely procedures on these items

j. **Capacity building** (national / international):

Institutional relation between the INM and the Instituto Social de la Marina ("Esperanza del Mar" owner)

k. **VOS promotion** (award schemes / publications & literature):

To be developed

l. **List of Port Meteorological Officers** (see Appendix 3): Not applicable

m. **Ship inspections and regime**:

Monthly carry out by the INM centre placed in Las Palmas de Gran Canaria (Cannary islands)

n. **VOSClim**: Not applicable

i. **Contribution to the VOSClim project**:

Number of ships participating in VOSClim as at 31 Dec 2002	
Number of VOSClim recruitments during 2002	
Number of VOSClim recruitments planned for 2003	
Target number of ships to participate in VOSClim	

ii. **Standard VOSClim observing equipment** (including details of AWS systems or electronic logbook used):

iii. **Comments** (data issues / instrumentation / difficulties experienced):

iv. **Catalogue of VOSClim ships** (see Appendix 4):

o. **Other comments**:

6. ASAP:

a. **Catalogue of ASAP vessels in 2002** (see Appendix 6):

b. **ASAP performance in 2002** (see Appendix 7):

c. **Data management** (monitoring / archival / quality control / exchange):

Receipt control and operational information on archived ASAP messages in INM database. Quality control is carried out using the HIRLAM/INM model.

d. **Coordination and collaboration** (national / international):

Thanks to the Met Office, the Spanish ASAP observations are being inserted the GTS.

e. **Research and development**:

f. **Instrument testing and comparison facilities**:

As the INM applies routinely procedures on these items

g. **Other comments**:

Appendix 1. Participating national marine organizations.

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

(1) Programmes: List the programmes (VOS, SOOP, ASAP) that each organization participates in. Include additional details, e.g (data management) where appropriate.

Appendix 2: National Focal Points.

Focal Point (1)	VOS	ASAP	
Name	Maria-Josefa Irigaray	Manuel Gil	
Title	Chief, Departament Control and Techical Studies	Chief, Observation and Instrumentation Service	
Agency	INM	INM	
Postal Address	C/ Leonardo Prieto Castro, 8 28040 MADRID SPAIN	C/ Leonardo Prieto Castro, 8 28040 MADRID SPAIN	
Email	Irigaray@inm.es	gilg@inm.es	
Telephone			
Facsimile			

Focal Point (1)			
Name			
Title			
Agency			
Postal Address			
Email			
Telephone			
Facsimile			

(1) Focal Point: Insert SOT, VOS, VOSClim, PMO, SOOP or ASAP as appropriate for each national contact.

Appendix 3: List of Port Meteorological Officers.

Port			
Name			
Title			
Postal Address			
Email			
Telephone			
Facsimile			
Comment			

Port			
Name			
Title			
Postal Address			
Email			
Telephone			
Facsimile			
Comment			

Appendix 6. Catalogue of ships participating in ASAP in 2002.

…1….. ASAP units operated during the year on …1…. ships

Type of ship (1)	Ship name	Callsign	Comms method (2)	Windfind method / sonde type (3)	Launch method (4)	Launch height (5)	Area of operation (6)	ASAP unit ID No.
Supply	Esperanza del Mar	EBUQ	Inmarsat C	GPS/Vaisala RS80-G	Container (semi automatic)	11,7 m	North Atlantic (Cannary Islands- South Mauritania)	

(1) Type of ship: Merchant, research, supply
(2) Comms method: Inmarsat C or others
(3) Windfind method / sonde type: eg. GPS/Vaisala RS80-G, Loran/Vaisala RS80-L, VIZ GPS Mark II Microsonde, etc
(4) Launch method: deck launcher (portable), deck launcher (fixed), container (manual), container (semi automatic), other
(5) Launch height: height above sea level from where the sonde is released
(6) Ocean area: North Pacific, North Atlantic, Indian Ocean, variable

Appendix 7. ASAP performance in 2002.

Callsign	Total number of sondes launched	Number of TEMP SHIP transmitted	Number of relaunches	Average terminal sounding height (km)	Balloon size (gm)	Percentage on GTS (see note)
EBUQ	There weren't soundings from EBUQ because of Inmarsat transmissions problems					

Percentage on the GTS is the ratio of reports received against reports transmitted, and is based upon reports received at a data centre or GTS insertion point (name)

Ship Observations Team

SOT-II, 28th July – 1st August 2003, London, UK.

1.

Country: **United Kingdom**

2.

Contact: **Sarah C North**
Met Office
Beaufort Park
Easthampstead
Wokingham
Berkshire RG40 3DN
United Kingdom

3. **Participating national marine organizations** (see Appendix 1):

4. **Focal Points** (see Appendix 2):

5. **VOS**:

a. **Programme description**:

Category	Number of ships at 31 Dec 2002	Comments
Selected	**426**	**Ships operating in all ocean regions equipped with Met Office instruments**
Supplementary	**0**	
Auxiliary	**23**	**Ships operating in all ocean regions equipped with their own instruments**
Other (specify)	**33**	**Offshore units comprising 15 fixed and 15 mobile installations, and 3 FPSO's. These units report in the SHIP Code and are effectively considered as 'Selected' ships. They operate in the North Sea oil fields as well as other areas of exploration on the UK continental shelf.**
Other (specify)	**28**	**Ships operating in UK coastal or near continental areas which transmit sea-water temperature observations and non-instrumental weather observations in a national 'MARID' code**
Total VOS fleet	**482**	**(Figure excludes the above 'Marid' ships which do not report using a recognised WMO Code format)**

Number of VOS vessels recruited in 2002	**34**
Number of VOS vessels decommissioned in 2002	**54**
Percentage of the VOS (selected ships only) that did not report in Dec 2002 (to nearest whole percent)	**47%**
Total number of SHIP messages sent on the GTS in 2002	**108,639**

b. **Specific goals and objectives**:

In addition to forming part of the UK's contribution to the World Weather Watch observations from the UK voluntary fleet contribute to a wide range of national User Requirements. In particular VOS observations provide an essential input to the commercial weather services which we provide to the offshore and shipping sectors, and to the Maritime Safety Information weather forecasts we are required to produce by SOLAS. In addition ships observations are need for numerical weather prediction, climate research, defence applications, and for our ocean models

Our goals are therefore closely aligned to the needs of our data users whose observation requirements will determine the parameters that need to be measured, their timeliness of receipt and their geographical locations. Our objectives are to meet these requirements in the most cost effective and efficient manner

Our specific goal in the coming year will be to start restructuring the UK Voluntary fleet in order to optimise the timeliness, quality and numbers of observations being generated. This will probably require a reduction in the overall size of the UK fleet and changes to our current inspection regimes.

Longer-term goals and objectives for the UK voluntary fleet are likely to be determined in relation to the new EUCOS Surface Marine Program. Although this program is still in its design phase it aims to optimise the surface-marine observations from VOS, moored and drifting buoys taking full account of EUCOS observational requirements in data-sensitive areas. Closer cooperation with other European participants leading to future integration of voluntary observing fleets and networks will hopefully reduce unnecessary duplication and permit objectives to be delivered in the most cost-efficient manner.

c. **Major challenges and difficulties**:

For UK ships that are on liner or coastal trades, and regularly return to the UK, we normally aim for three monthly inspections by our Port Met Officers. However, a large percentage of the UK Voluntary Fleet is trading on a worldwide basis and, as a consequence, it is often difficult to ensure that ships are inspected on a routine basis. Moreover, when such ships are failing to submit observations, it makes it difficult to decommission them from the fleet and to ensure the safe return of their meteorological instruments. In some cases this may be resolved by liaising with overseas PMOs, although many of these ships are trading on remote charters or to ports that are not readily accessible to PMOs. Each year there can be as many as 150 of the UK fleet which we have been unable to inspect for these reasons. To some extent this problem is reduced by sending muster forms to these ships each year requesting them to report on the quality of their instruments

Such problems are compounded by the changing dynamic of the shipping companies, with frequent changes of ship registry (and call signs) and consequent changes of crew. Failure to routinely visit recruited ships has implications for the quality of the observations and for the ongoing training of the observing officers.

Perhaps the biggest challenge facing the marine networks staff at the Met Office in the coming year is going to be our relocation to new premises in Exeter. This is expected to have an impact on the way in which we manage our marine networks in the future and may also have financial implications for the future operation of the UK voluntary fleet. In common with many other national met services the Met Office is also having to review the way in which it resources it its marine networks in the coming years.

As the ARGO project approaches full implementation and develops into an operational programme it is likely to become increasingly necessary to use suitable voluntary ships for float deployments, particularly in areas remote from the normal shipping lanes. This will inevitably generate the logistical problems requiring further resources

d. **Description of VOS equipment**:

i. **Standard meteorological equipment supplied by the NMS**:

Selected Ships

1 precision aneroid barometer with damping cap and mounting bracket.
1 marine barograph + shelf.
2 sheathed thermometers (1 air, 1 wet-bulb) for each screen, plus 2 spares.
2 marine screens (or 1 in certain circumstances e.g. training ships)
3 sea thermometers (1 protected + 2 spares) for rubber bucket.
2 rubber buckets.

Ships Fitted with Distant Reading Equipment

1 precision aneroid barometer with damping cap and mounting bracket.
1 marine barograph + shelf.
4 sheathed thermometers plus 2 spares.
4 electrical resistance thermometers (ERT).
2 marine screens (modified crosspieces for ERT's).
1 digital temperature indicator (DTI).
1 rubber bucket.
1 hull sensor.
2 sea thermometers.

Supplementary Ships

1 precision aneroid barometer with damping cap and mounting bracket.
1 sheathed thermometer (air) for each screen plus 1 spare.
1 or 2 screens.

MARID Ships

3 sea thermometers (1 protected + 2 spares).
1 rubber bucket.

Notes

- **Four selected ships are also provided with dedicated Inmarsat Sat C systems for transmitting their observations.**
- **Laptop computers loaded with TurboWin software are also provided to suitable Selected ships subject to financial limitations. Such software is also provided to a number of ships for loading onto their ships computers**
- **Anemometers are not normally used for observations made by the UK voluntary fleet, the surface wind speed and direction being estimated from the sea state.**

ii. **Shipboard AWS systems**:

Name	Number of ships at 31 Dec 2002	Manufacturer and model
Automet	Nil	Christian Michelson Research AS

Note - The 'Automet' Automatic Weather Station that was tested on board the UK VOS ship *OOCL Belgium* in 2001 and was subsequently returned to the manufacturers for modification. It is planned to refit this system, which

automatically measures and transmits atmospheric pressure and air temperature data via Inmarsat, to a suitable UK observing ship in mid 2003.

Note - In addition to the above a further 15 platforms and one FPSO host automatic weather stations which provide data every 10 minutes to the Met Office weather consultants in Aberdeen. These automatic stations are not provided by the Met Office.

iii. **Electronic logbooks** (using either ship's own or NMS supplied computer):

Software	Number of ships at 31 Dec 2002	Comments
TurboWin	82	1. Figure Includes a few ships equipped with the previous DOS based version of the Turbo programs (i.e. Turbo 1) 2. 53 ships were equipped with dedicated laptop computers for running the program in isolation from their own ships computers. 3. An addition 32 offshore installations use TurboWin software to code their observations.

e. **Observation transmission systems** (method / transmission problems / comments):

The overwhelming majority of selected UK voluntary observing ships now submit their real time observations using Inmarsat Sat-C via Land Earth Stations (LES) accepting code 41 observations

A small number of selected ships and ferries operating solely in coastal/near-continental waters (which do not trade within SOLAS area A3) are not required to carry Inmarsat satellite transmission terminals. As a consequence, following the closure of many coastal radio stations around the UK, these ships are no longer able to transmit their observations in real time. To overcome this problem the Met Office has equipped a small number of UK voluntary ships with dedicated Inmarsat Sat-C systems. The system is linked to a dedicated notebook computer loaded with 'TurboWin' software for coding the observations, and 'Capsat' software for making the Inmarsat transmissions. In 2002 the number of such ships stood at four (i.e. *Baltic Tern*, *European Envoy*, *Tor Baltica* and the UK ASAP ship *CanMar Pride).*

Most of our coastal ships reporting in our national 'Marid' code (a limited amended version of the SHIP code intended primarily for fog forecasting) have experienced similar problems in sending their observations in real time since the closure of the coastal stations. At present may of these observations are being received only as delayed mode written reports (1565 Marid observations were received in 2002)

Most of our selected offshore rigs send their observations to our Aberdeen Weather Centre. These are then forwarded on to our Bracknell Headquarters for insertion on the GTS. By the end of 2002 a total of 21,004 observations had been received from our recruited offshore installations.

The use of an earlier Met Office system known as MOSS (Meteorological Observing System for Ships) whereby observations were transmitted via the

Meteostat satellite system was discontinued at the start of 2002.

During 2002 an average of 97.2% of observations from Selected ships were received within our mesoscale cut-off time of 115 minutes, whilst 45.3% were received within 20 minutes of the observation time. (These figures are on the basis of observations received from all ocean areas).

Port Met. Officers note any difficulties that observing officers (and radio officers if carried) have experienced in clearing their reports through radio stations or Land Earth Stations (LES's) and Observations Supply - Marine Networks accordingly. In additional we are notified by our message switching systems personnel when transmission problems occur. Increasingly we also receive emails direct from ships notifying of transmission problems. Examples of transmission problems being experienced include

- **Failure to set the Inmarsat transmitter to the correct bit message settings (resulting in scrambled messages).**
- **Coding errors that prevent ingestion of observations into our switching gear (eg Incorrect preamble & ending of coded message)**
- **Problems with finding suitable LES to accept observations (e.g. incorrect Code 41 setup on address book section of Inmarsat terminal)**
- **Superfluous data included with observations message (e.g. long gap between final group of message and answerback, as though return key of keyboard tapped many dozens of times). Message costs considerably increased as a result.**

f. **Data management** (monitoring / archival / quality control / exchange):

Data Monitoring

Each week Met Office NWP staff produce weekly lists of all observing ships whose observations have been flagged against the background model field in the previous week. The following observation parameters are monitored;

- **Vector Wind (m/s), and**
- **Pressure (hPa)**

Flagged UK ships are contacted by the most appropriate means - normally e-mail, where available to the ship concerned, or by telex (via Inmarsat) - with a view to resolution of the problem at the earliest opportunity. Where the problem is caused by errors in coding the observation this can normally be achieved by providing the appropriate written advice. If however the problem stems from an equipment fault the following options are available, depending upon the vessels trading pattern;

- **For vessels trading to UK ports the UK Port Met Officer will arrange a visit to repair or replace the observing equipment, as appropriate, and if necessary advise the ships staff in the correct use of the equipment and the correct coding procedures**

- **For vessels trading overseas the relevant overseas Port Met Officer at the next convenient port of call may be contacted with a request that he visit the ship concerned with a view to repairing or replacing the defective equipment. (limited stocks of Met Office observing equipment and stationery are held at selected Port Met Offices abroad)**

Monthly statistical lists are produced of all observing ships (UK and Overseas) whose observations have been in gross error during the period, and indicating the

bias relative to the model field and the standard deviation. The following observation parameters are monitored;

- Wind speed (m/s),
- Wind direction (^{0})
- Pressure (hPa)
- Sea surface temperature (^{0}C)
- Relative Humidity
- Air Temperature(^{0}C)

As the lead centre for surface marine monitoring the Met Office also prepare six monthly reports on the quality of marine surface observations which are issued to focal points within National Meteorological Services with a view to the resolution of identified observing problems. The parameters covered by the reports include Wind speed (m/s), Pressure (hPa), and Sea Surface Temperature (^{0}C)

In addition to the above Met Office climatological databases are used to routinely monitor

- the historical observing record (e.g. the accuracy and frequency of observations) for individual observing ships,
- observations that have failed the quality checks when being inserted on our climatological database records. This is normally done on a monthly basis with details conveyed to PMOs for resolution of any problems. Parameters monitored include Air temperature, Sea temperature, Dewpoint, Pressure, Wind direction and speed parameters

Recent ship observations received on the GTS are also checked, when considered necessary by Met Office marine staff and Port Met Officers in order to pre-empt any subsequent monitoring problems.

The timeliness of receipt of ship observations is also monitored on a monthly basis, for defined geographical areas and ship categories, to ensure data is received within the specified model run cut-off times. Ships which fail to submit timely observations are either contacted directly, or a visit by a PMO is arranged to resolve any problems

The Met Office also acts as the Real Time Monitoring Centre (RTMC) for the VOSClim project, which requires participating ships to comply with more onerous observation criteria. Statistics of all participating ships are generated together with lists of ships which have failed to meet the specified criteria are produced on a monthly basis for posting on the project website.

One of the biggest problems associated with monitoring is the fact that ships' call signs can change frequently. (Monitoring based on ships' IMO numbers could have advantages for the future).

<u>Delayed mode data and archival</u>

The majority of UK ships continue to record their observations in logbooks for subsequent collection by our Port Met Officers, or for direct return to Met Office Headquarters. The number of logbooks received during 2002 was 380 compared to the previous year's total of 504. This continued reduction was owed, in part, to the increased use of TurboWin software for coding ship observations, but is also due to a number of prominent observing ships having reached the end of their service lives during 2002.

With its built-in quality control checks, TurboWin automatically codes each observation from the data entered by observers. The observation can then be downloaded to floppy disks for subsequent real time transmission to the Met Office via Inmarsat-C. The coded observations are subsequently downloaded by the visiting PMOs at routine intervals (approximately 3 months) as log files.

Delayed mode data undergo a series of quality control checks before being stored on a database for uses such as marine climatology and climate research. The logbooks themselves are destined to become permanent public records held in the National Meteorological Archive, currently located at Bracknell.

As a consequence in the decline in ships meteorological logbooks there has been a corresponding reduction in the number of reports noted on the 'Additional Observations' pages of ships' meteorological logbooks. These observations are used to prepare copy for our publication '*The Marine Observer*'. However, this reduction has been balanced by the increased use of TurboWin and email for reporting additional observations.

The Met Office Edinburgh also performs the role of one of the two Global Collecting Centres (GCCs) established under the Marine Climatological Summaries Scheme (MCSS). It is the responsibility of each GCC to check that the minimum quality control procedures have been applied to ship observations and then to despatch a copy of the quality controlled data to responsible members on a quarterly basis.

g. **Coordination and collaboration** (national / international):

1. **Met Office marine staff liaise closely with the Royal Dutch Meteorological Institute (KNMI) on the development of improvements to their TurboWin electronic logbook. Based on input from Met Office marine staff a new facility was recently added to permit observers to also record additional non-coded observations of marine phenomena. At present this is for text-only accounts (photographs, sketches and barograms, etc, continue to be forwarded separately). Problems identified by observation monitoring procedures have also given rise to amendments to the observation coding procedures in TurboWin**

2. **Met Office marine staff regularly assist the NOAA with arranging the deployment of drifting buoys for the Global Drifter program using suitable UK voluntary observing ships. During 2002 drifters were deployed for NOAA from the following UK ships; *Resolution Bay, Palliser Bay* and the *City of Cape Town.***

h. **Research and development:**

Trials of a new prototype plastic marine screen were performed during the summer of 2002. The trial entailed a comparison between two standard wooden Stevenson screens, one wooden marine screen and a new plastic screen. The trials concluded that the prototype plastic screen;

- **Provides a much better radiation shield than the wooden marine screen and produces dry bulb temperatures in good agreement with those in a Stevenson screen**
- **Has a faster thermal response that the standard Stevenson screen, this being noticeable at dawn and dusk when the air is warming up or cooling more quickly**
- **Gives dew points in very good agreement with those of the ordinary Stevenson screen when the appropriate psychometric coefficient is used**

In addition to having good performance plastic marine screens could be produced a lot more cheaply, and could be manufactured almost entirely using injection-moulding techniques. A small number of the screens have now been assembled and are about to undergo final land and sea trials. A modified version is also

going to tested on one of the Met Office's open ocean moored buoys.

The life of the new plastic screens is expected to be in the order of 10 years – substantially longer than the previous wooden variety.

i. **Instrument testing and comparison facilities**:

The Met Office Quality Assurance Laboratory (QA Lab) relocated to Watchmoor Point in Camberley in July 2002 and currently share premises with the engineering and calibration firm, Dowding & Mills. The QA Lab provides a comprehensive set of calibration services to a variety of internal and external customers. The staff can deal with a wide range of meteorological equipment, and the work done in the lab benefits from an extensive knowledge of met instruments accumulated over 150 years. The Met Office calibration standards have full traceability to National Standards as held at the National Physical Laboratory (NPL), and techniques are continually updated to keep in touch with the latest findings in Meteorology. Approx. 8000 instruments pass through the lab each year.

j. **Capacity building** (national / international):

Although the marine networks branch of the Met Office were not directly involved in any VOS capacity building initiatives during 2002 close links were maintained with Port Met Officers and National Met Services in other countries. In the course of the year PMOs and marine staff from several overseas national met services took the opportunity to visit the Met Office to exchange information and knowledge.

k. **VOS promotion** (award schemes / publications & literature):

Awards

In 2002 Excellent Awards were made to 300 Masters and observers serving on Selected ships who have returned meteorological logbooks, the contents of which were assessed as being of the highest quality. These awards consisted of a presentation book containing a named bookplate. Similar book awards were made to the top performing ships reporting in our national 'Marid' Code

A new award was also introduced in 2002 to recognise those ships and observers who now submit reports using TurboWin software. A framed certificate was presented to each of the top four TurboWin ships and a presentation book award made to the principal contributor of observations on each ship

In addition to awards made to shipborne observers, 15 observers working on offshore installations also received book awards in recognition of their contributions during 2002.

Six shipmasters were also nominated for long service awards and will be invited to a formal presentation of inscribed barographs at the Met office during 2003.

A small number of Special Awards were also made to overseas PMOs whose efforts had been of particular assistance to the UK observing fleet, and to ships' staff whose contributions had been particularly helpful e.g. concerning the deployment of drifting buoys, and to those who had contributed to the Automated Shipboard Aerological Programme.

As opportunity permitted, framed certificates were also presented by UK PMOs to ships participating in the VOSClim Project

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Publications

The following publications and forms are currently issued to selected UK voluntary observing ships

- **Ship's Meteorological Logbook**
- **Meteorology for Mariners**
- **Marine Observer's Handbook**
- **Barogram sheets (for open scale barographs)**
- **Inspection of Barometer tag**
- **Aneroid Barometer Correction Card/sticker**
- **Ship's Code Card**
- **Ship's Code & Decode Book**
- **State of Sea booklet**
- **Cloud Types for Observers**
- **Reduction to MSL Card**
- **Auxiliary Ship's Code Card**
- **Dew-point Tables**

Copies of *The Marine Observer* are also prepared and published quarterly and supplied to all UK Selected ships and rigs in appreciation of their voluntary contributions.

Marid Code ships are also provided with a dedicated code book and observation report forms. Similarly Auxiliary ships are provided with dedicated code cards and observation report forms

Marine Weather Services brochures detailing marine weather forecast and Maritime Safety Information (MSI) broadcasts are also produced annually and provided free gratis to observing ships and other interested marine organisations

A temporary reprint of *Meteorology for Mariners* was initiated in 2002 pending the finalisation of a revised text and new issue of the book planned for mid 2003. Work was also started in 2002 on preparing an updated version of *Cloud Types for Observers*, and plans put in place for a future revision of the *Marine Observer's Handbook*

l. **List of Port Meteorological Officers** (see Appendix 3):

m. **Ship inspections and regime**:

During 2002 the UK voluntary observing fleet was serviced by a team of six dedicated Port Met. Officers and one Port Met. Assistant based at principal ports around the UK. The offshore units were co-ordinated by the Offshore Adviser, based in Aberdeen.

In total, during the year the Port Met. Officers performed 538 UK VOS ship inspections whilst the Offshore Adviser inspected 23 offshore installations

Although the number of Port Met Offices remained constant throughout the year the duties of the incumbent PMO's were enhanced during 2002 to include the inspection of land-based meteorological sites, as well as some additional technical work.

The PMOs and the Offshore Adviser continue to visit ships and installations to offer advice and to check instruments. The PMOs, together with the Marine Networks staff in Met Office Headquarters, liaise closely with their counterparts around the world, so strengthening international co-operation and encouraging

more ships to become involved with observing. PMOs also visit ships of other countries' fleets, if required, to assist observing personnel.

Ideally, observing ships are inspected at intervals not exceeding three months, although there may be exceptional cases where this is not practicable e.g. when a ship has just had a change of service and is likely to be absent from the UK for a long period.

A Ship Inspection Report form is completed by PMO's at each inspection recording the ship's instruments and other details. An electronic version of this form is sent by e-mail to Met Office Headquarters as soon as possible after the inspection so that details and metadata can be stored on a dedicated fleet database.

At each inspection any defective instruments are replaced, and stocks replenished. As the barometer is the most important instrument for weather observing its readings are checked by comparison with MK1 precision aneroid 'Station' barometer(s) which are kept specially for this purpose.
Several barometer readings are made during an inspection and if the difference found (after calibration corrections have been applied) exceeds 0.3 mb, and the error is obviously increasing, the barometer is withdrawn.

On visiting an observing ship, Port Met. Officers also ascertain that the necessary logbooks, publications and stationery are on board, and replenish stocks as required. In addition they ensure that the observing officers understand the current WMO Code (FM 13-XI SHIP) and the procedures to be carried out in transmitting weather messages

In order to avoid overlapping inspections, Port Met. Officers ascertain the date and location of the last inspection from the Fleet Database

In some cases it may prove impossible for ships trading outside the UK to be inspected by a Port Met. Officer for considerable periods. When appropriate, Port Met. Officers of other National Meteorological Services may be requested to visit or inspect these ships

At least once a year, a muster form is sent to each ship that has not been inspected in the previous year. On this form ship's observing officers can report on the condition of meteorological instruments and order replacements and stationery as required.

In all cases when visiting ships, PMO's inspect the Ship's Meteorological Logbook and, if it is completed or nearly so, return it to Met Office Marine Networks (If a logbook in current use contains less than 30 days observations, it is not withdrawn). The opportunity, whenever possible, is also taken to give observers advice regarding the correct method of completing entries in the logbook.

In the case of ships solely using TurboWin software for coding observations (i.e. in lieu of meteorological logbooks) PMO's ensure that log files are downloaded onto floppy disks and returned to the Met Office for processing. Some discretion is exercised by the Port Met. Officer as to how frequently log files need to be downloaded, as this will depend upon the number of observations made and the ships trading pattern. However, for ships recruited to participate in the VOS Clim project downloads are as far as possible be performed at three monthly intervals

n. **VOSClim**:

i. **Contribution to the VOSClim project**:

Number of ships participating in VOSClim as at 31 Dec 2002	**19**
Number of VOSClim recruitments during 2002	**7**
Number of VOSClim recruitments planned for 2003	**11**
Target number of ships to participate in VOSClim	**30**

ii. **Standard VOSClim observing equipment** (including details of AWS systems or electronic logbook used):

Recruited VOSClim ships are equipped with the following instruments

1 precision aneroid barometer with damping cap and mounting bracket.
1 marine barograph + shelf.
2 sheathed thermometers (1 air, 1 wet-bulb) for each screen, plus 2 spares.
2 marine screens (or 1 in certain circumstances e.g. training ships)
3 sea thermometers (1 protected + 2 spares) for rubber bucket.
2 rubber buckets.

Recruited VOSClim ships with Distant Reading Equipment carry

1 precision aneroid barometer with damping cap and mounting bracket.
1 marine barograph + shelf.
4 sheathed thermometers plus 2 spares.
4 electrical resistance thermometers (ERT).
2 marine screens (modified crosspieces for ERT's).
1 digital temperature indicator (DTI).
1 rubber bucket.
1 hull sensor.
2 sea thermometers.

The Met Office does not provide anemometers for observations on VOSClim recruited ships. Surface wind speed and direction are estimated from the sea state.

iii. **Comments** (data issues / instrumentation / difficulties experienced):

Unfortunately four of our best observing ships recruited to the project, (operating on round the world voyages) were withdrawn during 2002, having reached the end of their service lives

Although efforts are made to recruit ships to the project that routinely return to the UK this is not always achievable, due to the vagaries of the charter market and due to ownership changes. As a consequence at least two of the UK project ships have been subject to changes in their trading patterns and now rarely return to the UK. This makes routine inspection of their meteorological equipment impossible and also interrupts the return of the delayed mode IMMT-2 data (which includes the additional project code groups).

A number of onboard observing problems have been resolved as a result of the project's monthly observation monitoring procedures. In particular, on a couple of ships, it was found that high pressure biases had occurred due to observers applying the pressure height correction twice (i.e. they had not appreciated that the TurboWin programme automatically applied the correction). This problem was easily resolved, and suitable text was added to the TurboWin program to warn observers of the need to avoid this error.

Anemometers are not provided for VOSClim recruited ships. The relative wind speed and direction required for the additional project code groups are calculated within the TurboWin program on the basis of the estimated

wind visually observed from the sea state.

iv. **Catalogue of VOSClim ships** (see Appendix 4):

o. **Other comments**:

Met Office marine staff were closely involved throughout 2002 in laying the foundations of an ambitious new European surface marine program for the Eumetnet Composite Observing System (EUCOS). This optional programme will initially run from 2003 to 2006, and will encompass the drifting buoy, moored buoy and VOS networks of all participating European member countries. In the first two years efforts will focus on the development of an integrated network design and thereafter, following thorough review of the design, it is hoped that the programme will enter an implementation phase. Up until the time of this new program there was no coordinated European forum for coordinating the operations of European VOS networks. It is envisaged that the program will therefore help optimise the efficiency of future European VOS operations.

An increasing number of drifting buoys were deployed from UK observing ships during 2002. Notably CanMar *Pride*, *Discovery* and *OOCL Belgium* assisted with North Atlantic deployments in 2002. In addition the research ships *Ernest Shackleton* and *James Clark Ross* assisted in the shipment and deployment of drifting buoys in the Southern Ocean

6. SOOP:

a. **Programme description**:

Operator	**SOC**
Number of XBT SOOP ships at 31 Dec 2002	**2**
Total number of XBT profiles in 2002	**428**
Total number of BATHY messages sent on the GTS in 2002	**0**

Operator	**BAS**
Number of XBT SOOP ships at 31 Dec 2002	**1**
Total number of XBT profiles in 2002	**174**
Total number of BATHY messages sent on the GTS in 2002	**0**

Operator	**Aberdeen Marine Lab**
Number of XBT SOOP ships at 31 Dec 2002	**1**
Total number of XBT profiles in 2002	**70**
Total number of BATHY messages sent on the GTS in 2002	**0**

Operator	**Dunstaffnage Marine Lab**
Number of XBT SOOP ships at 31 Dec 2002	**1**
Total number of XBT profiles in 2002	**119**
Total number of BATHY messages sent on the GTS in 2002	**0**

Operator	**Bullard Labs, Cambridge**
Number of XBT SOOP ships at 31 Dec 2002	**1**
Total number of XBT profiles in 2002	**42**
Total number of BATHY messages sent on the GTS in 2002	**0**

b. **Catalogue of SOOP vessels** (see Appendix 5):

c. **Specific goals and objectives**:

Research

***Charles Darwin* Cruise 141 (SCIPIO, June 1-July 11, 2002) provided a comprehensive, multidisciplinary oceanographic survey of the Mascarene Ridge system (between Seychelles and Mauritius) in the western Indian Ocean. The objectives of the cruise were:**

1. **Examination of the structure of the mean flow around and over the Mascarene Ridge.**
2. **Investigation of the decadal-timescale changes in the water masses in the vicinity of the Mascarene Ridge.**
3. **Assessment of the energy fluxes, and mixing produced by, internal waves in the vicinity of the Mascarene Ridge.**
4. **Bathymetric survey of parts of the Mascarene Ridge and surrounding area.**
5. **Calibration of the ENVISAT satellite sensors measuring the temperature (AATSR) and colour (MERIS) of the ocean**

surface.

7. **Investigation of biogeochemical properties (nutrients, phytoplankton, zooplankton, biogenic gases, CFC tracers and light levels) around the Mascarene Ridge, and their relationship to the structure of the mean flow.**
8. **Measurement of heat fluxes and winds near the air-sea interface, and the airflow disturbance around the ship.**

***RRS Discovery* Cruise 263 – comprised 2 cruises for Seismic Acquisition, firstly across the Faeroes-Shetland Trough, Faeroes Shelf and Continental Margin, and then on the Hatton Bank Continental Margin and Hatton-Rockall Basin**

***FRV Clupea* cruise objectives included the deployment of XBTs during an acoustic survey. The studies took place of the east coast of Scotland and included intense sampling of the region across the Wee Bankie sandbank in an attempt to locate a frontal zone between mixed water over the bank and stratified water in the deeper region closer inshore.**

Cruise JR70: marine biology and oceanography, South Georgia area
Cruise JR71: swath bathymetric survey and coring, northern Antarctic Peninsula
Cruise JR72: marine biology (acoustics), South Georgia area

d. **Major challenges and difficulties**:

Charles Darwin Cruise 141: At the end of the previous cruise, the hard disk in the XBT pc had become inoperable. However, a spare hard disk, which was "jury-rigged" to the XBT pc, and, following installation of the SEAS-IV software, provided a system which worked successfully for the duration of the cruise, allowing deployment of 277 XBTs in total.

Cruise JR71: working in ice-infested and partly unsurveyed waters

e. **Description of XBT equipment**:

i. **XBT instrumentation and probes**:

Sippican T5 and T7

ii. **XBT acquisition software**:

SEAS-IV

f. **Related sampling programmes**:

CTD casts: total 80 on JR70, 22 on JR71, 6 on JR72

g. **Observation transmission systems** (method / transmission problems / comments):

Data not transmitted on GTS

h. **Data management** (monitoring / archival / quality control / exchange):

All data passed to UKHO Taunton for QC and data basing.

i. **Coordination and collaboration** (national / international):

Data released by UKHO to US NODC World Data Centre, ICES Data Centre and BODC after 2 years

j. **Research and development**:

k. **Instrument testing and comparison facilities**:

l. **Other comments**:

7. ASAP:

a. **Catalogue of ASAP vessels in 2002** (see Appendix 6):

b. **ASAP performance in 2002** (see Appendix 7):

c. **Data management** (monitoring / archival / quality control / exchange):

The timeliness of receipt of ASAP observations is monitored on a quarterly basis to ensure data is received within the specified model run cut-off times. On average between 95% to 100% of UK ASAP observations are received within the model cut off of HH+115 minutes

Downloaded ASAP archive data and sounding logs are collected at routine intervals and the number of ascents being achieved and received on the GTS, the average burst heights, failure rates, standard deviations etc. are determined for report purposes. The edited data from the *CanMar Pride* received on floppy disks is transferred to our Met Office Upper Air Observing Development Team for retention and for quality assessment. GPS wind-finding data acquisition from the *CanMar Pride* continues to be extremely poor (30 to 40% wind measurements missing) and analyses of the raw GPS data by the manufacturer (Vaisala) have shown that radar interference is the most likely cause.

The temperature measurements are monitored using the ECMWF Model 100 hPa height fields and during 2002 and 2003 have only once shown an anomaly (second quarter 2002) where the (Observation- First Guess Model Field) bias or standard deviation of the quarterly measurements was more than +/-25m or 25m respectively. (25m error on the 100 hPa height corresponds to an average sounding error of 0.4C to that level) (It is likely that this anomaly was produced by one erroneous ascent in May 2002). Thus the *CanMar Pride* observations generally show good agreement with model fields.

Humidity measurements are monitored mainly by observing the maximum humidity measured in low cloud. The humidity measuring performance of the *CanMar Pride* does not appear to be significantly different to that of UK land stations using RS80 radiosondes.

[Note ; RS80 humidity sensors exhibit a dry bias in their measurements if they are not flown within about 6 to 8 months of their calibration date. Although may be difficult to achieve because of the smaller quantities of radiosondes used on ships, RS80 humidity measurements are improved if the supply of radiosondes can be maintained such that radiosondes older than about 8 months are not used. The radiosondes should be flown serially such that the oldest calibrations are used first. N.B. the first 3 digits of the calibration number YWW relate to the last digit of the year (Y) and week (WW) of calibration. Thus a sonde number (shown on packaging and calibration tape) of 234…… was calibrated in week 34 (August) of 2002 .]

ASAP data is archived on our climatological database

d. **Coordination and collaboration** (national / international):

The Met Office is an active participant in the EUMETNET-ASAP (E-ASAP) programme which became a component of the Eumetnet Composite Observing System (EUCOS) Operational Programme in 2003. By integrating the management of members existing national ASAP systems it is anticipated that significant cost savings and network efficiencies will be recognised.

Research and development:

UK Met Office staff were also actively involved in the supply of consumables and technical expertise for the Worldwide Recurring ASAP Project (WRAP) which was installed on the UK observing ship *Palliser Bay* until the ship was withdrawn from service at the end of May 2002.

The Met Office is also closely involved with the prototype testing of the new generation Vaisala RS92 radio sondes. As the RS92 uses a fully code-correlating GPS chip within the radiosonde itself, this new technology should enable a much better GPS satellite acquisition than achieved in the currently used RS80 GPS radiosondes. Initial tests (October 2002 (Camborne)) have shown < 1% missing winds and good GPS wind measurement quality. The RS92 also appears to be unaffected by radar interference. Further tests are being made in late May 2003. The RS92 pressure and temperature sensors are smaller than used in the RS80, with corresponding improved response and accuracy which will consequently improve the accuracy of height measurements. The software control of the new pulse-heated humidity sensors is still being optimised as a result of comparison tests. A previous problem of contamination of the RS80 humidity sensor with age, which can cause the humidity sensor to measure too dry, should be addressed by the new technology and preflight procedures for the RS92. Once the measurements (especially humidity) of the RS92 have proved to be within the Met Office specification, the Met Office aims to switch directly from the RS80 to the RS92 radiosonde operationally in 2004.

e. **Instrument testing and comparison facilities**:

Our radiosonde testing and comparison test facilities are based at our Met Office upper air station in Camborne, Cornwall.

f. **Other comments**:

The UK Automated Shipboard Aerological Programme (ASAP) is installed on the container ship *CanMar Pride* which operates on the North Atlantic (Thamesport–Antwerp–Le Havre–Montreal) route. It comprises a dedicated 10-ft container housing the radiosonde balloon launcher whilst the necessary equipment for processing and transmitting the sounding in TEMP SHIP code (FM36–XI) is installed on the bridge.

Thanks to the dedicated efforts of the ships staff a total of 182 sondes were successfully launched during 2002 reaching an average terminal sounding height of 23.6 km.

***Palliser Bay*, the UK observing ship which hosted the ASAP system used in connection with the Worldwide Recurring ASAP Project (WRAP) reached the end of its service life at the close of the year. The upper air equipment was withdrawn from the ship at the end of May 2002.**

Figures in Appendix 7 are based upon 18 voyages of the containership *CanMar Pride* during 2002.

The figure in the 'messages transmitted' column is for successful soundings only, i.e. ascents producing data to ≥200hPa. The figure in the "percentage on GTS" column is therefore a little misleading in that the total of 194 ascents received in MIDAS includes some ascents which did not reach 200hPa.

Launches were not attempted on 9 occasions due to adverse weather conditions.

Appendix 1. Participating national marine organizations.

Organization	**Met Office**
Programmes (1)	**VOS and ASAP programmes** **(Also participants in the EUCOS Surface Marine Programme, the E-ASAP programme and the VOSClim Project)**
Website URL	**http://www.metoffice.com**

Organization	**The United Kingdom Hydrographic Office**
Programmes (1)	**SOOP (Whilst there is no coordinated national SOOP programme in the UK Hydrographic Office was involved in the provision of XBTs for research cruises during 2002)**
Website URL	**www.ukho.gov.uk**

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

(1) Programmes: List the programmes (VOS, SOOP, ASAP) that each organization participates in. Include additional details, e.g. (data management) where appropriate.

Appendix 2: National Focal Points.

Focal Point (1)	SOT, VOSClim	PMO, ASAP, VOS	SOOP
Name	Sarah North	Captain E J O'Sullivan	Garry Dawson
Title	Nautical Officer	Manager, Marine Networks	Data Manager
Agency	Met Office	Met Office	UK Hydrographic Office
Postal Address	Beaufort Park Easthampstead Wokingham Berkshire RG40 3DN United Kingdom	Beaufort Park Easthampstead Wokingham Berkshire RG40 3DN United Kingdom	Admiralty Way Taunton Somerset TA1 2DN
Email	Sarah.north@metoffice.com	Edward.osullivan@metoffice.com	Garry.dawson@ukho.gov.uk
Telephone	+44 01344 855617	+44 01344 855723	+44 01823 337900 Ext 3225
Facsimile	+44 01344 855873	+44 01344 855873	+44 01823 284077

Focal Point (1)			
Name			
Title			
Agency			
Postal Address			
Email			
Telephone			
Facsimile			

(1) Focal Point: Insert SOT, VOS, VOSClim, PMO, SOOP or ASAP as appropriate for each national contact.

Appendix 3: List of Port Meteorological Officers.

Port	London - South-east England	Cardiff - Bristol Channel	Southampton -South-west England
Name	Harry H Gale	Austin P Maytham	James M Roe
Title	Captain	Captain	Captain
Postal Address	Met Office Trident House 21 Berth Tilbury Dock Tilbury Essex RM18 7HL	Met Office Titan House Cardiff Bay Business Centre Lewis Road Ocean Park Cardiff CF24 5BS	Met Office 8 Viceroy House Mountbatten Business Centre Millbrook Road East Southampton SO15 1HY
Email	pmolondon@metoffice.com	pmocardiff@metoffice.com	pmosouthampton@metoffice.com
Telephone	+44 1375 859970	+44 29 2045 1323	+44 23 8022 0632
Facsimile	+44 1375 859972	+44 29 2045 1326	+44 23 8033 7341
Comment	*Responsible for ports between the Wash and Beachy Head – including Felixstowe, Gt Yarmouth, Lowestoft, Tilbury, Thames Medway and Dover*	*Responsible for the Bristol Channel area including the ports of Avonmouth, Bristol, Cardiff, Swansea, Barry, Port Talbot, Milford Haven and Appledore*	*Responsible for the southern coast between Penzance in the west and Newhaven in the east.*

Port	Liverpool - North-west England	Hull - East England	Edinburgh - Scotland(S)
Name	Colin B Attfield	John Steel	Tony Eastham
Title	Mr	Captain	Mr
Postal Address	Met Office 8 Tower Quays Tower Road Birkenhead CH41 1BP	Met Office Crosskill House Mill Lane Beverley HU17 9JB	Met Office Saughton House Broomhouse Drive Edinburgh EH11 3XQ
Email	pmoliverpool@metoffice.com	pmohull@metoffice.com	pmoedinburgh@metoffice.com
Telephone	+44 151 6490541	+44 1482 867226	+44 (0) 131 528 7305
Facsimile	+44 151 6490547	+44 1482 868116	+44 (0) 131 528 7345
Comment	*Responsible for ports from the Solway Firth to Holyhead*	*Responsible for ports from Berwick to the Wash*	*Responsible the Forth ports and SW coast of Scotland to the Solway Firth*

Port	**Aberdeen - Scotland (N)**		
Name	**Iain Hendry**		
Title	**Offshore Adviser**		
Postal Address	**Met Office** **Davidson House** **Campus 1** **Aberdeen Science & Technology Park** **Bridge of Don** **Aberdeen** **AB22 8GT**		
Email	**ihendry@metoffice.com**		
Telephone	**+44 (0) 1224 407557**		
Facsimile	**+44 (0) 1224 407568**		
Comment	*Offshore Adviser (with Port Met Officer duties) - Responsible for ports on Scotland East coast from Invergordon to Dundee*		

Appendix 4. Catalogue of ships participating in VOSClim in 2002.

Ship name	Callsign	IMO Number	VOSClim recruitment date (yyyymmdd)	VOSClim withdrawal date (yyyymmdd)	Comments (e.g. details of name and/or callsign changes)
Peninsular Bay	MHCQ7	8808628	6-Oct-2001		
Scottish Star	C6KU8	8315994	10-Sep-2001		
St.Lucia	C6LF8	9038323	30-Aug-2001		
Dominica	C6LF9	9038335	15-Aug-2001		
Queen Elizabeth 2	GBTT	6725418	10-Dec-2001		
Oriana	GVSN	9050137	23-May-2002		
Resolution Bay	GXEV	7417575	26-Oct-2001	17-Sep-02	
City of Cape Town	GXUP	7510901	5-Sep-2001		
Providence Bay	MSTM6	9080613	20-Oct-2001		
P&O Nedlloyd Southampton	MXBC6	9153850	18-May-2002		
CanMar Honour	ZCBP5	9165360	3-Sep-2001		
James Clark Ross	ZDLP	8904496	10-Sep-2001		
City of London	MXMM5	9137703	28-Aug-2001		
Ernest Shackleton	ZDLS1	9114256	19-Sep-2001		
Glasgow Maersk	MZGK7	9193420	12-Sep-2001		
P&O Nedlloyd Genoa	MYMX5	9168219	5-Aug-2002		
P&O Nedlloyd Shackleton	ZQYC5	9211494	23-Jan-2002		
Discovery	GLNE	5090660	19-Feb-2002		
Mairangi Bay	GXEW	7417563	12-Oct-2001	31-Jul-02	
Berlin Express	GQHC	7218383	17-Aug-2001	31-Jul-02	
Grasmere Maersk	ZQAY4	9193276	10-Sep-2002		
Maersk Gateshead	VQBW2	9235543	5-Dec-2002		
Pegasus Bay	GXIC	7510896	1-Sep-2001	1-Nov-02	
Chiquita Belgie	C6KD7	9015204	16-Mar-2003		
Newport Bay	MQEC7	9005558	5-Apr-2003		

Appendix 5. Catalogue of ships participating in SOOP in 2002.

Ship name	Callsign	Operating Agency	SOOP recruitment date (yyyymmdd)	SOOP withdrawal date (yyyymmdd)	XBT line and (sampling mode)	Sampling systems (e.g. XBT, TSG, CTD, XCTD, pCO_2)
Charles Darwin	GDLS	NERC/ SOC	ongoing		Depends on research programme	XBT
James Clark Ross	ZDLP	BAS/SOC	ongoing		Depends on research programme	XBT
Clupea	MZFS9	Marine Lab	ongoing		Depends on research programme	XBT
Discovery	GLNE	NERC / Bullard Lb	ongoing		Depends on research programme	XBT

Appendix 6. Catalogue of ships participating in ASAP in 2002.

…1.. ASAP units operated during the year on …1…. ships

Type of ship (1)	Ship name	Callsign	Comms method (2)	Windfind method / sonde type (3)	Launch method (4)	Launch height (5)	Area of operation (6)	ASAP unit ID No.
Merchant	CanMar Pride	ZCBP6	Inmarsat-C	GPS RS80-15GH	Container (semi-automatic)	22 metres	North Atlantic	GB/ASAP1

(1) Type of ship: Merchant, research, supply
(2) Comms method: Inmarsat C or others
(3) Windfind method / sonde type: eg. GPS/Vaisala RS80-G, Loran/Vaisala RS80-L, VIZ GPS Mark II Microsonde, etc
(4) Launch method: deck launcher (portable), deck launcher (fixed), container (manual), container (semi automatic), other
(5) Launch height: height above sea level from where the sonde is released
(6) Ocean area: North Pacific, North Atlantic, Indian Ocean, variable

Appendix 7. ASAP performance in 2002.

Callsign	Total number of sondes launched	Number of TEMP SHIP transmitted	Number of relaunches	Average terminal sounding height (km)	Balloon size (gm)	Percentage on GTS (see note)
ZCBP6	246	182	0	23.6	350	93.8%

Percentage on the GTS is the ratio of reports received against reports transmitted, and is based upon reports received at a data centre or GTS insertion point (name)

Ship Observations Team

SOT-II, 28th July – 1st August 2003, London, UK.

Country: United States

1.

Contact: Steve Cook (AOML), Kathleen O'Neil (NDBC)

2.

3. Participating national marine organizations (see Appendix 1):

4. Focal Points (see Appendix 2):

5. VOS:

a. **Programme description**:

Category	Number of ships at 31 Dec 2002	Comments
Selected	526	
Supplementary	137	
Auxiliary	131	
Other (specify)	49	Great Lakes
Total VOS fleet	943	

Number of VOS vessels recruited in 2002	98
Number of VOS vessels decommissioned in 2002	Unknown
Percentage of the VOS (selected ships only) that did not report in Dec 2002 (to nearest whole percent)	54 %
Total number of SHIP messages sent on the GTS in 2002	100,311

b. **Specific goals and objectives**:

The goal of the VOS program is to obtain weather and oceanographic observations from moving ships. These data help to improve marine weather forecasts in both coastal and high seas areas, providing on the spot data and details about local surface conditions.

c. **Major challenges and difficulties**:

d. **Description of VOS equipment**:

i. **Standard meteorological equipment supplied by the NMS**:

Aneroid Barometer, Barograph, Hygrometer, Shipboard Environmental (Data) Acquisition (SEAS) software are routinely provided to U.S. VOS participant vessels.

ii. **Shipboard AWS systems**:

Name	Number of ships at 31 Dec 2002	Manufacturer and model
NONE		

iii. **Electronic logbooks** (using either ship's own or NMS supplied computer):

Software	Number of ships at 31 Dec 2002	Comments
SEAS	353	

e. **Observation transmission systems** (method / transmission problems / comments):

INMARSAT, TELEX, SITOR, VHF, and CELL PHONE are the primary methods of data transmission.

f. **Data management** (monitoring / archival / quality control / exchange):

VOS data are monitored at the National Center for Atmospheric Prediction (NCEP) where quality control procedures are in place. Data arriving at the National Weather Service (NWS) headquarters are placed on the NWS node of Global Telecommunications System (GTS) for worldwide dissemination. Archival of VOS data occurs at the National Climactic Data Center (NCDC).

g. **Coordination and collaboration** (national / international):

The U.S. VOS program is coordinated between the several National Oceanic and Atmospheric Association (NOAA) line offices utilizing cross-cutting and innovative processes and procedures.

h. **Research and development:**

Initial investigation of low cost weather observing systems is being conducted at the National Data Buoy Center (NDBC).

i. **Instrument testing and comparison facilities**:

Instrument testing and comparison facilities exist at several NWS locations including the NDBC.

j. **Capacity building** (national / international):

k. **VOS promotion** (award schemes / publications & literature):
Some 80 plaques and numerous certificates were awarded to U.S. VOS vessels during 2002. The Mariners Weather Log (MWL) continues to be the primary published forum whereby we are able to disseminate VOS information to the U.S. participants.

l. **List of Port Meteorological Officers** (see Appendix 3):

m. **Ship inspections and regime**:
PMOs inspect VOS participants regularly when they are import. VOSClim visits and inspections are conducted on a more regular basis consistent with the ships' schedules

n. **VOSClim**:

i. **Contribution to the VOSClim project**:

Number of ships participating in VOSClim as at 31 Dec 2002	8
Number of VOSClim recruitments during 2002	8
Number of VOSClim recruitments planned for 2003	42
Target number of ships to participate in VOSClim	50

ii. **Standard VOSClim observing equipment** (including details of AWS systems or electronic logbook used):

Aneroid Barometer, Barograph, Hygrometer sets, SEAS software are standard on U.S. VOSClim vessels.

iii. **Comments** (data issues / instrumentation / difficulties experienced):

iv. **Catalogue of VOSClim ships** (see Appendix 4):

o. **Other comments**:

6. SOOP:

a. **Programme description**:

Operator	NOAA
Number of XBT SOOP ships at 31 Dec 2002	36
Total number of XBT profiles in 2002	9372
Total number of BATHY messages sent on the GTS in 2002	9372

Operator	SIO
Number of XBT SOOP ships at 31 Dec 2002	6
Total number of XBT profiles in 2002	4700
Total number of BATHY messages sent on the GTS in 2002	1405

b. **Catalogue of SOOP vessels** (see Appendix 5):

c. **Specific goals and objectives**:

To provide real-time data to the National Centers for Environmental Prediction for ENSO monitoring requirements and for research into seasonal to interannual climate studies.

d. **Major challenges and difficulties**:

The dynamic environment of the VOS forces us to continually recruit new vessels for participation and lack of operational support in foreign countries.

e. **Description of XBT equipment**:

i. **XBT instrumentation and probes**:

Sippican Mk-12 and Mk-21, Deep Blue and T-10 probes

ii. **XBT acquisition software**:

SEAS, SIO Autolauncher and AOML Autolauncher

f. **Related sampling programmes**:

We use the VOS to deploy SVP Drifters and Argo Floats and some TSG sampling.

g. **Observation transmission systems** (method / transmission problems / comments):

SEAS utilizes Inmarsat Standard C to transmit compressed binary files.

h. **Data management** (monitoring / archival / quality control / exchange):

The GOOS Center monitors the real-time XBT data flow, sends monthly updates of the delayed mode data to NODC, QC's and archives the Atlantic XBT data and exchanges data with MEDS.

i. **Coordination and collaboration** (national / international):

Nationally, the GOOS Center works with other NOAA line offices and universities to coordinate sampling and hardware usage. Internationally, the GOOS Center works with the VOS, SOT, and SOOPIP to coordinate sampling.

j. **Research and development**:

SEAS 2000 shipboard software is being developed to accommodate AWS, TSG and pCO2 sampling.

k. **Instrument testing and comparison facilities**:

l. **Other comments**:

7. ASAP:

a. **Catalogue of ASAP vessels in 2002** (see Appendix 6):

b. **ASAP performance in 2002** (see Appendix 7):

c. **Data management** (monitoring / archival / quality control / exchange):

d. **Coordination and collaboration** (national / international):

e. **Research and development**:

The Office of Global Programs has funding to develop a new concept in balloon launching which will result in a working model.

f. **Instrument testing and comparison facilities**:

g. **Other comments**:

Appendix 1. Participating national marine organizations.

Organization	National Data Buoy Center
Programmes (1)	VOS, VOSClim
Website URL	www.ndbc.noaa.gov

Organization	NOAA – AOML – GOOS Center
Programmes (1)	SOOP
Website URL	http://seas.amverseas.noaa.gov/seas/

Organization	NOAA – AOML – GOOS Center
Programmes (1)	Global Drifter Program
Website URL	www.aoml.noaa.gov/phod/dac/dacdata.html

Organization	Scripps Institution of Oceanography
Programmes (1)	High Resolution XBT/XCTD Network
Website URL	http://www-hrx.ucsd.edu/

(1) Programmes: List the programmes (VOS, SOOP, ASAP) that each organization participates in. Include additional details, e.g. (data management) where appropriate.

Appendix 2: National Focal Points.

Focal Point (1)	VOS	VOS/VOSClim	VOS
Name	Kathleen O'Neil	David McShane	Robert Luke
Title	VOS Program Manager	VOS Technical Leader	VOS Logistics and Support Services
Agency	NOAA/NWS/NDBC	NOAA/NWS/NDBC	NOAA/NWS/NDBC
Postal Address	National Data Buoy Center Building 3203 Stennis Space Center, MS 39529	National Data Buoy Center Building 1100 Stennis Space Center, MS 39529	National Data Buoy Center Building 3203 Stennis Space Center, MS 39529
Email	Kathleen.O'Neil@noaa.gov	David.McShane@noaa.gov	Robert.Luke@noaa.gov
Telephone	(228) 688-7720	(228) 688-1768	(228) 688-1457
Facsimile	(228) 688-2869	(228) 688-3153	(228) 688-2869

Focal Point (1)	SOOP	ASAP	GDC
Name	Steven K. Cook	Warren Keenan	Craig Engler
Title	Manager GOOS Center		Manager - GDC
Agency	NOAA/OAR/AOML	NOAA/OAR/OGP	NOAA/OAR/AOML
Postal Address	National Marine Fisheries Service 8604 La Jolla Shores Dr. La Jolla, CA 92037	NOAA/OAR/OGP 1100 Wayne Ave. Silver Spring, MD 20910-5603	NOAA/AOML 4301 Rickenbacker Causeway Miami, FL 33149
Email	Steven.Cook@noaa.gov	Warren.Keenan@noaa.gov	Craig.Engler@noaa.gov
Telephone	858-546-7103	(301) 427-2089	305-361-4439
Facsimile	858-546-7185	(301) 427-2073	

(1) Focal Point: Insert SOT, VOS, VOSClim, PMO, SOOP or ASAP as appropriate for each national contact.

Appendix 3: List of Port Meteorological Officers.

Port	Miami, FL	Jacksonville, FL	Norfolk, VA
Name	Robert Drummond	Lawrence Cain	Peter Gibino
Title	PMO	PMO	PMO
Postal Address	National Weather Service, NOAA 2550 Eisenhower Blvd., Suite 312 P.O. Box 165504 Port Everglades, FL 33316	National Weather Service, NOAA 13701 Fang Road Jacksonville, FL 32218-7933	National Weather Service, NOAA 4034-B G. Washington Highway Yorktown, VA 23692-2724
Email	Robert.Drummond@noaa.gov	Larry.Cain@noaa.gov	Peter.Gibino@noaa.gov
Telephone	(954) 463-4271	(904) 741-5186	(757) 877-1692
Facsimile	(954) 462-8963	(904) 741-0078	(757) 877-9561
Comment			

Port	Baltimore, MD	New York/New Jersey	Great Lakes
Name	James Saunders	Tim Kenefick	Amy Seeley
Title	PMO	PMO	PMO
Postal Address	National Weather Service, NOAA Maritime Center I, Suite 287 2200 Broening Highway Baltimore, MD 21224-6623	National Weather Service, NOAA 110 Lower Main Street, Suite 201 South Amboy, NJ 08879-1367	National Weather Service, NOAA 333 West University Drive Romeoville, IL 60446-1804
Email	James.Saunders@noaa.gov	Timothy.Kenefick@noaa.gov	Amy.Seeley@noaa.gov
Telephone	(410) 633-4709	(732) 316-5409	(815) 834-0600 (Ext. 269)
Facsimile	(410) 633-4713	(732) 316-7643	(815) 834-0645
Comment			

Port	New Orleans, LA	Houston, TX	Honolulu, HI
Name	John Warrelmann	Chris Fakes	Derek LeeLoy

Title	PMO	PMO	Ocean Services Program Coordinator
Postal Address	National Weather Service, NOAA New Orleans International Airport Box 20026 New Orleans, LA 70141	National Weather Service, NOAA 1620 Gill Road Dickinson, TX 77539-3409	National Weather Service, NOAA Grosvenor Center, Mauka Tower 737 Bishop Street, Suite 2200 Honolulu, HI 96813-3201
Email	John. Warrelmann@noaa.gov	Chris.Fakes@noaa.gov	Derek.Leeloy@noaa.gov
Telephone	(504) 589-4839	(281) 534-2640 (Ext. 277)	(808) 532-6439
Facsimile		(281) 337-3798	(808) 532-5569
Comment			

Port	Long Beach, CA	Oakland, CA	Seattle, WA
Name	Robert Webster	Robert Novak	Patrick Brandow
Title	PMO	PMO	PMO
Postal Address	National Weather Service, NOAA 501 West Ocean Blvd., Room 4480 Long Beach, CA 90802-4213	National Weather Service, NOAA 1301 Clay Street, Suite 1190N Oakland, CA 94612-5217	National Weather Service, NOAA 7600 Sand Point Way, N.E. BIN C15700 Seattle, WA 98115-6349
Email	Bob.Webster@noaa.gov	Bob.Novak@noaa.gov	Pat.Brandow@noaa.gov
Telephone	(562) 980-4090	(510) 637-2960	(206) 526-6100
Facsimile	(562) 980-4089	(510) 637-2961	(206) 526-4572 or 6094
Comment			

Port	Kodiak, AK	Valdez, AK	Anchorage, AK
Name	Richard Courtney	Debra Russell	Larry Hubble
Title	PMO	OIC	PMO
Postal Address	National Weather Service, NOAA 600 Sandy Hook Street, Suite 1 Kodiak, AK 99615-6814	National Weather Service, NOAA Box 427 Valdez, AK 99686-0427	National Weather Service, NOAA 222 West 7th Avenue #23 Anchorage, AK 99513-7575
Email	Richard.Courtney@noaa.gov	Debra.Russell@noaa.gov	Larry.Hubble@noaa.gov
Telephone	(907) 487-2102	(907) 835-4505	(907) 271-5135
Facsimile	(907) 487-9730	(907) 835-4598	(907) 271-3711
Comment			

Appendix 4. Catalogue of ships participating in VOSClim in 2002.

Ship name	Callsign	IMO Number	VOSClim recruitment date (yyyymmdd)	VOSClim withdrawal date (yyyymmdd)	Comments (e.g. details of name and/or callsign changes)
APL JAPAN	S6TS	9074391	20020827		
APL CHINA	S6TA	9074389	20020617		
APL SINGAPORE	WCX8812	9074547	20020827		
APL KOREA	WCX8883	9074535	20020827		
APL THAILAND	WCX8882	9077123	20020827		
APL PHILIPPINES	WCX8884	9077276	20020827		
PRESIDENT ADAMS	WRYW	8616434	20020702		
HORIZON SPIRIT	WFLG	7729459	20020611		

Appendix 5. Catalogue of ships participating in SOOP in 2002.

SHIP NAME	CALL SIGN	Agency	IN	OUT	Route	Sampling Systems
NACRE	3EZI6	NOAA/SIO	NA	NA	PX-25,40,81	SEAS/SIO HD - XBT
MOL KAURI	3FCS7	SIO	NA	NA	PX-50	SIO HD - XBT
NUEVO LEON	3FPA9	NOAA	NA	NA	AX-7	SEAS/AOML HD - XBT
LYKES COMMANDER	3FRY9	NOAA	NA	NA	AX-8	SEAS - XBT
RUBY INDAH	9VND	NOAA	NA	NA	PX-1	SEAS - XBT
DIRECT EAGLE	9VRA	NOAA	NA	NA	PX-9,13,37	SEAS - XBT
TAI HE	BOAB	NOAA	NA	NA	PX-26	SEAS - XBT
COLUMBUS COROMANDE	DDGY	NOAA	NA	NA	PX-9,13,37	SEAS/SIO HD
CONTI ASIA	DDQI	SIO	NA	NA	PX-50	SIO HD - XBT
SAFMARINE TUGELA	ELRR4	NOAA	NA	NA	AX-8	SEAS - XBT
DIRECT FALCON	ELYT5	NOAA	NA	NA	PX-9,13,37	SEAS - XBT
COLUMBUS FLORIDA	ELTZ3	NOAA/SIO	NA	NA	PX-9,13,37	SEAS/SIO HD
MELBOURNE STAR	GOVL	NOAA	NA	NA	PX-8	SEAS - XBT
AMERICA STAR	GZKA	NOAA	NA	NA	PX-8	SEAS - XBT
WESTWOOD BELINDA	H9IM	NOAA	NA	NA	PX-26	SEAS - XBT
SEA-LAND DEFENDER	KGJB	NOAA	NA	NA	PX-26	SEAS - XBT
CSX HAWAII	KIRF	NOAA	NA	NA	AX-10	SEAS/AOML HD
CSX ENTERPRISE	KRGB	NOAA/SIO	NA	NA	PX-10,26,37,44	SEAS/SIO HD – XBT/AWS
SKAUGRAN	LADB2	NOAA	NA	NA	PX-26	SEAS - XBT
SKAUBRYN	LAJV4	NOAA	NA	NA	PX-26	SEAS - XBT
QUEENSLAND STAR	MZBM7	NOAA	NA	NA	PX-8	SEAS - XBT
POLAR STAR	NBTM	NOAA	NA	NA	I-28	SEAS - XBT
POLAR SEA	NRUO	NOAA	NA	NA	I-28	SEAS - XBT
LYKES WINNER	P3XQ7	NOAA	NA	NA	AX-8	SEAS - XBT
OLEANDER	PJJU	NOAA	NA	NA	AX-32	SEAS – XBT/TSG/ADCP
EMERALD INDAH	S6ID	NOAA	NA	NA	PX-1	SEAS - XBT
POLYNESIA	V2CA2	NOAA	NA	NA	PX-18	SEAS - XBT
TAUSALA SAMOA	V2FA2	NOAA	NA	NA	PX-18	SEAS - XBT
SKOGAFOSS	V2XM	NOAA	NA	NA	AX-2,33	SEAS – XBT/TSG
ENDEAVOR	WAUW	NOAA	NA	NA	AX-4	SEAS - XBT
ENTERPRISE	WAUY	NOAA	NA	NA	AX-4	SEAS - XBT
MAERSK CALIFORNIA	WCX5083	NOAA	NA	NA	AX-8	SEAS/AOML HD
DELAWARE BAY	WMLG	NOAA	NA	NA	AX-4	SEAS - XBT
CSX NAVIGATOR	WPGK	NOAA	NA	NA	PX-10,37,44,26	SEAS - XBT
CSX PACIFIC	WSRL	NOAA	NA	NA	PX-10,37,44,26	SEAS - XBT
MCARTHUR	WTEJ	NOAA	NA	NA	ETP	SEAS - XBT

Ship Observations Team

SOT-II, 28th July – 1st August 2003, London, UK.

E-ASAP

1.

Contact: Dr. Klaus Hedegaard

2.

3. ASAP:

a. **Catalogue of ASAP vessels in 2002** (see Appendix 6):

b. **ASAP performance in 2002** (see Appendix 7):

c. **Data management** (monitoring / archival / quality control / exchange):

d. **Coordination and collaboration** (national / international):

e. **Research and development**:

f. **Instrument testing and comparison facilities**:

g. **Other comments**:

Appendix 6. Catalogue of ships participating in ASAP in 2002.

…2….. ASAP units operated during the year on …2…. ships

Type of ship (1)	Ship name	Callsign	Comms method (2)	Windfind method / sonde type (3)	Launch method (4)	Launch height (5)	Area of operation (6)	ASAP unit ID No.
Merchant	PELJASPER	SWJS	Inmarsat-C	Loran-C/Vaisala RS90-AL	Container	16 m	Mediterranean	E-ASAP/1
Merchant	SEALAND ACHIEVER	WPKD	Inmarsat-C	Loran-C or GPS/Vaisala RS90-AL or AG	Container	30 m	North Atlantic and Gulf of Mexico	E-ASAP/2

(1) Type of ship: Merchant, research, supply
(2) Comms method: Inmarsat C or others
(3) Windfind method / sonde type: eg. GPS/Vaisala RS80-G, Loran/Vaisala RS80-L, VIZ GPS Mark II Microsonde, etc
(4) Launch method: deck launcher (portable), deck launcher (fixed), container (manual), container (semi automatic), other
(5) Launch height: height above sea level from where the sonde is released
(6) Ocean area: North Pacific, North Atlantic, Indian Ocean, variable

Appendix 7. EUMETNET-ASAP performance in 2002.

Callsign	Total number of sondes launched	Number of TEMP SHIP transmitted	Number of relaunches	Average terminal sounding height (km)	Balloon size (gm)	Percentage on GTS (see note)
SWJS	167	161		21.1	350	95.7%
WPKD	431	372		20.9	350	90.9%

Percentage on the GTS is the ratio of reports received against reports transmitted, and is based upon reports received at a data centre or GTS insertion point (name): Offenbach

Ship Observations Team

SOT-II, 28th July – 1st August 2003, London, UK.

Country: Australia, United Kingdom, and USA

1.

Contact: Captain Gordon Mackie

2.

3. **Participating national marine organizations** (see Appendix 1)
BoM (Consumables and other supports)
UKMO (logistics)
USA (sounder and launchers)
Ships staff funded from WRAP Fund

4. **Focal Points** (see Appendix 2): WRAP Project Leader Gordon Mackie

5. **VOS**: N/A

6. **SOOP**: N/A

7. **ASAP**:

a. **Catalogue of ASAP vessels in 2002** (see Appendix 6): m.v.Palliser Bay

b. **ASAP performance in 2002** (see Appendix 7):

c. **Data management** (monitoring / archival / quality control / exchange):

d. **Coordination and collaboration** (national / international):

e. **Research and development**:

f. **Instrument testing and comparison facilities**:

g. **Other comments**:

Appendix 1. Participating national marine organizations.

Organization	ASAPP
Programmes (1)	WRAP
Website URL	N/A

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

Organization	
Programmes (1)	
Website URL	

(1) Programmes: List the programmes (VOS, SOOP, ASAP) that each organization participates in. Include additional details, e.g (data management) where appropriate.

Appendix 2: National Focal Points.

Focal Point (1)	**WRAP**		
Name	Captain Gordon Mackie		
Title	Project Leader		
Agency			
Postal Address	30 Keephatch Road Wokingham Berks RG40 1QJ		
Email	gvmackie@aol.com		
Telephone	+44(0)1189783687		
Facsimile	+44(0)118989 0379		

Focal Point (1)			
Name			
Title			
Agency			
Postal Address			
Email			
Telephone			
Facsimile			

(1) Focal Point: Insert SOT, VOS, VOSClim, PMO, SOOP or ASAP as appropriate for each national contact.

Appendix 6. Catalogue of ships participating in ASAP in 2002.

…one….. ASAP units operated during the year on one ships

Type of Ship (1)	Ship name	Callsign	Comms method (2)	Windfind method / sonde type (3)	Launch method (4)	Launch height (5)	Area of operation (6)	ASAP unit ID No.
Merchant ship	Palliser Bay	GWAN	Inmarsat C	Vaisala RS80G-15GH	Deck Portable	31m	Indian Ocean, Gt Aust.Bight,S.Pacific Ocean to Cape Horn	WRAP 1

(1) Type of ship: Merchant, research, supply
(2) Comms method: Inmarsat C or others
(3) Windfind method / sonde type: eg. GPS/Vaisala RS80-G, Loran/Vaisala RS80-L, VIZ GPS Mark II Microsonde, etc
(4) Launch method: deck launcher (portable), deck launcher (fixed), container (manual), container (semi automatic), other
(5) Launch height: height above sea level from where the sonde is released
(6) Ocean area: North Pacific, North Atlantic, Indian Ocean, variable

Appendix 7. ASAP performance in 2002.

Callsign	Total number of sondes launched	Number of TEMP SHIP transmitted	Number of relaunches	Average terminal sounding height (km)	Balloon size (gm)	Percentage on GTS (see note)
GWAN	64	46	9	24.9	350	74%
Percentage on the GTS is the ratio of reports received against reports transmitted, and is based upon reports received at a data centre or GTS insertion point (name)						