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MSC.1/Circ.1293/Rev.1  
25 May 2018

## **PARTICIPATION IN THE WMO VOLUNTARY OBSERVING SHIPS SCHEME**

1 The Maritime Safety Committee (MSC), at its ninety-ninth session (16 to 25 May 2018), in response to a request from the World Meteorological Organization (WMO) to update MSC.1/Circ.1293 on *Participation in the WMO Voluntary Observing Ships (VOS) Scheme*, revised and approved the *Participation in the WMO Voluntary Observing Ships Scheme*, as set out in the annex, reintroducing the recruitment of ships to provide ship-based marine meteorological and oceanographic observations.

2 The ship-based meteorological reports in particular provide vital real-time feedback on ocean weather conditions to weather forecasters who use the data to improve the quality of the forecasts and warnings issued through, for example, the Global Maritime Distress and Safety System (GMDSS) for mariners at sea. The ship-based meteorological reports, therefore, form an important element in ensuring the safety of ships, their cargoes and crews. Furthermore, it should be noted that ship-based oceanographic measurements (e.g. Expendable Bathythermographs (XBTs)) also provide a valuable data source for studying the changes in climate which have become a matter of global concern in recent years.

3 IMO and, in particular, its Marine Environment Protection Committee, are giving high priority to the work relating to the issue of climate change. Ships' meteorological observations are not only recognized as being essential for the provision of safety-related services for ships at sea, but also for ships' routing, search and rescue, marine pollution prevention and climate change studies (i.e. quantifying extreme weather events that can affect the maritime industry). Additionally it has to be noted that sometimes ship-based meteorological and oceanographic reports are the only data available from data-sparse areas such as the polar regions.

4 While the real-time meteorological and oceanographic data collected on board ships is provided for forecasting, climatology and research applications, some shipowners and masters have raised concerns regarding the publication of ship identification and position data. WMO has, therefore, established a high-level dialogue, involving affected Members, IMO, ICS, shipping companies, relevant organizations and technical commissions, to propose a general and universally acceptable solution to the issue. This high-level dialogue resulted in schemes to mask ships' call signs. This solution will address shipowners' and masters' concerns as well as those of the WMO community regarding data monitoring and quality information feedback requirements. The continued participation of ships in providing marine meteorological and oceanographic observations remains critical.

5 It is essential that the volume of data provided by ships be maximized and, as such, that the number of ships participating in the WMO/IOC<sup>1</sup> marine observation programmes be increased wherever/whenever possible. It should be made clear that participation in the WMO/IOC ship-based observation programmes is entirely voluntary and no charges are incurred by the ship, shipowner or ship operator, as the meteorological instruments and, in most cases, the cost of the observation transmission are borne by meteorological services. The ship-based observation programmes do additionally welcome voluntary contributions by ships using ship-owned instruments.

6 In accordance with the provisions of SOLAS regulation V/5, Member States are invited to bring the relevant information in the annex regarding the ship-based marine meteorological and oceanographic observations to the attention of shipowners, ship operators, ship managers, masters and crews, non-governmental organizations and other parties concerned; and to encourage them to support the WMO/IOC marine meteorological and oceanographic observations and their National Meteorological Service (NMS), by offering their ships to participate in the WMO/IOC Marine observations programmes. More information can be located at the following web address: <http://www.jcommops.org/sot/>.

7 Ships that pass through or operate in the data-sparse areas such as the polar regions (and shown by the lack of dots on the attached ship data coverage charts), are strongly encouraged to volunteer and join the ship-based observations programmes; even if their voyage through a data-sparse region is temporary, the ship-based observations provided for that short period of time are still of great value and short-term participation is of value and should be encouraged.

8 This circular supersedes MSC/Circ.1293.

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<sup>1</sup> IOC: UNESCO's Intergovernmental Oceanographic Commission.

## ANNEX

### THE VOLUNTARY OBSERVING SHIPS SCHEME

#### 1 Background

The ship-based marine meteorological and oceanographic observations programmes (Ship Observations Team – SOT) operates under the auspices of the Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM), which was formed in 1999 through a merger of the marine activities of the World Meteorological Organization (WMO) and the Intergovernmental Oceanographic Commission (IOC) of UNESCO.

The work of the SOT consists of a collection of very successful and enduring data collection programmes, involving the Voluntary Observing Ships (VOS) scheme, Automated Shipboard Aerological Programme (ASAP) and Ships of Opportunity Programme (SOOP) which have supported a number of research and operational applications over many years. They provide for surface meteorological observations, aerological soundings using balloons, and surface and sub-surface oceanographic measurements.

Ships' meteorological observations are recognized as being essential for the provision of safety-related services for ships at sea, and also for ship routing, search and rescue, marine pollution mitigation and climate change studies (i.e. quantifying extreme weather events that can affect the maritime industry). Thus the Maritime Safety Committee (MSC), at its sixty-fourth session (5 to 9 December 1994), in response to a request for assistance from the World Meteorological Organization (WMO) on enhancing the recruitment of ships to provide ship-based marine meteorological and oceanographic observations, approved and circulated MSC/Circ.674 requesting ships to voluntarily submit the marine meteorological and oceanographic observations.

The Maritime Safety Committee, at its seventy-fourth session (30 May to 8 June 2001), in response to a further proposal from WMO, subsequently updated and reissued this circular as MSC/Circ.1017. It was noted at the time that the *Report of the Reopened Formal Investigation into the Loss of the **MV Derbyshire*** had underlined the potential value of ship-based observations to maritime safety, and recommended, inter alia, that consideration be given to reissuing this MSC circular.

Unfortunately, there has been further decline in the number of ships providing marine meteorological and oceanographic observations, regardless of the reissuance of this circular as MSC/Circ.1293. In 2016 there were approximately 2,000 ships identified as providing the ship-based marine meteorological and oceanographic observations. Only an average of approximately 1,200 ships actually provide any data in real time. This comes after a formal investigation into the loss of the flagged cargo vessel **El Faro**. The sinking of the **El Faro** ranks as one of the worst maritime disasters in United States history. The ship, cargo and all 33 crew members were lost in this disaster, resulting in the highest death toll from a United States commercial vessel sinking in almost 40 years. The value of ship-based marine meteorological and oceanographic observations to maritime safety cannot be overstated. The training and knowledge base that crews receive in preparation to participate in providing ship-based observations can provide insight and common practical avoidance measures for many maritime situations, such as tropical storms and hurricanes. Actively providing meteorological reports is essential for the provision of safety-related services for ships at sea.

### *Voluntary Observing Ships (VOS) Scheme*

The international scheme by which ships plying the various oceans and seas of the world are recruited by National Meteorological Services (NMS) for taking and transmitting meteorological observations is called the Voluntary Observing Ship (VOS) Scheme. (See the following web address for further information: <http://sot.jcommops.org/vos/>).

The forerunner of the scheme dates back as far as 1853, the year in which delegates of ten maritime countries came together at a conference in Brussels, on the initiative of Matthew F. Maury, the then Director of the United States Navy Hydrographic Office, to discuss his proposal to establish a uniform system for collecting meteorological and oceanographic data from the oceans and the use of this data for the benefit of shipping in return.

The Conference accepted Maury's proposal and adopted a standard form of ships' logs and a set of standard instructions for the required observations.

From the very beginning, ships' meteorological observations were recognized as being essential for the provision of safety-related meteorological services for ships at sea, as well as for climatological purposes.

### *Ships of Opportunity Programme (SOOP)*

The Ships-of-Opportunity Programme (SOOP) makes use of volunteer ships which routinely transit strategic shipping routes. Ships' officers are trained to deploy Expendable Bathythermographs (XBTs) at predetermined sampling intervals to acquire temperature profiles in the open ocean. Along routes where a high density of deployments is required, a ship rider from the scientific community will be on board to deploy the XBTs. Selected data which accurately represents the entire data profile is transmitted by satellites to shore centres, for insertion and exchange on the Global Telecommunication System (GTS), and assimilation into operational ocean models. The SOOP data is vital in particular to seasonal weather and climate prediction. More information on the SOOP program is available at: <http://www.jcommops.org/sot/programmes.html#SOOP>, or <http://www.aoml.noaa.gov/phod/goos/xbtscience/index.php>.

### *Automated Shipboard Aerological Programme (ASAP)*

ASAP presently consists of a small network of ships that collect reliable baseline upper-air data from remote ocean areas. Most of the soundings are presently from the North Atlantic and North West Pacific Oceans. These limited atmospheric profiles from ships have proven to have a high impact on weather forecasting and marine services in the regions where they are available.

## **2 The situation today**

At present, the contribution that VOS meteorological reports and SOOP oceanographic reports make to operational meteorology, to marine meteorological services, weather routing services and to global climate studies is unique and irreplaceable. During the past few decades, the increasing recognition of the role of the oceans in the global climate system has placed an even greater emphasis on the importance of marine meteorological and oceanographical observing systems.

One of the continuing major problems facing meteorology and oceanography is the scarcity of data from vast areas of the world's oceans (so-called data-sparse areas, i.e. the polar regions) in support of basic weather forecasting, the provision of marine meteorological and oceanographic services and climate analysis and research.

While meteorological satellites help substantially to overcome these problems, data from conventional platforms (in particular ship-based data) will remain essential for the foreseeable future, to provide ground-truthing for the satellite observations, and to provide important information that satellites cannot easily observe (notably atmospheric pressure and sub-surface ocean measurements). In addition, the VOS provide an essential contribution to the data input for the numerical weather prediction (NWP) models, which are the basis of most present-day forecasts and warnings, and provide real-time reports which can be used immediately in services for the mariner. The reports from the ships at sea are also used operationally in the preparation and promulgation of Maritime Safety Information (MSI) forecasts and warnings of gales, as well as storms required by the GMDSS (e.g., SafetyNET and NAVTEX), and issued to mariners in accordance with the SOLAS Convention requirements. Thus, without VOS observations, reliable and timely weather forecasts for mariners could not be provided.

### **3 The VOS and SOOP Fleet Size**

As might be expected, real-time reports from the VOS are heavily concentrated along the major shipping routes, primarily in the North Atlantic and North Pacific Oceans. The attached chart shows details of the geographical distribution of ships' weather reports for 2016. The most striking feature is the large data-void areas in all southern hemisphere oceans and the polar regions. While this situation certainly reflects the relatively small numbers of ships sailing in these waters, it also makes it more essential that ships sailing in these areas actively participate in the VOS, thus contributing to the global observing programme and the consequent enhancement of the forecast and warning services to the mariner.

Of course, as the VOS reports are part of a global data capture programme, these reports are of value from all the oceans and seas of the world, and even the relatively well-frequented North Atlantic and North Pacific Oceans require more observational data.

SOOP lines are shown in the second figure and show data collection for 2016, as well as lines that are currently unoccupied. The SOOP program welcomes interest from ships on any of the lines shown on the map, in particular where no data is currently collected.

### **4 What are the charges to be part of the VOS Scheme?**

#### **THERE ARE NO CHARGES TO THE SHIP OR TO THE SHIP OPERATOR**

In accordance with the provisions of SOLAS regulation V/5, "Contracting Governments undertake to encourage the collection of meteorological data by ships at sea and to arrange for a selection of ships to be equipped with tested marine meteorological instruments (such as a barometer, a barograph, a psychrometer, and suitable apparatus for measuring sea temperature)".

The calibrated marine meteorological instruments that are required to undertake weather observing at sea are supplied free of charge to the ship by the National Meteorological Services (NMS). The installation of the equipment is usually performed by a Port Meteorological Officer (PMO), appointed and trained by the NMS, who will provide advice on observing the various meteorological elements at sea. The appointed PMO will also explain means for reporting the observation, and offer guidance on transmitting the observations from the ship to shore using available communications equipment.

## **THERE ARE NO CHARGES TO THE SHIP FOR THE TRANSMISSION OF VOLUNTARY OBSERVING SHIPS WEATHER REPORTS**

Ships which send messages through Land Earth Stations (LESS) using the special Access Code 41 will not incur any transmission charges.

After recruitment into a national VOS Fleet, the meteorological instruments will be regularly serviced, without charge to the ship or shipowner, generally by a PMO from the "recruiting NMS" or by a PMO from the international PMO network.

### **5 How can you become involved?**

If an Administration:

- .1 Be aware that ships' meteorological and oceanographic reports can make a significant contribution to safety of life and navigation through higher quality forecasts and warnings.
- .2 Ensure that your ship operators are aware of the VOS Scheme, SOOP, and ASAP and encourage their active participation.

If a Ship Operator:

- .1 Contact your National Meteorological Services (NMS), or a local Port Meteorological Officer (PMO), and nominate your ship(s) for recruitment into the VOS Scheme. To become involved in the SOOP program, contact the Ship Coordinator at JCOMMOPS.

For further information contact:

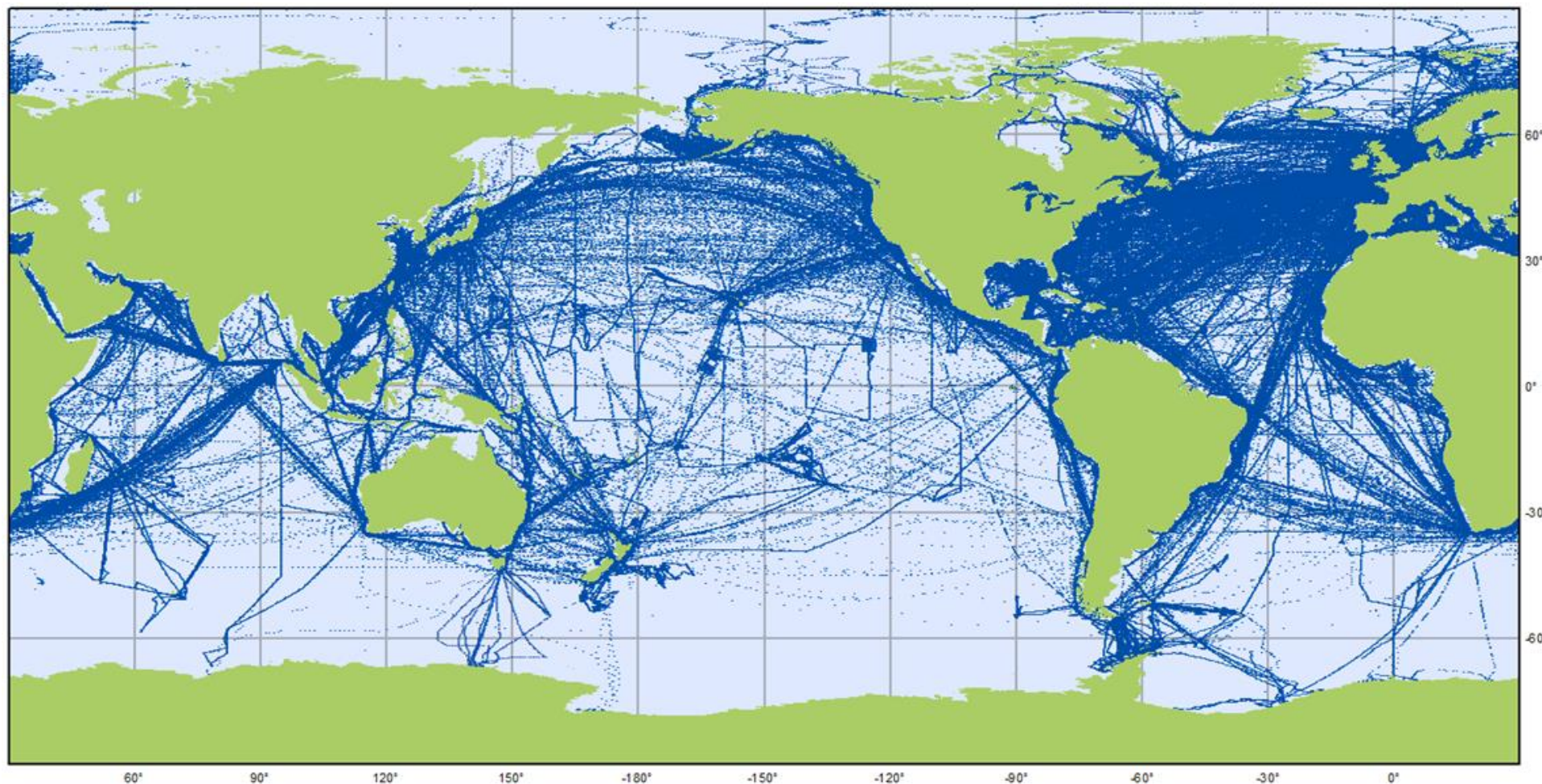
Ship Coordinator  
JCOMMOPS  
Technopole Brest Iroise,  
1625 Route de Sainte Anne  
29280 Plouzane  
France

**Telephone:** +33-22 900 85 87  
**Telefax:** +33-29 822 45 46  
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### **REMEMBER:**

**HELP IMPROVE THE QUALITY OF FORECASTS AND WARNINGS AND CONTRIBUTE TO THE ENHANCEMENT OF SAFETY AT SEA BY JOINING THE SHIP-BASED MARINE METEOROLOGICAL AND OCEANOGRAPHIC OBSERVATIONS PROGRAMMES OF WMO/IOC**

Mapping position pot chart of data received



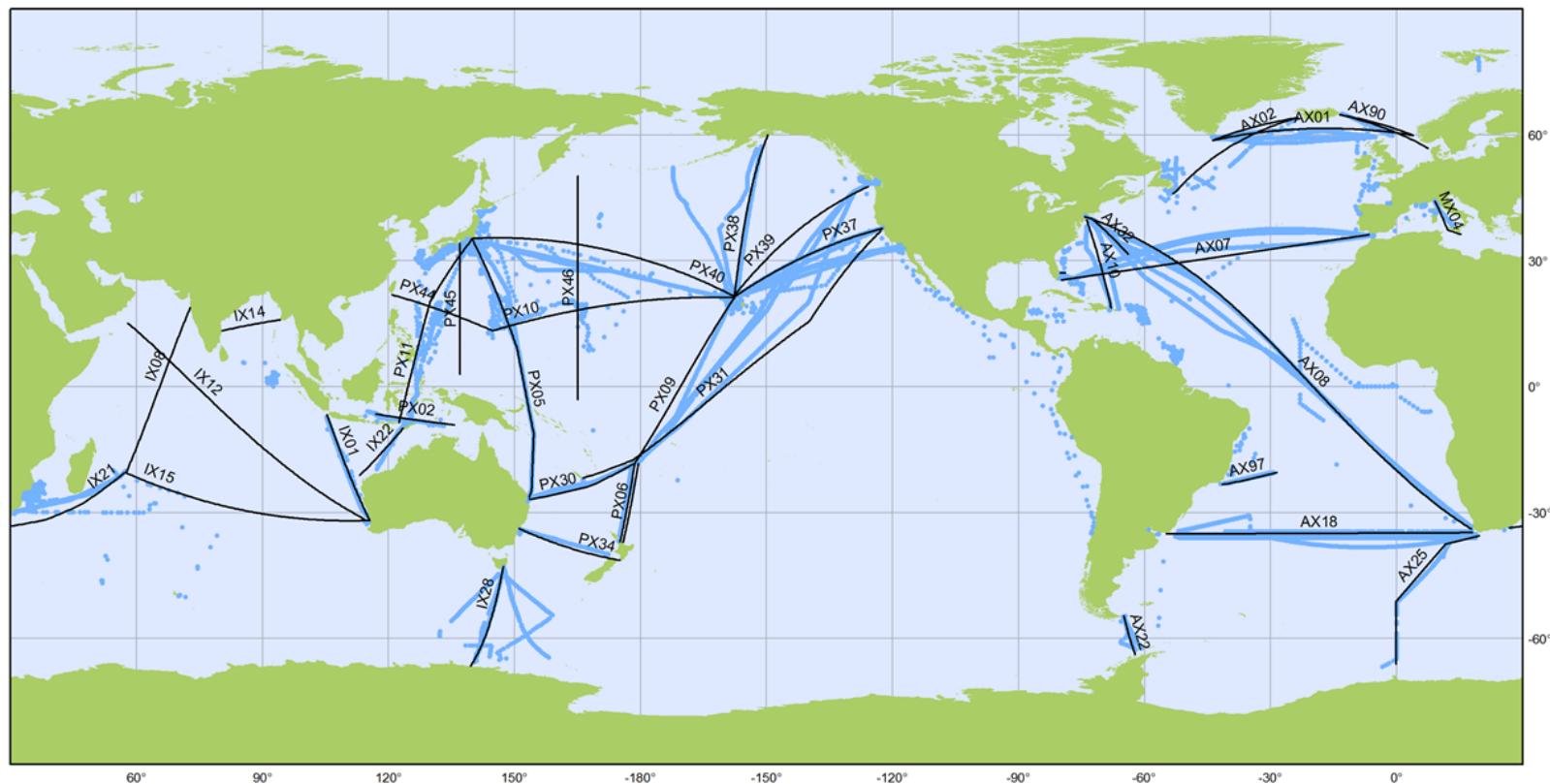
**Ship Observations Team**

**VOS Scheme**  
VOS Observations 2016 (3,145,612)

**2016**

Generated by [www.jcommops.org](http://www.jcommops.org), 09-Oct-17





Ship Observations Team

**SOOP: Yearly XBT Deployments**

2016

Last updated 17 February 2017. Identified Ships: 77



• XBT Deployment (17221)

— Reference Line



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