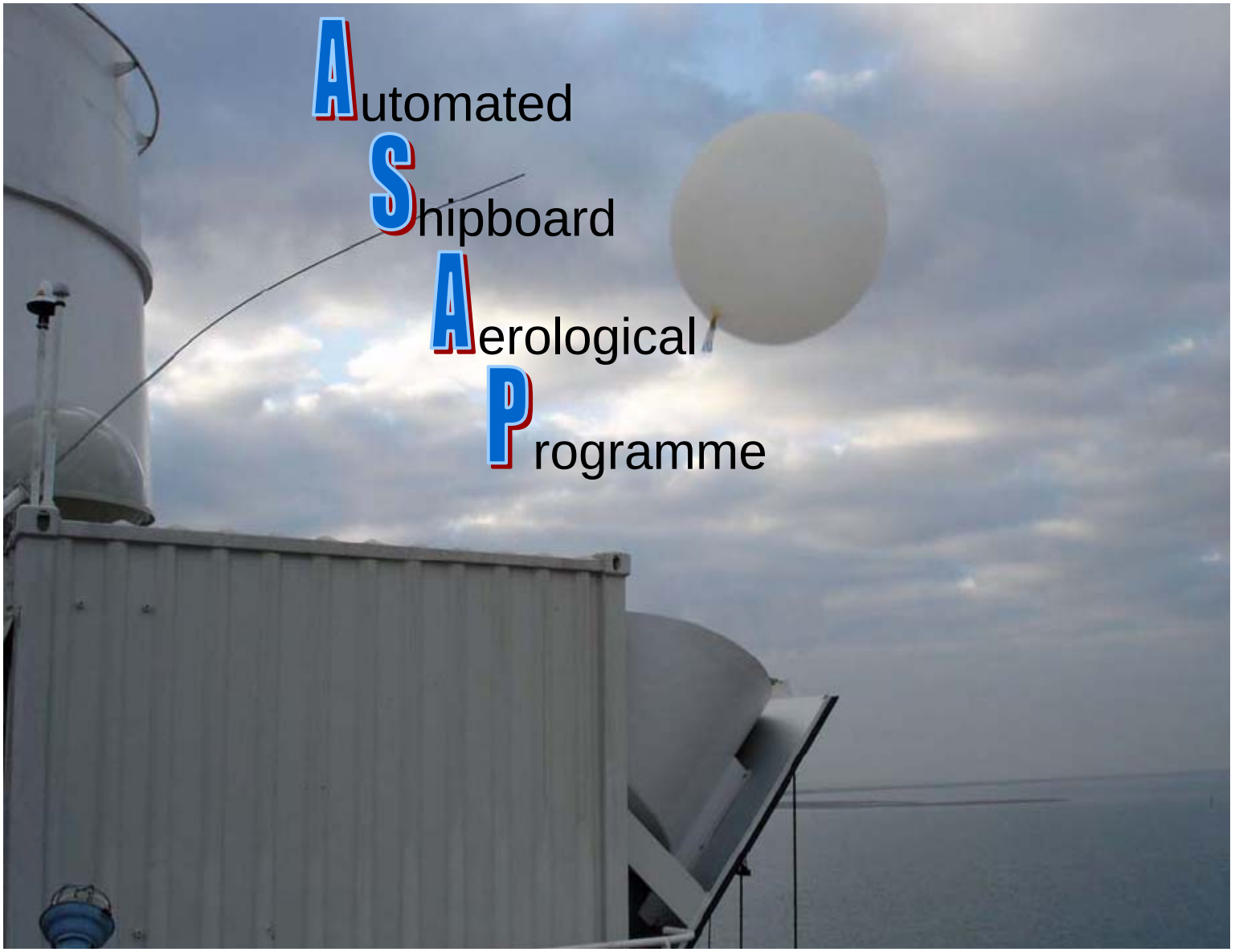
[DRAFT ASAP BROCHURE]

WMO – IOC
&
JCOMM Logos

[cover page] [New Artwork for cover required]



Collection of meteorological upper air data from the oceans

The Automated Shipboard Aerological Programme (ASAP) is a valuable source of baseline upper-air data from the oceans and is of vital importance to the World Weather Watch. As part of the global observing system, this data can be used to support many applications, including global climate studies.

ASAP activities, including monitoring ASAP performance and data quality, are coordinated internationally by the Ship Observations Team (SOT) established by the Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM).

ASAP DEVELOPMENT

ASAP in its present form began in the middle of the 1980s. The original systems were developed as a 'modular' designs using specially modified 20 foot (6.1 metre) shipping containers to house all necessary electronics, antennas, and the balloon launching system. The container also provided the workspace for the ASAP operator and stowage space for the necessary consumable supplies such as helium, balloons and radio sondes.

Containerised ASAP systems had the advantage that they could relatively easily be installed, or transferred from one ship to another. However, changes in ship designs in recent years have made it increasingly difficult to find suitable host ships with sufficient non-obstructed and easily accessible deck space.

Alternative configurations, known as 'distributed' systems have therefore been developed to expand the versatility of the ASAP concept. With distributed systems the electronics sounding equipment and operator workspace are situated within the ships accommodation, usually on the bridge, while consumable supplies are stored in appropriate onboard spaces. Balloon launching can be performed from transportable deck launching appliances or, alternatively, from a dedicated fixed 10 foot (3.05 metre) container.

Add diagram - Cross-sectional view of container comprising the original ASAP system design ??

In general, up to four ascents are made from ASAP ships each day, with the aim being for them to fall within the window of the main synoptic hours (00, 06, 12, and 18 hrs). ASAP balloons typically reach heights of approx. 25 km, and it can take approx 1.5 hours until they eventually reach their bursting height.

The balloons are filled with helium drawn by pipe from helium cylinder racks and are then attached to the radio sonde which carries sensors for measuring temperature, humidity and pressure. Wind speed and direction is most commonly calculated with a GPS module (although Loran is also used in some cases).

All data are sent from the ascending sonde to the container on board the host ship. Measuring and transmission of the data is computed automatically prior to the data being relayed via satellite (usually Inmarsat-C) to the National Meteorological Services. The data is then freely exchanged internationally via the Global Telecommunication System

ASAP OPERATIONS

The majority of ASAP soundings are currently performed by ships recruited to the EUMETNET* Automated Shipboard Aerological Programme (E-ASAP) The aim of E-ASAP is to enhance numerical weather forecast prediction over Europe by performing weather balloon launches from vessels trading in the North Atlantic and Mediterranean. In addition to the 5 ASAP systems that have been procured directly by E-ASAP 3 German and 1 UK ASAP systems have been managerially integrated into the programme. In addition systems are also operated by the following E-ASAP participants - Denmark (2), France (2),), Germany (1) Spain (1). Sweden/Iceland (1) The Programme is presently managed on behalf of the members by the German Meteorological Service (DWD) .

In addition to the systems operated under E-ASAP there are several other countries that operate ASAP units on research ships. In particular Japan operates ASAP units on a fleet of 5 research ships operating primarily in the North and West Pacific, but also in other oceans, while South Africa maintains an ASAP unit on a research ship operating in the Southern Oceans.

ASAP DATA

The quantity and quality of data collected in real time and transmitted over the Global Telecommunication System has shown significant improvement since the early years of ASAP. Furthermore, the quality of ASAP data has generally been shown to be high when compared to that from dedicated ocean weather ships and land based radiosonde stations.

Insert updated graph of ASAP soundings since 1994?

The total number of ASAP soundings has [increased] to approximately [XXXX] annually (see figure).

FUTURE OF ASAP

Recruitment of ships to host a new ASAP units requires significant capital investment, as well as ongoing human resources to operate and maintain the systems while in service. Following recruitment the ongoing cost of ASAP consumables (helium, radio-sondes and balloons), and of satellite data transmission, is extremely high when compared to the cost of other marine observing networks. For such reasons it can be difficult for National Meteorological Services to justify the risks involved in recruiting and establishing a new ASAP unit.

**** EUMETNET is a network grouping [19] European National Meteorological Services***

However, recruitment of ships under financially integrated regional programmes, such as that established by E-ASAP, will help to mitigate such risks. It is hoped therefore that ASAP activities will continue to grow in the coming years, with increased soundings and efficiencies, and that the success of initiatives like E-ASAP can be extended to other ocean areas.

It is also hoped also that it will be possible to collaborate on a global basis as was originally intended with Worldwide Recurring ASAP Project (WRAP). During this project which ran from 2001 to 2005 a number of countries collaborated to install and operate a distributed ASAP system on board a scheduled round-the-world container ship.

The JCOMM Ship Observation Team aims to further encourage the implementation and expansion of the ASAP operations, focusing on the following goals:

- To work effectively with countries adjacent to data-sparse ocean areas to find potential ASAP operators with routes through these areas;
- To encourage joint ventures to implement new ASAP observing programmes;
- To continuously analyse, evaluate and implement more cost-effective means to communicate ASAP data;
- To provide advice and assistance to new ASAP operators;
- To improve efficiency in communicating data;
- To provide valuable information on the vertical constitution of the troposphere/stratosphere
- To design more robust, automated and deck-based launching devices.

Prepared by the JCOMM ASAP Panel, March 2007

For more information please contact:

World Meteorological Organization
Ocean Affairs Division
WWW Department
7 bis*, avenue de la Paix*
P.O. Box 2300
CH-1211 Geneva 2
Switzerland
.: (+44 22) 730 82 37
Fax: (+41 22) 730 80 21
E-mail: ????@wmo.int