

WORLD METEOROLOGICAL ORGANIZATION

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JOINT WMO/IOC TECHNICAL COMMISSION FOR  
OCEANOGRAPHY AND MARINE METEOROLOGY  
(JCOMM)

SHIP OBSERVATIONS TEAM (SOT)

SEVENTH SESSION

VICTORIA, CANADA, 22-26 APRIL 2013

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ITEM: 9.1.7

Original: ENGLISH

## GLOBAL OCEAN SURFACE UNDERWAY DATA PILOT PROJECT (GOSUD)

*(Submitted by Loic Petit de la Villeon (France), GOSUD Chair)*

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### Summary and purpose of the document

This document provides information on the development and activities of the Global Ocean Surface Underway Data Pilot Project (GOSUD) since the last SOT meeting.

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### ACTION PROPOSED

The Team will review the information contained in this report, and comment and make decisions or recommendations as appropriate. See part A for the details of recommended actions.

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**Appendices:** A. GOSUD Report

**- A - DRAFT TEXT FOR INCLUSION IN THE FINAL REPORT**

9.1.7.1 The Chair of the Global Ocean Surface Underway Data Pilot Project (GOSUD), Mr Loic Petit de la Villeon (France) presented a report on the development and activities of GOSUD.

9.1.7.2. He recalled that the GOSUD Project is an Intergovernmental Oceanographic Commission (IOC) programme designed as an end to end system for data collected by ships at sea. The goal of the GOSUD Project is to develop and implement a data system for surface ocean data, to acquire and manage these data. For the moment, the parameters concerned are sea surface salinity and sea surface temperature.

9.1.7.3 The Team noted that since it began, the GOSUD partners have focused their efforts on assembling together data that have been collected by various agencies around the world. Some have been regular data contributors such as SO SSS – former ORE (France), NOAA (USA) and Coriolis (France). Some contributors that were used to provide data on non regular basis are now sending data on a regular basis (Belgium, Japan). Some others have been simply occasional (UK, Australia, and Germany). The contributions may be related to regular merchant ship lines (SO-SSS France) or to research vessel surveys (NOAA, IFREMER).

9.1.7.4 During the reporting period, GOSUD has been essentially working on the following tasks:

1. Continue the effort to collect and gather data from observing vessels. The main contributor are IRD, NOAA, IFREMER;
2. Continuing the effort on enlarging the network of vessels providing Sea Surface Salinity and temperature data. 91 vessels have reported data in 2011 and 81 vessels in 2012;
3. Develop a software –TSG-QC- (IRD contribution) which is freely available on <http://www.ird.fr/us191/spip.php?article63>.

This software allows to (i) Visualise TSG variables: Temperature, salinity and ship speed; (ii) compare TSG data with Levitus climatological values; (iii) data quality control using selected threshold criteria; (iv) validate and correct TSG data with external “bucket” measurements (water samples usually collected once a day and / or collocated Argo data); and (v) estimate the sensor drift;

4. Produce a delayed mode data set of science quality. Contribution IFREMER and IRD;
5. Define a new format GOSUD V3 which enables to hold in a single file near real time data, delayed mode data, metadata and ancillary data (buckets, Argo or CTD collocated data).

9.1.7.2 The meeting made the following recommendations:

- (i) GOSUD to better identify the vessels that report data on a regular basis through the GTS and recommend them to report data directly to the GDAC in addition to the GTS;
- (ii) GOSUD to make the delayed mode data (science quality) more visible and advertize them;
- (iii) Considering the status of the Project and the need to adapt its governance, GOSUD must identify an advisory group and a steering committee; SOT members are invited to consider applying for becoming member of the advisory group;
- (iv) GOSUD to enhance the relationship with science satellite community (SMOS and AQUARIUS).

9.1.7.3 The meeting decided on the following action items:

- (i) To assist the IODE in identifying a second co-Chair of the GOSUD Steering Group Chair (**action; SOT Chair; June 2013**);
- (ii) To invite GOSUD to evaluate the quality of the whole GOSUD data set available (**action; GOSUD; September 2013**);
- (iii) To organize a joint GTSP/ GOSUD workshop in April 2014 in Ostende, Belgium (**action; SOT & GTSP Chairs; April 2014**).

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Appendix: 1

## APPENDIX A

### REPORT OF THE GLOBAL OCEAN SURFACE UNDERWAY DATA (GOSUD) PROJECT

*(report submitted by the Chair of GOSUD, Mr Loic Petit de la Villeon, France)*

#### 1. INTRODUCTION

The Global Ocean Surface Underway data (GOSUD) Project is an Intergovernmental Oceanographic Commission (IOC) programme designed as an end to end system for data collected by ships at sea. The goal of the GOSUD Project is to develop and implement a data system for surface ocean data, to acquire and manage these data. The data concerned are those collected when a platform is underway and from the ocean surface down to about 15 m depth. All information relative to the project is available from the web site (<http://www.gosud.org>) hosted by IFREMER.

The aims of the project are to organize the surface underway data that are collected, to work with data collectors to improve practices to meet the benchmarks of spatial and temporal sampling and data accuracy set forth by GOOS. More precisely the following goals are targeted:

- Building comprehensive archives for surface underway ocean data. This encompasses data collected by any instrumentation at any time. It will contain sufficient meta-data that users will have clear information about accuracy, instrumentation, sampling, etc;
- Adding value to the archives by refining and standardizing existing quality assessment procedures carried out in near real-time and in delayed mode data and documenting both;
- Providing users with easy and efficient access to data and information. At any time after data collection, a user should be able to access the highest quality and the latest release. Users should be able to distinguish levels of quality in the archives. Users will be able to use the data and easily combine them with data from other sources;
- Working with data providers to improve the data acquisition systems and to return information to data collectors about the data they provide;
- Working with scientific organizations interested in surface data to provide products to a broader community.

#### 2. REPORT ON ACTIVITIES CARRIED OUT DURING THE INTER-SESSIONAL PERIOD

##### 2.1 Status of the Project

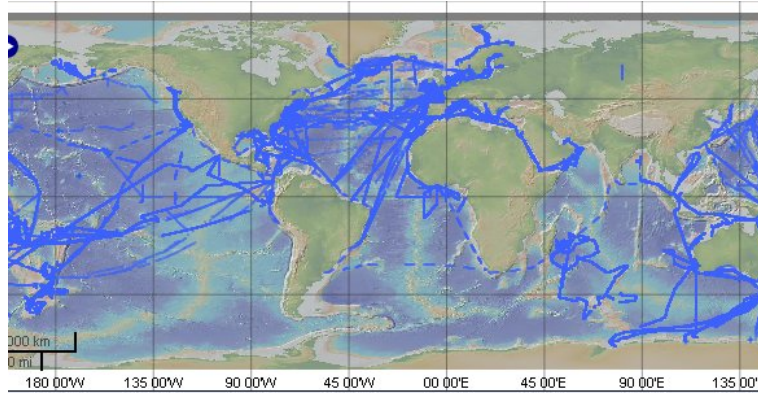
Since it began, the GOSUD partners have focused their efforts on assembling together data that have been collected by various agencies around the world. Some have been regular data contributors such as SOERE SSS –former ORE (France), NOAA (USA) and Coriolis (France). Some contributors that were used to provide data on non regular basis are now sending data on a regular basis (Belgium, Japan). Some others have been simply occasional (UK, Australia, and Germany). The contributions may be related to regular merchant ship lines (SOERE-SSS France) or to research vessel surveys (NOAA, IFREMER). Some contributions reach the GDAC –Global Data Centre- directly or may reach it by way of the GTS.

The GDAC is operated by the Coriolis data Centre (IFREMER, France). A daily back up of the data is performed by the US –NODC (Silver Spring, USA).

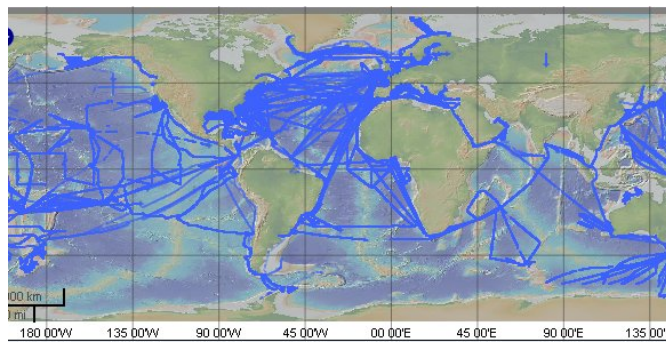
The quality of the data differs from one contributor to another. It is stated that the data that reach the GDAC through the GTS could be of a lower quality.

France began to elaborate delayed-mode datasets

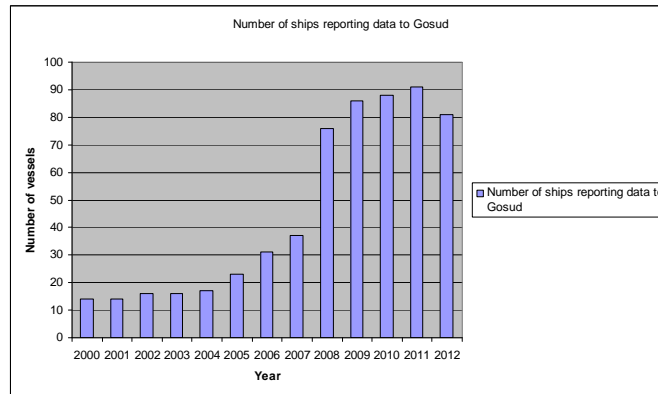
## 2.2 Network status



81 vessels have transmitted TSG data in 2012



91 vessels have transmitted TSG data in 2011



### Number of ships that have reported TSG data to Gosud

Until now, most of the data that have been submitted to the Project have been collected on board the research vessels and the ships of opportunity (merchant ships). The VOS-Nippon Project provides data from 2 different vessels on a regular basis. New contributors approached the Project and proposed that data could be collected on cruise or sailing ships. However, it is of the responsibility of the project to ensure that the data acquisition is done according adopted procedures.

It is stated that first priority must be put on regular contributions rather than pinpoint contributions. It is also stated that the project must focus on data from identified providers. This will allow to provide some feedback on the quality of the data and enhance it.

### 2.3 Work carried out during the intersessional period

- During the inter-sessional period a new NetCDF format (version V3.0) has been adapted from the 2 previous versions
- It fixes up the modifications that have been carried out from V2.0
- For the moment, GOSUD V3.0 is not yet implemented at the GDAC level.
- It enables to hold in a single file both data in near real time , delayed mode data, meta data (depth of intake, serial numbers of the instruments, calibration coefficients, ...) and ancillary data (data that have been used to process the delayed mode dataset ie Argo collocated data, water samples analysis,...)
- France has produced a delayed mode dataset that will be made available on the web site (April 2013)
- The GOSUD TSG data are distributed
  - through the GDAC (Coriolis-France-)
    - <http://www.gosud.org/Data-delivery/FTP-access>
  - Through the backup facilities provided by US-NODC.
    - <ftp://ftp.nodc.noaa.gov/pub/data.nodc/iode/gosud/>
    - <http://data.nodc.noaa.gov/opendap/iode/gosud/>
    - <http://data.nodc.noaa.gov/iode/gosud/>
  - Real time data are distributed through a ftp site which is updated on a daily basis. The files do not hold delayed mode data
  - Near real time are distributed trough a ftp site which is updated every month. The files do not contain any delayed mode data. This has been developed to fulfill the Smos satellite data needs for validation.
  - Delayed mode data are distributed on a ftp site which is updated each time the data from one cruise have been processed. Those files must be considered as the reference data set and of the highest quality. Those delayed mode datasets are processed using the software CVTSG developed by IRD –France-
- The statistics of access to GOSUD dataset are not impressive. Action must be undertaken to highlight the GOSUD project.
- Quality control software. CVTSG is the software developed by IRD. It applies the method developed by IRD. Using the data received in near real-time or when the ship arrives in the port and with the help of the salinity samples taken with bottles or / and data collected by neighboring instruments such as Argo, it is possible to evaluate the drift of the conductivity sensor and to propose salinity values adjustments that could fit the water samples analysis results and that take into account the calibration coefficients of the instruments. This software has been developed using Matlab and is available on request to GOSUD partners.
- GOSUD information and web site. The Gosud web site has been upgraded. The former site has been transferred to a Content Management System (CMS) which will allow identified partners to directly update the web site.

### 2.4 PROPOSED WORK PLAN AND TIME TABLE FOR THE NEXT INTER-SESSIONAL PERIOD

In 2013, the progress and weaknesses of the project must be assessed. Contribution from IODE is requested to identify an advisory group and a steering committee (June 2013).

Identify the contributors. Some of them are very well known, some others are less identified (data reaching the Project through the GTS) (June 2013)

Evaluate the quality of the whole GOSUD data set available (September 2013). Help is welcome.

Delayed mode datasets. Contact the data providers and propose them to elaborate delayed mode datasets (June 2013).

Reinforce the role of science centre. Since a software, that enables to QC data and to process a delayed mode dataset, is available, it becomes easier to have a common approach on data processing and data control. Using common tools and procedures and taking into account the local or regional expertises of the partners, it is suitable to re-start the data centre activities. The objective should be that no GOSUD dataset should be distributed without a minimum of scientific expertise.

Propose to have a joint GTSP/ GOSUD workshop in April 2014 in Ostende, Belgium.

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