GOSUD

Global Ocean Surface Underway Data

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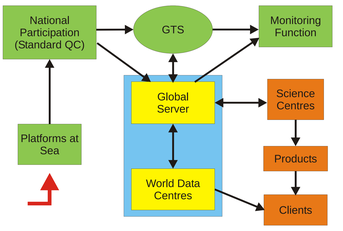
The Global Ocean Surface Underway Data (GOSUD) Project was initiated as part of the International Oceanographic Data and Information Exchange (IODE) programme of the Intergovernmental Oceanographic Commission (IOC) and is now a joint IODE-JCOMM (Joint WMO/IOC Commission for Oceanography and Marine Meteorology) project. It is designed as an end to end system for data collected by ships as they traverse their ocean tracks.

The goal of the GOSUD Project is to develop and implement the data system for ocean surface data, to acquire and manage these data and to provide a mechanism to integrate these data with other types of data collected in the world oceans. The first planning meeting for GOSUD was held in 2001. The fourth meeting was completed in early October, 2004. Work has progressed from planning and design and is now firmly in the implementation phase.

GOSUD data flow

Platforms at sea make routine underway measurements. The data are received by national participating agencies and pass through automated quality control procedures standardized for the project. Data are then sent to the global data server set up for the project and participants are encouraged to send the data to the GTS. A monitoring function compares data appearing on the GTS to data received at the global server.

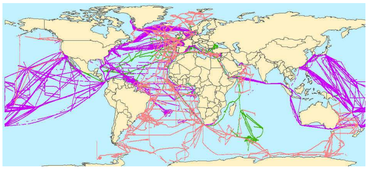


The global server is the central hub of the Project and acts as the archive for all data. It interfaces to the World Data Centres that hold historical underway data. The global server verifies the integrity of the data being offered and provides data and products to users. The global server also collaborates with science centres in developing and disseminating scientific products.

The responsibility of the global server is:

- To maintain a centralized web-ftp available data server
- To accept data from national centers and ensure a safe archive
- To verify that submitted data meet format and quality control requirements
- To ensure that archived data retain all agreed metadata for the Project
- Collaborate with WDCs to ensure long term safekeeping of the data and information
- To ensure that data contributors are permitted to manipulate their own data only
- To ensure that rules governing deletions, changes to data are met by contributors before actions are taken in archives

Available data



Temperature and salinity data available from Gosud GDAC in July 2004

1.2 million measurements
Data from WOCE-SSS
Data from ORE-SSS
Data from Coriolis

GOSUD data format
Derived from Argo trajectory format
Described in « GOSUD user's manual » available on GOSUD web site
http://www.ifremer.fr/sismer/program/gosud

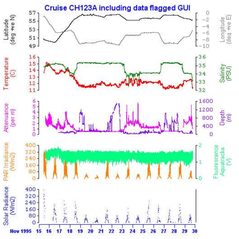
Real time TSG from GTS
MEDS, Canada, is collecting all SST and SSS circulating on GTS.
The real time quality control and distribution of this data is under test.

Real time TSG from participants
Example : ORE-SSS and Coriolis French projects
13 merchant ships and 6 research vessels collect TSG data.
The real-time QC is implemented.
A visual QC is performed once a week.
Data is distributed on GOSUD ftp site.
Data is also available from the web.

Historical data
TOGA-WOCE SSS data should be added to GOSUD data set.
Historical data from participating countries will also be added to GOSUD data set.

There are a variety of measurements of variables that can be successfully made while a platform is underway. These include:

- salinity
- water temperature
- ocean currents
- fluorescence
- pCO2
- attenuance
- dissolved oxygen
- nutrients

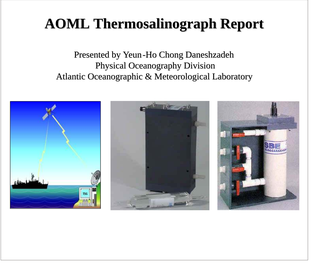


The GOSUD data system is flexible enough to accommodate future data collection systems that operate with similar characteristics.

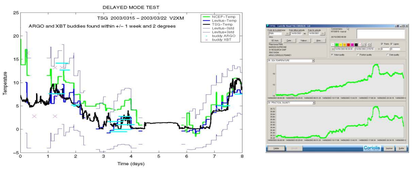
Quality control

Quality control of the underway data includes:

- **Automated QC**: platform identification, impossible date, impossible location, position on land, impossible speed, global ranges, regional ranges, spike test, gradient, climatology, instrument comparison
- **Visual control:** when data failed to pass automatic checks
- **Global control:** residuals from objective analysis detect anomalies

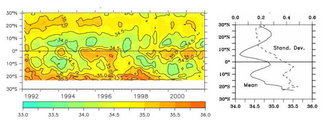


AOML has developed quality control procedures and published a report showing the results.

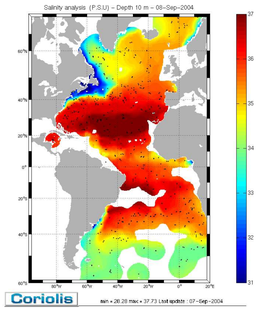


GOSUD products and web

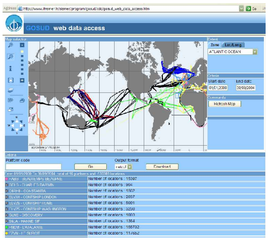
- **Data analysis** — objective analysis and mapping, sensor drift estimation
- **Web** — interactive and dynamic data access, profile visualisations, interactive maps
- **Technical reports**



Mean and standard deviation of SSS (right) along a shipping line crossing the western tropical Pacific and corresponding latitude–time variations (left) evidencing the El Nino/La Nina signatures in the equatorial band (IRD data).



Interactive maps and charts on the web
http://www.coriolis.eu.org



Surface underway data, collected between January 2000 - September 2004, available from the GOSUD website

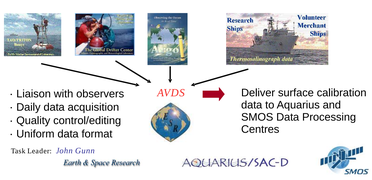
http://www.ifremer.fr/sismer/program/gosud/cdc/gosud_web_data_access.htm

Clients

- Satellite and in-situ instrument data validation studies
- global coupled atmosphere and ocean models
- global or regional ocean observing systems
- scientific community needing high resolution surface data

Aquarius and Soil Moisture and Ocean Salinity (SMOS) are satellite missions to measure global Sea Surface Salinity (SSS).

The *Aquarius* Validation Data Segment (*AVDS*) will collect and process surface measurements for the *Aquarius* data processing



- Liaison with observers
- Daily data acquisition
- Quality control/editing
- Uniform data format

Deliver surface calibration data to Aquarius and SMOS Data Processing Centres

Task Leader: John Gunn
Earth & Space Research

AQUARIUS/SAC-D

SMOS

Documents available

- GOSUD project plan : http://www.ifremer.fr/sismer/program/gosud/doc/gosud_pp_v3.doc
- GOSUD real-time QC : http://www.ifremer.fr/sismer/program/gosud/doc/gosud-real-time-qc.doc
- GOSUD TSG installation guideline : http://www.ifremer.fr/ird/soopip/tsg.html#TSG_GUIDE
- GOSUD manuals, project documents and reports are available from : http://www.ifremer.fr/sismer/program/gosud/documentation.htm

IODE International Oceanographic Data and Information Exchange

jcomm OCEANOGRAPHY & MARINE METEOROLOGY