Fourth Capacity Building Workshop of the WMO/IOC Data Buoy Cooperation Panel (DBCP) for the North Pacific Ocean and Its Marginal Seas (NPOMS-4)
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Data Buoy Cooperation Panel (DBCP)
DBCP activities and benefits to the Region

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Outline

- Overview of DBCP
- DBCP Activities
- Information available
- Benefit of DBCP activities
Data Buoy Cooperation Panel (DBCP)

• An official joint body of the World Meteorological Organization (WMO) and the Intergovernmental Oceanographic Commission (IOC).

• Consists of the data buoy component of the Joint WMO-IOC technical Commission for Oceanography and Marine Meteorology (JCOMM) and the Global Ocean Observing System (GOOS).

• Increases the quantity, quality and timeliness of atmospheric and oceanographic data in ocean areas, to improve global forecasts of weather and ocean conditions, plus also to contribute to climate study and oceanographic research.
Background

Management Committee
2 Co-Presidents,
3 PA Coordinators,
rep. of Team Sat. Data Req.,
rep. of Team on Capacity Building,
reps. of GOOS, GCOS, IODE,
additional experts

Joint WMO-IOC Technical Commission for
Oceanography and Marine Meteorology

Observations PA
Observations Coord. Group
OBS Coordinator (chair),
Chairs of Teams/Panels, liaison with Argo,
IOCCP, OceanSITES, data assim. expert,
two satellite experts,
CB Rapporteur

Services PA
Services Coord. Group
SERV Coordinator (chair),
Chairs of ETs,
3 additional experts,
satellite expert,
CB Rapporteur

Data Management PA
DM Coord. Group
DM Coordinator (chair),
Chairs of ETs, 3 specific experts incl.
WIS, rep. IODE, 2 additional experts,
satellite expert,
CB Rapporteur

Expert Team
Waves/Surges
Expert Team Sea Ice
Expert Team Marine Accident
Emergency Support
Expert Team Maritime Safety
Services
Expert Team Operational Ocean
Forecast Systems

CCI-CLIVAR-JCOMM
Expert Team Climate Change
Detection and Indices

Expert Team Data
Management Practices
(Joint with International
Oceanographic Data and
Information Exchange
IODE)

Cross-cutting Team on Satellite Data
Requirements
Cross-cutting Team on Capacity
Building

Ship Obs. Team
ASAPP
SOOPIP
VOSP

Data Buoy Cooperation Panel
GLOSS
Group of Experts
Argo
IOCCP
OceanSITES

JCOMMOPS
DBCP

WMO
IOC
jcommo
DBCP Goals

To provide international coordination and assist those providing and using observations from data buoys, within the meteorological and oceanographic communities.

DBCP reviews and analyses requirements for such data and provides an international focus and liaison on:

- strategies to maintain a global network of over 1250 drifting buoys and over 400 moorings
- monitoring quantity and quality of real-time data
- data management and archiving
- advancements in buoy technology
- support information exchange and sharing of expertise
- documentation and standards
- cooperative deployment programmes
- regional activities and between national bodies
- interactions with other international programs
Observing Networks/Action Groups

GDP: Global Drifter Programme  ([http://www.aoml.noaa.gov/phod/dac/gdp.html](http://www.aoml.noaa.gov/phod/dac/gdp.html), was SVP, Surface Velocity Programme)

DBCP- Task Teams /Pilot Projects

• Task Teams
  – Task Team on Instrument Best Practices & Drifter Technology Developments
  – Task Team on Data Management
  – Task Team on Moored Buoys
  – Task Team on Capacity Building

• Pilot Projects
  – Sea Level Atmospheric Pressure
  – Wave Measurements from Drifters
  – Pilot Project on Wave measurement Evaluation and Tests, from moored buoys
The primary objective of the DBCP is to maintain and coordinate all components of the network of over 1250 drifting buoys and 400 moored buoys, which provides measurements such as sea-surface temperature, surface current velocity, air temperature and wind speed and direction.

This data is useful for Weather and Ocean Forecasts and research and additionally can be used to complement or validate remotely-sensed data and operational models. The DBCP also explores and evaluates new technologies and uses those which prove successful to improve operations.
Networks Operate in the Region

- **TAO – Tropical Atmosphere/Ocean Array** (renamed the TAO/TRITON array on 1 January 2000. TAO array consists of approximately 70 moorings in the Tropical Pacific Ocean, telemetering oceanographic and meteorological data to shore in real-time via the Argos satellite system.

- **TRITON – Triangle Trans Ocean Buoy Network** (Mooring array in the tropical Western Pacific and Eastern Indian Ocean. Deployed since 1998)

- **GDP – Global Drifter array** (adopted in 1996. Maintain a global 5x5 degree array of 1250 satellite-tracked surface drifting buoys to meet the need for an accurate and globally dense set of in-situ observations of mixed layer currents, sea surface temperature, atmospheric pressure, winds and salinity)

- **OceanSITES** (collect, deliver and promote the use of high-quality data from long-term, high-frequency observations at fixed locations in the open ocean)

- **Meteorological moored buoys**

- **Tsunameter Buoys**
Network Status - Contributing Countries

- Drifting Buoys (1603)
  - AUSTRALIA (12)
  - HONG KONG (1)
  - CANADA (22)
  - EUROPE (112)
  - FRANCE (38)
  - GERMANY (4)
  - INDIA (1)
  - JAPAN (4)
  - NEW ZEALAND (8)
  - NORWAY (3)
  - UK (19)
  - USA (1,270)
  - USA/FRANCE (5)
  - UNKNOWN (104)

- Moored Buoys (441)
  - BRAZIL (4)
  - UK-FR (1)
  - BRAZIL/FRANCE/USA (11)
  - CANADA (39)
  - FRANCE (22)
  - GERMANY (7)
  - GREECE (2)
  - INDIA (17)
  - IRELAND (2)
  - JAPAN (8)
  - SOUTH KOREA (11)
  - SPAIN (2)
  - UK (13)
  - USA (238)
  - USA/INDIA (12)
  - UNKNOWN (52)

- Tsunameter Buoys (60)
  - AUSTRALIA (6)
  - CHILE (3)
  - COLOMBIA (1)
  - ECUADOR (2)
  - INDIA (6)
  - JAPAN (3)
  - RUSSIA (2)
  - THAILAND (1)
  - USA (36)

- Fixed Platforms (103)
  - GERMANY (2)
  - UK (92)
  - USA (9)

September 2015
Barometer Buoys

Barometer Drifting
- AUSTRALIA (12)
- CANADA (16)
- EUROPE (110)
- FRANCE (25)
- GERMANY (4)
- INDIA (1)

September 2015
BAROMETER FIXED PLATFORMS (90)
- JAPAN (212)
- UK (86)
- USA (4)
Sea Surface Temperature

Sea Surface Temperature
Drifting Buoys (1985-2015)

- Australia
- Hong Kong
- Canada
- Europe
- France
- Germany
- India
- USA
- Germany
- UK

September 2015
Drifting Buoy Density per 5°X5° grid
OceanSITES Platforms
Access to Buoy Data

• GTS (Global Telecommunication System)
• ISDM: data archive
• AOML Data Assembly Center (Drifter Data - Quality controlled delay mode data)
http://www.aoml.noaa.gov/phod/dac/gdp_doc.php
• ICOADS (International Comprehensive Ocean-Atmosphere Data Set)
http://icoads.noaa.gov/
• NDBC (National Data Buoy Center)
http://www.ndbc.noaa.gov/
• NODC (National Oceanographic Data Centre)
http://www.nodc.noaa.gov/BUOY/
• DBCP/JCOMMOPS Website
  – GTS monitoring tools
  – Links to data
  – Metadata on parameters reporting to GTS
Buoy Data – Quality Control

http://www.meteo.shom.fr/qctools/

- Monthly statistics
- Daily Data plots
- Blacklists: *List of buoys platforms for which over the past two weeks:
  - Pressure measurements are dubious,
  - or SST measurements are dubious,
  - or Positions measurements are dubious.
- Google Earth files
Buoy Data

• Sea level pressure is an Essential Climate Variable (ECV) to characterize the atmosphere at the land and ocean surface.
• This information helps to improve weather forecast models that predict typhoon intensity.
• Buoy measurements give the research community a better idea of the distribution of wind and how force is distributed.
• Some buoys also have Acoustic Doppler Current Profilers (ADCP) to measure currents as a function of depth, temperature probes in the upper ocean and acoustic devices to measure turbulence near the surface.
Sea Level pressure measurements from drifting buoys (DRIBU) are the most influential measurements to the NWP analysis.

DRIBU shows the largest mean forecast error reduction.

*E-SURFMAR – The Surface Marine Observation Programme of the European National Meteorological Services EUMETNET*
DBCP Helping Meteorologists and Oceanographers Worldwide

- Buoy observations permit forecasters to monitor pressure, wind, wave, and temperature conditions continuously in the coastal and immediate offshore waters.
- This information allow forecasters to fine tune model-generated forecast storm tracks and to evaluate critical derived information necessary to issue watches and warnings promptly for marine and coastal interests.
- Researchers, often in cooperation with NWS operational meteorologists, to study coastal meteorological events of major interest to forecasters.
- SST, wind and wave measurements from satellite need in situ data for calibration and validation.
Awareness of Buoy Program
Access to Buoy Data

Real-time

Buoy data is generally available in real time to platform operators via telecommunications providers and very quickly distributed on the Global Telecommunications System of the WMO.

- What is the GTS? Read more here.
- [Meteo France](http://www.meteofrance.fr) provides graphical views of GTS data for 10 days, for active buoys.

Near-real time and Archived data

- Canada’s [Integrated Science Data management](http://www.isdm.org) center provides an archive of all buoy data on behalf of the DBCP and JCOMM. Data coming from the GTS is usually available via the ISDM web site within 2 months of observation.
- The USA [National Oceanographic Data Center (NODC)](http://nodc.noaa.gov) provides an archive of a subset of buoy data and the [US National Climate Data Center (NCDC)](http://www.ncdc.noaa.gov) provides an archive of surface data.
- Derived Ocean Current Information from the Global Drifter Program is available a few months after observation: [Surface Drifter Data](http://www.nodc.noaa.gov/OC5/OC5.shtml).
- [Coriolis](http://www.cormaco.fr) in France provides access to most buoy data on the GTS.

Data Formats

Information about data formats is available on under [Sharing Your Data](http://dbcp.jcommops.org/data/access.html).

Data Policy

The DBCP adheres to a data policy.

Data access policy (draft)

The DBCP encourages free and open access to data. Real time data sharing is achieved via the Global Telecommunications System of WMO. At present, all of the archiving agencies and many of the operational and research bodies make provision for the release of drifter data to scientific and other customers. In particular, many data are
Thank you!

www.dbcp.jcommops.org

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## Saffir-Simpson scale

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