DIRECTORATE OF HYDROGRAPHY AND NAVIGATION
BRAZILIAN NAVY CENTER OF HYDROGRAPHY

GEBCO MEETING
DHN Chain of Command

Commander of the Navy (Maritime Authority)

Navy Chief of Staff

SGM  DGMM  DGPM  Diretoria Geral de Navegação  CNO  CGCFN

Diretoria de Hidrografia e Navegação
The Brazilian Hydrographic and Marine Meteorological Services

ISO 9001/2008 (November 2008)

Responsibilities

- Hydrography
- Cartography
- Nautical Publications
- Meteorology
- Maritime Safety Information
- Oceanography
- Capacity building
- Navigational Aids
- Survey Fleet

CHM
Centre of Hydrography, Meteorology and Oceanography

GNHO
Hydrographic Fleet

CAMR
Lighthouse Authority

BHMMN
Logistic Base
Hydrographic/Oceanographic Survey Fleet

6 oceanic ships (1200 tons)

- NOc Antares
- NHi Sirius
- NHoF Alte Graça Aranha
- NHo Cruzeiro do Sul
- NApOc Ary Rongel
- NPo Alte Maximiano

8 coastal ships (700 tons)

- Amorim do Valle
- Comandante Varella
- Tenente Boanerges
- Mario Seixas
- Taurus
- Comandante Manhães
- Garnier Sampaio
- Tenente Casetti
10 launches (132 tons) along Brazilian coast

Portable equipments
Mutibeam Bathymetry

EM-302 (2) / EM-1002 / EM 3000 / EM -3002 (installed)
EM-710 (2) / EM-122 / EM 2040 (to be installed)
Mutibeam Bathymetry – cont.

Antartica

EM 3000
(2008)
545 Nautical Paper Charts
Cartographic Plan for Antarctica

6 Nautical Charts
Cartographic Plan for the Amazon Basin

176 Nautical Charts
15,979 km

Northern Lighthouse Service (SSN-4)
Cartographic Plan for Paraguai-Paraná River Basin

Western Lighthouse Service (SSN-6)

68 Nautical Charts
1,384 km
Cartographic Plan for Tietê-Paraná Waterway

São Paulo State

78 Nautical Charts
1,505 km
Cartographic Production Database

HPD

Hydrographic and Navigation Safety Information

Maritime Information Overlays (MIO)

Print On Demand

Additional Military Layers (AML)

Paper Charts

Raster Nautical Charts (RNC)

Electronic Navigational Charts (ENC)
Electronic Navigational Charts
ENC

157 ENC (General, Coastal, Approach and Harbours) for the Brazilian Coast and Amazon River (SOLAS Ships)

115 ENC in the market
Notice to Mariners

Maritime Safety Information

http://www.mar.mil.br/dhn/chm/avgantes/avgante.htm

http://www.mar.mil.br/dhn/chm/avgantes/avradio.htm

http://www.mar.mil.br/dhn/chm/avgantes/avgantes/avradio.htm

http://www.mar.mil.br/dhn/chm/avgantes/avgantes/avradio.htm
Marine Meteorological Service

Issues and provides meteorological information (forecast and warnings) for navigators to METAREA V:
- bulletins
- synoptic charts
- severe weather warnings

(International Convention for the Safety of Life at Sea – SOLAS)
Numerical Weather Prediction

Atlantic

Regional

Local

GME 0.75  168h  WW3 / WAM 1.0

HRM 0.18  78h  WW3 / WAM 0.3

HRM 0.09  78h  WW3 / WAM 0.1
Numerical Ocean Prediction – cont.

Atlantic

Regional

Local

HYCOM 1/4°

HYCOM 1/12

HYCOM/ROMS/POM
Data Collection (meteo-oceanographic data)

GOOS (COI) - http://www.goosbrasil.org/
PNBOIA - Brazilian National Buoy Programme

Moored buoys  08
Drifters  47

PIRATA – INPE/DHN/FR/USA
National Cooperation

Research Centers / Universities
- UFRJ
- USP
- DWD
- FURG
- UFBA
- CPRM

Industries
- BR
- Navy

Operational Institutions
- Navy
- INMET
International Organizations

DHN

WMO

IOC

IHO

IMO

IALA
Capacity building

DHN offers:
Cat A (one year hydrography course)
Cat B (one year hydrography course)

Special courses like:

Tide gauge installation and operation course
Hydrographic softwares courses
METOC courses
Bridge meteorological observer
Mission: Contribute to the safety of navigation, by conducting activities related to the systems of aids to navigation within the Brazilian maritime area and navigable waters.

5 major branch offices (SSN), 28 minor branch offices (at Port Captaincies), 24 small buoy tenders, 5 large buoy tenders, 1 ship dedicated to the lighthouses.

Today, the Aids to Navigation installed in Brazil totalize:

213 major beacons (automated lighthouses), including 30 manned lighthouses
15 radiobeacons
572 automated beacons
1015 fixed daymarks
760 light buoys
2267 unlighted buoys
41 radar beacons
11 DGPS Reference Stations
2240 signboards (mainly for river marking)
## Getting the job done → Personnel

<table>
<thead>
<tr>
<th></th>
<th>Officers</th>
<th>Enlisted</th>
<th>Civilians</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>173 + 19R</td>
<td>1009 + 24R</td>
<td>215</td>
<td>1440</td>
</tr>
</tbody>
</table>
DHN has the bathymetric information from GEBCO sheets in analogical format. It is been converted to digital format in order to send it to GEBCO database. Nowadays DHN sends recently acquired single and multibeam data to GEBCO database.