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SERVICE HYDROGRAPHIQUE
ET OcéANOGRAPHIQUE
DE LA MARINE

DIRECTION DES MISSIONS
INSTITUTIONNELLES ET DES
RELATIONS INTERNATIONALES

Dossier suivi par
IPETA Eric Langlois
Head of the external relations division
Tel : +33 1 53 66 97 81
Fax : +33 1 41 74 94 23
Mél : eric.langlois@shom.fr

FRANCE NATIONAL REPORT TO THE 16TH MEETING OF THE MESO AMERICAN AND CARIBBEAN SEA HYDROGRAPHIC COMMISSION

1. SHOM: General

According to its targets and performance contract for the 2013-2016 period, SHOM is pursuing the achievement of its different commitments based on France's National Maritime Strategy and Defence Policy. Survey works are programmed according to the prioritized 4-years survey plan for the waters under French jurisdiction.

2. Surveys

2.1. Coverage of new surveys

Since the last Conference, bathymetric survey work has been performed at Clipperton Island in April 2015 with the cruise PASSION 2015. This survey included the bathymetric survey of the lagoon to complete the one achieved in 2012 around the island by a SHOM survey unit aboard IFREMER's *N/O Atalante*.

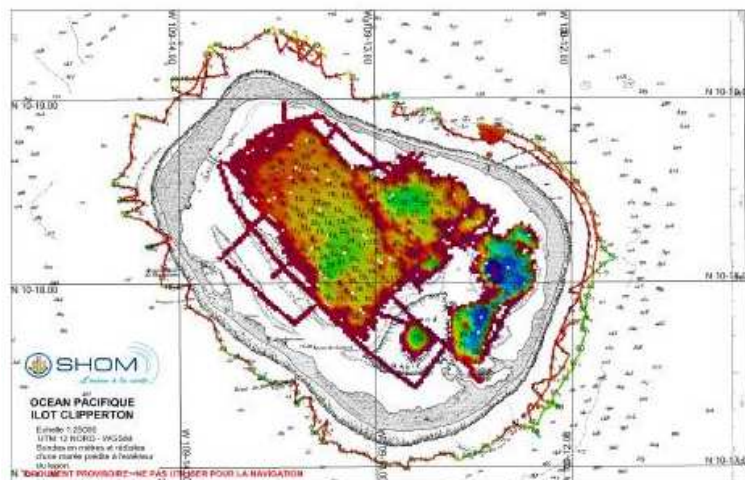


Fig.1: Survey coverage achieved during Passion 2015 campaign – Clipperton Island.

2.2. French Survey Programme for the region

SHOM's 2013-2016 national hydrographic survey programme document¹ depicts on the one hand the current hydrographic knowledge status and on the other hand the long-term target objectives of S-44 compliant hydrographic surveying in French Antilles, French Guyana and Clipperton Island waters. The updated survey plan related to those areas is detailed hereafter:

- **French Antilles :**

In this area, survey campaign programme focuses on main harbour access channels and anchorage areas of St. Martin and St. Barthélemy (Fig.2). A deployment of IFREMER's N/O Atalante, named SHOM ANTILLES 2016, is scheduled from 3rd to 28th January 2016 to support the following survey work conducted by SHOM, as depicted in the figure below (fig.2):

- Pursue the 2009 survey in Anguilla channel and its recommended access , northwest part of St. Martin (area A in green colour),
- Achieve the recommended access of Saint-Barthélemy channels and its recommended access (area B in orange colour),
- Pursue the survey work of the 30-200m depth area within French Waters (area C in purple color) for the purpose of exploring the continental shelf from the shore to its edge,
- Wreck and soundings research within the FR7471 chart limit.

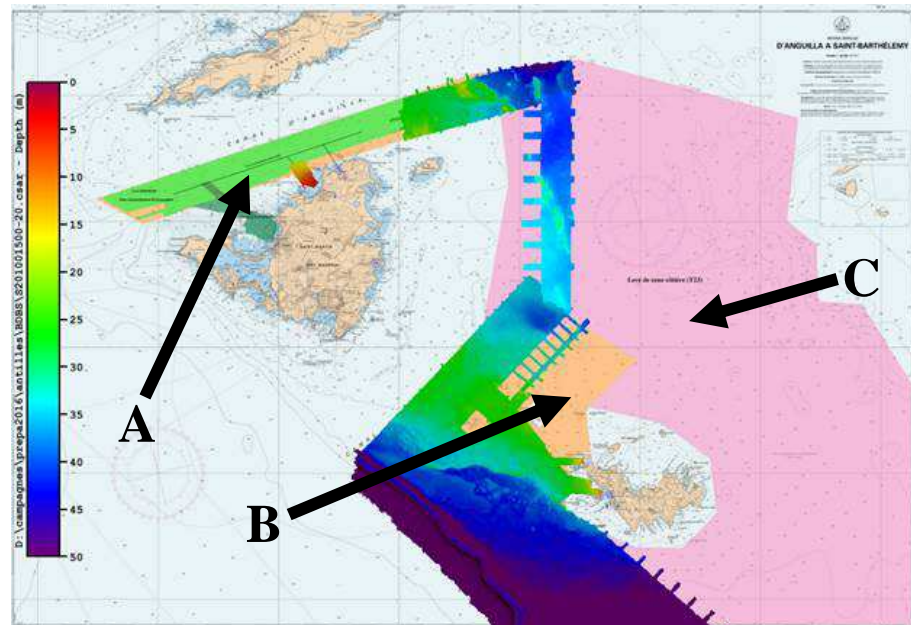


Fig.2: Survey work programmed during SHOM ANTILLES 2016 cruise.

- **French Guyana :**

French Guyana coastal waters are surveyed in order to define bathymetry in fishing areas to support surveillance operations. A 3 months deployment of a BH2 survey ship is currently scheduled by 2017 to complete the 2013 cruise achieved by BH2 survey ship *Borda* (see France's national report to the 14th MACHC Conference).

- **Clipperton Island**

No systematic surveys scheduled, only opportunity works as reported in §2.1.

¹ http://www.shom.fr/fileadmin/data/DMI/PLANS/PNH_RCO_20130103_HD_01.pdf

2.3. New technologies and /or equipment

NTR.

2.4. New ships

NTR.

2.5. Problems encountered

NTR.

3. New charts & updates

With the use of CARIS HPD being fully operational in the production process, French ENC's within the MACHC Region have been updated while being uploaded in CARIS HPD database, including minor changes due to connections of some ENC objects (cartographic objects) with hydrographic objects from the BDGS hydrographic database. These connections are important for the production tasks as they allow updating automatically the cartographic products ENC and paper charts.

3.1. ENC's

SHOM's collection of original ENC's has reached the number of 456, of which 29 cells within that region.

In line with the WEND recommendations and guidelines, France produces its small scale ENC cells as closely as possible to INT chart schemes.

The status of ENC production in the region B is detailed in the chartlet below. Except for technical editions regarding the migration into HPD, neither new cells nor new editions have been produced since the last MACHC conference.

Usage Band	Produced Cells	Planned Cells	Percentage
1	0	0	N/A
2	3	3	100%
3	4	4	100%
4	9	12	75%
5	9	32	41%
6	4		
Total	29	51	57%

Fig.3: SHOM's ENC production plan status.

Following is an extract of the online PRIMAR catalogue <http://www.primar.org> with the SHOM ENC coverage of the MACHC (region B) area:

SHOM's ENC production plan is depicted in the following table:

Port/Area	Usage Band	Corresponding FR Paper Chart	Date of issue
Havre du Robert et Baie du François	5-6	7088 (chart + inset A)	2017
Havre de la Trinité et Baie du Galion	5	7087	2017
Saint-Pierre, Case-Pilote, Cul-de-Sac du Marin, Baie du Vauclin	5	7089 (insets A,B,C & D)	2017
Grand Cul-de-Sac Marin – De la Baie du Lamentin à Port-Louis	5	7324	2017
Saint-François, Le Moule, Grande Anse, Sainte-Anne et anse Accul, Petit Havre	5	7102 (insets A,B,C,D & E)	2017
Anse Deshaies, Anse de Malendure, Anse à la Barque	5	7482 (insets A,B & C)	2017
Ports du Larivot et de Cayenne	5	7377	2017
Rivière de Sinnamary	4-5	5884 (chart + inset A & B)	2017
Embouchure du fleuve Maroni	4	7376 (inset A & B)	2017

Fig.6: SHOM's ENC production plan for the MACHC region up to 2018.

3.2. ENC Distribution method

All French ENC's (S-63 encrypted format) are distributed to End User Service Providers by PRIMAR RENC. FR is providing its support to the work plan of the WEND working group for improving the implementation of WEND principles.

3.3. RNCs

NTR.

3.4. INT charts

French charts include a QR Code to direct access to NTM applicable to that chart. Moreover, all up to date French charts are now available by 'Print On Demand' to French forces users.

SHOM's INT chart production plan for this region is completed:

Scale	Produced INT charts	Planned INT charts	Percentage
Small (<1/1 000 000)	1	1	100
Medium	4	4	100
Large (>1/100 000)	0	0	/
Total	5	5	100

Fig.7: SHOM's INT chart production plan status.

3.5. National paper charts

No original charts were published since the last conference, and there is no chart planned to be issued in 2016/2017.

3.6. Other charts, e.g. for pleasure craft

Since 2014, SHOM provides georeferenced marine charts in GeoTiff and S-57 format when produced. These digital marine charts are now available through SHOM's online store (<http://diffusion.shom.fr>) under 2 types of licenses according to the purpose of use (internal or commercial). These data can be used with GIS or cartographic software for commercial or private purposes.

A S-57 license allows unlimited download of updated versions for 12 months from the date of purchase.

3.7. Problems encountered

NTR.

4. New publications & updates

4.1. New Publications

NTR.

4.2. Updated publications

A new edition of the list of lights LD (Saint-Pierre-et-Miquelon – Petites Antilles – Guyane) was released in June 2015.

4.3. Means of delivery

In addition to paper production, all List of Lights, Radiosignals publications and most of Sailing Directions (including H5) are now available in digital format (pdf files) on SHOM's online shop (diffusion.shom.fr).

4.4. Problems encountered

NTR.

5. MSI

Since January 1st 2014, SHOM's notices to mariners (GAN) are exclusively available under digital formats, either downloadable on www.shom.fr or by annual subscription (CD-rom).

5.1. MSI Existing infrastructure for transmission

There is no NAVTEX station related to French overseas territories, MSI warnings are broadcast through SafetyNET.

Hereafter are listed the French overseas territories POCs for NAVAREA IV and XII:

AREA	COUNTRY	NAME	TELEPHONE	FACSIMILE	EMAIL
IV	French Antilles	Adjoint Mer Antilles (C)	+596 (0)5 96 39 50 59 +596 (0)6 96 28 40 82	+596 (0)5 96 39 51 65	opsmer.faa@wanadoo.fr
IV	French Guyana	Adjoint Mer Guyane (A)	+594 (0)5 94 39 56 69	+594 (0)5 94 39 55 85	nauticinfo.guyane@dirisi-cayenne.fr
XII	Clipperton (Île)	MRCC Papeete	+689 (0) 40 54 16 16 +689 (0) 40 54 16 15	+689 (0) 40 42 39 15	mrccpapeete@mail.pf

Fig.8: MSI Points of Contacts for French Overseas Territories within the MACHC region (Navarea IV and XII).

5.2. New infrastructure in accordance with GMDSS Master Plan

NTR.

5.3. Problems encountered

NTR.

6. C-55 Latest update

The last C-55 update by France has been transmitted to the IHB on August 28th 2015. The C-55 charting and surveying status values regarding Region A and B areas under SHOM responsibility are summed up in the following tables:

Survey Status		Depth < 200m			Depth > 200m		
		A	B	C	A	B	C
A	France - Clipperton Island	73,7	0	26,3	1,9	0	98,1
B	France - French Antilles	68,9	2	29	16,8	0,1	83,1
	France - Guyane	29,8	0	70,2	2,6	0	97,4

Charting Status		Small (<1 M)			Medium (1M < / < 100 000)			Large (> 100 000)			Metric	WGS84
		A	B	C	A	B	C	A	B	C		
A	France - Clipperton Island	100	0	100	0	0	NA	0	0	0	100	100
B	France - French Antilles	100	0	NA	100	0	100	100	0	85,71	100	100
	France - Guyane	100	0	100	100	0	66,67	100	0	50	100	100

Fig. 9: 2015 updated C-55 values (highlighted in red) for survey status (top table) and charting status (down table)

7. Capacity Building Offer of and/or demand for Capacity Building

7.1. Training received, needed, offered

For the record, initial training capabilities provided by SHOM can be consulted through the catalogue available on www.shom.fr.



Fig. 11: SHOM REFMAR tide gauges network.

Within the REFMAR network, 9 French permanent tide gauges are located in the region:

- Guadeloupe: Pointe-à-Pitre (SHOM/Météo-France/DM Guadeloupe), Deshaies (IPGP) and La Désirade Island (IPGP)
- Martinique: Fort-de-France (SHOM/Météo-France/marine nationale), Le Prêcheur (CG Martinique), Le Robert (CG Martinique).
- French Guyana: Îles du Salut (SHOM/DM Guyane), Îlet La Mère (DM Guyane) and Dégrad des Cannes (DM Guyane).

Sea level data are freely available on REFMAR webportal (<http://refmar.shom.fr>).

8.3. New equipment

NTR.

8.4. Problems encountered

NTR.

9. Other activities

9.1. Meteorological data collection

NTR.

9.2. Geospatial studies

NTR.

9.3. Disaster prevention

- **Tsunami :**

SHOM contributes to the launching of the national tsunami warning centre for the Caribbean. The importance of the development of real-time tide gauges on French coast and operated by SHOM, IPGP, CG Martinique, is recognised as a key component for the development of a regional tsunami warning system.

France has Navy ships in the MACHC region ready to provide support in case of an emergency. France also provides technical support and has a rapid response capacity for environmental data in case of a disaster.

The point of contact at SHOM in case of a disaster is ICETA Jean-Christophe ROSADA. His division can be reached 24/7 by fax +33 298 221 665 or email coord.navarea2@shom.fr

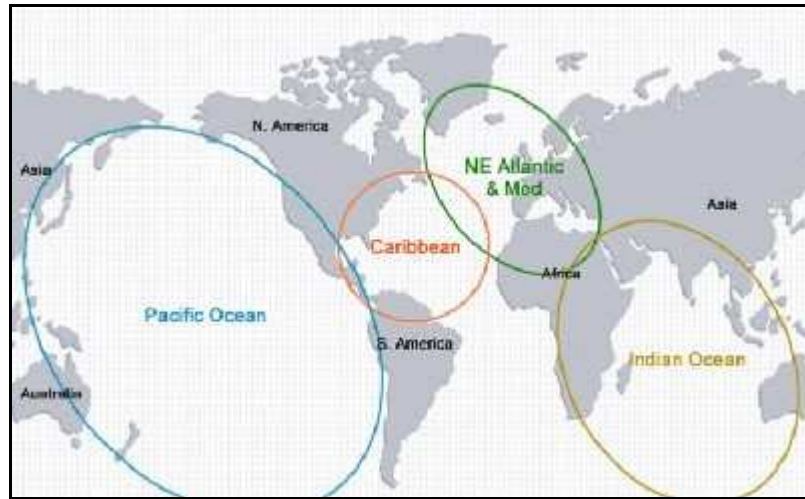


Fig.12: Cooperation areas on tsunami warning system (source IOC; UNESCO).

More information about SHOM's involvement can be found through the following link:
http://refmar.shom.fr/fr/sea_level_news_2012/t2/coordonner-l-alerte-aux-tsunamis-dans-les-petites-antilles-source-deal-guadeloupe

- **Coastal flooding :**

SHOM is associated with *Météo-France* in the provision of an alert system against coastal flooding named *Vigilance Vagues Submersion*. This allows for a better anticipation of this destructive phenomenon and protection of the populations living in the littoral area of Metropolitan France.

Regarding French overseas territories in the MACHC region, *Météo-France* has set up since 2006 a warning procedure (cf. Fig.12) to alert local population on dangerous phenomena as tropical cyclones and common meteorological risks (strong rain, strong sea waves, violent winds, etc).

In that scope, SHOM provides *Météo-France* with tidal predictions, expertise and models in coastal hydrodynamics and real time tide gauge observations as well as information relative to extreme sea levels and bathymetry. *Météo-France*'s marine forecasters compile the data and produce a map depicting the level of coastal flooding threat together with the risk of tall waves for each French metropolitan department:

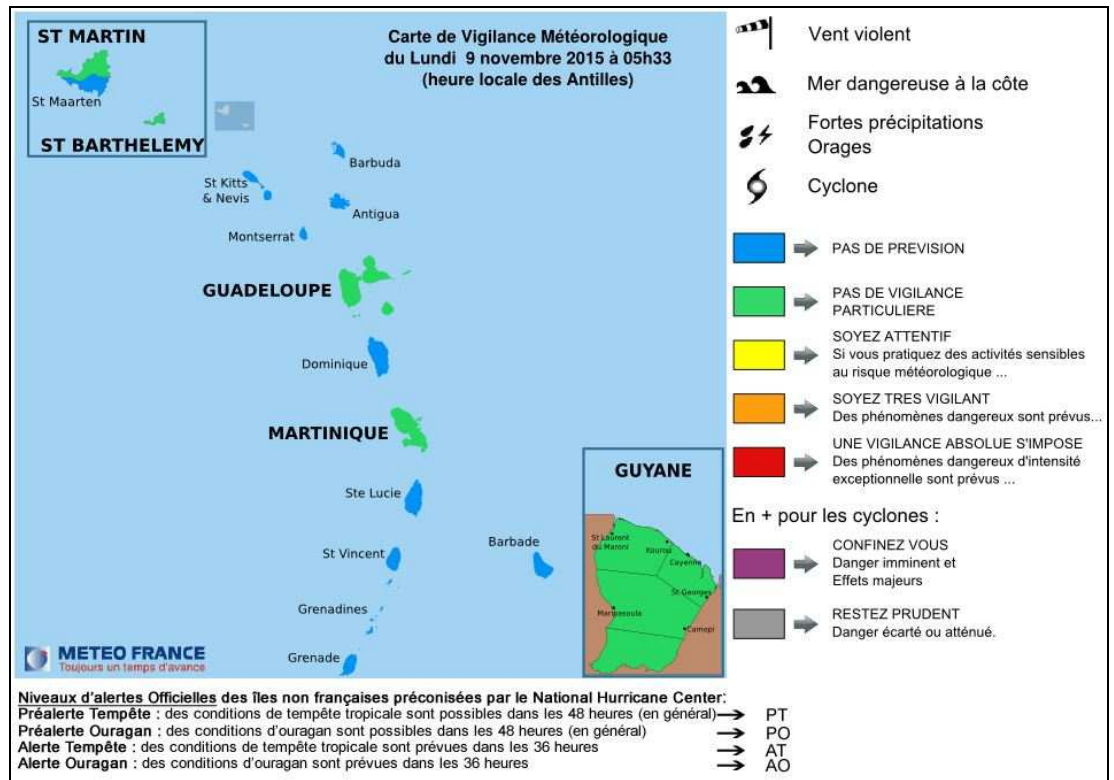


Fig.13: Meteorological warning forecast for French Antilles and (French Guyana) dated November 9th 2015. (source: *Météo-France*).

Moreover, SHOM and *Météo-France* have initiated the second phase of the *Homonim* Project which aims at extend to overseas departments the coastal oceanographic modelling tools used for *Vigilance Vagues Submersion* alert system (see above). This new phase includes an overseas deployment of coastal wave modelling tools implemented during the previous phase on French European coasts. Wavewatch III (WW3) and Hycom2D modelling configurations will be put into service in the region according to the following agenda:

- French Antilles WW3 : 2016/8 (V0) ; 2018/10 (V1)
- French Guyana WW3 : 2016/8 (V0)
- French Antilles-Guyana Hycom2D : 2017/4 (V0) ; 2018/4 (V1)

- **Oil spills:**

NTR.

9.4. Environmental protection

NTR.

9.5. Astronomical observations

NTR.

9.6. Magnetic/Gravity surveys

NTR.

9.7. MSDI Progress

Since the launch of SHOM's maritime and coastal geographic information portal data.shom.fr, further developments have been implemented with new online services data layers on a regular basis. Hereafter are listed the some of the latest ones:

- <http://zerohydro.data.shom.fr>: online service to apply the vertical datum on a bathymetric dataset,

- An advanced tidal prediction online service to generate tidal predictions at any point, including from external harmonic constituents and to perform harmonic analysis of an observation dataset.
- New seabed, tidal and 3D-currents layers available (French European coast only),
- Vertical reference surface layers generated from geoid/spheroid separation model (French European coast only),
- Updated raster layer of SHOM's nautical charts completed for large scale;

Those evolutions can all be followed via SHOM's Twitter account (@shom_fr),

Moreover, *ocean modelling forecasts* are available both in visualization and download under Open-Data Licence. Time and Space exploration (5 days timeframe), editable colour patterns, profile extraction and overlaying with other data sources are some of the interactive tools that come along with those exclusive data.

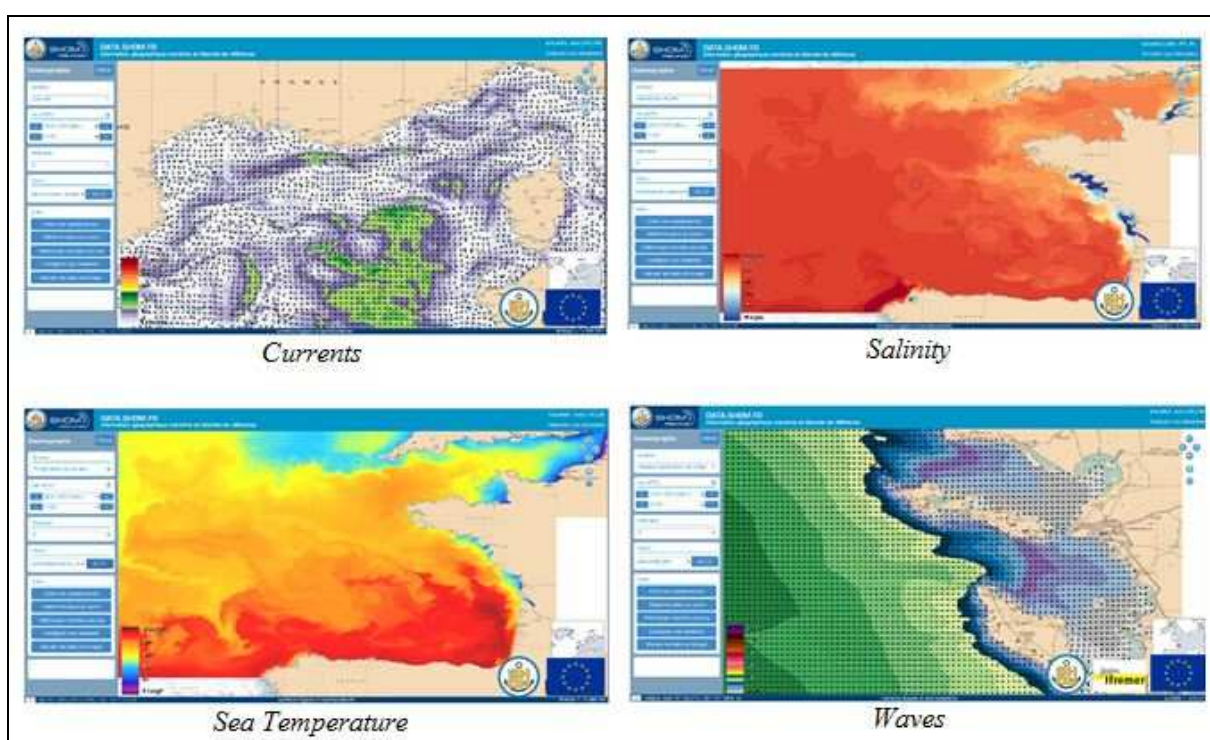


Fig.14: Oceanographic forecasts on SHOM's data portal (data.shom.fr)

A detailed description of the portal functions and contents is available on SHOM website (<http://www.shom.fr/les-services-en-ligne/portail-datashomfr/>). Data available on that portal are organised according to the following topics listed below: *tides, tidal currents, bathymetry, cartography, maritime and littoral databases.*

9.8. International

France, represented by SHOM, is either full member or associate member in 9 regional hydrographic commissions amongst the 15 organized by the IHO members States. The detail of SHOM's involvement in IHO activities is listed in the table hereafter:

Name	Chair / Vice chair	Member	Observations
CBSC		✓	Capacity Building Sub-Committee
NCWG		✓	Nautical Cartography Working Group (former CPSCWG)
ENCWG		✓	ENC Working Group (former TSMADWG/DIPWG)

DPSWG		✓	Data Protection Scheme Working Group
DQWG		✓	Data Quality Working Group
EAtHC		✓	Eastern Atlantic Hydrographic Commission
GEBSCO		✓	Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of Oceans (GEBSCO)
HCA		✓	Hydrographic Commission on Antarctica
HDWG	✓	✓	Hydrographic Dictionary Working Group
HSSC		✓	Hydrographic Services and Standards Committee
IENWG	✓	✓	IHO-European Union Working group
IRCC		✓	Inter Regional Coordination Committee
MACHC		✓	MESO American & Caribbean Sea Hydrographic Commission
MBSHC	✓	✓	Mediterranean and Black Seas Hydrographic Commission
MSDIWG		✓	Marine Spatial Data Infrastructure Working Group
NIOHC		✓	North Indian Ocean Hydrographic Commission
NIPWG		✓	Nautical Information Provision Working Group (former SNPWG)
NSHC		✓	North Sea Hydrographic Commission
RSAHC		✓	ROPME Hydrographic Commission
S-100WG		✓	S-100 Working Group (former TSMADWG/DIPWG)
SAIHC		✓	Southern Africa and Islands Hydrographic Commission
SWPHC		✓	South-West Pacific Hydrographic Commission
TWCWG	✓	✓	Tidal, Water Level and Currents Working Group (former TWLWG/SCWG)
WEND		✓	World-Wide Electronic Navigational Chart Database
WWNWS	✓	✓	World-wide Navigational Warning Service Sub-Committee, formerly known as the Promulgation of Radio Navigational Warnings Sub-Committee (PRNW)

10. Conclusion

One of the outcomes of the 13th Conference of Capacity Building Sub-Committee is to encourage Regional Hydrographic Commissions to consider larger CB projects opportunities, and to think about perspectives on that matter. France is fully supportive to that approach and wishes such discussion to follow up at the forthcoming MACHC Conference