

Report of the GEBCO Guiding Committee

Submitted by: Chair

Related Documents: IHO CL 17/2018 dated 14 February 2018
 IHO CL 18/2018 dated 14 February 2018
 IHO CL 27/2018 dated 18 April 2018
 IHO CL 28/2018 dated 18 April 2018
 IHO CL 29/2018 dated 18 April 2018
 IHO CL 59/2018 dated 13 December 2018
 IHO CL 11/2019 dated 25 January 2019
 IHO CL 12/2019 dated 11 February 2019

See Annex C for IHO Publications and Resolutions

Related Projects: NF-GEBCO Seabed 2030

Chair: Shin Tani, Japan

Vice-Chair: Martin Jakobsson, Sweden

Secretary: David Wyatt, IHO

Member States: Australia, Italy, Japan, Norway, Poland, Republic of Korea, Russian Federation, Sweden, UK, USA

Expert Contributors: Fugro

See Annex A for full details

1. Meetings Held During Reporting Period

The 35th meeting of the GEBCO Guiding Committee (GGC) was held in Canberra, Australia, from 12 to 16 November 2018; the meeting was chaired Mr Shin Tani (Japan). The GEBCO Technical Sub-Committee on Ocean Mapping (TSCOM), the Sub-Committee on Regional Undersea Mapping (SCRUM) and Outreach Working Group held a joint meeting from 12 to 13 November 2018; the meeting was co-chaired by Dr. Karen Marks (USA), (Chair of the TSCOM), and Dr Vicki Ferrini (USA) (Chair of the SCRUM). These meetings were followed by the GEBCO Symposium Day, which was held on 14 November 2018. 102 delegates from 22 Member States participated across the five days. The Sub-Committee for Undersea Feature Names (SCUFN) held its meeting in Wellington, New Zealand, 23 to 27 October 2018; the meeting was chaired by Dr Hans-Werner Schenke (Germany).

2. Work Programme

The joint meeting of TSCOM-SCRUM was co-chaired by Dr Karen Marks (USA), Chair of TSCOM, and Dr Vicki Ferrini (USA), Chair of SCRUM.

Update reports were provided on the following regional mapping projects: Indian Ocean Bathymetric Compilation (IOBC), North Atlantic Seabed Mapping Project, International Bathymetric Chart of the Arctic Ocean (IBCAO), International Bathymetric Chart of the Southern Ocean (IBCSO), Canadian Hydrographic Service (CHS) activities, European Marine Observation and Data Network (EMODnet) Bathymetry Digital Terrain Model (DTM) 09/2018 developments, Istituto Idrografico Della Marina (IIM) of Italy in the Arctic region and contributions to the GEBCO and Seabed 2030 projects and the Open Geospatial Consortium (OGC) and its relevance to GEBCO and Seabed 2030 project.

Reports were received from the Seabed 2030 Regional Data Assembly and Co-ordination Centres (RDACC) and the Global Data Assembly and Co-ordination Centres (GDACC). A comprehensive brief were provided on the developments in the IHO Data Centre for Digital Bathymetry (DCDB) and future proposed enhancements. Details were also provided on the Crowdsourced Bathymetry (CSB) initiative and the collaboration with Rosepoint Navigation to gather position and depth data via ECS from small vessels. The work to enhance the data collected via the Voluntary Observing Ships (VOS) programme to include bathymetry was highlighted.

Professor Hyo Hyun Sung, Chair of the OWG, presented a detailed update on activities, the proposed GEBCO outreach and capacity building strategies and suggested a way forward in consideration of the decision at GGC34 to create a new Sub-Committee out of the existing Outreach Working Group (OWG) with responsibility for Outreach, Communications and Engagement, to be called the Sub-Committee on Communications, Outreach, Public Engagement (SCOPE).

Thierry Schmitt (France) and Caitlyn Raines (ESRI) were elected as Chair and Vice-Chair of TSCOM respectively for the period 2019 to 2022.

For the twelfth consecutive year, the GEBCO project organized a symposium on the theme of 'Map the Gaps'. The symposium was opened by Dr James Johnson, Chief Executive Officer, Geoscience Australia. The symposium, which included digital poster sessions and contributions from a broad spectrum of institutions involved in all aspects of ocean mapping, featured 25 presentations on a diverse range of topics.

At its 35th meeting, the GGC received reports from key personnel performing functions on behalf of GEBCO as well as reports from its parent bodies - IHO and IOC, on activities since the previous meeting.

The Chair of the Sub-Committee on Undersea Feature Names (SCUFN) reported on the changes of membership and the election of a new Chair (Hyun-Chul Han –Republic of Korea) and Vice-Chair (Yasuhiko Ohara - Japan). He noted that there remained one IOC vacancy to be filled. He highlighted some changes proposed to B-6 (Standardization of undersea features names) to make the supporting bathymetric data available to the IHO DCDB as part of a submission. The GGC endorsed an amendment to the ToRs article 2.8 of the SCUFN to increase the submission deadline from 30 days to 60 days for all formats of submissions. He reported on the activities of the Undersea Feature Names Project Team (UFNPT) and the proposed future activities related to the development of a S-100 based Product Specification and the registration of terms in the IHO GI Registry.

The GGC considered outreach and ways to raise the profile of the GEBCO project among the different stakeholder and user communities, including the IHO and the IOC Member States, the maritime and scientific community and the general public. The GGC approved the creation of the new Sub-Committee on Communications, Outreach and Public Engagement (SCOPE) and directed the Chair of the OWG to develop appropriate ToRs. In addition, the GGC requested the Chairs of all Sub-Committees to review their ToRs with a view to achieve better harmonization and consistency. The GGC also requested the Chair OWG to generate a draft communications strategy for consideration at GGC36. The GGC devoted considerable time to discussions on the Seabed 2030 Project. The interim Seabed 2030 Project Director provided a comprehensive presentation on the establishment and activities of the Seabed 2030 Project Team and the regional centres. He highlighted the key personnel involved in the Project Team and the Sponsors. He also presented the initial goals and work packages included in the initial establishment documentation and the overall goal of the project being to complete the GEBCO Grid started in 1903. The GGC reviewed the Year 1 Seabed 2030 Project report and the proposed Year 2 Project Work Plan and both were endorsed after inclusion of a number of amendments and recommendations.

The GGC also reviewed its current financial situation in relation to proposed planned projects. The Committee addressed the budget submissions from its subordinate bodies and approved revised allocations to ensure a contingency balance of 15,000€ was maintained for 2019 to cover emergent items. The draft consolidated GEBCO Work Plan and budget will be reported to the 11th meeting of the IHO Inter-Regional Coordination Committee (IRCC) and the 30th meeting of the IOC Assembly, for consideration and endorsement of the parent organizations., see Annex B.

The GGC reviewed the state of membership and it was noted that one IHO appointed vacancy needed to be filled immediately and a further vacancy would need to be filled on completion of GGC36 in November 2019. Also it was noted that the current Chair and vice-Chair had completed their five-year terms in these roles. In accordance with Terms of Reference, article 2.1, the GGC re-elected Shin Tani and Martin Jakobsson as Chair and vice-Chair respectively for a period of up to two years. In addition it was agreed that a minor amendment to the ToRs article 2.1, reducing the terms of office from 5 to 3 years renewable for one additional term, should be proposed to the IHO and IOC, as it was felt that the current five-year term was too great a burden and commitment to attract suitable volunteers in the future (Track Change version attached as Annex E).

It was agreed that the 36th meeting of the Committee would take place, together with meetings of TSCOM, SCRUM and the GEBCO Symposium, in Portsmouth, New Hampshire, USA, during the week 4 to 8 November 2019. It was noted that France (Shom) and the IOC were investigating hosting the annual meeting in 2020.

3. Progress on IRCC Action Items

Decision 1: to approve the GEBCO Work Plan 2018-2019 (Annex B of doc. IRCC10-07I).

Recommendations to RHC:

1. Continue to encourage RHCs to organize contribution of bathymetric data in shallower coastal areas from their member states to GEBCO in order to support the production of higher resolution gridded data products of GEBCO;

2. Encourage RHCs to invite and communicate with GEBCO members to their meetings

Decision 2: to note the reports under agenda item 7 (docs. IRCC10-07A to I).

There were no specific actions on the GGC from IRCC10.

4. Problems Encountered

The on-going caution of some coastal states on the provision of bathymetric data in waters shoaler than 200 metres, the area critical for much tsunami and coastal inundation modelling. IRCC is requested to encourage member states to gather and contribute shallow water data, from all available sources.

5. Any Other Items of Note

None.

6. Conclusions and Recommendations

None.

7. Justification and Impacts

None.

8. Actions Required of IRCC

The IRCC is invited to:

- a. Note the contents of this report;
- b. Continue to encourage RHCs to organize contribution of bathymetric data in shallower coastal areas from their member states to GEBCO in order to support the production of higher resolution gridded data products of GEBCO;
- c. Encourage RHCs to invite and communicate with GEBCO members to their meetings as appropriate;
- d. Approve the proposed amendment to the GGC ToRs highlighted in Annex E; and
- e. Take any actions deemed necessary.

**IHO-IOC GEBCO GUIDING COMMITTEE
(GGC)**

List of GGC members - 1 May 2018

- | 1. IHO Appointed Members: | Term Period: |
|--|---------------------|
| Mr Shin Tani (Japan) (<i>Chair</i>) | (2018-2023) |
| Dr Hyo Hyun Sung* (Republic of Korea) | (2014-2019) |
| Dr Graham Allen (United Kingdom) | (2015-2020) |
| Mr David Millar (USA) | (2018-2023) |
| Mr Evert Flier (Norway) | (2019-2024) |
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| 2. IOC Appointed Members: | |
| Dr Marzia Rovere (Italy) | (2014-2019) |
| Dr Johnathan Kool (Australia) | (2016-2021) |
| Captain Leonid Shalnov (Russian Federation) | (2016-2021) |
| Dr Martin Jakobsson (Sweden) (<i>Vice-chair</i>) | (2018-2023) |
| Lieutenant Dr Karolina Zwolak (Poland) | (2018-2023) |
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| 3. Ex-officio Members: | |
| Dr Vicki Ferrini (USA) (<i>Chair of SCRUM</i>) | |
| Mr Thierry Schmitt (France) (<i>Chair of TSCOM</i>) | |
| Mr Hyun-Chul Han (Republic of Korea) (<i>Chair of SCUFN</i>) | |
| Ms Jennifer Jencks (USA) (<i>Director of IHO-DCDB</i>) | |
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| * Members serving a second 5-year term. | |
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| 4. Secretary: | |
| Mr David Wyatt (IHO) | (2015-2019) |

1.1. IHO-IOC GEBCO Guiding Committee (GGC) Work Plan 2019-2020

1.1 GGC Tasks

- A Organise and conduct GGC XXXV meeting in 2019(IHO Task 3.6.1)
- B Ensure conduct of TSCOM, SCRUM and SCUFN meetings in 2019 (IHO Tasks 3.6.1)
- C Ensure effective operation of IHO DCDB (IHO Task 3.6.2)
- D Encourage the contribution of bathymetric data to the IHO DCDB (IHO Task 3.6.3), identify priority areas for regional mapping (IHO Task 3.6.3) and promote data contribution through GEBCO participation in RHCs meetings (IHO Task 3.6.3)
- E Maintain IHO bathymetric publications (IHO Task 3.6.6) including: B-4, B-6, B-8, B-9, B-10 and B-11
- F Develop the on-line function of B-4 (Information concerning recent bathymetric data) (IHO Task 3.6.2)
- G Contribute to outreach and education about ocean mapping (IHO Task 3.6.7) by development of outreach and educational materials (IHO Task 3.6.7) and printing of IHO-IOC GEBCO World Map (IHO Task 3.6.7)
- H Ensuring IHO-IOC GEBCO Web site is kept current and updated regularly (IHO Task 3.6.8)
- I Develop short course and course material on compiling digital bathymetric models (DBMs) to be included in GEBCO from a heterogeneous bathymetric source database (IHO Task 3.6.9)
- J Update and enhance the GEBCO Gazetteer (B-8) for internet access (IHO Task 3.6.10) including providing the GEBCO Gazetteer as a web service via a geospatially enabled database (IHO Task 3.6.10), develop and make available public and management on-line interfaces to the Gazetteer (IHO Task 3.6.10) and develop the integration of undersea feature concepts in the S-100 framework
- K Liaise with and provide support to Seabed2030 project (IHO Task 3.6.5)

Task	Work item	Priority H-high M-medium L-low	Milestones	Start Date	End Date	Status P-planned O-ongoing C-completed	Contact Person(s) * indicates leader	Related Pubs/Standard	Funding Bid (€)	Approved Funding (€)
A	Organise and conduct GGC XXXVI meeting	H		2019	2019	P	Chair GGC Sec			0
B1	Ensure conduct of TSCOM, SCRUM and SCUFN meetings	H		2019	2019	P	Chair GGC, Chair, TSCOM, Chair SCRUM and Chair SCUFN			0

Task	Work item	Priority H-high M-medium L-low	Milestones	Start Date	End Date	Status P-planned O-ongoing C-completed	Contact Person(s) * indicates leader	Related Pubs/Standard	Funding Bid (€)	Approved Funding (€)
B2	Oversee work of subordinate bodies – TSCOM, SCRUM, SCUFN and Outreach WG – for completion of directed tasks	H		Continuous	Continuous	O	Chair GGC			0
C	Ensure effective operation of IHO DCDB	H		Continuous		O	Director DCDB			0
D1	Encourage the contribution of bathymetric data to the IHO DCDB	H		Continuous		O	All members of GEBCO GC through the Chair			0
D2	Identify priority areas for regional mapping and support the organization of regional mapping projects.	H		Continuous		O	Chair SCRUM			0
D3	Promote data contribution through GEBCO participation in RHCs and IOC regional meetings	H	Identify GEBCO people who are able to attend for meetings in 2019 – 2020	Continuous		O	All members of GEBCO GC through the Chair		0	10,000

Task	Work item	Priority H-high M-medium L-low	Milestones	Start Date	End Date	Status P-planned O-ongoing C-completed	Contact Person(s) * indicates leader	Related Pubs/Standard	Funding Bid (€)	Approved Funding (€)
D4	Organize regional mapping meetings/workshops	H		Continuous		O	Chair SCRUM			0
	Support participation at regional mapping meetings	H	Provide partial support, as necessary, for individuals to participate in regional mapping meetings	Continuous		P	Chair SCRUM			0
D5	Develop material to highlight activities and initiatives	H		Continuous		P	Chair SCRUM	Coordinated with Chair OWG	0	10,000
E	Maintain IHO bathymetric publications	M	Update GEBCO global 30 arc-second grid with new compilations	Continuous	Continuous	O	All members of GEBCO GC through the Chair	B-4 - Information concerning recent bathymetric data	0	0
		M		2016	2017 2019	O	Chair SCRUM	B-9 - GEBCO digital atlas		0
		M	Update GEBCO World Map to include updated versions of GEBCO grid and adopted undersea feature names from SCUFN.	2017	2018 2019	O	Chairs SCRUM/SCUFN	B-6 – Standardization of undersea feature names B-8 - Gazetteer B-9 - GEBCO digital atlas		0
		L M						B-10 - The history of GEBCO B-11 - GEBCO Cookbook		0 0

Task	Work item	Priority H-high M-medium L-low	Milestones	Start Date	End Date	Status P-planned O-ongoing C-completed	Contact Person(s) * indicates leader	Related Pubs/Standard	Funding Bid (€)	Approved Funding (€)
F	Develop the on-line function of B-4	M		2015	On going		Director DCDB		0	0
G1	Contribute to outreach and education about ocean mapping	H		Continuous		O	Chairs TSCOM, SCRUM and Outreach WG		0	2,000
G2	Development of outreach and educational materials (jigsaw puzzle for World Map and presentation files)	H		2015	2019	P	All members of GEBCO GC through the Chair Outreach WG		2,500	
G4	Development of webpage (for secondary school student etc.)	M		2015	2018/2020	O	All members of GEBCO GC through the Chair Outreach WG		2,000	2,000
G5	Developing a communication strategy and resources in GEBCO outreach (ex- Poster or video for each target)	H		2018	2020	O	All members of GEBCO GC through the Chair Outreach WG	See OWG WP 2019-2020	2,000	20,000
H	Ensuring IHO-IOC GEBCO Web site is kept current and updated regularly	M		Continuous		O	BODC		5,000	5,000
I1	Add instructive chapters in IHO-IOC GEBCO Cook Book related to Seabed 2030 as needed	M	Provide technical support	2019	2030	P	Chair TSCOM	B-11 - GEBCO Cookbook	0	0

Task	Work item	Priority H-high M-medium L-low	Milestones	Start Date	End Date	Status P-planned O-ongoing C-completed	Contact Person(s) * indicates leader	Related Pubs/Standard	Funding Bid (€)	Approved Funding (€)
I2	Develop short course and supporting material on compiling digital bathymetric models	H		2019	2021	P	All members of GEBCO GC through the Chair Outreach WG		0	0
J1	Update and enhance the GEBCO Gazetteer (B-8) for internet access	H		Annual	Annual	O	Chair SCUFN	B-8 – Gazetteer	15,000 /year	Funded out of IHO Operational funds
J2	Maintain the GEBCO Gazetteer as a web service via a geospatially enabled database	H		2016	Permanent	O	Chair SCUFN Director DCDB	B-8 – Gazetteer	(See Doc. SCUFN31-07.1B). Funding for correcting and basic maintenance agreed by US. Need to keep it maintained for about 4 years.	
J3	Develop and make available public and management on-line interfaces to the Gazetteer	M		2014	2018 2022	O	Chair SCUFN KHOA	B-8 - Gazetteer	0	0
J4	Develop a S-100-based product specification for Undersea Feature Names	M / L		2015	2019	O	Chair Project Team (Rowena Orok)	S-100, B-6 Harmonized definitions of generic terms across B-6, S-32, IHO GI Registry	0	0

IHO PUBLICATIONS AND RESOLUTIONS

Publications and Resolutions for which GEBCO is the lead or subject matter expert:

Title	IHO Number	IOC Number	Edition/date
<i>Standardization of undersea feature names</i>	B - 6	-	Edition 4.1.0 September 2013; new Edition 4.2.0 in preparation
<i>Gazetteer</i>	B - 8	-	V1.1.1
<i>GEBCO Digital Atlas</i>	B - 9	-	30" Grid March 2015
<i>The History of GEBCO</i>	B-10	-	April 2003
<i>GEBCO Cookbook</i>	B-11	Manuals and Guides 63	September 2018

Resolution3/1929 as amended (*Centralization of oceanic soundings*);
 Resolution3/1932 as amended (*Collecting oceanic soundings*);
 Resolution4/1932 as amended (*Metadata for oceanic soundings*);
 Resolution2/1962 as amended (*Oceanographic observations*); and
 Resolution8/1962 as amended (*Oceanographic information*).

AREAS WHERE ENC SOUNDING DATA HAVE BEEN PROVIDED TO GEBCO

