

G E B C O
GENERAL BATHYMETRIC CHART OF THE OCEANS



Thirty Third Meeting of the GEBCO Guiding Committee (GGC33)

13 – 14 October 2016, Valparaíso, Chile

(Paragraph numbering is the same as the Agenda Item numbering and does not necessarily reflect the order in which matters were discussed.)

1. Opening

1.1 Opening Remarks and Introductions

The Chair, Mr Shin Tani (Japan), welcomed attendees to the 33rd meeting of the GEBCO Guiding Committee (GGC) and thanked the Servicio Hidrográfico y Oceanográfico de la Armada (SHOA) of Chile for their excellent support in hosting the GEBCO meetings and the very successful Science Day. He thanked all participants for making the effort to attend, particularly those who had made long journeys. He also welcomed the representatives from the IHO and IOC secretariats. He emphasized the number of past GEBCO scholars participating, which he noted was very encouraging for the future. He also highlighted a number of exciting new projects such as Seabed 2030, which had been a major outcome of the Forum for Future Ocean Floor Mapping (F-FOFM) held in Monaco earlier in the year.

1.2 Opening remarks by parent bodies (IHO and IOC)

Mustafa Iptes, IHB Director, welcomed the attendees and complemented GEBCO; he emphasised the value of the cooperation between the two sister organizations and the need to highlight the importance of the GEBCO work to their Member States. He also highlighted that GEBCO community had achieved great success with the F-FOFM, which had taken place in Monaco. He encouraged the GGC to continue this demanding work.

Julian Barbière, representing the IOC, provided an overview of the IOC and its recent activities, noting that it is the only UN organization of its kind. He reminded the meeting of the UN Convention of the Law of the Sea and the importance of mapping the ocean floor, which is also a major requirement to achieve the Agenda 2030 goals, the Paris agreement on climate change and its Samoa Pathway convention for small islands protection.

He highlighted the outcome of the GEBCO review, in particular the decision that the IOC should reengage with the GEBCO activities. He noted the IOC member states recognise the importance of bathymetry and that they are committed to the future of the GEBCO Project. He welcomed the two new IOC appointed members to the GGC – Dr Jonathan Kool (Australia) and Captain Leonid Shalnov (Russian Federation).

1.3 Working Arrangements

The secretary requested that due to the number of papers, members were asked to keep their interventions brief and focused on the topic being discussed. He also highlighted the need to have the Finance Report

available when looking at the budgets. He noted the GGC would need to do some prioritization, as the current bids were larger than the funds available.

1.4 Administrative Arrangements

The secretary noted that apologies had been received from Captain Norhizam Hassan (Malaysia), Dr Marzia Rovere (Italy) and Captain Leonid Shalnov (Russian Federation). He reported that the number of GGC voting members present constituted a quorum, the list of participants is at Annex A.

1.5 Development of Work Plan and budget process.

The Secretary provided a short brief on the way it proposed to address the review of the Work Plans and Budgets. He requested GGC members read them once presented with the individual subordinate body report and before they were scrutinized during Day Two.

1.6 Adoption of the Agenda and approval of report from GGC32

No amendments, changes or additions were offered, the agenda as published was adopted, Annex B. The list of documents is at Annex C. The report for meeting GGC32 was approved (GGC33-1.6.2).

1.7 Review of Action Items from GGC32

The secretary proposed, as the list of actions (GGC33-1.7) contained many items which were dated or had been overtaken by events, that the current list should be abandoned and a new one started. The Chair and Vice-Chair supported the proposal noting that most of the items had been completed or would be addressed during the meeting under current agenda items. **Action Secretary** It was requested the standard GEBCO presentation be made available. **Action BODC** Lisa Taylor (LT) noted that action GGC32-03, report the number of accesses to the GEBCO Gazetteer, had been provided (GGC33-1.7).

1.8 Report from IRCC8

The chair provided details of the report on GEBCO activates to the 8th meeting of the Inter-Regional Coordination Committee (IRCC) that took place in Abu Dhabi, United Arab Emirates, from 29 to 31 May 2016 (GGC33-1.8).

The IRCC have agreed actions for RHCs to support GEBCO regional projects, to encourage a GEBCO member to participate in RHC meetings, and for IHO Member States to provide shallow water bathymetric data extracted from ENC to the GEBCO Project for improving the grid.

Mustafa Iptes (MI) reminded the meeting that the IRCC is the coordinating body in the IHO for GEBCO activities

2. Reports from Parent Organizations and GGC Subordinate Bodies.

2.1 IHO update (GGC33-2.1)

MI informed the meeting that the required votes had been received for the Protocol of amendment to the IHO Convention to come into force. He noted this would introduce significant changes to the way in which the organization would function in the future. The first session of the IHO Assembly is scheduled to take place from 24 to 28 April 2017 in Monaco.

He highlighted decision 8 of the EIHC-5, which tasked the IRCC to establish a Crowd-Sourced Bathymetry Working Group (CSBWG), this had been established and the WG is working on preparing a guidance document for CSB. To underpin the importance of Ocean Mapping, the proposed theme for 2017 United Nations World Hydrography day is "Mapping our seas and oceans - more important than ever." He invited GEBCO members to consider submitting papers to the International Hydrographic Review (IHR) and to improve the recognition of GEBCO as "the most authoritative publicly-available bathymetry of the world's

oceans.” He noted that the IHO will continue to support the Nippon training programme by administering the funds for this important activity. The main change impact of the change to the status of the IHO is a slightly longer period (6 months) for actions or changes.

The meeting noted the report, the proposal to submit articles to the IHR and engage in the CSBWG activities. MI noted the IHO would also highlight the importance of the GEBCO Project at the upcoming GEO conference and requested the Chair consider GEBCO representation. **Action Chair**

2.2 IOC update (GGC33-2.2)

Julian Barbière (JB) reported that there had been several notable advances and outputs from of IOC activities since the last GEBCO meeting. Membership currently stands at 148 members. The 49th IOC Executive Council (EC49) took place at the UNESCO headquarters (Paris, France) from 7 - 10 June 2016, during which the IOC member states confirmed their support for the GEBCO Project.

The theme of the World Oceans Day, held on the 8th of June, was “Healthy Ocean, Healthy Planet.” The GGC Chair had provided his article “Understanding the oceans is much more than an academic exercise” for the first time at this event. The 49th session of the Executive Council adopted a resolution, IOC/EC-XLIX, Dec.4.4, on the *IOC Role in Support of the General Bathymetric Chart of the Oceans (GEBCO) Project*, it was noted that more details would be provided under agenda item 4.3. It was highlighted that the IOC have launched a Capacity Building (CB) element supported by a new website, the IOC Capacity Development Fund will enable Member States to provide financial support for very specific activities. JB noted some forthcoming events: IOC leading a *Marine Spatial Planning Conference*, 15-17 March 2017, and IOC Assembly29, 19-30 June 2017. He highlighted that the IOC was considering a budget allocation to the GEBCO Project for the next biennium.

The meeting noted the report, and welcomed the commitment to re-engage with the GEBCO Project, the increased cooperation with relevant IOC activities and the potential funding allocation. JB reminded of the need to submit a report on GEBCO activities to the IOC Assembly29. **Action Chair**

2.3 Financial update, including funds status report (GGC33-2.3a & 2.3b)

The Secretary reported on the state of the five related GEBCO funds; he reminded the meeting that spending rules had been agreed at the GGC32. It was noted that all expenditure must be approved by the GGC, that the Secretary had agreed to be the second signature for all applications and approvals, and that invoices for travel should be submitted to the secretary for counter signature.

The Secretary highlighted that the current level of expenditure is not sustainable and noted that the work on the SCUFN gazetteer had been the largest expenditure item. He reminded the meeting that unplanned expenditure must be approved by the Chair or vice-Chair of the GGC before being submitting for processing.

He proposed that in order to ease the management of the funds to:

- Combine the GEBCO-IHO Fund and the GEBCO Operations Fund; and
- Change the name of the NF/F-FOFM fund to the “Seabed 2030 Fund”.

Robin Falconer (RF) agreed with consolidating the GEBCO-IHO and GEBCO Operations funds, he noted that there was a necessity to maintain the F-FOFM funds as there remained on going commitments and expenditures against this fund, which were not related directly to the proposed Seabed 2030 project.

The chair questioned the expenditure for SCUFN travel noting that this should be approved by the GGC, in accordance with the agreed spending rules, and not the IHB.

MI indicated that the SCUFN expenditure over the past years was an exceptional case and that it was not considered it would be the case for future years. He reminded the meeting that the IHO and Monaco Government continue to make substantial contributions to GEBCO funds.

The meeting noted the report and approved the consolidation of the GEBSCO-IHO and GEBSCO Operations funds into a GEBSCO Fund. **Action Secretary** The GCC did not agree to change the NF/F-FOFM name to Seabed 2030 since the resources were designated for post Forum activities, which may include more than Seabed 2030. The current travel claim procedure was endorsed.

JB reported that the IOC member states are considering making a financial contribution to the GEBSCO Project in the next biennium; however if the IOC budget remains the same, it will be difficult for to allocate funds, if the requested increase is approved, the allocation of funds will be possible.

2.4 Digital Atlas Manager (GGC33-2.4)

Pauline Weatherall (PW), UK, reported that the IHB had sent out requests for shallow water bathymetry from ENCs and had received data from 21 member states. This includes new data provided by Brazil, Ukraine and Uruguay following the IHO CL11/2016 sent out in March 2016. Work is now in progress on updating the GEBSCO_2014 Grid with the objective of publishing a new release of the data set in early 2017. In addition to the new shallow water bathymetric data, new data has also been received from New Zealand, EMODnet, US-NOAA, DEME group and Ministry of Israel Water Natural Resources. Substantial work has been done on updating the GEBSCO website and Web Map Service (WMS). The SID Grid is now available as a WMS.

PW reported that, since the last meeting, there have been almost 23,000 downloads of GEBSCO gridded data sets, which represent an increase since the last report. She noted the statistics were included in the submitted report (GGC33-2.4).

Lisa Taylor (LT), IHO DCDB, reported that the action to transfer the web pages hosted by NCEI-NOAA to the GEBSCO server were in the process of being transferred.

The meeting noted the report and thanked PW and BODC for the excellent support provided.

2.5 DCDB update, including relevant CSBWG and ASMIWG issues (GGC33-2.5)

LT noted that she will be stepping down as Director of the DCDB and Jenifer Jenks had been appointed to replace her. She noted her representation at the MACHC16 meeting and encouraged the GGC to support this type of travel/outreach as it provides a valuable forum to promote GEBSCO activities.

The meeting noted the report and thanked her for her excellent contribution to the GEBSCO Project and the GGC and as well as running the DCDB over many years.

2.6 SCUFN

Hans-Werner Schenke (HWS), Germany, highlighted the significant items that had occurred since the last GGC meeting, he noted that full detail were contained in his written report (GGC33-2.6). He reported that the vice-Chair, Lisa Taylor, had stepped down and been replaced by Dr. Yas Ohara, Japan. The GGC Chair thanked LT for the valuable contribution that she had made to SCUFN over many years.

HWS highlighted that, with the help of external contract support, over 3000 UFN were reviewed and edited as an ongoing maintenance requirement. He noted the top priority remained to improve the Undersea Feature Name model and produce an S-100 Product Specification for UFN data. He reported that SCUFN will set up a Project Team to progress this work.

New work on the gazetteer include; the development of a new website and process to enable SCUFN members to review proposals prior to the meeting. The close cooperation with other naming bodies was encouraging.

Reporting on the 29th meeting of SCUFN held in Boulder, Colorado, USA, in September, he noted that Norman Cherkis had stepped down from the SCUFN and that Kian Fadae had not been able to attend. He also requested guidance from the GGC concerning name proposals for features that fall within the 200 NM

limit. It was considered essential that the relevant coastal state must be consulted. The meeting reviewed proposed additional wording but decided that external guidance should be sought. It was highlighted the IHO-IAG ABLOS was programmed to meet 26-27 October; it was recommended a request was made to ABLOS for guidance on appropriate wording. **Action Chair SCUFN** It was proposed to include any suggested wording into the final SCUFN report. In the interim, it should use clause 2.10 (politically sensitive case) of their ToRs and RoPs.

2.7 TSCOM (GGC33-2.7a)

Karen Marks (KM), USA, noted that some of the listed TSCOM members had not attended any meetings for some time and, as they were not particularly active, they should be changed to scientific advisers. Furthermore she proposed that the appointment of members should be relaxed and the cap on the number of members removed. She noted that Thierry Schmitt (TS), France, had been elected as vice-Chair.

KM reported that there have been two updates to the GEBCO Cookbook. She questioned whether there is a need for an online course, and if so, there would be a need for a leader to be appointed for this work. She noted that the annual Science Day continued to be a great success and thanked the conveners and SHOA for their hard work.

2.8 SCRUM (GGC33-28)

Martin Jakobsson (MJ), Sweden, reported there had been a long discussion about issues related to the F-FOFM. GEBCO members had represented a number of meetings. He reported that a significant amount of ENC shallow water bathymetric data had been received which will be used in the next edition of the grid. He noted the current focus was now on updating the GEBCO grid. It will include new compilation of some of the IBC grids and the Indian Ocean grid. He confirmed he would be standing down from his role as chair of SCRUM due to significant engagement in the Seabed 2030 project as well as the demands of an expanded role as vice-Chair of GGC and that Vicki Ferrini, USA, had been elected as the new chair, he requested GGC endorsement for this. The GGC endorsed this change and noted that the vice-Chair had declined to step-up but wished to remain in the vice-Chair position.

2.9 IBCs and regional mapping update

Included in SCRUM report.

2.10 Outreach WG (GGC33-2.10)

Hyo Hyun Sung (HHS), Republic of Korea (KOR), reported that the meeting had carried out a review of the proposed draft Terms of Reference and Rules of Procedure for the Outreach Working Group. HHS will continue as the Chair and Vicki Ferrini (USA) was elected as the new vice-Chair. It was reported that the priorities remained as to create a mechanisms to gather user information and to develop an outreach website. It was proposed that this could be a subpage on the GEBCO website.

In harmony with the Seabed 2030 general goals for outreach, the focus will be to attract more involvement in ocean mapping and promote awareness of GEBCO activities. The WG will compile an outreach worksheet containing ideas and prioritize activities based on their impact, effectiveness, required resources, costs and timelines. Identified actions were to develop a mechanism to gather user information, develop an outreach website and develop the outreach ideas spread sheet. **Action OutreachWG**

3. Nippon Foundation Related Programmes

3.1 NF Programme Management Committee (NFPMC) report (GGC33-3)

RF reported that the Nippon Foundation (NF) had provided funding support for 12 years. The current intake includes students from two new countries Egypt and Madagascar. Seventy eight students have been trained from 48 different organization located in 35 coastal states. MI requested that the IHB be informed of nominations as soon as they are known. **Action UNH Programme Manager**

RF highlighted the ambassador programme, which could assist with GEBCO representational travel and whilst promoting the NF-GEBCO activities and engaging with past attendees at the University of New Hampshire (UNH) Ocean Mapping course. RF noted that there is a need to consider the future role of the NFPMC. He expressed his gratitude to the NF for their support over many years and looked forward to their continued engagement; the GGC echoed this sentiment and formally acknowledged the significant contribution the NF had made to the GEBCO Project over a number of years.

RF invited the meeting to review the report on the activities and outcomes of the F-FOFM as detailed in his report (GGC33-4.1). It was noted it would be discussed under agenda item 7.1.2. It is planned to issue a 6 page article in Hydro International publication on the F-FOFM as well as other related regular articles in the future.

3.2 UNH training programme update

Rochelle Wigley (RW), South Africa, informed the meeting that the programme had been running for 13 years at the UNH and that almost eighty per cent of students remained with their original organizations. Forty eight students were actively involved in the recent F-FOFM.

3.3 Nippon Foundation Ambassador programme

RF noted that the NF had set up an ambassador programme fund to assist NF students to travel to events as well as for others to visit and engage with them at their host organizations. He proposed that these funds could be used for members to travel for GEBCO representational activities, but only if the visit included engagement with local and regional GEBCO scholars and their institutions.

3.4 NF Funds

RF reported that the NF had been funding the programme for over 13 years, which is testimony to the success of the programme. Due to the focus on the F-FOFM, the NF had provided two years funding in advance, which had been received via the IHB.

3.5 NFPMC membership

RF noted that new members should be considered to reflect the maturity of the programme.

4. Other Significant Event

4.1 Report of F-FOFM event

Full details are contained in document GGC33-4.1. RF noted the outstanding success for the F-FOFM and that consideration was being given to holding a second Forum.

4.2 Arctic and Antarctic Workshop outcomes (GGC33-4.2a)

MJ reported that the meeting had been held just before the F-FOFM meeting at IHB in Monaco, facilities which were much appreciated. The work of updating the present version 3.0 of IBCAO had begun during the latter part 2016 and work of updating IBCSO would follow. No specific target dates had been set for the next releases to be made by either IBCAO or IBCSO.

4.3 IOC Review into Future GEBCO Engagement (GGC33-4.3a)

Osamu Miyaki (OM), IOC, provided a presentation on the IOC review and the subsequent discussions and decisions made at the 49th meeting of the IOC Executive Council (GGC33-4.3a). He noted an IOC working group will be established to collect, integrate and assess the user requirements to GEBCO products. The GGC was invited to nominate a member to serve on this Working Group. The Working Group will work, where appropriate, in close cooperation with GEBCO Guiding Committee, and IOC Secretariat will be in

constant communication with IHO secretariat. JB requested the GEBCO community look to develop closer engagement with relevant IOC programmes. **Action All** JB requested the GGC develop guidelines for use by scientists in the IOC community in order to advance basin-scale, campaign mapping and contribute to GEBCO data. **Action Chair/vice-Chair** JB also requested the GGC to consider submitting proposals towards which IOC funds could be directed in support of GEBCO activities. **Action Chair/vice-Chair**

The Chair GGC thanked the IOC commitment to support the GEBCO Project and noted that this was a very significant development. JB reported that this was the last meeting that Osamu Miyaki would attend and thanked him for his contribution to the IOC and to GEBCO over the past four years.

5. GEBCO Engagement with External Bodies

5.1 Participation at IHO RHC meetings (GG33-5.1)

The Secretary noted that the IHO Secretariat encourages the targeted participation of appropriate GEBCO personnel to represent GEBCO at Regional Hydrographic Commission (RHC) meetings. He requested the meeting review the list of RHCs with a view to prioritising RHC meetings. The list of future meeting was reviewed and attendees or lead facilitators were identified. It was agreed the list should be published and maintained on the GEBCO website. **Action Secretary/BODC**

Dave Clarke (DC), USA, proposed that attendees representing GEBCO at any meeting should provide a short report for uploading to the GEBCO website. **Action All/BODC**

5.2 Which international programmes should GEBCO engage in, and why?

The Secretary requested the GGC review with which international organizations and programmes should GEBCO be engaged and what priority (GG33-5.2.1). The meeting reviewed the list and suggested lead facilitators as well as a number of additional programmes. LT proposed that the list should be reviewed by the group dealing with the Seabed 2030 liaison. It was agreed that this could be a good resource for Seabed 2030.

5.3 Who are the users of GEBCO products and datasets?

PW reported that since the last meeting, there had been 22,973 downloads of GEBCO's gridded data sets. The GEBCO_2014 Grid is the most popular product with 17,727 downloads. There had been over 100,000 sessions on GEBCO's web site with 279,400 web pages being accessed.

6. Documents and Publications

6.1 Document Review and status

B-6 – *Standardization of undersea feature names* – undergoing significant changes; S-100 and integration of the fast track approval process, also will include the new submission website. Next edition will be ready in approximately two years.

B-7 – *GEBCO guidelines* – proposal to withdraw the publication made at GG32 was confirmed, noting that it has been under revision by the GGC since 2012. Request to be re-submitted to IRCC9. **Action Chair**

B-8 – *Gazetteer* – details in SCUFN report (GG33-2.6). HWS noted the development of a new online interface. Following discussion at the SCUFN29, NOAA agreed to study how much it would cost to further develop the WMS. It was noted that financial support needed to maintain and correct the Gazetteer database via an external contract. The Chair requested clarification for what the consultancy funds were required and whether the Web Gazetteer was sustainable? LT confirmed that its maintenance was secure. The information is currently manually entered into the database, NOAA are looking into a pushbutton solution to transfer data from the proposal database to the gazetteer database.

B-9 – *GEBCO digital atlas* – BODC still makes it available but there is diminishing demand.

B-11 – *GEBCO Cookbook* – KM reported that there have been two updates this year, the current edition July 2016 (GGC33-6.1).

GEBCO Grid – PW noted that form data collected from downloads indicated usage for storm surge modelling, tsunami modelling / ocean circulation modelling, as well as research and education.

6.2 ToRs and RoPs review

The Secretary noted the requirement that the GGC reviewed their ToRs and RoPs to confirm they are still correct and no changes are necessary.

Proposed amendments to the TSCOM and SCRUM ToRs and RoPs were reviewed. After discussion it was agreed that a three year term for the Chair and vice-Chair had advantages. The other minor amendments were approved by the GGC. Clean and Track Change versions of both documents are included as Annexes E and F to this report. These documents should also be published on the IHO and GEBCO websites. **Action Secretary/BODC**

6.3 Relevant IHO Resolutions

The Secretary noted that the GGC and its subordinate bodies were the subject matter experts most able to review the contents of the IHO Resolutions (GGC33-6.3), Annex G, and to propose amendments, if required. The GGC was requested to task TSCOM and SCRUM to review the Resolutions and submit proposed drafts amendments to GGC34 for consideration and onward submission to IRCC10. **Action Chairs TSCOM/SCRUM**

7. GEBCO Future

7.1 Seabed 2030

MJ and RF provided a comprehensive brief on the proposed Seabed 2030 Project, including its background, objectives, structure, funding, management, governance, oversight, milestones and reporting (GGC33-7.1.3a & 7.1.3b). A detailed draft Roadmap and Business Plan were provided for this a very ambitious project which it was noted still had a number of significant challenges to overcome before it could commence.

It was agreed to endorse the membership of the Seabed 2030 Establishment Team (Graham Allen, Robin Falconer, Vicki Ferrini, Martin Jakobsson (Chair), Marzia Rovere and David Clark (Secretary)). Approval was given for the Establishment Team to co-opt additional members if needed for particular tasks.

The team was mandated to:

- Seek and negotiate funding from the Nippon Foundation for the Seabed 2030 project in accordance with the business plan;
- Establish the initial Seabed 2030 Project management structure;
- Detail the liaison/relationship with currently established GGC subordinate bodies; and
- Develop a business plan and progress the initial stages of the project.

It was agreed that it must be a project within the current GEBCO ToRs and RoPs, which reported to the IHO and IOC member states via the GGC. **Action Establishment Team** It was noted that, to meet the NF requirements, the timeframe for completion of the initial milestones was tight. All participants were requested to provide comment and input to the Seabed 2030 roadmap and Business Plan to assist in their further development. **Action All**

It was agreed there was a need to better acknowledge contributions by donor/sponsor organizations on the GEBCO website. **Action BODC**

7.1.1 Arctic and Antarctic Workshop follow-on actions

Report under agenda item 2.8.

7.1.2 Outcomes and impacts, including F-FOFM Communiqué

RF reported that the F-FOFM had been a far greater success than had been expected. A major outcome of the forum was the Seabed 2030 project and the development of the associated roadmap document which identified the need for greater access to the tools and technology, particularly for developing and coastal nations, to make a comprehensive database possible and for the sharing of data to achieve this ultimate objective.

7.1.3 Future actions, GEBCO future vision action plan

Cover in agenda items 7.1 and 7.1.2.

7.2 GGC Subordinate bodies' Work Plans 2017-2018

The Secretary presented a consolidated Work Plan task/funding spread sheet, which was reviewed in detail by the GGC. It was agreed to stop funding a number of tasks and reduce funding on others so as to retain a small contingency balance for emergent items. The Chairs of subordinate bodies were tasked to submit their revised Work Plans and Budgets, reflecting the decisions made by the GGC as reflected in the spread sheet. **Action Chairs TSCOM/SCRUM/SCUFN/OutreachWG** MI highlighted that the IHO Work Programme and Budget for the next triennium was being developed and that the Chair GGC could consider submitting a proposal for supporting the maintenance and development of the SCUFN Gazetteer. **Action Chair GGC** The final spread sheet and revised Work Plans and Budget allocations as well as a consolidated GEBCO Work Plan and Budget are attached to the report as Annexes H, I, J, K & L.

Chair SCUFN was requested to advise members of SCUFN that funding support to attend meetings would no longer be available. **Chair SCUFN**

It was recognised that the tasks remained, even though they were unfunded for the next period. Should additional resources be made available, the tasks would be considered on a priority basis.

7.2.2 Review of GEBCO Education and Outreach strategy – Chair Outreach WG/Chair /Secretary

7.3 GGC Work Plan 2017-2018

Completed under agenda item 7.2

8. Secretary Responsibilities

8.1 Confirm responsibilities

The Secretary presented document GGC33-8.1, which contained a comprehensive list of the roles and responsibilities of the GEBCO Secretary. It was noted that this list had been removed from the GGC ToRs at the last review. The list was approved with the addition of 'and IOC' in item 'g' and a new item 'o' to read 'and other tasks as agreed between the Secretary and the GGC'. **Action Secretary**

9. GGC Membership

The Secretary presented the current list of voting members of the GGC (GGC33-9) and highlighted the large number due to end terms in 2018, Annex M. He recommended that action was commenced to find suitable candidates to fill the forthcoming vacancies. RF reported his intention to stand down at the GGC34 in 2017 and he requested all GGC members should start the process for looking for his replacement so that they did not come into the GGC without some experience. **Action All** LT suggested some thought should be put into articulating the attributes of the ideal candidate. HWS noted that SCUFN was in a similar position. It was

suggested that a process of calling for expressions of interest could assist the search. It was agreed a small group should lead the search for appropriate new candidates. **Action Lisa Taylor/Johnathan Kool/Hyo Sung**

The Chair asked the IHO and IOC for clarification on the process of advertising the vacancies and whether it would be possible to commence the search in advance of the vacancies becoming available. Both IOC and IHO representatives confirmed it was their practice to wait until the vacancy was created. Noting the requirements of the GGC ToRs article 1.2 (*The Chair shall inform the relevant parent organization of any foreseeable vacancy in a timely manner.*), the Chair requested the IOC and IHO commence the formal process for finding suitable candidates to fill the forthcoming vacancies, a request which would be included in the formal reports to IRCC9 and IOC Assembly29. **Action Chair and IHO/IOC**

The Secretary was requested to update and publish a revised GGC membership, reflecting the changes notified during the meeting. **Action Secretary/BODC**

10. Next Meeting

10.1 Dates and venue for GGC34

EC gave a short presentation on the offer of the Republic of Korea to host the 34th meeting of the GGC and the associated subordinate bodies and Science Day. It was agreed the next meeting will take place in Busan, Korea, during the week starting 13 November 2017. **Action Secretary/HHS** Tentative offers to hold the 2018 meeting in Australia and Sweden were received. **Action JK/MJ**

Post meeting note: GeoScience Australia have confirmed their offer to host the meeting in 2018, the week 5-9 November has been identified to avoid likely conflicts with other events.

10.2 Draft Agenda for GGC34

The Secretary requested participants look at the draft agenda for GGC34 and propose any amendments or changes, Annex N.

11. Any Other Business

BODC requested to review the current licencing policy and to provide draft revised wording of licence policy for circulation intersessionally to the GGC for endorsement, if required. **Action BODC**

12. Review of Actions

The List of Actions from the generated from the meeting reviewed and agreed.

All Action Items are marked in this report and are collated together at Annex D. An updated list of the Action Items will be maintained on the GGC34 document web page and all those who have actions to complete should keep the Chair, vice-Chair and the Secretary informed of progress. **Action All**

It was agreed that the Secretary would circulate a draft meeting report to all attendees by 21 October. **Action Secretary** Attendees were requested to provide any comments and input by 4 November. **Action All** It was intended the final meeting report would be published by 11 November. **Action Secretary**

The Secretary and the Chair would prepare the final report to IRCC9 and IOC Assembly29 using the format required by IRCC and the IOC Assembly. It was noted the report to IRCC9 needs to be submitted by 21 April 2017 and that to the IOC Assembly29 by 28 April 2017. **Action Secretary/Chair**

13. Closure of the Meeting

The chair expressed his appreciation to all those who attended the meeting and noted that he was especially grateful to Rear-Admiral Patricio Crasco, Hugo Gorziglia and all SHOA staff for hosting the meeting and for the excellent venue and support that they have provided.

IHB Director Iptes thanked SHOA for their excellent hospitality and thanked Lisa Taylor for her contribution both to GEBCO and to the DCDB over many years.

Rear-Admiral Patricio Carrasco thanked all members for the excellent participation and wished members a safe trip home.

The following Annexes are attached:

- A. GGC33 – List of Participants.
- B. GGC33 – Agenda
- C. GGC33 – List of Documents
- D. GGC33 – List of Actions
- E. GGC33 – SCRUM revised Terms of Reference and Rules of Procedure (Track change and Clean versions)
- F. GGC33 – TSCOM revised Terms of Reference and Rules of Procedure (Track change and Clean versions)
- G. IHO Resolutions
- H. SCRUM Work Plan and Budget – Final version
- I. SCUFN Work Plan and Budget – Final version
- J. TSCOM Work Plan and Budget – Final version
- K. OutreachWG Work Plan and Budget – Final version
- L. Consolidated GEBCO Work Plan and Budget – Final version
- M. List of GGC Members
- N. Draft agenda for GGC34

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G E B C O

GENERAL BATHYMETRIC CHART OF THE OCEANS



United Nations
Educational, Scientific and
Cultural Organization



Intergovernmental
Oceanographic
Commission

Thirty Third Meeting of the GEBCO Guiding Committee (GGC33)

**SHOA, Valparaíso
Chile**

13 – 14 October 2016

Agenda

Version 3.0; 22 Août 2016

1 OPENING REMARKS AND ADMINISTRATIVE ARRANGEMENTS – 30 minutes

- .1 Opening Remarks and Introductions – **Chair**
- .2 Opening remarks by parent bodies – **IHO and IOC Secretariats**
- .3 Working Arrangements – **Secretary/Hosts**
- .4 Administrative Arrangements – **Secretary/Hosts**
- .5 Development of Work Plan and budget process – **Secretary**
- .6 Adoption of the Agenda and approval of report from GGC32 – **Chair**
- .7 Review of Action Items from GGC32 – **Secretary**
- .8 Report from IRCC8 – **Chair**

GEBCO TODAY**2 REPORTS FROM PARENTAL AND SUBORDINATE BODIES – 120 minutes**

Brief reports (5 minutes) will be received, highlighting only significant events, achievements, outcomes, outputs/deliverables and matters requiring GGC action, full reports can be downloaded from the GGC website:

- .1 IHO update – **Iptes**
- .2 IOC update – **Barbière**
- .3 Financial update, including funds status report – **Secretary**
- .4 Digital Atlas Manager – **BODC**
- .5 DCDB update, including relevant CSBWG and ASMIWG issues – **DCDB Director**
- .6 SCUFN, including Work Plan and funding requests for next period – **Chair SCUFN**
- .7 TSCOM, including Work Plan and funding requests for next period – **Chair TSCOM**
- .8 SCRUM, including Work Plan and funding requests for next period – **Chair SCRUM**
- .9 IBCs and regional mapping update – **Chair SCRUM**
- .10 Outreach WG, including Work Plan and funding requests – **Chair Outreach WG**

3 NIPPON FOUNDATION – 30 minutes

Brief reports (5 minutes) will be received highlighting significant events, outcomes and matters requiring GGC action, full reports can be downloaded from the GGC website:

- .1 NF Programme Management Committee (NFPMC) report – **Chair NFPMC**
- .2 UNH training programme update – **Course Manager**
- .3 Nippon Foundation Ambassador program – **Chair NFPMC**
- .4 NF funds – **Chair NFPMC**
- .5 NFPMC membership – **Chair NFPMC**

4 OTHER SIGNIFICANT EVENTS – 60 minutes

The GGC will be appraised of feedback and comments arising from the F-FOFM, A&A Workshop and the IOC GEBCO Review, in particular:

- .1 Report of F-FOFM event – **Chair organizing committee**
- .2 Arctic and Antarctic Workshop outcomes – **Chair SCRUM**
- .3 IOC review into future GEBCO engagement – **IOC**

5 GEBCO ENGAGEMENT WITH EXTERNAL BODIES – 60 minutes

- .1 Participation at IHO RHC meetings – **Chair/Secretary**
- .2 With which international programmes should GEBCO engage and why? – **Secretary**
ICSU WDS, IODE, POGO, IRSO, WRI, GEOSS, IIOE2, Atlantos, EMODNet, etc
- .3 Who are the users of GEBCO products and datasets? Methods for discovering the users and uses of GEBCO products and datasets – **Head BODC/Director DCDB**

6 DOCUMENTS AND PUBLICATIONS – 30 minutes

- .1 Document Review Status – **Chair/Secretary**

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>GEBCO guidelines</i>	B-7	-	Under review
<i>Gazetteer</i>	B-8	-	V1.1.1
<i>GEBCO digital atlas</i>	B-9	-	08 Grid March 2015
<i>The history of GEBCO</i>	B10	-	April 2003
<i>GEBCO Cookbook</i>	B-11	Manuals and Guides 63	11 January 2016

- .2 ToRs and RoPs review – **Chair/Secretary**
- .3 Relevant IHO Resolutions – **Chair/Secretary**

3/1929 as amended (*Centralization of oceanic soundings*) - TSCOM;
 3/1932 as amended (*Collecting oceanic soundings*) - TSCOM;
 4/1932 as amended (*Metadata for oceanic soundings*) - TSCOM/SCRUM;
 2/1962 as amended (*Oceanographic observations*) - SCRUM/TSCOM; and
 8/1962 as amended (*Oceanographic information*) - SCRUM/TSCOM.

GEBCO TOMORROW**7 GEBCO FUTURE****.1 Seabed 2030 - 120 minutes**

The GGC will be appraised of outcomes and actions arising from the F-FOFM and A&A Workshop, in particular:

- .1 Arctic and Antarctic Workshop follow-on actions – **Chair SCRUM**
- .2 Outcomes and impacts, including *F-FOFM Communiqué* – **Chair organizing committee**
- .3 Future actions, GEBCO future vision action plan – **Chair**

.2 GGC Subordinate bodies' Work Plans 2017-2018 – 60 minutes

- .1 Approve funding requests and Work Plans of Subordinate bodies, including outputs/deliverables for next period – **Chair/Secretary**

Chairs will present draft funding requests and Work Plans for their Sub-Committee or Working Group; identifying outputs, deliverables and appropriate milestones for consideration and approval of the GGC.

- .1 SCUFN – **Chair SCUFN**;
- .2 TSCOM – **Chair TSCOM**;
- .3 SCRUM – **Chair SCRUM**; and
- .4 Outreach WG – **Chair Outreach WG**

- .2 Review of GEBCO Education and Outreach strategy – **Chair Outreach WG/Chair /Secretary**

.3 GGC Work Plan 2017-2018 – 60 minutes

- .1 Approve GGC funding requests and Work Plans including outputs/deliverables for next period – **Chair/Secretary**

8 SECRETARY RESPONSIBILITIES – 15 minutes

- .1 Confirm responsibilities – **Chair**

9 GGC MEMBERSHIP – 30 minutes

- .1 Identification of individuals, whose terms are due to complete within the next two years – **Secretary**
- .2 Details of nominations to fill vacancies – **Chair/Secretary**

10 NEXT MEETING – 15 minutes

- .1 Dates and venue for GGC34 – **Secretary**
- .2 Draft Agenda for GGC34 – **Secretary**

11 ANY OTHER BUSINESS – Chair/Secretary – 30 minutes**12 Review of Action Items from GGC33 – Secretary – 30 minutes****13 CLOSURE OF THE MEETING – Chair – 15 minutes**

GGC33 - List of Documents

Document No	Document Title
GEBCO 2016 Letter	Invitation Letter
GEBCO 2016 Letter Annex A	Registration Form (Word version)
GEBCO 2016 Letter Annex B	Logistic Information
GEBCO 2016	Outline Week Programme v2.0
GEBCO 2016	Transport Schedule v2.0
GEBCO Science Day	Programme-Final
GEBCO 2016	Document Template (Word version)
GEBCO 2016	Presentation Template (PowerPoint version)
GEBCO 2016	Guidance for meeting participants
GEBCO 2016	List of Participants
GGC33-1.6.1	Draft Agenda v3.0
GGC33-1.6.2	GGC32 Meeting Report
GGC33-1.7	GGC32 List of Actions - updated 8 October 2016
GGC33-1.7	Gazetteer Web Statistics
GGC33-1.8	GEBCO Report to IRCC8
GGC33-2.1	IHO Report
GGC33-2.2	IOC Report
GGC33-2.3a	Financial Report
GGC33-2.3b	Financial Report Related IHO CLs (.zip)
GGC33-2.4	Digital Atlas update
GGC33-2.5	DCDB update
GGC33-2.6	SCUFN Report
GGC33-2.7a	TSCOM Report
GGC33-2.7b	TSCOM Report Presentation
GGC33-2.8	SCRUM Report
GGC33-2.9	IBCs and regional mapping update (to be taken under item 2.8)
GGC33-2.10	Outreach WG Report
GGC33-3	NF Related Programmes Report
GGC33-3	NF Related Programmes Report Annex A
GGC33-4.1	F-FOFM Report

GGC33-4.2a	Arctic-Antarctic Workshop Report
GGC33-4.2b	Arctic-Antarctic Workshop List of Participants
GGC33-4.2c	Arctic-Antarctic Workshop Agenda
GGC33-4.3a	IOC review update
GGC33-4.3b	Report to Executive Council 49 on the IOC review of GEBCO
GGC33-4.3c	IOC Executive Council Council 49 Report Part3 - Relevant section
GGC33-5.1	Regional Hydrographic Commission meeting programme
GGC33-5.2.1	GEBCO Engagement with International programmes
GGC33-5.2.2	List of GEBCO relevant international programmes
GGC33-5.2.3	GEO Programme Board ToRs
GGC33-5.2.4	GEO Programme Board Nominations Form 2017-2019
GGC33-6.1	GEBCO Cookbook Report
GGC33-6.2	Draft Revised TSCOM ToRs
GGC33-6.2	ToRs and RoPs
GGC33-6.3	Relevant IHO Resolutions
GGC33-7.1.1	Arctic-Antarctic Workshop Actions (to be taken under item 4.2)
GGC33-7.1.2	F-FOFM Communiqué
GGC33-7.1.3a	GEBCO Future vision - Seabed 2030
GGC33-7.1.3b	GEBCO Future vision - Seabed 2030 figures
GGC33-7.2.1.1	SCUFN Work Plan and Budget
GGC33-7.2.1.2	TSCOM Work Plan and Budget
GGC33-7.2.1.3	SCRUM Work Plan and Budget
GGC33-7.2.1.4	Outreach WG Work Plan and Budget
GGC33-7.2.2	GEBCO Education and Outreach Strategy (see presentations)
GGC33-7.3.1	GGC Work Plan and Budget
GGC33-8.1	Secretary role and responsibilities
GGC33-9	GGC membership list
GGC33-10	Draft agenda GGC34
GGC33-12	GGC33 List of Actions
GGC33	Presentations .zip

LIST OF ACTIONS – Updated 6 November 2016

Agenda Item	Subject	Status/Date	Comments	Action
Continuous				
3.1	NF Programme Management Report	On going	Inform IHO and IOC secretariats as soon as the date for accepting UNH applications is known	Manager NF-UNH Programme
GGC33-4.3	IOC Review into future GEBCO engagement	On going	Develop closer engagement with relevant IOC programmes	All
5.1	Participation at IHO RHC meetings	On going	Published and maintain list of RHC meetings on the GEBCO website	Secretary/BODC
5.1	Participation at IHO RHC meetings	On going	Attendees representing GEBCO at meetings to provide short report for publication on GEBCO website	All/BODC
GGC33-7.1	Seabed 2030	On going	Provide feedback and comment to Seabed 2030 Establishment Team on Roadmap and Business Plan documents	All
GGC33				
1.7	GGC32 List of Actions	GGC34	Create new List of Actions, transferring only relevant items from previous list	Secretary
1.7	GGC32 List of Actions	31 Dec	Circulate standard GEBCO presentation	Secretary/BODC
1.8	IRCC8 Report	IRCC9	Re-submit proposal to remove B-7 from list of IHO publications	Chair GGC
2.1	IHO Report	GEO Plenary13	Investigate GEBCO representation at next GEO meeting	Chair GGC
2.2	IOC Report	Assembly29	Provide report on GEBCO activities for period 2015-2017	Chair GGC
2.3	Finance Report	31-Dec Complete	Consolidate GEBCO-IHO and GEBCO Operations Funds into GEBCO Funds	Secretary
2.6	SCUFN Report	21-Oct Complete	Request ABLOS to provide guidance on technical clarification for suitable wording to enable SCUFN to have workable procedures for the sea area between national territorial waters and the ABNJ, timeframe to be discussed with SCUFN secretary to ensure inclusion in SCUFN29 report and	Chair/Sec SCUFN

			circulated to the GGC for endorsement Discussed at ABLOS BM23, Chair GGC to inform Chair SCUFN of outcome	
2.10	Outreach WG Report	GGC34	Develop a mechanism to gather user information, develop an outreach website and develop the outreach ideas spread sheet	Chair OutreachWG
4.3	IOC Review into future GEBCO engagement	Assembly29	Cooperate with IOC for the work of IOC Working Group on user requirements and contributions to GEBCO products, in particular through nomination of an expert to serve as a member of the Working Group	Chair/vice-Chair GGC
4.3	IOC Review into future GEBCO engagement	Assembly29	Develop guidelines for use by scientists in the IOC community in order to advance basin-scale, campaign mapping and contribute to GEBCO data	Chair/vice-Chair GGC
4.3	IOC Review into future GEBCO engagement	Assembly29	GGC to consider submitting proposals towards which IOC funds could be directed in support of GEBCO activities	Chair/vice-Chair GGC
6.1	Review GEBCO publications	IRCC9	Re-submit proposal to remove B-7 - <i>GEBCO guidelines</i> - from list of IHO publications	Chair
6.2	ToRs & RoPs	31-Dec Complete	Upload revised versions of TSCOM and SCRUM ToRs and RoPs	Secretary/BODC
6.3	IHO Resolutions	GGC34	Review IHO Resolutions (GGC33-6.3) and propose amendments for consideration by GGC for submission to IRCC10	Chairs TSCOM/SCRUM
7.1	Seabed 2030	31 Dec	Liaise with IOC and IHO secretariats to ensure structure, governance and oversight remain within the current ToRs and RoPs and will be endorsed by Member States	PT Establishment Team
7.1	Seabed 2030	31 Dec	Investigate methods to acknowledge contributions by donor/sponsor organizations on the GEBCO website	BODC
7.2	Work Plans and Budgets	21-Oct Complete	Provide Word versions of Work Plans and Budgets to Chairs TSCOM/SCRUM/SCUFN/OutreachWG for revision, reflecting discussions and decisions of GGC33	Secretary
7.2	Work Plans and Budgets	4-Nov Complete	Provide revised Work Plans and Budgets and spread sheet for inclusion in final GGC33 meeting report	Chairs TSCOM/SCRUM/SCUFN/OutreachWG

7.2	Work Plans and Budgets	31 Dec	Advise members that funding support to attend meetings no longer available	Chair SCUFN
7.2	Work Plans and Budgets	26 Oct Complete	Consider submitting proposal for inclusion in IHO triennium Work Programme and Budget for supporting the maintenance and development of the SCUFN Gazetteer	Chair
8.1	Duties of Secretary	4 Nov Complete	Revise list to reflect decisions of GGC33	Secretary
9.1	GGC Membership	GGC34	Consider suitable candidates for future membership of GGC	All
9.1	GGC Membership	GGC34	Lead search for suitable candidates for future GGC members	LT/HS/JK
9.1	GGC Membership	4 Nov Complete	Update membership list and upload to website	Secretary/BODC
9.1	GGC Membership	IRCC9/Assembly29	Formally notify IHO and IOC of forthcoming vacancies on GGC and SCUFN and request they commence formal processes for suitable candidates to fill the vacancies.	Chair
9.1	GGC Membership	14 Apr	Commence formal process for search for suitable candidates to fill forthcoming vacancies on GGC and SCUFN	IHO/IOC
10.1	GGC34	14 Apr	Circulate an initial letter of invitation and post on the website.	HS/Secretary
10.1	GGC35	31 Dec Complete	Investigate hosting and advise Sec of proposed dates for circulation to GGC	MJ/JK
11	Any other business	31 Dec	Provide draft revised wording of licence policy for circulation intersessionally to the GGC for endorsement, if required	BODC
12	Action List	GGC34	Keep IHB and the Chair and vice-Chair informed of progress with allocated actions	All
12	GGC33 Draft Report	21 Oct Complete	Draft to be circulated for comment	Secretary
12	GGC33 Draft Report	4 Nov Complete	All to provide comments on draft report	All
12	GGC33 Final Report	11 Nov Complete	Publish final report	Secretary
12	Report to IRCC9	31 Mar	Draft report for review and amendment.	Chair/vice-Chair/Sec



**GENERAL BATHYMETRIC CHART OF THE OCEANS (GEBCO)
SUB-COMMITTEE ON REGIONAL UNDERSEA MAPPING (SCRUM)
TERMS OF REFERENCE AND RULES OF PROCEDURE**

Preamble

At a meeting of some GEBCO Guiding Committee (GGC) members (and one IHB representative) in Silver Spring, Maryland, USA on 18-29 May 2009, it was decided that a new Sub-Committee was required to coordinate, encourage, and provide an interface with the various regional mapping efforts being conducted by IOC, IHO and others. In addition, such a Sub-Committee on Regional Undersea Mapping (SCRUM) could function as an Editorial Board endorsing regional products to be included in GEBCO. These Terms of Reference and Rules of Procedure were presented to the full GGC at the annual meeting on 1-2 October 2009 in Brest, France, and the creation of the Sub-Committee was approved on an interim basis. At the following GGC meeting in Lima, Peru, on 18 September 2010, the Committee approved the formation of SCRUM on a permanent basis subject to the approval of IOC and IHO. Authority for the creation of this sub-committee is included in the GGC Terms of Reference, paragraph 8, which states that “The GEBCO Guiding Committee shall direct and monitor the work of the GEBCO Sub-Committees and Working Groups; propose to IHO and IOC the creation or termination of Sub-Committees, and create, maintain and terminate Working Groups as deemed necessary.” In accordance with paragraph 9 of the GEBCO Terms of Reference, SCRUM shall cooperate with regional International Bathymetric Chart (IBC) projects on the specifications and preparation of regional digital bathymetric models and charts, to ensure their compatibility with, and eventual inclusion in, GEBCO products.

1. Terms of Reference

- 1.1 The Sub-Committee reports to the Joint IOC-IHO GEBCO Guiding Committee (GGC) as its designated authority for all technical matters relevant to the goals of GEBCO as set out in the Guiding Committee Terms of Reference and Rules of Procedure.
- 1.2 The Sub-Committee shall:
 - 1.2.1 Maintain liaison and cooperate with all existing regional mapping efforts under the International Bathymetric Chart (IBC) initiative as well as other relevant regional bathymetric mapping projects.
 - 1.2.2 Act as an Editorial Board by reviewing and validating the resulting regional products before incorporation into the GEBCO global grid.
 - 1.2.3 Foster coordination between the IBC and other relevant regional bathymetric mapping projects and the IHO Data Centre for Digital Bathymetry (IHO DCDB) to capture, for long-term archive, the bathymetric data used by these projects.
 - 1.2.4 Encourage the establishment of new IHO/IOC regional bathymetric mapping projects to fill current gaps in global bathymetry.
 - 1.2.5 Establish, support, and/or disband working groups or project teams, as needed, to carry out specific tasks or product developments that advance the GEBCO Project.
 - 1.2.6 Work closely with other GEBCO Sub-Committees and subordinate bodies of the IHO and IOC on matters of common interest.



2. Rules of Procedure

2.1 Membership of the Sub-Committee is covered by the following rules:

2.1.1 The Sub-Committee shall normally consist of a Chair and Vice-Chair elected by the members and endorsed by the Joint IOC/IHO GEBCO Guiding Committee (GGC), and a number of additional members including representatives of any IBCs and other relevant regional bathymetric mapping projects as well as regional bathymetric experts.

2.1.2 The Chair and the Vice-Chair are elected for a three year period. The Chair will normally be succeeded by the Vice-Chair. The Chair and Vice-Chair may be re-elected for additional terms if desired by the sub-committee members and available.

2.1.3 Members of the Sub-Committee are experts acting exclusively for the benefit of the Joint IHO-IOC GEBCO Project.¹

2.2 The Chair or, in his/her absence, the Vice-Chair shall conduct the business of the Sub-Committee. Meetings will usually be held every year, ideally before the GGC meeting. In the intervening period the Sub-Committee shall conduct its business by correspondence (preferably electronic mail).

2.3 Individuals who can provide a relevant and constructive contribution to the work of the Sub-Committee may attend meetings as Scientific Advisors with observer status, at the discretion of the Chair or Vice-Chair.

2.4 Entities and organizations that can provide a relevant and constructive contribution to the work of the Sub-Committee may be represented at meetings as Expert Contributors with observer status.

2.5 Members are expected to regularly attend the Sub-Committee.

2.6 Observers from IHO and/or IOC Member States may attend meetings. Due to logistic constraints, attendance shall normally be limited to one observer per Member State.

2.7 The quorum to hold a meeting shall be not less than 50% of the Sub-Committee Members. The Sub-Committee shall strive to make decisions by consensus. If consensus cannot be reached, decisions shall be taken by simple majority vote. Only members present may cast a vote. The Chair shall have the casting vote if there is a tie.

2.8 Recommendations of the Sub-Committee shall be submitted to the GGC for consideration and decision.

2.9 The Chair shall submit an annual report to the Chair of the GGC.

¹ So far as IOC is concerned, the Sub-Committee is classed as a Joint Group of Experts under the IOC Guidelines for subsidiary bodies.



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SUB-COMMITTEE ON REGIONAL UNDERSEA MAPPING (SCRUM)
TERMS OF REFERENCE AND RULES OF PROCEDURE**

Preamble

At a meeting of some GEBCO Guiding Committee (GGC) members (and one IHB representative) in Silver Spring, Maryland, USA on 18-29 May 2009, it was decided that a new Sub-Committee was required to coordinate, encourage, and provide an interface with the various regional mapping efforts being conducted by IOC, IHO and others. In addition, such a Sub-Committee on Regional Undersea Mapping (SCRUM) could function as an Editorial Board endorsing regional products to be included in GEBCO. These Terms of Reference and Rules of Procedure were presented to the full GGC at the annual meeting on 1-2 October 2009 in Brest, France, and the creation of the Sub-Committee was approved on an interim basis. At the following GGC meeting in Lima, Peru, on 18 September 2010, the Committee approved the formation of SCRUM on a permanent basis subject to the approval of IOC and IHO. Authority for the creation of this sub-committee is included in the GGC Terms of Reference, paragraph 8, which states that “The GEBCO Guiding Committee shall direct and monitor the work of the GEBCO Sub-Committees and Working Groups; propose to IHO and IOC the creation or termination of Sub-Committees, and create, maintain and terminate Working Groups as deemed necessary.” In accordance with paragraph 9 of the GEBCO Terms of Reference, SCRUM shall cooperate with regional International Bathymetric Chart (IBC) projects on the specifications and preparation of regional digital bathymetric models and charts, to ensure their compatibility with, and eventual inclusion in, GEBCO products.

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- 1.2 The Sub-Committee shall:
 - 1.2.1 Maintain liaison and cooperate with all existing regional mapping efforts ~~chartered by the IOC~~ under the International Bathymetric Chart (IBC) initiative as well as other relevant regional bathymetric mapping projects.
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 - 1.2.4 Encourage the establishment of new IHO/IOC regional bathymetric mapping projects to fill current gaps in global bathymetry.
 - 1.2.5 Establish, support, and/or disband working groups or project teams, as needed, to carry out specific tasks or product developments that advance the GEBCO Project.
 - 1.2.6 Work closely with other GEBCO Sub-Committees and subordinate bodies of the IHO and IOC on matters of common interest.

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Updated: 28 June 2013



2. Rules of Procedure

2.1 Membership of the Sub-Committee is covered by the following rules:

2.1.1 The Sub-Committee shall normally consist of a Chair and Vice-Chair ~~appointed~~ **elected by the members and endorsed** ~~appointed by the Chair including, each representative of any IBCs and other relevant regional bathymetric mapping projects as well as regional bathymetric experts particularly where no IBCs exist.~~ ~~Members shall be approved by the GGC based on their ability to represent the activities of each individual project. The Sub-Committee Members List shall be kept updated and posted on the GEBCO website.~~

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2.1.2 The Chair and the Vice-Chair are ~~appointed~~ **elected** ~~for a three five-year period but not exceeding their current membership of the Committee.~~ The Chair will normally be succeeded by the Vice-Chair. The Chair and Vice-Chair may be ~~re-appointed~~ **re-elected** ~~for one additional five-year period~~ **terms if desired by the sub-committee members and available.**

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2.1.3 ~~Members of the Sub-Committee shall be appointed for a five year period, renewable for further five-year terms by majority recommendation of the Sub-Committee and with the approval of the GGC. The Sub-Committee Chair shall inform the GGC of any foreseeable vacancy in a timely manner.~~

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2.1.4 Members of the Sub-Committee are experts acting exclusively for the benefit of the Joint IHO-IOC GEBCO Project. ¹

2.2 The Chair or, in his/her absence, the Vice-Chair shall conduct the business of the Sub-Committee. Meetings will usually be held every year, ideally before the GGC meeting. In the intervening period the Sub-Committee shall conduct its business by correspondence (preferably electronic mail).

2.3 Individuals who can provide a relevant and constructive contribution to the work of the Sub-Committee may attend meetings as Scientific Advisors with observer status, at the discretion of the Chair or Vice-Chair.

2.4 Entities and organizations that can provide a relevant and constructive contribution to the work of the Sub-Committee may be represented at meetings **as Expert Contributors** with observer status.

2.5 Members are expected to **regularly** attend **every meeting of** the Sub-Committee. ~~Sub-Committee Members who are absent from meetings for two consecutive years will normally be considered to have resigned and new nominations shall be sought.~~

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2.6 Observers from IHO and/or IOC Member States may attend meetings. Due to logistic constraints, attendance shall normally be limited to one observer per Member State.

¹ So far as IOC is concerned, the Sub-Committee is classed as a Joint Group of Experts under the IOC Guidelines for subsidiary bodies.



- 2.7 The quorum to hold a meeting shall be not less than 50% of the Sub-Committee Members. The Sub-Committee shall strive to make decisions by consensus. If consensus cannot be reached, decisions shall be taken by simple majority vote. Only members present may cast a vote. The Chair shall have the casting vote if there is a tie.
- 2.8 Recommendations of the Sub-Committee shall be submitted to the GGC for consideration and decision.
- 2.9 The Chair shall submit an annual report to the Chair of the GGC.



TECHNICAL SUB-COMMITTEE ON OCEAN MAPPING (TSCOM) (former SCDB) TERMS OF REFERENCE AND RULES OF PROCEDURE

Preamble

In May 1977, at GEBCO Guiding Committee (GGC) IV, the Guiding Committee decided to form a small Sub-Committee on Digital Bathymetry (SCDB) to ‘investigate... the question: Is there an advantage [in] having digital bathymetric data?’ This led to a very positive report being submitted to the Guiding Committee in May 1983, the formation of a larger and more representative Sub-Committee, with revised Terms of Reference, and a recommendation leading to the establishment of the IHO Data Centre for Digital Bathymetry.

Over the years the annual meetings of this Sub-Committee have gained increasing recognition as being of growing importance to the scientific community. From a meeting of five experts in 1984, the group had grown to thirty-six experts from twenty-five groups in thirteen countries by June 1999.

By 2006 it was recognized that all GEBCO products and nearly all cartographic activities are “digital”, and after the SCDB XXII meeting in Bremerhaven, Germany it is proposed that, as part of the revision of the GEBCO structure, the sub-committee be renamed the “Technical Sub-Committee on Ocean Mapping” (TSCOM).

1. Terms of Reference

- 1.1 The Sub-Committee reports to the Joint IOC-IHO GEBCO Guiding Committee (GGC) as its designated authority for all technical matters relevant to the goals of GEBCO as set out in the Guiding Committee Terms of Reference and Rules of Procedure.
- 1.2 The Sub-Committee shall:
 - 1.2.1 Maintain and improve GEBCO products and supporting data such as, but not limited to:
 - a) A global bathymetric grid;
 - b) The GEBCO Digital Atlas;
 - c) Databases of soundings, shorelines, land elevations, remotely sensed and other data, generalized to a useful working scale, as may facilitate update of GEBCO products and maintenance of product quality.
 - 1.2.2 Monitor developments in data availability and relevant technology as may impact GEBCO activities, and recommend to the GC actions that will maintain the excellence of GEBCO products.
 - 1.2.3 Provide advice to individuals and appropriate authorities on the scientific and technical aspects of bathymetric mapping, as requested.
 - 1.2.4 Encourage and facilitate the location, acquisition and exchange of sounding, shoreline, remotely sensed and other data supporting bathymetric mapping.
 - 1.2.5 Investigate the application of GEBCO products, beyond the cartographic sciences, with the aim of producing products that are easily applied to other ocean sciences.



1.2.6 Establish, nurture, and/or disband working groups or project teams, as needed, to carry out specific tasks or product developments that relate to the technical advance of the GEBCO Project.

1.2.7 Work with SCUFN on matters of joint interest, such as, but not limited to, the shapes or outlines of named features and the automatic placement of feature names.

2. Rules of Procedure

2.1 Membership of the Sub-Committee is covered by the following rules:

2.1.1 The Sub-Committee shall normally consist of a Chair and Vice-Chair elected by the members and endorsed by the Joint IOC/IHO GEBCO Guiding Committee (GGC), and a number of additional members. Members should be encouraged to participate according to their individual technical expertise and their ability to complement the overall technical breadth of the Sub-Committee as a whole.

2.1.2 Members of the Sub-Committee are experts in their own right acting exclusively for the benefit of the Joint IHO-IOC GEBCO Project.¹

2.2 The Chair and Vice-Chair shall be elected by the Sub-Committee subject to endorsement by the GGC.

2.3 The Chair and the Vice-Chair are elected for a three year period. The Chair will normally be succeeded by the Vice-Chair. The Chair and Vice-Chair may be re-elected by the Sub-Committee for additional terms if desired by the sub-committee members and available.

2.4 The Chair, or in his/her absence the Vice-Chair, shall conduct the business of the Sub-Committee. Meetings will usually be held every year, ideally before the GGC meeting. In the intervening period the Sub-Committee shall conduct its business by correspondence (preferably electronic mail).

2.5 Individuals who can provide a relevant and constructive contribution to the work of the Sub-Committee may attend meetings as Scientific Advisors with observer status, at the invitation of the Chair or Vice-Chair.

2.6 Entities and organisations that can provide a relevant and constructive contribution to the work of the Sub-Committee may be represented at meetings as Expert Contributors with observer status.

2.7 Members are expected to attend every meeting of the Sub-Committee.

2.8 Observers from IHO and/or IOC Member States may attend meetings. Attendance shall normally be limited to one observer per Member State.

2.9 The quorum to hold a meeting shall be one more than half the members of the Sub-Committee Members. The Sub-Committee shall strive to make decisions by consensus. If consensus cannot be reached, decisions shall be taken by simple majority vote. Only members present may cast a vote. The Chair shall have the casting vote if there is a tie.

¹ So far as IOC is concerned, the Sub-Committee is classed as a Joint Group of Experts under the IOC guidelines for subsidiary bodies.



- 2.10 Recommendations of the Sub-Committee shall be submitted to the GGC for consideration and decision.
- 2.11 The Chair shall submit an annual report to the GGC.



TECHNICAL SUB-COMMITTEE ON OCEAN MAPPING (TSCOM) (former SCDB) TERMS OF REFERENCE AND RULES OF PROCEDURE

Preamble

In May 1977, at GEBCO Guiding Committee (GGC) IV, the Guiding Committee decided to form a small Sub-Committee on Digital Bathymetry (SCDB) to 'investigate... the question: Is there an advantage [in] having digital bathymetric data?' This led to a very positive report being submitted to the Guiding Committee in May 1983, the formation of a larger and more representative Sub-Committee, with revised Terms of Reference, and a recommendation leading to the establishment of the IHO Data Centre for Digital Bathymetry.

Over the years the annual meetings of this Sub-Committee have gained increasing recognition as being of growing importance to the scientific community. From a meeting of five experts in 1984, the group had grown to thirty-six experts from twenty-five groups in thirteen countries by June 1999.

By 2006 it was recognized that all GEBCO products and nearly all cartographic activities are "digital", and after the SCDB XXII meeting in Bremerhaven, Germany it is proposed that, as part of the revision of the GEBCO structure, the sub-committee be renamed the "Technical Sub-Committee on Ocean Mapping" (TSCOM).

1. Terms of Reference

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 - 1.2.1 Maintain and improve GEBCO products and supporting data such as, but not limited to:
 - a) A global bathymetric grid;
 - b) The GEBCO Digital Atlas;
 - c) Databases of soundings, shorelines, land elevations, remotely sensed and other data, generalized to a useful working scale, as may facilitate update of GEBCO products and maintenance of product quality.
 - 1.2.2 Monitor developments in data availability and relevant technology as may impact GEBCO activities, and recommend to the GC actions that will maintain the excellence of GEBCO products.
 - 1.2.3 Provide advice to individuals and appropriate authorities on the scientific and technical aspects of bathymetric mapping, as requested.
 - 1.2.4 Encourage and facilitate the location, acquisition and exchange of sounding, shoreline, remotely sensed and other data supporting bathymetric mapping.
 - 1.2.5 Investigate the application of GEBCO products, beyond the cartographic sciences, with the aim of producing products that are easily applied to other ocean sciences.
 - 1.2.6 Establish, nurture, and/or disband working groups or project teams, as needed, to carry out specific tasks or product developments that relate to the technical advance of the GEBCO Project.



1.2.7 Work with SCUFN on matters of joint interest, such as, but not limited to, the shapes or outlines of named features and the automatic placement of feature names.

2. Rules of Procedure

2.1 Membership of the Sub-Committee is covered by the following rules:

2.1.1 The Sub-Committee shall normally consist of a Chair and Vice-Chair elected by the members and endorsed by the Joint IOC/IHO GEBCO Guiding Committee (GGC), and a number of additional up to 10 members, appointed by the Joint IOC/IHO GEBCO Guiding Committee (GGC). They shall be appointed **Members should be encouraged to participate** according to their individual technical expertise and their ability to complement the overall technical breadth of the Sub-Committee as a whole.

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2.1.2 Members of the Sub-Committee are experts **in their own right** acting exclusively for the benefit of the Joint IHO-IOC GEBCO Project.¹

2.1.3 ~~Members of the Sub-Committee shall be appointed for a five year period, renewable for a further five year term by majority recommendation of the Sub-Committee and with the approval of the GGC. The Sub-Committee Chairperson shall inform the GGC of any foreseeable vacancy in a timely manner.~~

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2.2 The Chairperson and Vice-Chairperson shall be elected by the Sub-Committee subject to endorsement by the GGC.

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2.3 The Chairperson and the Vice-Chairperson are elected for a **three five year period but not exceeding their current membership of the Committee.** The Chairperson will normally be succeeded by the Vice-Chairperson. The Chairperson and Vice-Chairperson may be re-elected by the Sub-Committee for **one additional five year period terms if desired by the sub-committee members and available.**

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2.4 The Chairperson, or in his/her absence the Vice-Chairperson, shall conduct the business of the Sub-Committee. Meetings will usually be held every year, ideally before the GGC meeting. In the intervening period the Sub-Committee shall conduct its business by correspondence (preferably electronic mail).

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2.5 Individuals who can provide a relevant and constructive contribution to the work of the Sub-Committee may attend meetings as Scientific Advisors with observer status, at the **invitation discretion** of the Chairperson or Vice-Chairperson.

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- 2.9 The quorum to hold a meeting shall be ~~one more than half the members of the 6~~ Sub-Committee Members. The Sub-Committee shall strive to make decisions by consensus. If consensus cannot be reached, decisions shall be taken by simple majority vote. Only members present may cast a vote. The Chairperson shall have the casting vote if there is a tie.
- 2.10 Recommendations of the Sub-Committee shall be submitted to the GGC for consideration and decision.
- 2.11 The Chairperson shall submit an annual report to the Chairperson of the GGC.

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IHO Resolutions

The following IHO Resolutions cover topics and issues, in total or part, for which the GEBCO Guiding Committee (GGC) and its subordinate bodies are subject matter experts. It is therefore appropriate for the GGC to task the relevant subordinate body/bodies to review the Resolutions and propose changes and amendments as necessary for GGC34.

In the first instance it is considered this process will be led as indicated below:

- 3/1929 as amended (*Centralization of oceanic soundings*) - TSCOM;
- 3/1932 as amended (*Collecting oceanic soundings*) - TSCOM;
- 4/1932 as amended (*Metadata for oceanic soundings*) - TSCOM/SCRUM;
- 2/1962 as amended (*Oceanographic observations*) - SCRUM/TSCOM; and
- 8/1962 as amended (*Oceanographic information*) - SCRUM/TSCOM.

CENTRALIZATION OF OCEANIC SOUNDINGS	3/1929 as amended	85/2008	A5.3
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1 Full details of the information required to accompany data, and the criteria for its quality control, are contained in the GEBCO Guidelines (IHO Publication B-7).

2 Data Storage and exchange of data.

- a) Member States are requested to remind institutions and organizations within their own country of the desirability of collecting bathymetric data, whenever possible, in the course of oceanographic missions.
- b) It is recommended that Member States inform the IHB of any details concerning recent bathymetric data collected by themselves or by other national institutions and organizations, about which they may have been notified. The standard format below should be used for this purpose:
 - i) Country of origin;
 - ii) Institution or authority responsible for the mission;
 - iii) Name of vessel which carried out the soundings;
 - iv) Date (month and year);
 - v) Location (general sea area or significant points along track); and
 - vi) Terms under which data may be obtained (address for requests, method of ordering, price, or whether free on a mutual data exchange basis, etc.).

The IHB will issue an annual CL requesting such information.

3 All bathymetric data collected should be forwarded by HOs to the IHO Data Centre for Digital Bathymetry (DCDB). Any format convenient to the individual HO may be used; but the data must be accompanied by comprehensive format documentation and metadata. The IHO DCDB should be notified of digital data that have been found to be in error; if possible, a corrected version should be submitted as well.

4 Information concerning Recent Bathymetric Data IHO Publication B-4

At the beginning of each calendar year, the IHB shall make available an updated version of the online publication B-4 showing all bathymetric data received during the preceding year. These data will be available for download from the IHO DCDB in several digital formats, which include MGD 77, HYD 93 and delimited xyz ASCII.

COLLECTING OCEANIC SOUNDINGS	3/1932 as amended	85/2008	A5.1
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- 1 It is strongly recommended that Hydrographic Offices include in their programmes regular and systematic surveys of ocean areas beyond the continental shelves.
- 2 It is recommended that when Hydrographic Offices plan oceanic surveys they attach sufficient importance to obtaining data which will be useful not only for navigation purposes but also for promoting knowledge of the morphology of the sea floor.
- 3 It is recommended that Hydrographic Offices interested in the same oceanic areas arrive at an understanding among themselves regarding a suitable division of their zones of activity and priorities.
- 4 It is recommended that, as concerns oceanic soundings, Hydrographic Offices work in close cooperation with the oceanographic bodies of their respective countries and use a standard procedure for recording data.
- 5 It is recommended that ships fitted with MBES or SBES be requested to collect bathymetric soundings and communicate the results of such soundings to the Hydrographic Offices of their respective countries with all information required to enable their accuracy to be estimated. The use of sound velocity calibration in accordance with the guidance set out in the IHO Manual on Hydrography (C-13) is recommended.
- 6 It is recommended that newly-discovered topographic undersea features should be properly mapped and named following the "Standardization of Undersea Feature Names" IHO-IOC Publication B-6.

METADATA FOR OCEANIC SOUNDINGS	4/1932 as amended	85/2008	A5.2
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It is resolved that oceanic soundings, together with the metadata and potential additional supplementary information, shall be collected and exchanged mainly in digital form. Metadata should comprise at least information on:

- a) the survey in general as e.g. date, area, equipment used, name of survey platform;
- b) the geodetic reference system used, i.e. horizontal and vertical datum; including ties to WGS 84 if a local datum is used;
- c) calibration procedures and results;
- d) sound velocity;
- e) positioning information e.g. GPS, RT-DGPS, GLONASS, GALILEO;
- f) tidal datum and reduction (if applicable); and
- g) accuracies achieved and the respective confidence levels.

OCEANOGRAPHIC OBSERVATIONS	2/1962 as amended	59/1991	A1.3
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It is recommended that Member States should make every effort to collect and coordinate the collection of all types of oceanographic data, by their hydrographic services and other of their national institutions. The results of all such observations should be communicated to appropriate national and international Oceanographic Data Centres for maximum utilization by all marine scientific and hydrographic users.

OCEANOGRAPHIC INFORMATION	8/1962 as amended	IHC 16	C3.13
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- 1 It is recommended that the introductory part of Sailing Directions includes oceanographic information concerning general currents and a brief account of the main characteristics (temperature, salinity, density) of surface water.
- 2 It is recommended that a reference be made to the relevant oceanographic and tidal atlases, whenever possible.

1.1. IHO-IOC GEBCO Sub-Committee for Regional Undersea Mapping (SCRUM) Work Plan 2017-2018

1.1 SCRUM Tasks

- B Ensure conduct of SCRUM meeting in 2017 (IHO Task 3.8.1.3)
- D Encourage the contribution of bathymetric data to the IHO DCDB (IHO Task 3.8.3), identify priority areas for regional mapping (IHO Task 3.8.3.1) and promote data contribution through GEBCO participation in RHCs meetings (IHO Task 3.8.3.2)
- E Maintain IHO bathymetric publications (IHO Task 3.8.4) including: B-4 (IHO Task 3.8.4.1), B-7 (IHO Task 3.8.4.3), B-9 (IHO Task 3.8.4.5), B-10 (IHO Task 3.8.4.6) and B-411(IHO Task 3.8.4.7)

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 (€)	GGC Decision
B	Ensure conduct of SCRUM meeting	H		2017	2017	P	Chair SCRUM			
D1	Encourage the contribution of bathymetric data to the IHO DCDB	H		Continuous		O	All members of GEBCO GC through the Chair			
D2	Identify priority areas for regional mapping and support the organization of regional mapping projects.	H		Continuous		O	Chair SCRUM			

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 (€)	GGC Decision
D3	Promote data contribution through GEBCO participation in RHCs meetings	H	Identify GEBCO people who are able to attend for meetings in 2016 – 2018	Continuous		O	All members of GEBCO GC through the Chair		5,000	5,000
D4	Organize regional mapping meetings/workshops	H M	Arctic and Antarctic Mapping meeting	Continuous	2017 2018	P	Chair SCRUM		10,000	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 (€)	GGC Decision
E	Maintain IHO bathymetric publications	M H M	Update GEBCO global 30 arc-second grid with new compilations	Continuous 2016	Continuous 2017	O O	All members of GEBCO GC through the Chair Chair SCRUM	B-4 - Information concerning recent bathymetric data B-7 - GEBCO guidelines B-9 - GEBCO digital atlas		
		M	Update GEBCO World Map to included updated versions of GEBCO grid and adopted undersea feature names from SCUFN.	2017	2018	O	Chairs SCRUM/SCUFN	B-6 – Standardization of undersea feature names B-8 - Gazetteer B-9 - GEBCO digital atlas		
		L M						B-10 - The history of GEBCO B-11 - GEBCO Cookbook		

1.2 SCRUM Meetings (IHO Task 3.8.1.3 refers)

Date	Location	Activity
7&9 October 2013	Venice, Italy	1 st Meeting
11-13 December 2014	Mountain View, California, USA	2 nd Meeting
5-7 October 2015	Kuala Lumpur, Malaysia	3 rd Meeting
10-14 October 2016	Valparaíso, Chile	4 th Meeting

13-17 November 2017 Busan, Korea 5th Meeting

5-9 November 2017 Canberra, Australia 6th Meeting

Chair: Vicki Ferrini Email: ferrini@ldeo.columbia.edu
Vice-Chair: Pauline Weatherall Email: paw@bodc.ac.uk
Secretary: David Wyatt Email: adso@iho.int

1.1. IHO-IOC GEBCO Sub-Committee for Undersea Feature Names (SCUFN) Work Plan 2017-2018

1.1 SCUFN Tasks

- B Ensure conduct of SCUFN meeting in 2017 (IHO Task 3.8.1.4)
- E Maintain IHO bathymetric publications (IHO Task 3.8.4) including: B-6 (IHO Task 3.8.4.2) and B-8 (IHO Task 3.8.4.4)
- J Update and enhance the GEBCO Gazetteer (B-8) for internet access (IHO Task 3.8.8) including providing the GEBCO Gazetteer as a web service via a geospatially enabled database (IHO Task 3.8.8.1) and develop and make available public and management on-line interfaces to the Gazetteer (IOH Task 3.8.8.2)

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 (€)	GGC Decision
B1	Ensure conduct of SCUFN meeting	H		2017	2017	P	Chair/Sec SCUFN			
B2	Support attendance of some Members at SCUFN meeting	M		2017	2017	P	Chair/Sec SCUFN		4,000 (per diem only, for 6 days, 2 Members make request for support, in general. Important for getting quorum)	0
E	Maintain IHO bathymetric publications	M H		Continuous 2016	Continuous 2018	O	All members of GEBCO GC through the Chair	B-6 - Standardization of undersea feature names (new Edition of B-6 in preparation, impact study to be carried out)	7,000	0
J1	Update and enhance the GEBCO Gazetteer (B-8) database	H		Annual	Annual	O	Chair/Sec SCUFN	B-8 – Gazetteer (implement SCUFN meeting decisions in the database, monitor pending names, chase SCUFN actions with proposers, chase missing data)	15,000 /year	15,000

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 (€)	GGC Decision
J2	Provide the GEBCO Gazetteer as a web service via a geospatially enabled database	H		2016	2018	O	Chair SCUFN	B-8 – Gazetteer – Capture user requirements (incl. SCUFN Sec.), develop improvements and general maintenance. Transition plan to be develop if needed. Critical task.	10,000 Depends on NOAA Decision (tbd at SCUFN29)	0
J3	Develop and make available public and management on-line interfaces to the Gazetteer	M		2014	2017	O	Dr Han/NOAA	B-8 - Gazetteer		
J4	Develop a S-100-based product specification for Undersea Feature Names	M / L		2015	2019	O	Chair Project Team (K Fadaie)	S-100, B-6	To be discussed at SCUFN-29	0

1.2 SCUFN Meetings (IHO Task 3.8.1.4 refers)

Date	Location	Activity
23-27 October 2012	Wellington, New Zealand	25 th Meeting
23-27 September 2013	Tokyo, Japan	26 th Meeting
16-20 June 2014	IHB, Monaco	27 th Meeting
12-16 October 2015	Niterói, Brazil	28 th Meeting
19-23 September 2016	Boulder, Colorado, USA	29 th Meeting
tbc	tbc	30 th Meeting

Chair: Hans-Werner Schenke Email: hans-werner.schenke@awi.de
Vice-Chair: Yasuhiko Ohara Email: ohara@jodc.go.jp
Secretary: Yves Guillam Email: adcs@iho.int

1.1. IHO-IOC GEBCO Technical Sub-Committee on Ocean Mapping (TSCOM) Work Plan 2017-2018

1.1 TSCOM Tasks

- B Ensure conduct of TSCOM meeting in 2017 (IHO Task 3.8.1.2)
- C Ensure effective operation of IHO DCDB (IHO Task 3.8.2)
- D Encourage the contribution of bathymetric data to the IHO DCDB (IHO Task 3.8.3), identify priority areas for regional mapping (IHO Task 3.8.3.1) and promote data contribution through GEBCO participation in RHCs meetings (IHO Task 3.8.3.2)
- E Maintain IHO bathymetric publications (IHO Task 3.8.4) including: B-4 (IHO Task 3.8.4.1), B-7 (IHO Task 3.8.4.3), B-9 (IHO Task 3.8.4.5), B-10 (IHO Task 3.8.4.6) and B-411(IHO Task 3.8.4.7)
- F Develop the on-line function of B-4 (Information concerning recent bathymetric data) (IHO Task 3.8.4.8)
- G Contribute to outreach and education about ocean mapping (IHO Task 3.8.5) by development of outreach and educational materials (IHO Task 3.8.5.1) and printing of IHO-IOC GEBCO World Map (IHO Task 3.8.5.2)
- H Ensuring IHO-IOC GEBCO Web site is kept current and updated regularly (IHO Task 3.8.6)
- 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 3.8.7)

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 (€)	GGC Decision
B	Ensure conduct of TSCOM meeting	H		2017	2017	P	Chair TSCOM			
C	Ensure effective operation of IHO DCDB	H		Continuous		O	Director DCDB			
D1	Encourage the contribution of bathymetric data to the IHO DCDB	H		Continuous		O	All members of GEBCO GC through the Chair			

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 (€)	GGC Decision
D3	Promote data contribution through GEBCO participation in RHCs meetings	H		Continuous		O	All members of GEBCO GC through the Chair		See SCRUM WP	
E	Maintain IHO bathymetric publications	M H M L M		Continuous	Continuous	O	All members of GEBCO GC through the Chair	B-4 - Information concerning recent bathymetric data B-7 - GEBCO guidelines B-9 - GEBCO digital atlas B-10 - The history of GEBCO B-11 - GEBCO Cookbook	See SCRUM WP	
F	Develop the on-line function of B-4	M		2015	Continuous	O	Director DCDB			
G3	Printing of IHO-IOC GEBCO World Map	M		2015	2018		Chair TSCOM + Chair SCRUM	B-9 - GEBCO digital atlas	2,000	2,000
H	Ensuring IHO-IOC GEBCO Web site is kept current and updated regularly	M		Continuous		O	BODC		5,000	5,000
			Add news items relating to GEBCO's activities	Continuous		O				
			Add documents relating to GEBCO's meetings and events	Continuous		O				

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 (€)	GGC Decision
I	Develop short course and course material on compiling digital bathymetric models (DBMs) to be included in GEBCO from a heterogeneous bathymetric source database	M	Discussions at 2016 TSCOM/SCRUM meeting (leader for course development needed)	2019	2021	O	Chair TSCOM			

1.2 TSCOM Meetings (IHO Task 3.8.1.2 refers)

Date	Location	Activity
1-4 October 2012	IHB, Monaco	XXVIII th Meeting
7&9 October 2013	Venice, Italy	XXIX th Meeting
11-13 December 2014	Mountain View, California,USA	XXX th Meeting
5-7 October 2015	Kuala Lumpur, Malaysia	XXXII th Meeting
10-12 October 2016	Viña del Mar, Chile	XXXIII th Meeting
13-14 November 2017	Busan, Korea	XXXIV th Meeting

Chair: Karen Marks
Vice-Chair:
Secretary: David Wyatt

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IHO-IOC GEBCO Outreach WG Work Plan 2017-2018

1.1 Outreach Tasks

- G Contribute to outreach and education about ocean mapping (IHO Task 3.8.5) by development of outreach and educational materials (IHO Task 3.8.5.1) and printing of IHO-IOC GEBCO World Map (IHO Task 3.8.5.2)
- 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 3.8.7)

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 (€)	GGC Decision
G1	Contribute to outreach and education about ocean mapping (GEBCO World Map printing)	H		Continuous		O	Chair Outreach WG		7,000 (Duplicate of TSCOM G3)	0
G2	Development of outreach and educational materials (Jigsaw puzzle for World Map and presentation files)	M		2015	2018	P	All members of GEBCO GC through the Chair Outreach WG		2,000 2500 per year (2017,2018) Total 5000	2,500
G3	Development of webpage (for secondary school student etc.)	M		2015	2018	O	All members of GEBCO GC through the Chair Outreach WG		11,000 4000 per year (2017,2018) Total 8000	4,000

I1	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		not defined at this time,2017	0
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1.2 GGC Meetings (IHO Task 3.8.1.1 refers)

Date	Location	Activity
7-11 October 2013	Venice, Italy	1 st Meeting
13-15 June 2014	IHB, Monaco	2 nd Meeting
5-9 October 2015	Kuala Lumpur, Malaysia	3 rd Meeting
10-14 October 2016	Valparaíso, Chile	4 th Meeting
13-17 November 2017	Busan, Korea	5 th Meeting
5-9 November 2017	Canberra, Australia	6 th Meeting

Chair: Hyo Hyun Sung
Vice-Chair: Vicki Ferrini
Secretary:

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1.1. IHO-IOC GEBCO Guiding Committee (GGC) Work Plan 2017-2018

1.1 GGC Tasks

- A Organise and conduct GGC XXXIV meeting in 2017 (IHO Task 3.8.1.1)
- B Ensure conduct of TSCOM, SCRUM and SCUFN meetings in 2017 (IHO Tasks 3.8.1.2, 3.8.1.3 and 3.8.1.4)
- C Ensure effective operation of IHO DCDB (IHO Task 3.8.2)
- D Encourage the contribution of bathymetric data to the IHO DCDB (IHO Task 3.8.3), identify priority areas for regional mapping (IHO Task 3.8.3.1) and promote data contribution through GEBCO participation in RHCs meetings (IHO Task 3.8.3.2)
- E Maintain IHO bathymetric publications (IHO Task 3.8.4) including: B-4 (IHO Task 3.8.4.1), B-6 (IHO Task 3.8.4.2), B-7 (IHO Task 3.8.4.3), B-8 (IHO Task 3.8.4.4), B-9 (IHO Task 3.8.4.5), B-10 (IHO Task 3.8.4.6) and B-411(IHO Task 3.8.4.7)
- F Develop the on-line function of B-4 (Information concerning recent bathymetric data) (IHO Task 3.8.4.8)
- G Contribute to outreach and education about ocean mapping (IHO Task 3.8.5) by development of outreach and educational materials (IHO Task 3.8.5.1) and printing of IHO-IOC GEBCO World Map (IHO Task 3.8.5.2)
- H Ensuring IHO-IOC GEBCO Web site is kept current and updated regularly (IHO Task 3.8.6)
- 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 3.8.7)
- J Update and enhance the GEBCO Gazetteer (B-8) for internet access (IHO Task 3.8.8) including providing the GEBCO Gazetteer as a web service via a geospatially enabled database (IHO Task 3.8.8.1) and develop and make available public and management on-line interfaces to the Gazetteer (IHO Task 3.8.8.2)

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 XXXIV meeting	H		2017	2017	P	Chair GGC Sec			0
B1	Ensure conduct of TSCOM, SCRUM and SCUFN meetings	H		2017	2017	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		4,000 (per diem only, for 6 days, 2 SCUFN Members)	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 meetings	H	Identify GEBCO people who are able to attend for meetings in 2016 – 2018	Continuous		O	All members of GEBCO GC through the Chair		5,000	5,000
D4	Organize regional mapping meetings/workshops	H M	 Arctic and Antarctic Mapping meeting	Continuous	2017 2018 2018	 P	 Chair SCRUM		 10,000	 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 (€)
	Maintain IHO bathymetric publications	M		Continuous	Continuous	O	All members of GEBCO GC through the Chair	B-4 - Information concerning recent bathymetric data B-7 - GEBCO guidelines		0
		H								
		M	Update GEBCO global 30 arc-second grid with new compilations	2016	2017	O	Chair SCRUM	B-9 - GEBCO digital atlas		0
		M	Update GEBCO World Map to included updated versions of GEBCO grid and adopted undersea feature names from SCUFN.	2017	2018	O	Chairs SCRUM/SCUFN	B-6 – Standardization of undersea feature names B-8 - Gazetteer B-9 - GEBCO digital atlas	See J1 7,000	0
		L M					B-10 - The history of GEBCO B-11 - GEBCO Cookbook		0 0	
F	Develop the on-line function of B-4	M		2015	Continuous		Director DCDB			0
G1	Contribute to outreach and education about ocean mapping	H		Continuous		O	Chair Outreach WG	See G3 below	7,000	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 (€)
G2	Development of outreach and educational materials (jigsaw puzzle for World Map and presentation files)	H		2015	2018	P	All members of GEBCO GC through the Chair Outreach WG		2,000	2,500 per year (2017-2018)
G3	Printing of IHO-IOC GEBCO World Map	M		2015	2018		Chair SCRUM	B-9 - GEBCO digital atlas	2,000	2,000
G4	Development of webpage (for secondary school student etc.)	M		2015	2018	O	All members of GEBCO GC through the Chair Outreach WG		11,000	4,000 per year (2017-2018)
H	Ensuring IHO-IOC GEBCO Web site is kept current and updated regularly	M		Continuous		O	BODC		5,000	5,000
I	Develop short course and course material on compiling digital bathymetric models (DBMs) to be included in GEBCO from a heterogeneous bathymetric source database	M	Discussions at 2016 TSCOM/SCRUM meeting (leader for course development needed)	2019	2021	P	Chair TSCOM/All members of GEBCO GC through the Chair Outreach WG	B-11 - GEBCO Cookbook	Not defined, review in 2017	0
J1	Update and enhance the GEBCO Gazetteer (B-8) for internet access	H		Continuous	Continuous	O	Chair SCUFN	B-8 – Gazetteer	15,000 /year	15,000 per year

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 (€)
J2	Provide the GEBCO Gazetteer as a web service via a geospatially enabled database	H		Continuous	Continuous	O	Chair SCUFN	B-8 – Gazetteer	10,000 Depends on NOAA Decision (tbd at SCUFN29)	0
J3	Develop and make available public and management on-line interfaces to the Gazetteer	M		Continuous	Continuous	O	Chair SCUFN	B-8 - Gazetteer		0
J4	Develop a S-100-based product specification for Undersea Feature Names	M / L		2015	2019	O	Chair Project Team (K Fadaie)	S-100, B-6	To be discussed at SCUFN-29	0

1.2 GGC Meetings (IHO Task 3.8.1.1 refers)

Date	Location	Activity
1-4 October 2012	IHB, Monaco	XXIX th Meeting
7-11 October 2013	Venice, Italy	XXX th Meeting
13-15 June 2014	IHB, Monaco	XXXI th Meeting
5-9 October 2015	Kuala Lumpur, Malaysia	XXXII th Meeting
10-14 October 2016	Valparaíso, Chile	XXXIII th Meeting
13-17 November 2017	Busan, Korea	XXXIV th Meeting
5-9 November 2017	Canberra, Australia	XXXV th Meeting

Chair: Shin Tina Email: soarhigh@mac.com
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Secretary: David Wyatt Email: adso@iho.int

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

List of GGC members - 15 October 2016

- | 1. IHO Appointed Members: | Term Period: |
|--|---------------------|
| Mr Shin Tani (Japan) (<i>Chair</i>) | (2013-2018) |
| Rear Admiral Patricio Carrasco (Chile) | (2013-2018) |
| Dr Hyo Hyun Sung* (Republic of Korea) | (2014-2019) |
| Captain Norhizam Hassan (Malaysia) | (2015-2020) |
| Dr Graham Allen (United Kingdom) | (2015-2020) |
|
 | |
| 2. IOC Appointed Members: | |
| Dr Martin Jakobsson (Sweden)* (<i>Vice-chair</i>) | (2013-2018) |
| Dr Robin Falconer* (New Zealand) | (2013-2018) |
| Ms Marzia Rovere (Italy) | (2014-2019) |
| Dr Johnathon Kool (Australia) | (2016-2021) |
| Captain Leonid Shalnov (Russian Federation) | (2016-2021) |
|
 | |
| 3. Ex-officio Members: | |
| Dr Vicki Ferrini (USA) (<i>Chair of SCRUM</i>) | |
| Dr Karen Marks (USA) (<i>Chair of TSCOM</i>) | |
| Dr Hans-Werner Schenke (Germany) (<i>Chair of SCUFN</i>) | |
| Ms Jennifer Jencks (USA) (<i>Director of IHO-DCDB</i>) | |
|
 | |
| * Members serving a second 5-year term. | |
|
 | |
| 4. Secretary: | |
| Mr David Wyatt (IHO) | (2015) |

NOTE: Members of the Secretariats of the IHO and IOC are permanent non-voting Members in the Committee.

G E B C O

GENERAL BATHYMETRIC CHART OF THE OCEANS



Intergovernmental
Oceanographic
Commission

Thirty Forth Meeting of the GEBCO Guiding Committee (GGC34)

Busan, Republic of Korea

13 – 17 November 2017

Agenda

Version 1.0; 14 octobre 2016

1 **OPENING REMARKS AND ADMINISTRATIVE ARRANGEMENTS – 30 minutes**

- .1 Opening Remarks and Introductions – **Chair**
- .2 Opening remarks by parent bodies – **IHO and IOC Secretariats**
- .3 Working Arrangements – **Secretary/Hosts**
- .4 Administrative Arrangements – **Secretary/Hosts**
- .5 Development of Work Plan and budget process – **Secretary**
- .6 Adoption of the Agenda and approval of report from GGC33 – **Chair**
- .7 Review of Action Items from GGC33 – **Secretary**
- .8 Report from IRCC9 – **Chair**

GEBCO TODAY

2 **REPORTS FROM PARENTAL AND SUBORDINATE BODIES – 120 minutes**

Brief reports (**5 minutes**) will be received, highlighting only significant events, achievements, outcomes, outputs/deliverables and matters requiring GGC action, full reports can be downloaded from the GGC website:

- .1 IHO update – **Iptes**
- .2 IOC update – **Barbière**
- .3 Financial update, including funds status report – **Secretary**
- .4 Digital Atlas Manager – **BODC**
- .5 DCDB update, including relevant CSBWG and ASMIWG issues – **DCDB Director**
- .6 SCUFN – **Chair SCUFN**
- .7 TSCOM – **Chair TSCOM**
- .8 SCRUM – **Chair SCRUM**
- .9 Outreach WG – **Chair Outreach WG**

3 NIPPON FOUNDATION – 30 minutes

Brief reports (5 minutes) will be received highlighting significant events, outcomes and matters requiring GGC action, full reports can be downloaded from the GGC website:

- .1 NF Programme Management Committee (NFPMC) report – **Chair NFPMC**
- .2 UNH training programme update – **Course Manager**
- .3 Nippon Foundation Ambassador program – **Chair NFPMC**
- .4 NF funds – **Chair NFPMC**
- .5 NFPMC membership – **Chair NFPMC**

4 GEBCO ENGAGEMENT WITH EXTERNAL BODIES – 60 minutes

- .1 Participation at IHO RHC meetings – **Chair/Secretary**
- .2 With which international programmes should GEBCO engage and why? – **Secretary**
ICSU WDS, IODE, POGO, IRSO, WRI, GEOS, IIOE2, Atlantos, EMODNet, etc
- .3 Who are the users of GEBCO products and datasets? Methods for discovering the users and uses of GEBCO products and datasets – **Head BODC/Director DCDB**

5 DOCUMENTS AND PUBLICATIONS – 30 minutes

- .1 Document Review Status – **Chair/Secretary**

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>GEBCO guidelines</i>	B-7	-	Under review
<i>Gazetteer</i>	B-8	-	V1.1.1
<i>GEBCO digital atlas</i>	B-9	-	08 Grid March 2015
<i>The history of GEBCO</i>	B10	-	April 2003
<i>GEBCO Cookbook</i>	B-11	Manuals and Guides 63	11 January 2016

- .2 ToRs and RoPs review – **Chair/Secretary**
- .3 Relevant IHO Resolutions – **Chair/Secretary**

3/1929 as amended (*Centralization of oceanic soundings*) - TSCOM;
 3/1932 as amended (*Collecting oceanic soundings*) - TSCOM;
 4/1932 as amended (*Metadata for oceanic soundings*) - TSCOM/SCRUM;
 2/1962 as amended (*Oceanographic observations*) - SCRUM/TSCOM; and
 8/1962 as amended (*Oceanographic information*) - SCRUM/TSCOM.

GEBCO TOMORROW**6 GEBCO FUTURE****.1 Seabed 2030 - 60 minutes**

The GGC will be appraised of outcomes and actions arising from the Workshops, seminars and events pursuing the 2030 vision, in particular:

- .1 Report on progress with new datasets – **DCDB Director and BODC**
- .2 Mapping Workshop outcomes – **Chair SCRUM**
- .3 IOC initiatives – **IOC**
- .4 Future actions and action plan – **Chair**

.2 GGC Subordinate bodies' Work Plans 2018-2019 – 120 minutes

- .1 Approve funding requests and Work Plans of Subordinate bodies, including outputs/deliverables for next period – **Chair/Secretary**

Chairs will present draft funding requests and Work Plans for their Sub-Committee or Working Group; identifying outputs, deliverables and appropriate milestones for consideration and approval of the GGC.

- .1 SCUFN – **Chair SCUFN**;
- .2 TSCOM – **Chair TSCOM**;
- .3 SCRUM – **Chair SCRUM**; and
- .4 Outreach WG – **Chair Outreach WG**

- .2 Review of GEBCO Education and Outreach strategy – **Chair Outreach WG/Chair /Secretary**

.3 GGC Work Plan 2018-2019 – 60 minutes

- .1 Approve GGC funding requests and Work Plans including outputs/deliverables for next period – **Chair/Secretary**

7 SECRETARY RESPONSIBILITIES – 15 minutes

- .1 Confirm responsibilities – **Chair**

8 GGC MEMBERSHIP – 30 minutes

- .1 Identification of individuals, whose terms are due to complete within the next two years – **Secretary**
- .2 Details of nominations to fill vacancies – **Chair/Secretary**

9 NEXT MEETING – 15 minutes

- .1 Dates and venue for GGC35 – **Secretary**
- .2 Draft Agenda for GGC35 – **Secretary**

- 10 **ANY OTHER BUSINESS** – *Chair/Secretary* – 30 minutes
- 11 **Review of Action Items from GGC34** – *Secretary* – 30 minutes
- 12 **CLOSURE OF THE MEETING** – *Chair* – 15 minutes

DRAFT