

Paper for Consideration by SCUFN

Undersea Feature Names Integrated Systems

Development of the integration of SCUFN Operations Web Services (operated by KHOA) and the GEBCO Gazetteer (operated by NOAA)

Submitted by:	IHO Secretariat (as SCUFN Secretary), KHOA and NOAA-NCEI
Executive Summary:	<p>This document reports on the outcome of the dialogue between KHOA, NOAA, and the IHO Secretariat since SCUFN31 and proposes a way forward to SCUFN members for the development of the integration of SCUFN Operations Web services (currently KHOA-Beta Gazetteer), the IHO SCUFN webpages related to the naming proposals, and the GEBCO Gazetteer hosted by NOAA/NCEI/IHO DCDB. This document results in a joint response to the SCUFN-31 Action:</p> <p><i>“KHOA to develop a transition plan (tasks - what, who, when?, including continuity of services offered to current users of the GEBCO Gazetteer, liaison with NOAA) preparing to the commissioning of the Beta-Gazetteer (target date 2021-22) and to submit it to SCUFN at the next meeting for further consideration.”</i></p> <p>In this document, the wording “GEBCO Gazetteer” is used for the GEBCO Gazetteer of Undersea Feature Names hosted by NOAA.</p>
Related Documents:	N/A
Related Projects:	N/A

Introduction / Background

1. Following the SCUFN31 meeting in October 2018 and considering the limited resources available within its Sub-Committee, the Secretariat of the GEBCO Sub Committee on Undersea Feature Names (SCUFN) decided to contract several tasks in order to improve the content of the IHO-IOC online GEBCO Gazetteer of Undersea Feature Names (the Gazetteer) and support SCUFN activities managed by the IHO Secretariat. The following tasks were contracted to the former SCUFN Secretary.

Tasks	Objectives	Outcome reported in
1	<i>Update the Gazetteer from all undersea feature naming decisions and actions taken at SCUFN-31, ensuring quality control and standardization of the documentation provided as part of the relevant proposals. Prepare a draft report as a submission document to SCUFN-32. Deadline: 30 April 2019.</i>	SCUFN32-07.2B
2	<i>Monitor the list of pending names. Prepare a draft report as a submission document to SCUFN-32. Deadline: 30 April 2019.</i>	SCUFN32-07.3B
3	<i>Monitor / upgrade the wish-list of improvements to the Gazetteer interface and test any new developments by NCEI. Monitor the relationships with NCEI to maintain the Gazetteer, as necessary and/or appropriate. Prepare a draft status report as a submission document to SCUFN-32. Deadline: 31 May 2019.</i>	SCUFN32-07.1C
4	<i>Launch, monitor and provide advice on the development by</i>	SCUFN32-07.3A

	<i>KHOA of the prototype UFN database and web-based associated services (the Beta-Gazetteer). This will include testing the Beta-Gazetteer in operational mode for a couple of undersea feature names (Action SCUFN31/209). Prepare a draft status report as a submission document to SCUFN-32. Deadline: 31 May 2019.</i>	
5	Preload in the Gazetteer all undersea feature names from the proposals that will be submitted to SCUFN-32, in advance of the meeting. In doing so, quality control and standardization of the documentation provided will be ensured. All preloaded names to be put in Edit mode. Prepare a draft status report as a submission document to SCUFN-32. Deadline: 30 June 2019 .	

2. The objective of this submission paper is to report on Task 4.

Analysis/Discussion

3. A GEBCO Gazetteer, developed at NOAA, was launched in September 2013 (www.ngdc.noaa.gov/gazetteer/). It comprises a database of those undersea feature names selected by the GEBCO SCUFN, and web services allowing to query, display, update and export features.

4. In parallel, KHOA developed new interfaces on SCUFN undersea feature terms and definitions (www.scufnterm.org), on submission of proposals to SCUFN (www.scufn.submission.org), and on review of proposals by SCUFN members (www.scufnreview.org). These three new interfaces aimed at facilitating the preparation of proposals and their review by SCUFN members.

5. In parallel also, the IHO Secretariat acting as SCUFN Secretariat maintains SCUFN webpages by uploading all naming proposals, on the restricted access IHO SCUFN webpages prior to SCUFN meetings, and then on the open access SCUFN webpages after SCUFN meetings.

5. At SCUFN 29 (2016), NOAA reported that update and maintenance of the GEBCO Gazetteer could not be guaranteed. Accordingly, Korea (KHOA/KIGAM) offered to investigate the possibility of prototyping a new gazetteer database and associated web-services, which was accepted. Korea then undertook to build a new gazetteer which, additionally, would be S-100 compliant.

6. At SCUFN 30 (2017), however, NOAA reported that they had been able to fund the maintenance of the GEBCO Gazetteer so far, even though it was insufficient to update the system and implement S-100, but that they had no budget secured for its future operation and permanent maintenance. While the GEBCO Gazetteer continued to be run by NOAA, Korea (KHOA/KIGAM) was developing a system for use in the event that the existing gazetteer would not work properly and a substitution would be needed. The newly developed system was named as Beta-Gazetteer.

7. At SCUFN 31 (2018), NOAA reported that the funding requirements for the maintenance of the GEBCO Gazetteer could eventually be met. A new programmer had been hired and the work-off of desired corrections and enhancements would begin in 2019. Korea (KHOA/KIGAM) presented a prototype of the new integrated website, which included submission, review and Beta-Gazetteer functionalities. They mentioned that this system could be completed within 3 years, and that it would be shown, in its current status, at SCUFN 32 (2019).

8. In early 2019, the IHO Secretariat (SCUFN Secretary), SCUFN Chair, NOAA and KHOA agreed on the principles that the GEBCO Gazetteer should be dedicated to the public use and that the Beta-Gazetteer should be used by SCUFN members only, and also as a backup system of the GEBCO Gazetteer.

Recommendations

It is recommended that:

9. SCUFN members take note of the integration project of the existing Undersea Feature Names web services, under development between KHOA and NOAA, as described in Annex A.

Justification and Impacts

10. The development made by KHOA will achieve the integration of web services that were developed initially as stand-alone projects. This is from their reliable, sustainable, full and seamless integration that users (proposers, SCUFN Secretary, SCUFN Members, DCDB Administrator, end-users (machine-to-machine, and general public users)) can make the best benefit of internationally recognized undersea feature names.

12. This integration project aims to prevent duplication of effort between the IHO Secretariat, KHOA and NOAA, ensure consistency, and improve efficiency of SCUFN Operations in general (uploading, reviewing, decision-making process, and implementation in the GEBCO Gazetteer database).

Action required of SCUFN

11. SCUFN is invited to:

- a. note this report
- b. approve the strategy and way forward as depicted in Annex A
- c. acknowledge that the development of this project is incremental
- d. define an objective calendar and management plan for the commissioning of the new integrated SCUFN web services (target date: 2021 to be confirmed).

Development of the integration of SCUFN Operational Services (operated by KHOA) and the GEBCO Gazetteer (operated by NOAA)

I. The Current Undersea Feature Name Workflow

At present, undersea feature name proposals are submitted directly to the IHO Secretariat. The Secretariat pre-uploads the full proposals in pdf format “as they are” to the IHO SCUFN website and also uploads some of the feature attributes and shapefiles directly to the GEBCO Gazetteer repository/database. KHOA downloads the full proposals from the IHO SCUFN website and then uploads them to the KHOA Beta Gazetteer. SCUFN members access the proposals for review directly from the KHOA Beta Gazetteer. Using their credentials, SCUFN members can also access, in EDIT mode, the GEBCO Gazetteer map viewer application to visualize the proposed features in context with other existing features. Final, approved or pending features are amended, if needed, and saved in the GEBCO Gazetteer repository/database. The [GEBCO Gazetteer](#) then provides read-only access to the public through web services (for machine-to-machine access) and a web application (for human access).

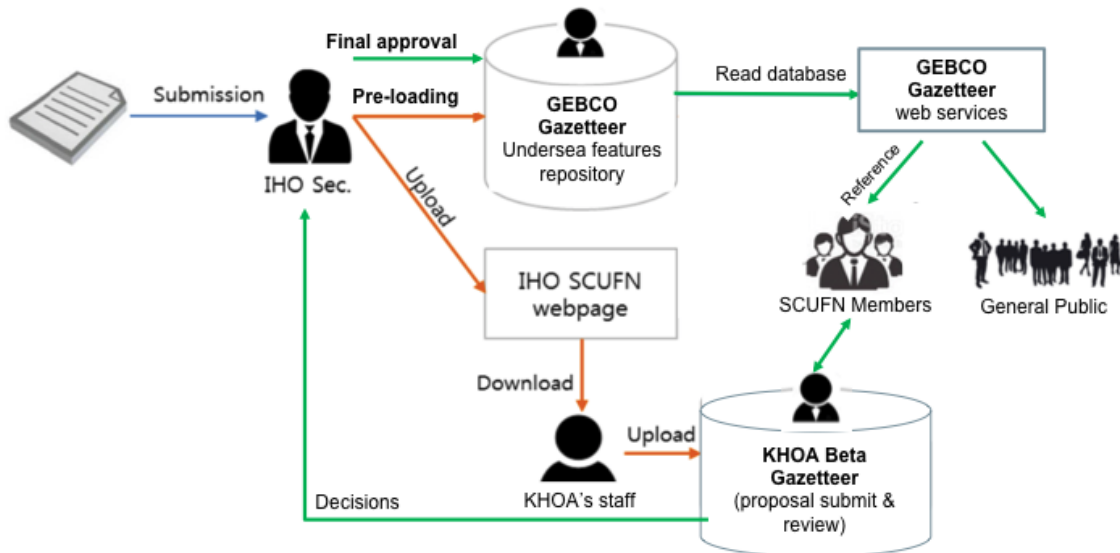


Figure 1: The current undersea feature name workflow.

II. Future Integrated KHOA Beta & GEBCO Gazetteer Proposal

In this description of an Integrated Gazetteer, undersea feature name proposals will still be submitted directly to the IHO Secretariat, as indicated in B-6. If the option discussed at GGC-35 is retained in the next Edition of B-6, proposers will also be requested/encouraged to provide their corresponding bathymetric data directly to the IHO DCDB, using the standard interface/web services/portal provided by NOAA/IHO DCDB. The full proposals, including feature attributes and shapefiles, would be uploaded to the KHOA Beta-Gazetteer. SCUFN members would access the proposal for review (edit/approval process) directly from the KHOA Beta Gazetteer (and from the KHOA Beta Gazetteer only). In the Integrated Gazetteer, the KHOA Beta Gazetteer will ingest the GEBCO Gazetteer map services allowing SCUFN members to visualize the proposed features in context with other existing features.

In the Integrated Gazetteer, a new data transfer mechanism would exist between the IHO and KHOA. Quarterly (or yearly), approved feature changes (new features, deletions, modifications to existing features) and potentially bathymetric data, would be securely transmitted to the IHO DCDB Administrator from the KHOA Beta Gazetteer. The DCDB Administrator would then update the GEBCO Gazetteer database with only current, approved features. The KHOA Beta-Gazetteer would be

responsible for storing any history of modified/deleted features and adapt the database model to be S-100 compatible if requested in the future. NOAA/DCDB would maintain ownership over the authoritative database of SCUFN names [and any associated bathymetric data provided].

The NOAA/DCDB-hosted GEBSCO Gazetteer database would continue to support standards-compliant web services (for machine-to-machine access) and a web application (for human access) to query, display, and export features and bathymetry grids from the database. These web services and web application would be available to the public and also be limited to read-only access to the SCUFN-approved features.

The IHO SCUFN website would be amended after every SCUFN meeting.

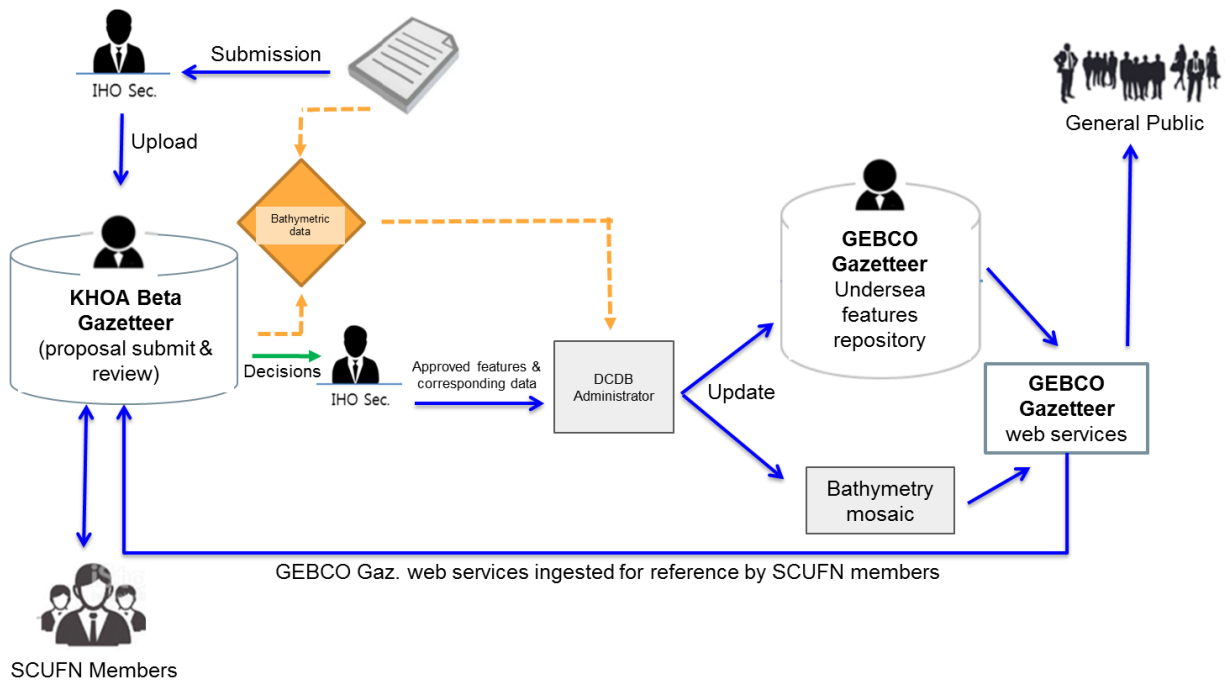


Figure 2: Prior to the annual meeting, all new proposals would be accessible by SCUFN Members via the KHOA Beta-Gazetteer only. The KHOA Beta-Gazetteer (to be renamed the **SCUFN Operations Web services**) would deliver approved datasets (features and corresponding data) to a buffer zone (DCDB Administrator), before the authoritative GEBSCO Gazetteer of Undersea Feature Names repository is updated. The transfer mechanism will be determined at a later date. It is also noted that the SCUFN Operations Web services is a client of the GEBSCO Gazetteer Web services.

III. SCUFN Operations Web Services

Operated by KHOA

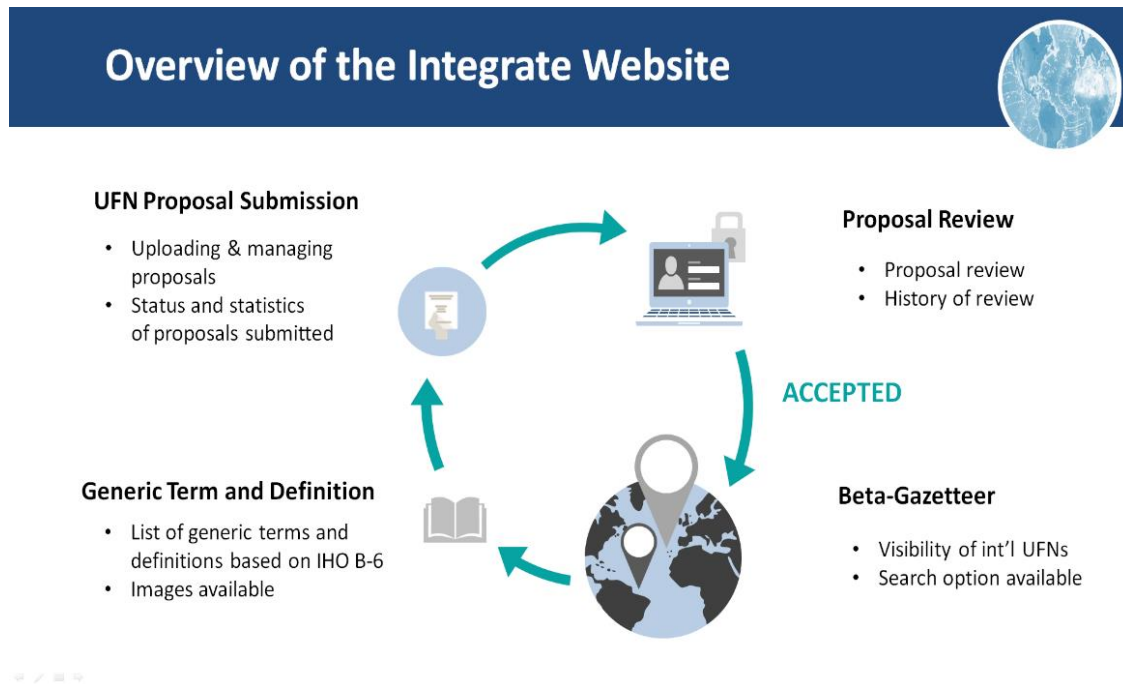
1. Development Purpose

There are four main purposes of Beta-Gazetteer development. The first is to make an interface system that delivers the accepted proposals that have been reviewed by SCUFN members based on currently operating SCUFN Review website to the GEBSCO Gazetteer in real time, thereby significantly reducing unnecessary time and labour. Secondly, to develop a system that can be easily understood by the general public through the GEBSCO Gazetteer, by providing images of undersea features corresponding to generic names. Third, in order to eliminate the distorted phenomenon, undersea features in the polar region is designed to use the polar coordinates. So that it is possible to express an accurate undersea feature as much as possible. Finally, we will make an integrated system for generic term and definition, proposal submission, review, and gazetteer data exchange to the GEBSCO Gazetteer to

enhance the utilization of undersea feature names in general.

The primary goal of the development made by KHOA is to achieve the integration of web services that were developed initially as stand-alone projects. This is from their reliable, sustainable, full and seamless integration that users (proposers, SCUFN Secretary, SCUFN Members, DCDB Administrator, end-users (machine-to-machine, and general public users)) can make the best benefit of internationally recognized undersea feature names.

2. System Overview



There are four menus for undersea feature registration, review, and management.

2-1. Generic term and Definition

- Providing the information of undersea feature terms and definitions, and related images based on B-6

2-2. UFN Proposal Submission

- Submit proposals by uploading files or directly entering them on the website
- Viewing the information of proposal submission status and statistics
- Management for proposal deletion and modification

2-3. UFN Proposal Review

- Review the proposals and exchange opinions between SCUFN members
- Viewing the history of reviewed proposals
- Interface for automatic transferring the accepted proposals to the Beta-Gazetteer

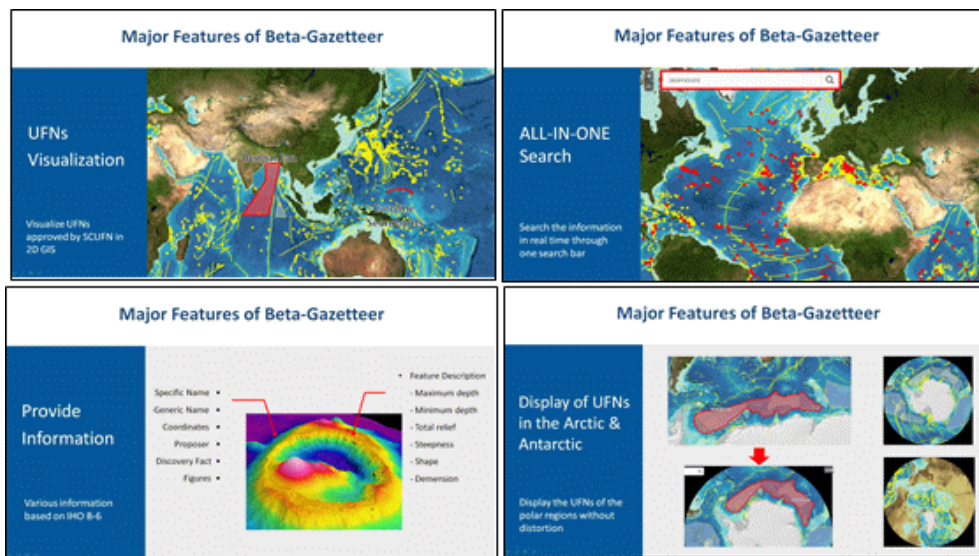
2-4. Beta-Gazetteer

- Visualization of final accepted proposals on GIS including images and meta data for undersea features
- Download the accepted proposals if you want

- Develop system to facilitate the integration of future tools such as S-100 to increase efficiency for undersea features and names

3. Current major features of Beta-Gazetteer

- Visualization of undersea feature names on 2D GIS
- Support for all-in-one search
- Providing meta information and images of undersea feature names registered in the Gazetteer
- Providing undersea feature information in the Arctic and the Antarctic regions using polar coordinates



4. Future plan (2019 – 2021)

- Implementation search results to downloadable files in a variety of formats (e.g., txt, csv, excel etc)
- Reinforced search functions such as the year of registration, and add more detail search capability within search results
- S-100 based structure design with Undersea Feature Project Team (UNPT)
- GML file support for linkage with S-100
- Periodic build-up of feedbacks and management systems to ensure efficient use of Gazetteer by end users and expert groups
- Dual system operation in case of system interruption and failure