

Undersea Feature Name Project Team And Detection of Undersea Features

SCUFN-36,
6 - 10 November 2023,
Wollongong, Australia

Content

- Objectives and members of the Undersea Feature Name Project Team (UFNPT)
- Detection of Undersea Features and Ocean Decade
- Proposed work plan for the UFNPT



Objectives and Members of UFNPT

- a. Consider the **development of an S-100 Product Specification for Undersea Feature Names** and register SCUFN terms in the IHO GI Registry.
- b. **Establish procedures** for the management and registration of undersea feature names approved by SCUFN and the management of proposals sent to SCUFN.
- c. **Provide recommendations** to SCUFN on managing undersea feature names and using registers to record the proposals made to SCUFN and the names approved by the Subcommittee.

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Develop S-100 Product Specifications for UFN



Habitats and species associated with Canadian seamounts. (Image credit: Fisheries and Oceans Canada, S. Du Preez, C. Du Preez, Ocean Exploration Trust, the Northeast Pacific Seamount Expedition partners, Pacific Wild)

- 2017-2020, two proposals sent to SCUFN for HSSC
- 2021, the development of a Standard for UF was included in an Ocean Decade proposal

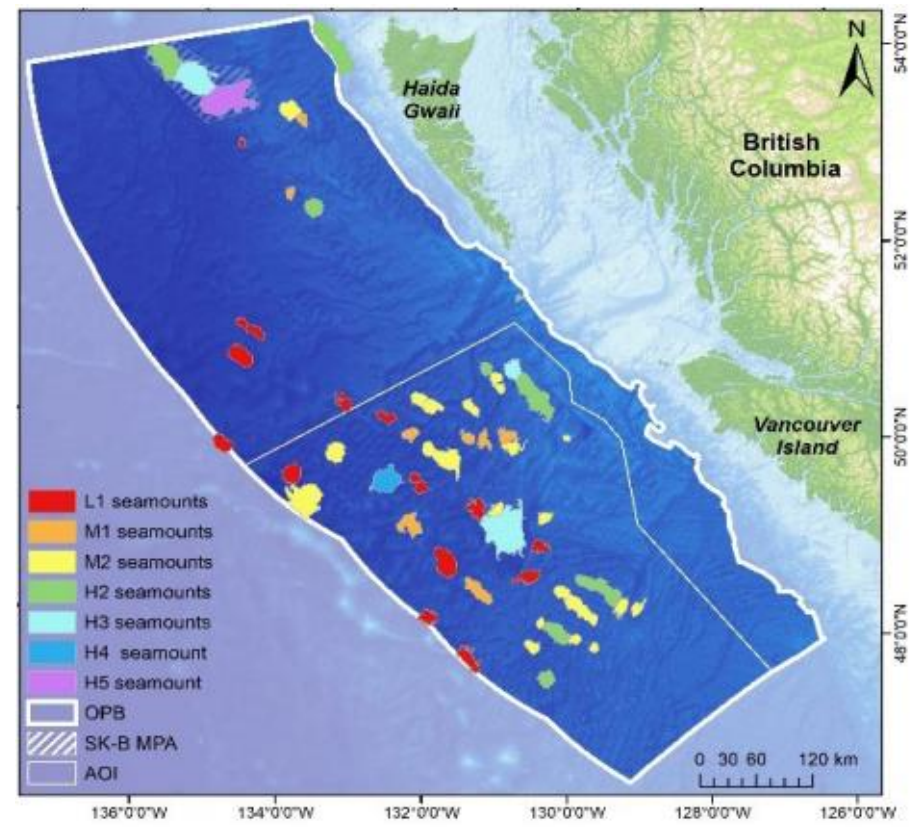
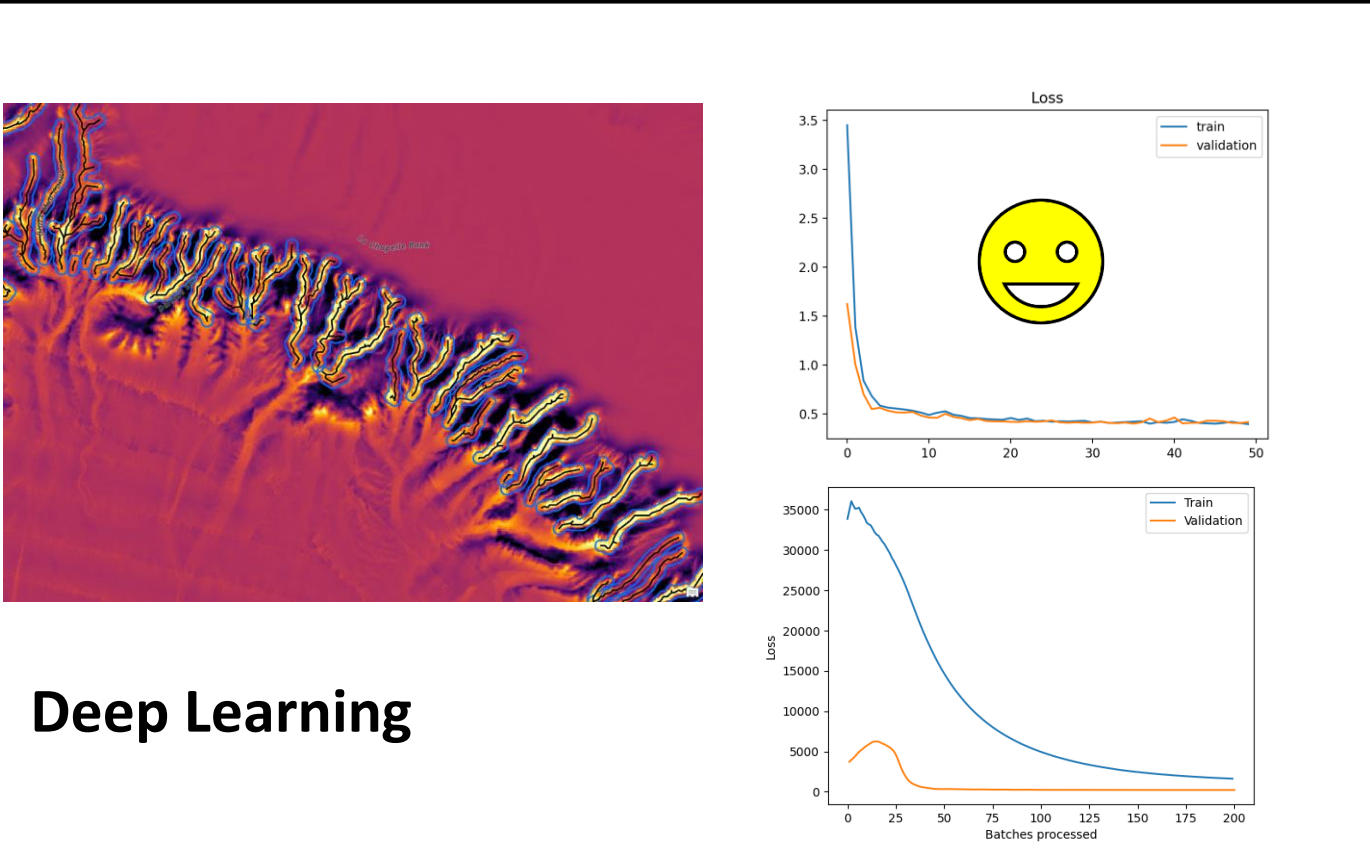


Figure 1. The Area of Interest (AOI) in the Offshore Pacific Bioregion (OPB). Also shown: 62 seamounts coloured by class and SGaan Kinghlas-Bowie Marine Protected Area.

Detection of Undersea Features and Ocean Decade

2017 – 2023, analysis of GEBCO data with different degrees of success

- Using definitions from B6 and the Cookbook
- Manual, semiautomated, and machine learning
- **A Repository of Analysis Methods for the Detection of UFs**, was endorsed in September 2022, as an Ocean Decade project.



Deep Learning

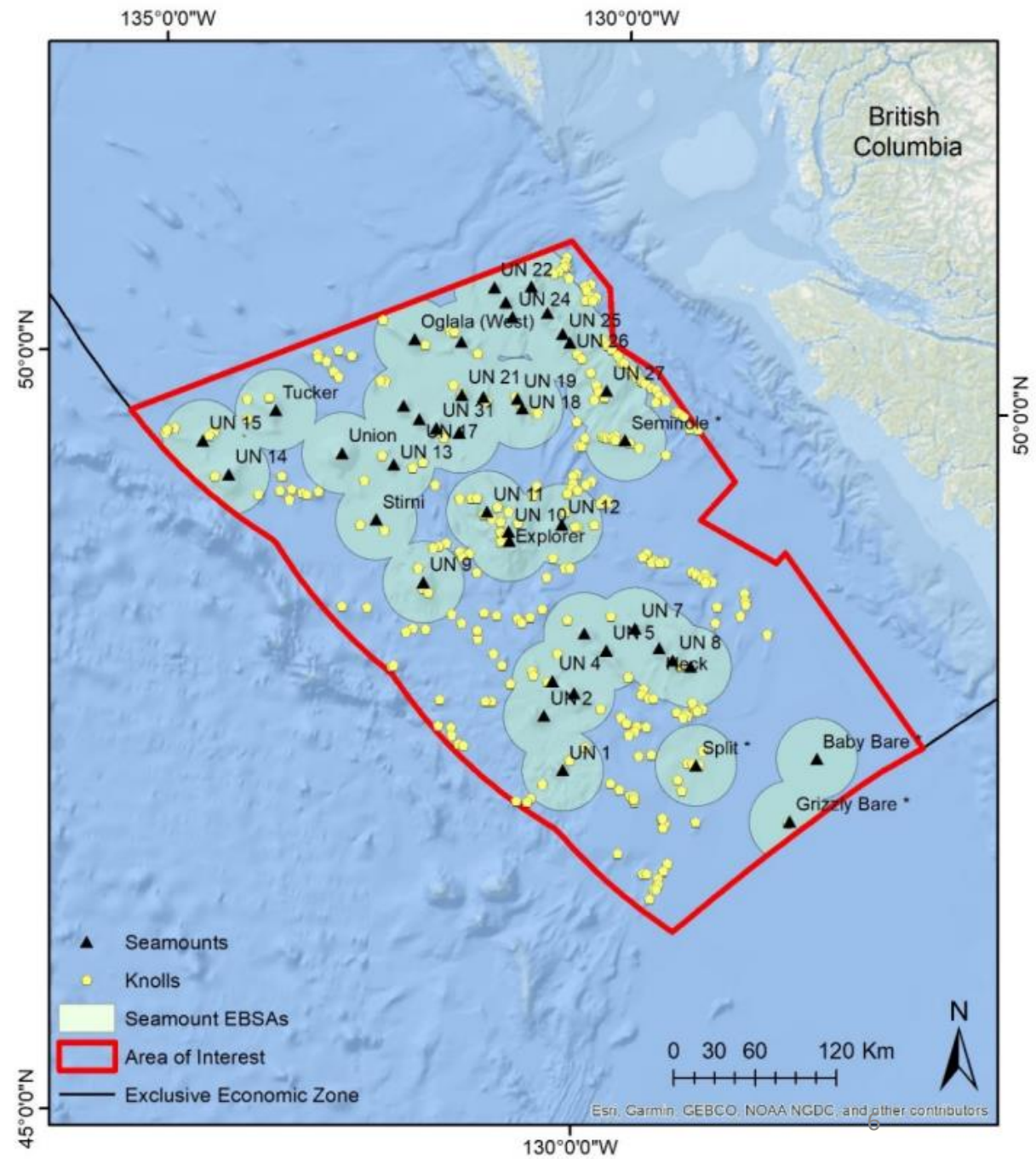
The figure displays the results of a deep learning model for detecting undersea features. On the left is a bathymetry map of a seafloor ridge system, with yellow and orange contours highlighting detected features. On the right are two loss graphs. The top graph, titled 'Loss', shows training (blue) and validation (orange) loss over 50 batches, with a yellow smiley face indicating successful convergence. The bottom graph shows training and validation loss over 200 batches, with training loss (blue) decreasing from approximately 35,000 to 2,000 and validation loss (orange) remaining near zero.

Batches processed	Train Loss	Validation Loss
0	35000	4000
25	25000	6000
50	15000	1000
100	5000	500
150	2000	500
200	1000	500

Unnamed Undersea Features

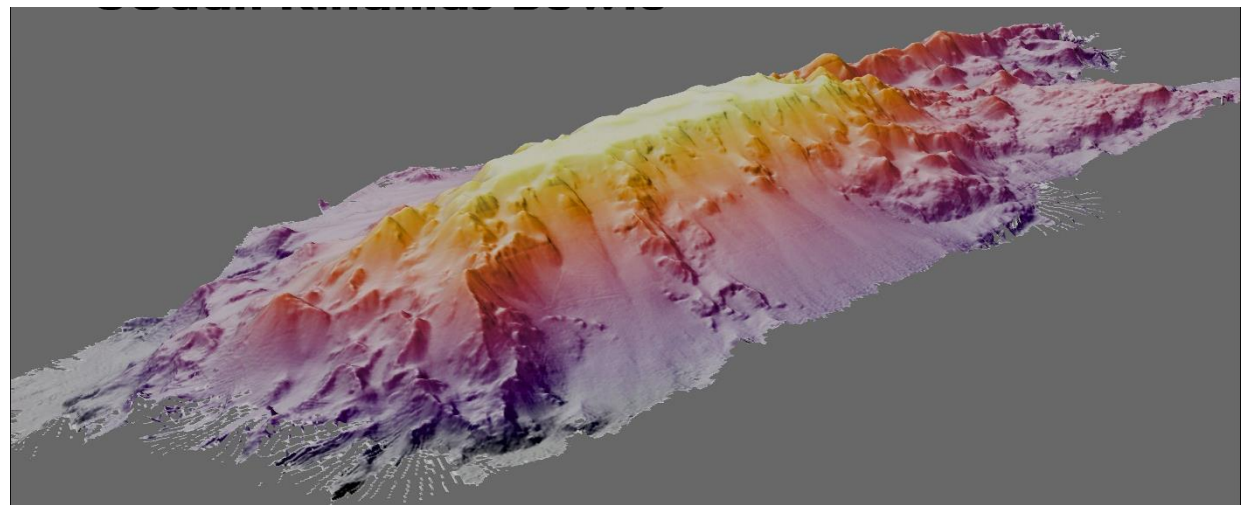
... we can detect them, faster than we can name them

- Send data to the Data center Digital Bathymetry (DCDB)
- Detect through spatial analysis of DCDB
- Populate a database of numbered or alphanumeric, unnamed features
- Proposed for Ocean Decade



Detection of Undersea Features and Ocean Decade

Project Goals	Status
Repository of methods of detection	not started
Data base of unnamed undersea features, engage indigenous communities in the official naming	ongoing
Develop standards for Ufs	ongoing



New Objectives for the UFNPT

- a. Develop S-100 Product Specifications for UF and register SCUFN terms in the IHO GI registry in collaboration (or merger) with the Horizontal Resolution Project Team.
- b. Design a public repository for detection methods of undersea features.
- c. Explore managing a database/catalogue of undersea features detected from the DCDB that qualify for official naming but have yet to be named.

Task	Due date
Update objectives, as per the direction given by SCUFN	2023
Work with Horizontal Resolution Project Team	ongoing
Collaborate with Ocean Decade project of Detection of Undersea Features	ongoing
Update the UFNPT website to show all documents shared to date	October 2024
Create update for SCUFN 37 and plan for 2025	September 2024
Select new Chair for the UFNPT	SCUFN 37

Recommendations and Actions for SCUFN36

Recommendations	Actions
That the UFNPT are given new objectives, aligned with Ocean Decade	Reassessment of the current objectives of the UFNPT
That SCUFN continues to partner with the Ocean Decade project of Detection of Undersea Features	That SCUFN Chair signs the Project Plan as a partner once the Draft Project Plan for the Detection of Undersea Features is final
That SCUFN assigns the UFNPT to comment on the Draft Project Plan for the Detection of Undersea Features in Annex 2	Assign the UFNPT to work on behalf of SCUFN in the Ocean Decade project of Detection of Undersea Features
That the request to HSSC for a number to develop the Specification for Undersea Features, is postponed until after they release S100 for navigation	Approval of the Work Plan for 2023-2024
	Any other actions that SCUFN will find helpful

Thank you / Merci
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