



GEOHAB

Marine Geological and Biological Habitat Mapping

International Symposium 2023

May 8-12 th - Reunion Island

PROGRAM



KONGSBERG



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French National Research Institute - Sustainable Development



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SEAS-OI



07:45 REGISTRATION & WELCOME COFFEE

- 8:30 Symposium opening - **Rodolphe Devillers** and **Hayley Cawthra** (Co-chairs)
 8:50 Local welcome - **Karine Pothin** (Director, Marine Reserve of La Réunion)
 9:00 Sponsor presentation - **Kongsberg Discovery**
 9:10 **Dan Ierodiaconou** (Keynote) - Marine and Coastal monitoring and applications using citizen science


10:00 Comfort break
10:10 - Session 1: Continental shelf and deep sea habitats - Chair: Mary Young

- 10:10 Using machine learning for predictive mapping of ferromanganese crusts (Fe-Mn) in the oceans
Tim Le Bas
 10:22 Ferromanganese concretion bottoms - microscale geodiversity hotspots in the Baltic Sea?
Aarno T. Kotilainen
 10:34 Deep-sea Mining: Spatiotemporal seafloor and plume monitoring of in-situ trials in Clarion-Cliperton-Zone using hydroacoustic and optic methods - **Iason-Zois Gazis**
 10:46 Preliminary development of standard reference areas for multibeam echo-sounder backscatter
Iain Parnum

10:58 Coffee break
11:28 - Session 2: Coastal and nearshore habitats - Chair: Craig Brown

- 11:28 Mapping the coastal and submarine geomorphology of Norfolk Island - **Alysha M. Johnson** 
 10:40 Spatial distribution of coral communities in the northern part of the great reef of Toliara, Madagascar
Yves Amoros Mitondrasoa 
 11:52 Ecological Coastal Units: A global ecological classification of shoreline characteristics
Keith VanGraafeiland
 12:04 Towards a global shallow water habitat mapping of French overseas territories in Indian ocean
Jean Benoît Nicet
 12:16 Seafloor morphological features of tidal channels in the shallow coastal Lagoon of Venice
 Lagoon, Italy - **Daphnie S. Galvez**
 12:22 Flushed away – nutrient load distribution related to supratidal spring-fed living microbialite ecosystems - **Carla Dodd**

12:34 Lunch
**13:45 - Session 3: New approaches, technologies and methods in habitat mapping
 Chair: Alex Bastos**

- 13:45 Trait-based approaches to biological habitat mapping: a case study of functional biodiversity in the Bay of Fundy, Canada - **Aaron Judah** 
 13:57 Incorporating environmental DNA for improved benthic habitat mapping - **Rylan Command**
 14:09 Towards better backscatter data products by multibeam echosounder systems for improved seafloor mapping: An update from the Backscatter Working Group (BSWG)
Alexandre Schimel (Craig Brown)
 14:15 Developing high-resolution point cloud and 3D modeling for the application of marine growth monitoring on ecological concrete infrastructure - **Yaeli Rosenberg (Steven Le Bars)**
 14:21 Geostatistical mapping of seabed sediment type and benthic communities: Review of common challenges and solutions - **Pierre Goovaerts**
 14:33 Combining drone and underwater camera photogrammetry to map coral reef complexity at centimeter resolution over large extents - **Isabel Urbina-Barreto**

14:45 Comfort break

14:55 - **Session 4: New approaches, technologies and methods in habitat mapping** **Chair: Peter Harris**

- 14:55 Using AUVs for sediment, habitat and object mapping – prospects and challenges - **Terje Thorsnes**
- 15:07 Seafloor morphology mapping in the Gulf of St Lawrence, Canada, using machine learning approaches - **Emily Sklar**
- 15:19 Mapping kelp forests using aerial drones and machine learning: a case study from Norway
Hege Gundersen
- 15:25 Multivariate mapping of seabed sediment properties in the Bay of Fundy using artificial neural networks - **Benjamin Misiuk**
- 15:31 Sen2TimeFusion: a remote-sensing image processing chain to improve deeper seafloor feature extraction using Sentinel-2 time-series imagery - **Pascal Mouquet**
- 15:43 Multispectral backscatter applied to seabed classification: a case of study examining the acoustic response of rhodolith beds - **Pedro Menandro**

15:55 Coffee break

16:25 - **Session 5: Posters - Chair: Guy Cochrane**

- 16:25 **1** - The submerged karst seascape off the Gargano promontory and their biota (Adriatic Sea, Italy)
Lorenzo Angeletti (Federica Foglini)
- 16:26 **2** - Spatial predictive modelling of coastal habitats of Norway - **Marco Brustolin**
- 16:27 **3** - Mapping of benthic foraminifera: an application to soft bottom benthic habitat (Laizhou Bay, China)
Sandra Donnici
- 16:28 **4** - The development and implementation of a methodology for the 3D monitoring of steep coastal cliffs
Todd Doran (Dan Ierodiaconou)
- 16:29 **5** - A pragmatic at-sea solution to comply with the multisource multibeam backscatter conundrum
Giacomo Montereale Gavazzi
- 16:30 **6** - A multiple-model machine learning approach with increased interpretability for spatial prediction of polymetallic nodules using hydroacoustic and optic data - **Iason-Zois Gazis**
- 16:31 **7** - A possible Paleolithic stonewall in the southwestern Baltic Sea - **Jacob Geersen**
- 16:32 **8** - Enigmatic seafloor depressions around the globe – one process to create them all? - **Jacob Geersen**
- 16:33 **9** - Multibeam bathymetry mapping in False Bay, Cape Peninsula, South Africa- **Ben Henderson**
- 16:34 **10** - Geomorphology and slope analysis of the Tasmantid Seamount Chain - **Alysha Johnson**
- 16:35 **11** - Study on integrated management of marine environment and ecosystems around Saemangeum in South Korea - **Kyungmin Kim**
- 16:36 **12** - Seabed acoustic mapping revealing a never-seen-before habitat of circular depression at a marine protected area in Brazil - **Daniel Leite (Alex Bastos)**
- 16:37 **13** - Comparing manual and semi-automated methods for deducing geomorphometric characteristics of miniature biogenic reefs in a shallow land-locked gulf of the Aegean Sea - **Vasiliki Lioupa (Riccardo Arosio)**
- 16:38 **14** - Seamounts habitat mapping and characterization of faunal communities using a non-intrusive and multi-scale approach with an AUV on Mediterranean Sea (Corsica, France) **Julien Marticorena**
- 16:39 **15** - A two-part seabed geomorphology classification scheme: Part 2 – a geomorphic classification framework and glossary - **Rachel Nanson (Riccardo Arosio)**
- 16:40 **16** - Cold water coral habitat monitoring with a multisensor platform - **Daniel Langenkämper (Tim Nattkemper)**
- 16:41 **17** - Two decades after: Reoccupancy of cold-water coral habitats of the southwestern Adriatic Sea
Marco Taviani (Giorgio Castellan)
- 16:42 **18** - A new GIS tool to classify Mediterranean benthic habitats - **Mariacristina Prampolini**
- 16:43 **19** - Seascape Mapping: Defining levels of detailed information - **Valeria Quaresma**
- 16:44 **20** - Comparing microplastic pollution in marine reserves and urbanised areas - **Marta Ribó (Sally Watson)**
- 16:45 **21** - Drone photogrammetry and autonomous surface water prospectors to investigate the morphology of super-shallow seabed: the buried marshlands of the central Venice lagoon exhumed by ship wake erosion
Gianmarco Scarpa

- 16:46 **22** - Seamless opto-acoustic mapping of coastal waters - a case study from the Baltic Sea with seagrass mapping - **Jens Schneider von Deimling**
- 16:47 **23** - Mapping seagrass and rockweed habitats using UAV hyperspectral imaging and machine learning - **Martin Skjelvareid (Kasper Hancke)**
- 16:48 **24** - A new standard in seamless on-offshore geological mapping for South Africa - **Wilhelm van Zyl**
- 16:49 **25** - Utilizing benthic habitat mapping and biological surveys to determine the physical status and ecological function of artificial structures offshore California, USA - **Chelsea Williams**
- 16:50 **26** - Mapping seafloor erosion induced by ship wakes in in the lagoon of Venice: integrating remote sensing (drone/satellite) and bathymetric data from autonomous shallow-water vehicles and hi-res multibeam echo sounders - **Luca Zaggia**
- 16:51 **27** - Using underwater photogrammetry for mapping and monitoring seafloor habitats: case studies from Western Australia - **Iain Parnum**
- 17:00 **Poster viewing & discussion session (with cocktail) - Bourbon Room**

18:30 End of day 1

Wednesday 10 May

- 8:15 Announcements - **Rodolphe Devillers** and **Hayley Cawthra** (Co-chairs)
- 8:30 Sponsor presentation - **Esri**
- 8:40 **Rochelle Wigley** (Keynote) - An international capacity-development ocean mapping training program: successes and lessons learnt (video-conference)
- 09:30 - **Session 6: Science communication and cultural heritage - Chair: Margaret Dolan**
- 09:30 Science communication in MAREANO – what are we doing to get our message across – and are we succeeding? - **Lilja Rún Bjarnadóttir**
- 09:42 Marine habitat mapping and archaeological investigation of the submerged Paleo-Suwannee River, eastern Gulf of Mexico, United States - **Arturo Chequer**

09:54 Comfort break

10:05 - **Session 7: Adaptation to a changing climate and environment** **Chair: Margaret Dolan**

- 10:05 Where is the carbon? Spatially mapping carbon on the seafloor in the Eastern Shore Islands
Catherine Brennan 🎓
- 10:17 Mapping shifting species patterns in a changing climate using a hierarchical approach - **Emmeline Broad**
- 10:29 Linking coral bleaching patterns with hydrodynamics, oxygen availability and microbiome variability in coral reefs - **Yusuf El-Khaled**
- 10:35 Production of an updated coastal resource atlas and Marine Spatial Planning tools for the British Virgin Islands - **James Asa Strong**
- 10:41 Mapping Ogak/Greenland cod (*Gadus ogac*) habitats in nearshore Nunatsiavut waters using community identified fishing locations - **Zachary MacMillan-Kenny**
- 10:53 Ocean acidification of deep-sea habitats – impact of the rising CCD depth in the global ocean
Peter Harris

11:05 Coffee break

11:30 - **Session 8: Marine Spatial Planning and applications of GIS - Chair: Federica Foglini**

- 11:30 Highlighting deep-sea geodiversity as a precursor to fully informed ecosystem-based management: examples from the Norwegian Sea - **Margaret Dolan**
- 11:42 Mapping fish beta-diversity across marine protected areas off Victoria, Australia - **Mary Young**
- 11:54 Predictive modeling of seafloor surficial gravel distribution within a windfarm concession area in Belgian waters - **Giacomo Montereale Gavazzi**
- 12:06 Resolution of Vulnerable Marine Ecosystem Maps of the SW Atlantic deep sea - what do we miss if we cannot use shipborne bathymetry data and what are the consequences for Marine Spatial Planning? - **Tabitha Pearman**
- 12:18 Spatialisation of coral reef conservation issues in Réunion Island - **Léo Broudic**
- 12:24 Marine base maps in the Norwegian coastal zone – contributing to a more sustainable co-existence **Barbro Taraldset Haugland**

12:36 Lunch

13:39 - **Session 9: New approaches, technologies and methods in habitat mapping - Chair: Gary Greene**

- 13:39 Drones for mapping benthic habitats and the SeaBee infrastructure - **Kasper Hancke**
- 13:51 Benthic Habitat Mapping in Soariake MPA, Southwestern Madagascar - **John Israel Bunyan** 🇺🇸
- 14:03 Assessing habitat biodiversity with BIIGLE – new tools for online semantic image and video annotation - **Daniel Langenkämper**
- 14:15 Interferometric Synthetic Aperture Sonar for centimeter scale mapping and imaging of seafloor geology on the Scotian Shelf, Canada - **Caroline Gini**
- 14:27 Deciding where to sample - The ‘science’ behind selecting abyssal sampling sites using multifaceted mapping support - **Philippe VandenBossche**
- 14:33 Towards High Spatial Resolution Map of Grain Size Distribution Along the Israeli Continental Shelf Based on Multibeam Backscatter Data - **Asaf Giladi**
- 14:45 Multi-scale mapping of changes in tropical reefs - **Matteo Contini** 🇮🇹

14:57 Comfort break

15:06 - **Session 10: Continental shelf and deep sea habitats - Chair: Tim Le Bas**

- 15:06 A glance at the seafloor with multibeam bathymetry; within and outside the uThukela Banks MPA region in South Africa - **Thamsanqa Wanda** 🇿🇦
- 15:18 ROV-based mapping of bryozoan-sponge-dominated habitat at lower mesophotic depths occurring in a southwestern Australian submarine canyon (Bremer Marine Park) - **Giorgio Castellani**
- 15:24 Whales cause millions of seafloor pits - **Jens Schneider von Deimling**
- 15:30 Surficial geological and biological observations near an upper continental slope cold-seep off Saglek Bank, Northern Labrador, Canada - **Evan Edinger** (video-conference)
- 15:42 Quantitative morphologic investigation of thousands of seafloor pockmarks offshore Vancouver Island - **Jacob Geersen**

15:54 Coffee break

16:21 - **Session 11: New approaches, technologies and methods in habitat mapping - Chair: Aarno T. Kotilainen**

- 16:21 A review of three decades of benthic habitat mapping - **Craig Brown**
- 16:33 Deep-sea benthic classification using structure from motion 3D point cloud and machine learning classifiers - **Salem Morsy**
- 16:45 Automatic detection of fluid emission echoes in water column acoustic data using Deep Learning approaches - **Tyméa Perret**

- 16:57 High resolution mapping before and after seafloor macrolitter removal by an innovative robotic solution in the Venice lagoon, Italy - **Fantina Madricardo**
- 17:09 A simple geo-acoustic inversion method based on the normalized grain size - **Gorm Wendelboe**
- 17:15 Earth Observation for Ecosystem Accounting: Fine scale, high resolution coastal habitat mapping in localised areas, an African perspective- **Erika Brown**
- 17:21 Modeling the local distribution of hydrothermal vent assemblages and megafauna from the surrounding habitat in relation to topographic variables and fluid influence - **Julien Marticorena**

17:33 End of day 2

Thursday 11 May

- 8:45 Announcements - **Rodolphe Devillers** and **Hayley Cawthra** (Co-chairs)
- 9:00 Sponsor presentation - **R2Sonic**
- 9:10 **Lucie Penin** (Keynote) - Using space when there is no time: What lava flows of variable ages tell us about the structure and dynamics of coral assemblages in eastern Réunion Island

10:00 - **Session 12: Time-series monitoring of seafloor habitats** - Chair: **Vincent Lecours**

- 10:00 Photogrammetry temporal monitoring in the deep sea reveals the fine-scale variability in hydrothermal vent assemblages - **Loïc Van Audenhaege**
- 10:12 Restoring a buried reef: using benthic habitat mapping to design, build, and monitor an artificial reef - **Jonathan Williams**

10:24 - **Session 13: Continental shelf and deep sea habitats** - Chair: **Vincent Lecours**

- 10:24 Habitat Suitability Model predicts potential solitary scleractinian coral occurrence in southwestern Australian submarine canyons - **Fabio DiGiovanna** 🎓
- 10:36 Seabed seeps: Oases in an (often) muddy world - **Valérie Bellec**
- 10:48 The NOMANS_TIF map: Ireland's first complete shallow seabed geomorphology map
Riccardo Arosio

11:00 Coffee break

11:30 - **Session 14: Human influenced environments and habitats** - Chair: **Fantina Madricardo**

- 11:30 Mapping macro-litter in deep-sea canyons: the southwestern Australia case - **Federica Foglini**
- 11:42 The footprint of anchoring on the seafloor - **Sally Watson**
- 11:54 Towards improved spatio-temporal estimation of boating pressure to benthic habitats with Sentinel-2 satellite imagery - **Joni Koskikala**
- 12:00 Utilizing high-resolution seafloor maps to assess habitat recovery in active bottom-contact fishing zones: A case study of the Banquereau Bank Arctic Surfclam fishery - **Claire Haar**
- 12:12 Mapping macro- and microliter distribution in the Venice coastal area (Italy) - **Susanna Mesghez (Vanessa Moschino)**
- 12:18 Salmon Foraging in an Urban Sea - Habitat Mapping for Fisheries Sustainability - **Gary Greene**
- 12:30 Developing designated anchorages to improve anchor management for ocean-going vessels: a role for habitat mapping and vessel tracking data - **Tim Ingleton**

12:42 Lunch

13:45 - **GeoHab 2024 presentation - Peter Harris**

14:00 - **Session 15: Coastal and nearshore habitats - Chair: Alexandre Sneessens**

14:00 Updating bathymetry improves ecological modeling of seagrass communities in Tampa Bay
Bea Lynn Combs-Hintze 

14:12 Where has the Suwannee Reef gone? Mapping historically significant subtidal oyster habitats in Florida at multiple scales - **Vincent Lecours**

14:24 Palaeo-estuarine seafloor features create biodiversity hotspots and offer insights into coasts past and future - **Fiona MacKay**

14:30 - **Session 16: Continental shelf and deep sea habitats - Chair: Alexandre Sneessens**

14:30 Fine-scale mapping of coral reef communities in Mayotte: an essential tool for marine park management - **Priscilla Dupont**

14:42 Amazon Reef Habitats: What do we already know? - **Alex Bastos**

14:48 A multi-disciplinary approach to assessing reef-scale drivers of biotic communities on Blood Reef (Durban, South Africa) - **Kaylee Smit (Hayley Cawthra)**

14:54 Large polygonal patterns of western Rio Grande Rise - **Maria Lisniewski**

15:00 Coffee break

15:30 - **Session 17: Continental shelf and deep sea habitats - Chair: Dan Ierodiaconou**

15:30 Mapping arctic and Antarctic seas with towed camera systems - **Lilian Boehringer** 

15:42 WIO-Benth - mapping unknown habitats and communities of the western Indian Ocean - **Sean Fennessy**

15:54 Mapping submarine vertical walls (cliffs) around volcanic Islands along the Mid-Atlantic Ridge using structure from motion - **David Price**

16:06 Spatial analysis of underwater comet structures along the Israeli shelf reveals trends in the sediment transport system - **Mor Kanari**

16:18 - **Symposium Closing**

16:30 - **GeoHab 2023 AGM**

18:00 End of day 3

GEOHAB 2023 - General schedule

Monday May 8th		Tuesday May 9th		Wednesday May 10th		Thursday May 11th		Friday May 12th		
7:45 8:45	Registration	7:45	Registration	8:15	Sponsor presentation Keynote talk	8:45	Sponsor presentation Keynote talk	6:15	Field Trip (See instructions on the website)	
8:45 9:15	WORKSHOP "3D underwater mapping of habitats and biological communities" Introduction	8:30 10:00	Symposium opening Sponsor presentation Keynote talk	9:30 9:54	Session 6: Science communication and cultural heritage	10:00 10:24	Session 12: Time-series monitoring of seafloor habitats			
9:15 10:30	Presentations - Survey design	10:10 10:58	Session 1: Continental shelf and deep sea habitats	10:05 11:05	Session 7: Adaptation to a changing climate and environment	10:24 11:00	Session 13: Continental shelf and deep sea habitats			
10:30	Coffee Break	10:58	Coffee Break	11:05	Coffee Break	11:00	Coffee Break			
10:45 13:00	Hands on exercises	11:28 12:34	Session 2: Coastal and nearshore habitats	11:30 12:36	Session 8: Marine Spatial Planning and applications of GIS	11:30 12:42	Session 14: Human influenced environments and habitats			
13:00 14:00	Lunch	12:34 13:45	Lunch	12:36 13:39	Lunch	12:42 13:45	Lunch			
14:00 15:00	Case studies - Shallow and aerial	13:45 14:45	Session 3: New approaches, technologies and methods in habitat mapping	13:39 14:57	Session 9: New approaches, technologies and methods in habitat mapping	13:45 14:30	GeoHab 2025 Session 15: Coastal and nearshore habitats			
15:00	Coffee Break	14:55 15:55	Session 4: New approaches, technologies and methods in habitat mapping	15:06 15:54	Session 10: Continental shelf and deep sea habitats	14:30 15:00	Session 16: Continental shelf and deep sea habitats			
15:15 16:00	Case studies - Deep Sea	15:55	Coffee Break	15:54	Coffee Break	15:00	Coffee Break			
16:00 17:00	Panel discussion			16:21 17:33	Session 11: New approaches, technologies and methods in habitat mapping	15:30 16:18	Session 17: Continental shelf and deep sea habitats			
17:00 18:00	Registration	16:25 18:30	Session 5: Posters	19:00	Conference Dinner (shuttle bus)	16:18 18:00	Symposium closing GeoHab 2023 AGM			
18:30	Ice Breaker							18:30		
										Return to the hotel

Note



GEOHAB

Marine Geological and Biological Habitat Mapping

<https://geohab.org/geohab-2023/>



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