# “Atlantic Seabed Mapping”

## 10th Anniversary MOU IENWG

**May 5th 2022**


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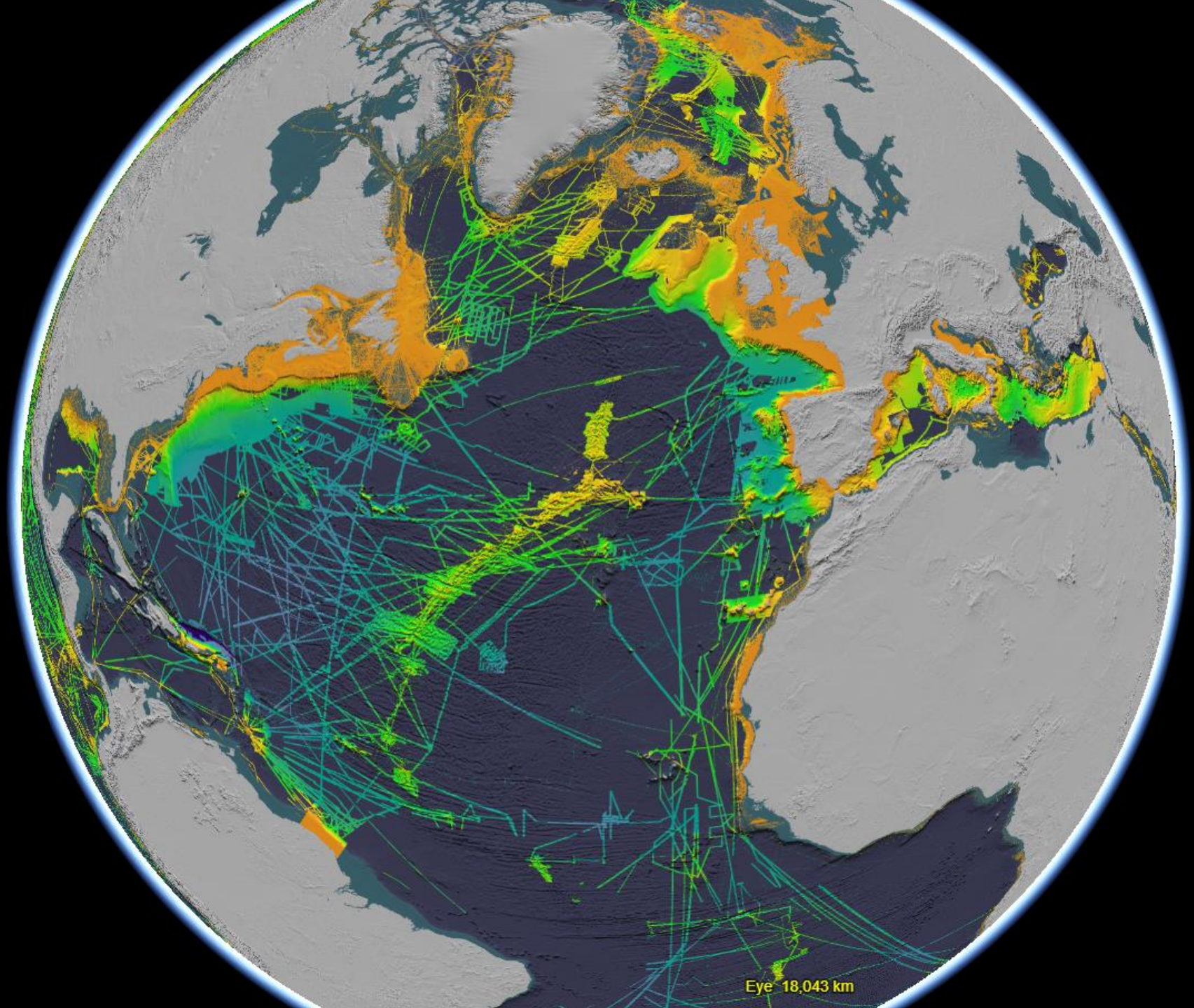
**Marine Institute INFOMAR Joint Programme Manager (with Sean Cullen, GSI)**

**Atlantic Seabed Mapping International Working Group (EU Co-Chair)**




This project has received funding from the European Union’s Horizon 2020 research and innovation programme under Grant Agreement No 862428 (MISSION ATLANTIC). This output reflects only the author’s view and the Research Executive Agency (REA) cannot be held responsible for any use that may be made of the information contained therein.

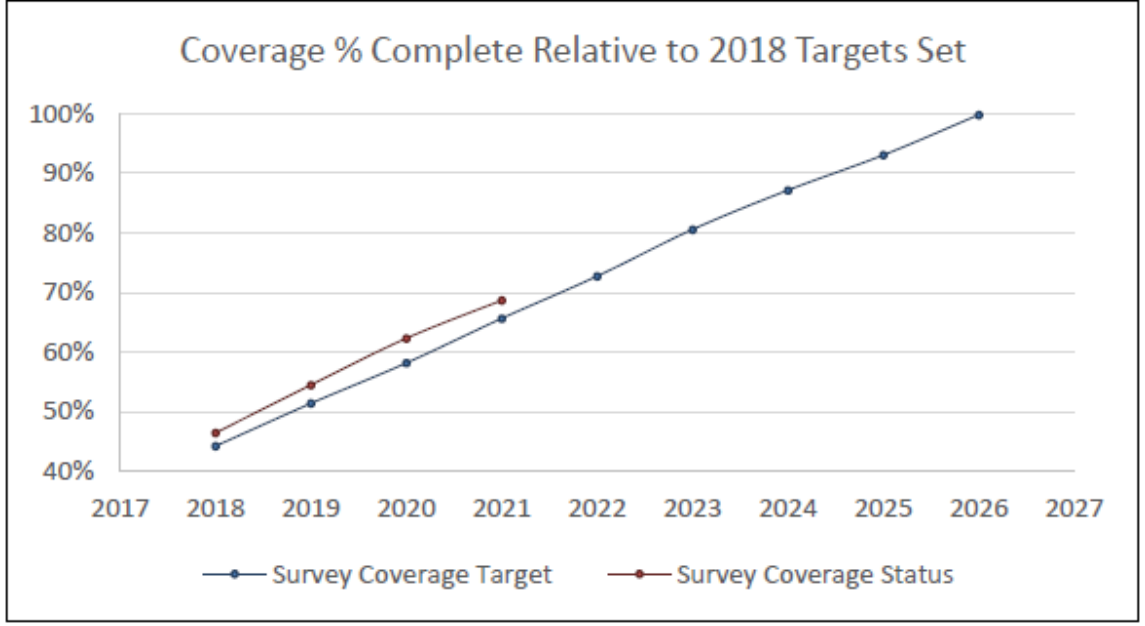




BathyGlobe

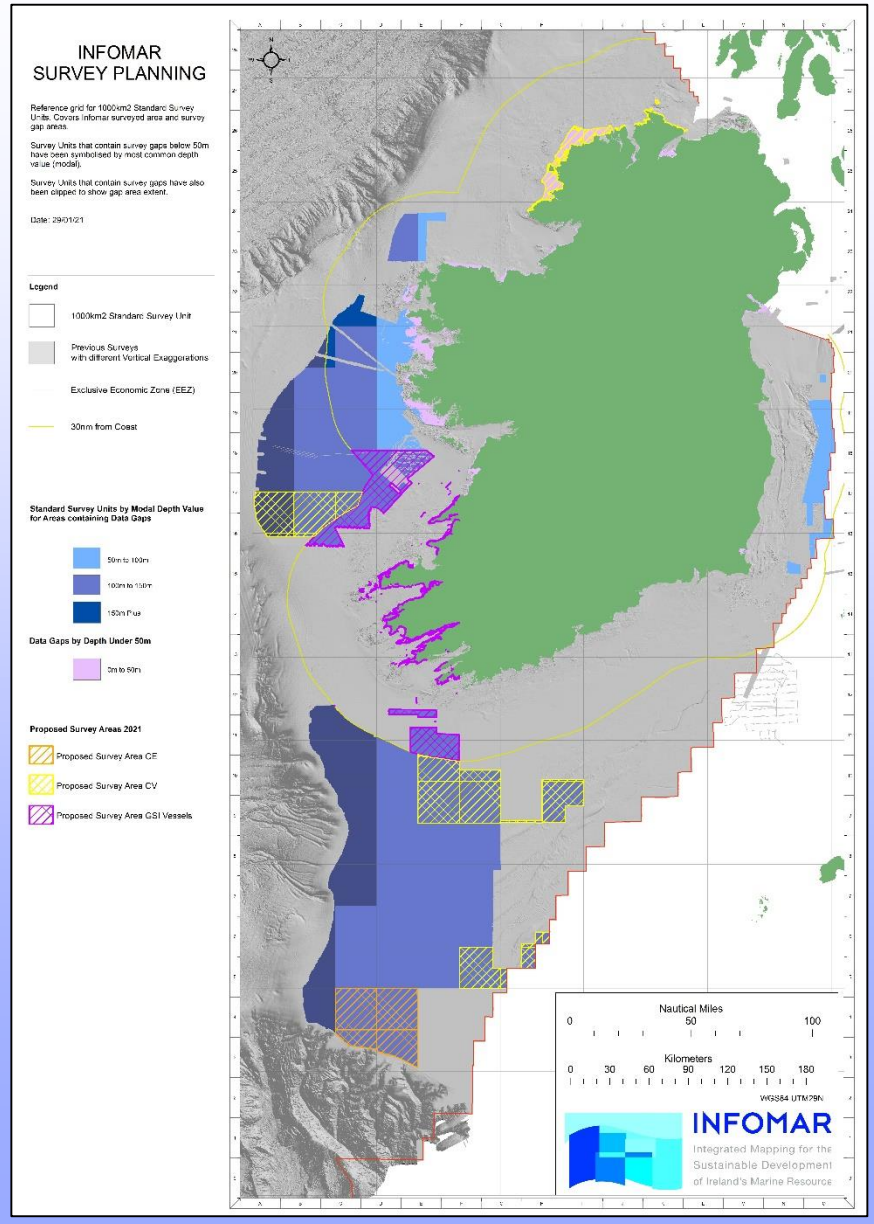
Learn about mapping the oceans and the Seabed 2030 project

# Survey Planning / Tracking






| | MI & GSI 2018 Set Annual Targets | MI & GSI Net Coverage Delivered | MI & GSI Cumulative Coverage Delivered | Total Coverage Target | % Targeted | % Complete |
|---|---|---|---|---|---|---|
| | km² | km² | km² | km² | % | % |
| **2016** | | 5,152 | 41,163 | | n/a | 33% |
| **2017** | | 5,322 | 46,485 | | n/a | 37% |
| **2018** | 8,871 | 11,627 | 58,111 | 55,356 | 44% | 46% |
| **2019** | 8,950 | 10,072 | 68,183 | 64,306 | 51% | 55% |
| **2020** | 8,461 | 9,757 | 77,940 | 72,767 | 58% | 62% |
| **2021** | 9,340 | 7,949 | 85,889 | 82,107 | 66% | 69% |
| **2022** | 8,857 | 0 | | 90,964 | 73% | |
| **2023** | 9,782 | 0 | | 100,746 | 81% | |
| **2024** | 8,230 | 0 | | 108,976 | 87% | |
| **2025** | 7,363 | 0 | | 116,339 | 93% | |
| **2026** | 8,433 | 0 | | 124,772 | 100% | |





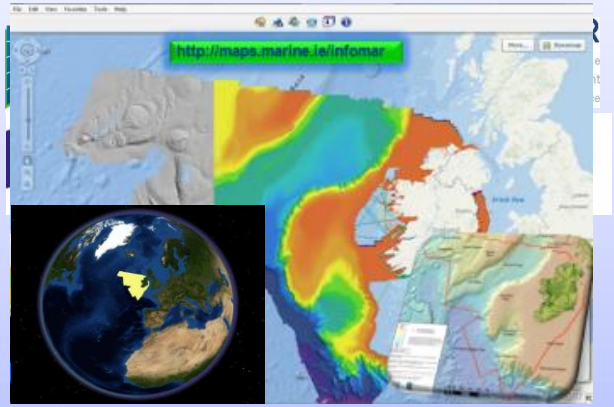
ASPIRE
THE NIPPON FOUNDATION-GEBCO
SEABED 2030

# Mapping Offshore Ireland to the Atlantic?

- EU Co-Chair of Atlantic Seabed Mapping International WG
- Seabed Mapping WP Co-Lead on H2020 Mission Atlantic
- Joint Programme Manager of INFOMAR

AORA
ATLANTIC OCEAN RESEARCH ALLIANCE
Atlantic Seabed Mapping Roadmap

ASMIWG Roadmap May 2020
Google "Atlantic Roadmap AORA"




Ireland: INSS-INFOMAR, '99-'26

ASMIWG setup Brussels Feb 2015,
2nd meeting Cork July 2015


1st AORA Transect, Aug 1-8th 2015
1st remote logged transect 2017

AORA
ATLANTIC OCEAN RESEARCH ALLIANCE

IMR Workshop Norway Nov 8-9th 2017
- "Mapping the Atlantic Seabed"
- Mission Atlantic Partnership

Galway Statement, May 24th 2013

Dublin Castle, Dec 2nd 2014

Forum for Future Ocean Floor Mapping

General Bathymetric Chart of the Oceans
GEBCO Forum
IHO

Monaco, June 2016. Panel 2: Use of bathymetry: The coastal perspective


Roadmap for Future Ocean Floor Mapping, June 2017




**ASMIWG Roadmap May 2020, Google "Atlantic Roadmap AORA"**

# OUTCOMES

To date, the *Seabed Mapping Group* have estimated the survey effort and cost to map the North Atlantic seabed beyond territorial waters. Between 2015 and 2020 we have collectively surveyed over **1 Million Km² of Unmapped Atlantic Seabed** through a combination of opportunistic Atlantic transects, research cruises, and dedicated mapping surveys.


**seabed mapping initiatives, including joint research, transects of opportunity, industry engagement & partnership and dedicated mapping surveys. Conferences and workshops have been used**

**Wölfl**, Anne-Cathrin & Jencks, Jennifer & Johnston, Gordon & Varner, Jesse & Devey, Colin. (2017). Identifying Deep-Sea Target Areas for a Pilot Atlantic Seabed Mapping Project using GIS-Techniques. Journal of Ocean Technology. 12. 28-42.

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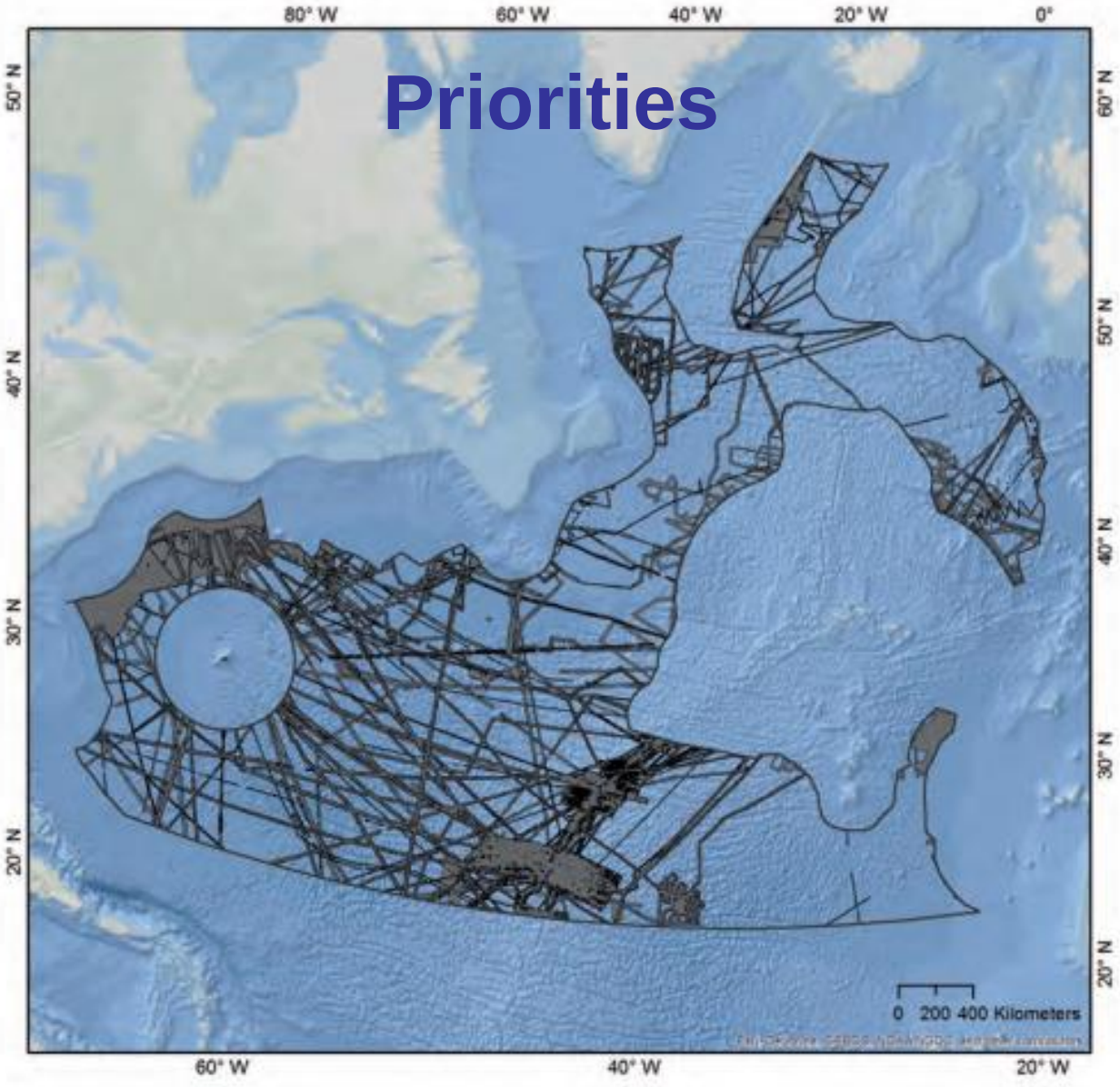
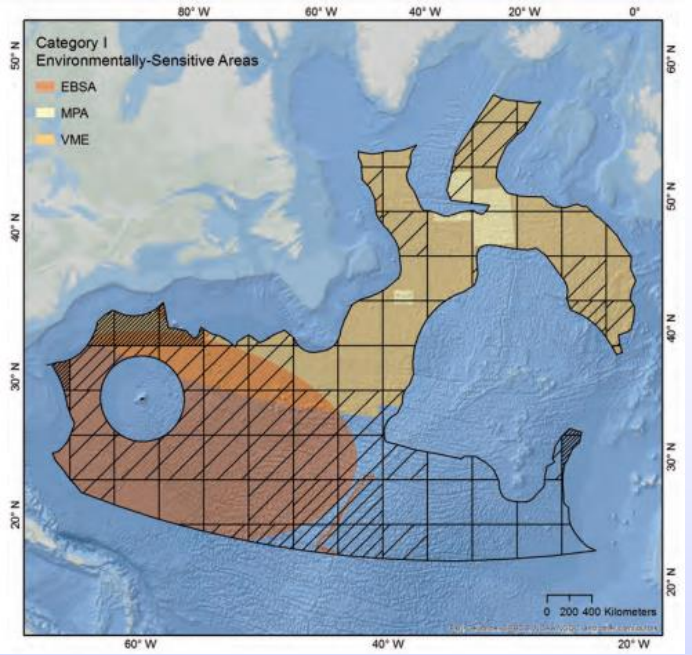
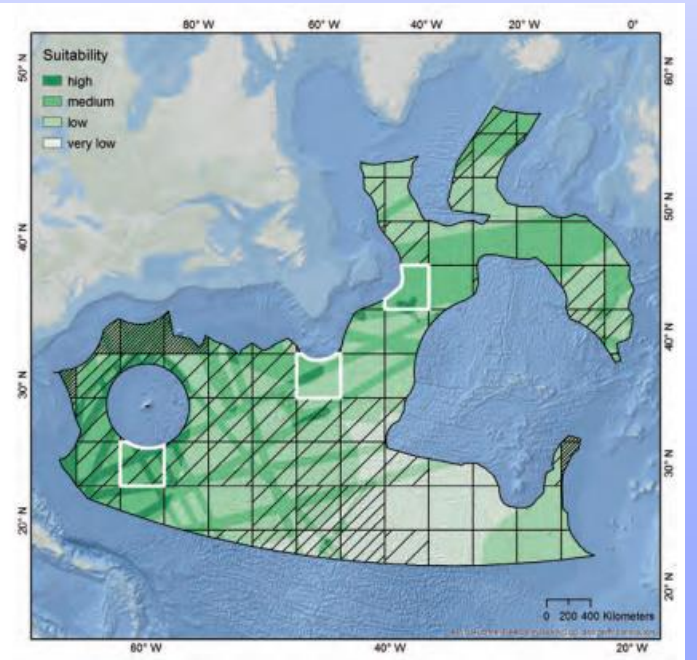
# Priorities



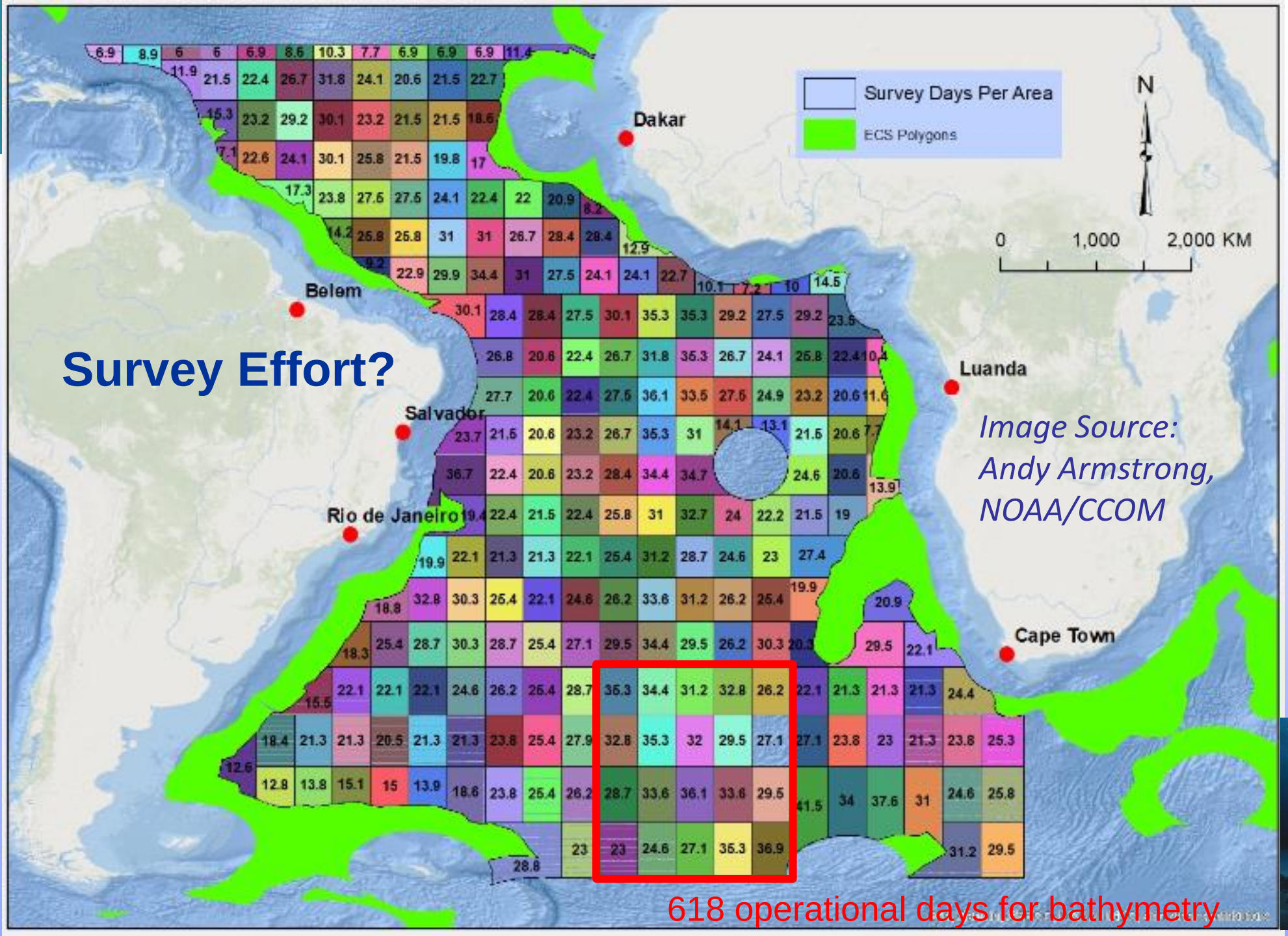

Map showing multibeam data in the study area from the Global Multi-resolution Topography Synthesis (GMRT), National Centers for Environmental Information (NCEI), EMODnet and from the Spanish and Portuguese National Archives (modified after Wölfl et al. (2017)).




Map of the study area showing the GIS parameter layers of category I - Environmentally-sensitive Areas (modified after Wölfl et al. (2017)).




Result map showing the suitability of the study area and the three selected target areas (modified after Wölfl et al. (2017)).




## Survey Effort

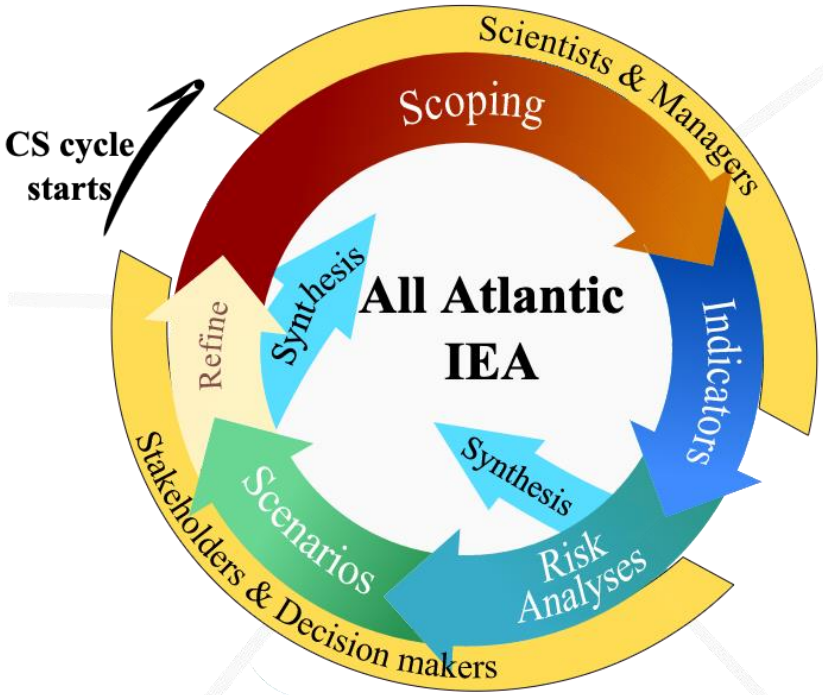
- 400 x 400 km
- Cell Depth
- Line spacing
- Line km / cell
- Ops effort

*Image Source:*
*Andy Armstrong,*
*NOAA/CCOM*

THE NIPPON FOUNDATION-GEBCO SEABED 2030

# *WP4: Benthic Mapping: ecosystem, resources and pressures*

- Mission Atlantic 2020 - 2025
- 11.5 M€ budget
- 34 Partners
- 38 deliverables and 43 milestones




## Objectives

*(for All Atlantic Case & Study Areas):*

- **Bathymetry and benthic mapping framework**
- Characterise **seafloor and benthic communities**
- ID Environmental **drivers** and anthropogenic **pressures**
- Assess **impact on distribution** of benthic communities & VMEs
- **Model their distribution (present & future** environmental regimes

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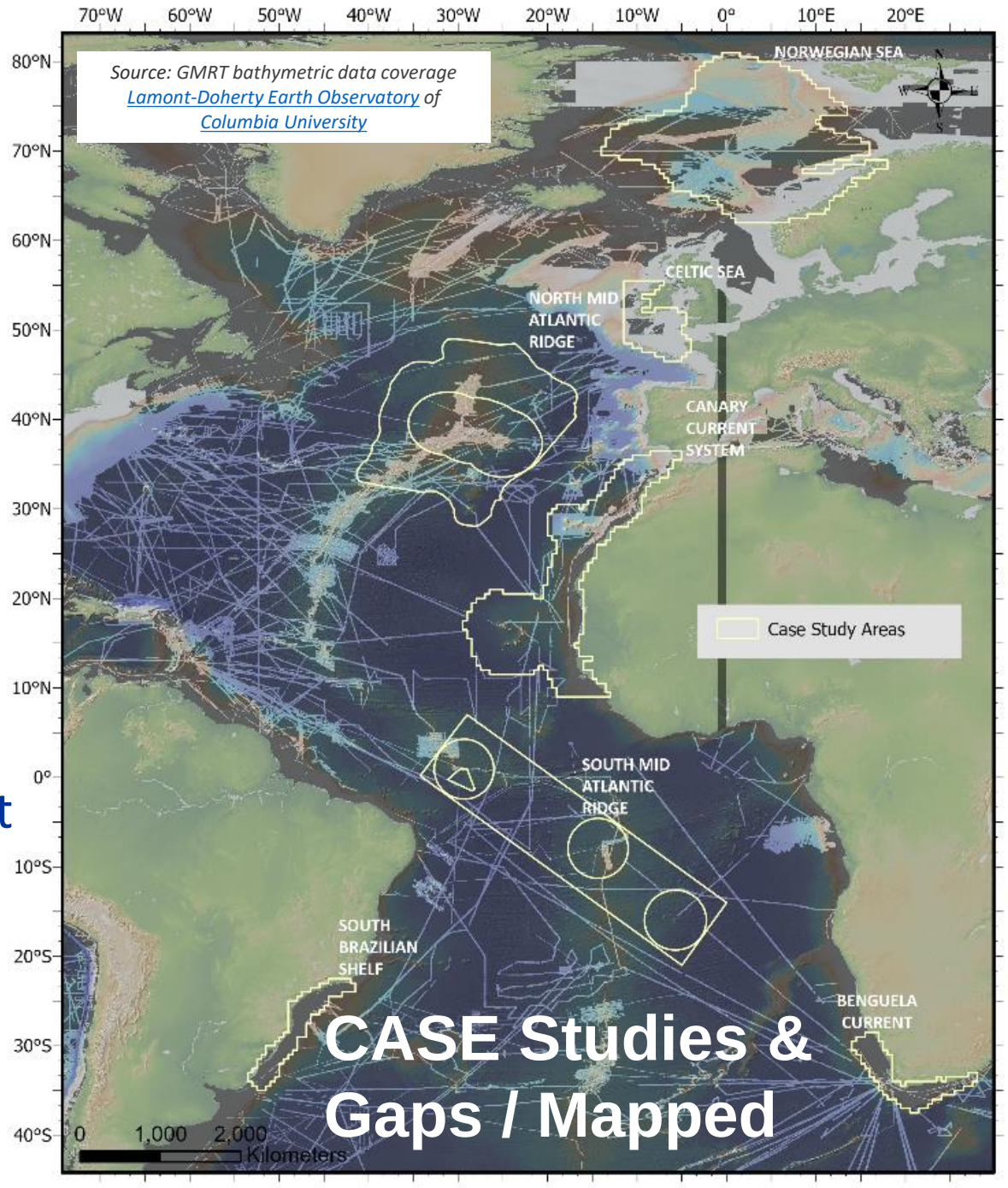
# Bathymetry AND Benthic Atlantic Mapping Framework Considerations

## Planning Phase

- Policy Drivers
- Legal Constraints
- Socioeconomics
- Priorities
- Methodologies
- Standards
- Infrastructure
- Partnerships
- Effort & Plans

## Delivery Phase

- Funding
- R&I Support
- Outreach
- Progress Tracking
- Data Sharing
- Capacity Build
- Societal Engagement

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IHO
International Hydrographic Organization

United Nations Educational, Scientific and Cultural Organization

Intergovernmental Oceanographic Commission

UN environment

WCMC

Convention on Biological Diversity

General Bathymetric Chart of the Oceans
GEBCO

THE NIPPON FOUNDATION-GEBCO
SEABED 2030

Food and Agriculture Organization of the United Nations

OSPAR COMMISSION
Protecting and conserving the North-East Atlantic and its resources

ICES
CIEM

ALL-ATLANTIC OCEAN RESEARCH ALLIANCE
Creating an Atlantic Ocean Community by Implementing the Galway and Belém Statements

CHALLENGER 150

ONE OCEAN HUB

COLUMBIA CLIMATE SCHOOL
LAMONT-DOHERTY EARTH OBSERVATORY

GMRT

IODE International Oceanographic Data and Information Exchange

DOSI
DEEP-OCEAN STEWARDSHIP INITIATIVE

GOBI
Global Ocean Biodiversity Initiative

EMODnet
BATHYMETRY
Understanding the topography of the European seas

EMODnet

GBIF
Global Biodiversity Information Facility

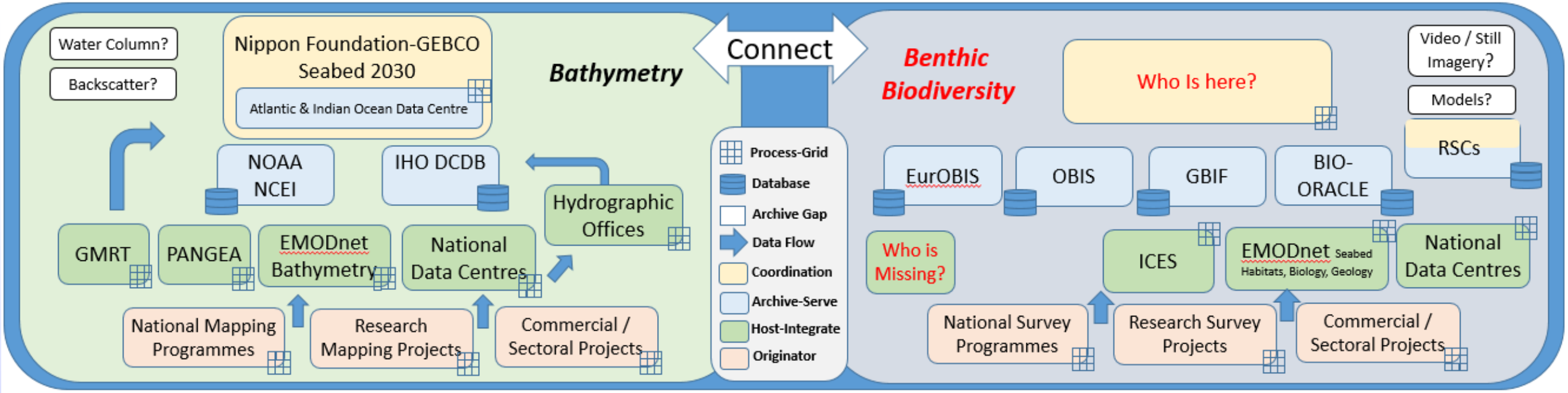
OBIS
OCEAN BIOGEOGRAPHIC INFORMATION SYSTEM

NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

NOAA NATIONAL CENTERS FOR ENVIRONMENTAL INFORMATION
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION


ASPIRE

iAtlantic
INTEGRATED ASSESSMENT OF ATLANTIC MARINE ECOSYSTEMS IN SPACE AND TIME




Modified from Wölfl et al 2019 related to Bathymetry architecture, to incorporate Benthic Biodiversity architecture

# *Bathymetry Mapping for Biodiversity Management*

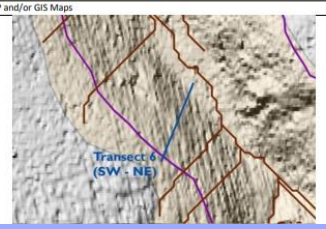
DIVE SUMMARY

| DIVE # | 454 | TRANSECT # | 6 |
|---|---|---|---|

| | Start | End |
|---|---|---|
| Date & Time | 05/07/2017 20:08:18 | 05/07/2017 22:07:03 |
| Latitude/ Longitude | 53.98744117, -13.65765133 | 53.974319, -13.66757333 |
| Depth | 1848.81m | 1489.81m |
| Images | IMG_3398-IMG-3464.JPG | |
| Samples | n/a | |

| | |
|---|---|
| Location | C12 |
| Target Features | Canyon, Escarpment |
| Depth Range | 1489.55m-1848.81m (av 1676.274m) |

Maps of Dive
OFOP BMP and/or GIS Maps




...tative of major biotopes, species, and sediments encountered throughout the transect)

SeaRover **Evolution** – Lifecycle of a large scale offshore reef habitat mapping project

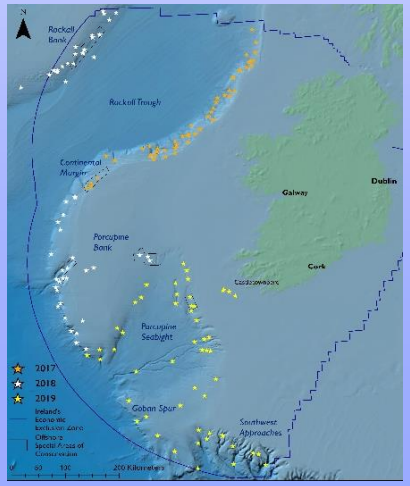
***Annex 1 habitats & protected under EU Habitats Directive***

Ireland's EU Structural and Investment Funds Programmes 2014 - 2020
Co-funded by the Irish Government and the European Union

An Roinn Talmhaíochta, Bia agus Mara
Department of Agriculture, Food and the Marine

EUROPEAN UNION
This measure is part-financed by the European Maritime and Fisheries Fund

EMFF Operational Programme 2014-2020
Marine Biodiversity Scheme
Sustainable Development of Fisheries
Fostering the Implementation of the Integrated Marine Policy







# Key Messages

- Systematic bathymetry and benthic habitat mapping is optimal.
- Partnership approach to High Seas Mapping is needed
  - Simplify pathway & define objective for new stakeholder engagement
- Multidisciplinary approach only pathway (transport / biodiversity / resources / energy)
- Business Case standardisation recommended
  - Assessing **socio-economics** / cost benefit
  - Engaging **stakeholders** – by challenge / theme rather than project
  - Address **capacity build** requirements
  - Common **messaging** – global challenge rather than project/sectoral interest