INTEGRATED MARINE DEBRIS OBSERVING SYSTEM

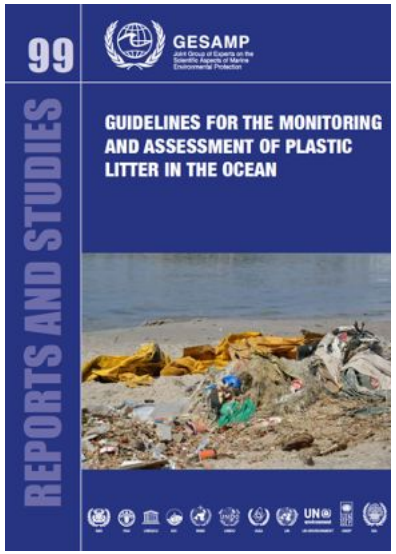
From vision to implementation

Artur Palacz (IOCCP/IOPAN), Audrey Hasson (GEO Blue Planet/MOi)

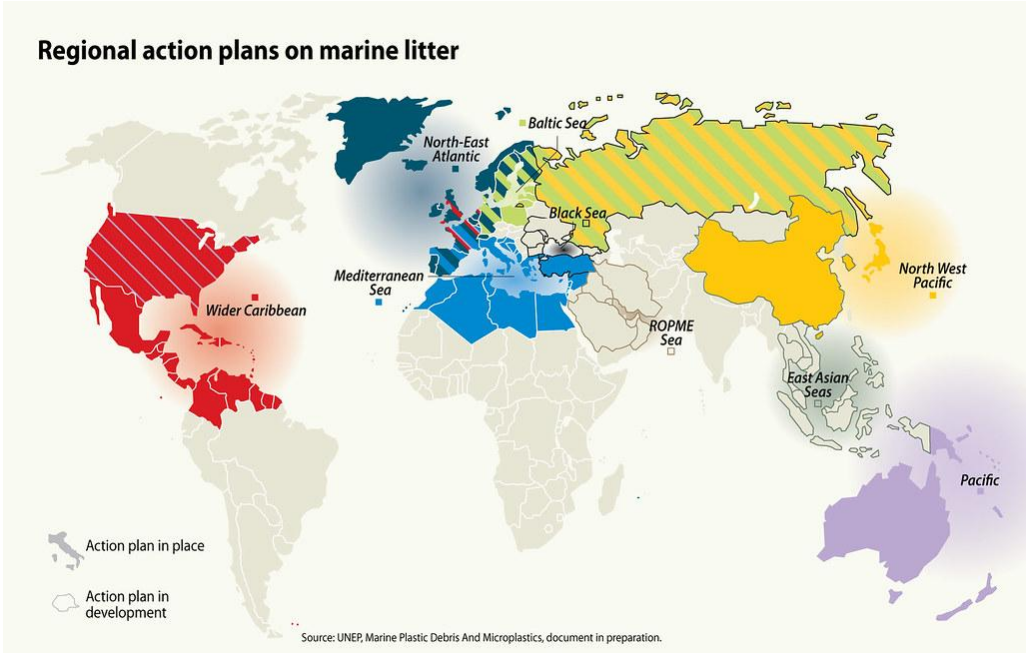
EUROqCHARM Final Conference
12 October 2023, Brussels,Belgium

Why do we need an Integrated Marine Debris Observing System (IMDOS)?

Monitoring of marine litter initiated to various degrees through Action Plans of the Regional Seas Programme and other countries



Ongoing efforts to harmonise and standardise monitoring methods regionally and globally

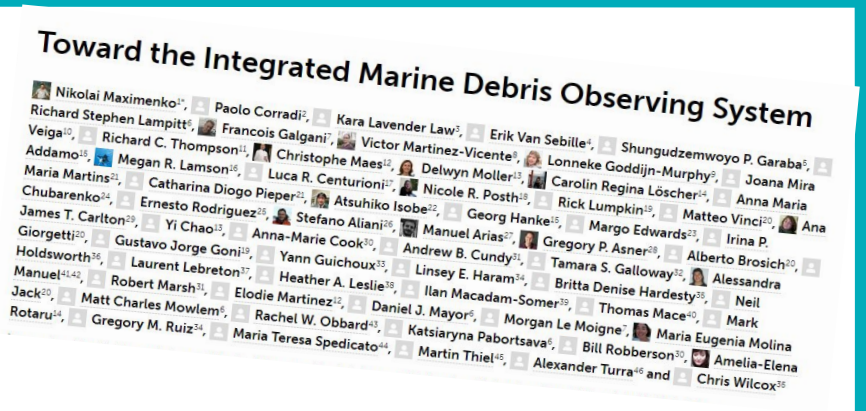


EURO CHARM

環境省
Ministry of the Environment
Government of Japan

But there is no global coordination or integration of marine debris monitoring

Community vision for an IMDOS


Toward the Integrated Marine Debris Observing System

Nikolai Maximenko[1*], Paolo Corradi[2], Kara Lavender Law[3], Erik Van Sebille[4], Shungudzemwoyo P. Garaba[5], Richard Stephen Lampitt[6], Francois Galgani[7], Victor Martinez-Vicente[8], Lonneke Goddijn-Murphy[9], Joana Mira Veiga[10], Richard C. Thompson[11], Christophe Maes[12], Delwyn Moller[13], Carolin Regina Löscher[14], Anna Maria Addamo[15], Megan R. Lamson[16], Luca R. Centurioni[17], Nicole R. Posth[18], Rick Lumpkin[19], Matteo Vinci[20], Ana Maria Martins[21], Catharina Diogo Pieper[21], Atsuhiko Isobe[22], Georg Hanke[15], Margo Edwards[23], Irina P. Chubarenko[24], Ernesto Rodriguez[25], Stefano Aliani[26], Manuel Arias[27], Gregory P. Asner[28], Alberto Brosich[20], James T. Carlton[29], Yi Chao[13], Anna-Marie Cook[30], Andrew B. Cundy[31], Tamara S. Galloway[32], Alessandra Giorgetti[20], Gustavo Jorge Goni[19], Yann Guichoux[33], Linsey E. Haram[34], Britta Denise Hardesty[35], Neil Holdsworth[36], Laurent Lebreton[37], Heather A. Leslie[38], Ilan Macadam-Somer[39], Thomas Mace[40], Mark Manuel[41,42], Robert Marsh[31], Elodie Martinez[12], Daniel J. Mayor[6], Morgan Le Moigne[7], Maria Eugenia Molina Jack[20], Matt Charles Mowlem[6], Rachel W. Obbard[43], Katsiaryna Pabortsava[6], Bill Robberson[30], Amelia-Elena Rotaru[44], Gregory M. Ruiz[34], Maria Teresa Spedicato[44], Martin Thiel[45], Alexander Turra[46] and Chris Wilcox[36]

- Integration of remote sensing and in situ observations
- Use of models to optimize the design monitoring system
- Interaction with other observing systems monitoring physical, chemical and biological processes in the ocean and on shorelines
- Engagement of volunteer and citizen science initiatives
- Establishing best practices and harmonized methodologies for the different elements of the observing system
- Enabling synthesized data to support innovative research and serve a diverse community of users

Also calling for identification of relevant EOV(s).

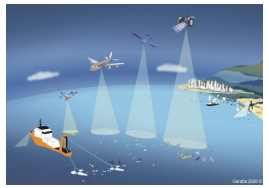
OCEAN OBS'19

IMDOS

Front. Mar. Sci., 28 August 2019 | https://doi.org/10.3389/fmars.2019.00447

IMDOS as a joint initiative of

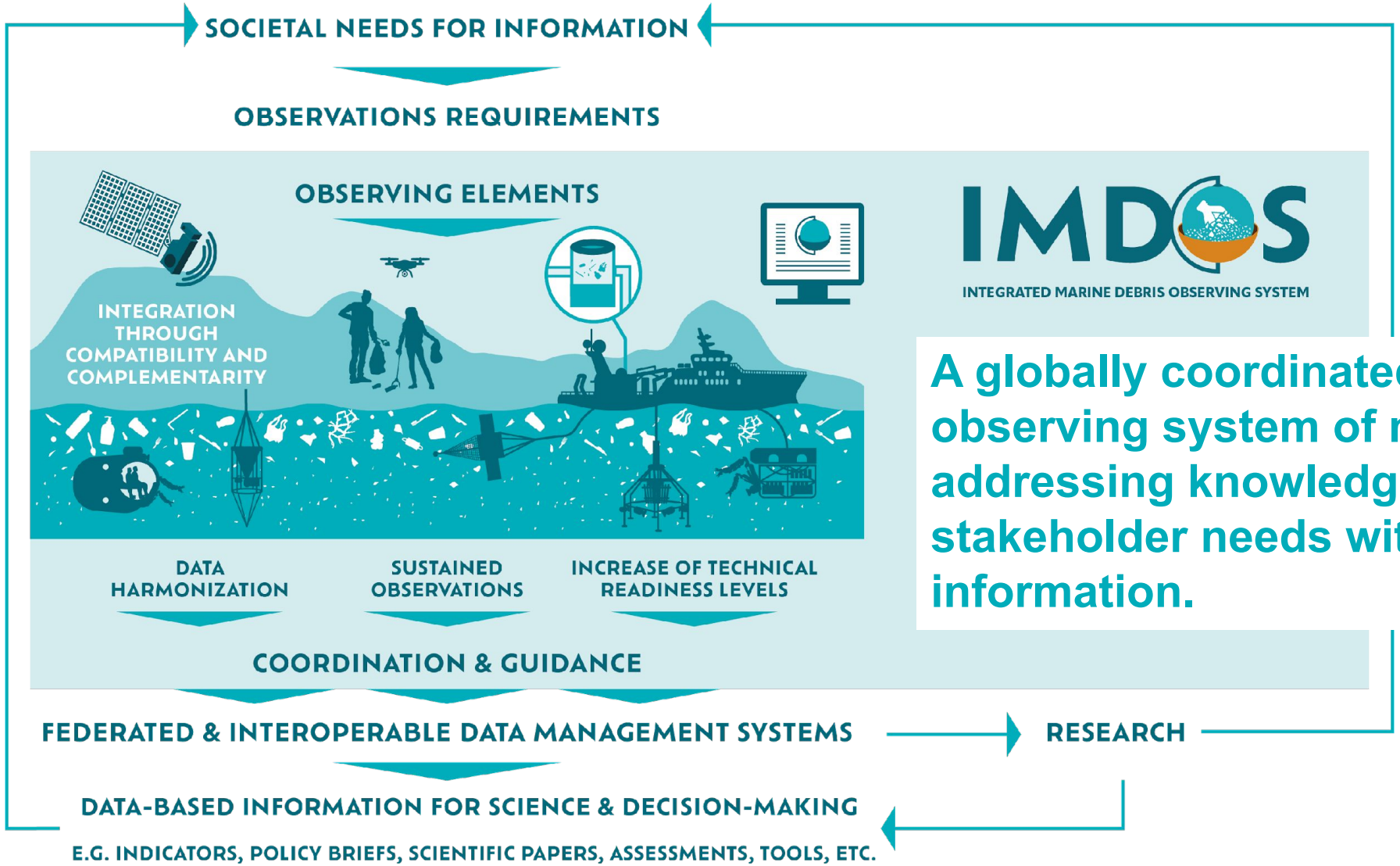
In collaboration with among others:



Initial support through:

Funded by the European Union

WG #153 FLOTSAM

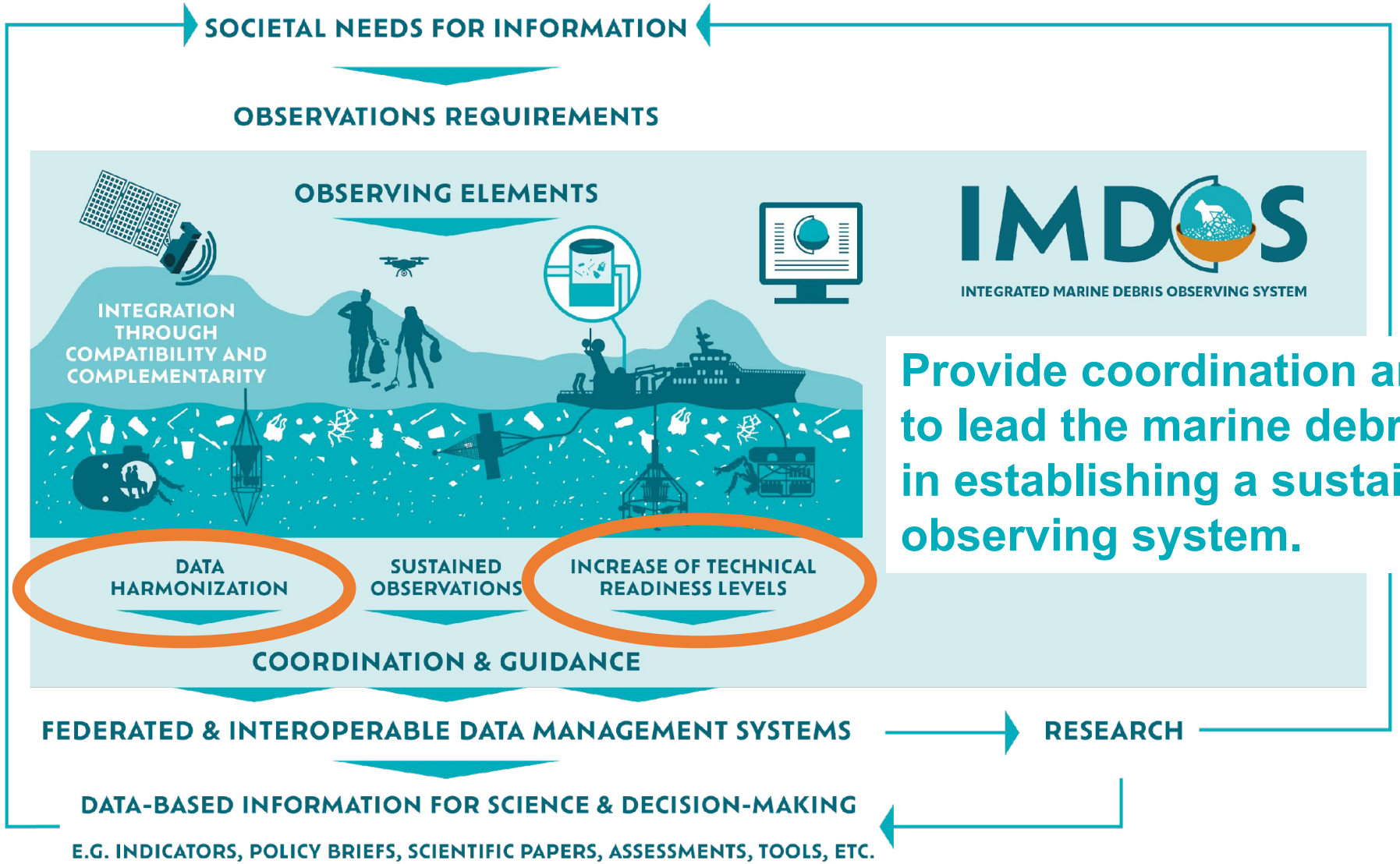


IMDOS

INTEGRATED MARINE DEBRIS OBSERVING SYSTEM

Vision

A globally coordinated and sustained observing system of marine debris addressing knowledge gaps and diverse stakeholder needs with adequate data and information.



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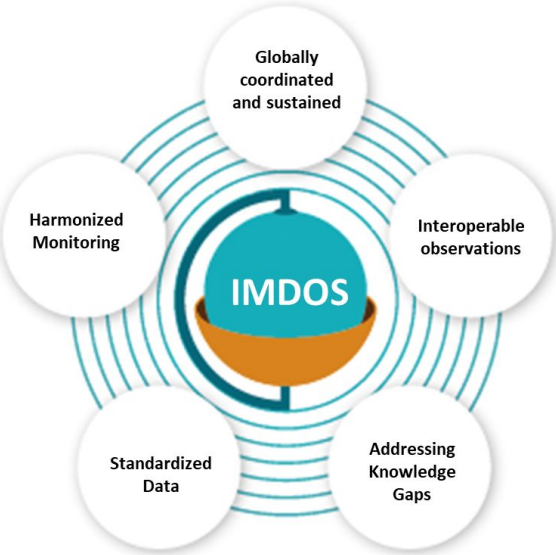
Mission

Provide coordination and guidance to lead the marine debris community in establishing a sustained global observing system.



Guidance from an international interim Steering Committee

Stefano Aliani (CNR ISMAR, Italy)

Paolo Corradi (ESA, Netherlands)

Francois Galgani (Ifremer, France)

Georg Hanke (JRC, Italy)

Kara Lavender Law (SEA, USA)

Nikolai Maximenko (Uni Hawaii, USA)

Toste Tanhua (GEOMAR, Germany)

Alexander Turra (Uni São Paolo, Brazil)

Coordination:

Audrey Hasson (Mercator/GEO BP, France)

Artur Palacz (IOCCP/IOPAN, Poland)

Funded by the European Union

EU4Ocean obs

EuroSea

IMDOS

Strategic Objectives

Provide recommendations for the design and evolution of the observing system for marine debris.

How?

IMDOS

Version: 1.0 - April 2022

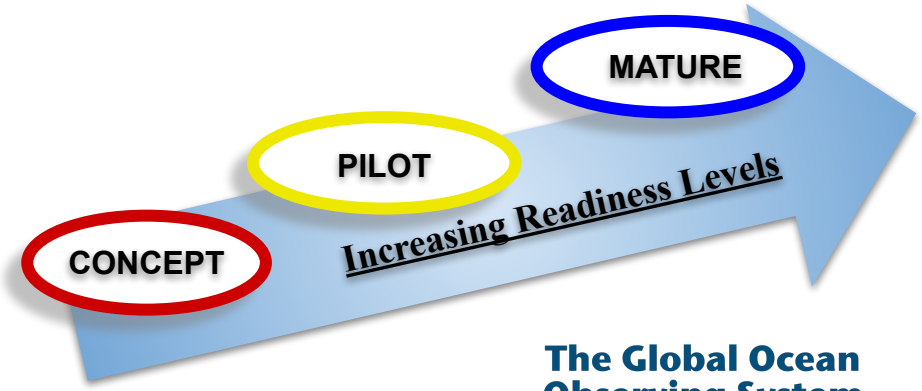
Essential Ocean Variable Specification Sheet

NEW

Marine Plastics Debris

Name of EOV	Marine Plastics Debris
EOV sub-variables	• beach litter: abundance per type & size category • floating microplastics: abundance, weight • floating macroplastics: abundance • seafloor litter: abundance per type & size class (macro, micro) *Additional sub-variables under consideration:* • Macroplastics in biota (ingestion by seabirds, fish, sea turtles) • Microplastics in biota (ingestion by seabirds, bivalves)

- Based on GESAMP WG40 recommendations for global scale monitoring
- Setting global requirements for what to observe, when, where and how
- Concept of TRLs used to describe the maturity of different EOV elements → direct application of EUROqCHARM's work on the RAPs and respective TRL assessment



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The Global Ocean Observing System

GOOS

Promote the development of a global network of marine debris observations (e.g. for surface microplastics)

How?

IMDOS

What does it take to build an observing network?

Observations sustained over multiple years

Data and metadata delivered free, open and in a timely manner

Standards and best practices developed and followed

Community-of-practice with a multi-year strategy and implementation plan

Capacity development and technology transfer to ensure inclusivity

Tracking and assessment of progress

The Global Ocean Observing System

GOOS

IMDOS

What does it take to build an observing network?

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EUROCHARM

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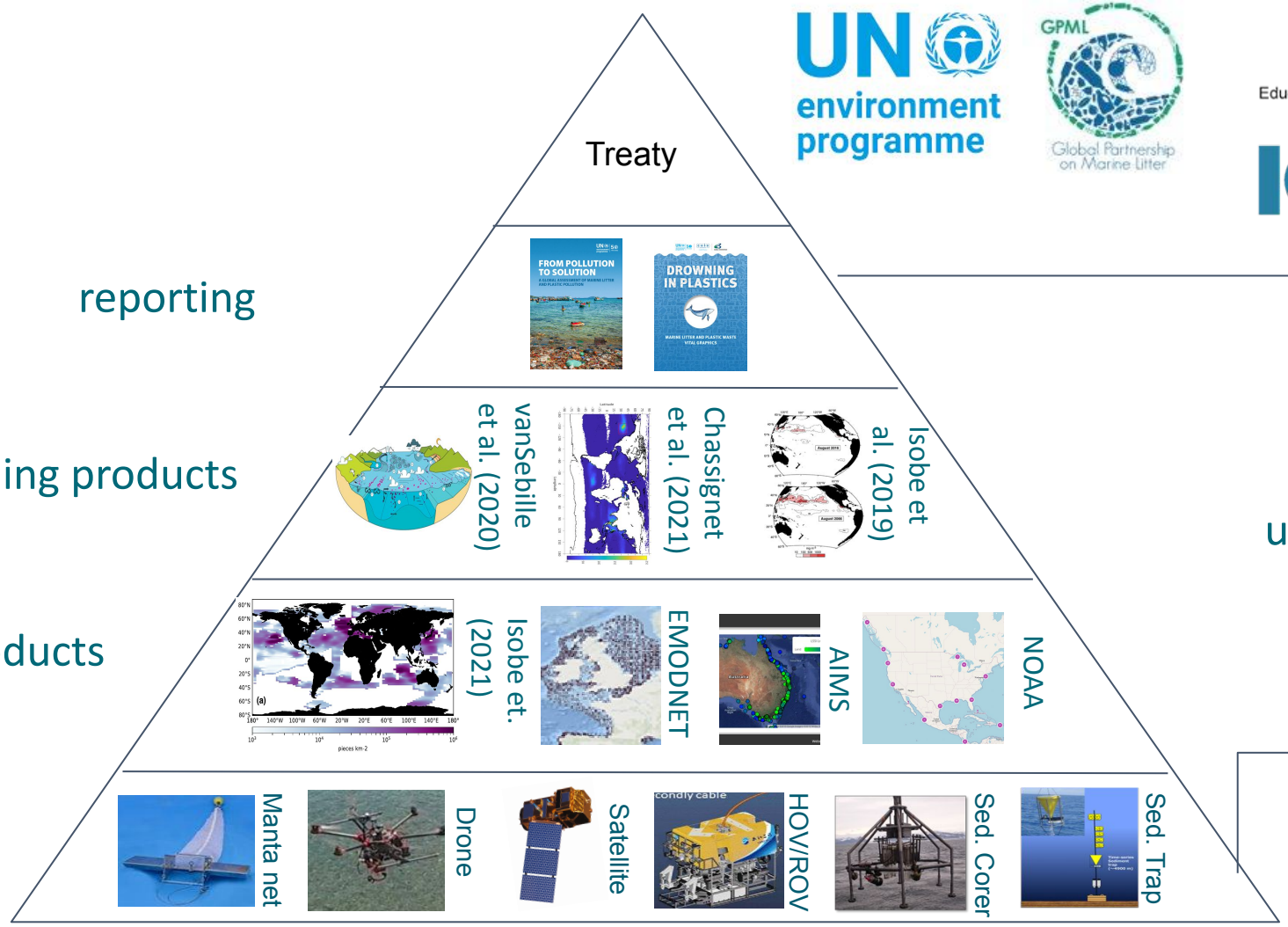
The value chain of marine debris observations



user feedback on data adequacy

UN environment programme

GPML Global Partnership on Marine Litter

United Nations Educational, Scientific and Cultural Organization

Intergovernmental Oceanographic Commission

IODE International Oceanographic Data and Information Exchange

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Promote guidelines for a federated and interoperable data management system.

How?

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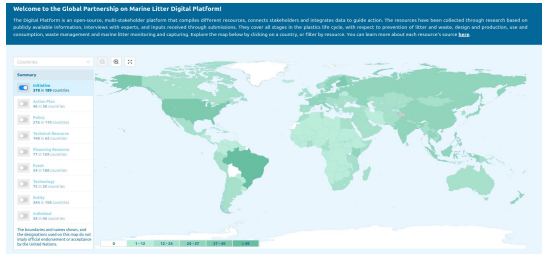
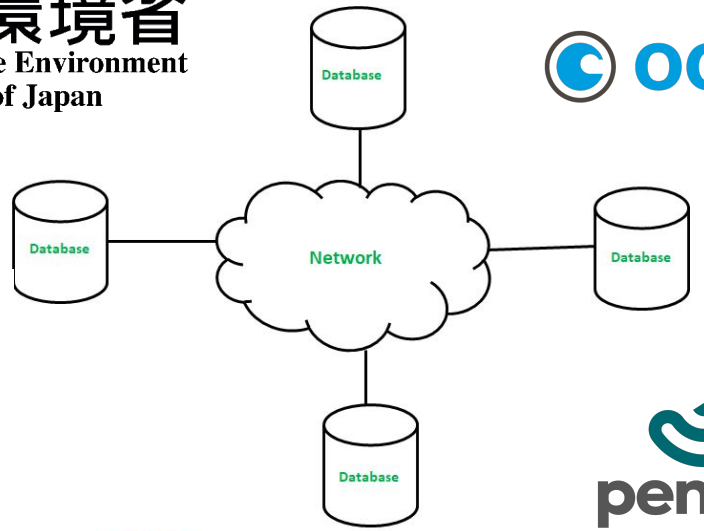
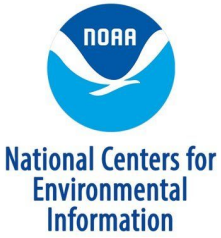
A federated & interoperable data management system [for surface MP]



digital.gpmarinelitter.org





Engage and coordinate existing and new initiatives.

How?

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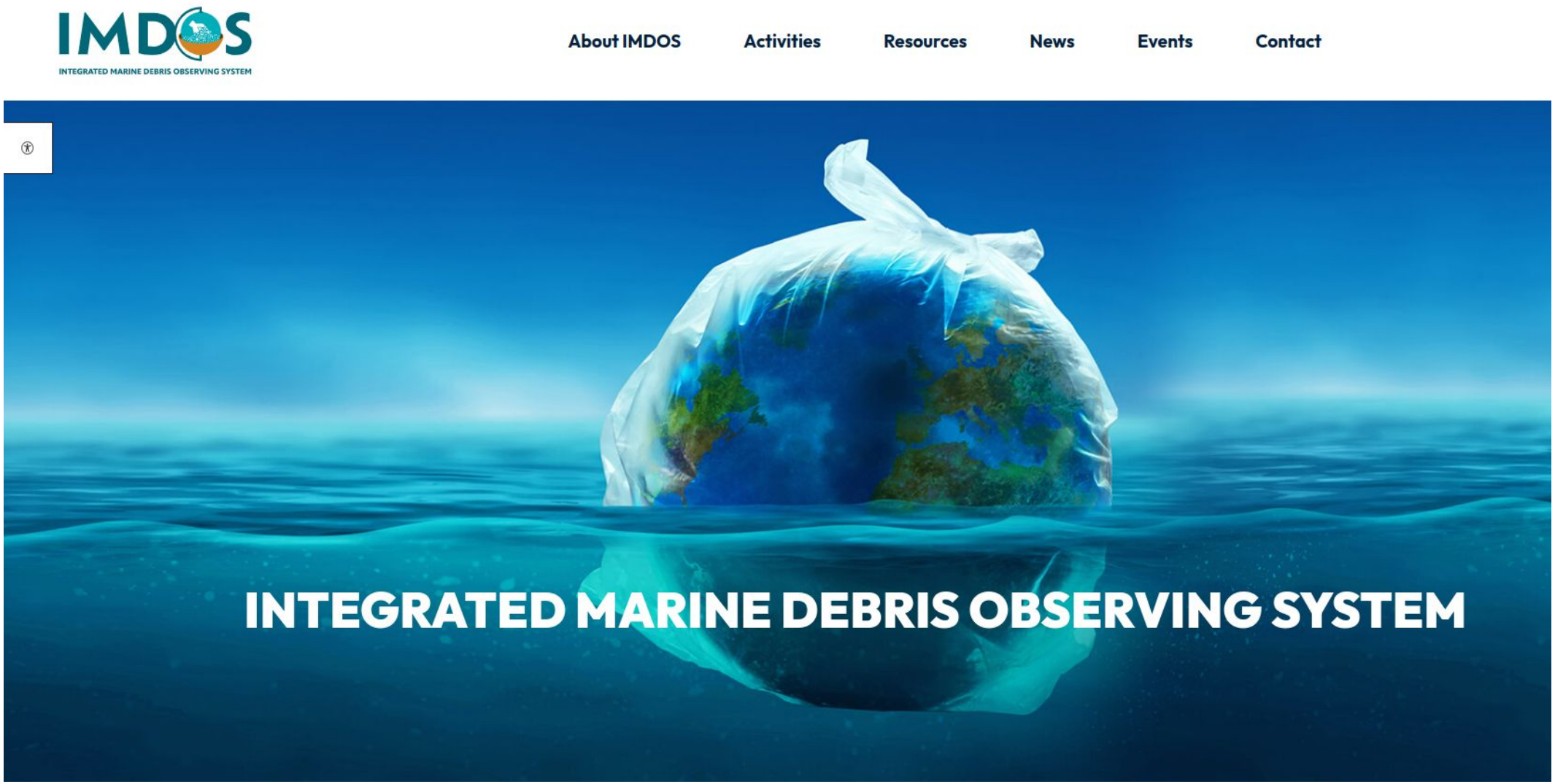
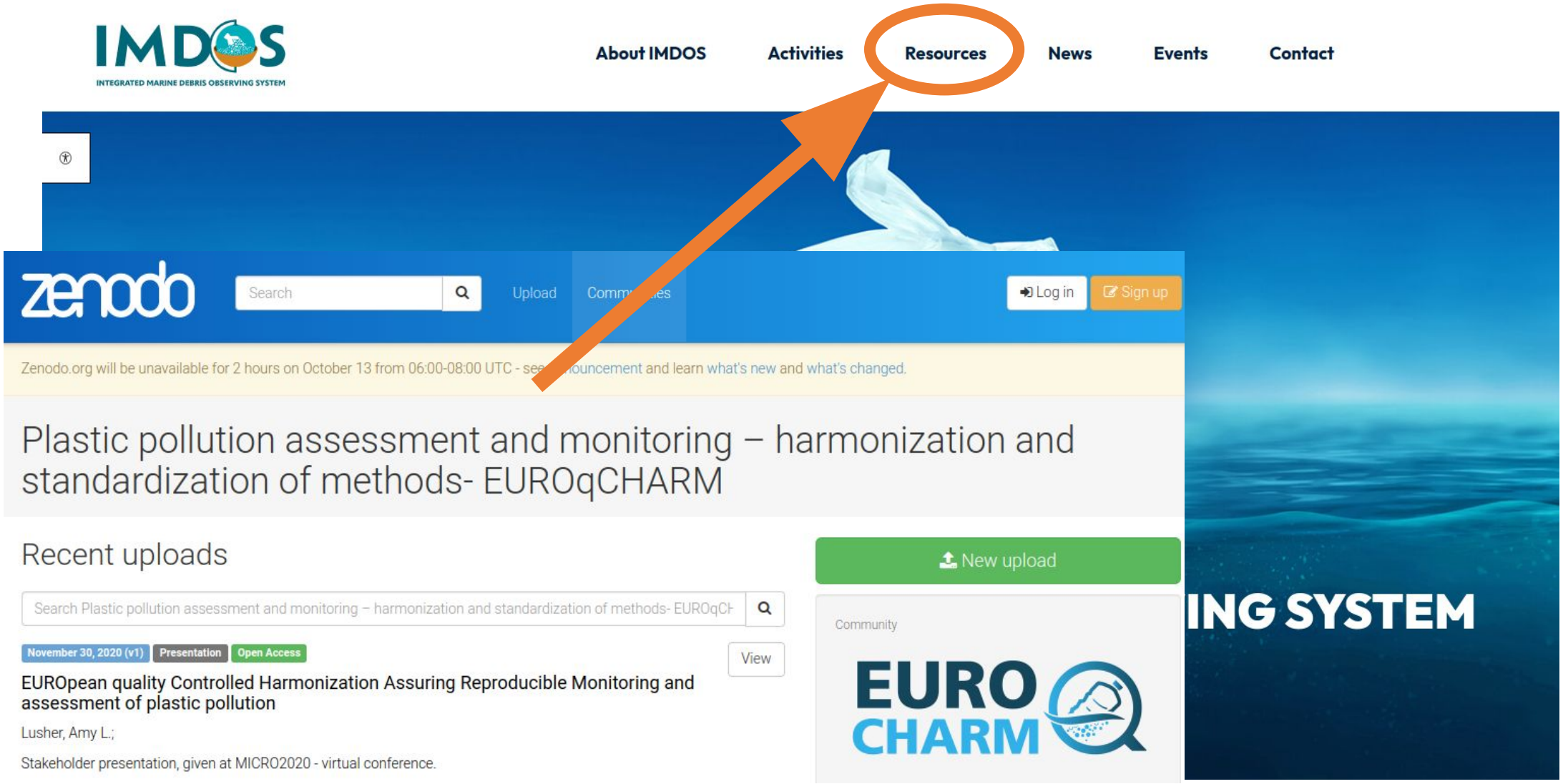


IMDOS

www.imdos.org *[to be launched soon!]*



IMDOS

www.imdos.org *[to be launched soon!]*

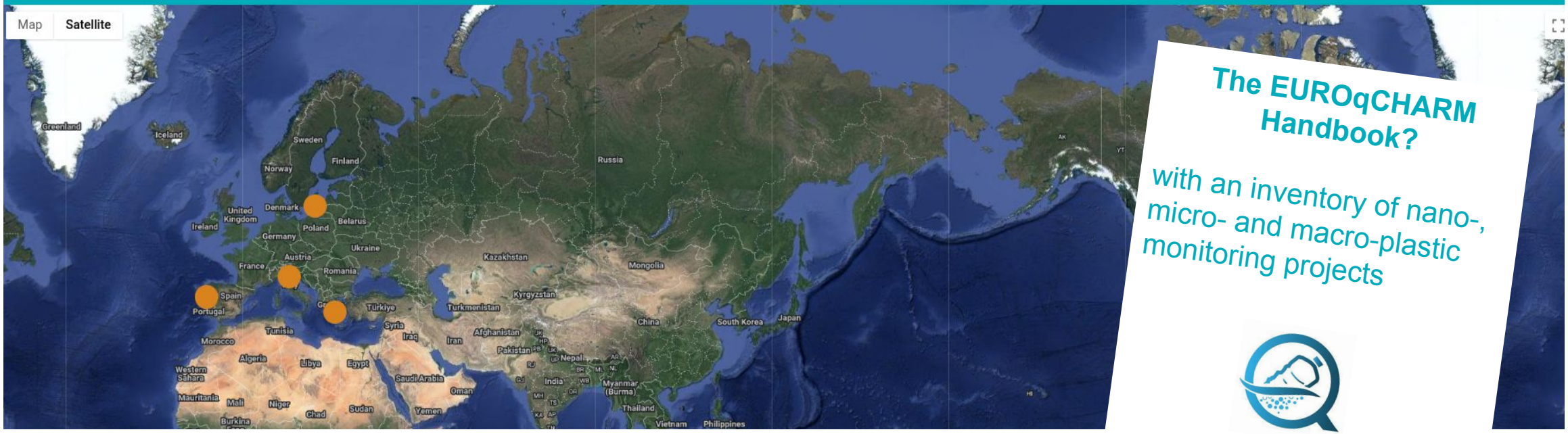
IMDOS
INTEGRATED MARINE DEBRIS OBSERVING SYSTEM

About IMDOS | Activities | Resources | News | Events | Contact

IMDOS DIRECTORY

The directory aims to showcase projects and initiatives that focus on marine debris observation.

Task Team | Project status | Marine Debris Domain | Search...



The EUROqCHARM Handbook?

with an inventory of nano-, micro- and macro-plastic monitoring projects

IMDOS

Take-home message

If adequately supported, IMDOS can be the vehicle for ensuring the legacy of EUROqCHARM among other projects worldwide.

The success of IMDOS will also depend on the existence of projects which follow-up on the successful outcomes of those dedicated to marine debris monitoring, such as EUROqCHARM.

IMDOS

INTEGRATED MARINE DEBRIS OBSERVING SYSTEM

THANK YOU

BLUE PLANET

The Global Ocean Observing System

UN environment programme

GPML Global Partnership on Marine Litter

Funded by the European Union

EU4oceanobs INTERNATIONAL OCEAN GOVERNANCE EU COMPONENT TO GLOBAL OCEAN OBSERVATIONS

INTERNATIONAL OCEAN CARBON COORDINATION PROJECT IOCCP

EuroSea