
International harmonization of monitoring methods and data

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Policies against Marine Plastics Pollution in Japan

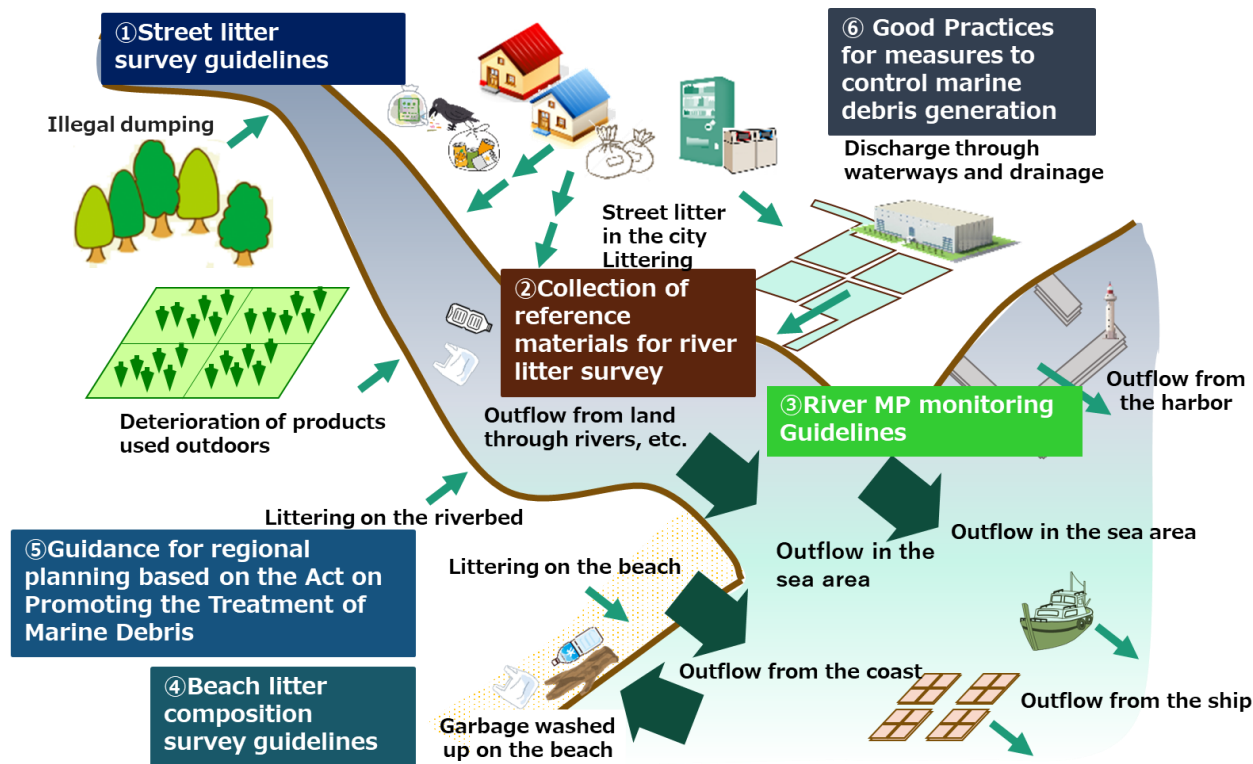
Legal / Policy Framework

- the Act on Promoting the Treatment of Marine Debris (2009, amended in 2018) → the Basic Policy on the Comprehensive and Effective Promotion of Measures Against Articles that Drift Ashore under the Act (2009, 2019) --- Promotion Council for Marine Litter Policy
- Resource Circulation Strategy for Plastics (2019) ; Japan Action Plan for Marine Plastic Litter (2019)
- Act on Promotion of Resource Circulation for Plastics (2021 (enforced in 2022))

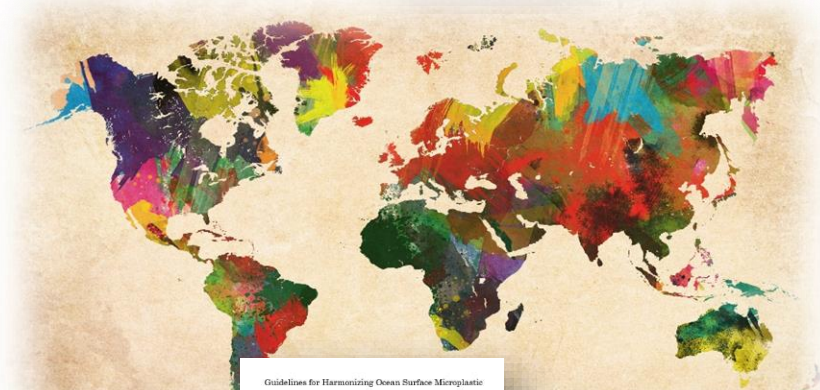
Measures



MOE's Guidelines related to plastics discharged into Ocean



⑧ Guidelines for Harmonizing Marine Litter Monitoring Methods using Remote Sensing Technology (Under Development)

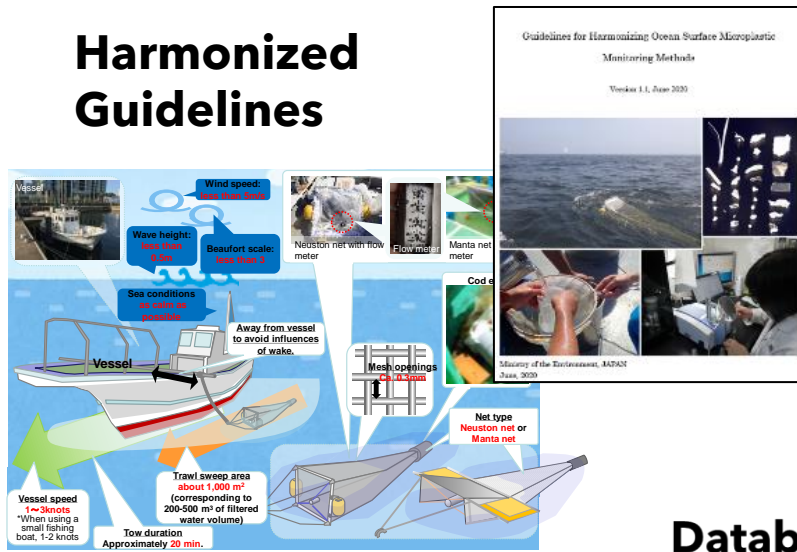


- Survey & Monitoring of plastics in the environment (Beach, Floating, Sea Floor, River, Lake)
- International cooperation:
 - Capacity building on plastic waste management
 - Technical training of monitoring of plastics
 - G20 report on Actions against Marine Plastic Litter
 - Knowledge sharing through RKC-MPD, ERIA

⑦ Guidelines for Harmonizing Ocean Surface Microplastic Monitoring Methods

<https://e20mpl.org/>

Harmonized Guidelines



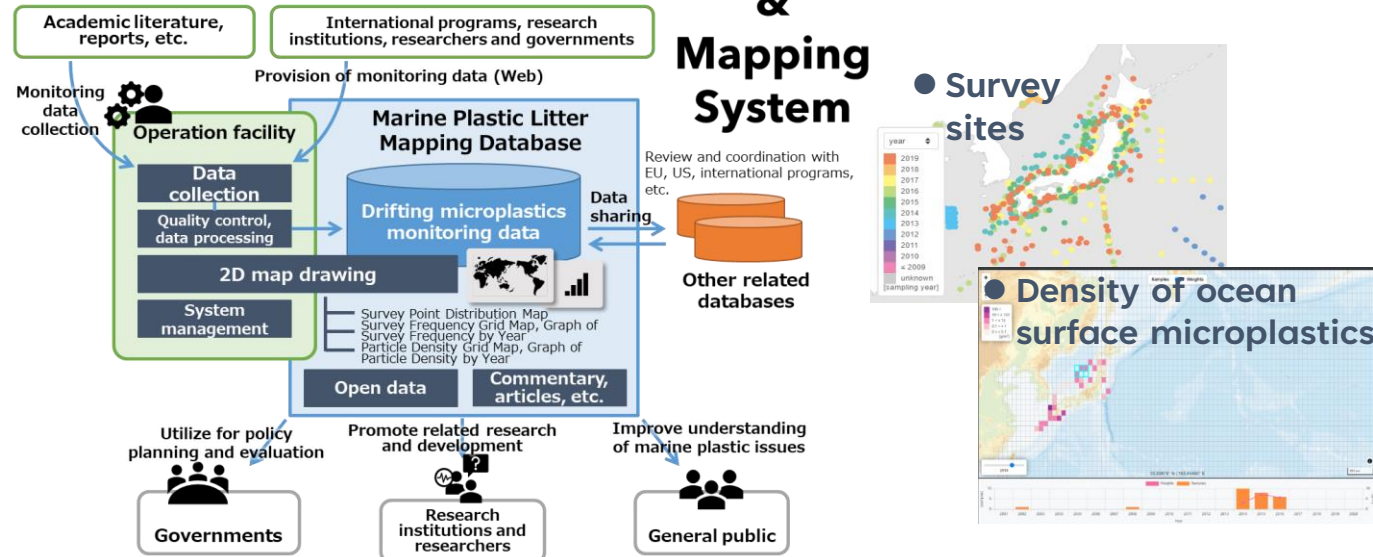
Harmonized monitoring and data compilation

Sources, pathways, impacts and measures to combat plastic waste leakage

Innovative solutions for reducing marine plastic litter

From 2019 G20 WS on Scientific Knowledge and Innovative Solutions

Database & Mapping System



Measures against Plastic Pollution Domestically & Internationally

International Workshop on Marine Debris Data Harmonization 2023



OVERALL GOAL

To enhance the level of data
- including associated metadata identification

For supporting **global data harmonization** for selected key marine debris indicators

Underpin the successful mitigation of plastic pollution

Programme

- Session 1: Rationale and objectives of the workshop
- Session 2: Addressing data gaps to inform marine debris indicators
- Session 3: Who is measuring what, where, and when?
- Session 4: Towards a global federated and interoperable marine debris data management
- Session 5: Towards a network of sustained observations of surface microplastics and beyond
- Session 6: Summary

UNEP GPML Data Harmonization CoP



CoP coordinated by: Maija Bertule, Alexandra Murray, Nicola Balbarini (UNEP-DHI)

GPML: Global Partnership on Plastic Pollution and Marine Litter

Summary of session 1 & 2



Session 1

Rationale and objectives of the workshop

- The presenters from 9 countries on: translating scientific data into policy and decision-making, and the urgency and necessity of measures against marine pollution.

(Key messages)

- ◆ There are different approaches to convert science to policy at country and regional level.
- ◆ Targets for individual countries are expected, but they require data.
- ◆ **Interactive communication of science and policy-making** is needed to detect **which monitoring data should be provided by the international research community**, taking into consideration **technical aspect as well as needs aspect**.
- ◆ Ocean surface microplastics is one of the most matured areas of monitoring.
- ◆ Enhancing accessibility to **encourage participation by citizens and businesses**, **harmonized monitoring guidelines**, and **metadata harmonization** to ensure interoperability are also important.

Addressing data gaps to inform marine debris indicators

- Presentation and discussion on: what data is necessary to inform the marine debris indicators, and to what level that can be provided by the current capacity to monitor and observe the ocean.

(Key messages)

- ◆ **Quality control** agreed by the international community is important to **enhance reliable and robust data**.
- ◆ **Monitoring data in different ecosystems** will help to **realize the holistic approach**.
- ◆ Reproducible Analytical Pipelines (**RAPs**) and Technology Readiness Assessment (**TRA**) may contribute to develop Essential Ocean Variables(**EOVs**).
- ◆ Data obtained by **variety kinds of monitoring methods**.
- ◆ **Communications between communities of modeling and observation** are needed, because **those data are mutually supportive**.

Session 2

Summary of session 3



Who is measuring what, where, and when?

- Discussion on: mapping the current capacity to monitor and observe selected global-scale marine debris indicators based on available knowledge of existing surveys.
- Challenges: improvement of data accessibility under the current situation where too many databases exist; ease for users of monitoring data; reliability and utilization for policy-making

Session 3

	A	B	C	D	E
1	Institution Name	Database name	Access to data	Geographical Focus	Ecosystem
2	EMODnet Chemistry (coordinated by: National Institute of Oceanography and Applied Geophysics (OGS))	European Marine Observation and Data Network (EMODnet) Marine Litter Databases	http://www.emodnet-chemistry.eu/marinelitter	European Member States extended	Beaches/Shoreline (Beach Water Column(would say Seafloor trawlings/Seabe
3	NOAA	This list was created by GEO Blue Planet for the report "A Global Platform for Monitoring Marine Litter and Informing Action" https://geoblueplanet.org/wp-content/uploads/2020/03/Marine-Litter-White-Paper-Draft_07Mar2020.pdf			
		Database or Dataset	Access to data	Time span of the dataset	Topical Focus
4	Ministry of Environment, Japan (MOEJ)	3 Australian Marine Debris Database	https://www.tangaroablue.org	1950-2020	Beaches/Shoreline (Beach
4		4 Marine LitterWatch	https://www.eea.europa.eu/		Beaches/Shoreline (Beach
5		5 TIDES (Trash information and data for education and	https://www.coastalcleanup.org/		Beaches/Shoreline (Beach
6		6 One Earth One Ocean Microplastic Pollution Map	https://oneearth-oneocean.org/		Beaches/Shoreline (Beach
5	Japan Agency for Marine-Earth Science and Technology (JAMSTEC)	7 Dive Against Debris® - Project AWARE's global	Dive Against Debris: https://www.diveagainstdebris.org/		Seafloor/Seabed
8		8 ICES/DATRAS	https://ices.dk/marine-data/		Seafloor/Seabed
6	Integrated Marine Observing System	9 OpenLitterMap	https://openlittermap.com		Global
10		10 Publication: The rise in ocean plastics evidenced from	https://www.nature.com/arti		Water Column
11		11 Mapping Marine Debris in the Main Hawaiian Islands	http://arcg.is/29tIsqk		Beaches/Shoreline (Beach
12		12 Coastal Observation and Seabird Survey Team	coasst.org		Beaches/Shoreline (Beach
13		13 Observations of Litter Deposited in the Deep Waters	https://www.frontiersin.org/litterbase.org		Water Column
14		14 LITTERBASE	litterbase.org		Beaches/Shoreline (Beach
15		15 Global Alert	www.globalalert.org		Beaches/Shoreline (Beach
16		16 Southeast Atlantic Marine Debris Initiative (SEA-MDI)	http://marinedebris.engr.uga.edu/		Beaches/Shoreline (Beach
17		17 International Pellet Watch	http://www.pelletwatch.org/		Beaches/Shoreline (Beach
18		18 Global Ghost Gear Initiative: Data Portal	https://globalghostgearporta		Open Ocean Ghost Gear,
19		19 Heal the Bay's Marine Debris Database	http://sites.healthebay.org/		Beaches/Shoreline (Beach

(working document)

Summary of session 4



Session 4

Towards a global federated and interoperable marine debris data management

- Monitoring projects and products in each region and country were introduced.
- Based on the current database systems especially **for ocean surface microplastic** in Japan, United States, and EU, discussion about existing definitions and mandatory requirements for metadata and data reporting and the concept of a global, federated data management system for ocean surface microplastics was held.
- The participants were divided into the following four break-out tables to discuss the conceptualization of a global, federated data management system for ocean surface microplastics:

Group 1

What data, data items and units should be mandatory requirements for metadata and data reporting -- in case of ocean surface microplastic?

Group 2

Potential additional elements for the roadmap of the Guidelines -- what is needed in addition to the items in the existing Guidelines?

Group 3

Socio-Technical challenges for harmonizing surface microplastic data within a federated data management system --- Lessons learned from Ocean InfoHub

Group 4

How to apply harmonization of existing ocean surface microplastic databases for other global level indicators.

Summary of session 4 (Break-out table)



Required Metadata items -- in case of ocean surface microplasti

Minimum requirements	
Sampling time	
	Start date (GMT)
	End date (GMT)
Sampling Location	
	Latitude of start point
	Longitude of start point
	Latitude of end point
	Longitude of end point
Particle number density per filtered water volume (Unit: particles/m3)	
	300 μ m \leq d<5mm
	5mm \leq d
Sampling equipment	
	Type of equipment
	Mesh openings size (Unit: mm)
Filtered water volume	
	Water volume (Unit: m3)
(*In case flowmeters is not available)	
Sampling equipment	
	Width of water intake (Unit: m)
Depth of the water intake	
	Lower end depth (Unit: m)
Sampling distance	
	Sweep distance (Unit: m)
Vessel speed	
	(Unit: knot)

Recommended	
Particle number density per filtered water volume (Unit: particles/m3)	
	d \leq 25 mm
	d \leq 300 μ m
Particle weight density per filtered water volume (Unit: g/m3)	
	300 μ m \leq d<5mm
	5mm \leq d
Percentage per material(Unit: %)	
	Fiber percentage
Weather, sea conditions, water quality	
	Wind speed (Unit: m/s)
	Significant wave height (Unit: m)
	oceanic conditions
Biota, marine life activity	
	Biota
	Marine life activity
Others	
	Pictures of MP fragments
	Small sample

! This is a living document !

Group
1

Summary of session 4 (Break-out table)



Group 2

Potential elements for the roadmap of the Guidelines

--- what is needed in addition to the items in the existing Guidelines?

- ✓ **Uncertainty estimates:** Remove operator bias
- ✓ **Correction factor:** Report all the metadata
- ✓ **Polymer types/Shape types:** Information on shape and polymer types and the exclusion of textile fibers
- ✓ **Guarantee period of federated database**

Group 3

Socio-Technical challenges for harmonizing surface microplastic data within a federated data management system --- Lessons learned from Ocean InfoHub

(Challenges (excerpts))

- ✓ **Coordination and governance** is not strong, Global authority for guidelines is no clear
- ✓ Independent professional & representative for standards,
- ✓ **Under-representation** of the global,
- ✓ **Different competing priorities** leading to fragmented data system,
- ✓ **Long term archives** of data,
- ✓ **Innovation** is needed on research methodology etc.

Group 4

How to apply harmonization of existing ocean surface microplastic databases for other global level indicators

- ✓ **Scope of the harmonization of monitoring** is not the same as the UN plastic treaty.
- ✓ The **role and responsibility** for each organization should be clarified.

Summary of session 5



Session 5

Towards a network of sustained observations of surface microplastics and beyond

➤ Discussion on: how to initiate a coordinated observation network:

Group 1

Surface micro-plastic

- ✓ Collaboration with private sectors
- ✓ Facilitation for global south
- ✓ Fragmentation progress (sea floor, coasts),
- ✓ Residence and life times of plastics,
- ✓ Mathematical tool for converting metadata
- ✓ Relationship with Carbon cycles and climate change
- ✓ Relationship with other toxic chemicals and their impact on organisms

Group 2

Sediment

- ✓ Global monitoring avoiding the use of trolling.
- ✓ Taking advantage of the work done by divers or NGOs.
- ✓ Governance and responsibility for global monitoring.
- ✓ Artificial intelligence.

Group 3

Beach litter

- ✓ Differentiate different types of beaches and coastal habitats and structure an observation program.
- ✓ Additional info; hydrodynamics, beach slope processes, type beach usage, accessibility, frequenting of cleanings by municipalities

Group 4

Surface macro-plastic

- ✓ Different Levels of data comprehensiveness.
- ✓ One strict protocol for various data collection methods.
- ✓ Image documentation is useful.
- ✓ parallel observations with AI and observers

Group 5

Biota

- ✓ Clear protocol to monitoring impact related to the ingestion entanglement. (or risk assessment methodology)
- ✓ Muscle as an indicator for other pollutants.
- ✓ Connecting the database, such as biodiversity database)
- ✓ Chemical data found in BIOTA .
- ✓ Molecular genetics as a tool for insight of responses by the microplastic.

Outcome: International Workshop on Marine Debris Data Harmonization 2023

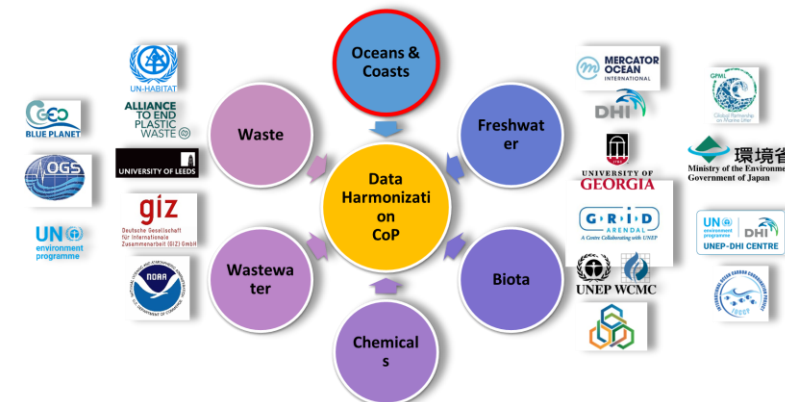


OUTCOME:

- A **coordinated network** of ocean surface microplastic data providers initiated under the auspices of GOOS and IMDOS, with an agreement to adhere to agreed common sampling protocol and metadata and data requirements.
- **Draft metadata and a data requirements sheet** based on the data sheet provided by MOE Japan, the European Marine Observation and Data Network (EMODnet), and NOAA National Centers for Environmental Information (NCEI), and any other potential large data integrators.
- **Recommendations for standardized metadata and data requirements for the UNEP GPML Digital Platform data matrix.**
- **Roadmap** towards a federated data management system for ocean surface microplastics and selected global-scale marine debris indicators.

- GPML: Global Partnership on Plastic Pollution and Marine Litter

UNEP GPML Data Harmonization CoP



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- INC and Implementation on Plastic Pollution Treaty



<https://geoblueplanet.org/international-marine-debris-data-harmonization-workshop/>



Global Commitment and Cooperation

2023 G7's commitment to end plastic pollution

Sapporo Env. Ministers Mtg: April 15-16; Hiroshima Summit: May 19-21, 2023

<Summit and Env Ministers communiques>

“We are **committed to end plastic pollution**, with the ambition to reduce additional plastic pollution to **zero by 2040**.”

<Env Ministers>

“...we are also committed to playing an **active and constructive role** to make **substantial progress in the negotiations** and bring us closer to specifying the key provisions of an **ambitious international legally binding instrument** on plastic pollution...”



Osaka Blue Ocean Vision (June 2019)

“We aim to reduce additional pollution by marine plastic litter to zero by 2050 through a comprehensive life-cycle approach that includes reducing the discharge of mismanaged plastic litter by improved waste management and innovative solutions while recognizing the important role of plastics for society.”



G20 Report on Actions against Marine Plastic Litter (2019~)



- 5th Report in 2023:**
- Actions reported: by **30 countries** and **10 organizations**
 - 21 countries have **national action plans** on marine plastic litter, and 16 countries have **specific indicators** to measure progress of efforts on MPL.

Environmental monitoring of plastic pollution is an important element of NAPs !

An aerial photograph of a large group of dolphins swimming in clear, turquoise water. The dolphins are scattered across the frame, with some appearing as dark shapes and others as lighter, more defined forms. The water's surface is slightly rippled, and the overall scene is bright and clear.

ありがとうございました！
Thank you!