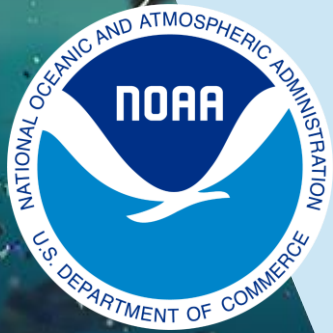


AOMI Database Workshop:
Enhancing Ocean
Microplastics Monitoring
8 October 2024



**National Centers for
Environmental Information (NCEI)**

The NOAA NCEI Global Marine Microplastics Database and Map Portal - Fall 2024 Update

At the AOMI Database Workshop:
Enhancing Ocean Microplastics Monitoring

Jennifer B. Webster¹, Ebenezer Nyadjro^{1,2}, Gunnar Kaltenberger^{1,4},
Tiffany Toft^{1,4}, Zhankun Wang³, Yee Lau^{1,2}, Tim Boyer³, Kirsten Larsen¹

1. NOAA/ National Centers for Environmental Information, Stennis Space Center, MS
2. Northern Gulf Institute, Mississippi State University, Stennis Space Center, MS
3. NOAA/ National Centers for Environmental Information, Silver Spring, MD
4. General Dynamics Information Technology, Inc, Stennis Space Center, MS

2024 Activities: Growing our database and collaborations

- International Collaborations
- Database data set additions
- Microplastics from biota
- Planning of an updated Hub Site

First: Hurricane Helene update

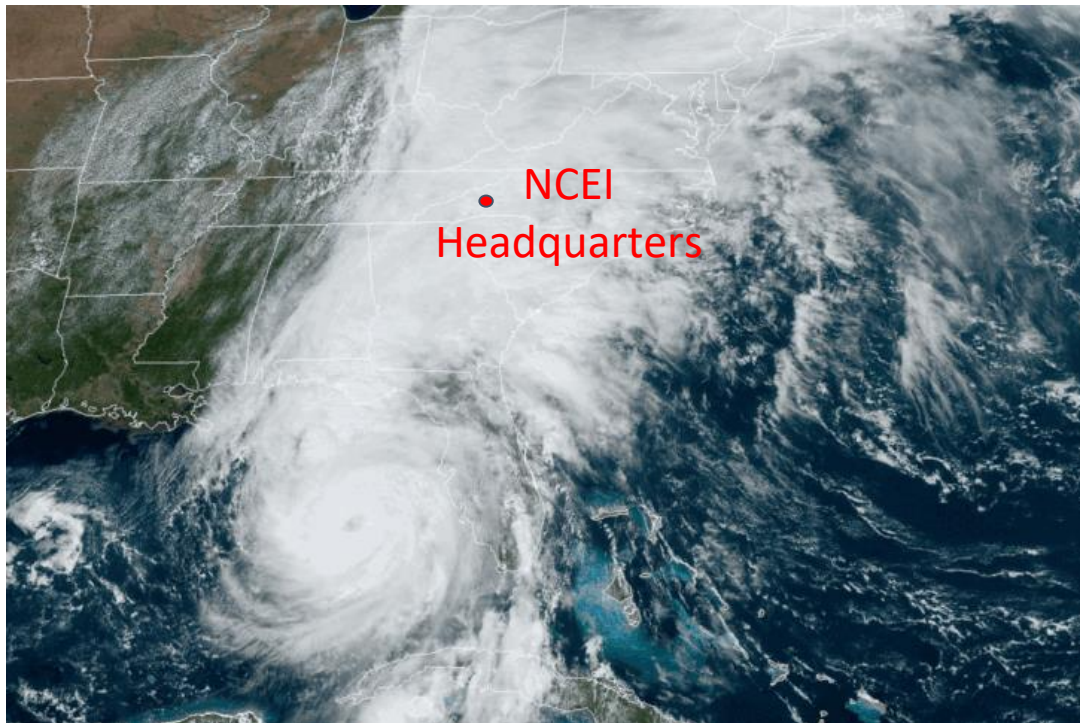


Website might be down but NOAA Archive is safe

[Helene Devastates Southeast, Impacts NOAA NCEI Headquarters](#)

26 September 2024

- **Hurricane Helene** made landfall on Florida coast as a Category 4 storm.
- Largest impacts across the southern Appalachians mountains
 - widespread severe and unprecedented flooding with hundreds of fatalities and billions in property damage.



NOAA NCEI Marine Microplastics Database: 2 Levels

1. NOAA Archive** (*in North Carolina, USA*)

All original data received are quality controlled and guaranteed to be available for a minimum of 75 years.

2. Geodatabase* (*in the ESRI cloud*)

Data are homogenized and added to a geodatabase which is displayed on the [NCEI microplastics ArcGIS web portal](#).

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***CC0-1.0 (i.e., open access) or CC-BY 4.0 (i.e., cite data source)*



International Collaborations

- Continued work with GPML on their Microplastic Indicator development efforts
 - Draft homogenized map created
- Promote our catalog listing on [Ocean Info Hub](#)
 - Metadata updated to conform with the Schema.org JSON-LD template
- Supporting AOMI development
- Promote our product on [SDGToday](#)



Global Partnership
on Plastic Pollution
and Marine Litter

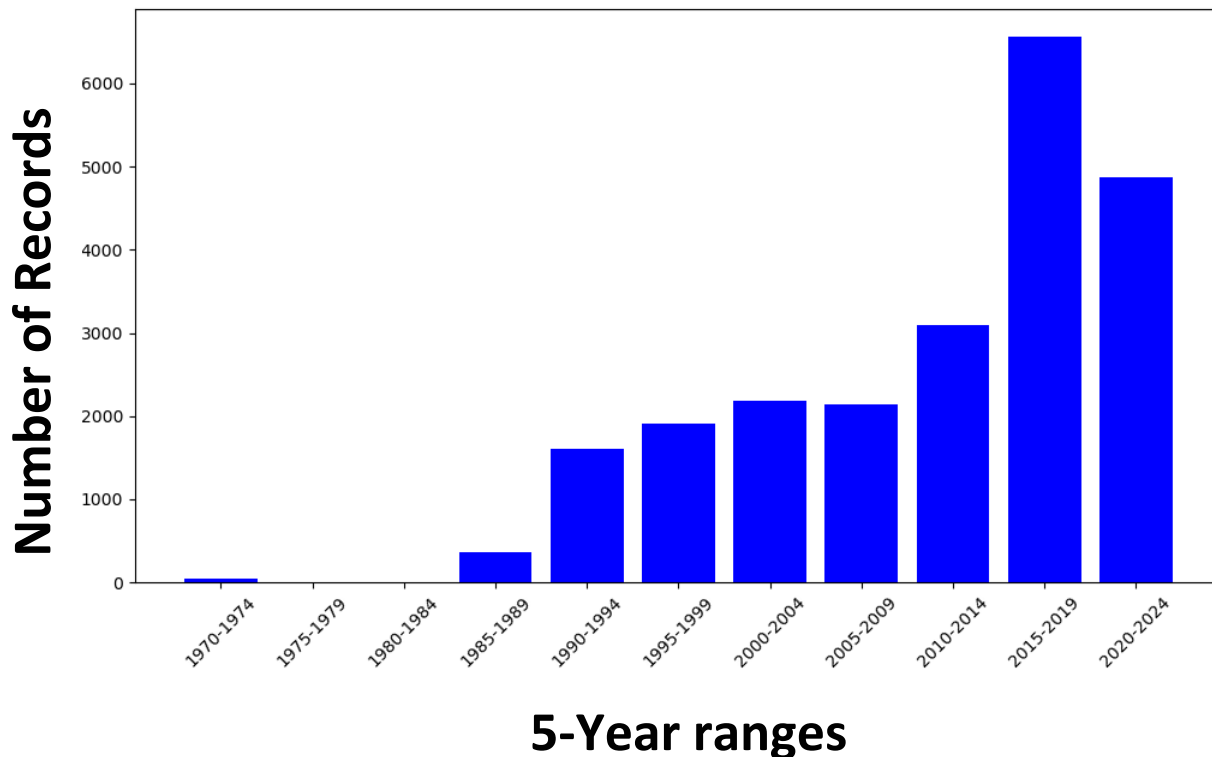


Microplastic Data Records as of October 2024

Setting	No. of datasets	No. of data points
Surface ocean	47	14,807
Subsurface ocean	4	326
Ocean sediment	9	341
Beach (including nurdle patrol)	13	6,438
Multiple	10	658
Total	83	22,570

- Data added from different marine compartments (water, sediment, beach)
- Data acquisition success rate : ~30%

NCEI Microplastic Data Records over time



Additional Database Activities 2024 and beyond

New Geodatabase for MP found in Biota

- Build a complimentary database for marine microplastics collected in biota - also to be shared publicly
- Data are also added to the NCEI Archive

Coming in 2025 ...

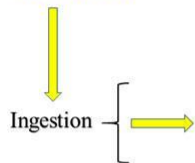
- ★ Developing a gridded data product for the map viewer
- ★ Design a ArcGIS Hub Page with data access to better serve our diverse user base



Marine Debris → Plastics → Microplastics

- Microplastic pollution is everywhere, irreversible and disrupts the ecological system
- Impact the environment, organisms therein, and human health

Exposure pathways of MP in fish

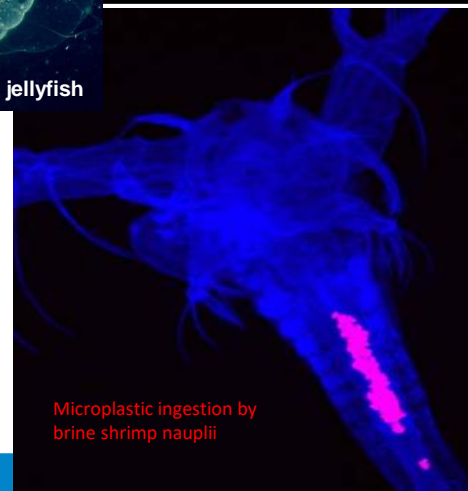


Possible effects of MPs in fish

-
- ← Oxidative damage
 - ← Tissue damage
 - ← DNA damage
 - ← Intestine damage
 - ← Behavioral change
 - ← Slow down swimming
 - ← Growth reduction
 - ← Dysbiosis
 - ← Breeding impairment
 - ← Disrupt digestion
 - ← Inflammation
 - ← Alter gene expression
 - ← Neurotoxicity
 - ← Reproductive organ damage
 - ← Mortality



Microplastics in jellyfish



Microplastic ingestion by brine shrimp nauplii

Bhuyan_2022



Microplastics in Biota

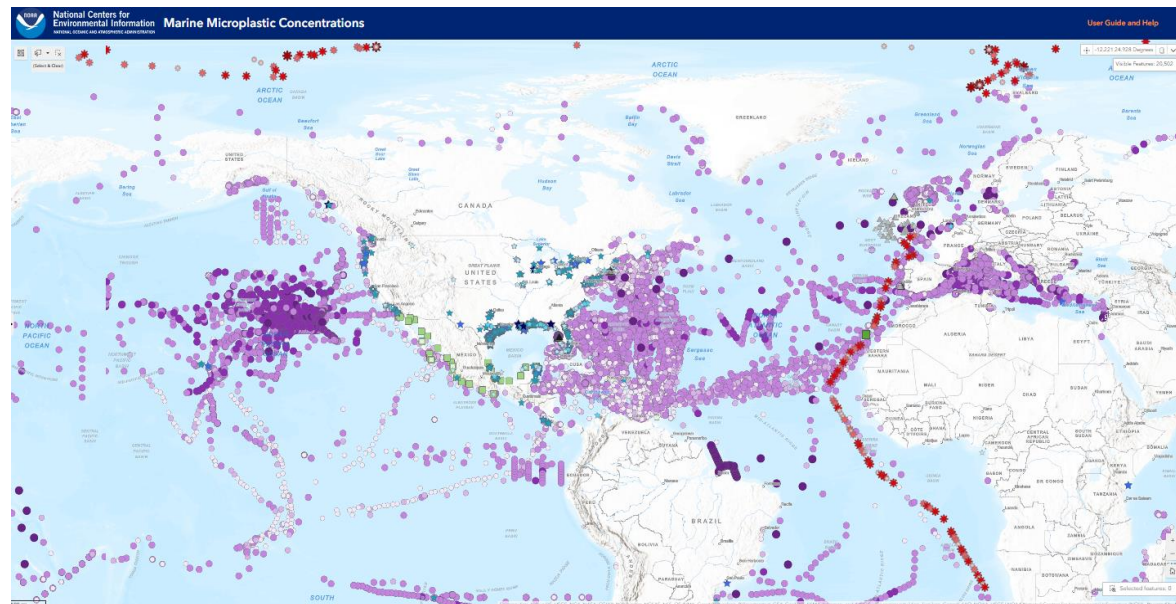
- Began collecting datasets from publish work
- Biota: 9 datasets (679 data points) archived
- Exploring ways to present data, separate from other microplastics data
- This would include species identification, body part examined for microplastics (e.g. gills, gastrointestinal tract, whole body), and count of microplastics per individual sample
- Product will help understand prevalence in biota, at risk species and guide ecosystem management



Supporting a Diverse User Base

Geoportal & Database Users:

- Researchers
- Students
 - Middle & High School students
 - College & Graduate Students
- Environmental Managers
- General public

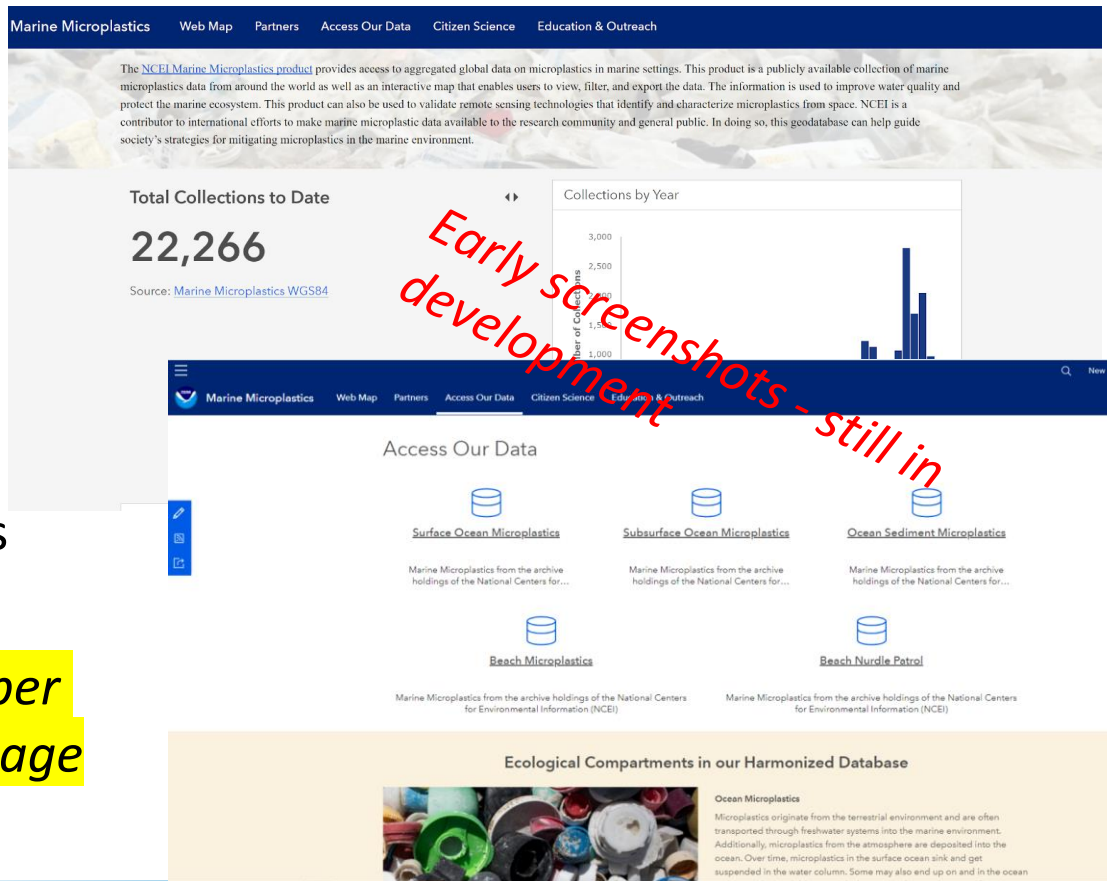


New Hub Page - Coming early 2025

Planned Sections

- Microplastic Dashboard
- Data Visualization
- Access our Databases
- Education & Citizen Science
- **Partners**
- Marine life and Microplastics

We will soon contact you for proper logos and links for our Partners page



Thank You

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**Scan for Database
Homepage**

