

Are your RT datasets updating? If not,
contact: sos.support@noaa.gov

SOS Education Forum



National Oceanic and Atmospheric Administration
U.S. Department of Commerce

May 10, 2023





Agenda

SOS Team - Dataset Catalog Refresh

NOAA-FSU Marine Debris SOS Collaboration: Global Marine Debris Ocean Model -

MaryLee Haughwout (NOAA Marine Debris Program) and Tracy Ippolito (Florida State University).

AND

Tracking marine microplastic monitoring through the NOAA NCEI Global Marine Microplastic ArcGIS Online Experience Builder web application -

Jennifer Webster, NOAA, with co-author Ebenezer Nyadjro of the Northern Gulf Institute





SOS Education Forum

**We are retiring/archiving many datasets soon.
This means, if you see a dataset that says “(archived date)”:**

- We plan to remove it from the website and the FTP
- We do not remove datasets from your local SOS
- If you have to do a fresh full install of SOS, you may lose it
- You may want to back it up
- We have a copy and can always send it to you again



SOS Education Forum

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Press **Esc** to exit full screen

Presenting today

Let's learn about Marine Debris!





NOAA - FSU Marine Debris SOS Collaboration

Global Marine Debris Ocean Model

SOS Educator Forum
May 10, 2023

Who We Are



MaryLee Haughwout
Deputy, NOAA Marine
Debris Program



Tracy A. Ippolito
Communications and
Special Projects
Coordinator, FSU Center
for Ocean-Atmospheric
Prediction Studies



Why a Marine Debris SOS Display?

1

There is a need for more and updated marine debris content on SOS

3

Prevention, outreach and education mandate

2

Reaching new audiences

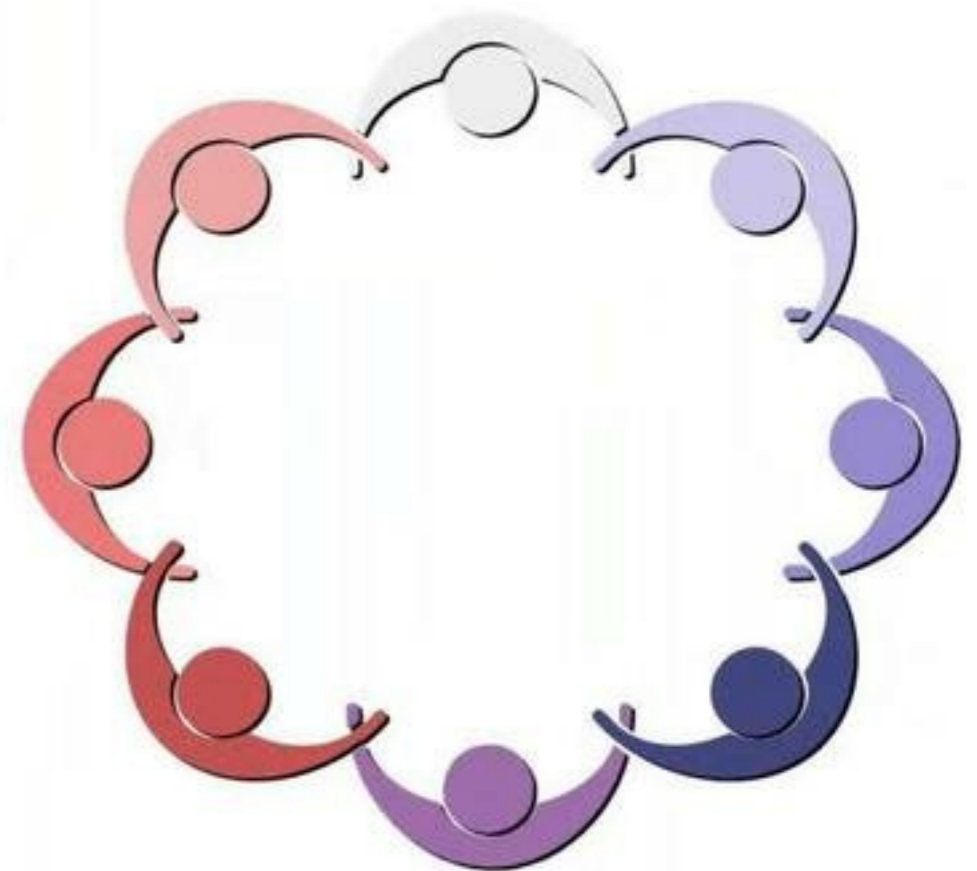
4

Why science matters



Team Science

- Team Science is a collective, interdependent approach to scientific endeavors
- It can be situated within a single scientific discipline or it can bring together several different disciplines, as well as non academics (e.g., NGOs, industry, governmental agencies)
- Team Science has become the dominant model for tackling complex social, environmental, and public health issues
- Collaborating across disciplinary and other boundaries increases productivity and impact



Roles & Responsibilities

Florida State University (FSU), in conjunction with NOAA, developed marine debris Science on a Sphere videos that include:

- An introduction to marine debris, what it is, where it comes from, and why it's a problem
- A discussion of where the debris goes and what happens over time
- Exploration of the science behind these questions
- Visualizations that connect the audience to consumer items and how those items may move through the environment and ocean
 - Ensures the U.S. contributions are represented.
- Solutions individuals can employ to help - what can I do?

NOAA, in conjunction with FSU:

- Collaborated on the creation of the products by providing messaging support for the content, and direction as needed
- Drafted the initial script to inform the visualizations
- Reviewed, commented, and approved all drafts and designs
- Participated in regular meetings with FSU to check in on the progress and address concerns



Multidisciplinary Project Team

Dr. Eric Chassignet
Physical Oceanography (FSU)

Dr. Xiaobiao Xu
Computer modeling (FSU)

Dr. Olmo Zavala
Computer Science (FSU)

Dr. Andy Opel
Documentary film (FSU)

Ian Weir
Digital video production (FSU)

Tracy Ippolito
Science Communication (FSU)

MaryLee Haughwout
Operations (NOAA MDP)

Emma Tonge
Communications (NOAA MDP)

Amanda Dwyer
Communications (NOAA MDP)

Rafael DeAmeller
Vizlab/NESDIS (NOAA)

Juan Pablo Hurtado
SOS/Vizlab (NOAA)



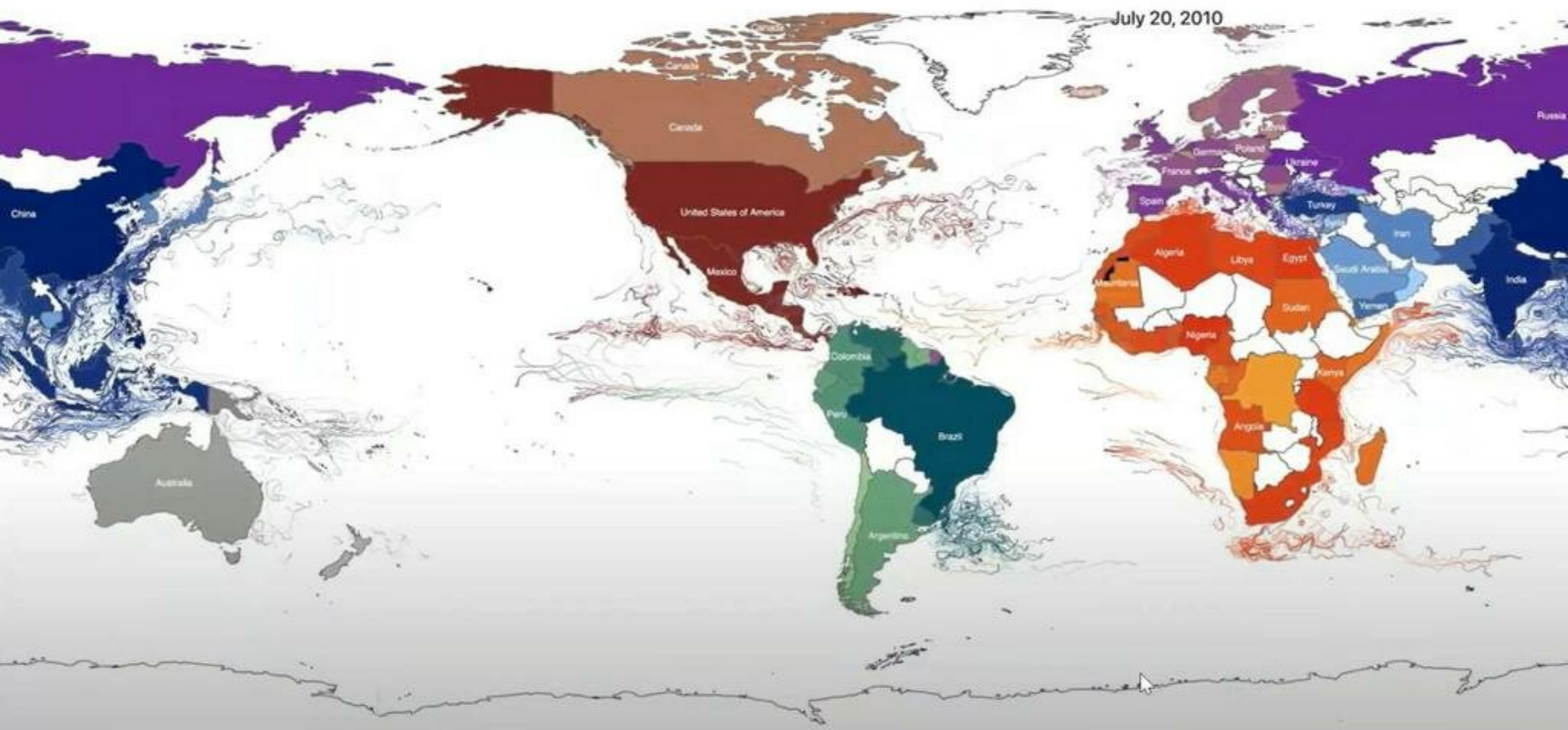
Products

- Two videos
 - Intro to marine debris in the global ocean (4:54 min)
 - Global marine debris model (6:21)
- Narrated - self guiding
- Translation of script into Spanish
- Raw trajectory data
- 2D videos for desktop for MDP website





July 20, 2010



Successes and Challenges

Successes

- Outcome of partnership
- Collaboration between FSU and NOAA Education SOS team

Challenges

- Science communication is hard
- Integrating different expertise (e.g., understanding the government, academic, production perspectives)
- Project evolved over time





Thank You!
Questions?

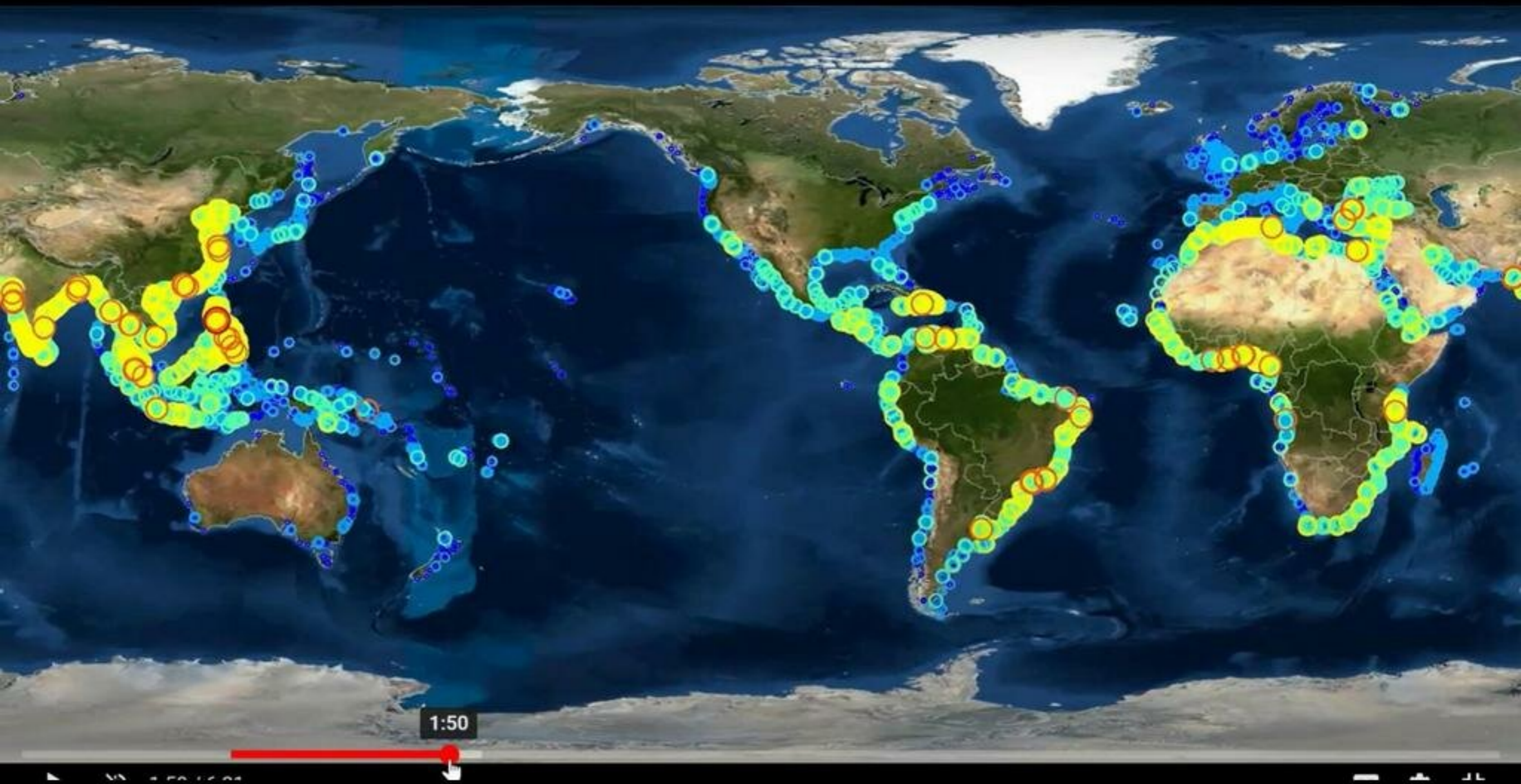
Contact:
MaryLee.Haughwout@noaa.gov
tippolito@fsu.edu

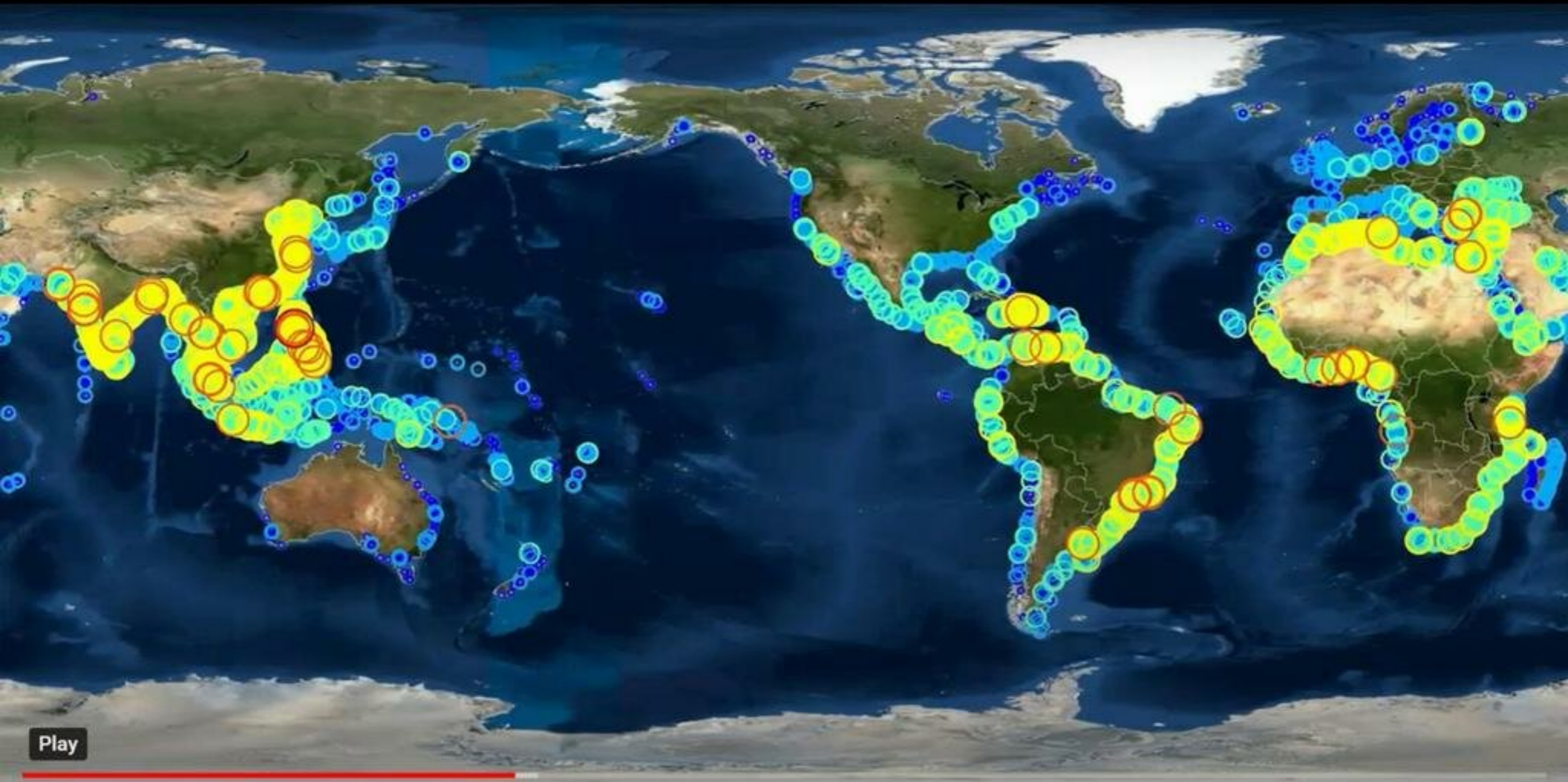


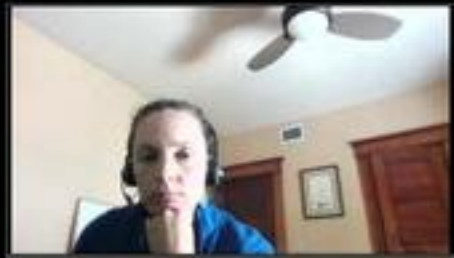
Next Steps

- Launch on World Ocean Day, June 8
- Feedback from users on content and resources
- Additional supporting content









SOS_Script_2_FSU_v9.mp4



Play



5:28 / 6:21



SOS_Script_2_FSU_v9.mp4



This video was created by Florida State University with funding from the National Oceanic and Atmospheric Administration Marine Debris Program

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▶ 🔇 6:01 / 6:21





Small bit, large problem: *Tracking marine microplastic monitoring through the NOAA NCEI Global Marine Microplastic ArcGIS Online Map Portal*

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

National Centers for Environmental Information (NCEI)

Date: May 10, 2023

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

Marine Debris → Plastics → Microplastics

Marine debris: Manufactured by humans disposed of or abandoned into the marine environment



Plastic bag life cycle
30 years



Abandoned fishing gear
cost about \$25,000 per
ton to remove



Plastic water bottle life cycle
650 years

Need for a Marine Microplastics Database

- To understand and monitor global marine microplastic **distribution, transports & fate**
- Input for **numerical modeling & predictions** of plastics
 - Track **environmental concentration & toxicity**
 - Assess and **quantify the impact on the blue economy** due to marine ecosystem loss



Website Overview

<https://www.ncei.noaa.gov/products/microplastics>



Launched July 2021

Updated August 2022

Homepage:

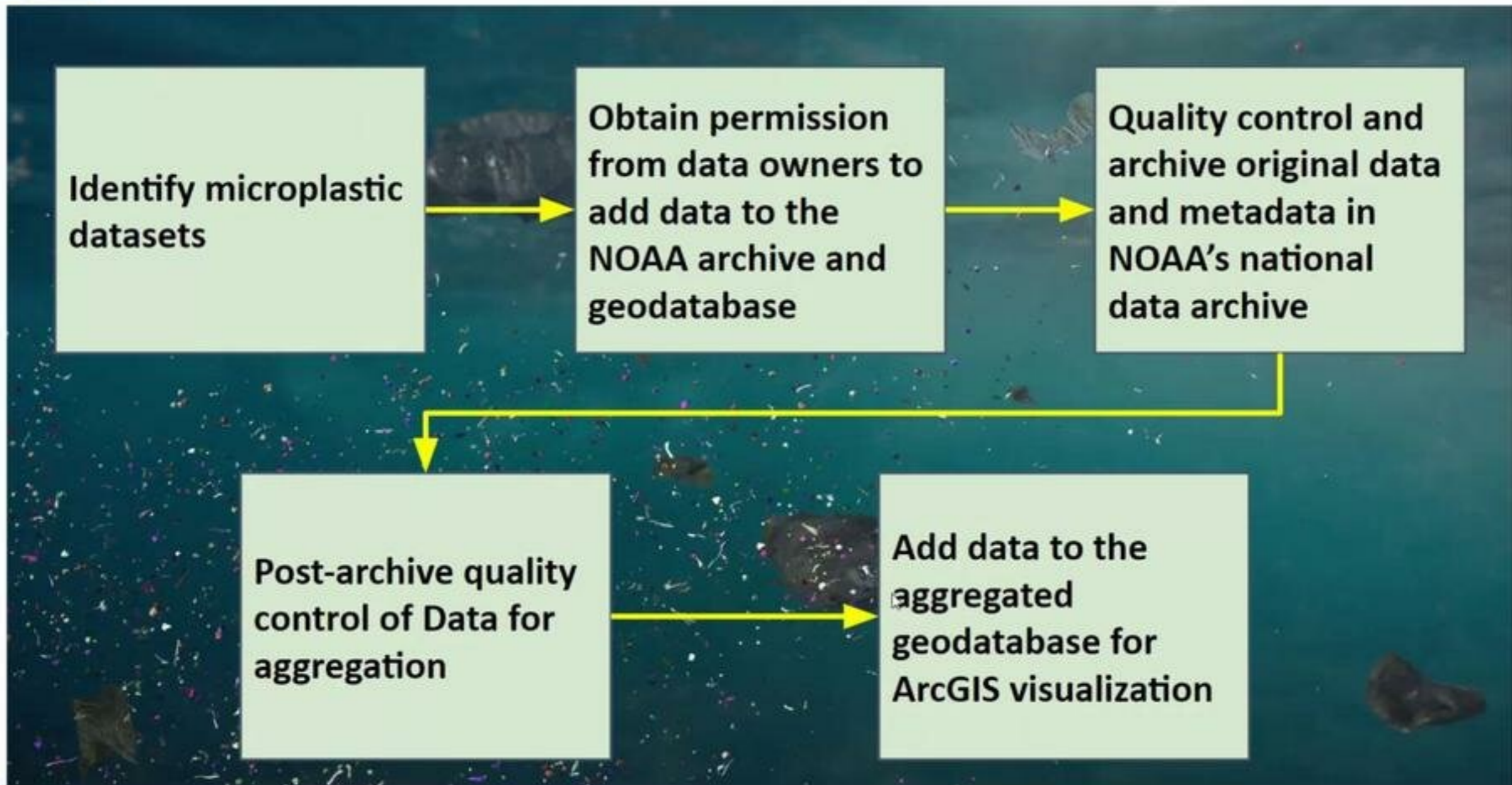
- Background information
- NOAA Policy & Approach
- Access to
 - Data submission information
 - **Microplastic Data Archive**
 - **ArcGIS Online Map Portal**



Microplastics
Homepage



Steps in Database Development



Marine Microplastics Geoportal



National Centers for
Environmental Information
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Marine Microplastics

[User Guide and Help](#)

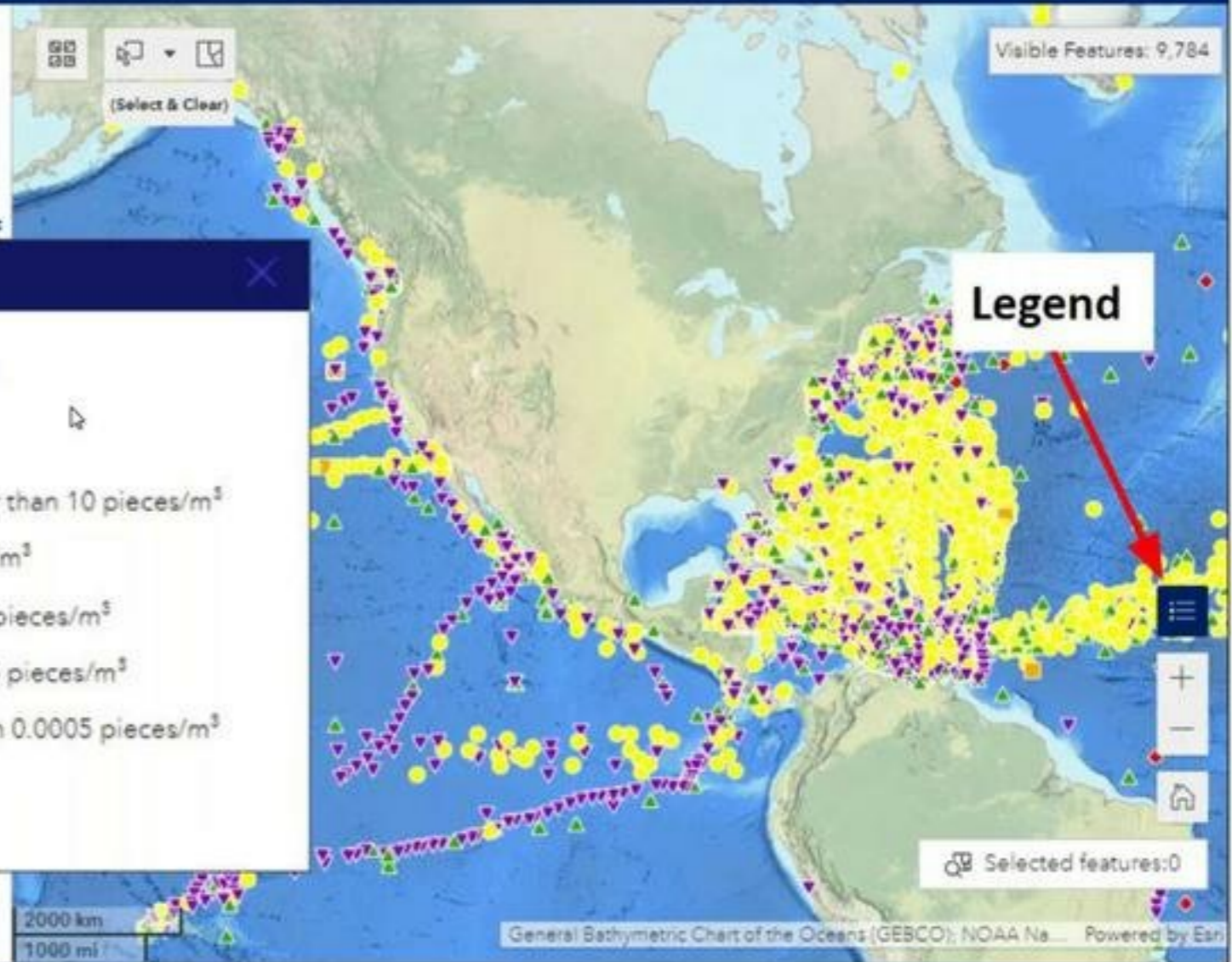
Data Information

Display Filters

Map Viewer

Data Table

[Click to view the metadata for the Microplastics data.](#)



Visible Features: 9,784

Legend

Marine Microplastics

Density Class

- Very High : Greater than 10 pieces/m³
- High : 1-10 pieces/m³
- Medium : 0.005-1 pieces/m³
- Low : 0.0005-0.005 pieces/m³
- Very Low: Less than 0.0005 pieces/m³

Select Features in the Map to Review their A

Microplastics
Map Portal



National Centers for Environmental Information (NCEI)

Geoportal Overview: *Filtering by Area*

Microplastics Map Portal



NCEI National Centers for Environmental Information
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Marine Microplastics

Data Information | **Display Filters** | Map Viewer | Data Table

Click to view the metadata for the Microplastics data.

Select by Ocean: Pacific Ocean

Search: [Q Search]

- All -
- Arctic Ocean
- Atlantic Ocean
- Indian Ocean
- ✓ Pacific Ocean

Select by Density Range (pieces/m³): - All -

Click the button to the right to reset selected filters.

Legend

Marine Microplastics

Density Class

- Very High : Greater than 10 pieces/m³
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- Low : 0.0005-0.005 pieces/m³
- Very Low: Less than 0.0005 pieces/m³

Selected features: 0

3000 km / 1000 mi

General Bathymetric Chart of the Oceans (GEBCO); NOAA Nis. Powered by Esri



Current Use of Database & Future Target Audience

★ Research Scientists

- Example: AI Moonshot Challenge proposal - AI & MP sensing International collaboration - data for development of remote sensing capabilities

★ U.S. and International Students

- Example: Data requests to support Ph.D. dissertation and Undergraduate thesis projects

★ U.S. State Environmental managers and Policy makers

- Example: Texas Commission on Environmental Quality - data to support state microplastic water quality policy

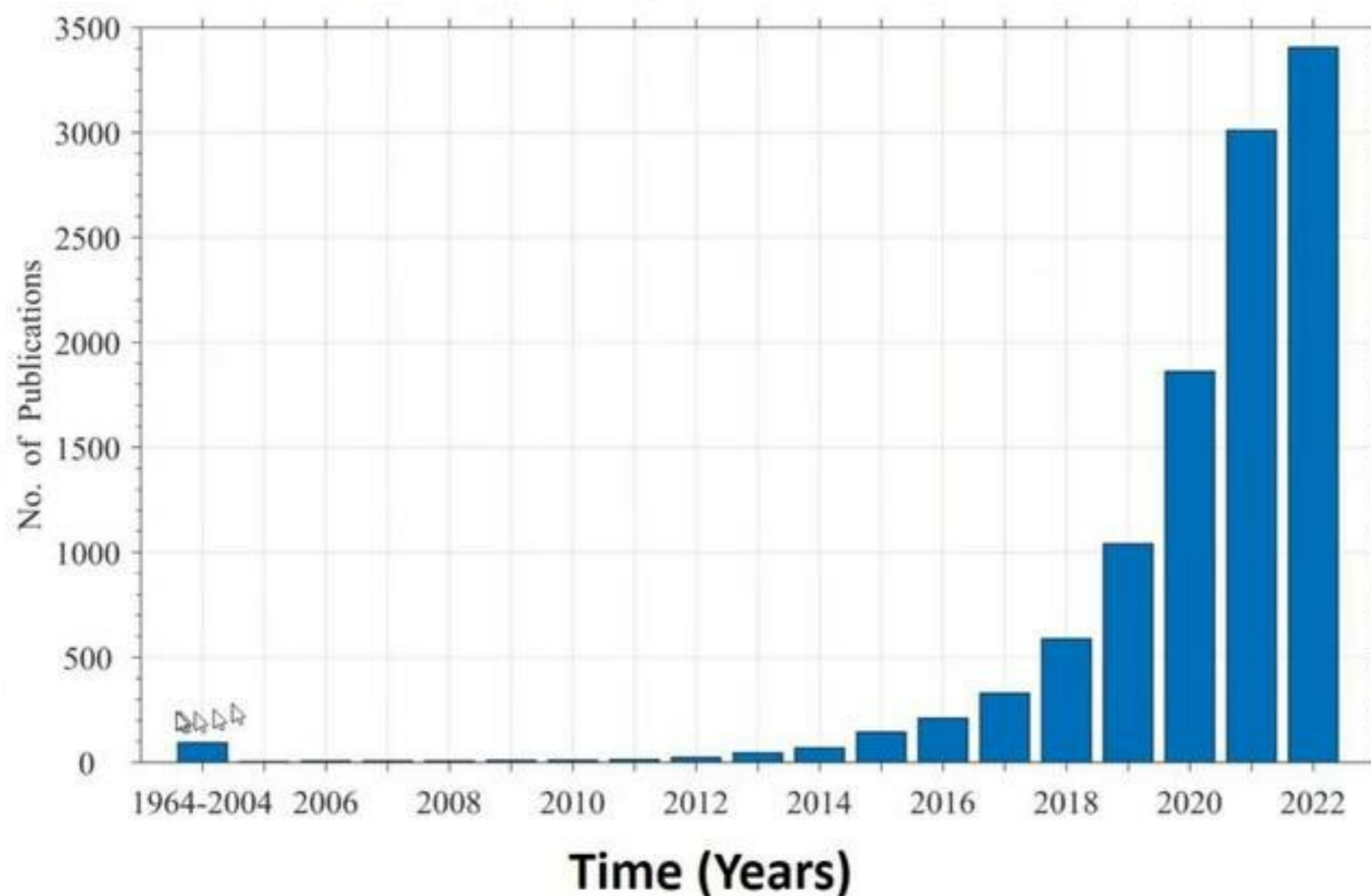
Future target audiences:

Fisheries managers, Tourism organizations, Media, General public



Marine Microplastic Monitoring is increasing

Marine Microplastic Publications



Folks are starting to pay attention !



Marine Microplastic Monitoring is increasing

Citizen Science Contributions

- [Adventure Scientists](#)
 - Opportunistic collection of 1-liter grab samples by citizen scientists during 2013-2017 - (Barrows et al 2018)
- [Oceaneye](#)
 - Geneva-based non-profit supports microplastic data collected by private sailboats world wide - (Faure et al 2015)
- [GEOMAR](#)
 - During The Ocean Race 2017/2018 edition (formerly known as Volvo Ocean Race), two yachts served as ships of opportunity regularly taking samples of microplastics during their circumnavigation (Tanhua et al 2020)



More Marine Microplastic Data to be added

More data coming this summer from ...

- Beaches
 - nurdlepatrol.org
... and more!
- Sediments
- Subsurface



NCEI Partners with Outreach Professionals

- **MS- AL Sea Grant**
 - High School education module
 - Extension Agent documentation
- **World Ocean Day Activities**
 - **Science On a Sphere** - [Time series video](#) highlighting data from Geoportal and the increase in global observations of the growing marine microplastic problem.
 - **ESRI** LinkedIn streaming “**Fireside Chat with Dawn Wright**”





SOS-NCEI Microplastics.mp4

Open with

