

Tiny Pollutants, Big Problems:

A visual story of plastic pollution using satellite data.

Semira BENER



The Shoreline: Where It All Begins

Microplastics
Less than 5
millimeters in
size

8.3 billion tons
of plastic

Only 9% has
been recycled



The Ocean Surface: The Invisible Drift



Between 4.8 and 12.7 million metric tons of plastic waste enter the oceans every year!

Food Chain Contamination

Ecosystem Disruption

Potential Human Health Risks

Strategic Cleanups

Tracking Microplastics



Dataset Source

NASA's CYGNSS mission (2017).



Indirect Detection

Ocean surface roughness measured.



Algorithm Development

University of Michigan team.

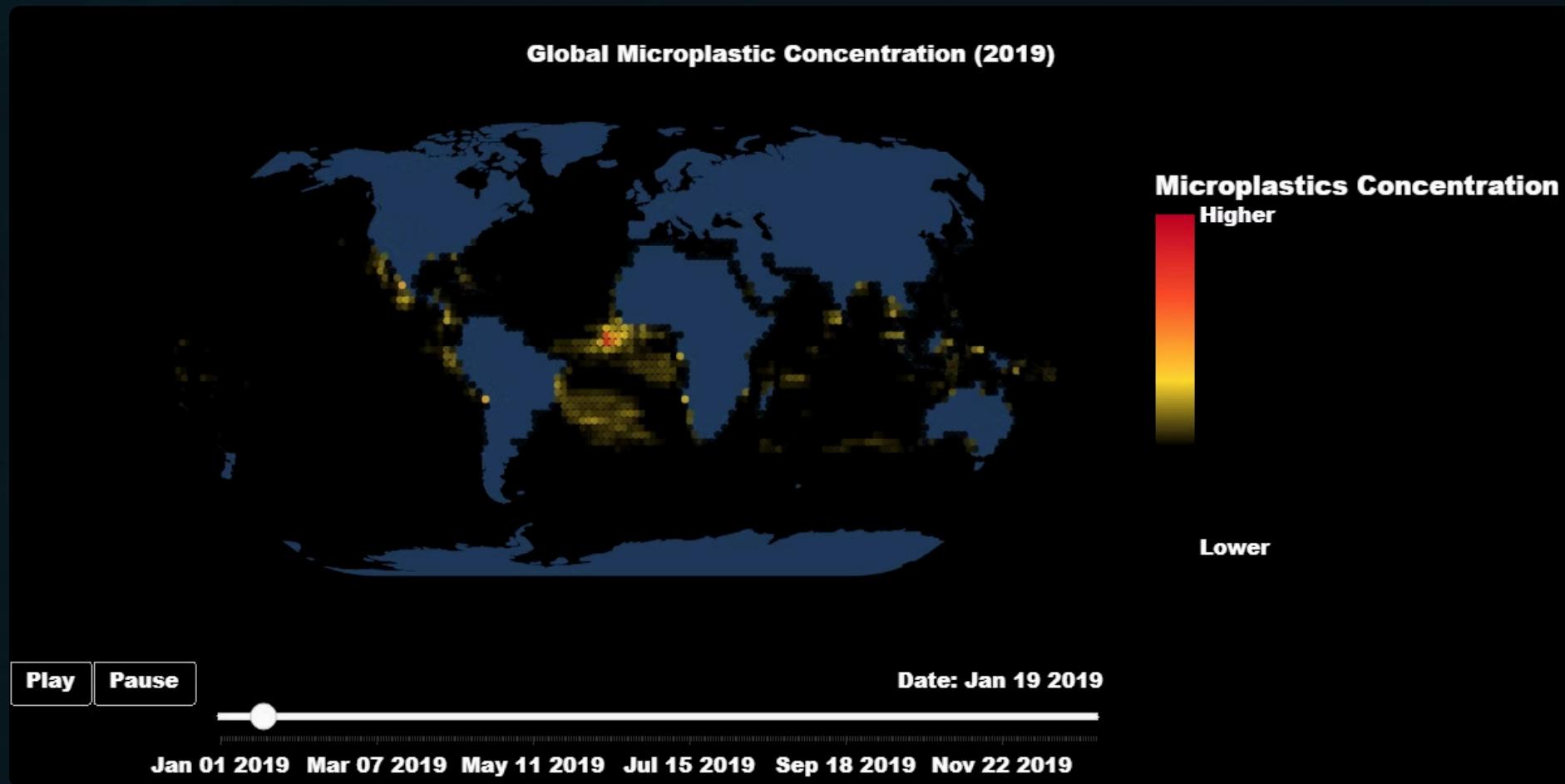


Dashboard Focus

2019 data analysis.



Animated Trend Map



Maps show seasonal and spatial trends in microplastic accumulation



Why this work matters?



Limited
Sampling
Traditional
methods
insufficient.



Global Insights
Worldwide
coverage.



Actionable
Data
Inform
prevention,
cleanup.

A Full Circle: Back to Us



Reduce

Use reusable bags, bottles,
and containers

Educate

Share knowledge about
microplastic pollution

Advocate

Support policies to reduce
plastic production

Thank You For Your Attention!



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github.com/Benersem

Resources

[Cloud Datasets | PO.DAAC / JPL / NASA](#)

[Scientists Use NASA Satellite Data to Track Ocean Microplastics From Space](#)

[Mapping Marine Microplastics](#)

- Evans M. C., and Ruf C. S., (2021).Toward the Detection and Imaging of Ocean Microplastics with a Spaceborne Radar
IEEE Transactions on Geoscience and Remote Sensing
- Sun, Y., T. Bakker, C. Ruf, Y. Pan, (2023).Effects of microplastics and surfactants on surface roughness of water waves.*Scientific Reports*

