
Building a comprehensive archive and open access data portal for monitoring marine microplastics - the NOAA NCEI Global Marine Microplastics Database and Web Map

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Abstract

Microplastics (< 5 mm) pollution is a growing problem affecting coastal communities, marine ecosystems, aquatic life, and human health. Aquatic biota such as plankton, fishes, and shrimp ingest microplastics that interfere with organ functions, reduce growth, and eventually kill these organisms. Microplastics can also bioaccumulate in humans through the consumption of seafood, possibly leading to oxidative stress and cell damage. Despite the extensive negative impacts, studies on the consequences of microplastics have been limited due to the lack of large-scale, long-term monitoring and collection of data to understand the sources, distribution, and impacts of microplastics. The National Oceanic and Atmospheric Administration (NOAA) National Centers for Environmental Information (NCEI) now offers global open access to marine microplastics data on an easily discoverable and accessible public GIS web map and data portal (<https://www.ncei.noaa.gov/products/microplastics>). The objective of this data portal is to develop a repository where data on microplastics are aggregated, archived, and served in a user friendly, consistent, and reliable manner. This work contributes to NCEI's efforts towards data integration, harmonization, and interoperability among international collaborators for monitoring global marine microplastics. In concert with international efforts, NCEI aims to adapt to user needs as contributors to this rapidly evolving science come to a consensus on reporting metrics and sampling methods. Through this data visualization and access portal, researchers and interested groups will be able to access and analyze data that will enable new insights in holistic understanding of the global microplastic problems.

Keywords: Marine Microplastics, Global Ocean, GIS map, Open Access Data, NOAA NCEI, Marine Pollution

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