Visualizing Microplastics in the San Francisco Bay

MAT 259 Final Project
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Visualization concept

- Microplastics can range in size from millimeters (10e-3 meters) and above to micrometers (10e-6) which presents a challenge for visualization
- My concept: place small microplastics near the center of a 3D interface and large ones near the boundary. Zooming in reveals smaller particles without obstruction, while zooming out reveals larger particles.
- Concept inspired by Cary Huang's "Scale of the Universe 2": https://htwins.net/scale2/

The dataset

- Small plastic particles, or **microparticles**, are ubiquitous in marine environments. Microparticles that are confirmed by experiment to be plastics are called **microplastics**.
- Data for this project was collected by the San Francisco Estuary Institute: https://data.cnra.ca.gov/dataset/microplastic-sf-bay

Features of the Dataset

- Data was collected in several batches between 2014 and 2018
- Particles collected from 5 sources: surface water, prey fish tissue, stormwater, effluent (runoff), and sediment
- Particles take 5 basic shapes: fragments, films, foams, fibers, and spheres
- Many different types of plastic (polyethylene, polystyrene, polypropylene, etc.) and other particles observed. Most are not characterized.
- Each particle has color data
- A minority of the roughly 40,000 particles collected have length and width data. Those particles are visualized in this project