

MONITORING

PLASTIC

MARINE

IMPACTS



5GYRES

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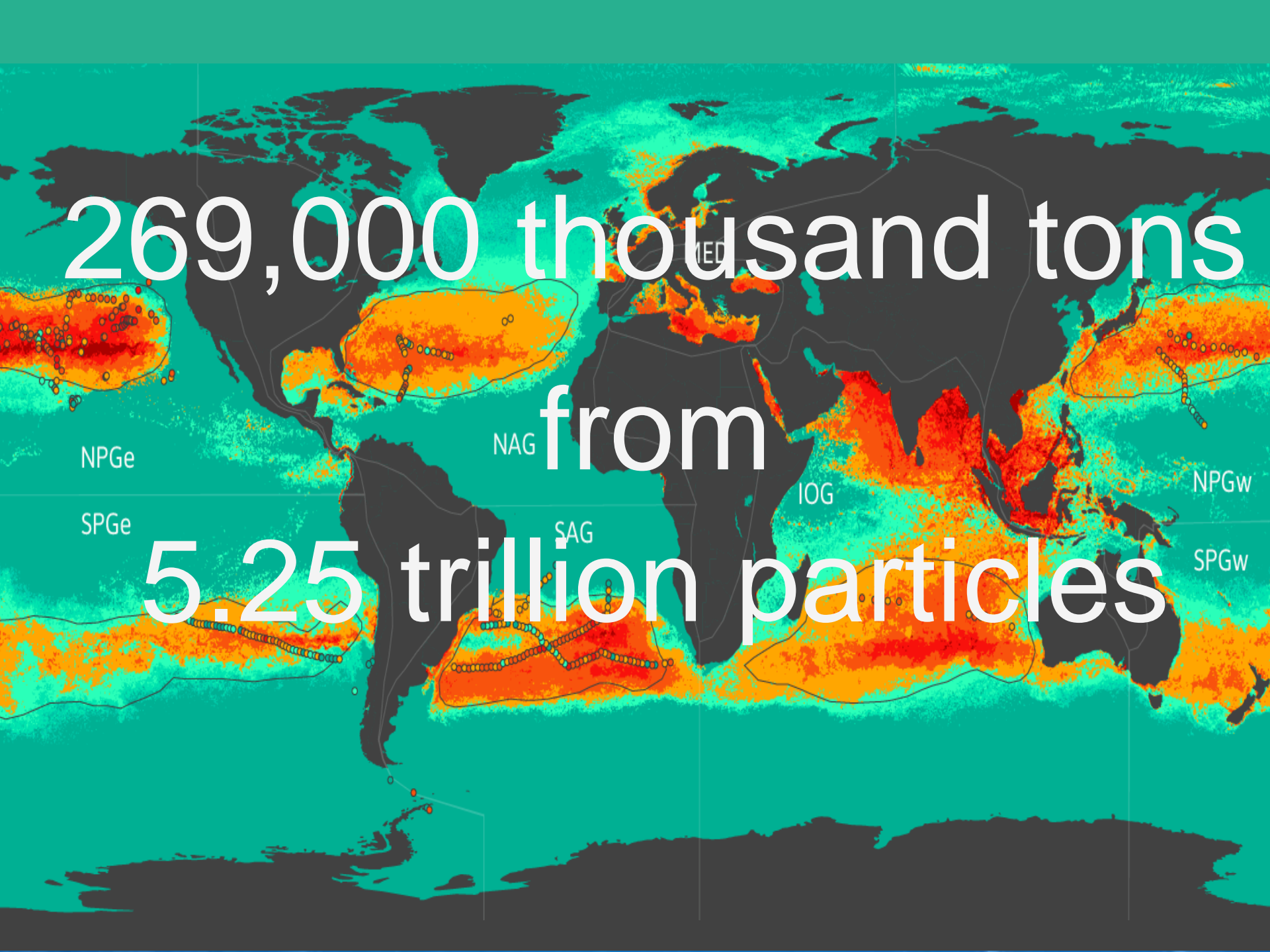


SGYRES

269,000 thousand tons

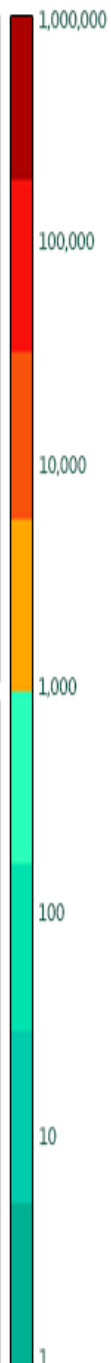
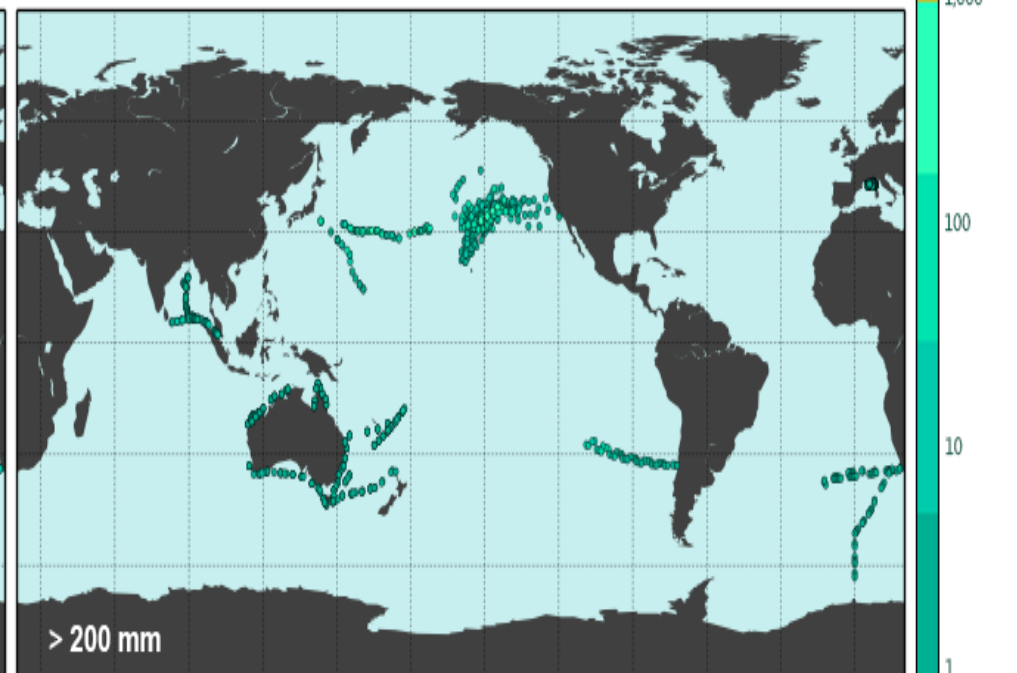
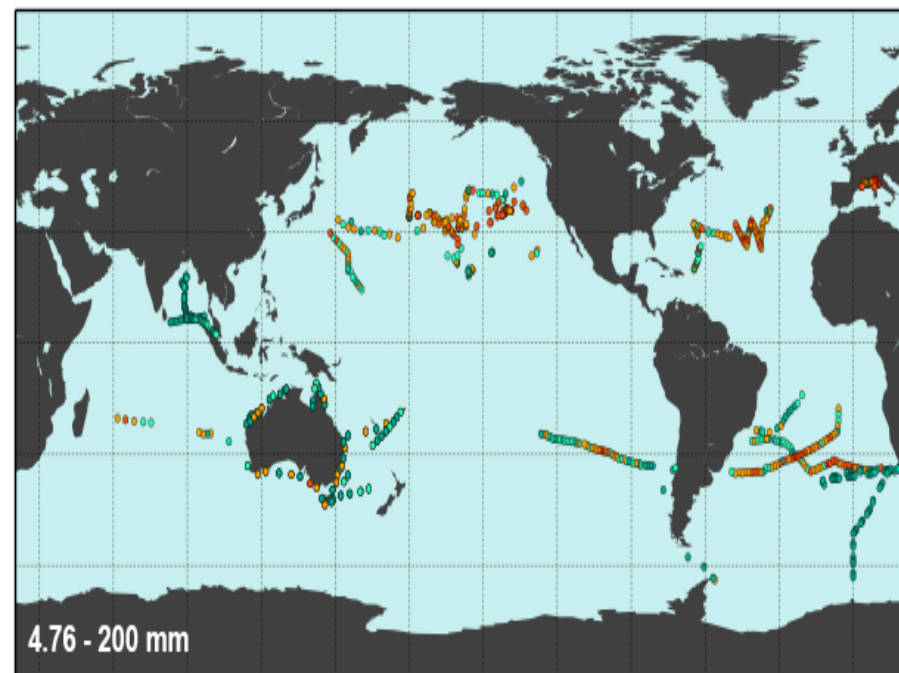
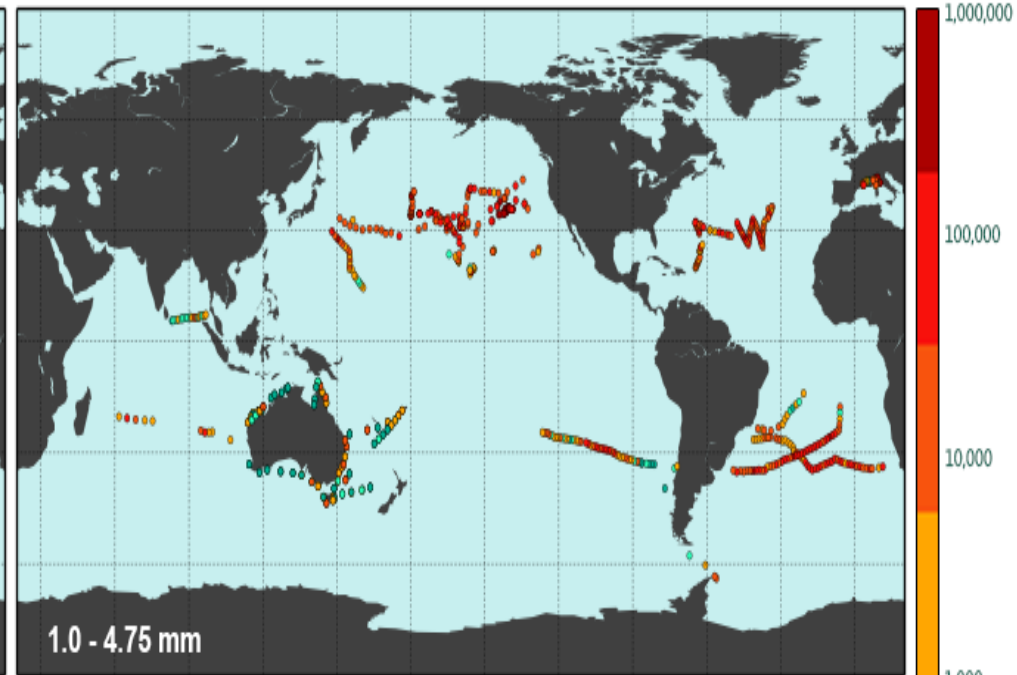
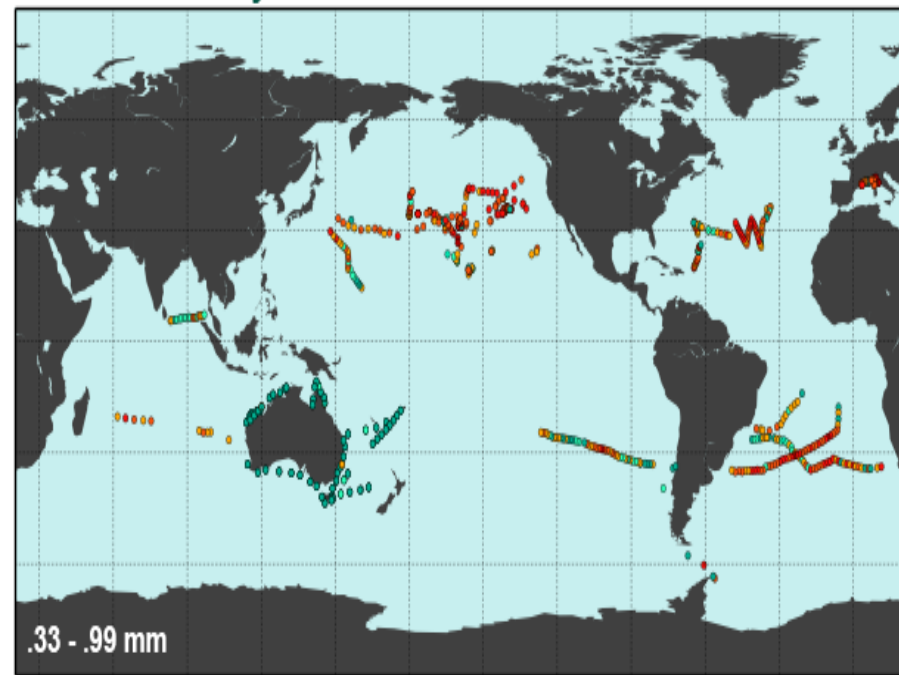
from

5.25 trillion particles

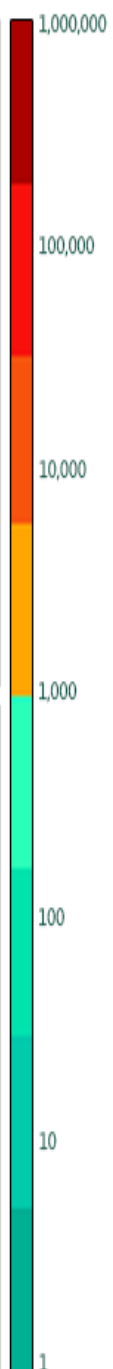
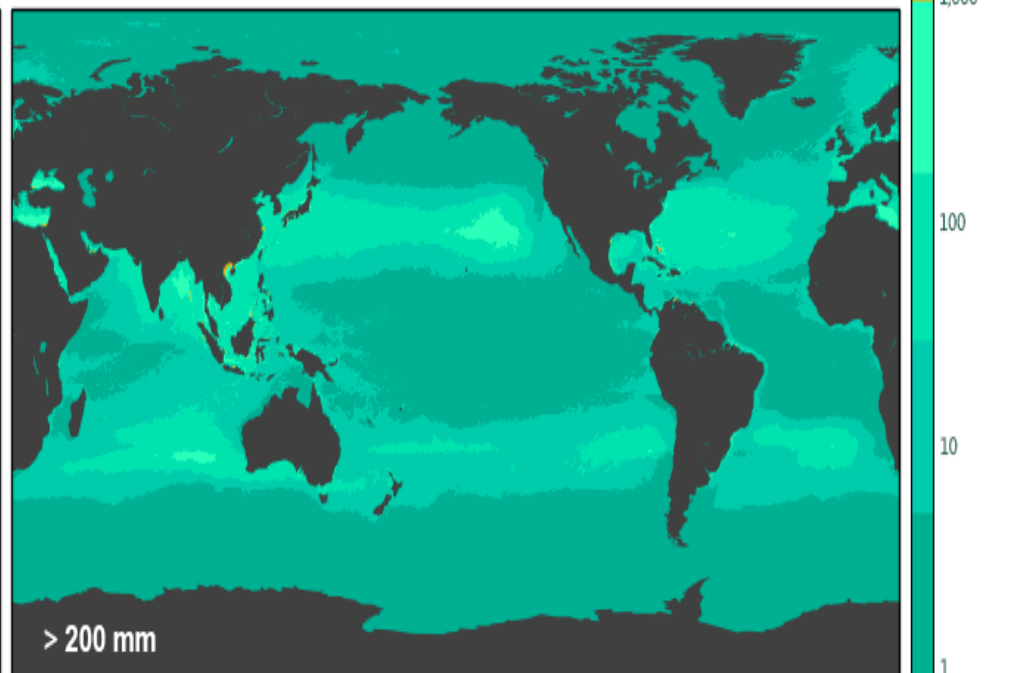
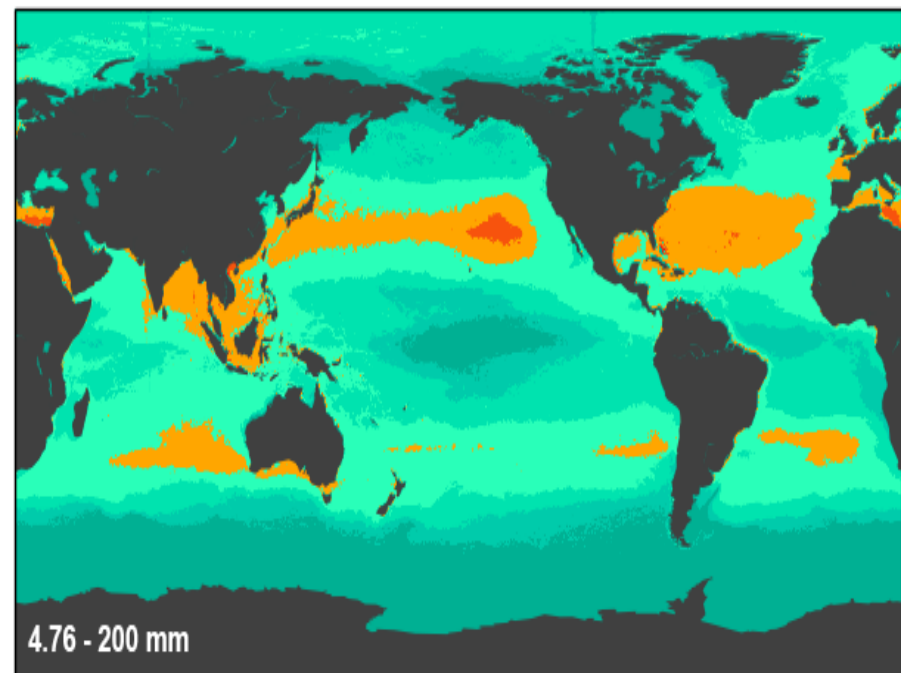
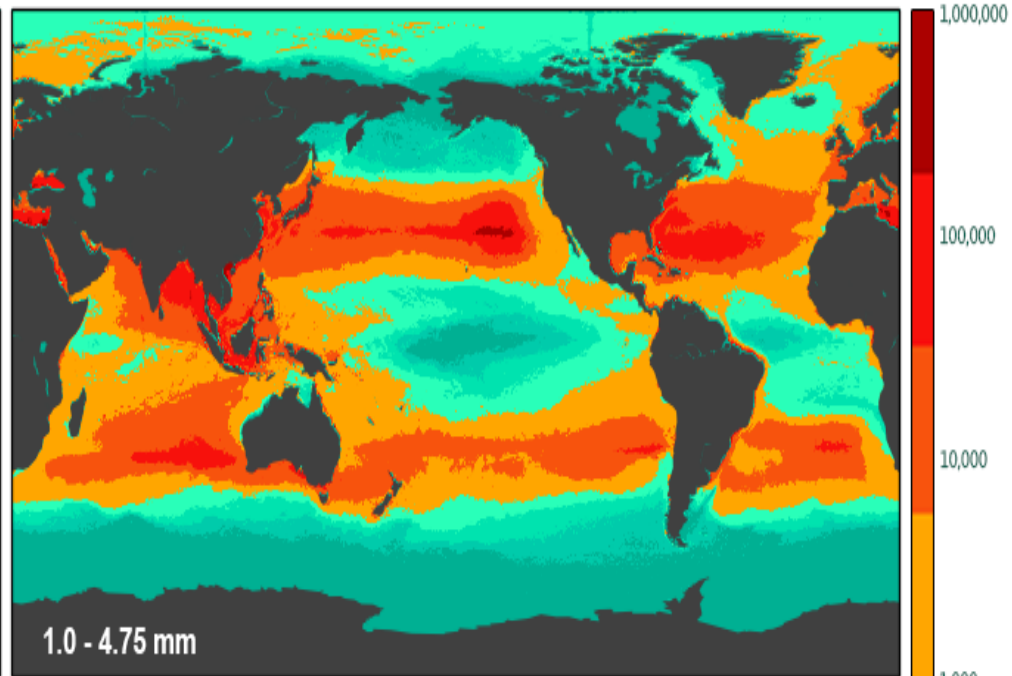
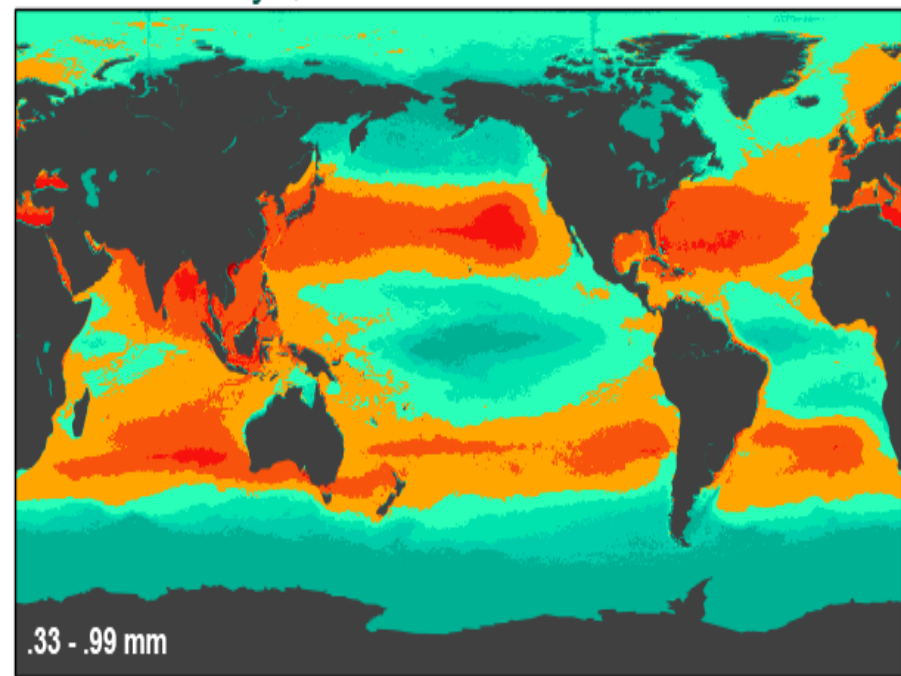




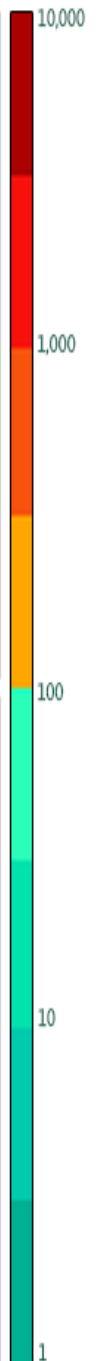
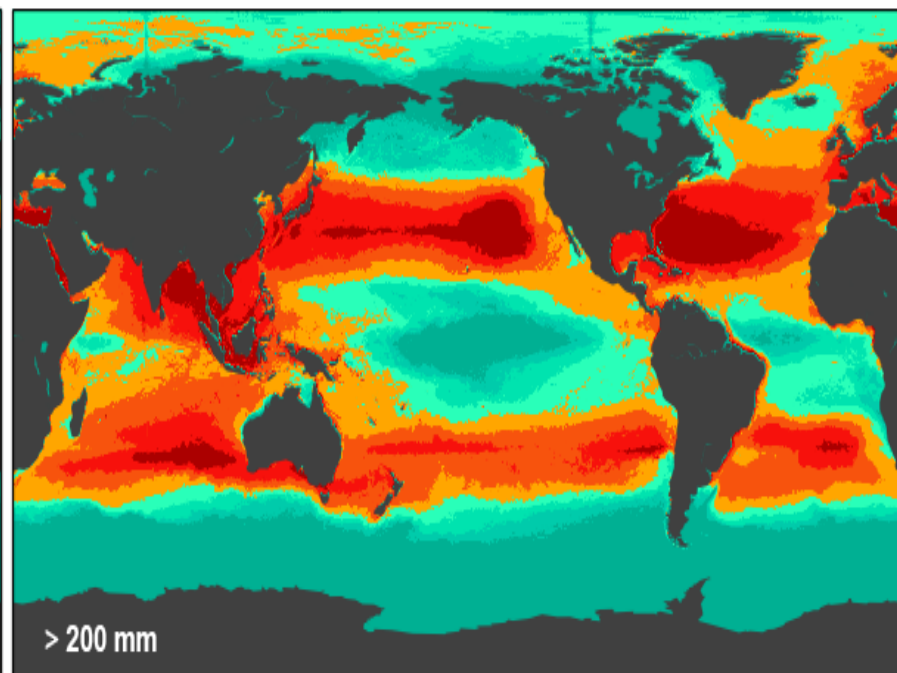
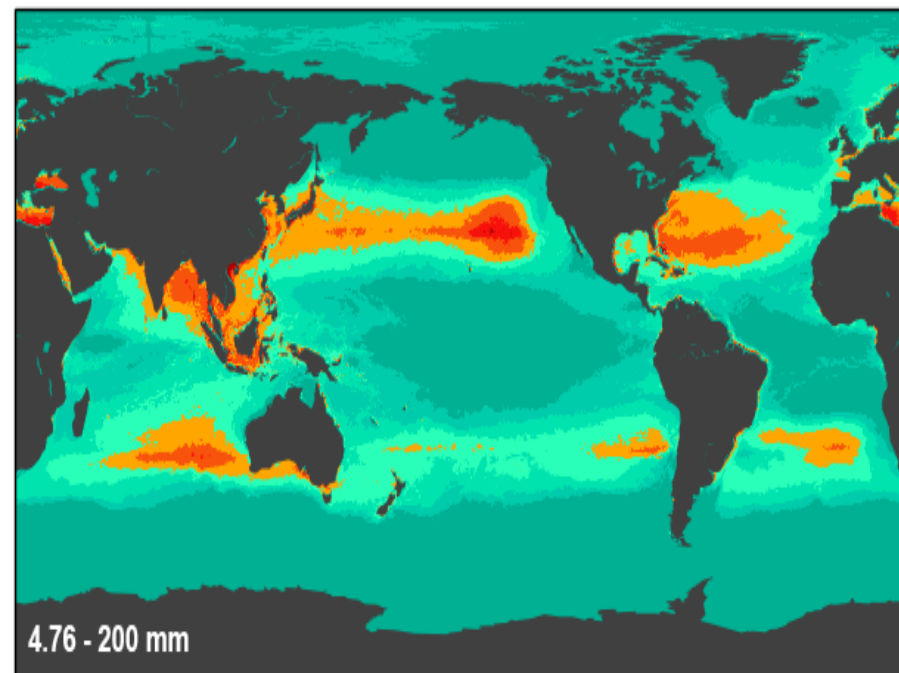
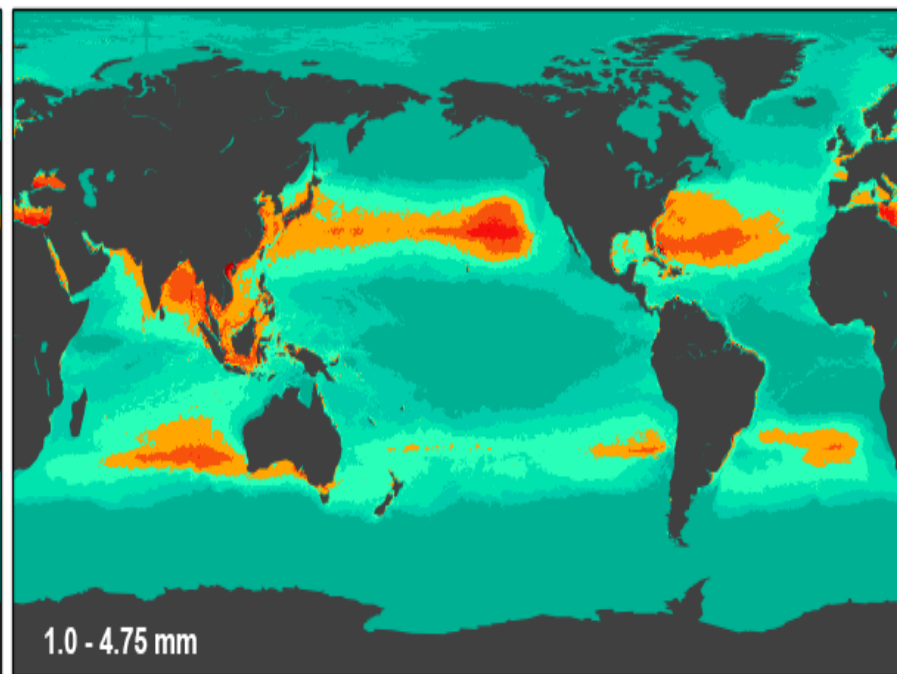
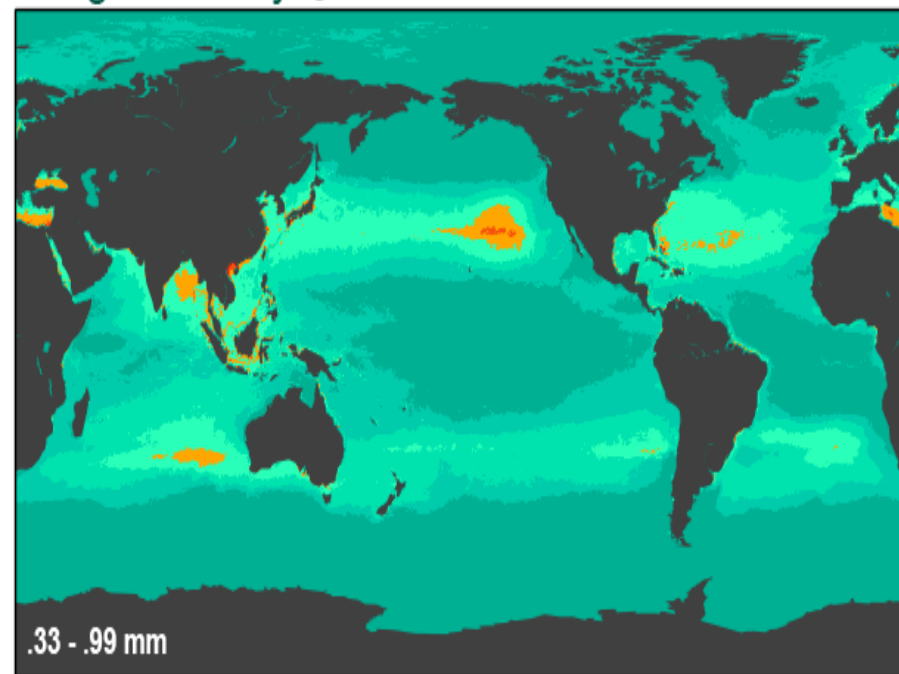
# Count Density - pieces.km<sup>-2</sup>



# Count Density - pieces.km<sup>-2</sup>



# Weight Density - $\text{g.km}^{-2}$



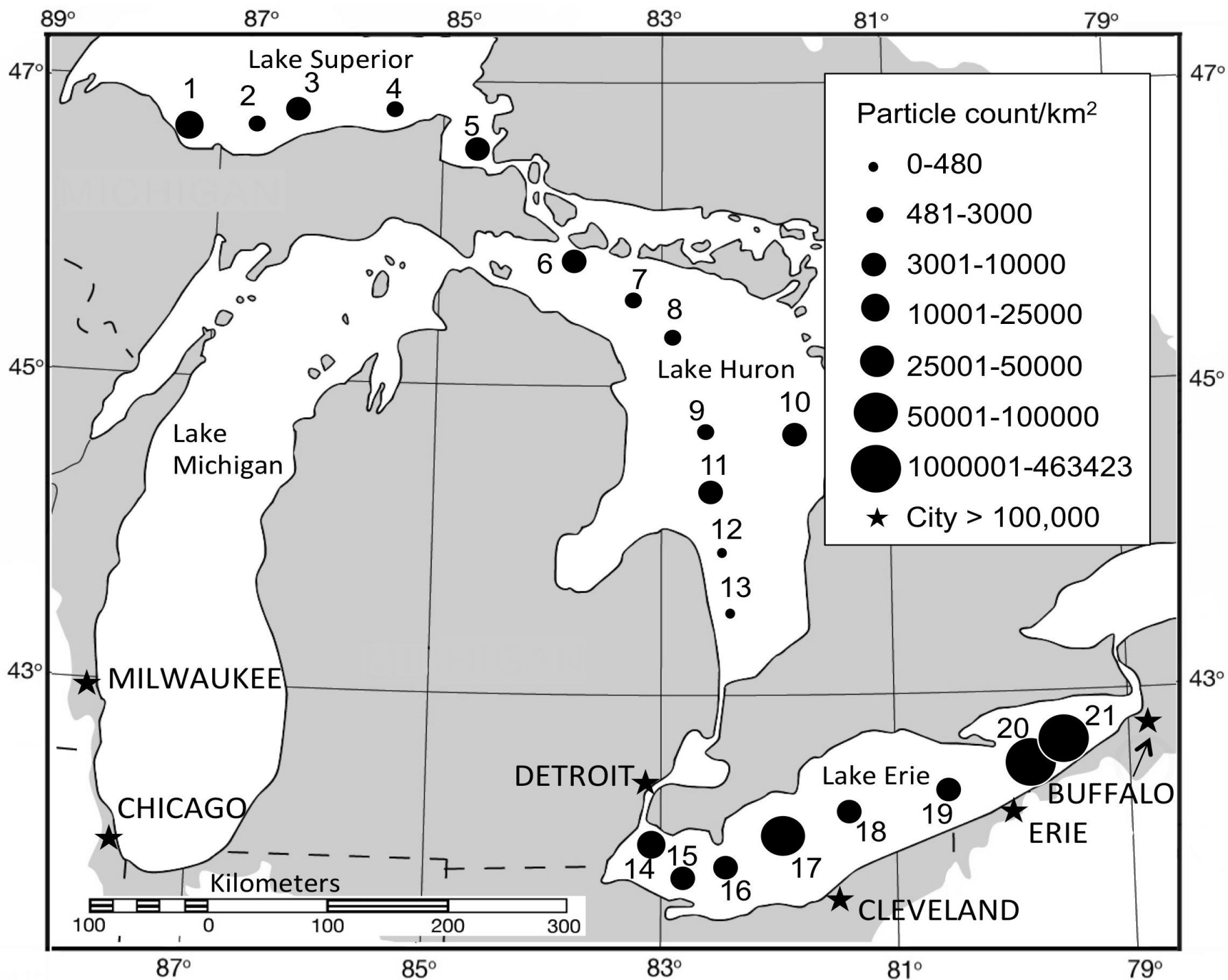


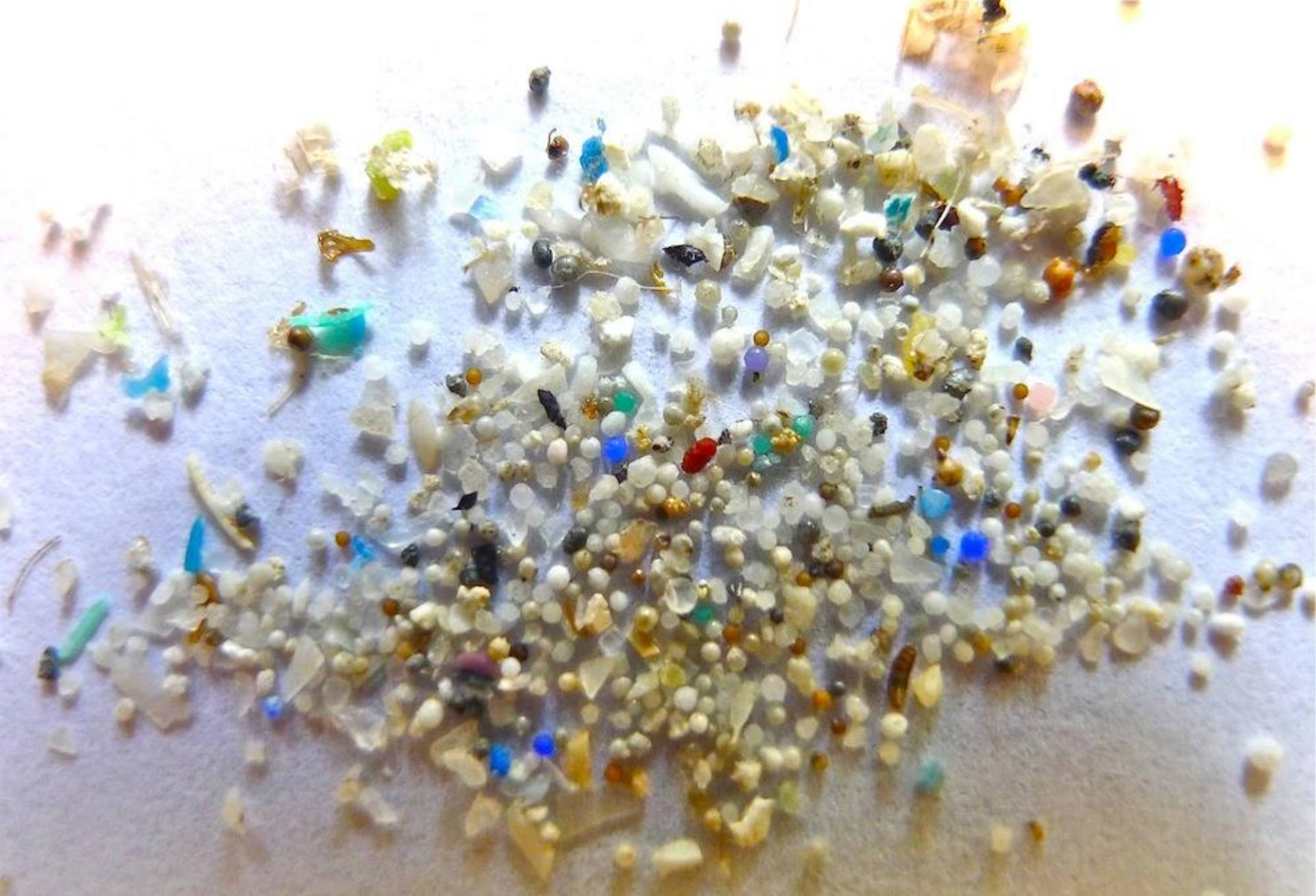
Density	Size class	NP	NA	SP	SA	IO	MED	Total
Count	0.33-1.00mm	68.8	32.4	17.6	10.6	45.5	8.5	183.0
	1.01-4.75mm	116.0	53.2	26.9	16.7	74.9	14.6	302.0
	4.76-200mm	13.2	7.3	4.4	2.4	9.2	1.6	38.1
	>200mm	0.3	0.2	0.1	0.05	0.2	0.04	0.9
	Total	199.0	93.0	49.1	29.7	130.0	24.7	525.0
Weight	0.33-1.00mm	21.0	10.4	6.5	3.7	14.6	14.1	70.4
	1.01-4.75mm	100.0	42.1	16.9	11.7	60.1	53.8	285.0
	4.76-200mm	109.0	45.2	17.8	12.4	64.6	57.6	306.0
	>200mm	734.0	467.0	169.0	100.0	452.0	106.0	2028.0
	Total	964.0	564.7	210.2	127.8	591.3	231.5	2689.4

A globe of the Earth is shown, heavily encrusted with various pieces of plastic waste. The waste includes small fragments, bottle caps, and larger pieces of debris in various colors like blue, yellow, and purple. The globe is centered in the frame, and the text is overlaid on it.

**NEARSHORE  
MONITORING  
LEADS TO  
SOLUTIONS**

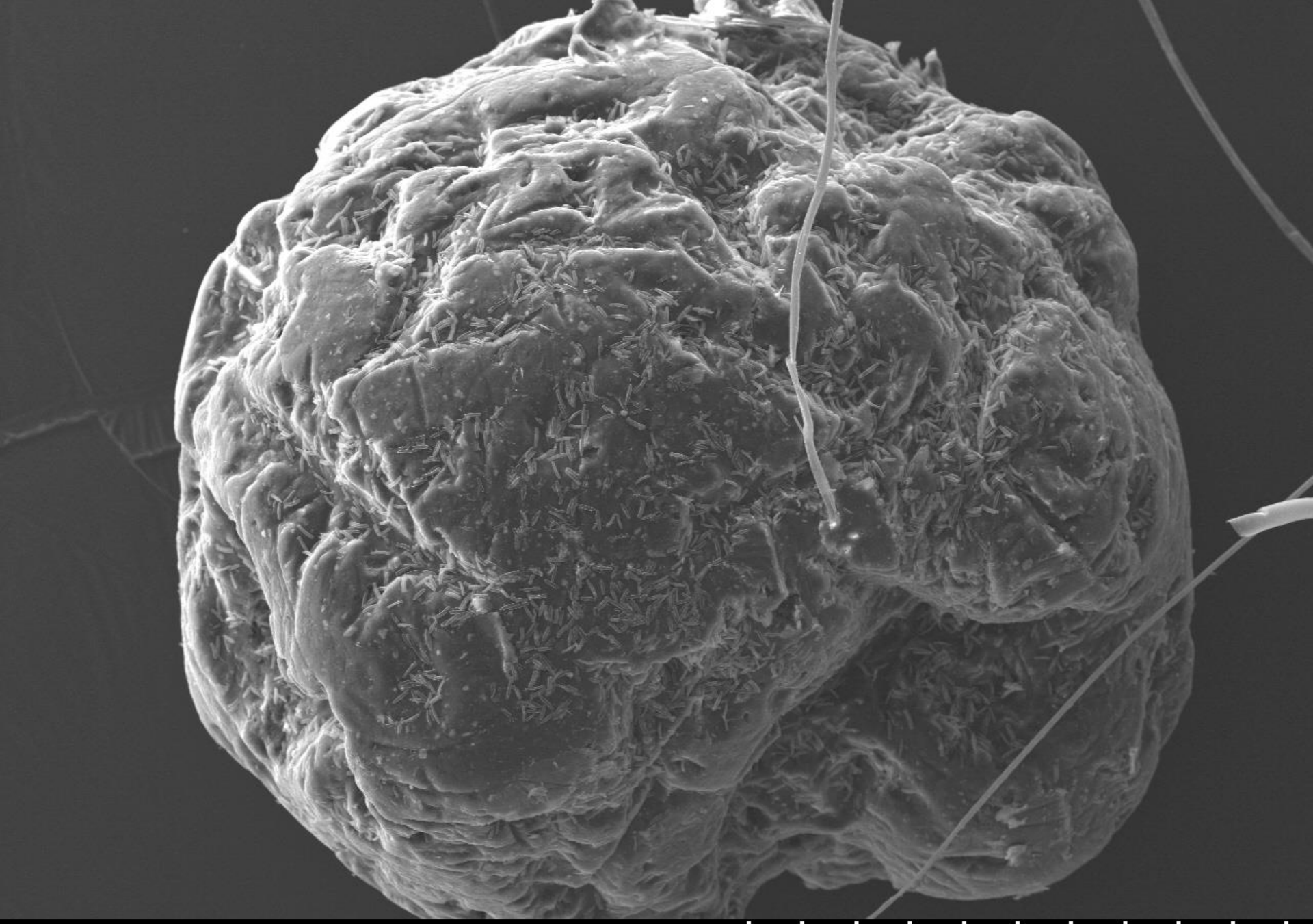






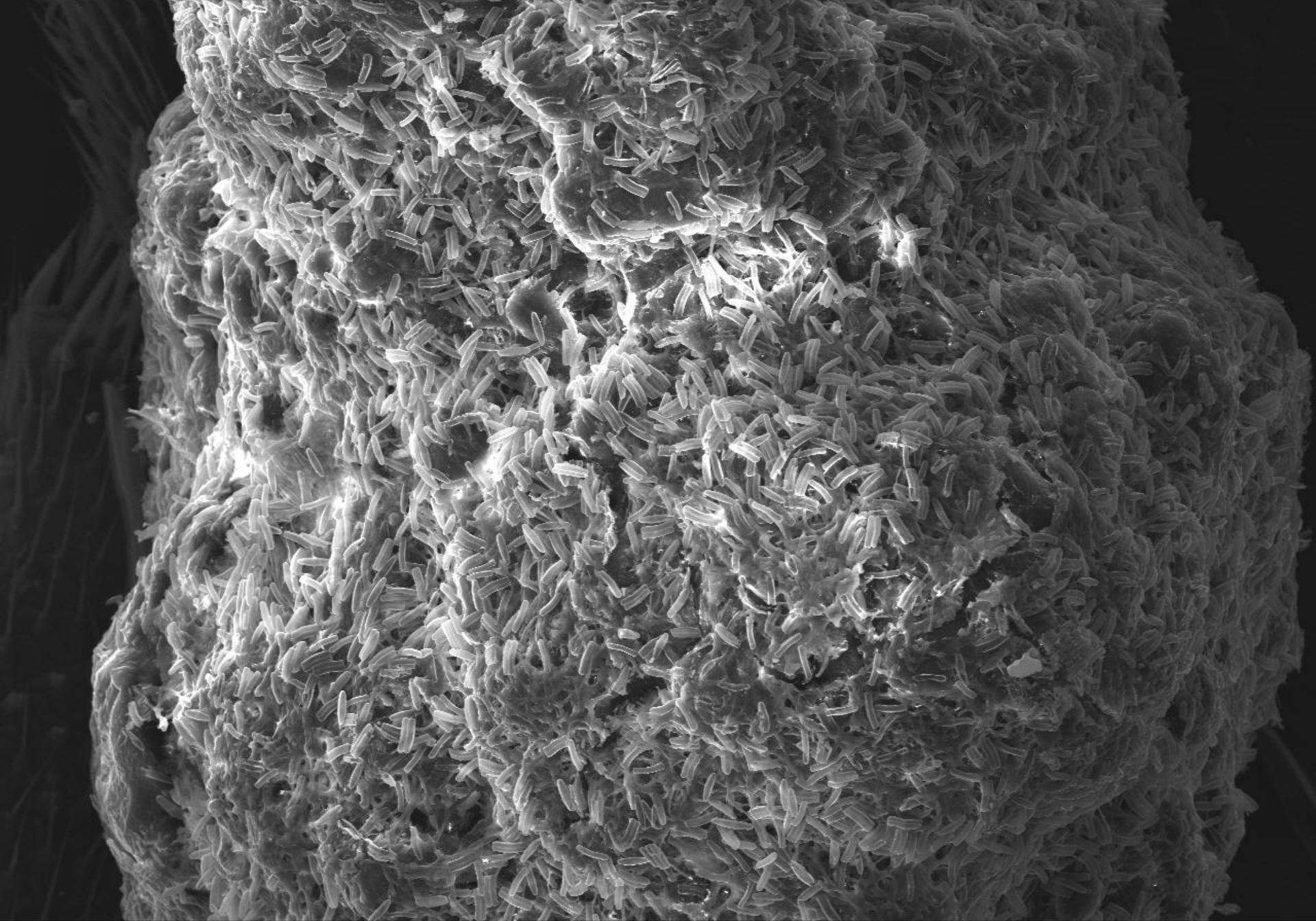
Station #20 Lake Erie





SU70 20.0kV 15.0mm x130 SE(M) 1/8/2013

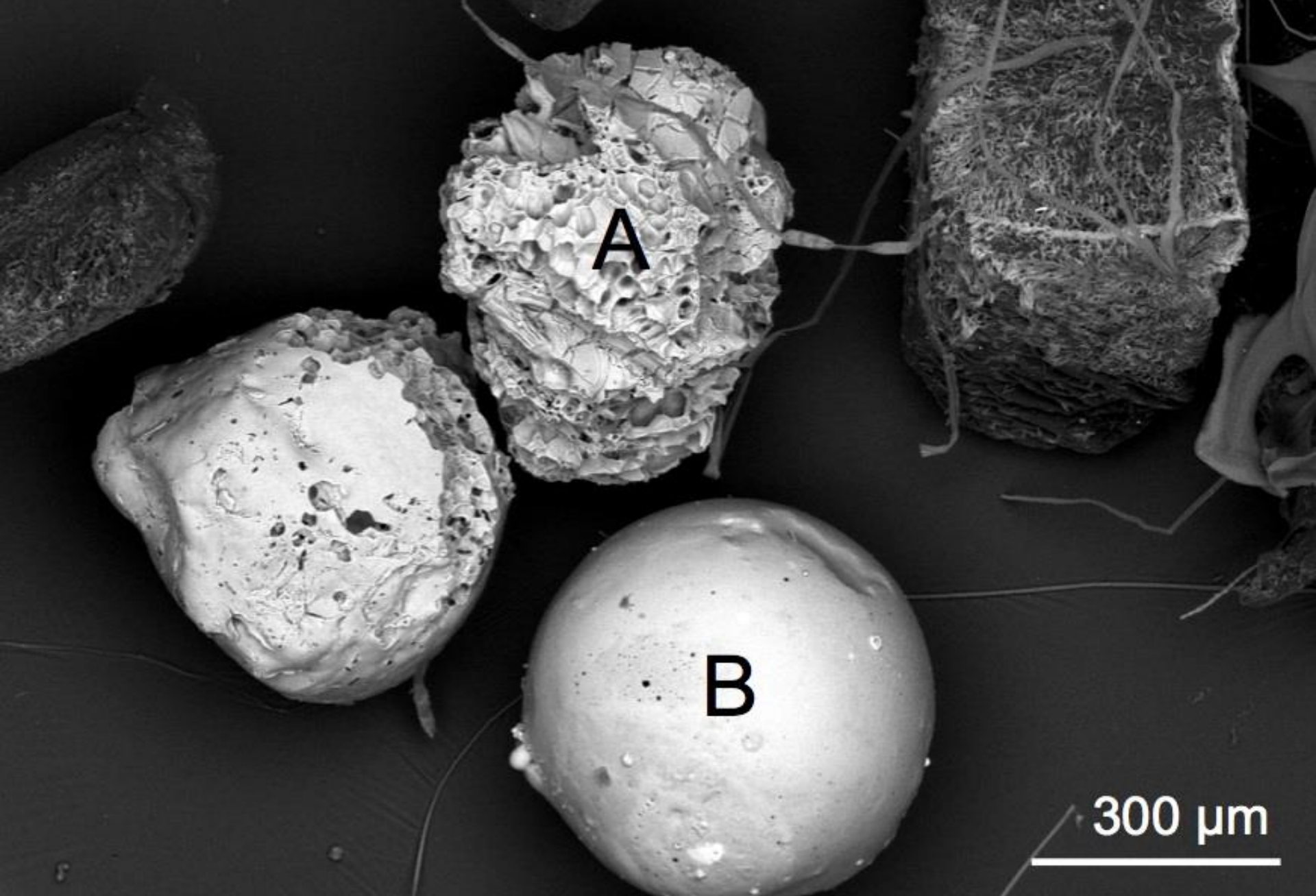
400um



SU70 20.0kV 15.3mm x250 SE(M) 1/8/2013

200um





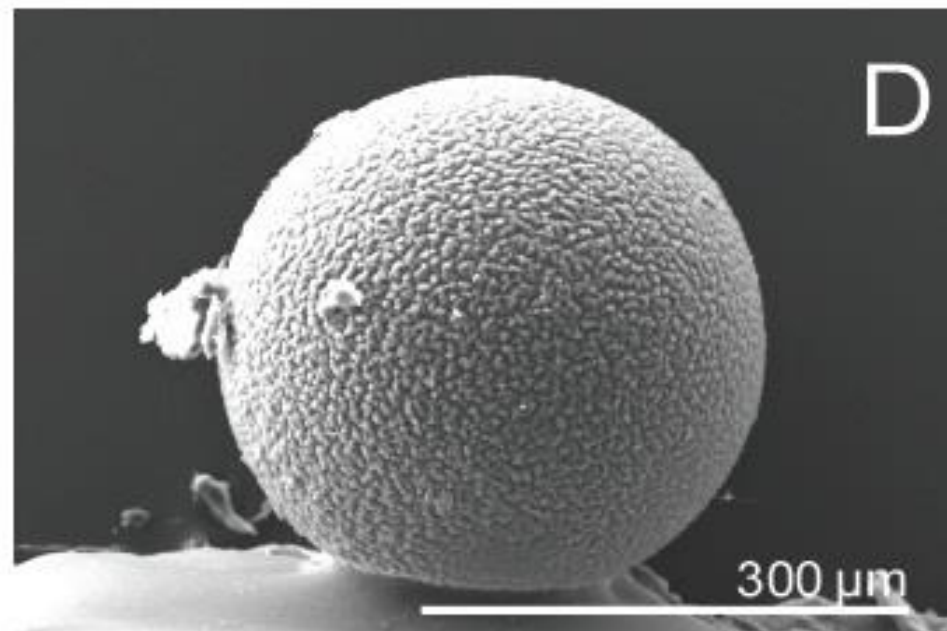
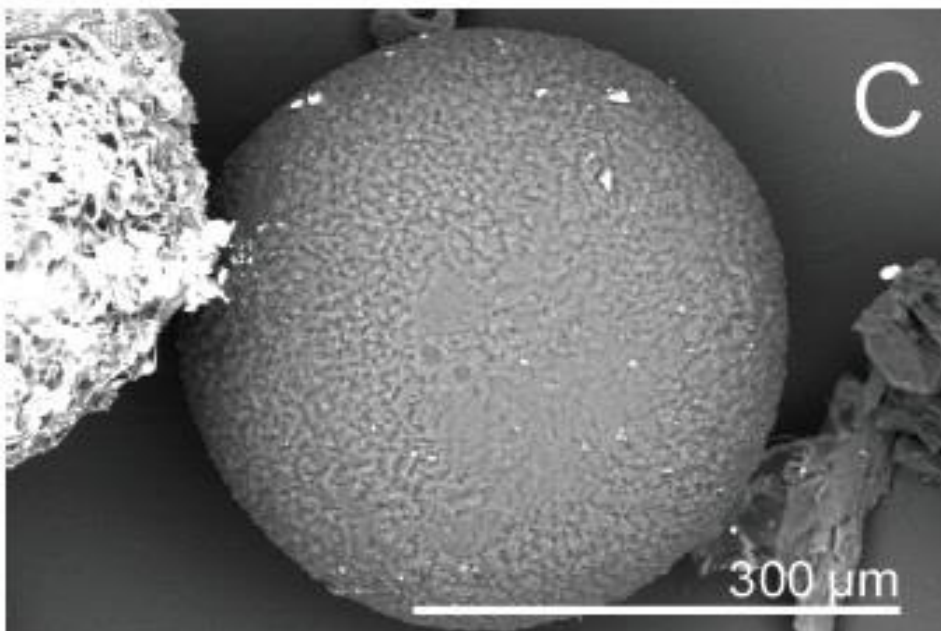
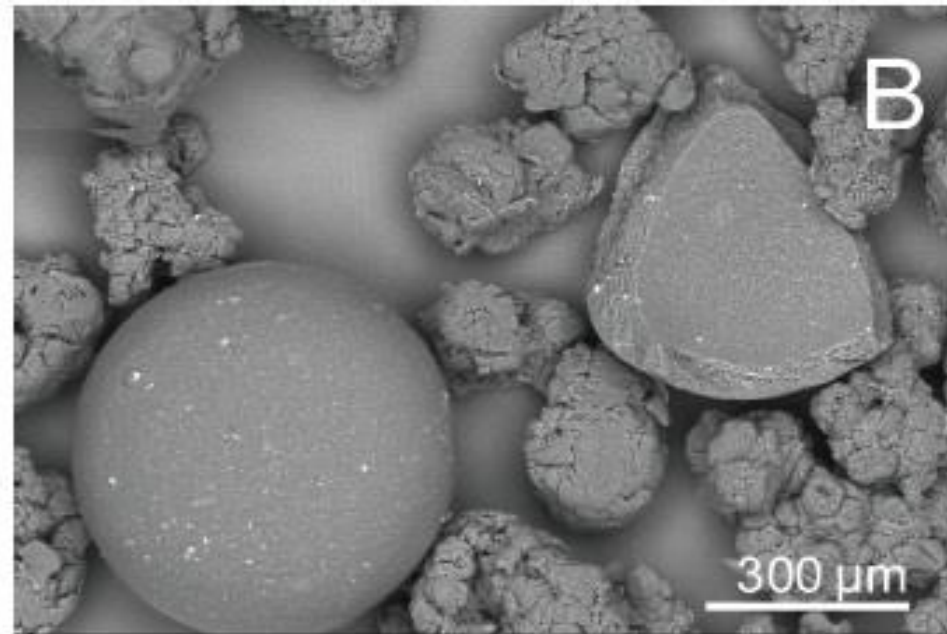
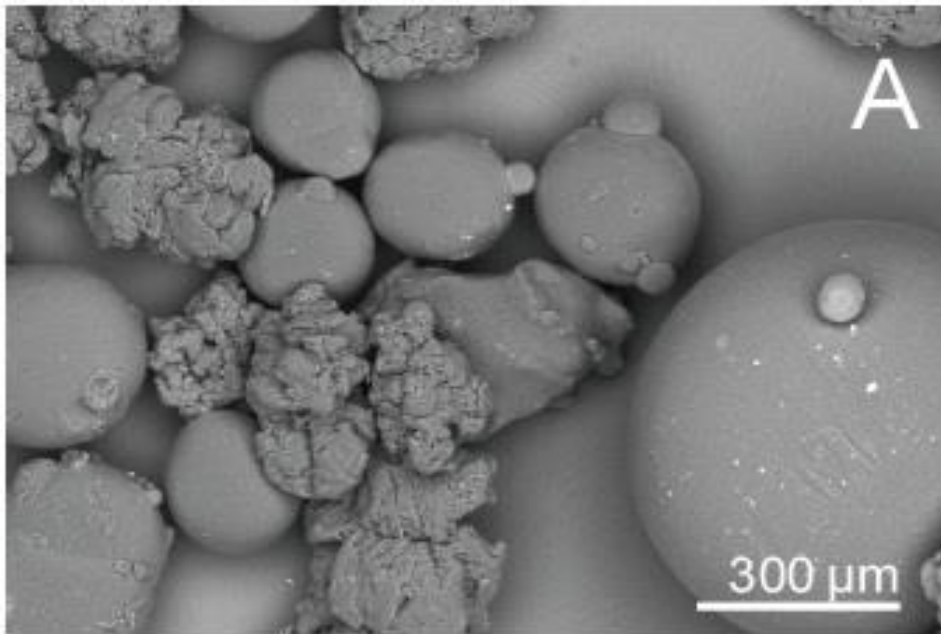
A

B

300  $\mu\text{m}$



Differentiate microbeads from non-plastic (A&B are coal ash)







SGYRES

Microplastic by design

GENTLE

SCRUB

g me guy.  
faurate, Polyethylene, Glycerin  
taric Acid, Acrylates/C10

oil free

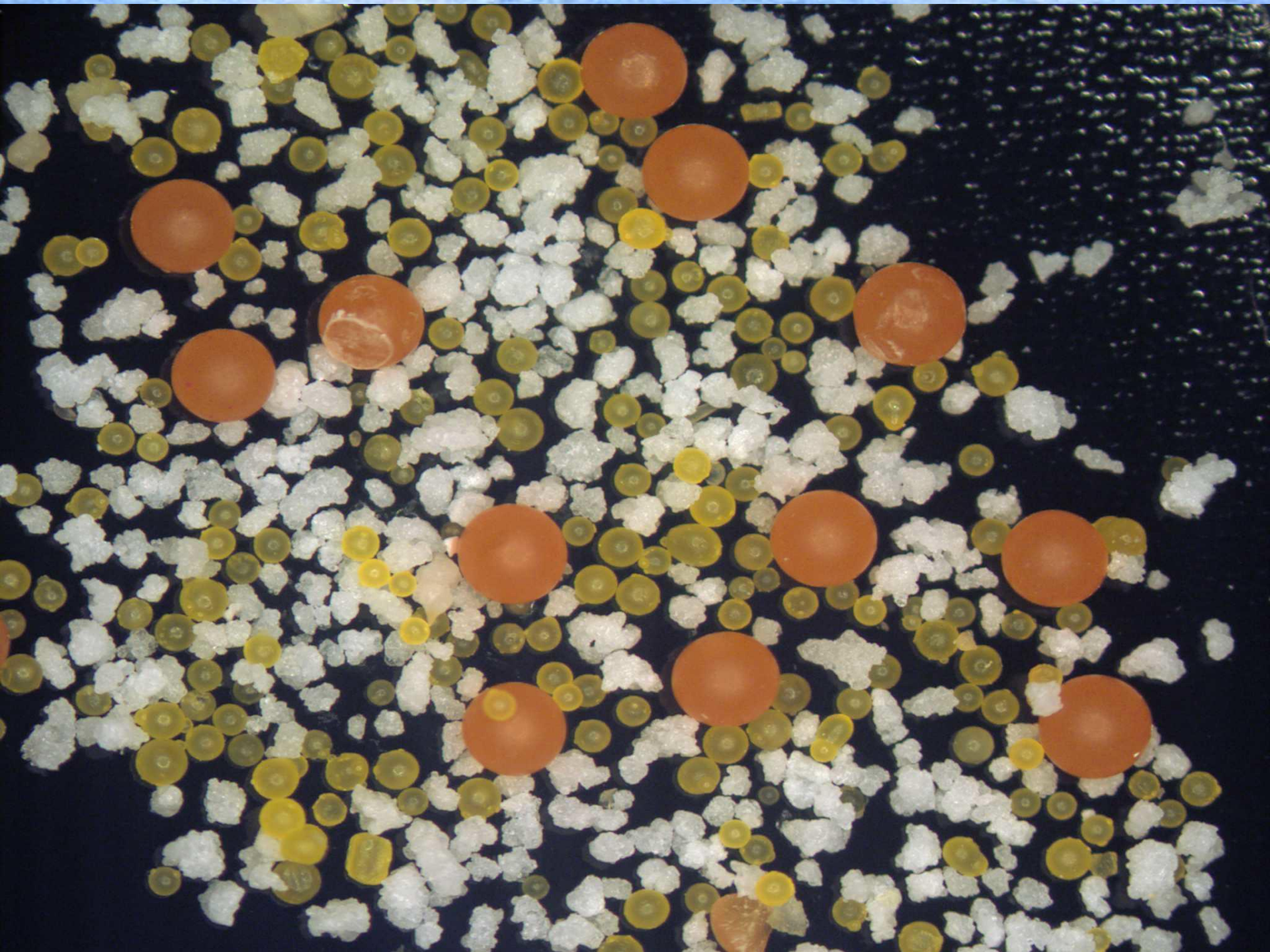
microbeads gently exfoliate,  
Beta Hydroxy cleans deep into  
pores for soft, smooth skin

Neutrogena®



Phase out problematic design





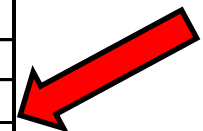




0.1 gram = >6000 microbeads or estimated 330K in product



Count, location and abundance of plastic pollution in the Great Lakes					
Sample id.	Latitude	Longitude	Count total	Tow length (km)	Abundance (count/km <sup>2</sup> )
Lake Superior					
1	46.5737	-87.3413	15	1.94	12645
2	46.6872	-86.6649	8	3.70	3541
3	46.7772	-86.4405	3	3.85	1277
4	46.8487	-85.2473	6	3.76	2616
5	46.5860	-84.7222	16	3.82	6875
Lake Huron					
6	45.8682	-83.7218	11	3.80	4750
7	45.6372	-83.3776	3	4.00	1229
8	45.3463	-83.0087	4	3.87	1694
9	44.7287	-82.5399	5	3.70	2213
10	44.7676	-81.9475	15	3.76	6541
11	44.3480	-82.5583	13	3.98	5352
12	43.9240	-82.5130	1	3.59	456
13	43.4134	-82.3994	0	3.93	0
Lake Erie					
14	41.8979	-83.0498	26	3.78	11282
15	41.7523	-82.9450	9	3.15	4686
16	41.7830	-82.7569	20	3.85	8511
17	41.8953	-82.3409	131	3.76	57122
18	42.1425	-81.5131	13	3.52	6056
19	42.2441	-80.7501	21	3.78	9112
20	42.3938	-79.9536	1101	3.87	466305
21	42.3000	-80.0259	657	3.83	280947



A globe of the Earth is shown, heavily encrusted with a variety of colorful microplastic particles in shades of blue, yellow, red, and white. Several insects, including a large purple fly and a blue beetle, are crawling on the globe, illustrating the presence of microplastics in terrestrial environments.

**TERRESTRIAL  
SOURCES  
OF  
MICROPLASTICS**



# WASTEWATER EFFLUENT





# ROAD ABRASION





GENTLE

SCRUB

g the day.  
laurate, Polyethylene, Glycerin  
sulfuric Acid, Acrylates/C10

oil free

microbeads gently exfoliate,  
Beta Hydroxy cleans deep into  
pores for soft, smooth skin

Neutrogena®



**METHODS  
TO  
MONITOR  
MICROPLASTICS**



