

Concentrations of Small Plastic Pieces on Florida Beaches: East and West Coast Comparison

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Introduction

Several factors can influence the abundance of small plastic pieces in coastal sediment. Proximity to dense populations and transport of plastic via currents are both possible influencers of plastic pollution^{1,2}. This study aims to determine what factors contribute most to the concentration of small plastic pieces (1-3 mm) in coastal sediment of South Florida Beaches.

Methods

- 20L sand samples were collected in triplicate from the strand line of 6 beaches in South Florida
- Sand was sieved to remove sediment < 1mm
- Large plastic pieces were removed via physical identification and density separation
- Potential plastic pieces will be confirmed as plastic via IR spectroscopy as the next phase of the project

Works Cited

¹Law, K. L., Morét-Ferguson, S., Maximenko, N. A., Proskurowski, G., Peacock, E. E., Hafner, J., & Reddy, C. M. (2010). Plastic accumulation in the North Atlantic subtropical gyre. *Science*, 329(5996), 1185-1188.
²Ivar do Sul, J.A., et al. Here, there and everywhere. Small plastic fragments and pellets on beaches of Fernando de Noronha (Equatorial Western Atlantic). *Mar. Pollut. Bull.* (2009), doi:10.1016/j.marpolbul.2009.05.004

Results

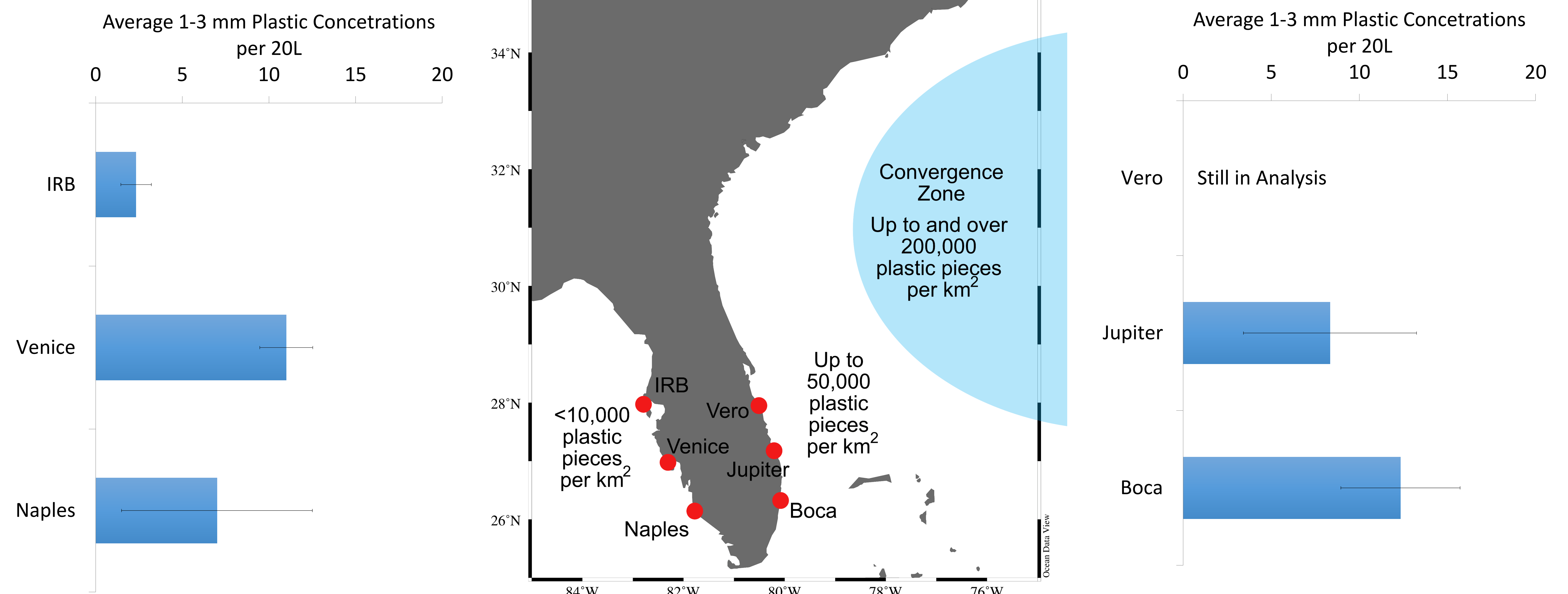
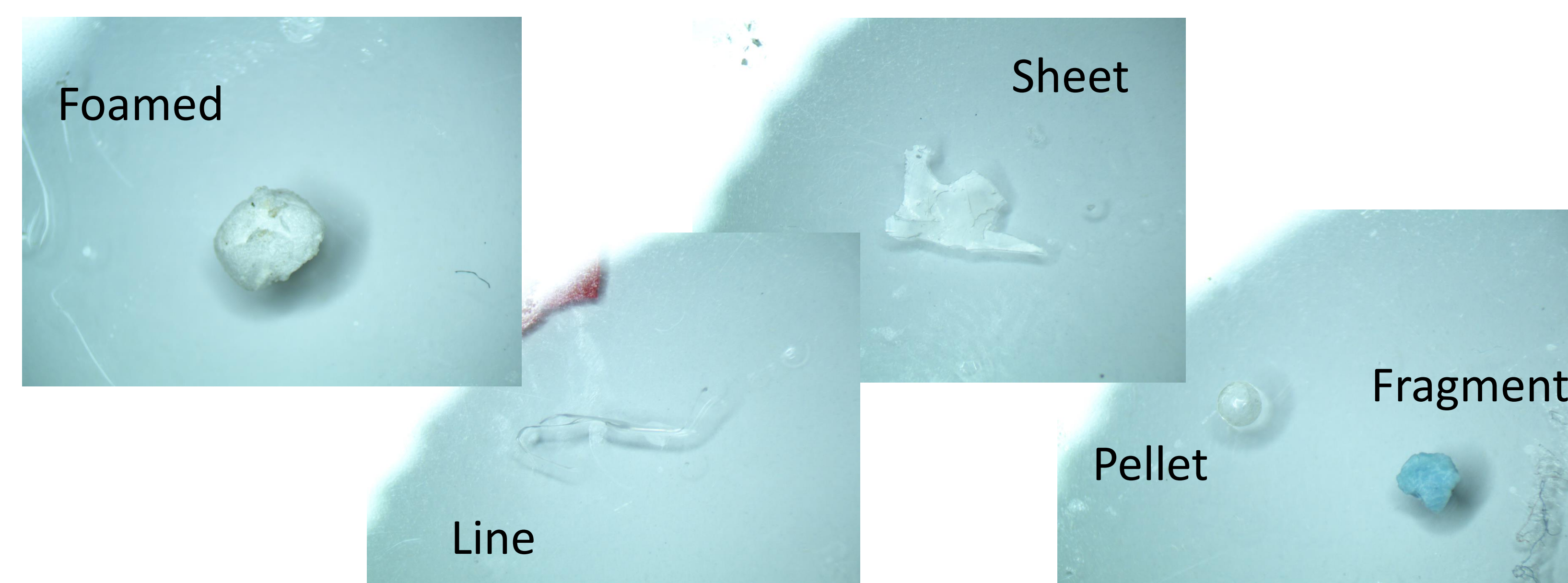


Figure 1: (Far left and right) average concentrations of 1-3 mm plastic pieces per 20L on their relative side of Florida (center) and relative North-South location. Ocean plastic concentrations from ¹.

Types of Plastics Observed

The five morphologies of marine plastic in literature described in previous research were all found in these samples². Photographs are from the Boca site.



Discussion

While the range of concentrations on the east coast of Florida is higher than the west coast the difference is not significant, indicating the higher concentrations of plastic in ocean water may not be the most important factor contributing to the beach contamination. The highest concentrations on both coasts are immediately down current of the largest metropolitan areas of each coast, indicating debris from these cities carried by currents and deposited on the strandline by wave and tides may be the most important factor contributing to plastic abundance.