

Press Release
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UH Scientist Predicts Plastic Garbage Patch in Atlantic Ocean

Where does the plastic garbage in the ocean go? Twenty-two years worth of data collected by undergraduate students aboard a sailing vessel has identified widespread floating plastic debris in the western North Atlantic that is comparable to the 'Great Pacific Garbage Patch.' The study, led by a team of researchers from Sea Education Association (SEA), Woods Hole Oceanographic Institution (WHOI), and the University of Hawaii at Manoa (UHM), is published this week in *Science*.

UHM scientist Nikolai Maximenko, a co-author on the paper, has developed a computer model that describes how converging surface currents cause the plastic to accumulate in such garbage patches.

Students of the SEA collected samples of plastic in surface plankton nets at 6100 locations over the 22 years. The highest concentrations of plastic they found in a region of the North Atlantic predicted by Maximenko's model, around 32°N (roughly the latitude of Atlanta, GA) and extending from 22-38°N latitude.

"The study is so exciting," says Maximenko, oceanographer at the UHM International Pacific Research Center, "because it validates the computer model we've developed using more than 15,000 trajectories of drifting buoys. The purpose of the model is to track long-living objects that float on the ocean surface. Our model has already successfully reproduced the location of the 'Great Pacific Garbage Patch.' That now the debris in the North Atlantic collects mostly where our model predicts is further evidence that plastic moves in a similar way that drifters do. We can now expect that our model will be very useful in coordinating debris detection and clean up operations."

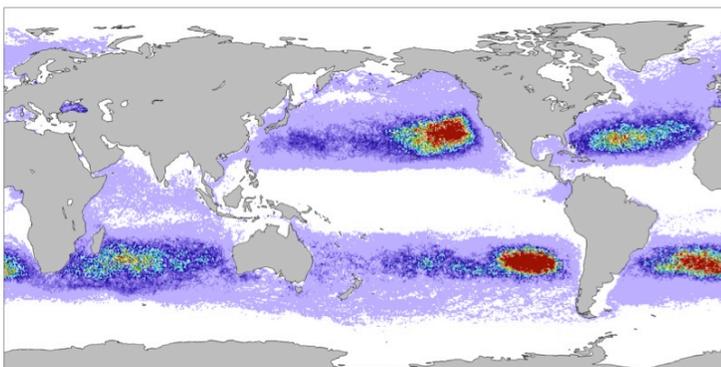


Figure caption: Results of the simulation with Maximenko's model. Shown is where the drifters, put uniformly into the world ocean and carried by the ocean currents, would end up after 10 years of simulation. The red patches show the biggest accumulation.

The lead author of the paper, SEA scientist Kara Lavender Law, says "Not only does this important data set provide the first rigorous scientific estimate of the extent and amount of floating plastic at an ocean-basin scale, but the data also confirm that basic ocean physics explains why the plastic accumulates in this region so far from shore."

Maximenko's model predicts three other ocean "garbage patches" that have yet to be found: one in the South Atlantic, one in the South Pacific, and one in the South Indian Ocean. These patches are in regions that ships rarely visit. So here is an opportunity to discover yet another garbage patch, but you need a fine net as most of the plastic pieces in the present study and in the Great Pacific Garbage Patch are only millimeters in size.

For further information about Maximenko's model, please see

http://iprc.soest.hawaii.edu/newsletters/newsletter_sections/iprc_climate_vol8_2/tracking_ocean_debris.pdf

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Paper Information: Kara Lavender Law, Skye Morét-Ferguson, Nikolai A. Maximenko, Giora Proskurowski, Emily E. Peacock, Jan Hafner, and Christopher M. Reddy: Plastic accumulation in the North Atlantic subtropical gyre, *Published Online August 19, 2010, Science DOI: 10.1126/science.1192321*.

Researcher Contact: Senior Researcher Nikolai A. Maximenko, International Pacific Research Center, School of Ocean and Earth Science and Technology, University of Hawaii at Manoa, (808) 956-2584; maximenk@hawaii.edu

International Pacific Research Center Media Contact: Gisela Speidel (808) 956-9252; gspeidel@hawaii.edu

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