



(Re)parting the Seas

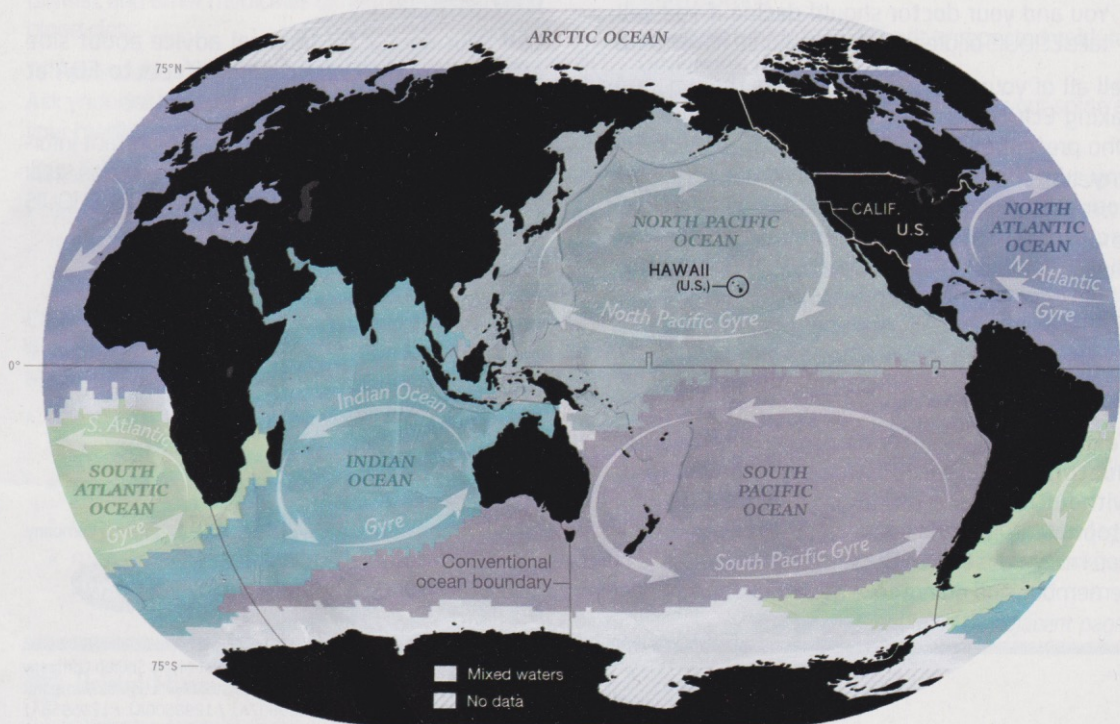
For something that covers most of the planet, the ocean is a pretty murky frontier. Scientists say technically there's just one connected global ocean, but people far more commonly refer to several, as in the Atlantic, the Pacific, the Indian.

More confusing is why the lines separating these basins—divisions first formally recognized in 1928—have remained largely unchanged. “The boundaries reflect geopolitics” rather than the way the water actually circulates, says mathematician Gary Froyland of Australia’s University of New South Wales. He and Imperial College oceanographer Erik van Sebille proposed a new map, redrawing borders based on modern knowledge of currents and the natural basins they form, as well as the currents’ relationship to a pressing environmental problem: trash.

Plastics and other debris have been drifting for decades in the oceans, sometimes churned into massive patches by powerful currents known as gyres. Froyland and van Sebille’s revised boundaries center roughly on the locations of these polluted plots, the largest of which floats between Hawaii and California. With further research, their new analysis could help determine the origins of some of the litter—in other words, which countries are responsible for dumping it. —Catherine Zuckerman



When plastic bags, bottles, and other debris end up in the sea, some of it becomes part of huge patches of trash. This map shows proposed ocean boundaries (distinguished by color) centered on those accumulations.



MAP: JEROME N. COOKSON, NGM STAFF. SOURCES: GARY FROYLAND AND ROBYN M. STUART, UNSW AUSTRALIA; ERIK VAN SEBILLE, IMPERIAL COLLEGE LONDON. PHOTO: MIKE NELSON, EPA/ALAMY