1. Re-evaluating Drogue Presence and Cause of Death for the Global Drifter Array

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Abstract: At least half of the World Ocean now has drifter velocity observations extending back more than 15 years, allowing climate-scale fluctuations to be studied. However, examination of these data reveals evidence of an apparently spurious acceleration of global surface drifter currents in a pattern reflecting the geographic distribution of mean surface winds. This is likely due to time variations in undiagnosed drogue loss, which was most severe in the time period January 2004 through December 2008.

This study highlights the need to continuously monitor the drifter and drogue lifetimes from various manufacturers. However, properly monitoring drifter lifetimes requires discriminating between drifters that cease transmitting due to internal failure, and those that cease due to external factors such as running aground or being picked up. An accurate assessment of where drifters run aground can also be used to quantify which shores are most prone to the deposit of marine debris. While the drifter Data Assembly Center maintains a metadata file which includes cause of death, most deaths (68%) are due to "quit transmitting". A re-evaluation of these data suggests that a significant fraction of these drifters likely ran aground or were picked up, and a statistical estimate that each drifter actually ran aground is derived.