

**Citation:**

**Johns, E. M.**, B. A. Muhling, **R. C. Perez**, F. E. Muller-Karger, N. Melo, **R. H. Smith**, J. T. Lamkin, T. L. Gerard, and E. Malca, 2014: Amazon River water in the northeastern Caribbean Sea and its effect on larval reef fish assemblages during April 2009. *Fisheries Oceanography*, 23(6), 472-494, doi:10.1111/fog.12082.

**Justification text:**

This paper describes interdisciplinary observations of a large plume of Amazon River water that was delivered to the northeastern Caribbean Sea by a North Brazil Current Ring during spring of 2009. We use hydrographic observations, larval fish net tows, satellite ocean color imagery, and a data-assimilating numerical model to describe the 3-dimensional properties of the plume and its effect on the abundance, distribution, and variety of the larval fish found in it and its surrounding waters. The turbid, green plume was 20 m thick, and had anomalously low sea surface salinity and high temperature, chlorophyll, and dissolved oxygen and covered an area of hundreds of km<sup>2</sup>. We show that this “green water” plume displaced the reef-associated larval fish normally found in the region and replaced them with offshore, mesopelagic species transported from the western tropical and subtropical Atlantic.

This paper is relevant to NOAA’s mission and to the strategic goal of:

**Healthy Oceans:** *Marine fisheries, habitats, and biodiversity sustained within healthy and productive ecosystems*

The impact of this paper is that it is a fully cross-Line Office partnership between AOML and SEFSC, demonstrating the value of combining physical oceanography and fisheries observations in the analysis of complex coastal and oceanic phenomena such as the Amazon River water plume in the northeastern Caribbean Sea. Such an extreme event like the one observed in 2009 has not been documented in this region in at least the past 30 years, and yet satellite ocean color imagery revealed that it was followed by another similar event in 2010. The ecological implications, including any long-term consequences of such recent extreme events, are important and merit further study.