

The Gulf Stream in the Vicinity of the Rhumb Line Newport to Bermuda June 18, 2014
An Analysis of Conditions

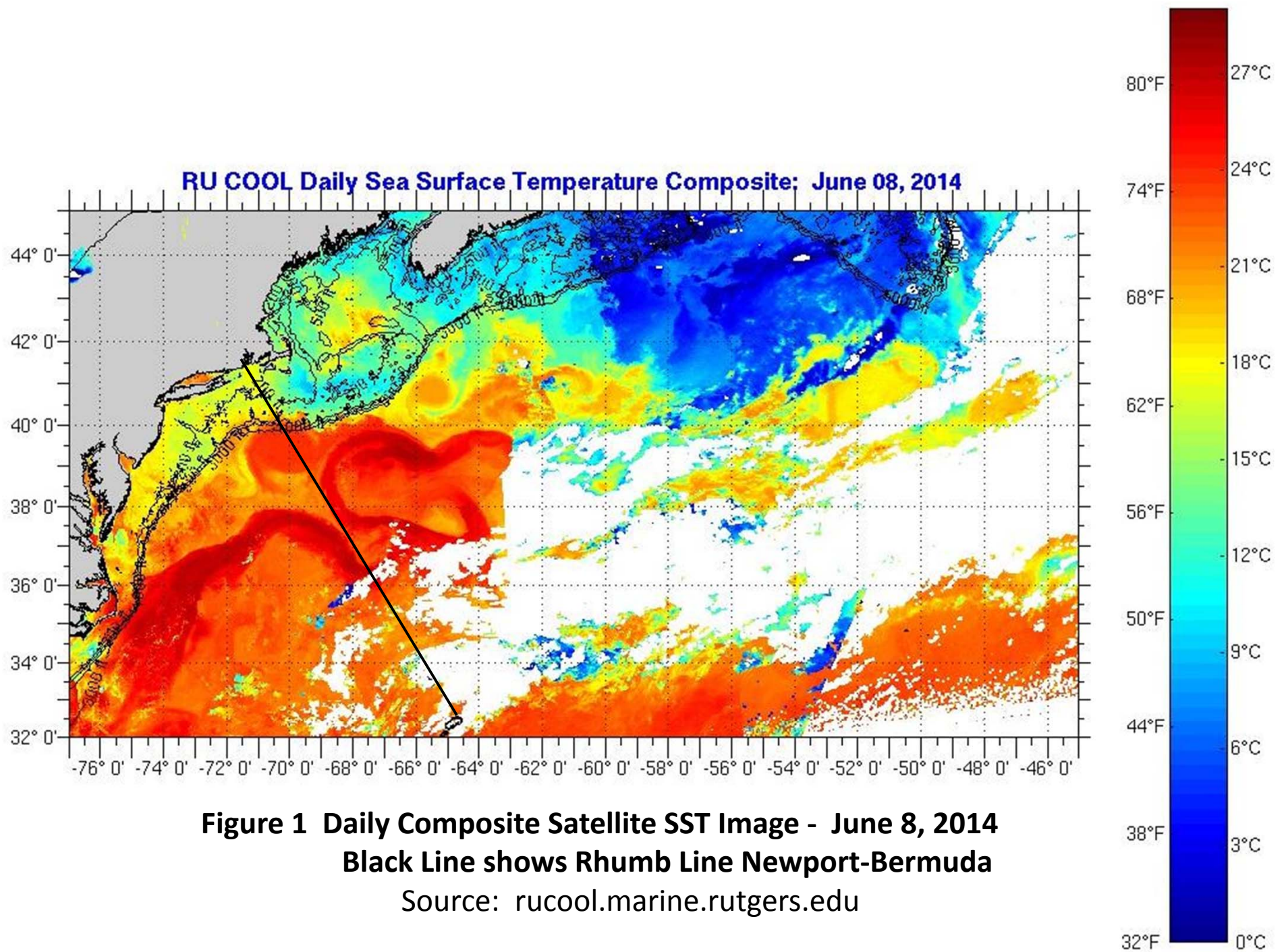
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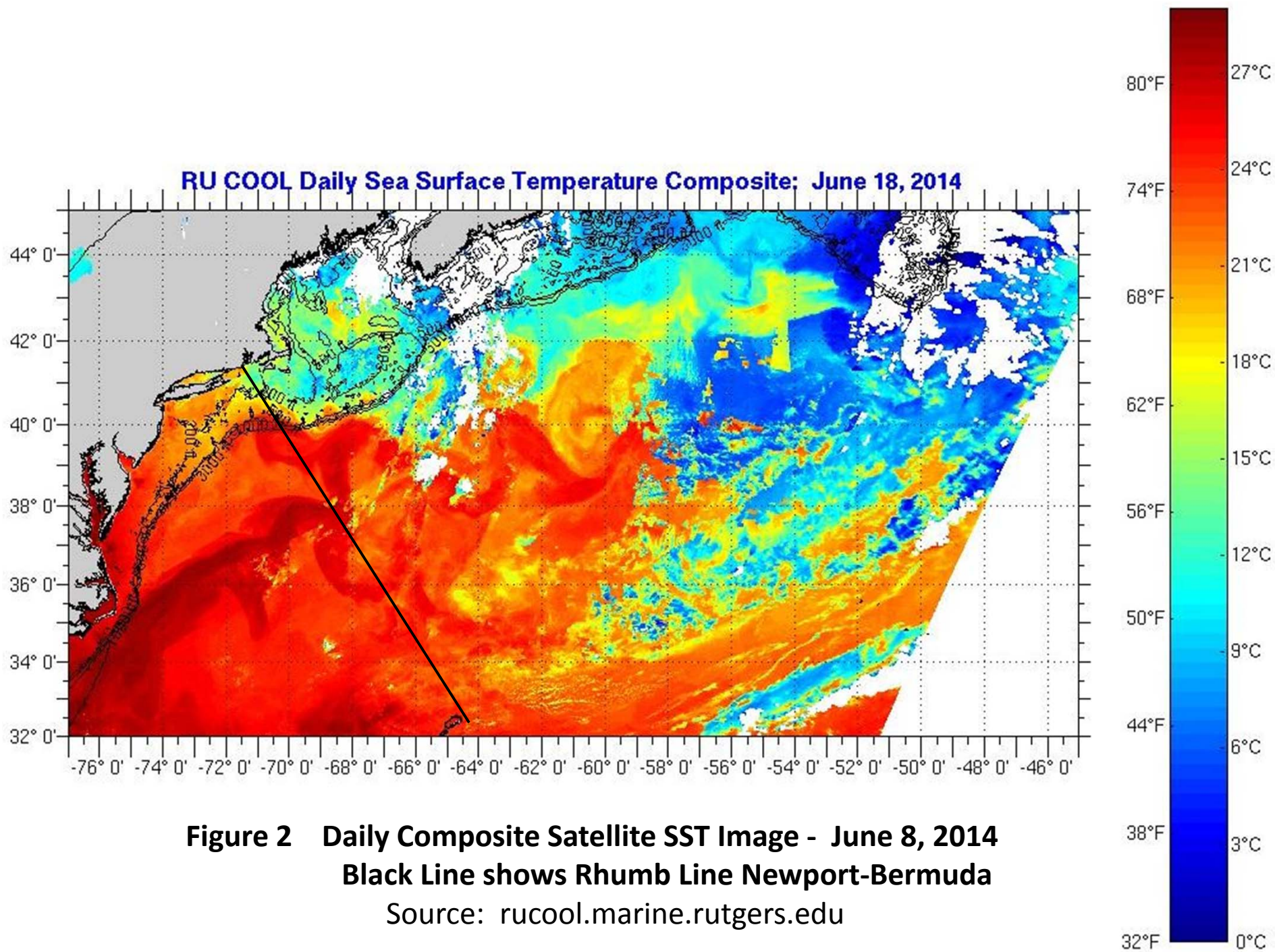
The relatively unusual conditions that have been affecting the position and form of the Gulf Stream in the vicinity of the Newport Bermuda rhumb line (Fig.1) continued over the past week. Although dense cloud cover often limited satellite views of the surface temperature distributions the few partial images that were obtained showed the meander rapidly “pinching off” resulting in what at first appeared to be a bifurcation in the main body of the Stream with branches of warm water extending to the north and to the south of the original trajectory (Fig.2). The northern branch merged with the warm water mass observed earlier along the edge of the continental shelf. The southern disappeared under clouds with compositing being of little help. The limited visibility and the unusual configuration made it difficult to define the course of the main body of the Stream.

Fortunately over the past few days visibility has improved, to some extent, allowing better evaluation of Stream structure. It’s now reasonably clear that the northern limb represents the main body of the Stream while the southern was, and remains to some extent, a remnant of the meander. The abrupt change in Stream direction from near west to east to the west of the rhumb line to nearly north south just east of the line is quite unusual. It may have been the result of the pinching off process, that yielded a cold core ring to the south, or simply an example of slow mixing once a water mass leaves the direct influence of the Stream. Whatever the exact process what has resulted is a relatively large area of “Stream influence” that will be encountered with 90 nm of Newport where water temperatures increase from 60° F to near 75° F in a short distance (Fig.2)

The altimetry based model of surface currents provided by NOAA (Fig.3) provides clear indication of the complex structure of the Stream with a warm lobe along the edge of the shelf and a cold core feature to the south of 38° N with a center east of the rhumb line. This latter feature is relatively stationary with little apparent change in location over the past week or so. This suggests that it will not move significantly before the fleet passes after starting from Newport on the 20th.

The structure of the Stream and associated features continues to favor routes to the west of the rhumb line with exact displacements varying as a function of boat characteristics and the ongoing winds. Once clear of the southern limits of the cold core ring there is little indication of adverse currents sufficient to call for anything but a straight line course to Bermuda. As always it will be interesting to see just how closely these analyses compare to actual conditions. Enjoy the race !





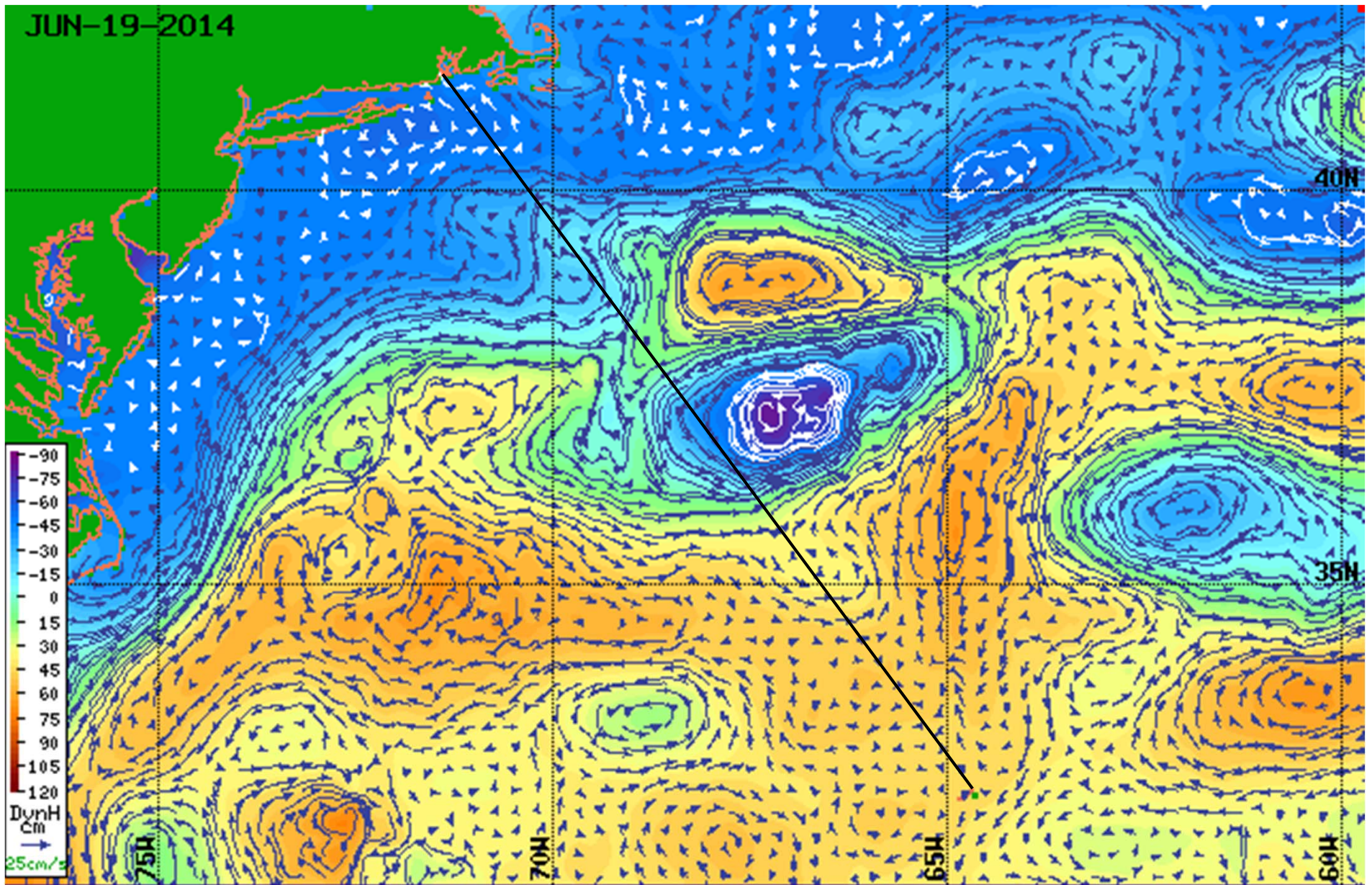


Figure 3 Satellite Altimetry Derived Surface Currents- NW Atlantic Region- June 19, 2014

Black Line shows Rhumb Line Newport-Bermuda

Source: <http://www.aoml.noaa.gov/phod/dataphod/work/trinanes/INTERFACE/index.html>