Southern Florida to Cape Hatteras Early Season Preview 2017

U.S. EAST COAST GULF STREAM CONDITIONS LOOKING PROMISING

By Matthew A. Upton and Mitchell A. Roffer

ROFFS™ continues its spring preview series by providing an overall update of the oceanographic conditions during early April for the east coast of the United States from the Florida Keys north to Cape Hatteras, NC including the entire offshore Gulf Stream region. As always, we use a combination of many different data sets but mainly sea surface temperature (SST) and ocean color/chlorophyll images. We will discuss these overall ocean conditions for the present spring season and how these conditions may translate to the near future fishing season.

For forecasting short-term oceanographic conditions related to finding fish, ROFFS™ uses real-time direct observations rather than unproven ocean models and longer-term composites. We have learned that evaluating the preseason conditions along with regional climate models provides insight into future seasonal trends for fishing. Experience and understanding the ocean – atmospheric dynamics is our guide as we have had moderate success in forecasting seasonal trends of fishing productivity based on the stepwise progression in the location of the fishes' preferred habitat based on temperature and water color. Please reference our 2017 Bahamas forecast for more in-depth discussion on the environmental and climate indicators that goes into our detailed evaluation of the southeastern United States fishing forecasting analysis (Click Here).

Background and Some Observations for 2017

It is important to look at the year-to-year trends including the anomalies to gain insight into the location and condition of the fishes' preferred habitat compared with previous years. Comparing similar locations and features to last year during the same early April time period we found that the SST of the core of the Gulf Stream off of Miami, FL for 2016 was approximately 80.1°F and for this year it is approximately the same (79.6°F). Farther north off of Charleston, SC the SST of the core of the Gulf Stream for early April 2016 was approximately 78.0°F and for this year it is also relatively similar (78.5°F). However, farther north off of Cape Lookout, NC, the SST of the core of the Gulf Stream for 2016 was approximately 76.0°F – 76.5°F and this year the SST is approximately 77.5°F – 78.0°F, which is 1.5°F higher than last year during this same early April time period. Therefore, the farther north you go the Gulf Stream SST overall appears to be warmer this year than last year. This could indicate an earlier arrival of tuna, wahoo, dolphin and even marlin farther north off of South Carolina and North Carolina this year compared to last year, especially when considering that the conditions over the Bahamas region is more favorable than previous years.

Furthermore, we studied the SST for the near coastal waters (~ 10-12 miles east) in a few different locations along the southeast coast of the United States and compared it to last year at this time. Overall, the near coastal SST for 2016 was relatively similar in many of the coastal regions from central Florida to Onslow Bay, NC during this same early April time period as this year. The SST off of Cape Canaveral for both years were approximately 72.5°F - 73.0°F. The SST in the Gray's Reef

region were also similar for 2016 and 2017 during this same early April time period at approximately 66.0°F to 67.0°F. Similarly the SST off of Charleston, SC for both years were approximately 63.5°F-64.5°F. The exception is farther north where the SST between Cape Fear and Cape Lookout within Onslow Bay for 2016 was approximately 62.5°F but the SST for this same region for 2017 is approximately 60.0°F to 61.0°F, which is 1.5°F to 2.5°F cooler than last year. We are uncertain to what this means in the longer-term as the recent cooler air temperatures from the cold fronts appeared to have lowered the near shore SST's in many locations. However, as of early April the SST looks to be similar to last year's conditions in many places, unlike the warmer-than-last year trend we are seeing in the Gulf of Mexico and the eastern Bahamas. This may suggest that the fish will remain in the Bahamas a bit longer before moving west to the Gulf Stream and then north. Click here for the ROFFS™ review of the Bahamas conditions.

For the area between central Florida and Cape Hatteras, there continues to be good news in that there is still a substantial volume of Bahamas "blue marlin" water pushing into northern Eleuthera and toward the east coast of Abaco for favorable marlin action. Of particular importance is the large clockwise rotating eddy centered north-northwest of Abaco near 77°30'W & 28°00'N, this eddy in addition to the smaller counter-clockwise rotating eddy centered northeast of Abaco (near 76°45'W & 26°50'N) continues to pull mixed "blue marlin" water west-northwestward into the Gulf Stream area. This water is usually associated with an abundance of yellowfin tuna and marlin. The proximity of this water to the Gulf Stream is a good indication that a population of fish continues to be fed into the Gulf Stream and will move north first along the eastern Gulf Stream edges and then to the western Gulf Stream and closer to the U.S. east coast for the next several weeks.

Nowcast Analysis

The Gulf Stream Current including its related eddies and filaments along the current's eastern and western side are the preferred habitat of the highly migratory species for this time of year and are the most important conditions that we are studying. It is the day-to-day and hour-to-hour movements of these Gulf Stream related features that are important to monitor when deciding where to fish on a daily basis. Although we are only showing a two-to-three-day snap shot of the conditions in this report from early April (Figure 1 and 2), we can discuss briefly the trends we see based on these early spring oceanographic conditions and related fishing reports that may provide insight into the near-future fishing season.

Figure 1 was derived from a variety of U.S. and European satellites during the early April (April 02-04, 2017) period and Figure 2 was derived from U.S. SNPP VIIRS, Aqua MODIS and Terra MODIS ocean color/chlorophyll imagery during this same period (April 02-04, 2017). As the exact values of the original data from different satellite sensors (VIIRS and MODIS) are not the same, we cross-calibrated the data to derive images that had realistic and consistent watercolor. This is one of the many techniques that we derived during the valuable NASA Earth Science Program projects that ROFFS™ has been involved with. We cannot over-stress the importance of NASA's Earth Science Program for helping to understand the ocean's dynamic ecosystem and how it impacts food security, homeland security and land-ocean interactions.

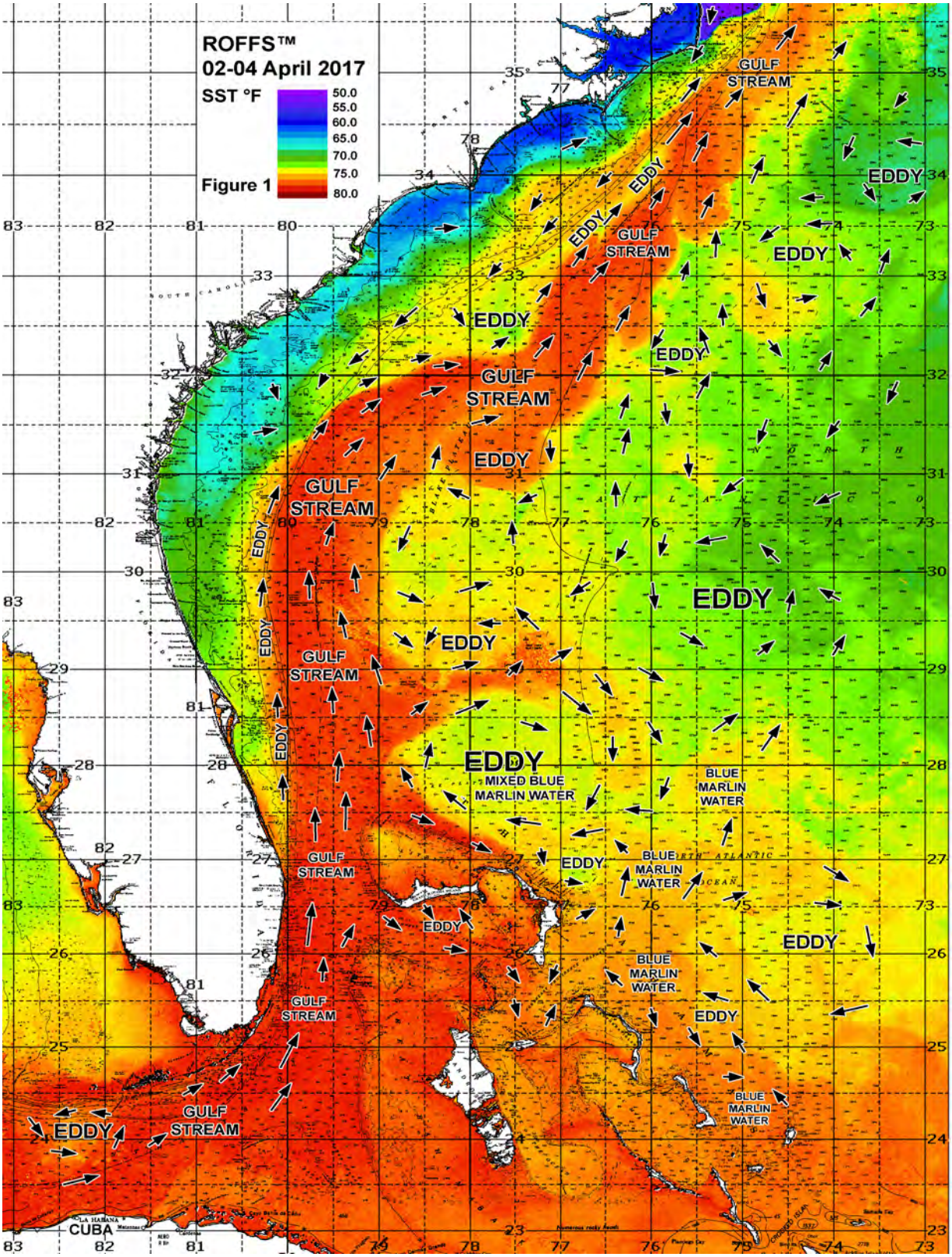

Figure 1: *This year's Florida Keys to Cape Hatteras, NC conditions were derived from a variety of infrared sensors to get SST from NASA, NOAA, JPSS and ESA satellites during April 02-04, 2017. Main features and surface currents are labeled.*

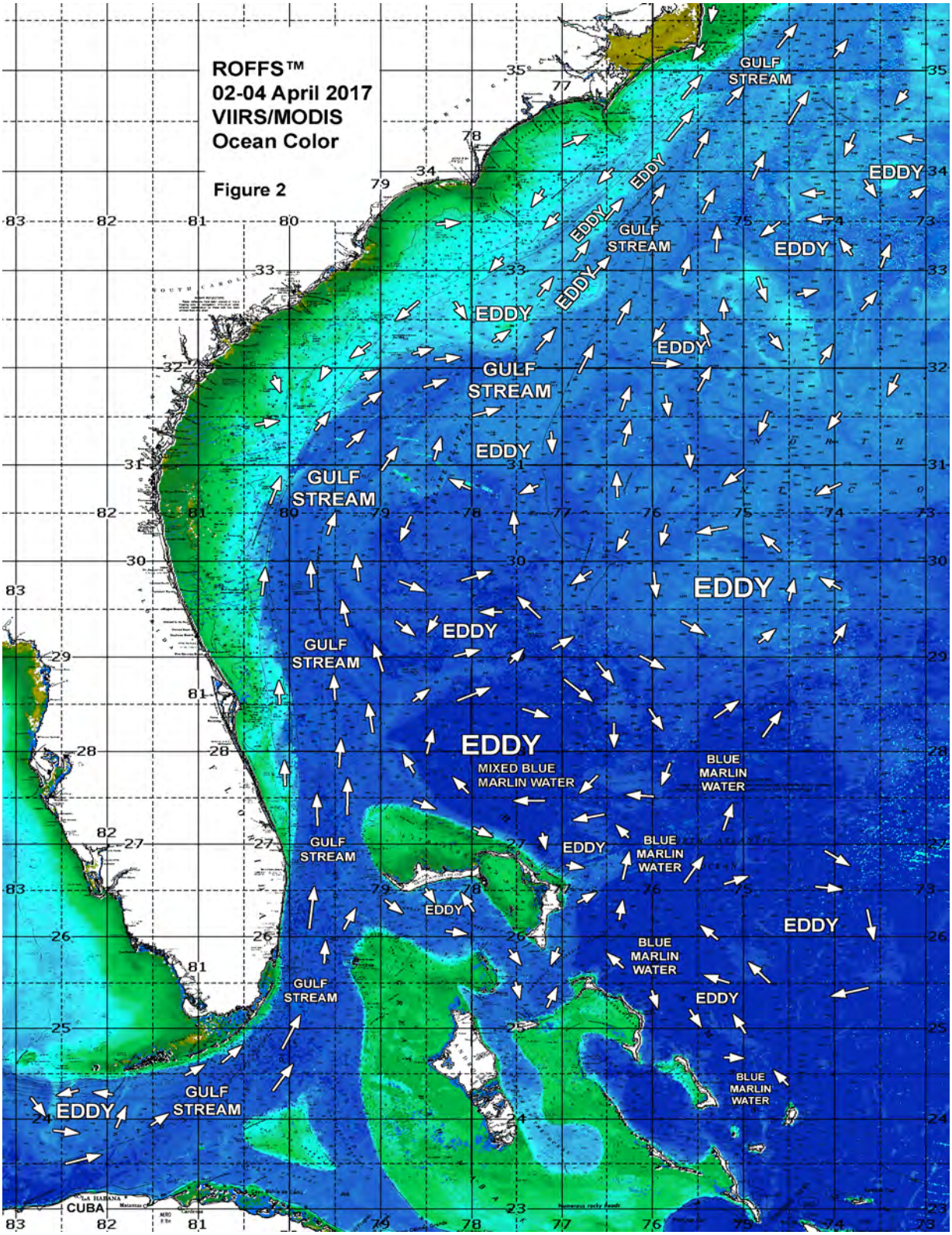

***Figure 2**: This year's Florida Keys to Cape Hatteras, NC conditions derived from the ocean color/chlorophyll imagery during April 02-04, 2017 from the VIIRS sensors on SNPP satellite in combination with the Aqua and Terra sensors on the MODIS satellite. We consider this an image pair with the above SST Figure 1 image. Same main features and surface currents labeled.*

We could not use single and same day imagery for the SST and ocean color data due to cloud cover interference, so we used a combination of imagery and the time-tested ROFFS™ cloud reduction techniques to produce these relatively cloud-free images. However, for comparison purposes we consider these images as an equal image pair for the purposes of this discussion. The directional flow of the water was derived from our ROFFS™ sequential image analysis, following the water image to image based on the water masses distinct, i.e. signature value. An example of this years SST satellite infrared imagery in greytone can be found on the ROFFS™ YouTube™ site (https://www.youtube.com/watch?v=30WcTq2nmtM). Viewing the movie will allow one to follow the flow of the water and numerous eddies within the Gulf Stream region from offshore of eastern and southern Florida to North Carolina during the last month, where the darker greytoned water represents the warmer water and white indicates clouds.

In these figures and other ocean data, we have noticed that offshore of Charleston, SC to Cape Lookout, NC, there are larger amounts of favorable SST (70.0°F- 75.0°F) located further inshore this year compared with last year. This suggests that the chances for favorable fishing conditions (especially wahoo, dolphin, tuna, and sailfish) may be closer to the coast sooner this year than in previous years. Another good indicator for forecasting fishing success is the recent good fishing action. Relatively recent fishing reports have already confirmed the good conditions, as there have been many reports of good wahoo, blackfin tuna and mahi action offshore of Ocracoke and Cape Lookout, NC to offshore of Charleston, SC and also the St. Augustine, FL to Savannah, GA areas.

The wahoo action was slower in early-to-mid March 2017 off Jacksonville, FL than last year, but this is likely due to the more northward location of the preferred habitat off Charleston, SC where the wahoo fishing action was as good as gets. This started in the late fall of 2016 when the wahoo's preferred habitat was positioned off Charleston, SC and not the Jacksonville – St. Augustine area. The increase of wahoo off of Jacksonville, FL in late March may have been due to the early arrival of the wahoo headed north from the Bahamas earlier than usual. However, without a comprehensive tagging study one will not know this. Good yellowfin tuna action along with white and blue marlin along the eastern side of the Gulf Stream off central Florida supports the idea of an earlier northward migration of fish from the Bahamas.

Additional good news is that the blackfin tuna (both smaller and larger size classes) are being caught earlier this year on the western side of the Gulf Stream from central Florida to North Carolina compared with 2016. A few Yellowfin tuna are already being caught off Cape Hatteras, NC. Furthermore, we have additional reports of an early mahi and cobia season off east Florida especially from Miami to Cape Canaveral. Unfortunately, the cooler weather over the last two-to-three weeks has pushed the cobia's preferred habitat south to the Palm Beach, FL area where the cobia action has been improving. However, the cobia habitat extends from Key West to Palm Beach suggesting that the population is not concentrated in any given locale. This suggests that fishing action is likely to continue to be spotty. The same can be said for sailfish between Key West and Palm Beach, FL. However, we have recent promising fishing reports of good mahi and billfish action off the Florida Keys. As the winds dissipate and the coastal waters warm off central and northeastern Florida the cobia will appear. We anticipate this to happen over the next two weeks.

As stated previously, the conditions along the eastern side of the Gulf Stream west and north of Walkers Cay to east of Cape Canaveral, FL continue to be excellent. The early fishing action with

yellowfin and marlin has been good especially for those individuals who are fishing the true eastern boundary of the Gulf Stream and where the ROFFS™ daily-derived valuable hot spots have been located. Too many people think that all one has to do is go east 60-70 miles and find the birds, when in reality the Gulf Stream's water mass boundaries hold the key to concentrating the bait and larger fish. We hear too many sad stories of people chasing birds only to realize that if they had only found the stable sections of the true eastern boundary of the Gulf Stream that they would have found the fish. We often fine-tune and update the ROFFS™ Fishing Oceanographic Analyses via satellite telephone communications with our clients. These updates are free between 10:30 AM and 12:00 Noon.

Conclusion

Based on what we have been observing over the last several weeks, the present overall early April ocean conditions for the Gulf Stream region between the Florida Keys to Cape Hatteras, NC are similar to last year. However, we have noticed many promising conditions and fishing reports already this year making it MORE FAVORABLE OVERALL THAN LAST YEAR in many locations. This implies that the good early fishing season for both the coastal and offshore areas will continue through spring and into the summer season including the Bahamas region. This is likely due to the Bahamas blue water moving toward the eastern side of the Gulf Stream. Mild to warmer spring weather over the next few weeks will allow the coastal areas to warm allowing the offshore fish to move closer to the coast. The bottom line is that the Gulf Stream related fishing action is expected to continue to be early this year north of Ft. Pierce, FL. It will not be long until an increased marlin population is available offshore of the Carolinas.

This means you should be either fishing already or your boat should be in the water waiting for that weather window. We want you to take advantage of this early fishing season. If the water continues to warm after these cool fronts pass through, the offshore fishing season will have begun over most of the areas from Cape Canaveral to Cape Hatteras.

It is important to note that good fishing action on a daily basis is strongly linked to local, short-term (days) current conditions that concentrate the fish once the preferred habitats of the fish are in a particular region. When the water mass boundaries associated with these currents are geographically stable and favorable, i.e., persistently pushing over "good" bottom topography and/or in a favorable inshore direction, then they concentrate the baitfish and larger fish can be found foraging. This indicates that the fishing action on any given day is controlled by relatively short-term (hourly to daily) and relatively small-scale (1-5 mile) movements of the currents and their water mass boundaries. Our experience indicates that to reliably forecast specific concentrations of fish on a daily basis one must evaluate the ocean conditions on these scales. Relatively small subtle changes in the currents and their associated water mass boundary zones often have dramatic effects on the distribution and concentration of fish.

The Gulf Stream conditions change rapidly so it becomes even more important to contact ROFFS™ (800.677.7633 / fish7@roffs.com / www.roffs.com) for the daily up-to-date detailed fishing forecasting analyses and get the inside track to where the better conditions will be tomorrow. We continue to monitor the coastal southeastern U.S. ocean conditions especially the Gulf Stream and its related

features and how it relates to the local fishing environment as the larger recreational and tournament fishing season approaches. Get out and fish now and maximize your fishing experience by using ROFFS™ to locate the good spring conditions near you.

Safe and Successful Fishing