

Southern Florida to Cape Hatteras Spring Season Preview 2024

UPDATE ON U.S. EAST COAST GULF STREAM CONDITIONS

By ROFFS™ | James L. W. King

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 have used 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 2024 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 pre-season conditions, along with regional climate models, provides insight into future seasonal trends for fishing. Experience and understanding of 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 2024 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 2024

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. This year, the overall southeastern oceanographic conditions are approximately 2°F cooler (74.7°F) than observed in 2023 (76.9°F) during late March and early April. 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 offshore of the Florida Keys to Miami, FL for 2024 was approximately 2°F cooler (79.3°F) compared to 2023 (81.3°F). This cooler trend continues northward as the core of the Gulf Stream from Cape Canaveral to Jacksonville is approximately 0.7°-1.0°F cooler (79.3°F) compared to 2023 (80.6°F). Further northward towards the area offshore of Cape Fear, NC we observed a similar trend in 2024 (79.3°F) compared to 2023 (80.3°F). However, temperatures offshore of Cape Hatteras, NC are roughly the same comparing this year (78.4°F) to last year (78.8°F). These cooler trends are consistent with North Atlantic Oscillation atmospheric models previously discussed in ROFFS™ Bahamas 2024 season forecast ([Click Here](#)).

We continue to observe the formation of larger Gulf Stream eddy circulations offshore of Charleston, SC as the Gulf Stream interacts with the Charleston Ridge. Compared to 2023, these eddy formations appear to be generated slightly further northeast and are slightly more elongated, as Gulf Stream water continues to pull the cooler inshore water to the northeast. These eddy formations move back towards the 100 fathom ledges south of Cape Lookout, NC. We have also observed relatively large clockwise eddy formations developing north of Walker's Cay, Bahamas along the eastern side of the Gulf Stream north of the Bahamas area. Compared to 2023, this has resulted in cooler, Bahamas blue marlin water moving towards the Gulf Stream further south near good bottom between Abaco and Walker's Cay.

We have also studied the SST for the near coastal waters (~10-12 miles offshore) in a few different locations along the southeastern coast of the United States and compared it to last year during the same time frame. Overall, the inshore SST is considerably cooler in 2024 compared to 2023. The SST offshore of Cape Canaveral and the Space Coast was approximately 4°F cooler this year (71°F-72°F) compared to last year

(75°F-76°F). Similar conditions have been observed in the inshore areas offshore of Georgia this year (63°F-64°F) compared to last year (67°F-68°F). Continuing northward offshore of NC from Cape Fear to Cape Hatteras, inshore temperatures are also much cooler this year (59°F-60°F) compared to last year (64°F-65°F). This is likely due in part to the prolonged presence of Gulf Stream eddy filaments in late winter and early spring of 2023 helping warm the inshore areas which we did not see this year.

Overall, these early April 2024 offshore oceanographic conditions for the southeastern United States have been markedly different than last year. Including the Gulf Stream, the majority of offshore SST along the Southeast United States has been cooler than the previous year. Overall inshore SST has also been cooler compared to 2023 with more bodies of higher SST water being found closer to shore from Cape Canaveral, FL to Georgetown, SC last year. Unstable clockwise centers of rotation north of Walker's Cay and Abaco helped pull cooler "blue marlin water" northwestward along the northern ledges of the Bahamas, helping to improve early season conditions within the northern Bahamas. As these features have interacted with the eastern side of the Gulf Stream, an abundance of this cooler "blue marlin water" has likely been pulled into the Gulf Stream allowing for a potential early arrival of these species further northward offshore of Florida, Georgia, and the Carolinas. Additionally, we have observed a few more eddy formations along the western side of the Gulf Stream moving northward offshore of the east coast of Florida and Georgia. These eddy filaments, when pushing into good bottom, have resulted in some of the more productive waters during the early 2024 season. With all of this in mind, we have already begun to receive positive reports from the Bahamas and South Florida. Decent billfish action has already been reported in the northern Bahamas (Eleuthera, Abaco & Walker's Cay) with several boats recently catching billfish grand slams. Good billfish reports have also been received offshore of South Florida from the Keys and northward towards the Palm Beaches. Strong sailfish action showed up in South Florida in late February to early March with double digit release days occurring frequently for multiple boats. Further northward, there have been some good reports of larger wahoo offshore of Northern Florida and into southern Georgia with some billfish showing up as well.

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 the 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 a/b and 2 a/b), 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.

Figures 1 a/b were derived from a variety of U.S. and European satellites during the early April period (April 05-07, 2024 and April 05-06, 2023) and Figures 2 a/b were derived from U.S. SNPP VIIRS, Aqua/Terra MODIS Ocean color/chlorophyll, and European Space Agency's Sentinel 3 chlorophyll imagery during this same period (April 05-06, 2024 and April 05-06, 2023). 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 have realistic and consistent water color. This is one of the many techniques that we derived during the valuable NASA Earth Science Program projects that ROFFS™ continues to participate in. 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.

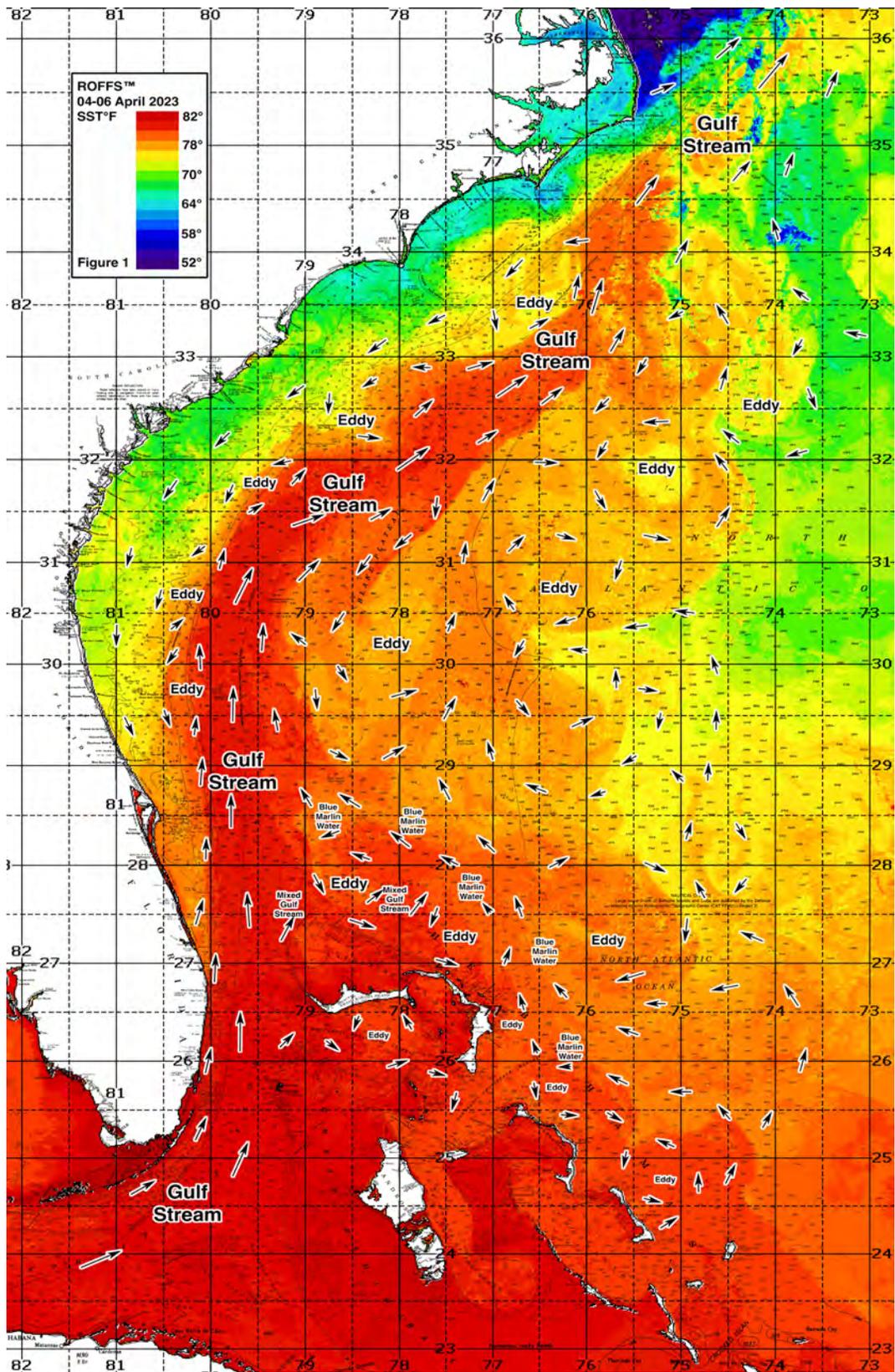


Figure 1b: Last year's Florida Keys to Cape Hatteras, NC conditions were derived from a variety of infrared sensors to get SST from NASA, NOAA, JPSS and ESA satellites during April 04-06, 2023. Main features and surface currents are labeled.

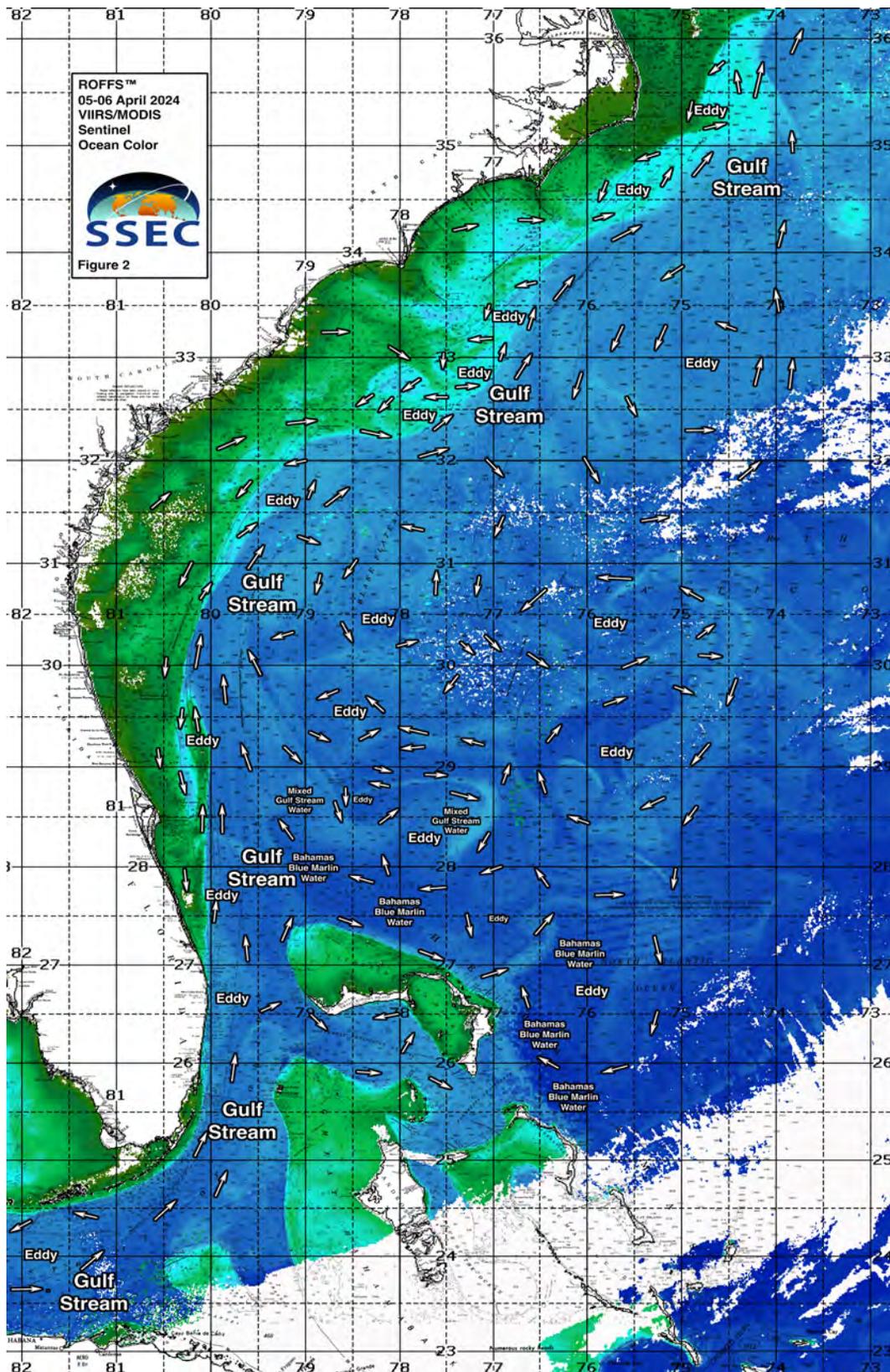


Figure 2a: This year's Florida Keys to Cape Hatteras, NC conditions derived from the ocean color/chlorophyll imagery during April 05-06, 2024 from the VIIRS sensors on SNPP and NOAA 20 satellites and the Aqua and Terra sensors on the MODIS satellite provided by University of Wisconsin-Madison in combination with the ESA's Sentinel 3 satellites. We consider this an image pair with the above SST Figure 1a image. Same main features and surface currents labeled.

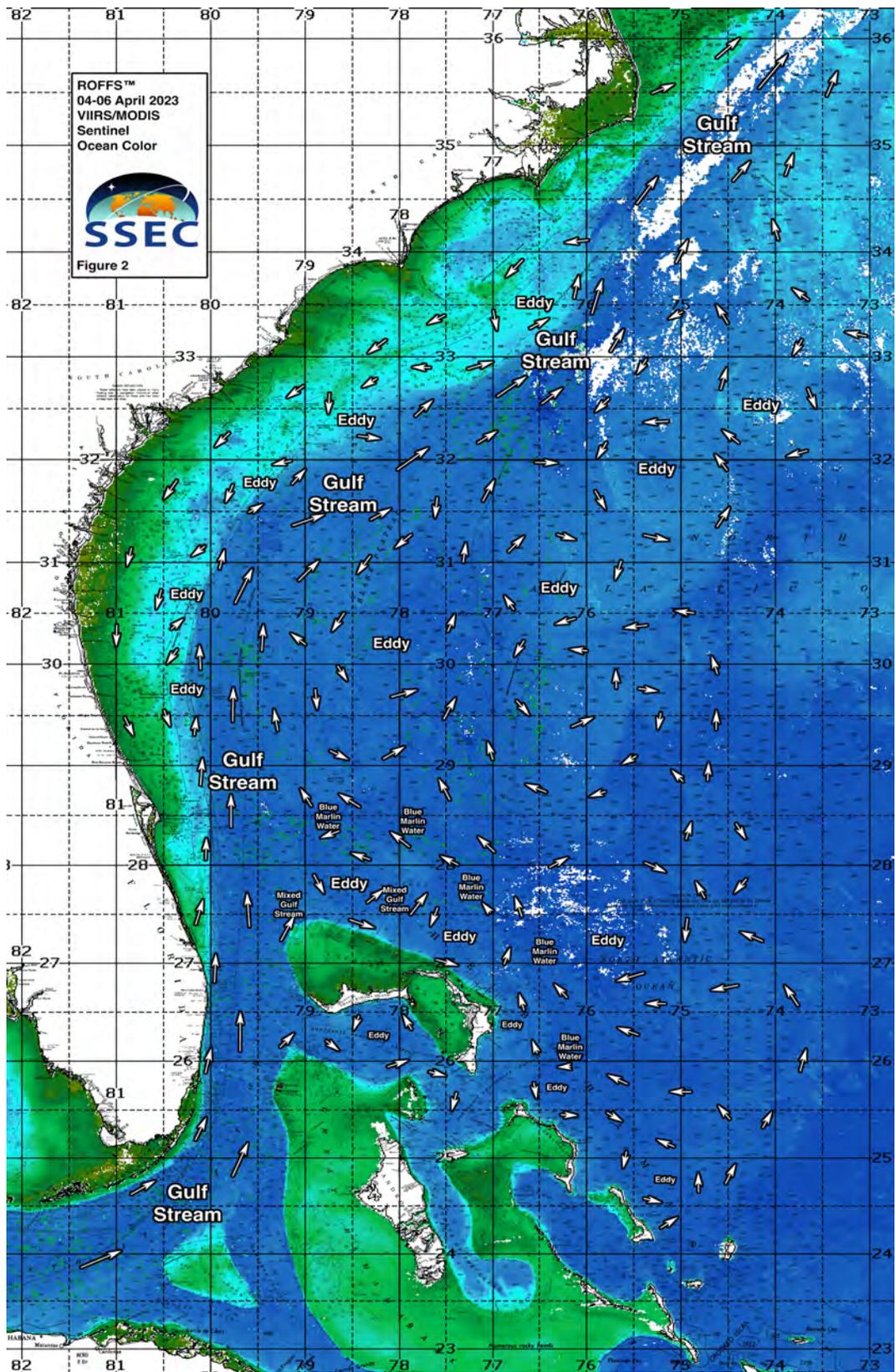


Figure 2b: Last year's Florida Keys to Cape Hatteras, NC conditions derived from the ocean color/chlorophyll imagery during April 04-06, 2023 from the VIIRS sensors on SNPP satellite in combination with the Aqua and Terra sensors on the MODIS satellite provided by University of Wisconsin-Madison in combination with the ESA's Sentinel 3 satellites. We consider this an image pair with the above SST Figure 1b image. Same main features and surface currents labeled.

We were able to use imagery from April 5th-7th for this year's analysis. The directional flow of the water was derived from our ROFFS™ sequential image analysis, following the water from image to image based on the water masses distinct, i.e. signature value. An example of this year's SST satellite infrared imagery in greytone can be found on the ROFFS™ YouTube™ site ([Click Here](#)). 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 greytone water represents the warmer water and white indicates clouds.

Conclusion

Based on what we have been observing over the last several weeks, the present overall early April ocean conditions (SST) for the Gulf Stream region between the Florida Keys to Cape Hatteras, NC appears cooler than what we had observed last year. This delayed increase in SST could indicate a more normal start for the southeastern U.S. fishing season this year. However, the presence of "Bahamas blue marlin water" moving northwest from Abaco may indicate the start to the season as this water continues interacting with the eastern side of the Gulf Stream. Fortunately, we have begun receiving reports of tuna and billfish action north of the Bahamas and also offshore of Florida, GA and the Carolinas. Additionally, south Florida sailfish action has been better this year overall compared to years past. Favorable reports of larger wahoo from north Florida to the Carolinas suggests that the fish are starting to arrive in these areas as well. As a result, now is a good time to start fishing, if you are not fishing already or at least have your boat in the water (or on the trailer and ready to go) waiting for that weather window. We want you to take advantage of the good ocean conditions and the early fishing season. As the water continues to warm after what appears to have been one of the last of the seasonal cool fronts to recently pass through, the offshore fishing season will have begun over most of the areas from Cape Canaveral, FL to Cape Hatteras, NC. It will likely not be long until the main migration of marlin, yellowfin tuna and mahi will be available for catching offshore of South Carolina and North Carolina.

It is important to note that good fishing action on a daily basis is strongly linked to local, short-term (daily) 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. Relatively short-term (hourly/daily) and relatively small-scale (1-5 mile) movements of the currents and their associated water mass boundaries are often in control of the level of fishing productivity on any given day. 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 continue to change rapidly, so it becomes even more important to contact ROFFS™ (321.723.5759 / fishing@roffs.com / www.roffs.com) for 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 eddy features and how it relates to the local fishing environment as the larger recreational and tournament fishing season approaches. Get out, fish now and maximize your fishing experience by using ROFFS™ to locate the best spring conditions near you.

Safe and Successful Fishing