Southern Florida to Cape Hatteras Spring Season Preview 2025

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 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 different water masses, currents, temperature and water color. Please reference our 2025 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 2025

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. Overall, the southeastern oceanographic conditions are approximately 2°F warmer than 2024 (2024: 74.7°F vs 2025: 76.6°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 off of the Florida Keys to Miami, FL for 2025 was approximately 1.0°F-1.5°F warmer (at 80.6°F) compared to 2024 (79.3°F). This warmer trend continues northward as the core of the Gulf Stream from Cape Canaveral to Jacksonville is approximately 1°F warmer (also 80.6°F) compared to 2024 (79.3°F) and further north to Cape Fear (2024: 79.3°F vs 2025: 80.1°F) and off Cape Hatteras (2024 (78.4°F) and 2025 (79.6°F).

We continue to observe the formation of larger Gulf Stream eddy formations offshore of Charleston as the Gulf Stream interacts with the Charleston Ridge in a similar fashion to the 2024 season from the normal semi-consistent Charlston Gyre system we see consistently throughout the year. These eddy formations move back towards the 100 fathom ledges south of Cape Lookout. However, unlike the 2024 season, we observed a prolonged period of unstable conditions within the Gulf Stream through January and early February, 2025 while the Loop Current within the Gulf of Mexico began to reform. These oceanographic features

returned to normal by late February which has resulted in relatively stable boundaries along the western side of the Gulf Stream moving northwards along the east coast of Florida in March into early April. The occasional Gulf Stream eddy formations moving northwards along the western edges of the Gulf Stream have periodically provided improved chances for wahoo fishing action inshore of the 100-fathom ledge. However, this has also resulted in slightly unstable conditions along the eastern side of the Gulf Stream moving northwards from the Corner to the northwest of Walker's Cay, finally allowing warmer Bahamas blue water to push northwestward to the north of Abaco.

We have also 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 inshore SST is considerably warmer in 2025 compared to 2024. The SST off of Cape Canaveral and the Space Coast was approximately 5°F-7°F warmer at 75°F (compared to 68°F-70°F in 2024). Similar conditions have been observed off of Georgia at 69°F (compared to 64°F in 2024). Continuing north from Cape Fear to Cape Hatteras, inshore temperatures are also warmer in 2025 at 66°F-68°F (compared to 58°F-60°F in 2024). This is likely due in large part to relatively stable conditions, inshore, throughout the month of March and perhaps less wind events than 2024. This has also resulted in overall cleaner (mixed blue green/blended blue) water inshore throughout much of the southeast.

Overall, these early April 2025 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 warmer and cleaner/bluer water, especially inshore, than the previous year. Overall inshore SST has also been warmer compared to 2024 with bodies of warmer, mixed blue green to blended blue water being found closer to shore from Savannah to Georgetown and Cape Fear to Cape Hatteras compared to last year. A considerable amount of the warmer, 'blue marlin water' still remains east of the Bahamas as well and has not pushed into the Gulf Stream north of the Bahamas in large amounts. Productivity along the Gulf Stream areas will likely begin to improve when this warmer Bahamas blue marlin water begins fully interact with the eastern side of the stream. Additionally, we have observed stable boundaries along the western side of the Gulf Stream punctuated with periodic meanderings of eddy filaments inshore of the 100 fathom ledge between Cape Canaveral and Jacksonville. These eddy filaments, when pushing into good bottom and inshore, continue to provide the more productive waters for wahoo fishing off north Florida and southern Georgia during the early 2025 season. All indicators suggest that with the warmer water throughout this Gulf Stream region compared to last year, it may be an earlier fishing season with the majority of the larger populations of gamefish arriving a few weeks earlier in places compared to last year.

With all of this in mind, we have already begun to receive reports from the Bahamas and South Florida. Decent billfish action has already been reported in the northern Bahamas with strong yellowfin tuna and dolphin bites along the eastern side of the Gulf Stream in mid-February. Strong sailfish action also showed up in South Florida in mid-February from the Keys to the Palm Beaches with smaller kingfish, mahi, and large swordfish thrown into the mix by mid-to-late-March. Sailfish action during some weeks has been really good in February and March compared to last year from upper Keys to Miami to St. Lucie and Jupiter areas. Looking further north, there have been some good reports of larger wahoo out of North Florida and into southern Georgia by late February and early March before dropping off some. Though we anticipate increased productivity as these Gulf Stream eddy filaments move north

from South Florida and push inshore of the ledge. Additionally, the big three tuna; bigeye, bluefin, and yellowfin have been spotted off the Outer Banks. Click here for the ROFFS™ Bahamas preview.

Nowcast Analysis

The Gulf Stream Current, including its related eddies and filaments along the current's eastern and western side are the important habitat regions of the highly migratory species for this time of year and are the most important conditions that we are studying. The Gulf Stream in the spring season acts as a "highway" for many of the target pelagic species to migrate north, then move inshore as the temperature warms and bait concentrates. 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 1a/b and 2a/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 1a/b were derived from a variety of U.S. and European satellites for SST during the early April period (April 05-06, 2025 and April 05-07, 2024) and Figures 2a/b were derived from U.S. SNPP VIIRS, Aqua MODIS Ocean color/chlorophyll, and European Space Agency's Sentinel 3 chlorophyll imagery during this same period (April 05-06, 2025 and April 05-06, 2024). As the exact values of the original data from different satellite sensors (Sentinel, VIIRS and MODIS) are not the same, we cross-calibrated the data to derive images that have 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 and NOAA'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.

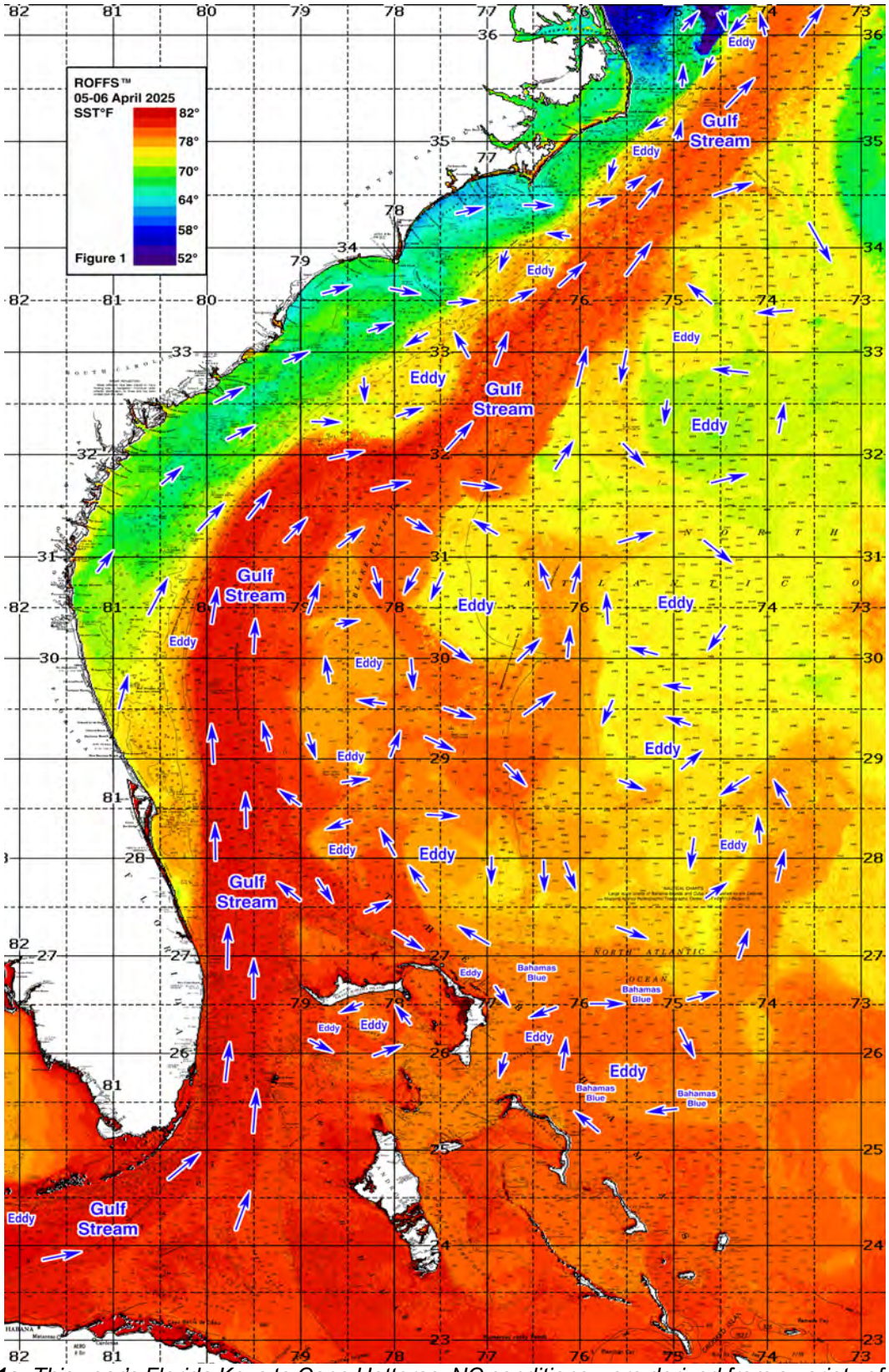

Figure 1a: *This year's Florida Keys to Cape Hatteras, NC conditions were derived from a variety of infrared sensors to get SST from NASA, NOAA, JPSS and ESA satellites during April 05-06, 2025. Main features and surface currents are labeled.*

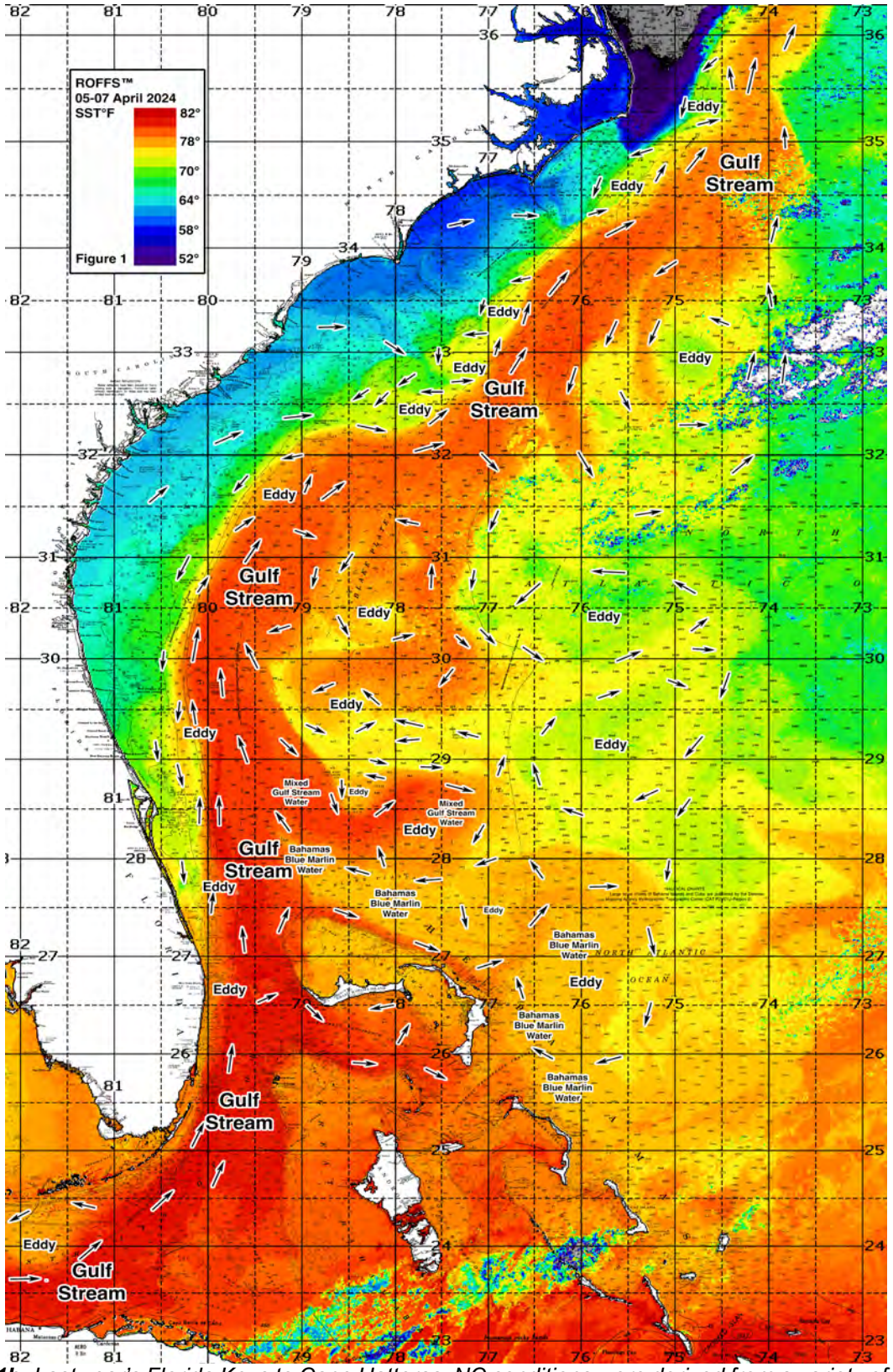

Figure 1b: *Last year's Florida Keys to Cape Hatteras, NC conditions were derived from a variety of infrared sensors to get SST from NASA, NOAA, JPSS and ESA satellites during April 05-07, 2024. Main features and surface currents are labeled.*

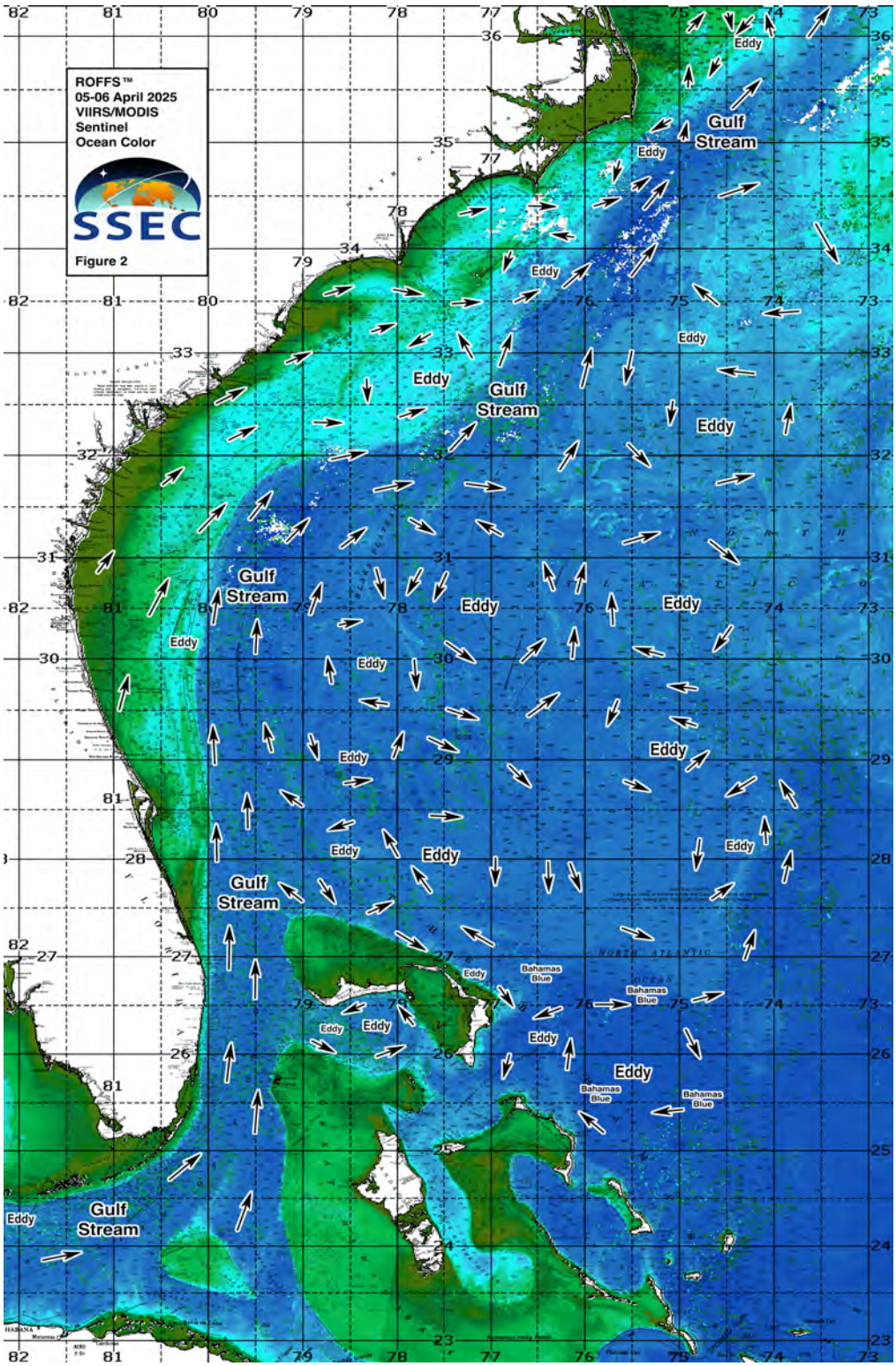

***Figure 2a**: This year's Florida Keys to Cape Hatteras, NC conditions derived from the ocean color/chlorophyll imagery during April 05-06, 2025 from the VIIRS sensors on SNPP and NOAA 20 & 21 satellites and the Aqua sensors on the MODIS satellite provided by University of Wisconsin-Madison in combination 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.*

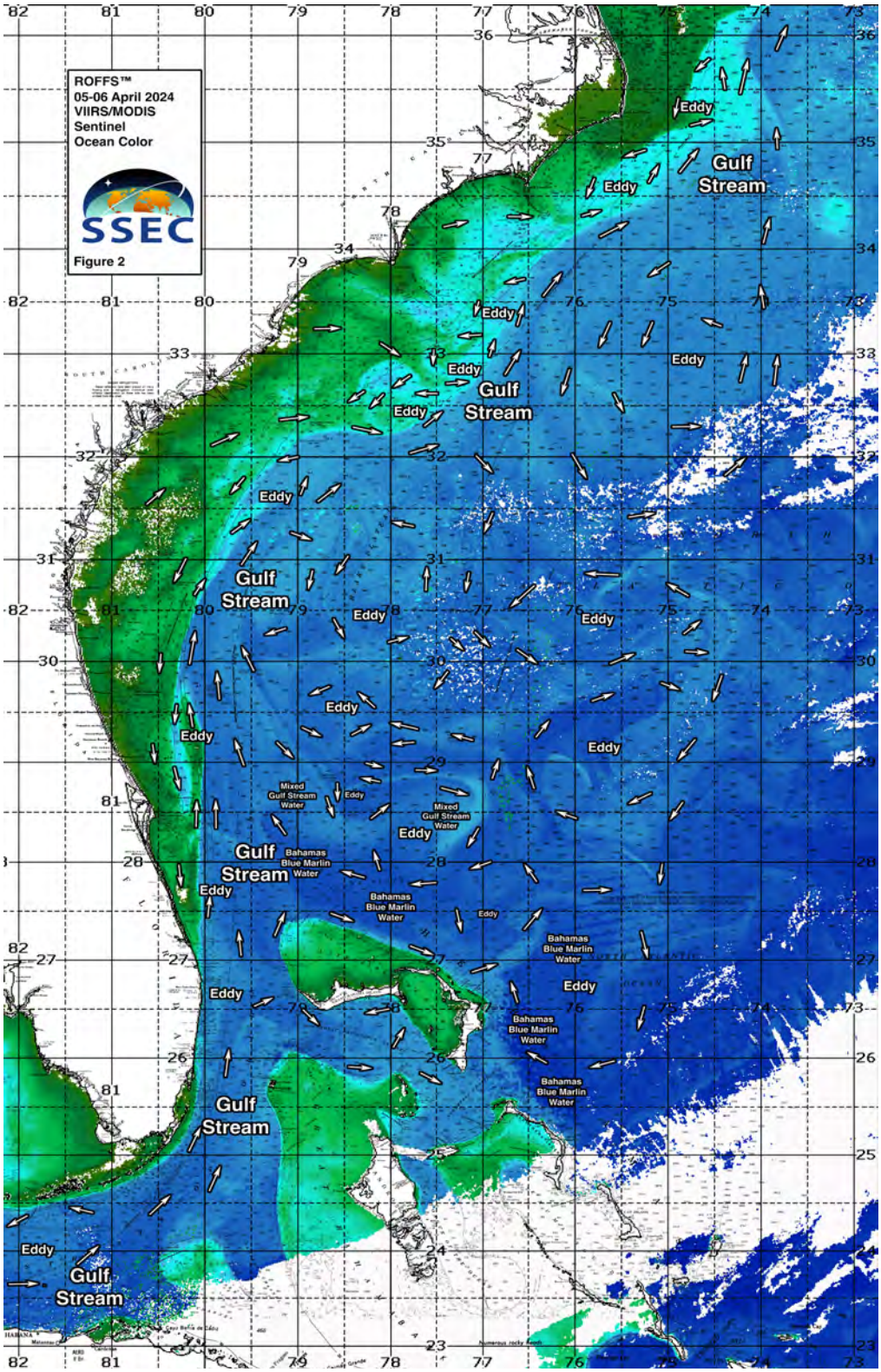

***Figure 2b**: Last year's Florida Keys to Cape Hatteras, NC conditions derived from the ocean color/chlorophyll imagery during April 05-06, 2024 from the VIIRS sensors on SNPP and NOAA 20 & 21 satellites in combination with the Aqua sensor on the MODIS satellite provided by University of Wisconsin-Madison 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-6th 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 greytoned 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 warmer than what we had observed in the prior year. This increase in SST should indicate an earlier start for the southeast fishing season for the majority of the targeted game fish species. However, the delayed presence of "Bahamas blue marlin water" moving northwest from Abaco may indicate a more normal start to the season as this water begins interacting with the eastern side of the Gulf Stream. Fortunately, we have begun receiving reports of good tuna, billfish, and mahi action north and east of the Bahamas and into the eastern side of the Gulf Stream north of the Corner/Matanilla Shoal. Additionally, south Florida sailfish action has been really good in places these past two months. Favorable reports of larger wahoo from north Florida to the Carolinas suggests that the fish are ready when conditions are right. As a result, now is a good time to be either fishing already or your boat should be in the water waiting for that weather window. We want you to take advantage of the good ocean conditions and the early fishing season. Once the water continues to warm after what appears to have been one of the last of the seasonal cool fronts pass through, the offshore fishing season will have begun over most of the areas from Cape Canaveral to Cape Hatteras. It will not be long until the main migration of marlin, yellowfin tuna and mahi will be available off Georgia to North and South Carolina. One additional point to mention, is the larger populations, sightings and catching of bluefin tuna from off of the Keys and South Florida, the Bahamas up to off of North Carolina this year compared to the last few years. This is a GOOD sign as the population of bluefin tuna appears to have rebounded nicely the past 4-5 years.

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 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 and fish now and maximize your fishing experience by using ROFFS™ to locate the good spring conditions near you.

Safe and Successful Fishing from Team ROFFS™