



Bahamas Season Fishing Forecast for 2023

BAHAMAS: IT IS TIME TO FISH

By Matthew Upton

Introduction

For the past 21 years ROFFS™ has been forecasting the overall ocean and fishing conditions during the spring Bahamas Fishing Season from March through early June. The hypothesis for forecasting the seasonal marlin fishing action stems from the location of the blue and often warmer water that occurs from the Cat Island – San Salvador Island area and south to southeast of these islands where it is presumed that the marlin concentrate before, during and after spawning. We have been calling this water “blue marlin water” in our analyses. From satellite data, we can identify this water based on its ocean color/chlorophyll signature and sea surface temperature (SST) characteristics. Our hypothesis and experience have shown that the marlin and other pelagic species (such as tuna, dolphin and wahoo) are associated with this water and the more “blue marlin water” that exists in the Abaco Islands and Eleuthera Island areas early in the season, the greater the relative abundance of marlin in these areas.

We have also observed an association between the “blue marlin water” and the tuna action in the Bahamas, northward along the western side of the Gulf Stream between Jacksonville, Florida and northward towards Cape Hatteras, North Carolina. We do observe evidence that when more “blue marlin water” passes north and northwest of Abaco to the eastern side of the Gulf Stream earlier in the season that a certain unknown proportion of the migratory fish move to the western side of the Gulf Stream and north. This brings more fish to the coastal fisheries at the edges of the Gulf Stream water throughout the spring to early summer season from northeast Florida to North Carolina.

Based on our observations in the Bahamas from Eleuthera to the Abacos over the last 36 years, it appears that excellent fishing action occurs within the Bahamas areas when there is a substantial volume of the “blue marlin water” pushing over the 100-500 fathom (600-3000 feet) and shallower ledges along the eastern side of Cat Island, Eleuthera and the Abacos. Relatively favorable fishing seasons occur when this water only occurs over the 500-1000 fathom depths, but does not reach the 100-500 fathom or shallower depths. Mediocre to poor years occur when there is a lack of this water over these areas or the “blue marlin water” is way offshore and pushes more north of the Abacos instead of west to northwest. However, in these cases, short pulses of this water bring fish into these areas regardless. Unless there is a sustainable flow of the water into these regions, the catch rates remain below average to average through the season. It is also important to understand that good fishing action on a daily basis is linked to the water mass boundaries created by these currents and eddies, where they are stable for consecutive days over good bottom structure and ledges and where the water is pushing in a favorable inshore direction over good structure toward the islands. These features, that have remained favorable for multiple days, concentrate the baitfish and draw bigger fish into these areas.



The hypothesis is also based on our experience using the hourly satellite observations of the ocean conditions derived by ROFFS™ (www.roffs.com), catch reports provided by a variety of sources for the past 36 years and information derived from other sources of oceanographic data. We mainly use infrared (IR) satellite data to observe the sea surface temperature (SST) and the ocean color/chlorophyll data for indices of phytoplankton (chlorophyll), water clarity, and colorized dissolved organic material (CDOM) that are received from a variety of data sources including NASA, NOAA, Suomi National Polar-orbiting Partnership (SNPP or JPSS) and the European Space Agency (ESA) satellites.

Background and Some Data for 2023

Although we have learned that the favorable oceanographic conditions develop from the presence or absence of the “blue marlin water” during the main Bahamas fishing season, we continue to prepare the annual forecast from data around mid-March. This allows us insight into the conditions prior to the spring season and understand the ongoing fishing success starting in March and continuing to early June. We prefer to use real-time observations and have learned that evaluating the preseason conditions in March provides insight into future seasonal trends. We evaluate whether or not we are observing “normal” conditions or anomalies. We rely on real time satellite data but also consult climate models. One indication is the SST in the core of the Gulf Stream off Miami and the SST of the Bahamas “blue marlin water” east of Cat Island to east of Long Island. Because we started our forecasting studies during the first week or two of March in 2003, we have continued our time series using that same time period to directly compare each year.

The ROFFS™ 21 year (2003-2023) mean SST for the core of the Gulf Stream off Miami is 78.8°F during our standard early to mid-March measurement period. This year the SST was approximately 80.0°F in the core of the Gulf Stream off of Miami on March 16-18 (2023), which is about 0.5°F warmer than during the same period as the previous year (2022), about the same as the same period in 2020-2021 and about 1.2°F warmer than the 21 year mean. While we have not been recording the SST of the Bahamas “blue marlin” water offshore of Cat Island to Long Island as long, the 16 year mean (2008 – 2023) SST for the warmer water east of Cat Island area is 77.2°F. This year the SST of the “blue marlin water” east of Cat Island/Long Island was 78.6°F during the standard early to mid-March time period, which is about 0.5°F warmer than last year and 1.4°F warmer than the mean. This year the presence of the slightly warmer “blue marlin water” off the southeastern Bahamas area has just recently (within the last 2 weeks) shown up in a higher abundance and could indicate a normal or later than normal arrival of an abundance of marlin and various tuna species into the Bahamas region compared to last two to three years.

Furthermore, we continue to monitor climate variability and ocean-wide circulation and consider other indices such as the North Atlantic Oscillation (NAO) and the Atlantic Multidecadal Oscillation (AMO). The NAO is the dominant mode of climate and seasonal variability in the North Atlantic region ranging from central North America to Europe and much into north Asia. The NAO is a large-scale variation in atmospheric mass between the subtropical high and the polar low. The corresponding index varies from year to year, but also exhibits a tendency to remain in one phase for intervals lasting several years. The NAO is a climatic phenomenon in the North Atlantic Ocean defined as the difference of



atmospheric pressure at sea level between the Icelandic low and the Azores high. Through east-west oscillation motions of the Icelandic low and the Azores high, it controls the strength and direction of westerly winds, currents, and storm tracks across the North Atlantic Ocean. It appears to be one of the most important manifestations of climate fluctuations in the North Atlantic (<https://www.ncdc.noaa.gov/teleconnections/nao/>). This year (2023) the NAO index for January and February is slightly higher in January but lower in February than last year (around 1.3 and 0.9 respectively) and considered slightly higher than normal. Typically the NAO is more important for driving the west to east winds (westerly's) from 30°N latitude and north. Higher NAO index values or an increase in NAO index suggests stronger wind and more cooling so we expect both the atmospheric temperature and SST to be slightly warmer than last year and warmer than average which has been the case. It was a warmer than normal winter in this area.

The Atlantic Multi-decadal Oscillation (AMO) has been identified as a coherent mode of natural variability occurring in the North Atlantic Ocean with an estimated period of nearly 100+ years. It is based upon the average anomalies of sea surface temperatures (SST) in the North Atlantic basin, typically over 0°-80°N latitude. (<https://climatedataguide.ucar.edu/climate-data/atlantic-multi-decadal-oscillation-amo>). The unsmoothed AMO Index for January and February 2023 is approximately 0.19 which is about exactly the same as it was last year suggesting similar SST anomalies but still a positive AMO. We have learned that the current positive trend in these indices suggest a decrease in speeds of the North Atlantic Ocean Circulation is occurring. This includes a slow decrease in current speeds of the Gulf Stream system. Also, a positive AMO is usually associated with a potential increase in the number of tropical storms that mature into hurricanes because the overall North Atlantic Ocean SST is higher. This does not take into account the wind shear variability and other aspects of tropical storm genesis. For easy to understand answers to frequently asked questions about the AMO see http://www.aoml.noaa.gov/phod/amo_faq.php#faq_2.

Regarding El Niño we have yet to observe any direct relationship between El Niño – La Niña and the Southern Oscillation (ENSO) and the oceanographic conditions in the Bahamas area. Currently we are still in a La Niña phase. We have been in a La Niña stage for the better part of three years now suggesting increased amounts of tropical storms in the North Atlantic Basin, which lines up with the current AMO readings. This long run of La Niña conditions is abnormal. However, the forecast for the next few months are to progress toward an ENSO neutral stage then toward an El Niño phase at the end of the year (https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/lanina/enso_evolution-status-fcsts-web.pdf).

Nowcast Analysis

In this section we want to discuss and present the current oceanographic conditions (Figure 3 and Figure 4) and compare it to last year's conditions (Figure 1 and 2). For clarification purposes, Figures 1 and 3 were derived from a variety of NASA, NOAA, ESA, and JPSS satellite SST sensors during the mid-March period and Figures 2 and 4 were derived from the SNPP, VIIRS, Sentinel 3, and NASA MODIS Aqua/Terra ocean color/chlorophyll imagery during relatively same mid-March time period. We also try to stay relatively consistent with our color palettes through the years to make it easier to directly compare the conditions by satellite signature.

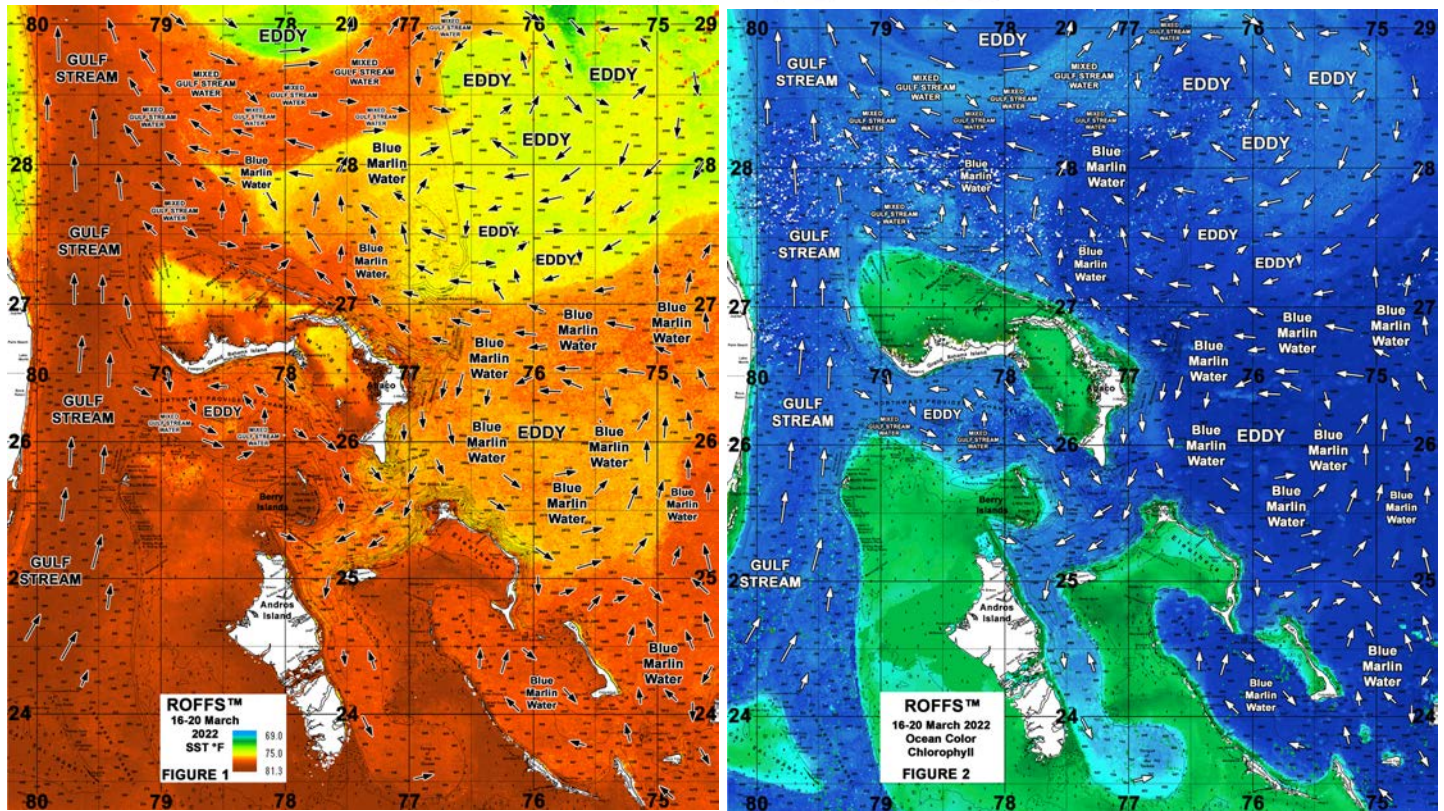


Figure 1: Last years conditions were derived from a variety of infrared sensors to get SST from NASA, NOAA, and ESA's Sentinel 3 satellites during March 16-20, 2022 and **Figure 2:** Derived from the ocean color/chlorophyll imagery during March 16-20, 2022 from the Sentinel 3 satellites, VIIRS sensors on SNPP satellite in combination with the Aqua and Terra sensor on the MODIS satellites provided by the University of Wisconsin SSEC. We consider this an image pair.

In both instances, 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 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. While these provide a visualization of the mid-March conditions, they also provide examples of how the eddy features, or lack of eddy features, and the water circulation are pulling the “blue marlin water” through the Bahamas. This is important for understanding the dynamics of the region. Both images for each year have the same arrows, eddy and “blue marlin water” labeling. The flow of the water was derived from our ROFFS™ sequential image analysis of Lagrangian coherent features where we study several days of satellite imagery to follow the signature water masses and their motion. An example of this years SST satellite infrared imagery can be found on the ROFFS™ YouTube site at (<https://www.youtube.com/watch?v=ESB6sc1ELnY>) showing the flow of the water around the Bahamas region during the last two months, where the darker grey water represents the warmer water and white represents clouds.

Every year is different; however, this year's overall conditions look similar to last year's with a few exceptions. When looking at Figure 3 and 4 and talking to anglers, we noticed a few obvious features and trends that are different from previous years. First off, what is similar to last year in the ocean



color/chlorophyll image (Figure 4), there is a lot of “blue marlin water” east to southeast of Abaco, east of Eleuthera and east of Cat Island; however, the main pulse of this water has just started to be pushed harder into the eastern Eleuthera and eastern Abaco areas and northwest of Abaco and pulses and smaller filaments of “blue marlin water” are just starting to reach the eastern Gulf Stream area, which is different from 2020 and 2021, but similar to last year. This lack of large abundance of “blue marlin water” already interacting with the Gulf Stream indicates that there is likely less of the main marlin and tuna population in middle to northern Bahamas region and perhaps a later than normal arrival of the majority of these species in the northern Bahamas and further north along the coast of Florida, Georgia, and South Carolina. In fact, we have not had many reports of yellowfin tuna around the Bahamas and eastern side of the Gulf Stream just yet. The main observation and difference between this year and last year is that the water is overall warmer by at least 0.5°F in many places likely due to the warmer winter mainly. Also, the overall flow and current appears faster this year especially east of the islands and north of the Little Bahamas Bank where conditions are changing quite rapidly with more eddies in the southern and eastern Bahamas than last year. The water is specifically darker blue and warmer in the Exuma Sound compared to last year, which could mean better fishing action earlier in the Exuma Sound compared to last year. Another distinct similar trend as last year is the larger amount of cooler, mixed blended water north and northeast of Great Abaco Canyon pushing down from the north then moving west when it gets closer to Abaco.

With all this in mind, we believe that the main eddies to keep an eye on and that are driving the flow are the counter-clockwise rotating eddy sliding southeastward and now centered east of the Hole in the Wall near 76°00'W & 25°50'N, the clockwise eddy centered farther offshore well east of Abaco near 74°50'W & 26°20'N and the smaller counter-clockwise eddy centered well east of Eleuthera near 74°50'W & 25°05'N. It is the presence and persistence of these three eddies that have just recently acted as a conveyor belt pushing a larger amount of “blue marlin water” swiftly north to northwestward toward the Bahamas coasts and northwestward toward the Gulf Stream. If these eddies stay relatively stable and the trend continues, conditions should be good for the next few weeks into April for the larger populations of marlin, tuna, wahoo and dolphin to move through the area.

The other driving feature is the large clockwise rotating eddy centered well northeast of Abaco (near 76°15'W & 28°20'N). This is important eddy to watch, as it is assisting in pushing the “blue marlin water” in a favorable direction into the Abaco Canyons and northwest toward the Gulf Stream. If this eddy remains stable or moves northward it will remain good for fishing conditions closer to the northern islands. But if it moves farther south it could pinch off that flow of warmer “blue marlin water” and cause it to not get closer to the Gulf Stream water which would mean not as good conditions north of Abaco and Walkers but at the same time improve the conditions directly east of Abaco by pushing water in a favorable inshore direction. So stay tuned to ROFFS and order to keep track of the day-to-day better conditions for fishing action in the Bahamas. The smaller eddies directly northeast of Abaco and north of Walkers and north of Little Abaco Island will be short lived and move quite quickly to the north and be a non factor into April.

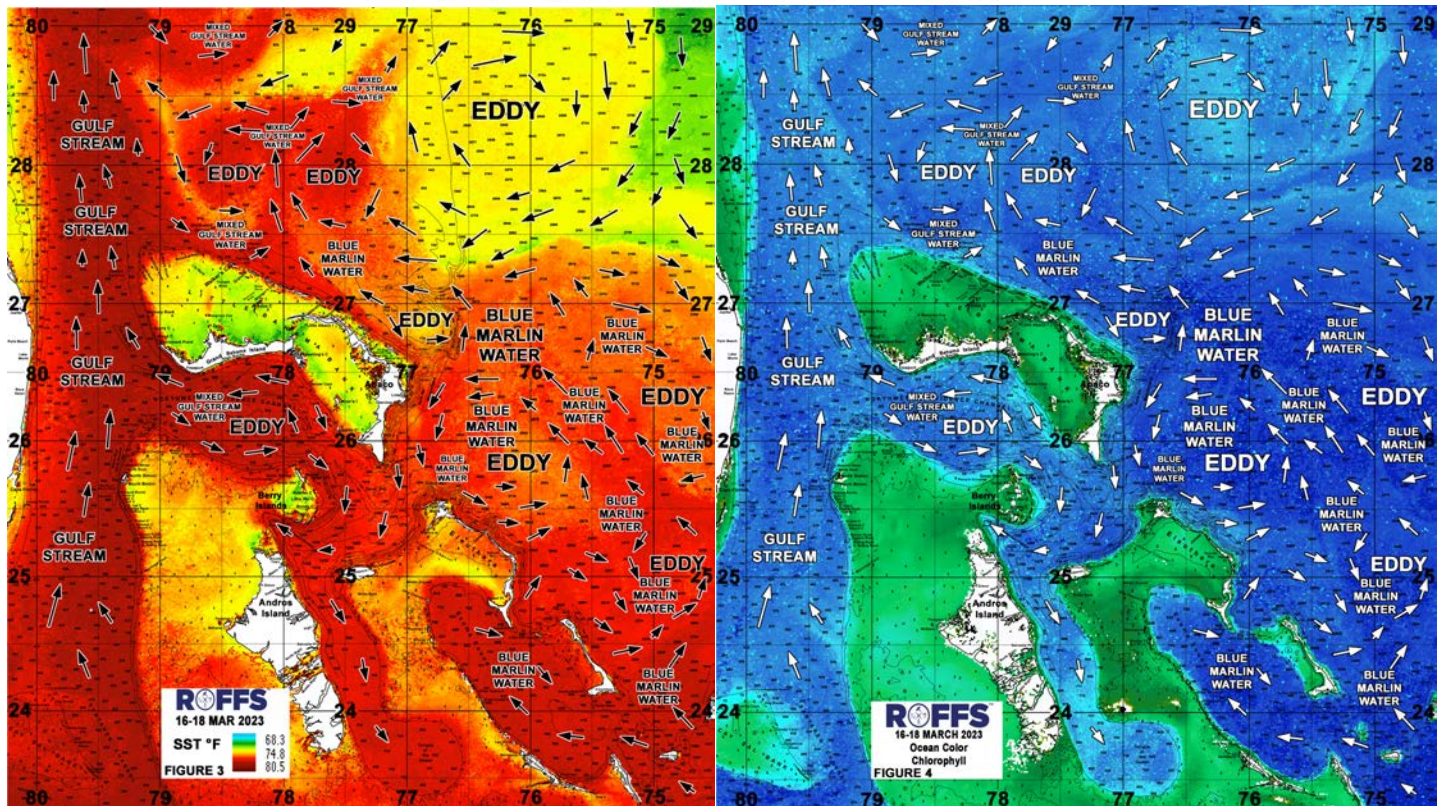


Figure 3: This year's conditions were derived from a variety of infrared sensors to get SST from NASA, NOAA, and ESA's Sentinel 3 satellites during March 16-18, 2023 and **Figure 4:** Derived from the ocean color/chlorophyll imagery during March 16-18, 2023 from the ESA Sentinel 3 satellites, VIIRS sensors on SNPP satellite in combination with the Aqua and Terra sensor on the MODIS satellites provided by the University of Wisconsin SSEC. We consider this an image pair.

Overall, the conditions are setting up nicely as the larger amount of “blue marlin water” has started to push in over the eastern Bahamas in larger amounts over the past two weeks. In fact, the position of the eddies now are pushing larger amounts of slightly warmer and bluer water in a favorable inshore direction over the ledges directly into the Abaco Canyons and into the North Bar and Wonderland area for GOOD fishing action down to the Hole in the Wall. Some of this better water is pushing down between Harbour Island and Abaco toward the Berry Islands toward the Northwest Channel for improved fishing conditions. Furthermore, as evident now, if the wind and water is pushing into the Pocket south and southwest of Chub Cay, it can produce very good fishing action for the upcoming tournaments and fun fishing. Further west we continue to observe the traditional counter-clockwise rotating flow centered in the Northwest Providence Channel now east of Tuna Canyon area. This eddy pulls in Gulf Stream water and interacts with the Island banks and provides good conditions for tuna, dolphin, wahoo and even marlin in this area. Farther north, north of Walker's Cay and the Abaco Islands there are lots of eddies and dynamics going on right now and a lot of unstable conditions but currently the fishing should improve over the next couple of weeks as larger amounts of darker “blue marlin water” continues to push north of the Abaco Islands and northwest joining the Gulf Stream. The conditions right now east to northeast of Eleuthera do not look too favorable as the water is being pulled offshore by the counter clockwise eddy, but conditions should improve as this eddy continues to drift to the southeast.



To back up our ocean observations, there is nothing more valuable than client feedback and reliable fishing reports that ROFFS™ is blessed to have by talking with loyal clients. With that said, we have found further evidence of a slightly later than normal start to the better Bahamas fishing season. There surprisingly has been very few mahi caught east of Eleuthera, Cat and Long Island area yet, but there have been some dolphin caught on the eastern side of the Gulf Stream north of the Corner northwest of Walkers. The nice dark blue pretty blue marlin water has just recently showed up east of Cat Island and Long Island and the water appears to look better than last year. Blue and white marlin action has been slow overall, but showing signs of being more steady and improving. There has been some sailfish caught also, but not a lot of tuna. We have heard the best fishing has out of Chub Cay, especially for marlin and improving over the Hole in the Wall. North of Walkers recent reports have suggested a lot of good bites, marlin, tuna, dolphin north of Walkers Cay where you find the eddy edges, so that is an encouraging sign that some of the population of pelagics are already near the Gulf Stream and north of the Bahamas. Another pathway for larger numbers of fish is through the Gulf Stream coming from the Caribbean or southern Gulf of Mexico filtering into the Bahamas to feed.

As the water warms in the coming weeks we again anticipate that a substantially higher amount of marlin, tuna and other species will continue to be move closer to the Bahamas Islands especially in the northern Islands. These present conditions look similar to last year, but have hints to a slightly later start to the better fishing action compared to the last few years, so stay patient as all signs show it will improve soon. We also have heard that there are large amounts (higher than normal) of sargassum moving toward the Caribbean toward Florida and the Bahamas. As this may improve dolphin action and fish habitat, too much of the sargassum will worsen the fishing conditions overall, so we hope it does not flood the region too bad. ROFFS™ will be monitoring these and other conditions that develop over the next several weeks and months as we do in other areas.

Seasonal Concluding Thoughts

Based on what we have been observing and hearing in March thus far, the better ocean conditions related to higher abundance of marlin, tuna, wahoo and mahi has just begun, especially in the south to southeast Bahamas. The way the eddies have set up the past two weeks has finally allowed the higher amount of "blue marlin water" to flow rapidly from southeast to northwest offshore of Long Island to Cat Island to Eleuthera Island and now directly east of Abaco Island and starting a bigger push northwest of Abaco toward Walkers Cay and the Gulf Stream area which is encouraging. Conditions look best right now east of Abaco into the Abaco Canyons and the Wonderland, North Bar, Pocket to Hole in the Wall area for blue marlin. Overall, the conditions and reports have hinted at a slower than normal start to the season especially the northern Bahamas where there is not a lot of "blue marlin water" moving toward the Gulf Stream yet, but it appears that is about to change and improve. We do see a lot of similar features and conditions as last year, but the overall SST is a bit warmer, likely due to the warmer than normal winter season. We do observe that the flow and current appears to be moving more rapidly east and north of the islands, it remains to be seen if that contributes to better fishing conditions or worse. It tends to translate to slower fishing action as the water mass boundaries and food source remain unstable and move quicker hence not stable enough to hold bait in one spot for long periods of time. However, all it takes is a shift in a few of these eddies to push water consistently into the ledges and coast improving conditions in certain regions.



Overall we see conditions better earlier in Exuma Sound than last year and reports of good fishing in the Berry Islands area. The water is just starting to improve and look great east of Cat and Long Island area with a dark blue to purple tint that is promising for marlin action to take off.

We will continue monitoring these ocean conditions within the Bahamas region as the season progresses. Reports suggest fewer dolphins this year than the past few years but the marlin and sailfish action has just started to improve. We can only hope more tuna and dolphin will show up soon as well. As these main eddy features and currents progress the areas of better fishing conditions will change and it depends on where the currents and eddies are pushing over good structure and toward the coast. Overall, it is shaping up to be another GOOD Bahamas fishing season this spring but just a slower start than normal. Small hints of warmer than normal water and higher current speeds are not the best news, but we are confident that the conditions should be productive and improve over the next month or two and remain favorable into June when most of the species (minus some resident fish) will move north.

In conclusion, it is important to note that good fishing action on a daily basis is strongly linked to local, short-term (24-48 hours) current conditions that concentrate the fish once the preferred habitat of the fish are in a particular region. When the water masses and boundaries of these conditions are stable and favorable, i.e., continuously pushing over good bottom topography and structure then they concentrate the baitfish and larger fish can be found foraging. This means that the fishing action on any given day is controlled by hourly to daily and relatively small-scale (1-10 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 especially this year with conditions changing more rapidly. Relatively small subtle changes in the currents and their boundaries often have dramatic effects on the distribution and concentration of fish. Contact ROFFS™ for these daily detailed fishing forecasting analyses and get the inside track to where the better conditions are tomorrow. We highly recommend when the weather permits, you prepare now for the spring Bahamas fishing season and other fun fishing action as the conditions are finally starting to improve and will for the next few weeks into May.

Stay safe and tuned in to ROFFS™ on our web site www.roffs.com, on Facebook/Instagram @roffsfishing or subscribe to our newsletter for additional news and reports related to where the better conditions for fishing action is occurring each week. Thank you for your support.

Safe and Successful Fishing from ROFFS™