Gulf of Mexico Spring Season Preview 2020

CURRENT CONDITIONS LOOK EXCELLENT IN THE GULF OF MEXICO

By Gregory J. Gawlikowski

Introduction

Continuing our series of "Early Season Previews", ROFFS™ is providing a spring analysis of the oceanographic conditions for the Gulf of Mexico region derived using a combination of high-resolution satellite data including infrared sea surface temperature (SST) and ocean color/chlorophyll images from mid-to-late April 2020. In this preview, we will discuss the overall ocean conditions for the current spring fishing season and how they may transition into the summer conditions compared to the similar time period last year.

ROFFS™ (www.roffs.com) has a 30+ year history of monitoring the ocean conditions throughout the Gulf of Mexico for research and fishing applications. Infrared (IR) satellite data is used to observe the SST and ocean color data is used to derive indices of phytoplankton (chlorophyll), water clarity, water color and colorized dissolved organic material (CDOM). Combined with other oceanographic data and using sequential image analysis, these data allow one to visualize the dynamic ocean currents. The satellite data are derived from a variety of sources including NASA, NOAA, Suomi National Polar-orbiting Partnership (SNPP), the University of Delaware and the European Space Agency (ESA). ROFFS™ also incorporates a variety of different data derived from NOAA buoys, drifting buoys, gliders, aircraft, fishing vessels and satellite altimeters into its comprehensive fishing forecasting analyses. The altimeter data provides a relatively coarse spatial (~15 mile) and temporal resolution (5-10 days) that limits the data's usage to studying large-scale circulation. It is generally not useful for evaluating smaller scale and short-term (daily and sub-daily) changes in the ocean currents or their water mass boundaries that often control the location of forage (bait) fish and the larger, more valuable predator/pelagic fish.

Background and Some Observations for 2020

It is important to look at the year-to-year trends and anomalies to get a better understanding of how the ocean conditions compare regarding the conditions and location of the fishes preferred habitat and the likelihood of a productive fishing year. Comparing the similar locations and features to last year, the SST of the core of the Loop Current for mid-to-late April 2020 is approximately 82.4°F-83.2°F and last year over this same time period the core of the Loop Current water was approximately 83.0°F-83.4°F which was similar and slightly warmer overall compared to this year and previous years. Please note; however, this year the northern boundary of the Loop Current appears to be at a lower latitude than last year at this same time period and this year there are two large Loop Current eddy features – one which had broken off approximately two months prior and drifted west/northwestward (currently centered near 90°00'W & 26°30'N) and one that has broken off more recently to the north (west of Tampa) that is currently centered near 85°45'W & 27°30'N.

The main body of the Loop Current appears to show warmer overall temperatures again this year and the other areas within the Gulf of Mexico are continuing to show the warming trend we have observed for over three years now. The SST in the offshore northwestern Gulf of Mexico is generally 78.0°F-80.0°F, which is approximately the same SST as we observed last year (2019), but 2.0°F-3.0°F

warmer than we had observed back in 2018. Similarly, the SST in the offshore southwestern Gulf of Mexico area (although mostly obscured by cloud cover this year over the observation time period) was observed to be within the 82.0°F - 83.0°F range this year, which is similar to the same time period last year, but much warmer than the 76.0°F-77.0°F that was observed back in 2018. Also of note is that the coastal SST's along the west coast of Florida to the western Gulf of Mexico are again showing temperatures similar to last year, but continue to range 4.0°F - 5.0°F higher than they were during the same time period (early to mid-April) back in 2016-2017.

Normally, a strong contributor to the warmer than normal SST's observed is the presence of a mild El Nino as observed last year. This year's NOAA model predictions indicate a 60% chance of ENSO-neutral conditions continuing during March-May 2020, while the probability for El Niño is near 35%. For the June-August 2020 season, the chance for ENSO-neutral is 55%, for an El Niño is 20-25% and that for La Niña is also 20-25%. The explanation of the warmer SST observed again this year is likely associated with the above average air temperatures over (and offshore of) FL, AL, MS, LA and TX during March and April 2020.

Currently (as previously discussed) there are two Loop Current eddy features, which have broken away from (separated from) the main body of the Loop Current over the past two months. The clockwise circulation of these features has pulled clean blue water with Loop Current origins northward towards the area west of Tampa, over the Lloyd Ridge region, and northwestward towards the Green Canyon region south of LA with some of this blue water also drifting east/northeastward towards and into the De Soto Canyon area as well. This circulation along with these substantially warmer SST's, which are similar to last year, support the earlier arrival time of the species that you usually target in May (e.g. yellowfin tuna, wahoo, dolphin, kingfish, sailfish, marlin, swordfish, cobia, etc.).

Recent reports indicate that the cobia have already arrived offshore (south) of the Florida panhandle and kingfish action has been decent so far in March and April offshore of western Florida with scattered sailfish and dolphin along with blackfin and yellowfin tuna and marlin also being caught offshore of Tampa, FL. We have also had reports of larger bluefin tuna caught in the northeast Gulf of Mexico in mid-to-late March and into early April resulting in the early closing (April 16, 2020) of the Gulf of Mexico trophy bluefin tuna season. There have also been reports of marlin, wahoo and yellowfin tuna action (some larger than 150+ lbs.) south of LA and in the northeastern Gulf of Mexico area, which is not surprising based on the SST's we have been observing in the areas east/northeast of the Green Canyon, towards the Mississippi Canyon south of the Mississippi River Delta and eastward into the De Soto Canyon. In the western Gulf of Mexico there have also been reports of releases of blue marlin in the Perdido Rig and Hoover Diana Rig areas and also good yellowfin tuna action offshore of Texas.

Nowcast Analysis

For forecasting short-term oceanographic conditions related to finding fish, ROFFS™ first uses real-time direct observations based on high-resolution satellite data rather than unproven and unreliable ocean models or 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 movement of water masses, stability, temperature (SST) and water color.

The circulation of the Gulf of Mexico is controlled by the location and flow of the Loop Current, large mesoscale eddies, local and regional winds, and the dynamic thermohaline forces of the fresh water runoff mixing with the ocean water. The Loop Current is a warmer ocean current that flows northward between Cuba and the Yucatan Peninsula into the Gulf of Mexico. It makes a "loop" east/northeastward within the Gulf then southward before exiting through the Straits of Florida and re-joining the Gulf Stream. It is the dominant circulation feature in the eastern Gulf of Mexico and its location varies on a weekly, monthly and annual time scale. The Loop Current and related eddies can be a highway and spawning grounds for pelagic fish moving into the Gulf of Mexico from the Caribbean Sea. The eddies that the Loop Current sheds can be an important fish habitat for longer periods of time as they progress from the eastern Gulf of Mexico to the northeastern, central and western Gulf of Mexico sometimes over a time period of several months.

Figure 1a was derived from a variety of U.S. (NASA, NOAA, JPSS and ESA) satellites during the mid-to-late April (April 25-27, 2020) period and Figure 2a was derived from the U.S. SNPP VIIRS, Sentinel 3A and 3B, Aqua MODIS and Terra MODIS ocean color/chlorophyll imagery during this same period (April 25-27, 2020). As the exact values of the original data from different satellite sensors (VIIRS, MODIS and Sentinel) are not the same, we cross-calibrated the data to derive images that had 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™ has been involved with over the years.

Figure 1b was derived from a variety of U.S. (NASA, NOAA, JPSS and ESA) satellites during the mid-April (April 20-22, 2019) period and Figure 2a was derived from the U.S. SNPP VIIRS, Sentinel 3A and 3B, Aqua MODIS and Terra MODIS ocean color/chlorophyll imagery during this same period (April 19-22, 2019).

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, not speed of the water was derived from our ROFFS™ sequential image analysis, following the motion of the water from 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=XHiGQ21WUnw). Viewing the movie will allow one to view the flow of the water within the Gulf of Mexico region during the last two months, where the darker greytoned water represents the warmer water and white indicates clouds.

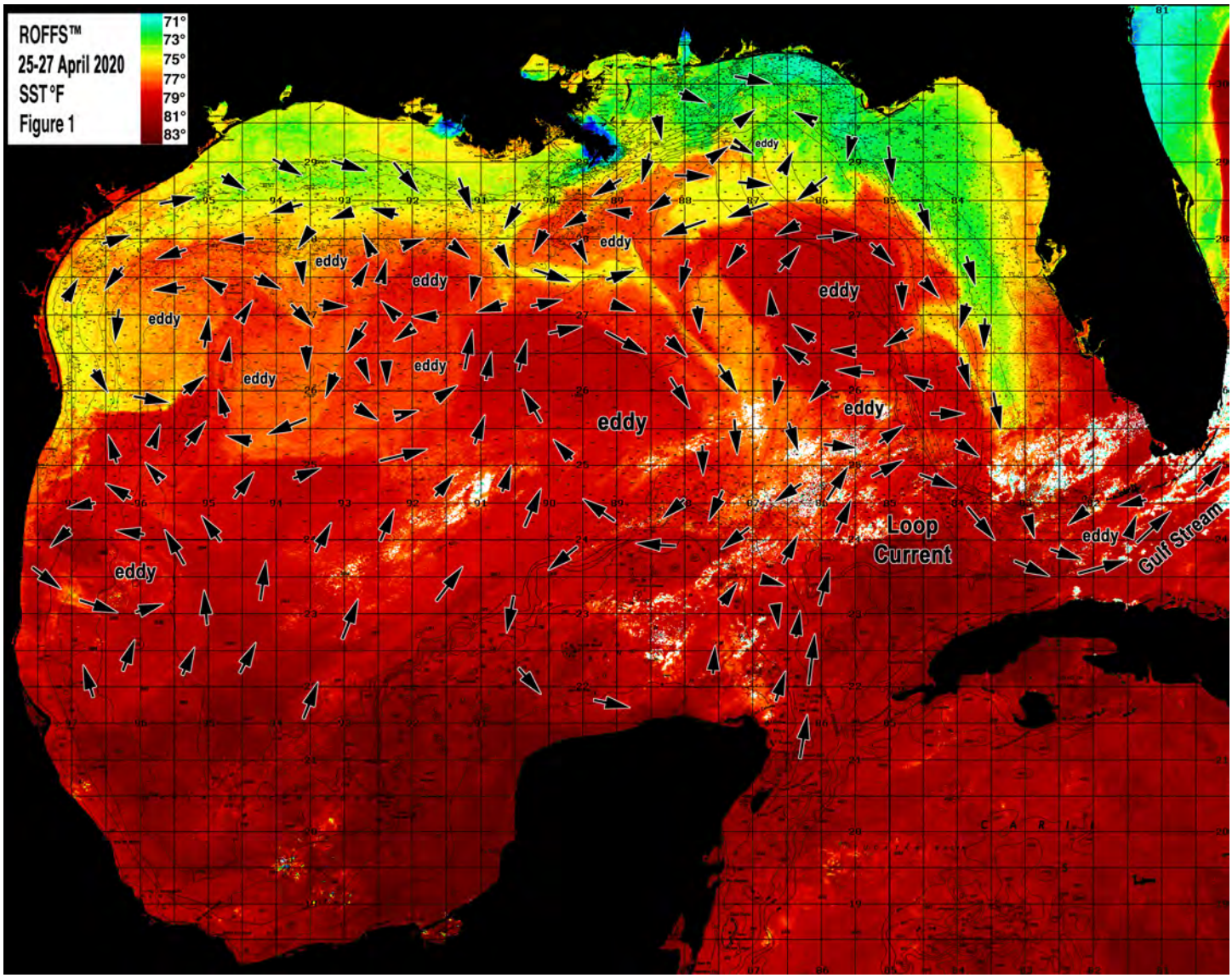

Figure 1a: *This year's Gulf of Mexico conditions were derived from a variety of infrared sensors to get SST from NASA, NOAA, and JPSS satellites during April 25-27, 2020. Main features and surface currents are labeled.*

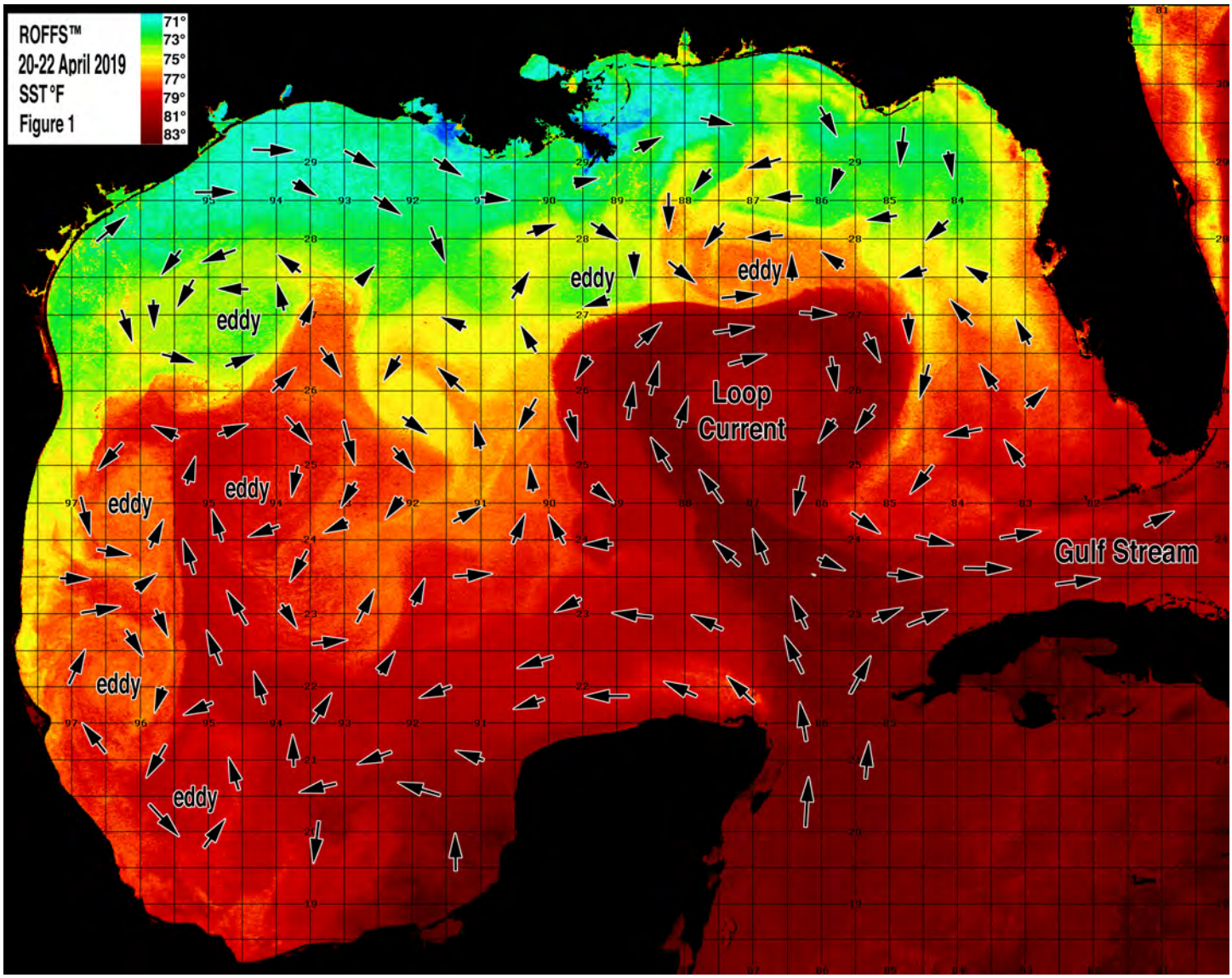

Figure 1b: *Last year's (2019) Gulf of Mexico conditions were derived from a variety of infrared sensors to get SST from NASA, NOAA, and JPSS satellites during April 20-22, 2019. Main features and surface currents are labeled.*

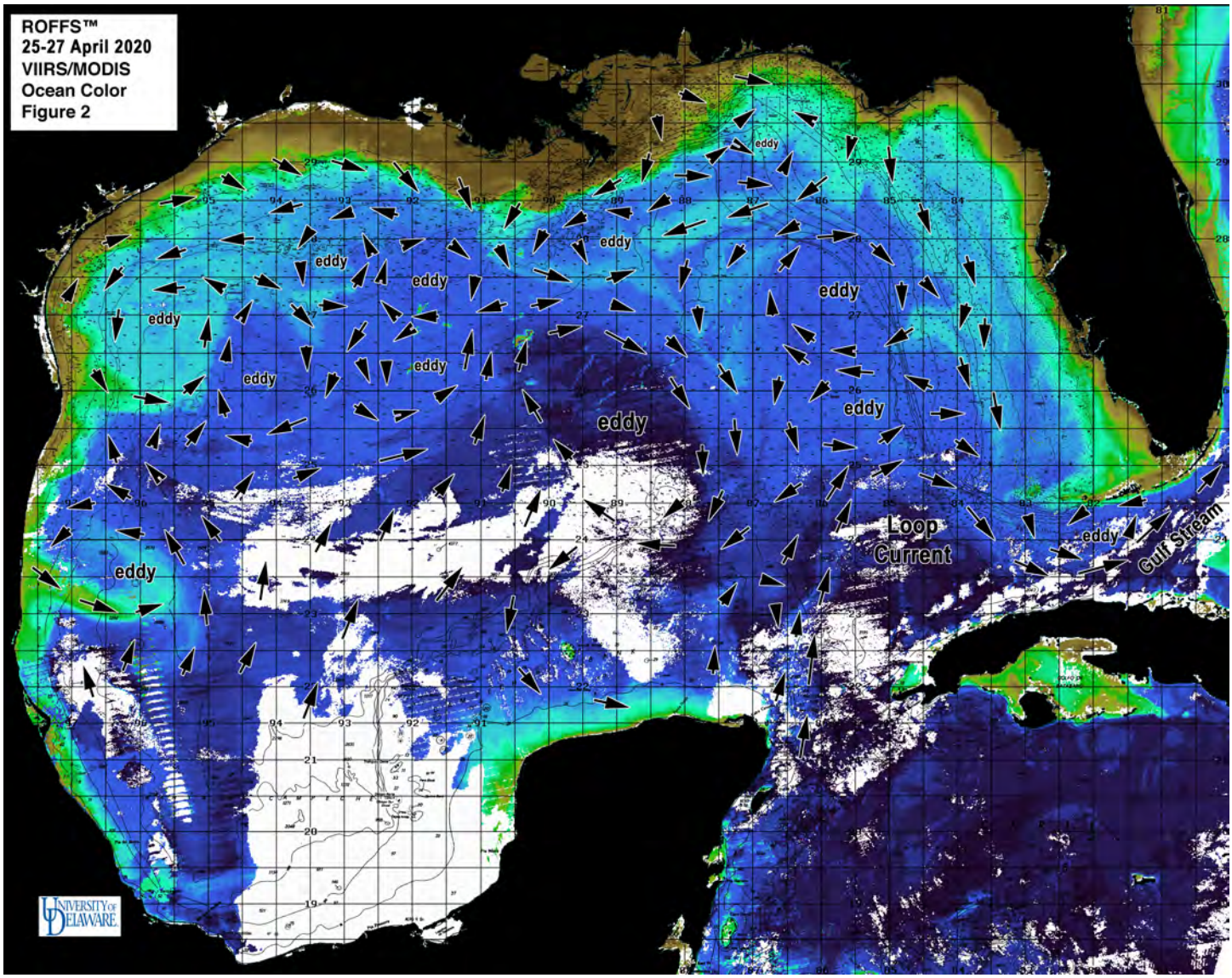

***Figure 2a**: This year's Gulf of Mexico conditions derived from the ocean color/chlorophyll imagery during April 25-27, 2020 from the VIIRS sensors on SNPP satellite in combination with the Aqua and Terra sensors on the MODIS satellite provided by the University of Delaware and from ESA's Sentinel 3A & 3B. We consider this an image pair with the above SST Figure1a image. Same main features and surface currents labeled.*

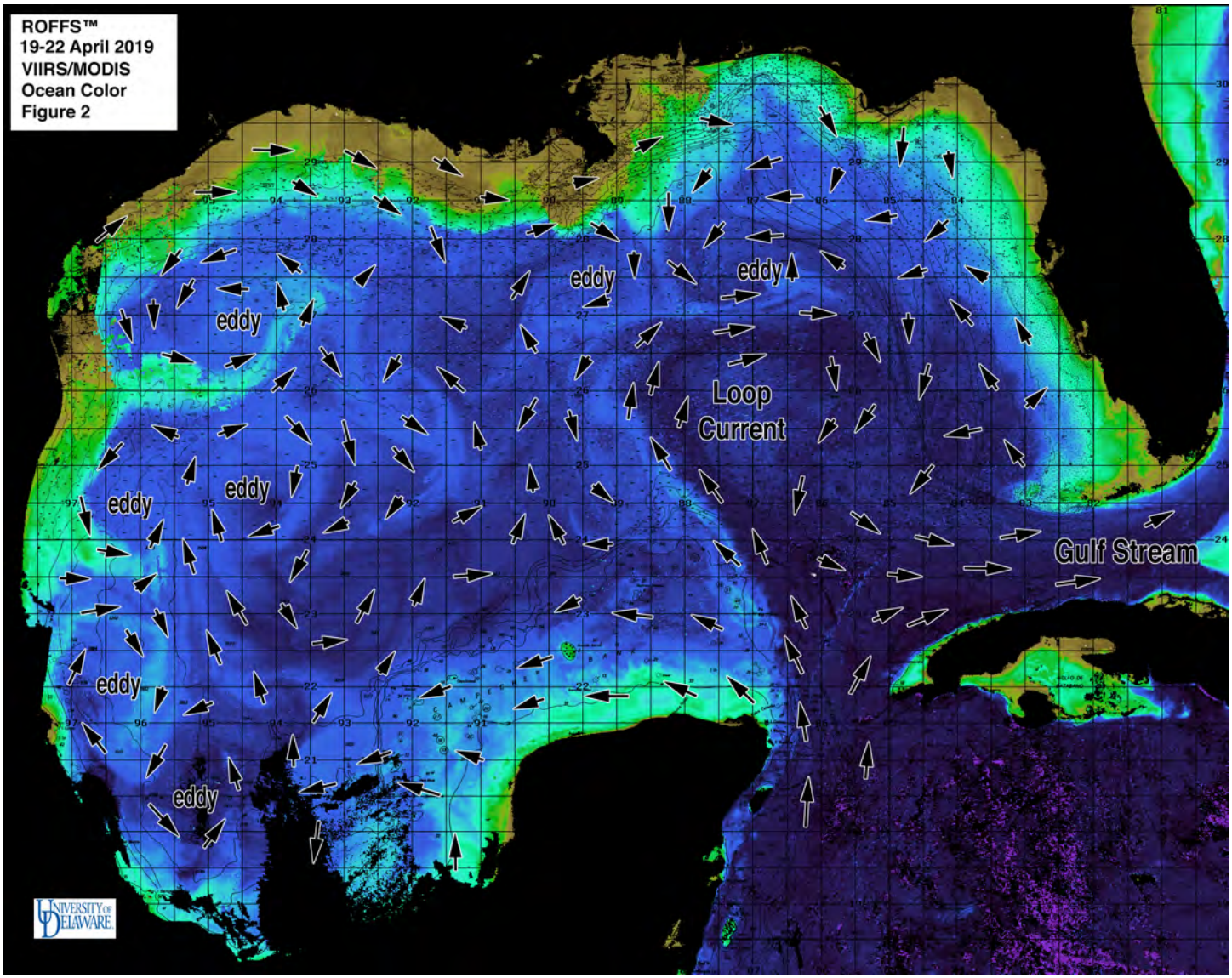

***Figure 2b**: Last year's (2019) Gulf of Mexico conditions derived from the ocean color/chlorophyll imagery during April 19-22, 2019 from the VIIRS sensors on SNPP satellite in combination with the Aqua and Terra sensors on the MODIS satellite provided by the University of Delaware. We consider this an image pair with the above SST Figure1b image. Same main features and surface currents labeled.*

When evaluating this year's mid-to-late April oceanographic conditions we continue to observe the intrusion and northern location of the main body of the Loop Current located further southward from where we observed it last year; however, as previously stated this year we did observe two distinct Loop Current eddy features – one south of the De Soto Canyon and one south of the Green Canyon which have helped the cleaner blue water with Loop Current origins move further north/northwestward within 15-20 miles of the Mississippi River Delta and also east/northeastward towards the De Soto Canyon area. These conditions likely account for the recent early season catches of bigger yellowfin tuna, dolphin, wahoo, and blue marlin in the northeastern Gulf of Mexico. Also, although we notice that the main edges of the Loop current are further south than last year, the easternmost Loop Current eddy (south/southeast of the De Soto Canyon) continues to push clean blue water eastward (closer to Florida) and within 60-70 miles of Tampa, FL. Stay tuned and call ROFFS™ to get updated conditions within this entire Gulf of Mexico region to find the best locations to fish nearest to your inlet.

Offshore of Texas, due to the large counter-clockwise rotating eddy (centered in the area near 95°40'W & 27°00'N), warmer than normal blue water (78°F/79°F-80°F) has migrated inshore over the Dump Site, towards the Flower Gardens, over the East Breaks and west/southwestward inshore of 100 fathoms towards the Colt 45 region suggesting good offshore fishing action east/southeast of Texas as well.

Conclusion

Based on what we are observing currently and what we have been observing over the last several weeks, the present ocean conditions for the Gulf of Mexico region continue to look exceptional with warmer (blue) water over much of the typical fishing zones within the Gulf of Mexico early this spring season. The presence of both large Loop Current eddies and other favorable blue water features (eddies) will continue to keep the warmer water within these fishing zones allowing the already favorable fishing conditions to continue through the spring and into the summer. There are more eddies and Loop Current eddies in the Gulf of Mexico this spring than last year. If these larger loop current eddies continue their traditional slow migration west then southwest through the spring and summer seasons, the Gulf of Mexico (especially mid-to-western Gulf of Mexico) should continue to have plenty of good water to fish throughout the year. Overall, we think that the Gulf of Mexico conditions for spring to early summer are EXCELLENT and shaping up to be better than last year so it is time to start fishing and call ROFFS™ for the latest and greatest updates. Please continue to get your fishing reports and photos in to us at feedback@roffs.com and be sure to follow us @roffsfishing on Instagram and Facebook.

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 both the baitfish and larger predatory pelagic 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 (5-10 mile) movements of the currents and their associated 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, therefore it is extremely important to monitor these conditions and the changes in them on a daily basis.

Contact ROFFS™ (321-723-5759 / fishing@roffs.com / www.roffs.com) for daily real-time detailed fishing forecasting analyses and get the inside track to where the better conditions will be tomorrow while you are out fishing. We continue to monitor the Gulf of Mexico conditions and how they change from day-to-day as the recreational fishing season has arrived and the bigger tournament fishing season is arriving soon. The bottom line is GET OFFSHORE NOW, for the spring season EXCELLENT fishing conditions have already started and should continue through May and into June and July. We at ROFFS™ hope that you are all safe and healthy and we hope the COVID-19 pandemic does not affect the sport we all love and look forward to.

Safe and Successful Fishing!
ROFFS™ Team