

Seasonal Fishing Forecast For 2007: Oceanographic Conditions Are The Best We Have Seen

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The task to provide the annual fishing forecast for the Bahamas Billfish Championship (BBC) was not as demanding this year compared with the last few years. While the King of the BBC (hint his initials are A.B.) allowed a two week grace period to produce this forecast, it turns out this seems to be a year where forecasting the marlin season in mid-February may have been feasible because the ocean indicators (crystal ball, smoke - mirrors, and chicken bones) were more obvious in February 2006, than they had been in March in previous years. In preparation for the Miami International Boat Show we were able to observe the ocean conditions long enough to understand the situation. While these conditions may change the overall situation this year appears substantially more favorable than the last several years.

Our working hypothesis for forecasting the seasonal marlin fishing action stems from the location and geographic extent of the blue water that occurs from the Cat Island – San Salvador Island area where the marlin concentrate before spawning. We have been calling this water “blue marlin water” for the past several years. We assume that the marlin are associated with and will travel in this water. Thus, the more “blue marlin water” that you have in the Abaco Islands and Eleuthera Island area, the greater their abundance will be. This assumes that the temperature of the water is within the preferred temperature range of the marlin. While blue marlin will swim into water with temperatures of 72°F and 86°F, recent electronic tagging and other research results (see <http://www.sefsc.noaa.gov/fisheriesbiology.jsp>) suggest that the peak abundance of marlin off Bermuda occurs when the sea surface temperature is between 81°F and 82°F which is probably similar to that in the areas of the Bahamas where the BBC takes place. Such temperatures often do not exist in the Bahamas when we make our seasonal forecast, so we monitor the location and conditions of the “blue marlin water” from its signature temperature (warmer) and water color (bluer).

The hypothesis is that excellent blue marlin fishing seasons occur over the Bahamas region, particularly Eleuthera and Abaco, when the dark blue water that occurs along the Cat Island – San Salvador Island area moves along the eastern side of Eleuthera and pushes over the 100 fathom ledges along the eastern side of Eleuthera and off Abaco. Good fishing seasons occur when this pool of water with marlin occurs over the 1000 fathom curves of both areas. When this water remains outside the 60 mile tournament limit, then overall fishing success with blue marlin is relatively poor.

Before we will review the results of our analyses of the surface oceanographic conditions that describe the condition, location and motion of the “blue marlin water,” we will provide some background information on overall oceanographic conditions. Last year (2006) was considered a “moderate” El Nino year, but this year the El Nino has ended and the climate forecasters reported that we are likely to have a La Nina year. During El Nino years the tropics are usually warmer which usually results in an increase in tropical storm development. We know that the hurricane season in 2006 was reduced compared with the number and intensity of storms in 2005 even though it was an El Nino year. As it turns out, the lack of hurricane development last year appears to be due to a cooling of the waters during the late summer due to an increase in Sahara dust over the Atlantic Ocean. So what does this have to do with blue marlin? Nothing, except that it demonstrated that predicting what Mother Nature will do is a precarious task especially with our present understanding of global climate. Our ability to understand the ocean circulation is not as good as our ability to forecast weather and its effects. This is not an article about global climate change, other than the effect of ocean climate variability on fishing success.

For this analysis Roffer’s Ocean Forecasting Service, Inc (ROFFS™) evaluated the sea surface temperature (sst) conditions off Miami in the core of the Gulf Stream as it has for the last several years as in indicator of

the overall ocean temperature conditions in this area. While many more data points over a larger area should be evaluated for a more comprehensive evaluation, we have found this Gulf Stream index useful when considering inter-annual conditions. During March 05-06, 2007 the core of the Gulf Stream had a sst of 80.5°F which is 3.5°F warmer than last year. The sst conditions in 2006 were cooler by 2°F from 2005. We reported that the sst in 2004 was 79.0°F and in 2003 it was 79.7°F. As we need to study this temperature variation for longer periods of time and over many different areas in the Bahamas, we can not conclude anything other than that this year is not a cold year. This is the first positive indication. However, do not grab that leader yet (to pull your imaginary winning fish to the boat) because if the water becomes too warm, the marlin will swim deeper in the water column and will be less likely to be attracted to your surface trolled baits and lures. Figures 1-3 show the sst and pattern of water masses in the BBC region as derived from NOAA and NASA infrared satellite sensors. Figure 1 is the sst image derived during March 05-06, 2006, Figure 2 was derived from March 05-06, 2007 and Figure 3 was derived from February 09, 2007. While Figures 2 and 3 cover a larger area compared with Figure 1, one can see that overall the sst conditions are warmer in 2007 compared with 2006.

For the BBC blue marlin forecast one should focus on Figure 2 (March 5-6, 2007), particularly on the location and geographic extent of the “blue marlin water”. This year the blue marlin water has an sst of 79°F-80°F which is the same sst of the Gulf Stream water (along the western margin of the image). While it can be difficult distinguishing the Gulf Stream water from the “blue marlin water,” we use the NASA ocean color data derived from the MODIS sensor to observe the differences in chlorophyll + colored dissolved organic matter (CDOM) to help distinguish the different water masses. Clouds interference preclude showing this data as it is not as handsome looking as the figures that were included. We also are able to distinguish the different water masses using a sequential image analysis technique that allows one to track the flow patterns of the water over time from the signature sst of each water mass. During March 5-6, 2007 we had observed that the “blue marlin water” was already over the Wonderland to Great Abaco Canyon area (approximately 76°50'W & 26°15'N to 76°35'W & 27°05'N) east of Abaco. This suggests that the blue marlin are already there. Not only was this water off Abaco within the BBC tournament zone during the first week of March, we observed a large pool of blue marlin water moving from Eleuthera to Abaco during the first week of February. Just after its arrival in February the first blue marlin were caught which is an early start to the marlin season. Figure 3 shows the conditions just before the Miami International Boat Show (February 9, 2007) where the “blue marlin water” had been over the North Bar and Pocket for a week along with a relatively large pool offshore.

Note in that both Figures 2 and 3 that there are three and four eddy features. Our experience suggests that the location, size and rotational velocity (strength) play an important role affecting the circulation in the Bahamas including in the movement of the “blue marlin water” to Eleuthera and Abaco and even to the Berry Islands. This year, there is a relatively large (75 miles x 75 miles) clockwise rotating eddy north of Abaco that is pulling the “blue marlin water” toward Abaco. This eddy has been north of Abaco for a month and is likely to remain there for another month. This is a favorable circulation for bringing blue marlin into the BBC area. Another eddy is shown in the Northwest Providence Channel (between Grand Bahama Island and the Berry Islands) in both Figure 2 and 3. While two different eddies have existed in this area between February and March, they have been pulling some of the “blue marlin water” to the Berry Islands.

A third eddy now exists northeast of Abaco (centered near 76°15'W & 26°45'N) that formed as a result of the opposing forces of the eddy north of Abaco and yet another eddy (centered near 75°00'W & 26°00'N) approximately 120 miles east of Abaco. Unfortunately, this other eddy is moving eastward and is pulling some of the “blue marlin water” away from the BBC tournament zone. While it remains to be seen how much water this offshore eddy takes, the two eddies near Abaco continue to pull the “blue marlin water” into the BBC tournament area.

From what we have seen this year and from what we can foresee for the next 30 days, it appears that very favorable conditions for bringing the marlin to the BBC tournament area which suggests that the 2007

season will be the best marlin season that we have seen for the last five years at least! Of course conditions can change. While the marlin are likely to be in the region in abundance this season, the daily catch rate is largely determined by the location of concentrations of bait, which are controlled by daily changes in the location of the water mass boundaries and the overall location of the preferred thermal habitat of the fish.

Figure 1.

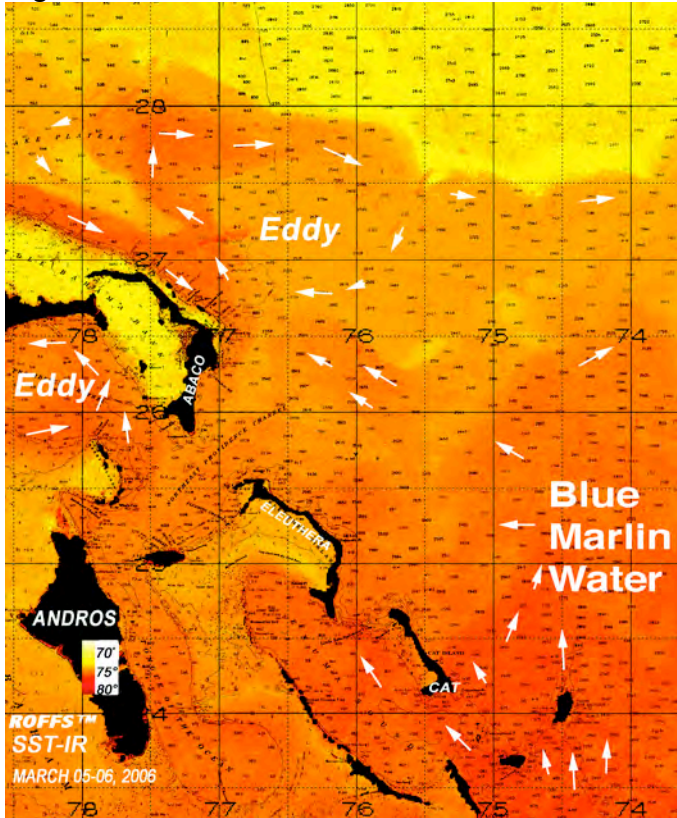


Figure 2.

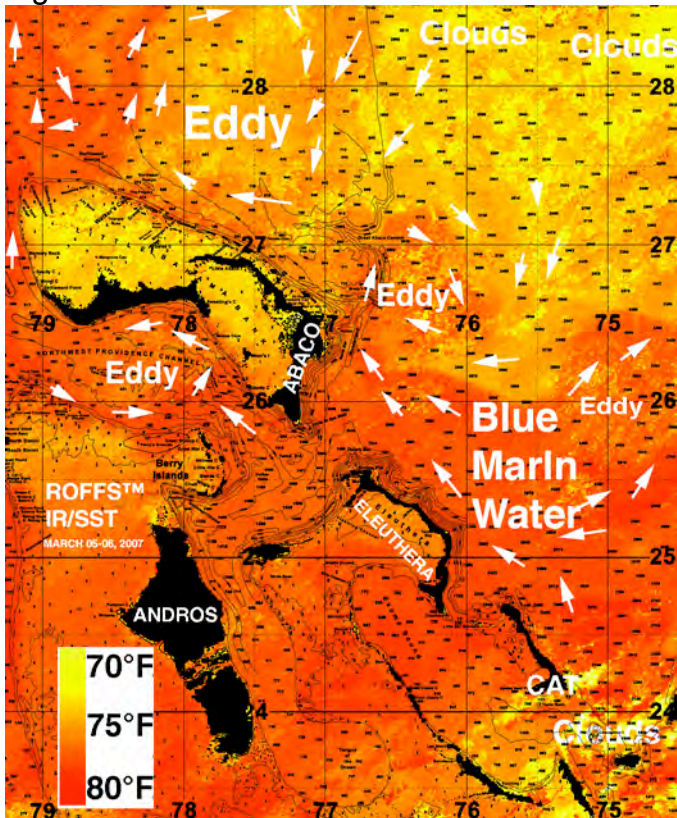


Figure 3.

