Dana Lewkowitz
Journal Analysis
Tiger Shark #67152

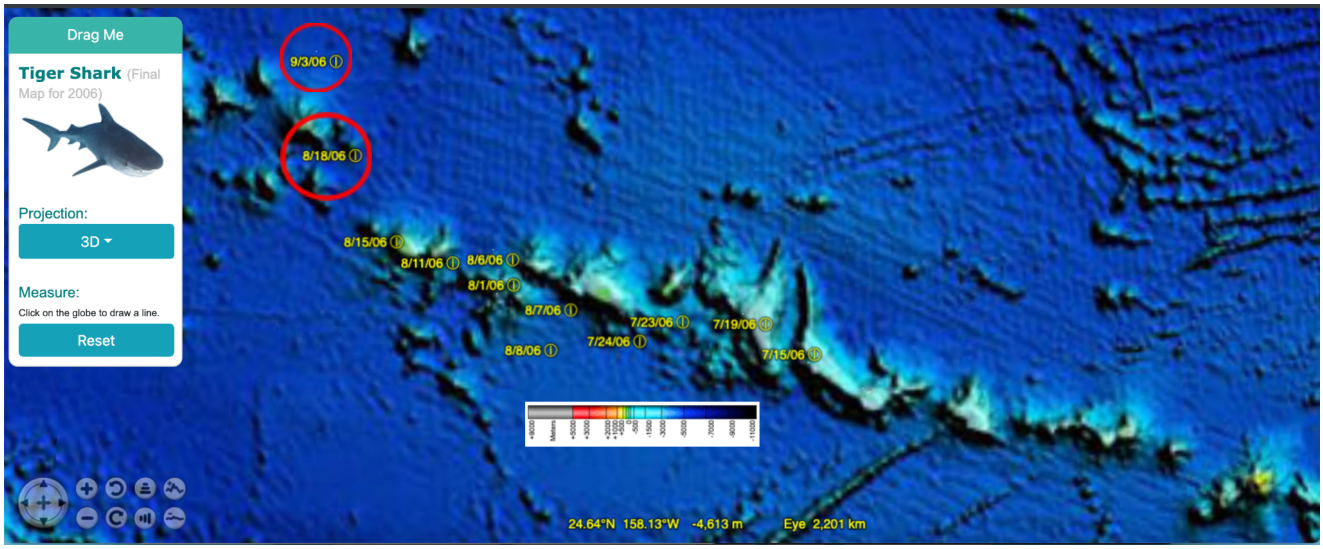
Introduction:
For my journal analysis, I was assigned tiger shark #67152 (Finn). After analyzing the tracking data on Finn, as well as my research on tiger sharks, I was able to draw conclusions in regards to *why* he traveled where he did over a short period of time.

Observations:
Between the months of June 2006-September 2006, Finn traveled amongst the Hawaiian Islands in North America. He typically stayed in the areas that were at, or very close to, sea level. On average, Finn remained between 0 and -300 m below sea level through all of June, July, and about half of August. On August 17th, Finn traveled approximately 90 miles, and began traveling towards the deeper parts of the ocean (-4,000m). Finally, on August 18th, Finn continued to trek deeper, reaching depths of -5,000 m on September 3rd. Finn's tracking data unfortunately ended on September 3, 2006, but if he continued his pattern of moving North, Finn would remain in the deeper parts of the ocean.

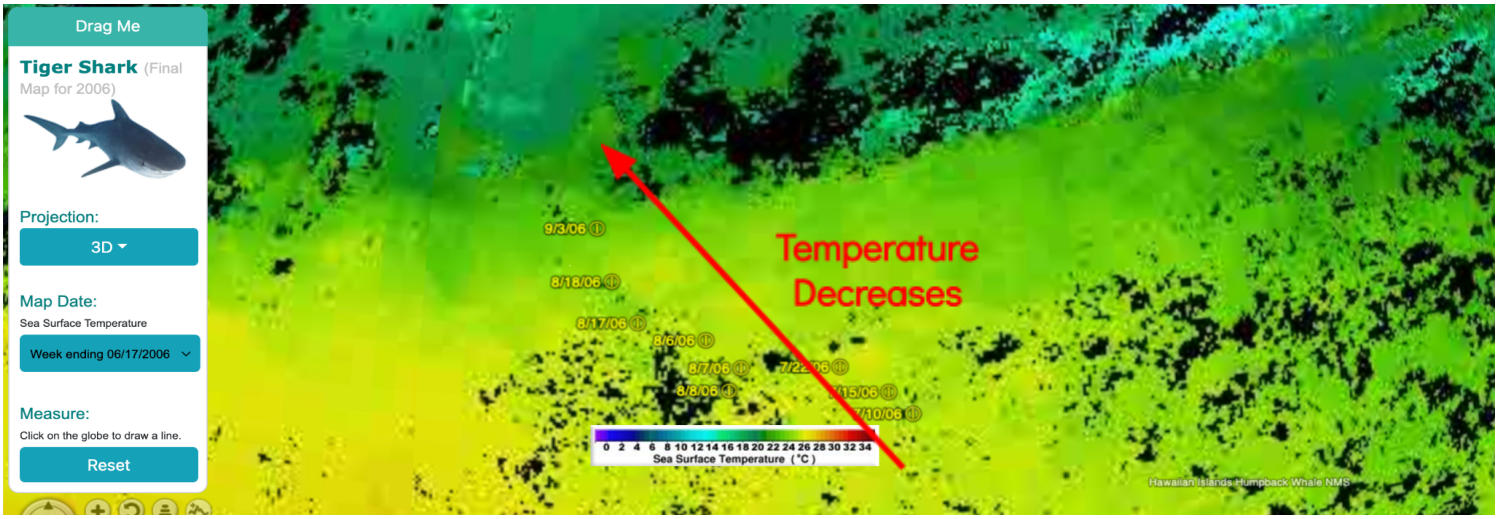
Justification:
Throughout this time period, Finn typically stayed on or near the continental shelf. It is very rare that he swam deeper than -300 m below sea level. Tiger sharks have a diet which consists of species such as fish, squid, and stingrays. They are nocturnal animals and do their feeding at night. Tiger sharks rely on their sense of smell to feed on prey, and being in the shallow water helps them to do so successfully. This supports why Finn stayed near the ocean's surface for the majority of the tracking time. The months of June and July had very consistent data and little movement, but this shifts in mid-August. Between August 17th and August 18th, Finn traveled approximately 90 miles. This is very inconsistent when compared to the previously acquired data, as tiger sharks usually do not travel more than 40 miles a day for food. At this time, Finn is in much deeper water, and is farther from the continental shelf. A few days later, Finn makes another large jump (115 miles) to even deeper water.

This data supports the idea that Finn moved towards the deeper waters to find an area with more chlorophyll and in turn, more food. According to the temperature map, Finn stayed in waters that were approximately 25℃ between June-July. When Finn moves towards the deeper waters, it is apparent that the temperatures he is swimming into are becoming increasingly cooler, as supported by the map below. This suggests that there may have been some upwelling in this area, as the water is cooler and is bringing with it an abundance of nutrients. The species on the lower end of the food chain are able to produce photosynthesis and reproduce here, and thus, more animals will arrive to eat. Finn would be able to use his strong sense of smell to sense an increase of food there, which supports why he moved such distances on both August 17th and September 3rd. On August 18th, Finn was spotted in temperatures at about 23℃, and on September 3rd, the water was approximately 21℃.

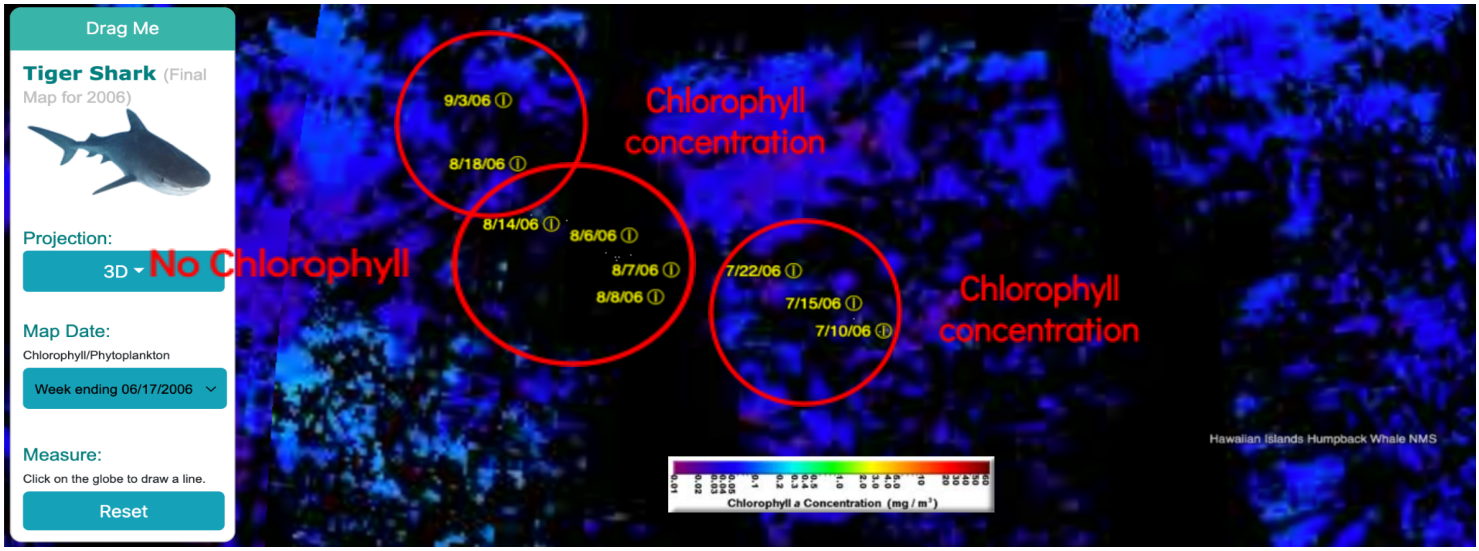
In order to support the previous data trends, and determine whether Finn traveled for food, there would need to be higher levels of chlorophyll in the two areas where Finn swam farther distances than normal. This would contribute to the conclusion that Finn was able to smell the greater food source brought on by uplifting and thus would result in a higher level of chlorophyll. The map shows that between the months of June and July, there was a steady supply of chlorophyll available (0.05 mg per meter cubed). When analyzing the late July-early August data, the phytoplankton significantly decreased and thus, Finn's food supply. As he moved towards mid-August and early September, the number again increased as the water temperature decreased. This supports the idea that upwelling was taking place at this time, and that Finn moved this great distance in order to find an area with an abundant amount of phytoplankton. As Finn moves North, it is assumed that as the water temperature decreased, the amount of phytoplankton will increase. Although Finn will not be near the continental shelf as he usually is, the natural instinct to adapt to his environment will help him survive.



Bathymetry Data- Finn stayed at/near sea level August 18th, 2006 when he moved approximately 90 miles towards deeper waters. This pattern continues as Finn again moves between August 18th and September 3, 2006.



Sea Surface Temperature Data- Finn's data begins in waters of approximately 25℃ and moves towards cooler water where it is predicted that upwelling has occurred. The water temperature here is approximately 21℃.



Phytoplankton Data- In June & July, Finn was in an area with an abundance of chlorophyll. As he continued to move North, there was no chlorophyll present, until he reached August 18th. It is predicted that Finn was able to smell the prey that were attracted to the large amount of chlorophyll in this area.