



EVERYTHING WHALE BE ALRIGHT

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Abstract

This study aims to explore the animals whose cetacean strandings have increased in recent years. We discovered the current situation through survey data and adopted care data and other methods, taking Miaoli Tong Coast as the starting point of our research. Collect and analyze data to test our hypotheses and draw conclusions.

Research Question

1. Why do whales and dolphins stranded?
2. What should you do if you encounter a stranded whale or dolphin?

Conclusions and Discussion

1. By observing the topographic relief map of the seabed along the Tongxiao coast and verifying it with the Chiba coast in Japan where cetaceans stranded, we determined that rapid topographic relief would affect the sonar positioning of cetaceans and cause stranded.
2. Based on the above sea temperature data and stranding event statistical charts, as well as the time of stranding events in Japan, we can determine that cetacean strandings are related to changes in ocean current temperature.

台灣地形緒論

Bibliography

GLOBE VISUALIZATION SYSTEM

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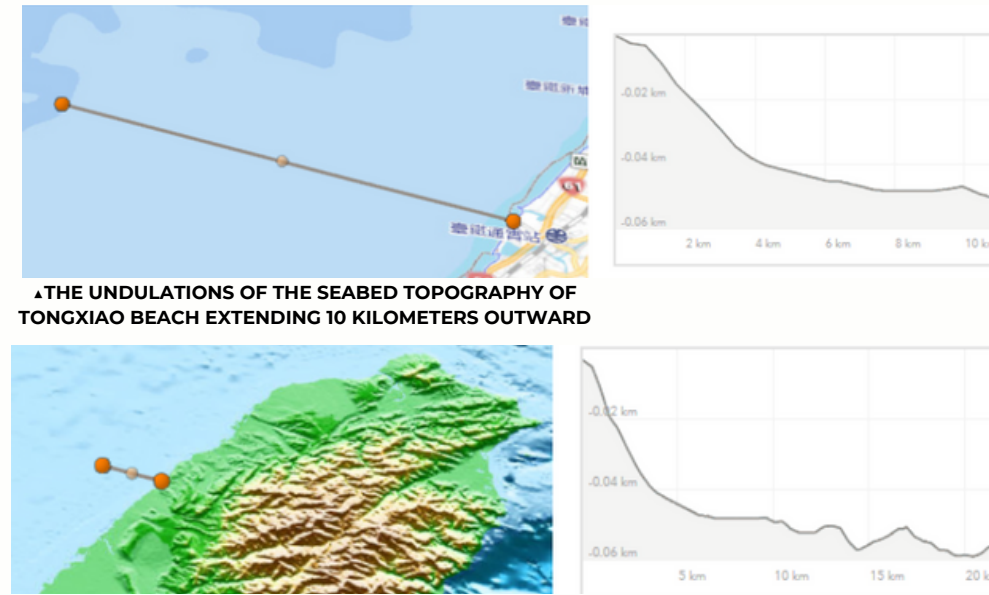
苗栗縣通霄鎮潮汐表

日本海岸32頭海豚集體擱淺 衝浪客合力救援

Research Methods and results

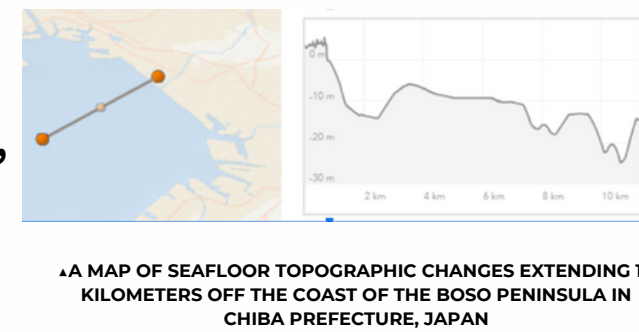
Determining the suspected cause We used data from the Department of the Interior's system to obtain seafloor topography data in the Tonglu area and verify whether rapid changes in topography were the cause of cetacean strandings. We also used data from GLOBE and NODASS to verify whether changes in ocean currents and temperatures are one of the causes of cetacean strandings. We hypothesized that topography and seawater temperature may influence cetacean strandings.

Terrain changes: Cetaceans rely on sonar to determine terrain and direction. If the seabed topography is complex or changes rapidly, it may cause abnormal reflection of sound waves, thereby disrupting navigation. There are shoals and sandbars along the Miaoli coastline. These terrains may interfere with the sonar of whales and dolphins, causing them to become disoriented!

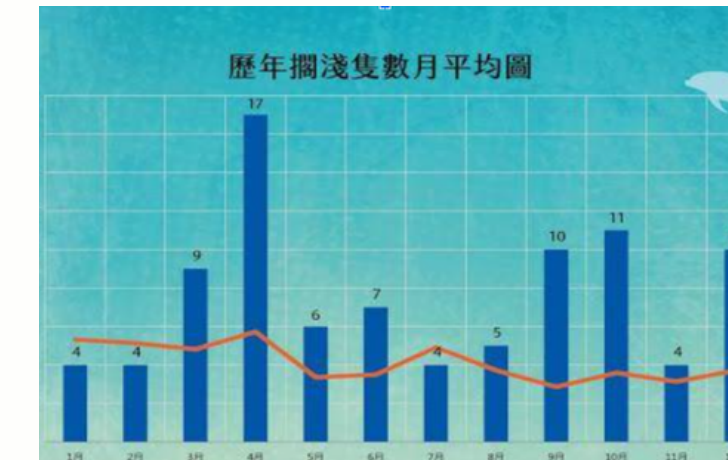


Undersea topographic map extending 10 kilometers from Tongxiao Beach Ocean current temperature: Temperature changes caused by changes in ocean currents may cause whales and dolphins to lose their sense of direction. From the chart we observe a significant increase in strandings in April-May and September-October. In addition, through big data analysis, we noticed that the ocean temperature changes greatly during the monsoon period from April to May and September to October, so the ocean current temperature is taken into consideration.

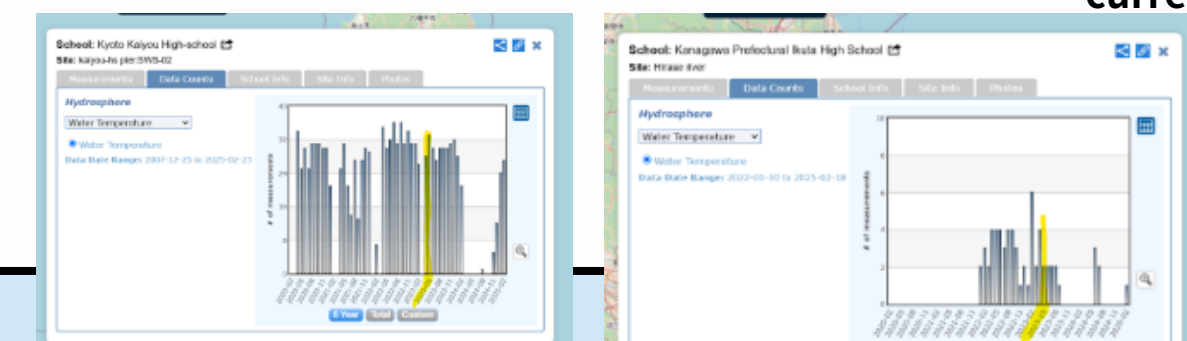
The impact of terrain undulations on cetacean strandings: Cetaceans rely on sonar to determine terrain orientation. If the seabed terrain changes too much, it may cause abnormal reflections, thereby affecting navigation. Miaoli Tongxiao has shoals and sandbars. These landforms may interfere with sonar and cause navigation.



Discuss the impact of temperature changes in ocean currents on cetacean strandings: The ocean currents in the Tongxiao area are complex. Temperature changes caused by ocean currents make cetaceans lose their sense of direction. And we found that 32 dolphins were stranded collectively on the coast of Chiba Prefecture, Japan on April 3, 2023. Using the data in the figure below, we found that the sea temperature changes in Japan during April-May are indeed very large, which is consistent with dolphin current strandings.



MONTHLY AVERAGE CHART OF THE NUMBER OF WHALE AND DOLPHIN STRANDINGS OVER THE YEARS



SEA TEMPERATURE CHANGES IN JAPAN FROM APRIL TO MAY 2023

Introduction

After seeing the news report about the "stranding of pilot whales in sea-savvy areas", we became interested and further realized that whales and dolphins are important components of the marine ecosystem and play a key role in maintaining ecological balance. For causes and hypotheses, we use big data to analyze the causes of whale and dolphin strandings.

On the other hand, these incidents also exposed the ignorance of local responses to cetacean strandings, including the lack of targeted preventive measures in emergency rescue capabilities. With increasingAfter a stranding event, we reflect on whether there were ways to prevent the event from happening or reduce its impact. Through this research, we hope to solve the problem of cetacean strandings, improve people's understanding of the ocean.

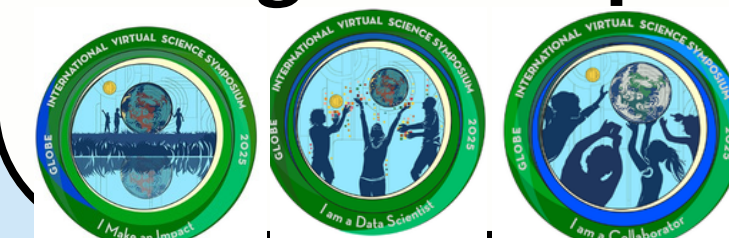
and further promote the United Nations Sustainable Development Goal 14.

Research method:

Use big data to observe whether the hypothesized causes are generally consistent with the results.

Use big data analytics to compare and verify results match. Get data on whale and dolphin strandings (and learn why).

Badge description



1. I MAKE AN IMPACT
2. I AM A DATA SCIENTIST
3. I AM A COLLABORATOR