



Using vessel-located thermal cameras to detect fin whales on the Catalan coast, north-western Mediterranean Sea

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Introduction

Ship strikes are becoming an increasing and widespread issue for large marine mammal populations, being the most significant threat for fin whales in the Mediterranean Sea.

The Catalan coast fin whale feeding ground, monitored since 2014 by EDMAKTUB under the Fin Whale Project, is exposed to high-density marine vessel traffic, which links Barcelona and Tarragona Ports to the Atlantic Ocean and the wider Mediterranean Basin.

Thermal cameras have been tried recently to automatically detect cetaceans but there is still no standardized method for it.

This study has the aiming to get a new perspective on how to implement thermal cameras to decrease the risk of collision for whales in high-risk areas.

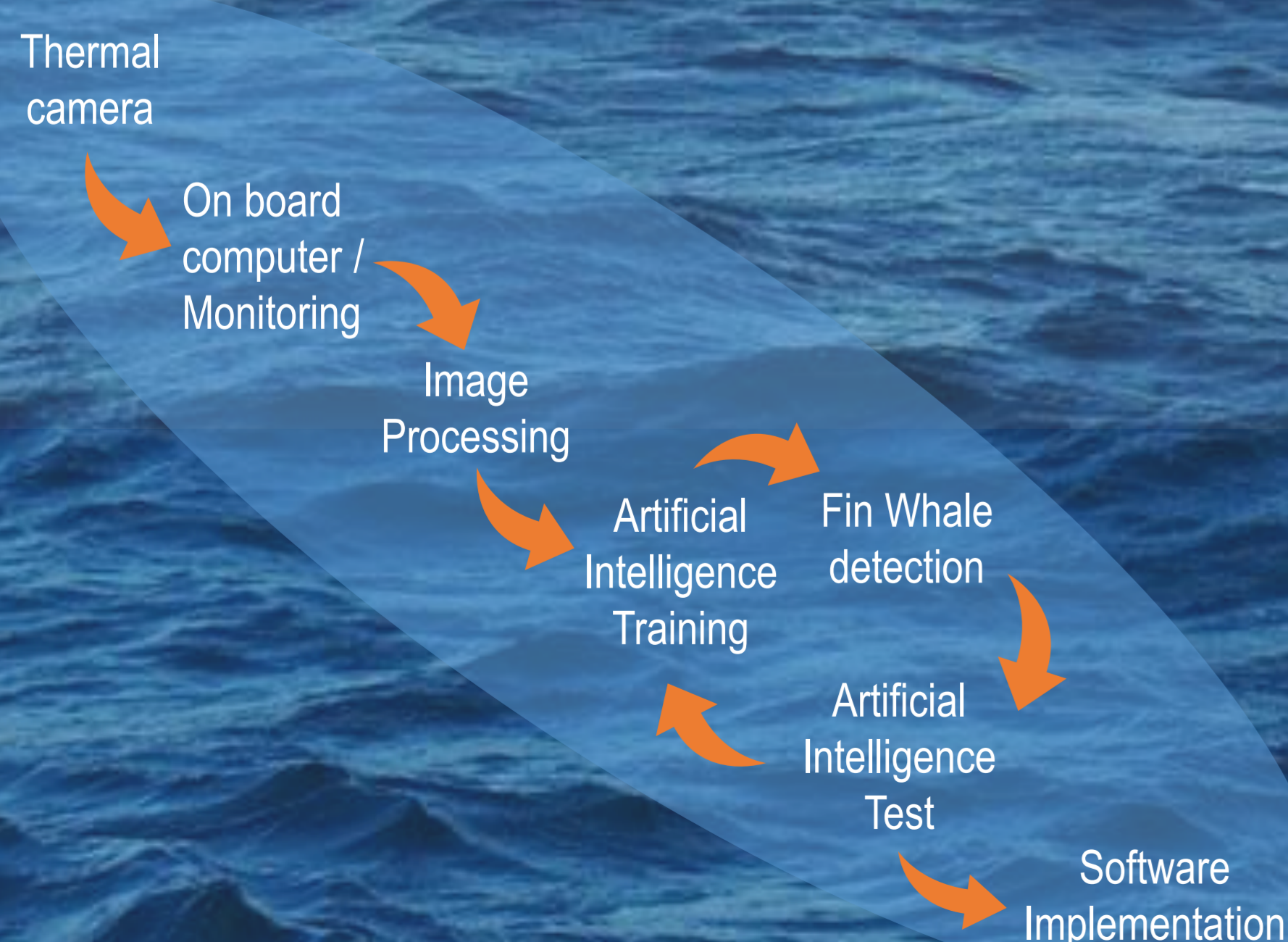
Methodology



The study area. In a red square, the study area of the Fin Whale Project. Cargo ship (red gradient), Tanker ship (orange gradient) and Passenger ship (purple gradient) in spring 2022 on the Catalan coast.



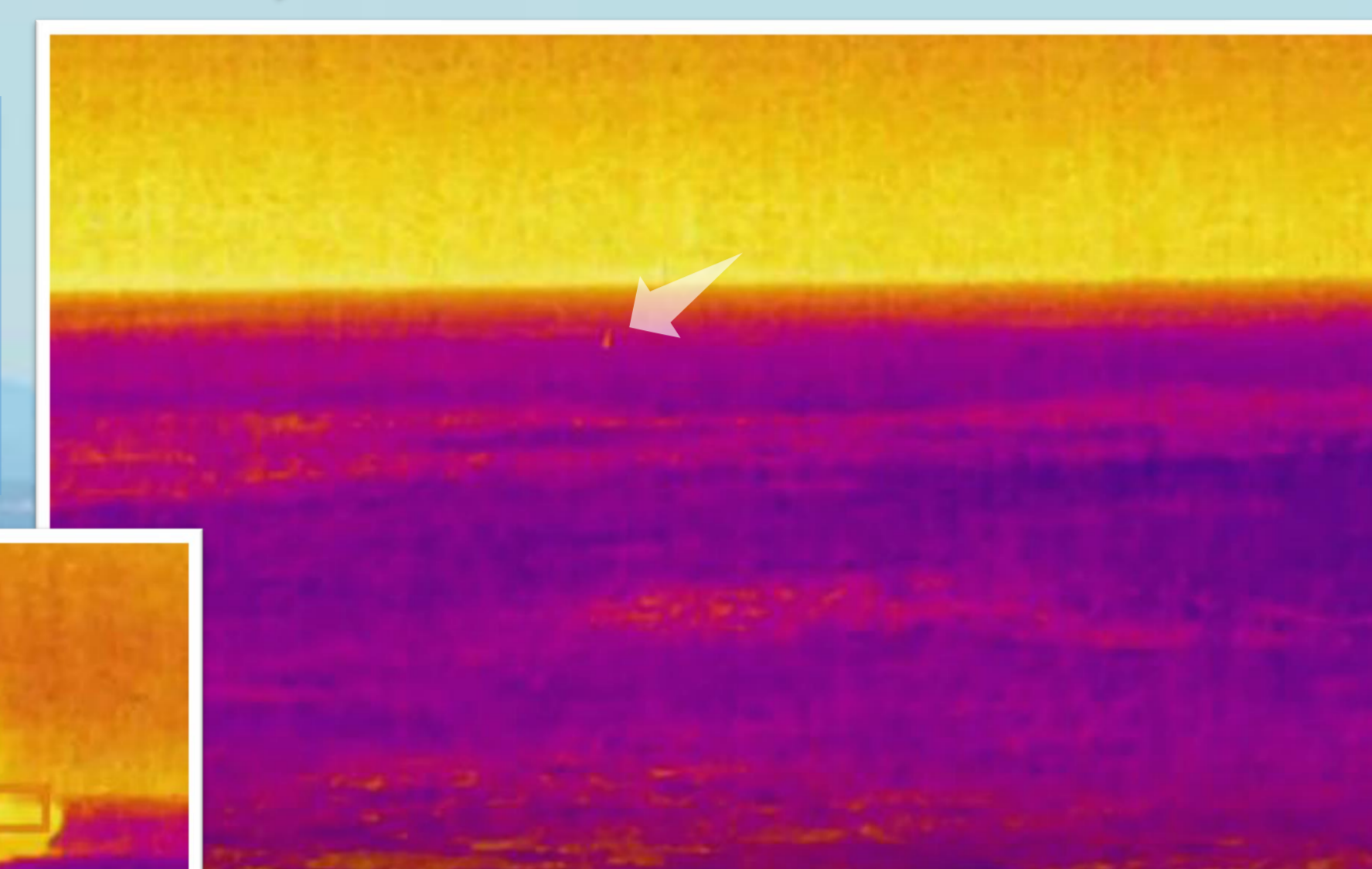
A FLIR M364C LR thermal camera installed on top of the mast of the Maktub, research vessel of the EDMAKTUB Association.



Results

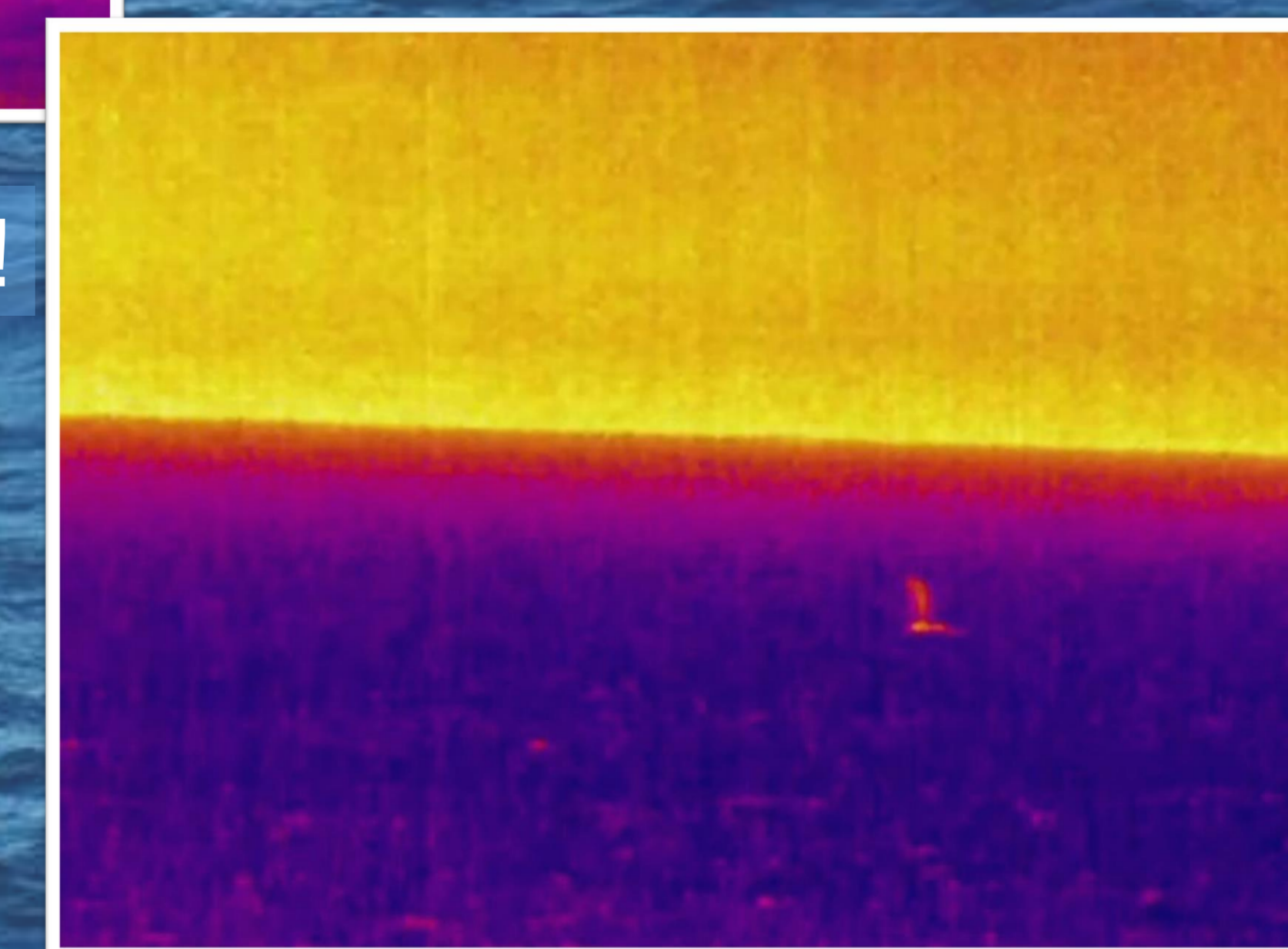
14 days of whale sightings recorded → 35 hours along 38 sightings

Whales were detected by researchers up to 1 km distance in good weather conditions during daylight hours. The white arrow is indicating the blow in the picture.



The actual automatic detection software of the thermal camera is just detecting boats not whales. The new detection model that is being created will recognize whales at different distances and weather conditions.

Whale blows and bodies can also be detected at sunset and night from far. Blow spotted with the thermal camera at 21:34 the 19th of May 2022.

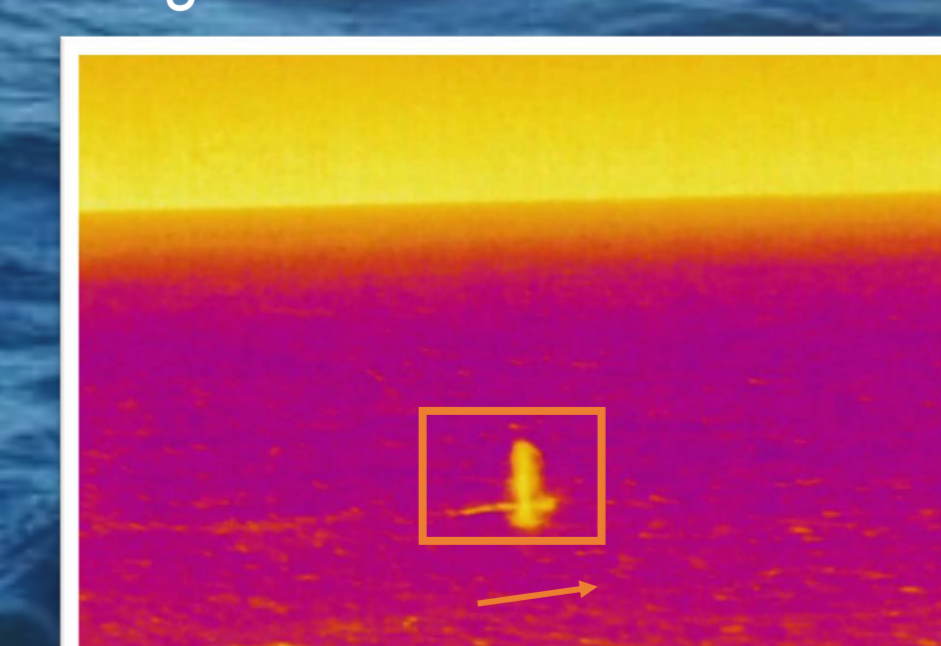
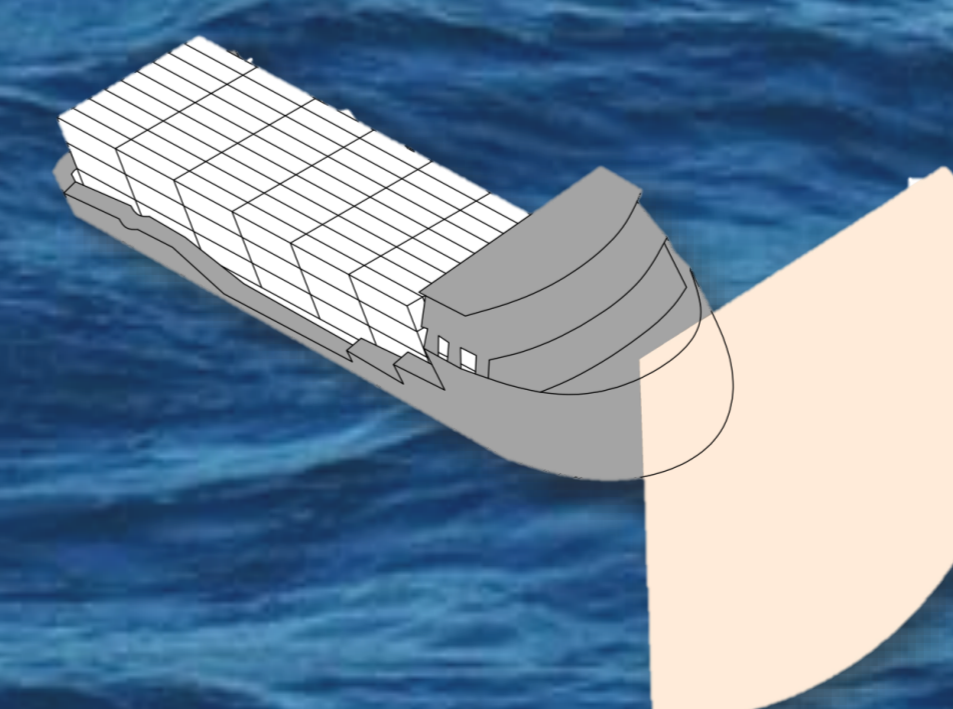


Videos and + information here!



Discussion and Future Work

Installing thermal cameras on merchant ships can help reduce collisions, especially in low light and favorable sea conditions. Further tests need to be carried out to determine the limitations of detection in rough seas.



The whales should be possible to detect at 4 km.

The whale's behavior have to be taken into account while delimiting the high-risk area.

