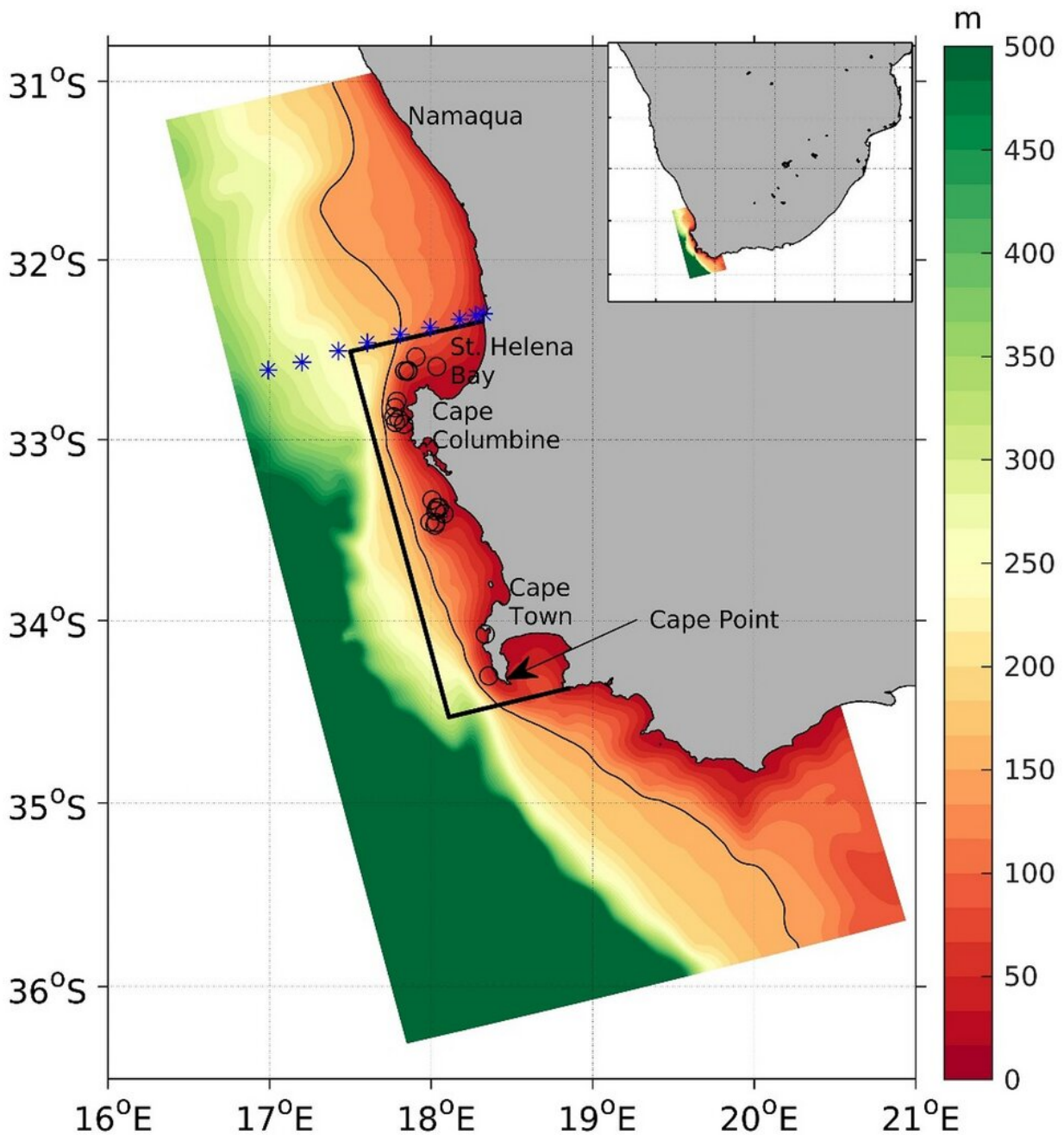


What is drawing humpback whale supergroups to the African coast?

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The region where humpback whale super-groups have been observed within the Southern Benguela Upwelling System (SBUS). The color shading represents the bathymetry of the ocean model domain. The black contour indicates the 150 m isobath. The open circles represent the locations of super-groups observed in 2011, 2014, and 2015 (data from Findlay et al.9). The ocean area enclosed by the rectangle covers all the super-group locations and is termed the focus area. The blue asterisks show the St Helena Bay Monitoring Line with the nine fixed stations from the coast to offshore. The inset picture shows the southern part of the African continent and the location of the model grid (color shade in inset image). This figure is plotted using MATLAB 2020b (<https://matlab.mathworks.com/>) with M_Map (a mapping package available at <https://www.eoas.ubc.ca/~rich/map.html>). Credit: DOI: 10.1038/s41598-021-00253-2

Super-groups of up to 200 humpback whales appearing off the coast of South Africa are following changing ocean currents and phytoplankton blooms, a new study has found.

Researchers at Griffith University were part of an international team led by the University of Cape Town (UTC) which combined satellite observations and a physical [ocean](#) model to intricately map the ocean circulation and productivity using chlorophyll levels in the region over the past 10 years in order to understand environmental drivers of these behavioral changes in feeding humpbacks.

"While humpback [whales](#) in the Southern Hemisphere are known for annual migrations between the summer high-latitude Southern Ocean feeding grounds and the winter mating and calving grounds in subtropical coastal waters, feeding in such dense packs is unprecedented," said Dr. Olaf Meynecke, a whale researcher and

Manager of the Griffith Whales and Climate Program.

Dr. Subhra Prakash Dey from the Department of Oceanography UCT said the formation of whale super-groups in recent years suggested a potential change in oceanographic or ecological characteristics which provide the conditions for this new feeding strategy.

"Through the development of fine scale ocean models our team was able to reveal these oceanographic and ecological changes in the area, the Southern Benguela Upwelling System (SBUS) off South Africa, that had previously remained hidden," Dr. Meynecke said.

The unusually large feeding groups of humpback whales in South Africa coincided with the changes in ocean circulation of the region and a higher-than-normal phytoplankton bloom, determined through chlorophyll levels, within one month prior to super-group events.

The study showed that a decrease in the ocean current led to higher retention of the phytoplankton bloom which the whales responded to by prolonging their feeding in the region over several weeks while ocean productivity was at its highest.

"Understanding the causation leading to these events will allow researchers and the whale watching industry to prepare for the arrival of super-groups of humpback whales at least one month in advance, through the evaluation of chlorophyll from [satellite data](#) and ocean models," explained Dr. Dey.

Dr. Meynecke said that here in Australia the current conditions are very different to those in South Africa, but we have started to see larger groups of feeding humpback whales than in previous years.

"However, unlike in South Africa the large whale pods that have started

to show up in Australia only last for a short period of time, but super-groups of [humpback whales](#) off the coast of Australia are increasingly likely in the years to come."

What is driving these changes in [ocean currents](#) and productivity that are altering whale behavior and leading to them migrating together in such massive pods, is not yet fully known.

"There are signs that the major changes that are occurring in the marine environment and [ocean circulation](#) are driven by climate change," Dr. Meynecke said.

"But with only 10 years of data and the long term cycles that exist in ocean systems we are going to need a longer time series to come to a definitive conclusion."

More information: Subhra Prakash Dey et al, Oceanographic anomalies coinciding with humpback whale super-group occurrences in the Southern Benguela, *Scientific Reports* (2021). [DOI: 10.1038/s41598-021-00253-2](#)

Provided by Griffith University

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