

Molting krill provide a highway for ocean carbon storage

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Krill, which need to be weighed accurately at sea, are the main diet for whales, seals and penguins. Credit: British Antarctic Survey

This study provides the first estimate of how much carbon large swarms of Antarctic krill can draw down and store through the molting process. The efficiency of this process has an important influence on our global climate.

Lead author Dr. Clara Manno, marine ecologist at British Antarctic Survey, says:

"This is exciting news because it almost doubles the previous estimate of how much atmospheric carbon is transported into deep [ocean](#) layers by [krill](#). Our study reveals that large krill swarms could remove a significant amount of carbon from the atmosphere. Over the entire ocean, krill transfer 0.3 million tons of carbon daily—equivalent to the daily domestic CO₂ emissions of the UK."

The team worked in the north Scotia Sea, located in the Southwest Atlantic Sector of the Southern Ocean, where more than 50% of all Antarctic krill are located. They collected krill molts over a year using a trap moored close to the seabed.

"Krill are really unusual crustaceans in molting so frequently" said co-author and ecologist, Prof Geraint Tarling. "In fact, they renew their exoskeleton every 10 to 14 days, releasing their old ones to sink towards the seabed, and taking carbon with it.

"We are trying to understand the impact of environmental change on krill stocks, not only as they are a key food source for the whales, seals and penguins that inhabit the Southern Ocean, but perhaps now as they are a more important method of removing carbon from the atmosphere."

The Southern Ocean covers 14% of the Earth's surface and plays a fundamental role in controlling atmospheric carbon levels and global climate. This study highlights the important role that krill play in this process.

"Continuous molting by Antarctic krill drives major pulses of [carbon](#) export in the north Scotia Sea, Southern Ocean" is published in the journal *Nature Communications*.

More information: C. Manno et al. Continuous moulting by Antarctic krill drives major pulses of carbon export in the north Scotia Sea,

Southern Ocean, *Nature Communications* (2020). [DOI: 10.1038/s41467-020-19956-7](https://doi.org/10.1038/s41467-020-19956-7)

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