



Southern Ocean Module

The Southern Ocean plays a starring role in determining the Earth's climate. Its vast and icy waters surround Antarctica, and because of its location, the Southern Ocean is the only place in the world where deep waters from the rest of the world upwell and meet the atmosphere, absorbing both carbon and heat. Despite its importance to the Earth's climate, its rough winds and inaccessibility have kept the biogeochemical dynamics of the Southern Ocean essentially an enigma to scientists.

The Southern Ocean Carbon and Climate Observations and Modeling Project, or SOCCOM, aims to collect as much information as possible about the Southern Ocean and its connection to the climate. Using 200 autonomous floats, SOCCOM has been taking measurements on the Southern Ocean's oxygen, nitrate, and carbon content in order to investigate its role in the global carbon cycle. It's clear that the Southern Ocean absorbs enormous amounts of anthropogenic carbon dioxide, but as it continues to be flushed with carbon dioxide, the absorption power of the Southern Ocean will begin to wane, and Southern Ocean sponge may only be able to hold back the effects of climate change for so long.¹ The data records from SOCCOM can help predict how it will change over time depending on how the world's carbon output changes.

SOCCOM uses biogeochemical data from the floats to design and support climate models, building high-resolution projections of the Southern Ocean. This open-source data can help support climate models throughout the world and hopefully lead to further innovations in climate research.

This Southern Ocean Overview Multimedia Module is designed to explain the importance of the Southern Ocean and how SOCCOM aims to study it.

Videos

[Mysteries of the Southern Ocean](#)

Presentations

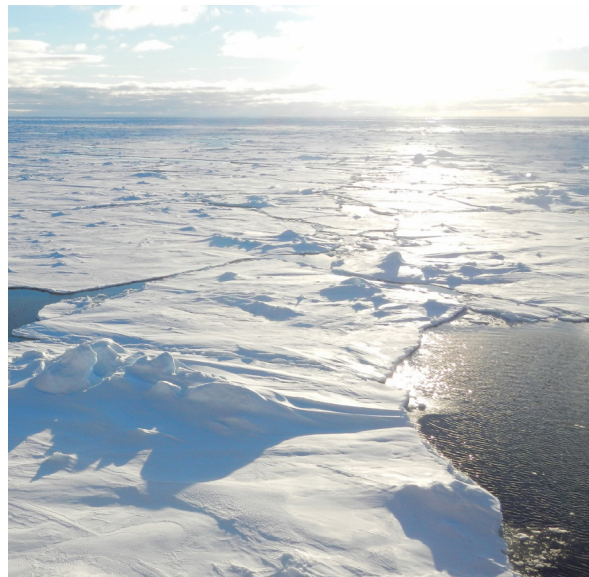
[Using SOCCOM DataViz](#)
[SOCCOM and the Southern Ocean](#)

Handouts

[The Southern Ocean:
A Driver of Global Climate](#)
[Biogeochemistry in the Southern Ocean](#)

Media Resources

[SOCCOM Flickr Account](#)



¹ A. K. Morisson, T. L. Frölicher, J. L. Sarmiento. "Upwelling in the Southern Ocean" *Physics Today*. 68 (1), 27. 2015.
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