Carbon cycling in Antarctic benthic communities subject to glacier retreat

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Western Antarctic Peninsula: One of the fastest warming regions on Earth

Shallow bay (<50m water depth)
Primary production dominated by macroalgae and benthic microalgae

Very productive area!

Potter Cove, King George Island

Fourcade glacier rapidly retreating since 1950s

How do benthic assemblages recycle organic matter?

In situ deployment of benthic chambers and sediment profiler with oxygen sensors by skilled divers at 9m water depth

Measure O₂ dynamics in overlying water in dark and transparent chambers over 24h cycle

Total oxygen uptake (TOU) is a measure for carbon cycling in the sediment.

TOU rates comparable to temperate regions → confirms productivity of area

Fauna mediated oxygen uptake (TOU – DOU) is high → strong role of macrobenthos

Are there seasonal differences in organic matter cycling?

Chamber deployment in austral summer, winter (under ice!) and spring 2015

Winter under ice deployments

Yes, there are seasonal differences in organic matter cycling:

→ Lower TOU in winter as compared to spring and summer

→ Net primary production is only observed in spring

Work in progress, still samples and data on benthic community structure (density and biomass), pigment and organic matter content of the sediment left to analyze before we can draw conclusions!