

Southern Ocean Breakout Group Report

A. Intermediate and mode waters of the Southern ocean: Pre-formed chemical properties and their biological determinants

Important site for anthropogenic carbon uptake by the ocean

Mechanism to supply nutrients to much of the ocean thermocline, and oxygen to low oxygen zones.

Sensitive to climate change

Perfect opportunity to piggy-back on ARGO

~100 floats with O_2 and nitrate

~10 including chl

Deploy in south east Pacific- near OOI mooring

Involve process cruise, possibly gliders from Chile

All it takes is money!

B. Annual cycle of coastal Antarctic productivity, export and CO₂ uptake

- Debate about importance wrt CO₂ sink
- Let's measure and find out!
- Extraordinary productivity has ecological impacts
- Exploratory research- go where ships can't go
- Document full annual cycle, including seasonal edges
- Technological challenge

Somewhere accessible- Ross Sea?

Deploy floats beneath the ice, or ice-tethered profiling floats

Would require a more sophisticated suite of sensors,
chl, O₂, NO₃, export, optics, FRR