

Validation of greenhouse gas observations over the ocean

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Agenda Item 6.15

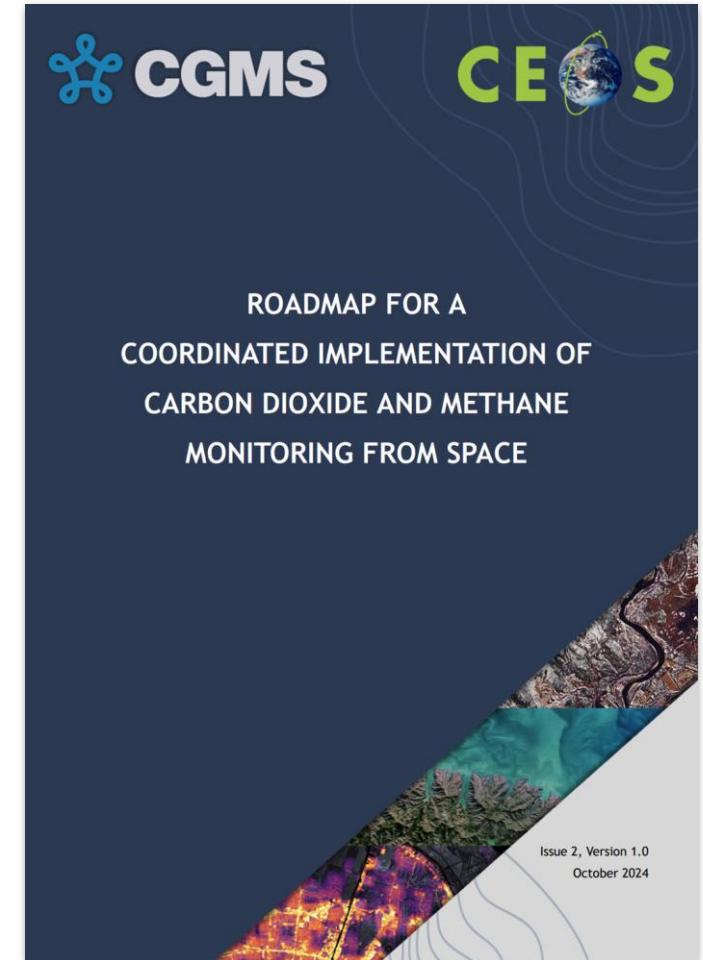
CEOS AC-VC#22

Leiden, Netherlands

1–4 June 2026

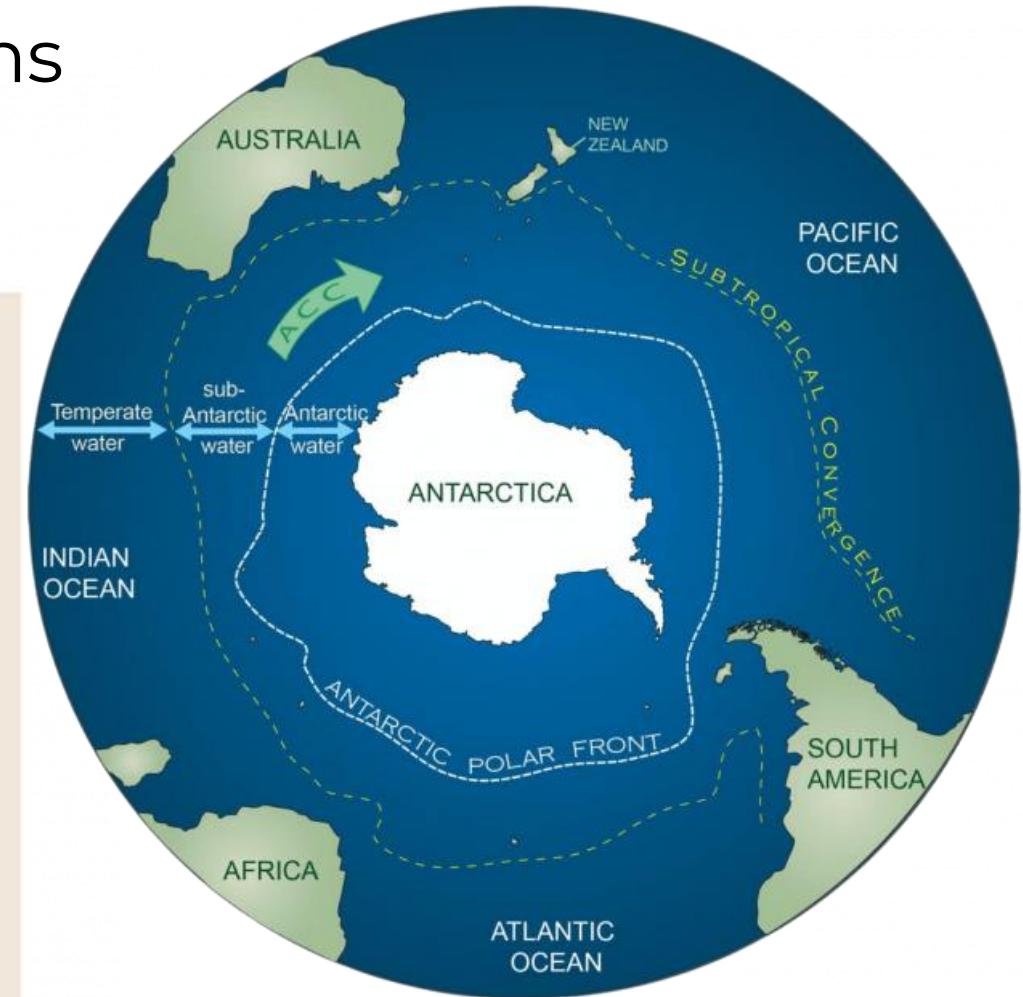
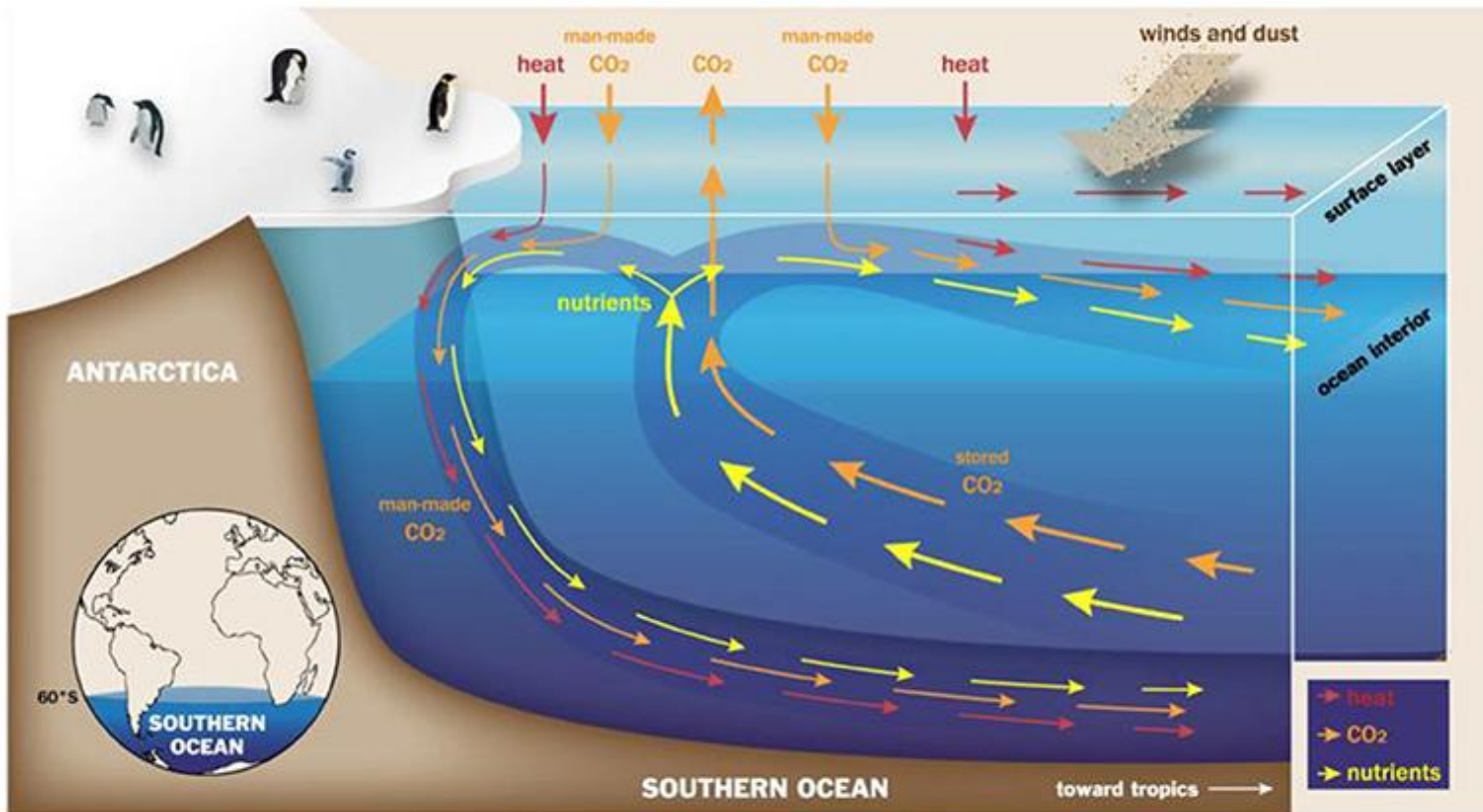
Confluence of carbon roadmaps

- ❖ GHG RM was endorsed in 2024
- ❖ Aquatic RM is in advanced draft
- ❖ These roadmaps are connected at their interfaces
- ❖ In response to NASA's SIT focus on oceans, the GHG Task Team aims to specifically improve science on atmospheric fluxes over the Southern Ocean



Southern Ocean

Deep ocean with stored concentrations meets new world resulting in fluxes



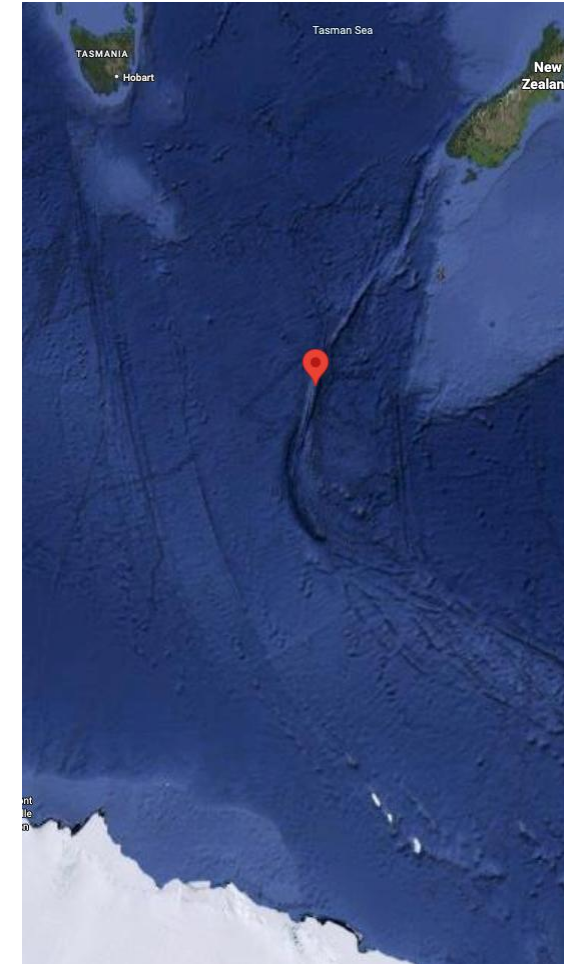
Improved sat. capabilities & needs

- ❖ Net flux is large as an accumulation of small fluxes over the vast Southern Ocean
- ❖ Improved satellite observations, e.g. from the Copernicus CO2M mission, might meet the needs
- ❖ Requires enabling validation of greenhouse gas observations
- ❖ Contact made with South African Environmental Observation Network (SAEON)
- ❖ Contact made with Australian Bureau of Meteorology (BOM)

Potential validation sites

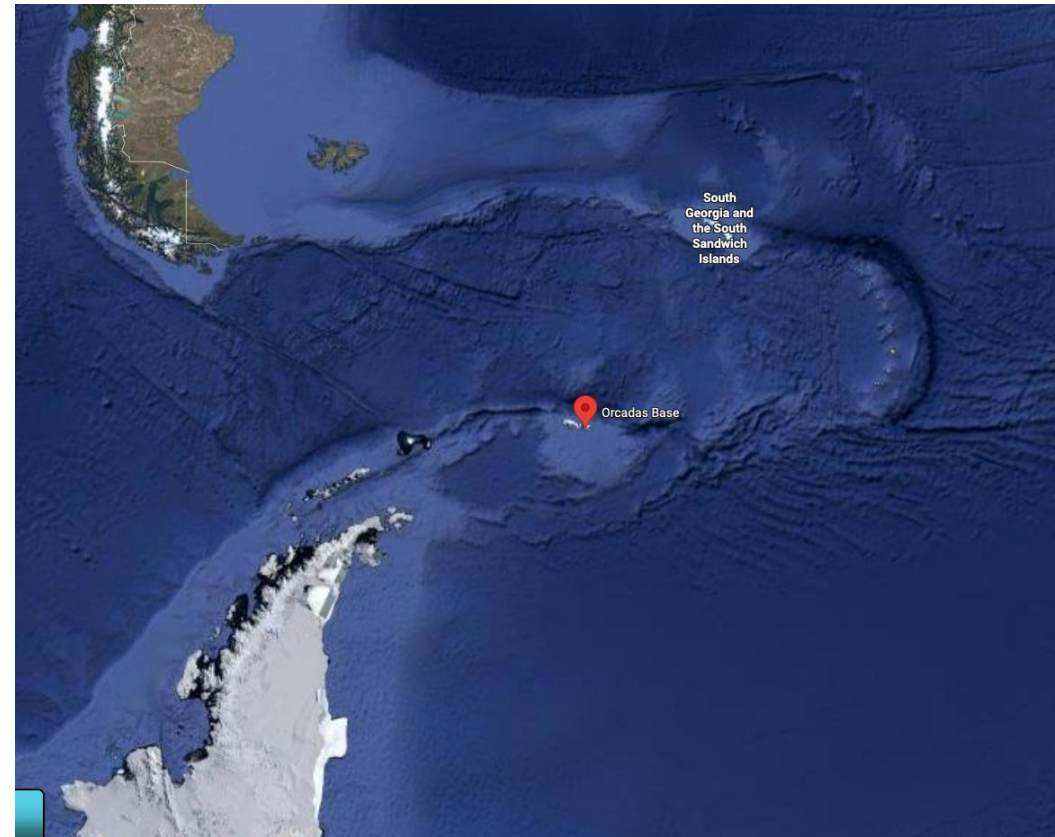


- ❖ SAEON has regular cruises to their Antarctic base
- ❖ SAEON operates a manned research station on Marion Island
- ❖ France has a research station on Ile Amsterdam
- ❖ BoM (AU) has stations on Macquarie Island and Cape Grim, Tasmania
- ❖ In South American / Atlantic region, Argentinian Orcadas Base, BAS King Edward Point on South Georgia, or Gough Island



Potential validation equipment

- ❖ Sub-Antarctic islands are rather hostile regions and require robust, weatherproof equipment
- ❖ Seawater, ice and clouds will make it challenging
- ❖ For GHGs (CO_2 & CH_4), the EM-27 instrument with housing would be suitable



Request for enabling validation

We are now seeking agencies to support this by:

1. Enabling contact & reaching out to host agencies
2. Informing the GHG TT on potential funding schemes
3. Provision of weatherproof, equipped EM-27s
4. Network optimisation exercise testing optimal locations
5. Suggestions for exploiting other instruments/ measurements, e.g. ship-born $p\text{CO}_2$
6. Identify research groups interested in Southern Ocean Carbon Cycle Science

THANKS!

TIME FOR QUESTIONS & FEEDBACK