# YOPP-SH UK
# Extra observations

- BAS will be carrying out daily radiosonde launches at 12UTC from Rothera during the Intensive Observing Period (IOP) (normally only 5 per week at 12UTC)
- BAS will be carrying out twice daily radiosonde launches from Halley at 00UTC and 12UTC during the IOP (normally daily at 12UTC)
- Data will be archived with a YOPP tag in PANGEA https://www.pangaea.de/ so that it can be discovered by the YOPP data portal.

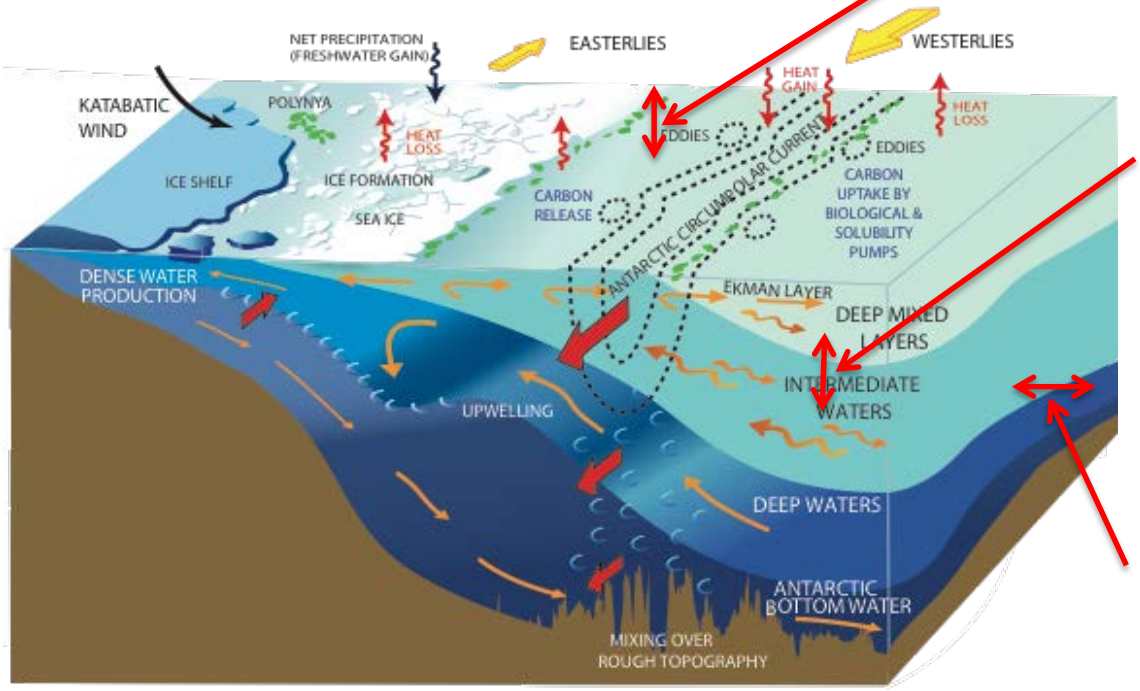
# YOPP-SH UK

## Ocean Regulation of Climate through Heat and Carbon Sequestration and Transports (ORCHESTRA)

The project is led by the British Antarctic Survey (BAS), in partnership with National Oceanography Centre (NOC), British Geological Survey (BGS), Plymouth Marine Laboratory (PML), the Centre for Polar Observation and Modelling (CPOM), the Sea Mammal Research Unit (SMRU) and the UK Met Office, along with numerous national and international partners.

BAS was part of this project during the 207/18 season flying the BAS MASIN Twin Otter.

***ORCHESTRA Objective**: Determine quantitatively the strength, variability and controls of the Southern Ocean uptake, storage and export of heat and carbon, and advance our capability to predict its climatic effects.*




(image courtesy of Lynne Talley)

**WP1. Air-Sea Fluxes** What controls the exchange of heat and carbon across the air-sea-ice interface, and how well are these exchanges constrained by observations and reproduced by models?

**WP2. Surface layer to ocean interior** What are the leading-order processes that control the rate at which heat and carbon enter the Southern Ocean interior in its different layers, and how will these rates change in future?

**WP3. Basin-scale transports** What are the size, variability and controls on basin-scale heat and carbon transports throughout the Atlantic sector of the Southern Ocean and outwards to the global ocean, and how will these change in the future?

# WP1: Interaction of the Southern Ocean with the atmosphere (leader: Liz Kent)

- New system for direct observations of air-sea fluxes from research ships
- Missions with the BAS meteorological aircraft over different ice/sea states (MASIN)
- Autonomous wintertime measurements (ASV)
- Assessment of ocean/atmosphere reanalyses and extant/new satellite products (ESA CCI, GNSS reflectometry etc)
- Assessment of parameterisations in extreme Southern Ocean conditions
- Quantification of sensitivity of heat and carbon uptake to uncertainty in flux fields and parameterisations in models.

British Antarctic Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

cpom

National Oceanography Centre
NATURAL ENVIRONMENT RESEARCH COUNCIL

PML Plymouth Marine Laboratory

# YOPP-SH UK
# ORCHESTRA this season

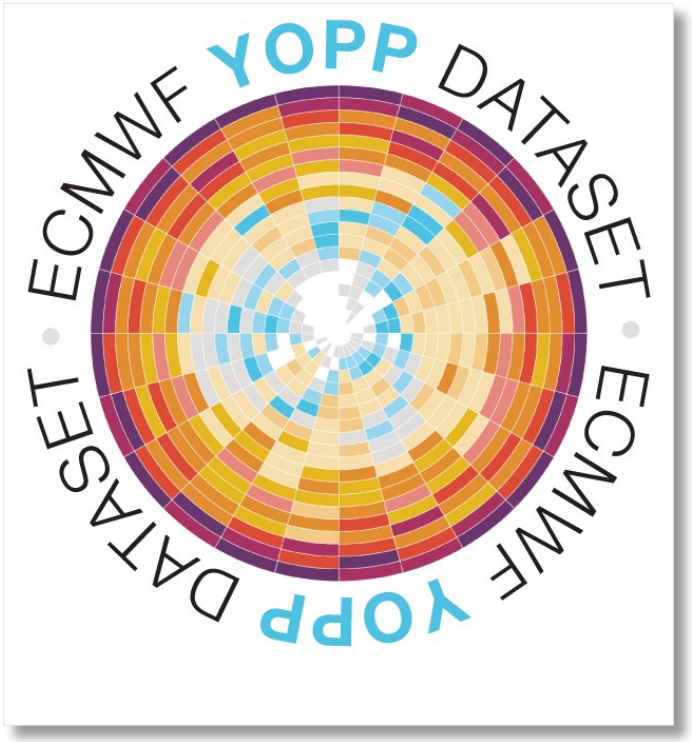
- There are three ORCHESTRA voyages coming up. JR18002, end October – early November 2018. This is a JCR hydrographic section across Drake Passage, SR1b. It will be a full GO-SHIP level voyage with nutrients, CFCs/SF6, DIC, TA/alk, O2 and other parameters measured as well as the usual physics.

- The next voyage is JR18004 end December – early January 2019. This is three work elements in one. The first is an ORCHESTRA process study over sea mounts in the South Scotia Ridge to study mixing. This will include several glider deployments, EM-APEX deployments and VMP/CTD profiles. The next element of work is the turn around of the Orkney passage array of moorings, that study dense water flow out of the Weddell sea. The final bit of work is a reoccupation (CTD and VMP) of the A23 hydrographic section across the Weddell Sea.

- The final voyage is JR18005, ANDREXII mid February 2019. This is a repeat of a hydro section done in 2009 that goes from the tip of the peninsula all the way to 30 E where it meets another hydro section, I6S. This forms a box completely enclosing the Weddell sea and allows us to calculate inversions and back out mixing, flux and transformation rates within the gyre. It will include a full Go-SHIP compliment of measurements (as in JR18002 above). We will also be deploying 6 SOCCOM floats for the US SOCCOM programme.

- Between the two voyage above there will be aircraft ops using the BAS MASIN twin otter, flying out of the Falklands. This will be to measure flux and turbulence over 'standard' southern ocean waters. They will also coordinate fly overs of the ship as it returns from JR18004, and when JR18005 departs the Falklands. These will be to calibrate between the aircraft flux measurements and those being taken on the ship foremast.

# ECMWF YOPP Dataset APPLICATE.eu




**Operational ensemble forecasts**

- Period: July 2017 to June 2019
- Analysis fields (fc step 0)
- Coupled forecasts out to day 15
- Tco639 (≈18km) + 91 levels
- Data available on native mesh

**Dedicated research experiments**

- Same period, system and resolution
- Coupled forecasts out to day 2
- Availability of process tendencies

**Data availability and further information**

- http://apps.ecmwf.int/datasets/data/yopp/levtype=sfc/type=cf/
- https://software.ecmwf.int/wiki/display/YOPP
- http://polarprediction.net