



ORCHESTRA

OCEAN • CLIMATE • CARBON

ORCHESTRA – Data Management Update

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National
Oceanography Centre
NATURAL ENVIRONMENT RESEARCH COUNCIL

noc.ac.uk

NERC SCIENCE OF THE
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NERC Data Policy

“All environmental data produced by NERC-funded activities are considered a public good”

Our shared commitments to NERC are to support:

- Management of data in an effective manner
- Free, open and long-term availability of data

<http://www.nerc.ac.uk/research/sites/data/policy/data-policy/>



The **British Oceanographic Data Centre** is NERC's designated data centre for marine science.

Data Management Plan

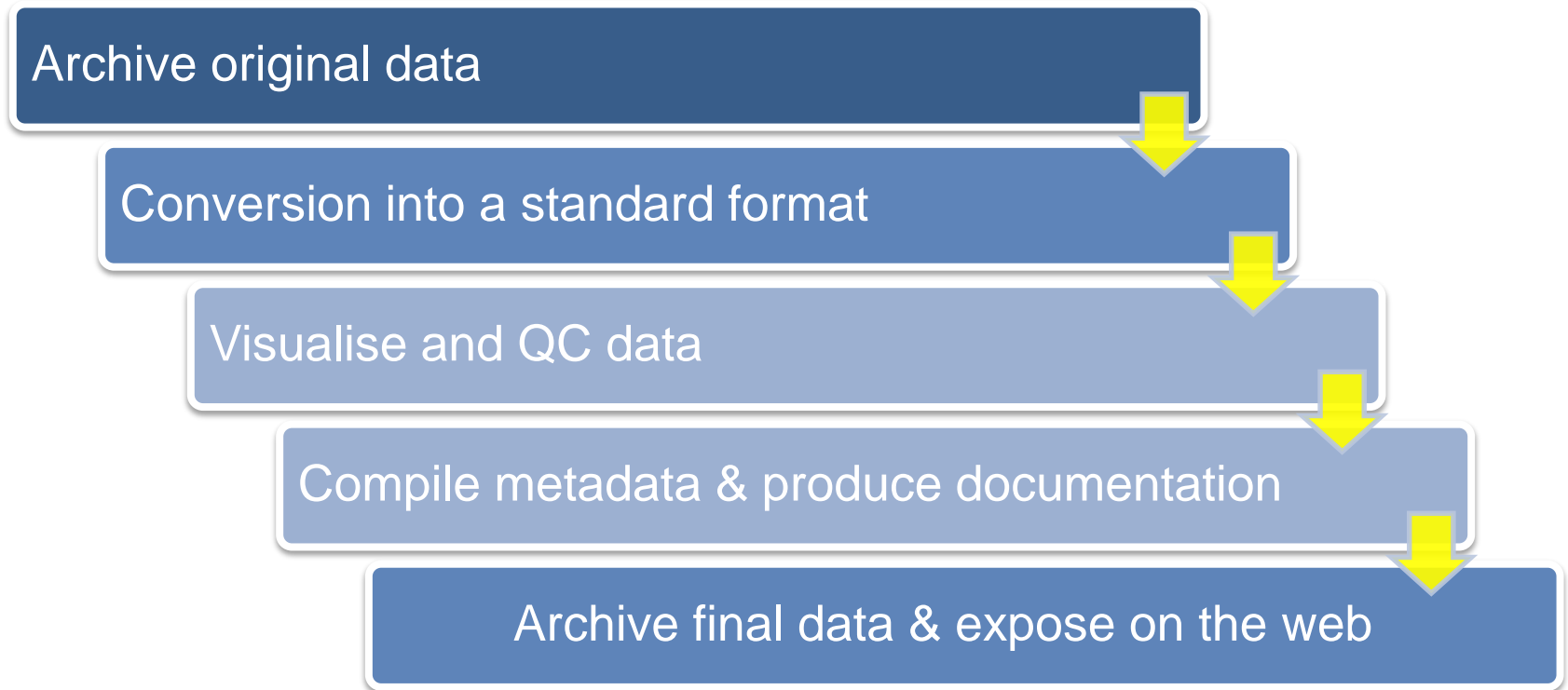
ORCHESTRA Data Management Plan outlines:

- What data types are to be collected
- Who is collecting it (the contact)
- How much data is to be collected (volume/number data files)
- The format of the data files
- The expected submission date to BODC

Fundamental document to BODC data management practices and must be kept updated with any changes.

What happens to your data at BODC?

Data Ingestion Example:



How to find ORCHESTRA data?

- BODC National Oceanographic Database (NODB)

https://www.bodc.ac.uk/data/bodc_database/nodb/data_collection/6618/

National Oceanographic Database (NODB) data series

Search [help](#)

Found 194 | Showing (1 - 194) | 1

Antarctic Peninsula ©

INVESTORS IN PEOPLE

Data collection [x](#)

ORCHESTRA Project Oceanographic data set

Date range	Data type	Parameter	Data collections	Project	Cruise	Site	Platform	Instrument	Water depth
Instrument depth	Country	Originator	Data availability	File format					

How to find ORCHESTRA data?

- BODC Archives EDMED Discovery Record
<https://www.bodc.ac.uk/resources/inventories/edmed/report/6618/>

The screenshot shows a web browser window displaying the EDMED Data set information page for the ORCHESTRA Project Oceanographic data set. The browser address bar shows the URL: <https://www.bodc.ac.uk/resources/inventories/edmed/report/6618/>. The page title is "European Directory of Marine Environmental Data (EDMED) Data set information".

The page is divided into several sections:

- General**
 - Data set name:** ORCHESTRA Project Oceanographic data set
 - Data holding centre:** [British Oceanographic Data Centre](#)
 - Country:** United Kingdom
 - Time period:** Data collected during ORCHESTRA cruises from 31 March 2016
 - Ongoing:** Yes
 - Geographical area:** Southern Ocean; South Atlantic Ocean
- Observations**
 - Parameters:** Vertical spatial coordinates; Transmittance and attenuation of the water column; Air pressure; Air temperature; Atmospheric humidity; Wind strength and direction; Vertical velocity of the water column (currents); Horizontal velocity of the water column (currents); Salinity of the water column; Temperature of the water column; Acoustic backscatter in the water column; Chlorophyll pigment concentrations in water bodies; Dissolved oxygen parameters in the water column; Horizontal spatial coordinates; Platform or instrument orientation; Electrical conductivity of the water column
 - Instruments:** Anemometers; meteorological packages; thermosalinographs; multi-beam echosounders; altimeters; flow meters; bench fluorometers; acoustic velocity systems; NAVSTAR Global Positioning System receivers; water pressure sensors; CTD; transmissometers; water temperature sensor; dissolved gas sensors; active fluorometers
- Description**
 - Summary:** The Ocean Regulation of Climate by Heat and Carbon Sequestration and Transports (ORCHESTRA) data set comprises hydrographic data, including measurements of temperature, salinity and currents, complemented by bathymetric and meteorological data. The study area was the South Atlantic Ocean and Southern Ocean, including the Weddell and Scotia Seas and Drake Passage. The data were collected by research cruises from March to December 2016. Shipboard data collection involved the deployment of conductivity-temperature-depth (CTD) packages and Lowered Acoustic Doppler Profilers (LADCP) in the study area. Continuous measurements of current velocities (using vessel mounted ADCPs, VMADCPs), bathymetry and surface ocean and meteorological properties were collected throughout each cruise. The ORCHESTRA programme aims to advance the understanding of, and capability to predict, the Southern Ocean's impact on climate change via its uptake and storage of heat and carbon. It represents the first fully unified activity by the Natural Environment Research Council (NERC) institutes as part of the Long-Term Multi-centre Science (LTMS) along with other UK research institutes, more specifically the British Antarctic Survey (BAS), National Oceanography Centre (NOC), British Geological Survey (BGS), Plymouth Marine Laboratory (PML), Sea Mammal Research Unit (SMRU), Centre for Polar Observation and Modelling (CPOM) and the Met Office Hadley Centre. The programme was divided into four Work Packages with the following Principal Investigators for each: WP1 [Interaction of the Southern Ocean with the atmosphere], led by Margaret Yelland from NOC; WP2 [Exchange between the upper ocean mixed layer and the interior], led by Andrew Hejlers from BAS; WP3 [Exchange between the Southern ocean and

How to find ORCHESTRA data?

- Digital Object Identifiers (DOIs)

Data freely available via Published Data Library

https://www.bodc.ac.uk/data/published_data_library/

- Other UK or International Data Centres



**British
Antarctic Survey**



C C H D O
CLIVAR & Carbon Hydrographic Data Office



**National
Oceanography Centre**
NATURAL ENVIRONMENT RESEARCH COUNCIL

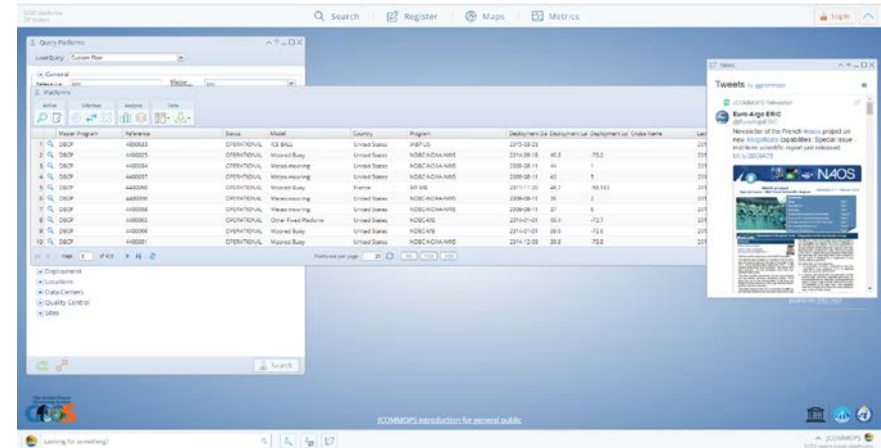
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How to find ORCHESTRA data?

ARGO Floats

- JCOMMOPS www.jcommops.org (metadata)
- ARGO.net <http://www.argo.net/> (data)



MARS Portal

Orchestra-1

ORCHESTRA: Investigating surface fluxes and mixing in Ona Basin

- Public Mission
- Active
- Part of Ona Basin
- Began on 2017-11-27 (142 days ago)
- Last updated 2018-02-27 12:58:52
- Finished on 2018-01-28 (30 days ago)

The development and destruction of ocean stratification is a key control on the flux of heat and momentum into the ocean interior, yet the processes by which mixed layers are created, deepened and ultimately removed remain poorly understood both in both a qualitatively and quantitatively. This deficiency in knowledge is particularly acute in the Southern Ocean, which is known to be a region of strong heat and carbon uptake and which plays a pivotal role in setting the magnitude and configuration of the meridional overturning circulation. For example, it is known that surface-oceanic frontal waves driven by east-westerly wind motions effect mixing between the upper and lower oceanic cells, yet the routes through which momentum is moved from the surface ocean to mid-oceans are only partly understood. In addition, it is known that surface fluxes strongly regulate the formation of both mode and deep waters in the Southern Ocean, which in turn ventilate much of the global abyss.

Progress to date in this field has been vitally hindered by a lack of high-resolution upper ocean observations over the appropriate spatial scales to capture the mixed layer processes of interest. Many of these processes (e.g. Langmuir cells) occur at a range of sizes known as the submesoscale, typically 1-10km. This scale is conceptually undersampled, meaning that parameterizations of mixed layer physics within relatively coarse. The sampling strategy we propose, which combines observations of surface fluxes from a surface vehicle (subject to a separate SWI) with high-resolution ocean observations from underwater gliders, will target these scales directly. These observations will achieve several objectives:

1. Quantify the development of summertime stratification to the south of the Ross Front;
2. Understand how surface fluxes affect the breakdown of the wintertime mixed layer, and the role of submesoscale processes in these changes;
3. Quantify the changes in turbulent mixing that occur during the summer season and how these affect near-surface stratification;
4. Understand the magnitude and timescales of mixing of heat from the surface layer into the ocean interior.

Vehicle Activity

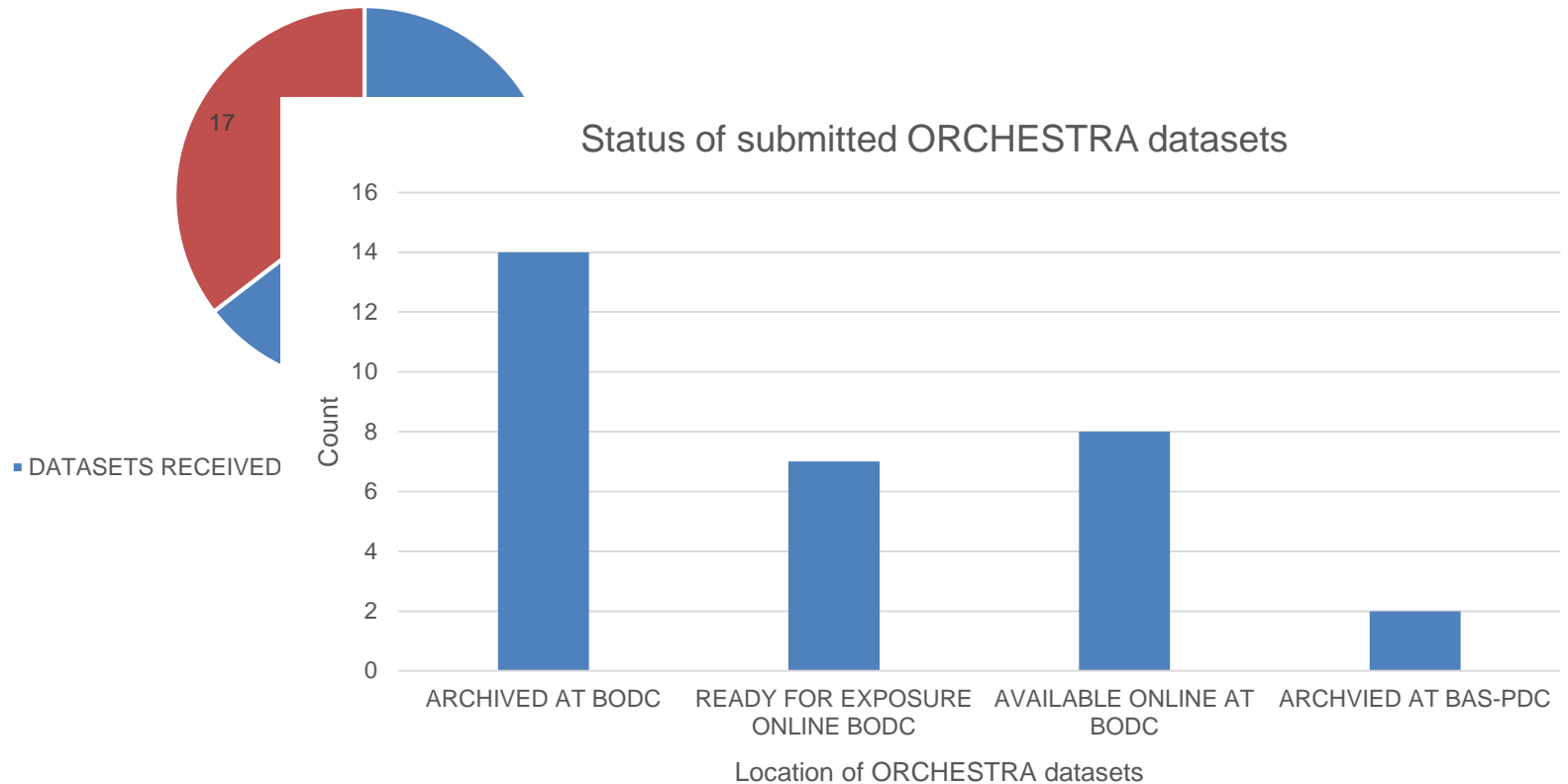
Vehicle	Last Update	Public Data Available
• Neptune	2018-01-28 05:47:42 (79 days ago)	No Public Data Available
Deployed	2017-11-27 (142 days ago) by Alex Ormelid	
Recovered	2018-01-28 (79 days ago) by Hugh Venables - End of Mission	
• Grenier	2017-12-14 07:41:00 (124 days ago)	No Public Data Available

Gliders

- MARS Portal <https://mars.noc.ac.uk/>

Story so far...

ORCHESTRA datasets as of 01/05/2018 (inc. stats from all DCs)



Finally...

If you have any questions or feedback on ORCHESTRA data management...

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