

## BIANNUAL ACHIEVEMENTS REPORT

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Reporting period: April 2017 to September 2017

Dear Colleague

Please find attached template to report on the outcomes and impacts of the NERC programme for which you are science co-ordinator for the period from April 2017 to September 2017. Please email your completed report to [reporting@nerc.ac.uk](mailto:reporting@nerc.ac.uk) by 1 October 2017.

Please provide narrative under the following headings:

- *Key achievements (please try to stick within 200 words each)*
- *Overall progress with the programme (100-200 words as a guide)*
- *Any notable issues encountered (if any and remedial actions undertaken, if needed)*
- *Any newsworthy activity planned or known about in the next 6-9 months*

This reporting process is intended to be high-level, light touch and flexible. In a programme consisting of multiple projects, please try to do more than list achievements from individual projects. Consider how achievements integrate together and report on activity at the programme level. Please try to be concise. Ideally, the whole report should not exceed one side.

Between reports, if there are any significant good news stories, delays or issues affecting the programme, please let us know as soon as possible.

**Please note, if there are any significant delays or issues affecting delivery of the programme please contact the programme manager immediately and do not wait until the biannual achievement report to notify us.**

If you require further help in completing the report, please do not hesitate to contact us [reporting@nerc.ac.uk](mailto:reporting@nerc.ac.uk).

<b>Programme/investment</b>	The UK Overturning in the Subpolar North Atlantic Program (UK-OSNAP)		
<b>Completed by</b>	<b>Penny Holliday</b>	<b>Date</b>	<b>29 September 2017</b>

### Key achievements

- The eastern boundary array moorings were recovered and redeployed on cruise *RRS Discovery* DY078 (May 2017). The cruise also deployed and recovered UK and US OSNAP gliders, deployed Argo floats and completed the 2017 occupation of the Extended Ellett Line hydrographic section
- New biogeochemical sensors and sampling system were added to Rockall Trough moorings in May, funded by EU project ATLAS
- 5 further glider sections were achieved across the Rockall-Hatton Basin, and clear evidence obtained that Seagliders and not Slocum gliders are required for these long missions
- New higher resolution adjoint experiments have been run exploring the sensitivity of the AMOC at 26N to surface momentum and buoyancy fluxes at different timescales
- The RTHIM validation stage is nearing completion; we have quantified the robustness of the solutions to observational errors, the thermohaline grid design, and aspects of the optimisation process (manuscript near to completion)
- All 2014-2016 international OSNAP array data have been submitted to the Duke data hub
- The winner of the first OSNAP Challenge (model predictions of the first 2 years of MOC time series ) was Ben Moat (NOC) with his prediction from a NOC 1/12 global NEMO run.
- Scientists on the EEL and OSNAP cruise DY078 in May 2017 ran our regular blog ([ukosnap.wordpress.com](http://ukosnap.wordpress.com)) and tweeted blog posts or a photo every day (@uk\_osnap). During the cruise we generated 30 tweets and gained 23,000 twitter impressions.

### Overall progress

Overall progress is good.

- A manuscript describing the circulation, transport and variability from the glider sections is near to completion
- Analysis of two high resolution CTD/LADCP sections (summer 2014 and 2016) shows a large range in synoptic MOC and fluxes estimates, which are in line with preliminary estimates of the MOC from the array; manuscript near to completion
- Work is underway to explore the characteristics of regional temperature, salinity and density anomalies, their regional evolution, and the mechanisms that form them.
- UK OSNAP PIs are contributing to the development of the OSNAP method for computing MOC and fluxes. The 2 year time series is on course to be submitted for publication in autumn 2017.
- Analysis of current meter data from UK moorings is in progress

### Notable issues (if any)

We were not able to recover the slope current bottom-mounted ADCP in May 2017. We did not deploy a replacement while we perform tests to establish the reasons for high failure rate. We are investigating new ways to observe the slope current from 2018 onwards.

### Upcoming newsworthy activities

Our next cruise is May-June 2018