

BIANNUAL ACHIEVEMENTS REPORT REQUEST – RESEARCH GRANTS

Reporting Period: Q2, 2020/21

Dear Colleague

Please find attached a template to report on the outcomes and impacts of the NERC Highlight Topic or Discovery Science Large grant for which you are the lead Principal Investigator. Please email your completed report to reporting@nerc.ukri.org.

Please provide narrative under the following headings:

- *Key achievements (please try to keep within 200 words each)*
- *Overall progress with the project (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. 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 grant, please let us know as soon as possible at researchgrants@nerc.ukri.org.

If you require further help in completing the report, please do not hesitate to contact us reporting@nerc.ukri.org.

Research Grant Reference	NE/T00858X/1, NE/T00858X/2 (NOC) NE/T008938/1 (SAMS)		
Grant Title	UK-OSNAP-Decade: 10 years of observing and understanding the overturning circulation in the subpolar North Atlantic		
Completed by	NP Holliday	Date	23/10/20

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Key achievements
<p>- 3 new papers: <i>Mackay, et al. 2020</i>. The observation-based application of a Regional Thermohaline Inverse Method to diagnose the formation and transformation of water masses north of the OSNAP array from 2013-2015, <i>JPO. Houpert et al., 2020</i>, Observed variability of the North Atlantic current in the Rockall Trough from four years of mooring measurements, <i>JGR: Oceans. Rossby et al., 2020</i>, What can hydrography tell us about the strength of the Nordic Seas MOC over the last 70 to 100 years, <i>GRL</i>.</p> <p>- 5 new papers in review</p> <p>- Cruise DY120 on RRS Discovery took place in Sept-October 2020 and recovered 3 UK OSNAP moorings in the Iceland Basin, and redeployed those three and one new mooring in the Hatton-Rockall Basin. Very high rate of data return.</p> <p>- Glider mission re-fresh: UK OSNAP has re-designed the mission for our continuous presence gliders in the Rockall Trough, because of damage to moorings by fishing activity throughout the programme. Analysis of our observations and models were used to determine the effectiveness of the new mission, demonstrating the value in measuring a key current for the OSNAP array.</p> <p>- Leveraged funding: UK OSNAP researchers are part of the consortium that successfully bid for funds from the Changing North Atlantic Ocean call; the new SNAP-DRAGON grant (2020-2023) is underpinned by the OSNAP and CLASS observations. It will support research into the causal relationships that link atmospheric forcing to subpolar ocean variability, their implications for predictability and their robustness across models,</p>

Overall progress
Overall progress is very good for this period, as demonstrated by continuing publication of high quality papers

Notable issues (if any)
- Significant uncertainty developed around field work. All OSNAP international partners had cruises planned for servicing OSNAP moorings in summer 2020 but the COVID-19 crisis forced the suspension of all cruise programmes. The NMF programme was resumed in Sept 2020 with the UK OSNAP and CLASS cruise DY120 being the first cruise to sail. Despite the higher risk of downtime due to bad weather, the cruise was successful in meeting all its scientific objectives. Covid-safe protocols meant that the science party consisted of fewer scientists than usual, meaning that training berths and additional opportunistic sampling was not possible. Fortunately all international OSNAP cruises were also rescheduled and the whole array has successfully been turned around in 2020.

Upcoming newsworthy activities