BIANNUAL ACHIEVEMENTS REPORT

BIANNUAL ACHIEVEMENTS REPORT REQUEST – RESEARCH GRANTS
Reporting Period: Q2, 2019/20

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.

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Research Grant Reference	NE/K010948/1, NE/K010875/1, NE/K010972/1, NE/K010700/1, From 2019: NE/T00858X/1 (NOC), NE/T008938/1 (SAMS)		
Grant Title	The UK Overturning in the Subpolar North Atlantic Program (UK-OSNAP, to June 2019) and UK-OSNAP-Decade: 10 years of observing and understanding the overturning circulation in the subpolar North Atlantic (July 19 onwards)		
Completed by	**N P Holliday, NOC**	**Date**	**11/11/19**

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Key achievements

- 5 new papers published: *Moat; B. et al. 2019*. New insights into decadal North Atlantic sea surface temperature and ocean heat content variability from a high-resolution coupled climate model, Journal of Climate. 32 (18). 6137-6161.https://doi.org/10.1175/JCLI-D-18-0709.1. *Eleanor Frajka-Williams, et al., 2019*, Atlantic Meridional Overturning Circulation: observed transport and variability. Frontiers in Marine Science, Ocean Observations, 6:260, doi:10.3389/fmars.2019.00260. *Hopkins, J. E. et al. 2019*. Transport variability of the Irminger Sea Deep Western Boundary Current from a mooring array. 2019. JGR: Oceans, 124, 3246–3278. doi: 10.1029/2018JC014730. *Li, F., et al. 2019*. Local and downstream relationship between Labrador Sea Water volume and North Atlantic MOC variability. J. Climate, 32, 3883-3898. doi:10.1175/JCLI-D-18-0735.1. *Kostov, et al., 2019*. AMOC sensitivity to surface buoyancy fluxes: the role of air-sea feedback mechanisms. Climate Dynamics. doi:10.1007/s00382-019-04802-4

- 6 new papers presently in review

- UK OSNAP attendance at OceanObs19 conference in Sept 2019
- UK OSNAP is now underpinned by CLASS (NC) observations: we took part in a CLASS cruise in Sept 2019, and have processed and delivered CLASS Ellett Array glider data to BODC and the OSNAP data hub.

Overall progress

- Overall progress is **very good**
- OSNAP has moved to full recovery of the array every 2 years, meaning there were no major cruises in 2019. Cruise plans are in place for 2020.

Notable issues (if any)

The OSNAP array is underpinned by a CLASS ADCP lander positioned on the seafloor under the Scottish Continental Slope Current. The lander was funded by UK OSNAP up to 2018 when it became part of the CLASS programme. We have had major problems with deploying and recovering the lander, and again in 2019 the lander was not recovered. We made the decision not to re-deploy the lander in 2019. So the OSNAP PIs are discussing alternative solutions to measure the slope current, and those are being assessed with AMOC attribution calculations (US partners). Potential primary solution is to re-direct CLASS Ellett Array glider missions to slope current region.

Upcoming newsworthy activities