

NOTIFICATION OF PROPOSED RESEARCH CRUISE

Part A: GENERAL

1. Name of research ship: RV Pelagia Cruise number: 64PE

2. Cruise dates: June – July 2015

3a. Operating authority: NIOZ Royal Netherlands Institute for Sea Research
Telephone: (+31) (0)222-369300
Telefax: (+31) (0)222-319674

3b. Operating agent: NIOZ Royal Netherlands Institute for Sea Research
Telephone: (+31) (0)222-369300
Telefax: (+31) (0)222-319674

4. Owner: NIOZ Royal Netherlands Institute for Sea Research

5. Particulars of ship:

name: Pelagia
nationality: Dutch
overall length: 66.00 meters
maximum draught: 4.00 meters
net tonnage: 1553 NRT
propulsion: 2 diesel electric Elliot White Gill
Bow Thruster
call sign: PGRQ

6. Crew: name of master: J.C. Ellen / P. Kuijt
number of crew: 11

7. Chief scientist: name: Prof. Stuart A. Cunningham
addresses: The Scottish Marine Institute, Oban, Argyll,
Scotland, PA37 1QA
telephone: 01631 559336
telefax:
e-mail address: Stuart.Cunningham@sams.ac.uk

**8. Geographical area in which the ship will operate:
(with reference in latitude and longitude)**

In a region from 57° 6'N, 9° 12'W to 58° 45'N, 30° 7'W.

9. Brief description of purpose of cruise:

The Overturning in the Subpolar North Atlantic Program (OSNAP) program is an international program designed to provide a continuous record of the full-water column, trans-basin fluxes of heat, mass and freshwater in the subpolar North Atlantic. It is a collaborative program with scientists from several nations, including the U.S., U.K., the Netherlands, Germany, France, and Canada. The OSNAP observing system consists of two legs: one extending from southern Labrador to the southwestern tip of Greenland across the mouth of the Labrador Sea (OSNAP West), and the second from the southeastern tip of Greenland to Scotland (OSNAP East). The observing system also includes subsurface floats in order to trace the pathways of overflow waters in the basin and to assess the connectivity of currents crossing the OSNAP line.

Cruise R/V Knorr 221-2 was the first cruise to set out the observing system along OSNAP-East. Scientists from the U.S., the U.K., and the Netherlands participated in the cruise. The moorings that were deployed on this cruise will be serviced at 1-2 year intervals through 2018.

The specific objectives of the cruise are:

1. Recover and deploy 13 moorings along the OSNAP East line, from west of the Reykjanes Ridge to the coast of Scotland.
2. Conduct standard CTD (Conductivity-Temperature-Depth) stations at selected sites along the same mooring line.
3. Launch RAFOS and argo floats at selected sites near the mooring line, and
4. Recover and deploy an autonomous glider off Hatton Bank at the eastern end of the Iceland basin.

10. Names and dates of intended ports of call:

11. Any special logistic requirements at ports of call:

Part B: DETAIL

1. Name of research ship: RV Pelagia

2. Cruise dates:

3. Purpose of research and general operational methods:

The purpose of the cruise is to recover and redeploy scientific moorings and to conduct hydrographic stations. This work is part of the international Overturning in the Subpolar North Atlantic Programme (OSNAP, <http://www.o-snap.org/>).

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OSNAP is a partner in the North Atlantic Virtual Institute (NAVIS), which connects science teams around the world studying climate variability and change in the North Atlantic. <http://navinstitute.org/>

This research is conducted by deploying scientific moorings instrumented with current meters and conductivity-temperature-pressure sensors. The moorings will be recovered to retrieve data and redeployed for a further year. Autonomous gliders are continually patrolling between 21°W and the Scottish continental shelf at 9°W. Shipboard hydrographic stations will be occupied close to all the moorings for the purposes of calibrating instruments on the moorings and for pre-deployment functionality checks on mooring acoustic releases.

An autonomous underwater Seaglider will be deployed near 58°N & 21° 8.6'W. This glider will cycle from the surface to 1000m in a sawtooth pattern heading to position 58°N, 20°W. This track is repeated for several months and the glider will then transit to Scottish coastal waters to be recovered by scientists from the Scottish Marine Institute. The glider is UK owned and operated by UK scientists. The deployment though in international waters ends with the glider entering into UK waters for recovery. Therefore, because the glider enters UK waters for prudence we submit a diplomatic request. This is a continuing operating as part of OSNAP. Data in real time may be viewed at <http://velocity.sams.ac.uk/gliders/>.

4. Attach chart showing (on an appropriate scale) the geographical area of the intended work, positions of intended stations/hydrographic sections:

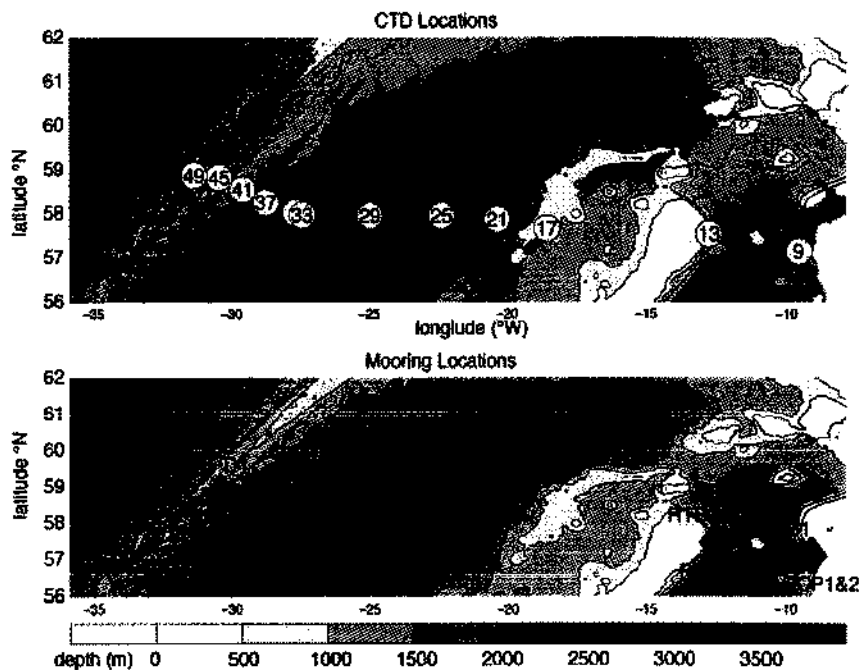


Figure 1: Bathymetry from ETOPO1 (m). Top panel: Location of hydrographic stations (yellow). Lower panel: Location of deployed moorings in project OSNAP deployed on R/V Knorr cruise 221-02, July 2013. D & M (RSMAS Iceland Basin moorings, red); RT (SAMS Rockall Trough moorings, blue).

5a. Type of samples required:

Water samples for salinity determination will be obtained during the hydrographic stations for the purpose of calibration of the ship's CTD system.

5b. Methods by which samples will be obtained (including dredge/core/drill techniques):

Water samples for salinity will be obtained from a 24x10liter rosette water sampling system lowered by hydrographic wire from the ship. Water samples will be drawn from depths near the seabed to near the sea surface.

6. Details of moored equipment:

Mooring Deployments

A total of 13 moorings were deployed at the locations listed in Tables 1, 2 and shown in Figure 1. These moorings will be recovered, refurbished and redeployed at the same locations.

Table 1. U.S. Mooring Deployments (U. Miami)

Mooring Site	Mooring Number	Latitude (°N)	Longitude (°W)	Depth (m)	Date of Deployment
M1	M423	58° 52.33'	30° 31.95'	1712	11/07/2014
M2	M424	58° 02.26'	28° 01.29'	2370	13/07/2014
M3	M425	58° 00.77'	24° 25.72'	2850	15/07/2014
M4	M426	57° 59.56'	21° 08.61'	2923	16/07/2014
D1	M427	58° 44.77'	30° 07.01'	1740	12/07/2014
D2	M428	58° 32.11'	29° 27.82'	2517	12/07/2014
D3	M429	58° 18.42'	28° 49.12'	2174	13/07/2014
D4	M430	58° 00.58'	26° 58.07'	2670	14/07/2014

Table 2. U.K. Mooring Deployments (SAMS)

Mooring Site	Mooring Number	Latitude (°N)	Longitude (°W)	Depth (m)	Date of Deployment
RTWB1	n/a	57° 28.24'	12° 42.30'	1600	17/07/2014
RTWB2	n/a	57° 28.22'	12° 19.87'	1800	17/07/2014
RTEB1	n/a	57° 05.96'	9° 32.88'	1975	18/07/2014
RTADCP2	n/a	57° 05.98'	9° 16.52'	396	18/07/2014
RTADCP1	n/a				

The following types of instrumentation are distributed across moorings listed in Table 1 and Table 2. 1. Conductivity-temperature-pressure sensors; Doppler current meters; bottom pressure recorders.

7. Explosives:

None

8. Detail and reference of:

a. Any relevant previous/future cruises:

<http://www.o-snap.org/research-cruises/>

- **OSNAP 1:** RRS James Clark Ross, cruise 302
 - May 31 – July 18, 2014
 - Chief scientists: Brian King and Penny Holliday (NOC)
 - Purpose: Hydrographic section across OSNAP West and East: temperature, salinity, oxygen, nutrients, carbon and CFCs.
 - Blog postings: ukosnap.wordpress.com
- **OSNAP 2:** R/V Knorr
 - June 16 – 30, 2014
 - Chief scientist: Brian Guest (WHOI)
 - Purpose: Deployment of sound sources and RAFOS floats
 - Map of OSNAP sound source locations ([See PDF](#))
- **OSNAP 3:** R/V CCGS Hudson, cruise 2014-017
 - June 30 – July 15, 2014
 - Chief scientist: Blair Greenan
 - Purpose: Improve understanding of ocean currents, variability and dispersion in the vicinity of Sackville Spur through the use of moored measurements and to validate computer model configurations
 - Cruise prospectus: ([See PDF](#))
- **OSNAP 4:** R/V Knorr
 - July 4 – 30, 2014
 - Chief scientist: Bill Johns (U. of Miami)
 - Purpose: Deployment of moorings, sound sources and RAFOS floats along OSNAP East
 - Cruise prospectus: ([See PDF](#))
- **OSNAP 5:** R/V Knorr

- August 3 – 31, 2014
- Chief scientist: Bob Pickart (WHOI)
- Purpose: Deployment of moorings, sound sources and RAFOS floats along OSNAP West

b. Any previous published research data relating to the proposed cruise:

This programme began in 2014 with the deployment of moorings. These data will be recovered in 2015. Preliminary shipboard measurements are reported in the programmes cruise reports. These are available at: <http://www.o-snap.org/research-cruises/> within 12months of the cruises listed under a) above.

9. Names and addresses of scientists of the coastal state in whose waters the proposed cruise takes place with whom previous contact has been made:

UK OSNAP Project Manager
 Dr Penny Holliday
 National Oceanography Centre
 Southampton
 UK
 SO14 3ZH

10. State:

a. Whether visits to the ship in port by scientist of the coastal state concerned will be acceptable:

Yes

b. Whether it will be acceptable to carry on board an observer from the coastal state for any part of the cruise and dates and ports of embarkation/-disembarkation:

This research cruise is led by Prof Cunningham from the Scottish Marine Institute and will also include ~5 other UK marine research scientists and technicians.

c. When research data from intended cruise is likely to be made available to the coastal state and if so, by what means:

In accordance with the provisions specified in the cruise prospectus and application for U.K. research clearance, the full data results from this experiment will be provided to the U.K. Foreign and Commonwealth Office according to the following schedule:

Shipboard Measurements

All shipboard measurements, including underway data records and CTD/LADCP station data in U.K. territorial waters, will be provided within 6 months of the termination of the cruise (January, 2016).

Moored Instrumentation

Time series data records from the moored instruments deployed in U.K. territorial waters will be provided within 2 years of recovery of the instruments.

COASTAL STATE: UK

SCIENTIFIC EQUIPMENT

11. Complete the following table - include a separate copy for each coastal state (indicate "Yes" or "No" if applicable)

Marine scientific equipment used	water depth (m)	fisheries research	distance of research to coast in nautical miles			
				< 3	3-12	12-50
Seabed mooring RTADCP2: Acoustic Doppler Current Profiler	400	No	47	No	Yes	No
Seabed mooring RTADCP1: Acoustic Doppler Current Profiler	750	No	51	No	No	Yes
Taught wire mooring from seabed to 100m RTEB1: 6 current meters; 8 conductivity-temperature-pressure sensors; 1 bottom pressure sensor	1800	No	57	No	No	Yes
Taught wire mooring from seabed to 100m RTWB2: 3 current meters; 3 conductivity-temperature-pressure sensors	1800	No	166	No	No	Yes
Taught wire mooring from seabed to 1000m RTWB1: 5 current meters; 8 conductivity-temperature-pressure sensors; 1 bottom pressure sensor	1600	No	178	No	No	Yes

