Cruise Prospectus

OSNAP "East" Cruise

R/V Neil Armstrong (July 1-30, 2018)

Description of Project: Nature and Objectives

The specific objectives of this cruise are as follows:

1. To perform mooring operations along the OSNAP East line between Scotland and Greenland, including servicing (recovery and redeployment) of 15 current meter moorings, recovery of two current meter moorings and 3 sound source moorings, and deployment of 4 additional current meter moorings.
2. To conduct standard CTD (Conductivity-Temperature-Depth) and Lowered ADCP (Acoustic Doppler Current Profiler) stations at selected sites along the same mooring line.
3. To recover and deploy ocean gliders, as needed, along the section.

This research is part of the U.S. led "Overturning in the Subpolar North Atlantic Program (OSNAP), an effort to determine the strength of the meridional overturning circulation and associated heat and freshwater fluxes in the subpolar North Atlantic. It is a collaborative program with scientists from several nations, including the U.K., the Netherlands, Germany, France, Canada, and China. Scientists from the U.S., the U.K., and the Netherlands will participate in this cruise.

The moorings to be deployed on this cruise are listed in Table 1, and the planned CTD/LADCP stations are listed in Table 2. The mooring locations and planned CTD/LADCP stations are also shown in the attached maps (Figs. 1 and 2). The cruise will depart from, and return to, Reykjavik, Iceland. The order of operations and exact cruise track will depend on weather conditions and other considerations at the time of the cruise.

All of the moorings to be serviced or deployed are taut-wire subsurface moorings. Most of them have multiple instruments, including internally-recording current meters and temperature/salinity/pressure recorders, while three of the moorings have low-frequency sound source used for tracking RAFOS floats that were deployed during the previous 4 years of the OSNAP program.. Ocean gliders are used to monitor the flow and water properties in part of the survey area (over the Rockall/Hatton Bank region), and one or more of these gliders may need to be replaced or redeployed during the cruise depending on their operational status at the time of the cruise.

Table 1. Moorings to be serviced (recovered and/or deployed)

Name Latitude Longitude Depth(m)

U.S. Mooring positions in the Iceland Basin:

M1 58° 52.330' N 30° 31.765' W 1710

D1 58° 44.810' N 30° 07.040' W 1740

D2 58° 32.010' N 29° 27.580' W 2513

D3 58° 18.320' N 28° 49.060' W 2180

M2 58° 02.210' N 28° 01.130' W 2370

D4 58° 00.600' N 26° 58.120' W 2680

D5 58° 00.350' N 25° 40.560' W 2705

Dutch Mooring positions in the eastern Irminger Basin:

IC0 59˚ 13.02’ N 35˚ 07.51’ W 2930

IC1 59˚ 06.26’ N 33˚ 41.20’ W 2494

IC2 59˚ 01.29’ N 32˚ 43.56’ W 1873

IC3 58˚ 57.40’ N 31˚ 57.08’ W 1633

IC4 58˚ 53.38’ N 31˚ 17.90’ W 1471

UK Mooring positions in Rockall Trough and Iceland Basin:

RTADCP1 57° 06.00' N 9° 20.30' W 800

RTEB1 57° 06.00' N 9° 33.78' W 1800

RTWB1 57° 28.20' N 12° 42.25' W 1600

RTWB2 57° 28.20' N 12° 18.60' W 1800

IB3 58° 00.80' N 24° 25.37' W 2850

IB4 57° 59.54' N 21° 08.45' W 2920

IB5 57° 46.02' N 19° 10.36' W 900 (exact location TBD)

WHOI Sound Source moorings:

SS-5 59° 02.33' N 34° 14.17' W 2565

SS-6 58° 01.26' N 27° 49.01' W 2344

SS-7 58° 00.50' N 22° 59.41' W 2991

Table 2. Proposed CTD/LADCP Stations

Sta. Latitude Longitude Depth (m)

1 56° 50.20' N 8° 20.00' W 120

2 56° 53.00' N 8° 30.00' W 125

3 56° 57.00' N 8° 47.00' W 125

4 57° 00.00' N 9° 00.00' W 135

5 57° 03.00' N 9° 13.00' W 350

6 57° 04.50' N 9° 19.00' W 500

7 57° 06.00' N 9° 25.00' W 1050

8 57° 09.00' N 9° 42.00' W 1900

9 57° 14.00' N 10° 03.00' W 2100

10 57° 18.00' N 10° 23.00' W 2300

11 57° 22.00' N 10° 40.00' W 2000

12 57° 24.00' N 10° 52.00' W 800

13 57° 27.00' N 11° 05.00' W 550

14 57° 28.06' N 11° 19.00' W 750

15 57° 29.00' N 11° 32.00' W 2020

16 57° 29.50' N 11° 51.00' W 1800

17 57° 30.50' N 12° 15.00' W 1817

18 57° 32.00' N 12° 38.00' W 1658

19 57° 32.50' N 12° 52.00' W 1000

20 57° 33.00' N 13° 00.00' W 330

21 57° 34.00' N 13° 20.00' W 210

22 57° 35.00' N 13° 38.00' W 130

23 57° 35.60' N 14° 15.96' W 195

24 57° 36.24' N 14° 54.00' W 470

25 57° 36.88' N 15° 31.94' W 1055

26 57° 37.44' N 16° 10.08' W 1170

27 57° 38.13' N 16° 47.92' W 1190

28 57° 38.80' N 17° 25.92' W 1220

29 57° 39.40' N 18° 04.00' W 1060

30 57° 40.00' N 18° 42.00' W 600

31 57° 43.80' N 19° 13.80' W 1050

32 57° 47.50' N 19° 45.00' W 1290

33 57° 50.11' N 20° 08.61' W 1700

34 57° 52.74' N 20° 29.82' W 2360

35 57° 54.88' N 20° 51.37' W 2600

36 57° 57.28' N 21° 12.12' W 2900

37 57° 57.60' N 21° 51.54' W 3000

38 57° 57.60' N 22° 30.96' W 3050

39 57° 57.60' N 23° 10.38' W 3050

40 57° 57.60' N 23° 49.80' W 2900

41 57° 57.60' N 24° 29.35' W 2850

42 57° 57.60' N 25° 07.14' W 2800

43 57° 57.60' N 25° 44.94' W 2700

44 57° 57.60' N 26° 22.74' W 2500

45 57° 57.60' N 27° 00.62' W 2680

46 57° 58.59' N 27° 33.97' W 2520

47 57° 59.70' N 28° 04.41' W 2370

48 58° 05.04' N 28° 20.56' W 2500

49 58° 10.42' N 28° 36.96' W 2300

50 58° 15.70' N 28° 53.06' W 2175

51 58° 20.09' N 29° 05.51' W 2300

52 58° 24.67' N 29° 18.86' W 2100

53 58° 29.40' N 29° 32.10' W 2510

54 58° 33.42' N 29° 44.10' W 2000

55 58° 37.60' N 29° 56.87' W 1850

56 58° 42.03' N 30° 10.31' W 1740

57 58° 45.73' N 30° 22.08' W 1570

58 58° 49.85' N 30° 34.76' W 1710

59 58° 50.19' N 30° 48.27' W 1400

60 58° 50.52' N 31° 02.26' W 1480

61 58° 50.92' N 31° 15.99' W 1470

62 58° 52.31' N 31° 29.68' W 1500

63 58° 53.69' N 31° 43.38' W 1570

64 58° 55.09' N 31° 57.08' W 1670

65 58° 56.65' N 32° 12.52' W 1800

66 58° 58.21' N 32° 27.95' W 1900

67 58° 59.68' N 32° 42.28' W 2040

68 59° 01.34' N 32° 58.85' W 2080

69 59° 02.90' N 33° 14.31' W 2140

70 59° 04.48' N 33° 29.78' W 2260

71 59° 06.04' N 33° 45.26' W 2390

72 59° 07.70' N 34° 01.12' W 2450

73 59° 09.35' N 34° 17.65' W 2600

74 59° 11.00' N 34° 33.85' W 2680

75 59° 12.66' N 34° 50.04' W 2760

76 59° 14.62' N 35° 06.91' W 2860

77 59° 15.97' N 35° 22.43' W 2950

78 59° 17.63' N 35° 38.63' W 3000



Figure 1. Mooring sites to be serviced (recovered and/or deployed) on the cruise..



Figure 2. Planned CTD/LADCP stations to be performed during the cruise.