Cruise Prospectus

OSNAP "East" Cruise

R/V Neil Armstrong (July 18 - Aug. 9, 2022)

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 the Iceland and Irminger basins, including servicing (recovery and redeployment) of 12 current meter moorings.
2. To conduct standard CTD (Conductivity-Temperature-Depth) and Lowered ADCP (Acoustic Doppler Current Profiler) stations at approximately 42 sites along the same mooring line.
3. To acquire continuous underway data (vessel-mounted ADCP data, meteorological data, and surface temperature and salinity data) along the cruise track, and to perform selected additional CTD stations along the cruise track.

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. 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. The CTD stations will include collection of salinity samples from Niskin bottles in order to calibrate the electronic conductivity sensors on the CTD package.

Table 1. Moorings to be serviced (recovered and 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

Table 2. Proposed CTD/LADCP Stations

Sta. Latitude Longitude Depth (m)

1 57° 57.60' N 24° 29.35' W 2850

2 57° 57.60' N 25° 07.14' W 2800

3 57° 57.60' N 25° 44.94' W 2700

4 57° 57.60' N 26° 04.45' W 2700

5 57° 57.60' N 26° 22.74' W 2500

6 57° 57.60' N 26° 42.49' W 2600

7 57° 57.60' N 27° 00.62' W 2680

8 57° 58.04' N 27° 17.90' W 2680

9 57° 58.59' N 27° 33.97' W 2520

10 57° 59.25' N 27° 50.44' W 2520

11 57° 59.70' N 28° 04.41' W 2370

12 58° 05.04' N 28° 20.56' W 2500

13 58° 10.42' N 28° 36.96' W 2300

14 58° 15.70' N 28° 53.06' W 2175

15 58° 20.09' N 29° 05.51' W 2300

16 58° 24.67' N 29° 18.86' W 2100

17 58° 29.40' N 29° 32.10' W 2510

18 58° 33.42' N 29° 44.10' W 2000

19 58° 37.60' N 29° 56.87' W 1850

20 58° 42.03' N 30° 10.31' W 1740

21 58° 45.73' N 30° 22.08' W 1570

22 58° 49.85' N 30° 34.76' W 1710

23 58° 50.19' N 30° 48.27' W 1400

24 58° 50.52' N 31° 02.26' W 1480

25 58° 50.92' N 31° 15.99' W 1470

26 58° 52.31' N 31° 29.68' W 1500

27 58° 53.69' N 31° 43.38' W 1570

28 58° 55.09' N 31° 57.08' W 1670

29 58° 56.65' N 32° 12.52' W 1800

30 58° 58.21' N 32° 27.95' W 1900

31 58° 59.68' N 32° 42.28' W 2040

32 59° 01.34' N 32° 58.85' W 2080

33 59° 02.90' N 33° 14.31' W 2140

34 59° 04.48' N 33° 29.78' W 2260

35 59° 06.04' N 33° 45.26' W 2390

36 59° 07.70' N 34° 01.12' W 2450

37 59° 09.35' N 34° 17.65' W 2600

38 59° 11.00' N 34° 33.85' W 2680

39 59° 12.66' N 34° 50.04' W 2760

40 59° 14.62' N 35° 06.91' W 2860

41 59° 15.97' N 35° 22.43' W 2950

42 59° 17.63' N 35° 38.63' W 3000

Chart, surface chart

Description automatically generated

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

Chart

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**Figure 2. Planned CTD/LADCP stations to be performed during the cruise, and proposed cruise track to and from Reykjavik, Iceland.**