

## APPLICATION FOR CONSENT TO CONDUCT MARINE SCIENTIFIC RESEARCH

### 1. General Information

1.1 Cruise name and/or number:	OOI Irminger Sea Array Deployment - F2014-017
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1.2 Sponsoring institution(s):		
Name	Address	Name of Director
National Science Foundation	Jean McGovern NSF OCE	TBD

1.3 Scientist in charge of the project:	
Name:	Robert Weller
Country:	US
Affiliation:	Woods Hole Oceanographic Institution
Address:	, Massachusetts US
Telephone:	508-289-2508
Email:	rweller@whoi.edu

1.4 Entity(ies) /Participant(s) from coastal State involved in the planning of the project:	
Name:	See Section 6.2.
Country:	
Affiliation:	
Address:	
Telephone:	
Fax:	
Email:	
Website (for CV and photo):	

### 2. Description of Project

2.1 Nature and objectives of the project:
The purpose of the cruise is to deploy four moorings and five gliders within the region bounded by 38°W and 41°W, 58°N and 61°N and to establish a long-term observing array. The bottom bathymetry will be surveyed to find the exact locations for each of the four moorings. The moorings will be deployed, and shipboard sampling (temperature, salinity profiles; water samples; shipboard meteorology; ocean currents, sea surface temperature and salinity) done. Three ocean gliders will be deployed that will sample in the vicinity of the moorings. The moorings and gliders would be recovered roughly one year later and a new set of moorings and gliders deployed at the same location.

2.2 Relevant previous or future research projects:
This is one of four global sites of the U.S. National Science Foundation Ocean Observatory Initiative (OOI). It will be maintained for ~25 years with annual cruises. This first cruise is the first of a series of cruises.

2.3 Previous publications relating to the project:
None

### 3. Geographical Areas

3.1 Indicate geographical areas in which the project is to be conducted (with reference in latitude and longitude, including coordinates of cruise track/ way points):
Southeast of Greenland, working within a box bounded roughly by 38°W and 41°W and by 58°N and 61°N

3.2 Attach chart(s) at an appropriate scale (1 page, high-resolution) showing the geographical areas of the intended work and, as far as practicable, the location and depth of sampling stations, the tracks of survey lines, and the locations of installations and equipment.
Chart provided - see Section 10.1.

### 4. Methods and Means to be Used

4.1 Particulars of vessel:
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Name:	KNORR
Type/Class:	Ship
Nationality (Flag state):	United States
Identification Number (IMO/Lloyds No.):	
Owner:	Office of Naval Research
Operator:	Woods Hole Oceanographic Institution
Overall length (meters):	281.00
Maximum draught (meters):	16.70
Displacement/Gross tonnage:	2518.00
Propulsion:	Two Lips diesel-electric azimuthing stern thrusters, 1500 SHP each
Cruising:	11.00
Maximum speed:	13.00
Call sign:	KCEJ
INMARSAT number and method and capability of communication (including emergency frequencies):	500/2182 kHz
Name of master:	Captain Sheasley
Number of crew:	24
Number of scientists on board:	16

4.2 Other craft in the project, including its use:  
none

4.3 Particulars of methods and scientific instruments:		
Types of samples and measurements	Methods to be used	Instruments to be used
Ocean glider borne instruments to collect ocean data.	Five gliders with sensors.	Glider ocean sensors, including current meters, temperature/salinity sensors, chemical sensors, biological sensors
Shipboard meteorology	Shipboard sensors	Wind speed and direction, air temperature, air humidity, barometric pressure, incoming shortwave radiation, incoming longwave radiation, rain.
Moorings	Four moorings: one surface mooring, one subsurface mooring with moving profiler, two taut subsurface moorings with fixed depth instruments	Surface buoy with meteorological sensors: wind velocity, air temperature, humidity, barometric pressure, rain, incoming shortwave radiation, incoming longwave radiation. Moored ocean sensors for velocity, temperature, salinity, oxygen, nutrients, pH, pCO <sub>2</sub> , spectral irradiance, optical and acoustical backscatter, optical absorption, chlorophyll, colored dissolved organic carbon (CDOM).
CTD profiles from ship	Lowered CTD (Conductivity-temperature-depth) instrument with water sampling bottles	CTD sensors: salinity, temperature, pressure, dissolved oxygen, chlorophyll. Water samples to be taken and analyzed for salinity, dissolved oxygen, chlorophyll, nutrients (nitrate, nitrite), dissolved inorganic carbon and alkalinity, and particulate organic carbon.

4.4 Indicate nature and quantity of substances to be released into the marine environment:  
No

4.5 Indicate whether drilling will be carried out. If yes, please specify:  
No

4.6 Indicate whether explosives will be used. If yes, please specify type and trade name, chemical content, depth of trade class and stowage, size, depth of detonation, frequency of detonation, and position in latitude and longitude:  
No

4.7 Indicate whether protected species be studied. If yes, please specify:  
No

## 5. Installations and Equipment

Details of installations and equipment (including dates of laying, servicing, method and anticipated timeframe for recovery, locations

and depth, and measurements):  
 yes  
 Four moorings and five gliders deployed during cruise. Exact positions pending bottom survey and coordination with other mooring deployments in the region. Plan at this time this positions, which need to be confirmed by bottom survey at time of deployment: deploy surface mooring 12 Sept 2014 at 59.9397°N, 39.5213°W; deploy profiling mooring 13 Sept 2014 at 59.9723°N, 39.4685°W; deploy flanking mooring 1 14 Sept 2014 at 59.7166°N, 39.3362°W; deploy flanking mooring 2 15 Sept 2014 at 59.7694°N, 39.8621°W. Deploy 2 gliders near surface mooring ~16 Sept 2014. Deploy additional 3 gliders in area near the four moorings ~17 Sept 2014. Depths of mooring sites ~2800m. Recovery planned one year later, at which time four fresh moorings and five fresh gliders would be deployed.

6. Dates

6.1 Expected dates of first entry into and final departure from the research area by the research vessel and/or other platforms:  
 Project Start Date: Sep 05, 2014  
 Project End Date: Sep 26, 2014

6.2 Coastal State-specific details:		
Coastal Area	Estimated Entry Date	Estimated Departure Date
Greenland	Sep 08, 2014	Sep 23, 2014
<b>Explanation of multiple entries:</b> N/A		
<b>Research will be performed:</b> between 12-200 nm		
<b>Extent to which Greenland will be enabled to participate or to be represented in the research project:</b> A participant is welcome to join cruise.		
<b>Name, affiliation and contact information for all participants from coastal state Greenland:</b>		
Coastal Area	Estimated Entry Date	Estimated Departure Date
Iceland	Sep 05, 2014	Sep 06, 2014
<b>Explanation of multiple entries:</b> N/A		
<b>Research will be performed:</b> between 12-200 nm		
<b>Extent to which Iceland will be enabled to participate or to be represented in the research project:</b> Volunteer participants welcomed. No extra ship time available for stations or sampling.		
<b>Name, affiliation and contact information for all participants from coastal state Iceland:</b>		

7. Port Calls

No port calls

8. Participation of the representative of the coastal State

8.1 Modalities of the participation of the representative of the coastal State in the research project:  
 See Section 6.2.

8.2 Proposed dates and ports for embarkation/disembarkation:  
 See Section 6.2.

9. Access to Data, Samples and Research Results

9.1 Expected dates of submission to coastal State of preliminary report, which should include the expected dates of submission of the data and research results:  
 No more than 60 days from the end date of the research as provided in Section 6.1.

9.2 Anticipated dates of submission to the coastal State of the final report:  
 No more than 2 years from the end date of the research as provided in Section 6.1.

9.3 Proposed means for access by coastal State to data (including format) and samples:  
 Data will be provided through official channels at no cost to the coastal State(s). Samples will be provided upon request.

9.4 Proposed means to provide coastal State with assessment of data, samples and research results:  
 Assessment of data, samples and research results will be provided at no cost to the coastal State(s).

9.5 Proposed means to provide assistance in assessment or interpretation of data, samples and research results: Assistance in further assessment or interpretation will be provided upon request.
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9.6 Proposed means of making results internationally available: Cruise data and data from the moorings and gliders will be freely shared via the OOI Cyberinfrastructure (CI) component and the OOI website.
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10. List of Supporting Documentation

10.1 List of attachments, such as additional forms required by the coastal State, etc.:			
Attachment Type	Description	Attachment	Submission Date
Proposed Cruise Track	Proposed cruise track, Reykjavik to Woods Hole. Area of work and region where four moorings and five gliders will be deployed marked by red square.	4226875000_OOI_Irminger_cruise_track.pdf	Dec 01, 2013



US Dept of State Geographer  
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Image Landsat  
Data SIO, NOAA, U.S. Navy, NGA, GEBCO