

Rédigé le 17/12/2015

CAMPAGNE OcéANOGRAPHIQUE / OcéANOGRAPHIC CRUISE

SUR LE N/O L'ATALANTE

Demande d'autorisation de travaux de recherche scientifique dans la zone économique exclusive sous juridiction d'Irlande

Application for consent to conduct marine scientific research in Ireland exclusive economic zone

**Le chef de mission doit adresser ce document :
The chief scientist must send this application to:**

prog-ums@flotteoceanographique.fr

Les quatre opérateurs français de flotte (CNRS, Ifremer, IPEV, IRD), sous la tutelle du ministère chargé de la Recherche, ont décidé de créer le 1^{er} janvier 2011, une **unité mixte de service** intitulée **UMS FOF** (Flotte océanographique française).

Cette structure opérationnelle a principalement pour vocation à :

- élaborer et à mettre en oeuvre la programmation intégrée des navires et des équipements lourds,
- assurer la prospective, la définition et la coordination du plan d'évolution de la flotte, en prenant en compte les besoins des opérateurs nationaux publics non membres de l'UMS (TAAF, Marine nationale),
- coordonner leurs politiques d'investissement.

A la panoplie complète de navires hauturiers et d'engins sous-marins qui permettent l'accès à tous les océans et mers du globe (océan Atlantique, mer Méditerranée, océan Pacifique, océan Indien sud, océan Austral, hors zone polaire) s'ajoutent des navires côtiers et de stations permettant d'assurer un continuum avec les zones côtières et littorales.

Four French research vessel operators (CNRS, IFREMER, IPEV, IRD), under the supervision of the National Research and Education Ministry, have created on the 1st March 2011, a single fleet administration entity in a form of a Unité Mixte de Service (Combined Unit Service - UMS). The UMS has been created on March 03rd 2011.

This operational entity aims at:

- *Create and implement the integrated programming of the fleet vessels and equipments*
- *Elaborate a prospective work, fix and coordinate a fleet evolution scheme on a national level*
- *Coordinate the institutes fleet investment policy*

The fleet gathers ocean going vessels and their associated major mobile equipment (all ocean but ice covered) together with coastal vessels and station vessel, for a continuous investigation capacity from shore to offshore.

INFORMATION GÉNÉRALE GENERAL INFORMATION

Institution responsable / *Institution in charge*

Nom / *Name*: IFREMER
Adresse / *Address*: Siège social : Technopolis 40
155, rue Jean-Jacques Rousseau - 92138 Issy les Moulineaux -
France
Téléphone / *Phone*: 33 (0)1.46.48.21.00
Fax: 33 (0)1.46.48.22.48
Directeur / *Director*: François Jacq

Personne en charge de cette demande / *Person in charge of the project*

Nom / *Name*: Sylvie VAN ISEGHEM
Adresse / *Address*: Ifremer Centre de Brest – Secteur Programmation Flotte
B.P. 70 - 29280 Plouzané
Téléphone / *Phone*: 02 98 22 49 25
Fax: 02 98 22 44 55
Email: svaniseg@ifremer.fr

Scientifique en charge du projet / *Scientist in charge of the project*

Nom / *Name*: Prof. Mary Elliot
Adresse / *Address*: Université de Nantes, LPG, 2 rue de la Houssiniere, 44300 Nantes
Téléphone / *Phone*: 02 51 12 52 96
Fax:
Email: Mary.elliott@univ-nantes.fr

Collaboration avec le pays concerné / *Collaboration with relevant country*

Nom / *Name*: Dr. Audrey Morley
Adresse / *Address*: School of Geography and Archaeology, National University of Ireland,
Galway
Téléphone / *Phone*: +353-(0)91 49 4104
Fax: +353-(0)91 49 5505
Email: audrey.morley@nuigalway.ie

DESCRIPTION DU PROJET PROJECT DESCRIPTION

Nature et objectifs du projet / Nature and objectives of the project

This project aims to conduct multiproxy study (sedimentology, biology and geochemical measurements on fossil material) in order to reconstruct changes in reef growth and associated changes in environmental conditions (ocean circulation, sea surface hydrology, temperature) mainly during the Holocene period. We aim to reconstruct past changes in the hydrology of surface and subsurface waters with unprecedented temporal resolutions from 2 distinct water depths. This highly novel project will be conducted by an experienced researchers all with international recognition.

The cruise will take place on the *Atalante* in the North Atlantic region. Our studied sites are located 1) offshore Scotland (Mingulay) and 2) on the Rockall Plateau (Logachev). Mingulay cold water coral reef mound is located in the Sea of Hebrides off the West coast of Scotland. Colonies of live cold water corals (*L. pertusa*) are found between 100-150m water depth. The Logachev reef is deeper, around 750m water depth, where colonies of *L. pertusa* and *M. acculata* can be found.

Campagne(s) antérieure(s) ou future(s) sur un sujet similaire / Relevant previous or future research cruises

Past cruise : MICROSYSTEMS (Microbial Diversity and Functionality in Cold-Water Coral Reef Ecosystems), European Science Foundation EUROCORES EuroDIVERSITY Project

PIs :

-Blamart Dominique, Laboratoire des Sciences du Climat et de l'Environnement, CEA-CNRS-UVSQ, Gif sur Yvette, France

-VanRooi David, Department of Geology and Soil Sciences Ghent University

Travaux de recherches déjà publiés par l'équipe scientifique sur ce sujet / Previously published research date related to the project

Colin, C., Frank, N., Copard, K. and Douville, E., 2010. Neodymium isotopic composition of deep-sea corals from the NE Atlantic: implications for past hydrological changes during the Holocene. *Quaternary Science Reviews*, 29(19-20): 2509-2517.

Copard, K., Colin, C., Douville, E., Freiwalde, A., Gudmundsson, G., De Mol, B., Frank N., 2010. Nd isotopes in deep-sea corals in the North-eastern Atlantic, *Quaternary Science Reviews*, 29, 2499-2508.

Copard, K., Colin, C., Henderson, G.M., Scholten, J., Douville, E., Sicre, M.A., Frank, N., 2012. Late Holocene intermediate water variability in the northeastern Atlantic as recorded by deep-sea corals. *Earth Planet. Sci. Lett.* 313-314, 34-44.

Douarin, M., Elliot, M., Noble, S.R., Moreton, S.G., Long, D., Sinclair, D., Henry, L.-H., Roberts, J.M., (in prep) Holocene North Atlantic Meridional Overturning Circulation Changes and Ecosystem Vulnerability

Douarin, M., Elliot, M., Noble, S. R., Sinclair, D., Henry, L.-A., Long, D., ... Murray Roberts, J. (2013). Growth of north-east Atlantic cold-water coral reefs and mounds during the Holocene: A high resolution U-series and ¹⁴C chronology. *Earth and Planetary Science Letters*, 375, 176–187.

Douarin, M., Sinclair, D. J., Elliot, M., Henry, L.-A., Long, D., Mitchison, F., & Roberts, J. M. (2014). Changes in fossil assemblage in sediment cores from Mingulay Reef Complex (NE Atlantic): Implications for coral reef build-up. *Deep-Sea Research Part II: Topical Studies in Oceanography*.

Frank, N., Freiwald, A., Lopez Correa, M., Wienberg, C., Eisele, M., Hebbeln, D., Van Rooij, D., Henriët, J.-P., Colin, C., van Weering, T., de Haas, H., Buhl-Mortensen, P., Roberts, J.M., De Mol, B., Douville, E., Blamart, D., Hatte, C., 2011. Northeastern Atlantic cold-water coral reefs and climate. *Geology* 39, 743-746.

Frank, N., Paterne, M., Ayliffe, L., van Weering, T., Henriët, J.-P., Blamart, D., 2004. Eastern North Atlantic deep-sea corals: tracing upper intermediate water D¹⁴C during the Holocene. *Earth and Planetary Science Letters* 219, 297-309.

Frank, N., Ricard, E., Lutringer-Paquet, A., Van der Land, C., Colin, C., Blamart, D., Foubert, A., Van Rooij, D., Henriot, J.-P., de Haas, H., Van Weering, T.C.E., 2009. The Holocene occurrence of cold water corals in the NE Atlantic: Implications for coral carbonate mound evolution. *Marine Geology* 266, 129-142.

Roberts, J.M., Brown, C.J., Long, D., Bates, C.R., 2005. Acoustic mapping using a multibeam echosounder reveals cold-water coral reefs and surrounding habitats. *Coral Reefs* 24, 654-669.

Roberts, J.M., Wheeler, A.J., Freiwald, A., 2006. *Reefs of the Deep: The Biology and Geology of Cold-Water Coral Ecosystems*. Science 312, 543-546.

Roberts, J.M., Wheeler, A.J., Freiwald, A., Cairns, S., 2009. *Cold-Water Corals The Biology and Geology of Deep-sea Coral Habitats*. Cambridge University Press.

Préciser le niveau d'implication du pays concerné dans la présente demande

Please indicate the level of implication of the concerned country in this request

Dr Audrey Morley will participate to the cruise and will be a collaborate with the French and UK research groups.

DESCRIPTIF DU NAVIRE DESCRIPTIVE OF THE VESSEL

Name : *L'Atalante*
Nationality : French
Owner : Ifremer
Operator : Genavir
Load displacement : 3 550 t
Overall length : 84,60 m
Maximum draught : 5,1 m
Gross tonnage : 3 559 UMS
Propulsion : Diesel electric
Average operating cruising speed and survey speed: 11 knots
Call sign : FNCM
IMO: 8716071

Method and capability of communication (including telex, frequencies) :

GSM : 33.6.82.81.38.16 (bridge) - 06.82.81.37.89 (captain) -
Fax : 33.6.29.36.97.41

Inmarsat : Tel : 00.870.773.160.305 or 00.870.3.227.222.52 (std. auto)
Fax : 00.870.783.180.644 (bridge) or 00.870.3.227.222.60

Vsat : Tel : 33.2.29.00.85.70
Fax : 33.2.29.00.85.71

Telex : Inmarsat C1 : 058x.4.227.222.14 - Inmarsat C2 : 058x.3.227.222.15
(*Atlantic East : 0581 ; Atlantic West : 0584 ; Pacific : 0582 ; Indian ocean : 0583*)

Email : AT.Commandant@atalante.ifremer.fr

Email Telex C1 : AtalanteC1@skyfile-c.com

Email Telex C2 : AtalanteC2@skyfile-c.com

Name of master :
Number of crew : 30
Number of scientists on board :

MÉTHODES ET MOYENS UTILISÉS METHODS AND INSTRUMENTS USED

Engin aérien ou autre appareil utilisé dans le projet / Aircraft or other craft to be used in the project

N/A

Particularités des méthodes utilisées et instruments scientifiques / Particulars of methods and scientific instruments

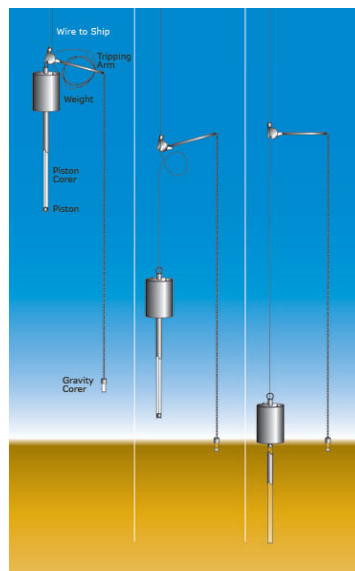
Types d'échantillons et de données <i>Types of samples and data</i>	Méthodes utilisées <i>Methods to be used</i>	Instruments utilisés <i>Instruments to be used</i>
Underwater screening	Underwater Video system (Mohave ROV)	Underwater Video system (Mohave ROV)
Water sampling	No measurements on board (just storage)	
Sediment collection	coring	Calypso (Gravity and piston corer)

Indiquer s'il est prévu d'utiliser des substances toxiques / Indicates whether harmful substances will be used

No

Indiquer s'il est prévu de réaliser des forages / Indicate whether drilling will be carried out

We will be sampling sediments. We will not drilling but we use a sediment piston or gravity corer. The piston or gravity corer is a long, heavy tube which is plunged into the seafloor to extract samples of mud sediment. In the case of a piston core, the piston inside the tube allows scientists to longer samples, during our cruise the maximum length of piston coring will be 24 meters. See figure below:



Détail des installations et équipements (dates de mise en place, de services, de dépose, localisations exactes, avec la profondeur) / Details of installations and equipments (dates of laying, servicing, recovery, exact locations and depth)

No

ACCÈS AUX DONNÉES, ÉCHANTILLONS ET RÉSULTATS ACCESS TO DATA, SAMPLES AND RESEARCH RESULTS

Dates prévues pour la remise aux responsables du PAYS_CONCERNE du rapport préliminaire, qui devrait inclure les dates prévues de remise des résultats définitifs

Expected dates of submission to relevant country of preliminary reports which should include the expected dates of submission of the final results

November 2015 (6 months after the end of the cruise)

Moyens proposés pour assurer l'accès aux données par les scientifiques du PAYS_CONCERNE.

Proposed means for access by national scientists to data and samples

Data will be made available via the standard web sites (NOAA Paleoclimatology):
www.ncdc.noaa.gov/paleo/wdc-paleo.html)

Moyens proposés pour la diffusion internationale des résultats de la recherche

Proposed means of making research internationally available

Data will be presented in national and international conferences, workshops. Within a 3 year time frame the data collected will be published in high ranking journals.

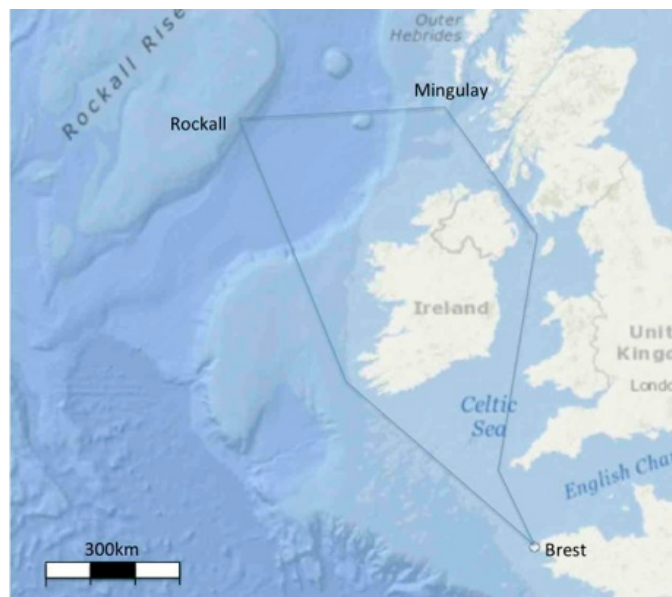
ZONES GÉOGRAPHIQUES GEOGRAPHICAL AERAS

Indiquer les zones géographiques dans lesquelles le projet doit être conduit (avec référence aux latitudes, longitudes et sondes) / Indicate geographical areas in which the project is to be conducted (with indication of latitude and longitude and water depth)

Operations	Latitude	Longitude	Profondeur Water depth
Rockall	55°31'17N	15°39'08W	750 meters
Mingulay	56°49'25"	7°24'15"	230 meters

Annexer une (des) carte(s) à une échelle appropriée montrant les zones géographiques du travail proposé et, autant que possible, la position des stations prévues, le tracé des profils et la localisation des mouillages et observatoires éventuels (préciser la durée)

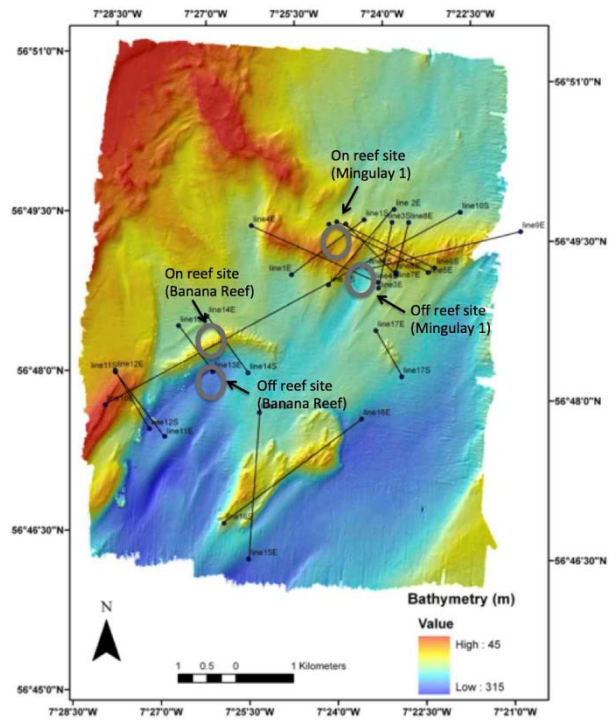
Attach chart(s) at an appropriate scale showing the geographical areas of the intended work and, if possible, the positions of intended stations, the line tracks and locations of moorings and possible observatories (indicate the duration)



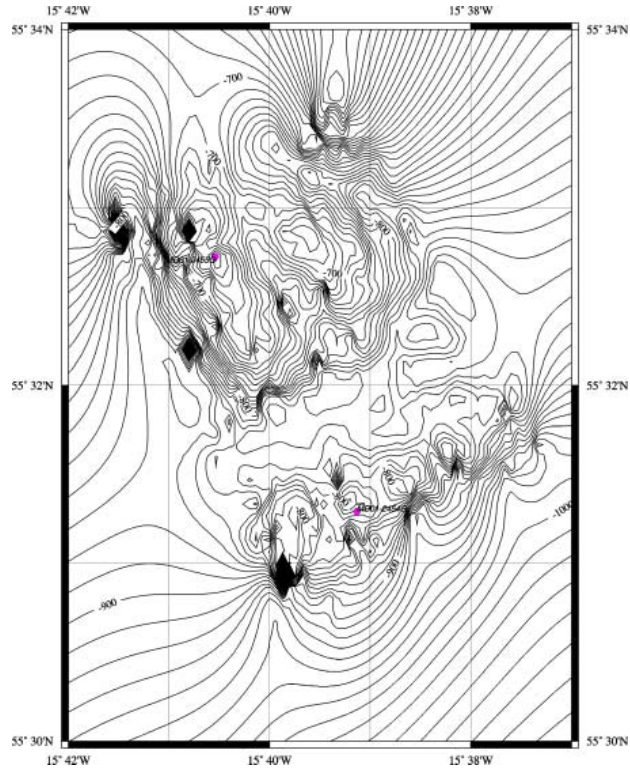
Map with localities of the 2 study areas



Detailed map of Mingulay (1/2)



Detailed map of Mingulay (2/2)



Detailed map of Rockall (1/1)

DATES

Chronologie de la campagne, dont escales / *chronology of the cruise, including port calls*

Jour day	Port Embarquement/Débarquement/Escale <i>Embarking/Disembarking/Call</i>	Date de départ <i>Date of departure</i>	Date d'arrivée <i>Date of arrival</i>
J1	Brest (embark)	21/06/2016	
J2	Transit) Brest to Rockall	21/06/2016	22/06/2016
J5	Rockall to Mingulay	25/06/2016	26/06/2016
J10	Mingulay to Galway ?	30/06/2016	1/07/2016
J11	Galway (disembark)	1/07/2016	

Dates prévues pour la première entrée et du départ final de la zone de recherche par le navire océanographique / *Expected dates of first entry into and final departure from the studied area of the research vessel*

However, these expected dates are subject to slight changes in case of bad weather, unexpected material issues or cruise schedule modifications. As a consequence, we request authorization for the entire period of the cruise:

Date d'entrée / Date of entry	15/06/2016
Date de sortie / Date of departure	05/07/2016

Indiquer si des entrées multiples sont prévues / *Indicate if multiple entry is expected*

NO

PORTS D'ESCALE PORTS CALLS

Pour chaque port d'escale du pays concerné préciser / For each port-call of concerned country please indicate

Nom du port <i>Name of the port</i>	Demande logistique faite à ce port <i>Any special logistical requirements at port of call</i>
Brest	Aucune. Embarquement de scientifiques «Nationalité» et d'éventuels observateurs. <i>None – «Nationalité» scientists boarding and eventually observers.</i>
Galway	<i>None – «Nationalité» scientists boarding and eventually observers.</i>

Coordonnées de l'agent maritime / *Contact of the Maritime Agent*

PARTICIPATION

Niveau d'implication du pays concerné dans la participation ou la représentation dans le projet de recherche / *Extent of which the country will be enabled to participate or to be represented in the research project*

We are collaborating with Dr Audrey Morley who is a Lecturer at the School of Geography and Archaeology at the National University of Ireland, Galway. Audrey Morley will be embarking with us during the cruise and will participate actively in the research projects that will be conducted on the material collected.

NB : Sur demande des autorités du « pays concerné » un observateur pourra être embarqué pendant la durée des travaux

NB: On request of the concerned authorities, a observer will be embark on board during the cruise.

EQUIPE SCIENTIFIQUE ET TECHNIQUE*
SCIENTIFIC AND TECHNICAL STAFF

Nom <i>Surname</i>	Prénom <i>First name</i>	Nationalité <i>Nationality</i>	Fonction <i>Position</i>	Organisme <i>Organism</i>
Elliot	Mary	British	Professor	Univ- Nantes
Douarin	Melanie	French	Doctor (post doc)	Univ- Nantes
Guivel	Christel	French	Lecturer	Univ-Nantes
Morley	Audrey	Irish	Lecturer	National University of Ireland
Roberts	Murray	British	Professor	Heriot Watt University
Howe	John	British	Professor	SAMS
Colin	Christophe	French	Professor	Univ-Orsay
Dubois-dauphin	Quentin	French	PhD student	Univ-Orsay
Dewilde	Fabien	French	Technician	LSCE
Thuillier	Doris	French	Technician	LSCE
Tisnérat-Laborde	Nadine	French	Senior Researcher	LSCE
Douville	Eric	French	Senior Researcher	LSCE
Michel	Elisabeth	French	Senior Researcher	LSCE
Master student				
Master student				
Master Student				

*liste connue à ce jour et pouvant évoluer
The list will be updated 2 months prior the cruise.