



EUROFLEETS+ Project

INTAROS Research Infrastructures Dialog meeting

Aodhán Fitzgerald, Project Coordinator

This project has received funding
from the EU H2020 research and
innovation programme under
Grant Agreement No 824077





42 Partners
9.9M € Budget



27 Research Vessels, 7 ROVs, 5 AUV's and 1 Mobile telepresence unit



Coordinator:
Marine Institute



Duration: 48 Months
2019 -2023



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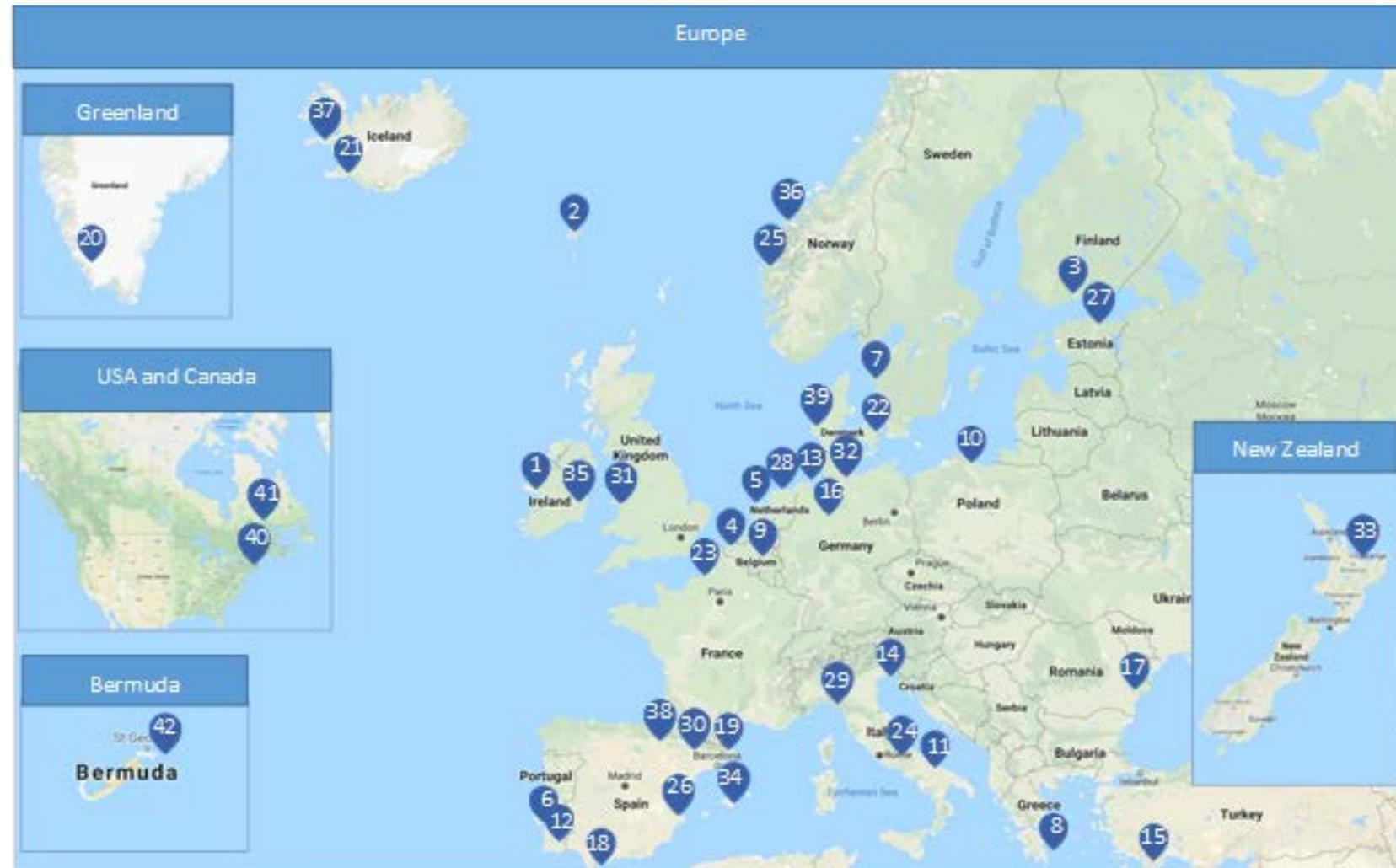


97 Deliverables
25 Milestones



Eurofleets+

An alliance of European marine research infrastructure to meet the evolving needs of the research and industrial communities



Infrastructures' Locations

North Atlantic, Baltic, Black, Mediterranean, Pacific
Southern Ocean, North Sea & Ross Sea



Eurofleets+ Project Progression



Eurofleets 2009-2013

- FP7
- 5 Ocean Research Vessels
- 14 Regional Vessels
- 24 Partners
- Funding of €7.2 m



Eurofleets2 2013-2017

- FP7
- 22 Research Vessels (8 Global Ocean RV, 14 Regional)
- 31 Partners
- Funding of €9m



Eurofleets+ 2019-2023

- H2020
- 27 research vessels (13 Global/Ocean and 14 Regional), 7 ROVs, 5 AUVs, and a telepresence unit
- 42 Partners
- Funding of €9.2 m



Eurofleets Beyond 2023...

- Horizon Europe participation
- Eurofleets as an Entity
- Established Full time Coordination office

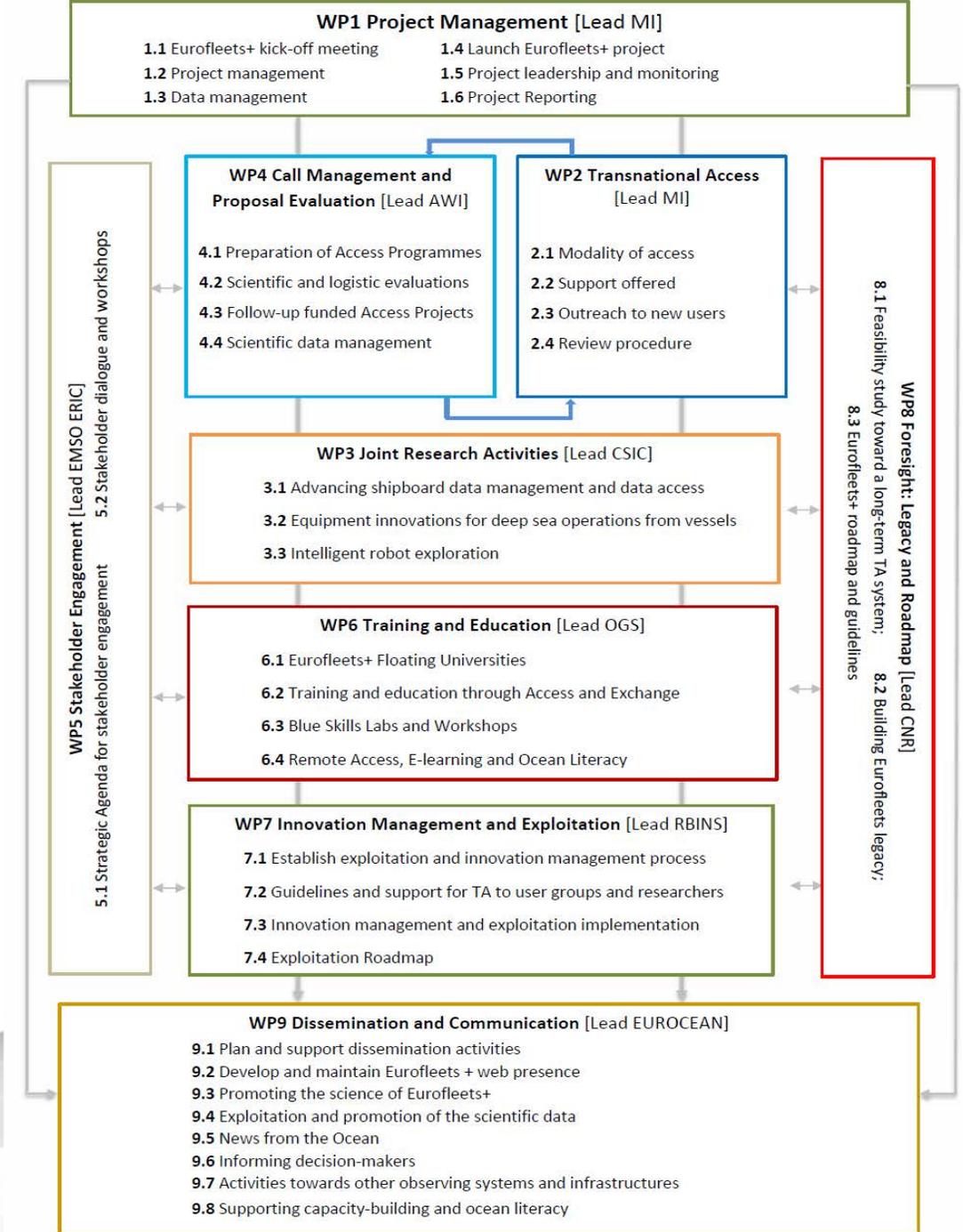
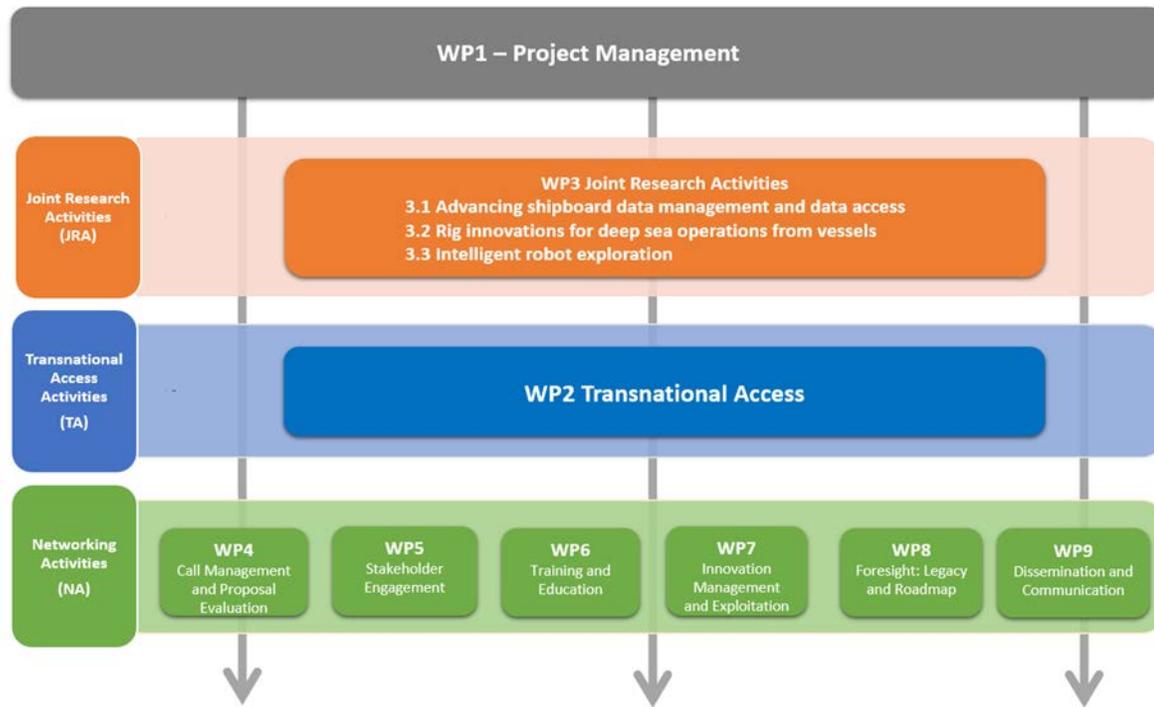
European Research Vessels Operators (ERVO) 1999-Present



Eurofleets+ Project Overview

Call: Integrating and opening existing national and regional research infrastructures of European interest (INFRAIA Call H2020 2018)

Topic: Integrating Activities for Advanced Communities



Eurofleets+ Provisional Transnational Study Locations 2020-2022



 Eurofleets+ TA 2022

 Eurofleets+ TA 2021

 Eurofleets+ TA 2020

2022	
Vessel Name	Location
Pelagia	Alboran or Balearic Sea
Tangaroa	East coast of North Island, New Zealand
Sanna	Godhabfjord, Ameralik fjord and the shelf area connecting these fjords in Nuuk, Greenland
Sarmiento de Gamboa	Northeast Atlantic, Western Iberian Margin.
Laura Bassi	Hillary Canyon, Ross Sea, Antarctica
Atlantic Explorer	Gulf Stream (NW Atlantic)

2021	
Vessel Name	Location
Arni Friedrikson	North Western Iceland
DANA	Bredefjord, Greenland. Easily accessible (embark/disembark) from Narsaq, Greenland
Celtic Explorer	NE Atlantic (S Rockall Plateau; Eriador Seamount; Porcupine Basin & Ridge; East Thulean Rise)
GO Sars_Aegir	Denmark Strait, between 64 and 68.5°N.
Sanna	Disco Bay, West Greenland coastline
Thalassa_Ariane	SE Alboran Sea (W Mediterranean)
Mare Nigrum	Danube Fan, 44°20' N, 30°39' E / 43°59' N, 31°20' E
Aranda	Gulf of Finland, Baltic Proper (Gotland Deep is the southernmost area).
Tubitak Marmara	Western Black Sea
SOCIB	Mallorca and Cabrera islands
Belgica II	Ceuta Canyon and adjacent areas (West Moroccan Mediterranean margin). Shelf and slope environments.
Aegeo	Eastern Mediterranean, SW Aegean Sea, Myrtoon Basin

2020 UGOT Hugin AUV/RV Tangaroa





EUROFLEETS+ Objectives IMPACTS

Objectives

- Transnational Access
Applications: Priority given to research on **sustainable, clean** and **healthy oceans**
- **Linking** with existing **ocean observation infrastructures**
- Support **innovation** through working closely with industry
- **Training & Education** – emerging scientists, technicians
- **Stakeholder** Engagement & Legacy **Road Map**

Impacts

- Wider, simplified & more efficient **access** to the **best** research infrastructures irrespective of location
- Access to new of more **advanced research infrastructure** services enabling leading edge research
- **Foster** innovation through reinforced **partnerships** between research institutes and industry
- Development of **synergies** and **complimentary capabilities** across related research infrastructures leading to economies of scale through **optimization** of operations
- **Education** of the **next generation** of researchers so that they are ready to optimally exploit all of the tools essential for their research
- Better management of the **continuous flow of data** collected or produced by the facilities

Eurofleets+ Ice class vessels	Country	Operator	Area of Operation	Ice Class	
	RV CELTIC EXPLORER	Ireland	Marine Institute	North Atlantic in the area 40-80N, 35W to 10E & on a case by case basis depending on annual operational plan.	1 D +Polar Code(2020)
	RV Laura Bassi	Italy	OGS	Antarctica (Ross Sea & surrounding areas), Indian Ocean, Arctic Sea and Mediterranean Sea	ICE05, Icebreaker
	RV SARMIENTO DE GAMBOA	Spain	CSIC	North Atlantic on a case by case basis depending on annual operational plan.	Polar Code 2018 (C class)
	RV G.O. SARS	Norway	HAVFO	North Sea, Norwegian Sea and Barents Sea	ICE C
	RV THALASSA	France	IFREMER	North Atlantic and Mediterranean Sea in the area 10-60 N, 40W-35E and on a case by case basis depending on annual operation plan.	Ice II + Polar Code
	RV DANA	Denmark	DTU	North Sea, Skagerak, Kattegat, Bothnian Sea, North Atlantic Ocean	Ice – 1A* (PC-C on request)
	RV ARNI FREIDRICKSON	Iceland	HAFRA	North Atlantic in the area 50 – 70N, 30 – 10W	LR 1B

Eurofleets+ Ice class vessels	Country	Operator	Area of Operation	Ice Class	
	RV BELGICA II	Belgium	RBINS	North Atlantic Ocean, North Sea, Mediterranean Sea, Black Sea, Baltic Sea	DNV-GL ICE-1
	RV SKAGERAK	Sweden	UGOT		Fin-Swe 1B
	RV ARANDA	Finland	SYKE	The Baltic Sea, from N 53° to N66°, and E 10° to E30°, all conditions and seasons. Oceans with no restrictions, Polar areas in spring, summer and fall.	Ice 1A*, PC6 or 7 in 2020.
	RV MAGNUS HEINASON	Faroe Islands	HAVST	North Atlantic in the area 55-70°N, 25°W-5°E	DNVGL ICE-C
	RV Jákup Sverri	Faroe Islands	HAVST	North Atlantic in the area 55-70°N, 25°W-5°E	BV ICE, Polar Cat-C
	RV SANNA	Greenland	Greenland Institute of Natural Resources	Coastal area in West Greenland.	Polar Code B



Arctic Region Research Cruise

Increased demand for Arctic Region Research cruise Applications Across both the Eurofleets+ Transnational Access Programme and demand for RV Celtic Explorer

- **RV Celtic Explorer: CIAAN NUI Galway 2021** (Constraining the Impact of Arctic Amplification in the Nordic Sea: A biogeochemical approach)
- August/September 24 Days
- Additional cruise scheduled for 2022





Overview of present and future plans in the region

Eurofleets+ Oceans & Regional Call

Eurofleets 2 Polar & Sub Polar Call

- 2013 6 proposals
- 4 funded
- 22 days at sea

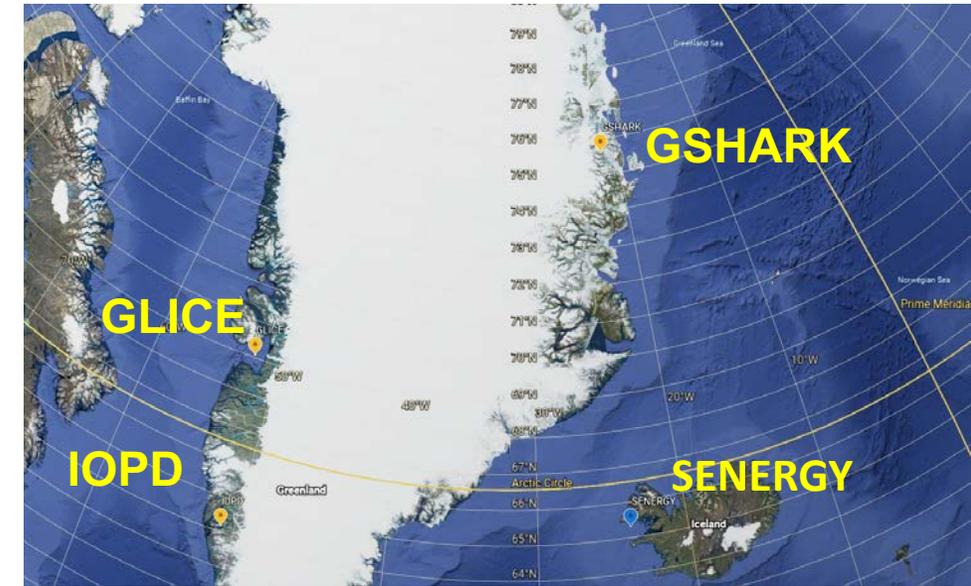
- 34 Applications
- 24% (8) Applications in Ocean call to work in or near the Arctic Region
- 3 Funded Oceans
- 1 Regional Funded
- 41 Days





Eurofleets+ Funded Planned Cruises in Arctic Region 2021-2023

Vessel	Cruise Name	Study Area	Location
Arni Friedrikson 2021	SENERGY	Marine Biology	North Western Iceland (64/65n)
DANA 2021	GSHARK	Marine Biology	Bredefjord, Greenland. Easily accessible (embark/disembark) from Narsaq, Greenland 75n
Sanna 2023	GLICE	Biological Oceanography Biogeochemistry Physical Oceanography	Disko Bay, West Greenland coastline 69/70n
Sanna 2022	IOPD	Biogeochemistry Climate dynamics New technologies Marine Biology Polar Biology Training	Godhabfjord, Ameralik fjord and the shelf area connecting these fjords in Nuuk, Greenland 64n





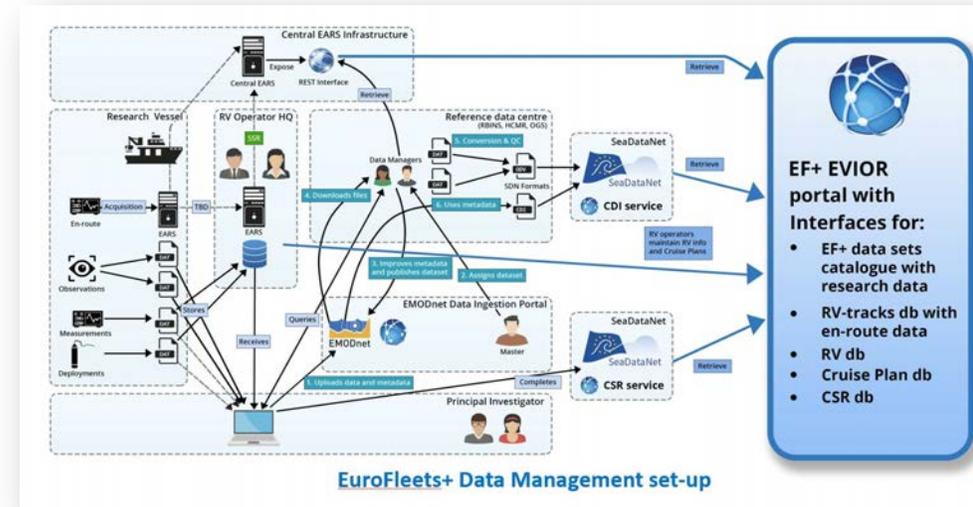
Data Management

Connectivity

- Vessel based so no major differences apart from satellite comms (>80n)
- VSAT installed on majority of vessels working in the region

Data Management of Funded Eurofleets+ Research Cruises:

- Eurofleets+ Data Management Policy for funded cruises is subject to the FAIR data Principles
- Information regarding a cruise must be provided as follows:
 - Metadata of the cruise (SeaDataNet Cruise Summary Report): within two weeks after the cruise
 - Metadata of the datasets of the cruise: within one month after the cruise
 - en-route data: via EARS, delayed mode
 - CTD data: within two months
 - "manual" data, e.g. sample-based: two months, but at the latest before M45 (01/11/2022).
 - embargo: optional, up to two years after the cruise, justified in the DMP



An active open data management strategy to capture and publish EF+ TA cruises with research data collected underway and processed afterwards



Technology Development

Certification (polar code) Eurofleets2 Deliverable No.32 2015

Region	Polar Code Category	IACS Class	Ship Name	Picture	Country	Length	Built year	Operator	Ice Class	Research Equipment	Operating area	Major Refit	Supply Station	
EUROPE	B	PC6 to PC7	<u>Aranda</u>		Finland	59,2	1989	Finnish Env. Insti.	1A Super	100/100	Arctic		No	
			Helmer Hanssen		Norway	64	1988	University of Tromso	Dnv 1A	100/100	Arctic	1992	No	
			Lance		Norway	61	1978	Norwegian Polar Ins.	Dnv 1A	100/100	Antarctic	Arctic		No
			Maria S Merian		Germany	95	2005	IOW_Warmermunde	PC 7	100/100		Arctic		No
			<u>Sanna</u>		Greenland	32,3	2012	GINR	Ice 1A	100/100		Arctic		No
EUROPE	C	ICE CLASSIFIED	<u>Arni Fridriksson</u>		Iceland	69,9	2000	MRI	1B	100/100	Arctic		No	
			<u>Dana</u>		Denmark	78	1981	DTU Aqua	1C	100/100		Arctic	1992	No
			Ernest Shackleton		UK	80	1995	BAS	DNV: ICE05	25/100	Antarctic		2001	Yes
			<u>G.O. Sars</u>		Norway	77,5	2003	UiB	Ice 1C	100/100	Antarctic	Arctic		No
			Hesperides		Spain	82,5	1991	Spain Navy/UTM	Ice 1C	100/100	Antarctic	Arctic		Yes
			<u>OGS-Explora</u>		Italy	73	1973	OGS -Trieste	1c	100/100	Antarctic	Arctic		No



Technology Development

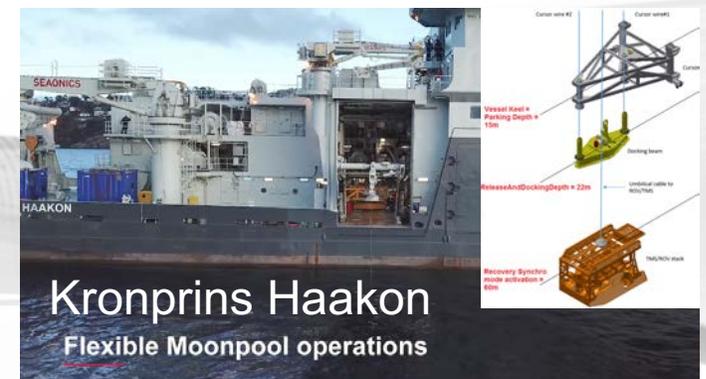
New European RV's:

RV BELGICA II: ICE(1C)

RV Celtic Voyager Replacement: ICE1C FS

New vessel design for Artic operations:

- Moon pools to deploy and recover ROV, AUV and CTD/Rosette (EFs+ JRA 3.2 **SEANONICS**)
- Acoustically quiet
- Use of ship launched drones





Governance

- Normal diplomatic clearance process to date no experience in more challenging regions (Russia)

Eurofleets 2 WP3



- D3.5 evaluated three different models for optimization of the polar research fleet; Barter & Exchange System, ARICE & Icebreakers jointly operated and financed by an international consortium
- D3.6 “Report on implementation models, Governance and sustained Stakeholder involvement:
Recommendation: ARICE Consortium



Sustainability

- Reduced Emissions from diesel engines
- Acoustically Silent Vessels
- Compliance in IMO Requirements
- Polar Code

- Eurofleets+ FAIR Data Principles to Reuse data
- Eurofleets+ Remote Transnational Access

Future actions 2020-2021:	Implemented actions (2016-2019):
Ongoing monitoring of survey fuel consumption	Energy Audit of RV Celtic Explorer
Review and procedures to be implemented for reduction of Food waste and general waste volumes	Tracking emissions dividends (where we made savings on a survey) and emissions penalties on a bi-weekly basis.
Installation of a Kongsberg power management system (PMS) onto the Celtic Explorer which will make the engines more efficient – installation due summer 2020	Review each survey in terms of fuel consumption. The captain for each survey is asked to provide a few sentences prior to the survey end date about fuel emissions and where savings were made and where they could be made. As many surveys are annual this will allow us to build up a time series and give suggestions going forward.
New RV being built/commissioned with Energy and Green credentials with the hope to gain EXEED certification	Presentation to chief scientists in October about the vessel energy committee and ways in which they can help us improve our energy efficient e.g. weather routing; more efficient mob/demob locations and using one larger vehicle instead of multiple smaller ones
	Going plastic free on the vessels. Gradual changes e.g., elimination of plastic bottles and the installation of a sparkling water machine. Asking the fishmongers to not double wrap items

*The **Remote Transnational Access (RTA)** Programme is providing researchers with remote access to samples or data from any of the state-of-the-art research vessels offered within EUROFLEETS+. This remote access will allow sample or data needs to be addressed remotely, when this can be accomplished with one day of ship time.*

Apply here: <https://www.eurofleets.eu/access/rta/>

THANK YOU

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