

**A replacement for Celtic Voyager?
Possible Vessel designs for Marine Institute
17th ERVO Meeting
10th June 2015**

Aodhán FitzGerald
Research Vessel Manager
Marine Institute

www.marine.ie

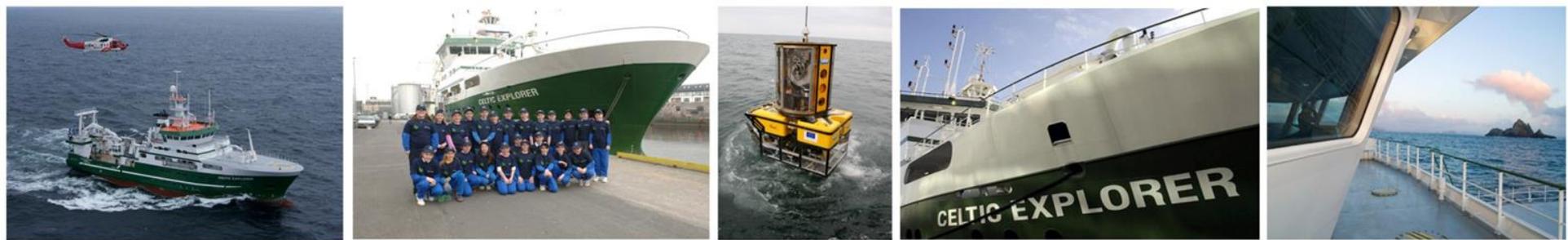




R.V. *Celtic Voyager*



- 31.5m Loa
- Multipurpose research vessel
- Accommodation for 7/8 scientists
- Endurance 10-14 Days
- Equipped with full hydrographic suite including EM3002D , EM2040 multibeam systems
- Permanent hull mounted USBL system
- Came into service in 1997



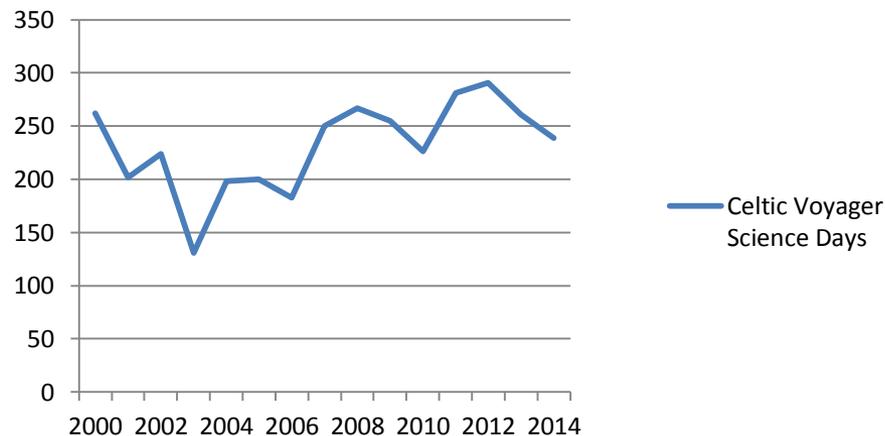
R.V. *Celtic Voyager*

- Vessel launched in 1997 and completed mid life refit in 2006
- Vessel has completed an average of 260 science days per year since its refit

Typical usage:

- 80 days PA Hydrographic survey,
- 30-40 Days UWTV Fisheries Surveys
- 60 Days Academic Training (Smart)
- 10 Days Oceanography
- 10 Days Buoy servicing
- 40 Days Academic Research

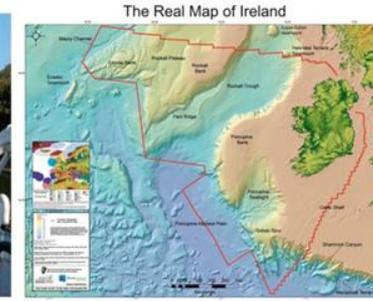
Celtic Voyager Science Days



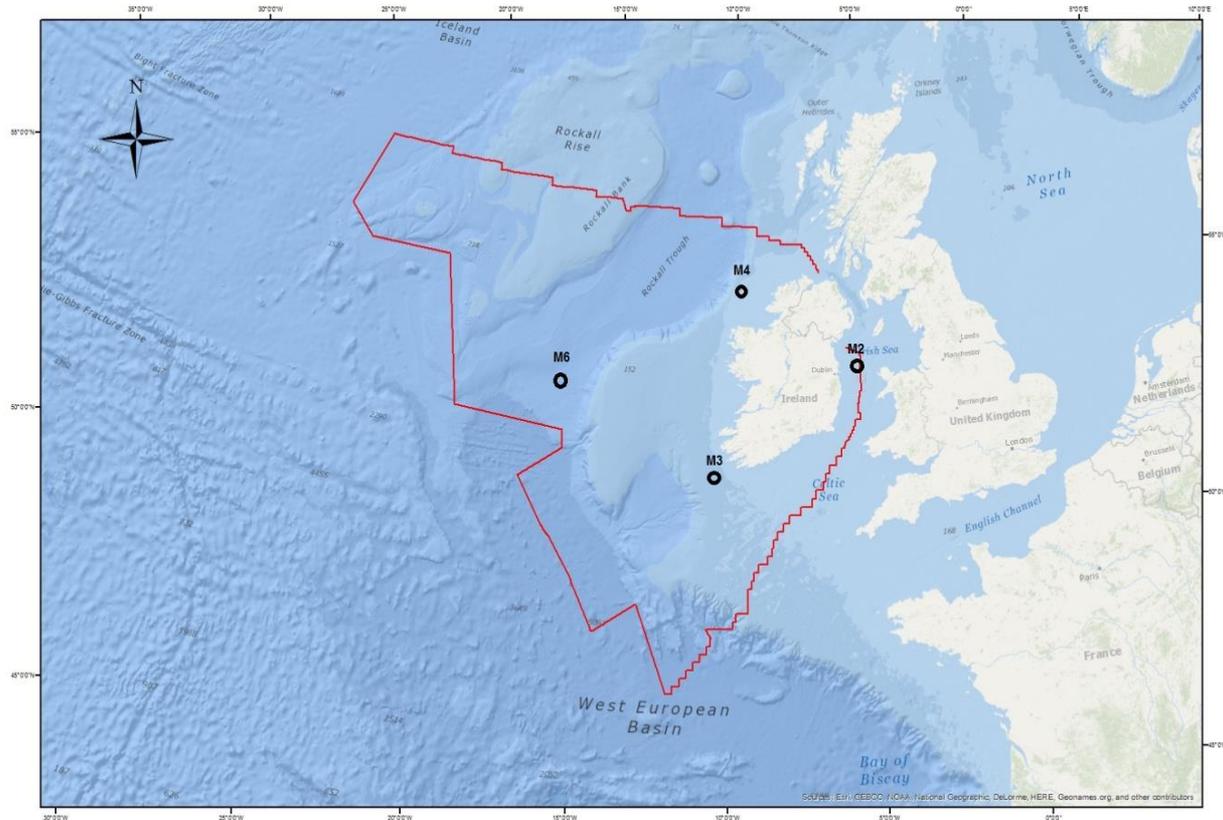


R.V. *Celtic Voyager* limitations/Issues

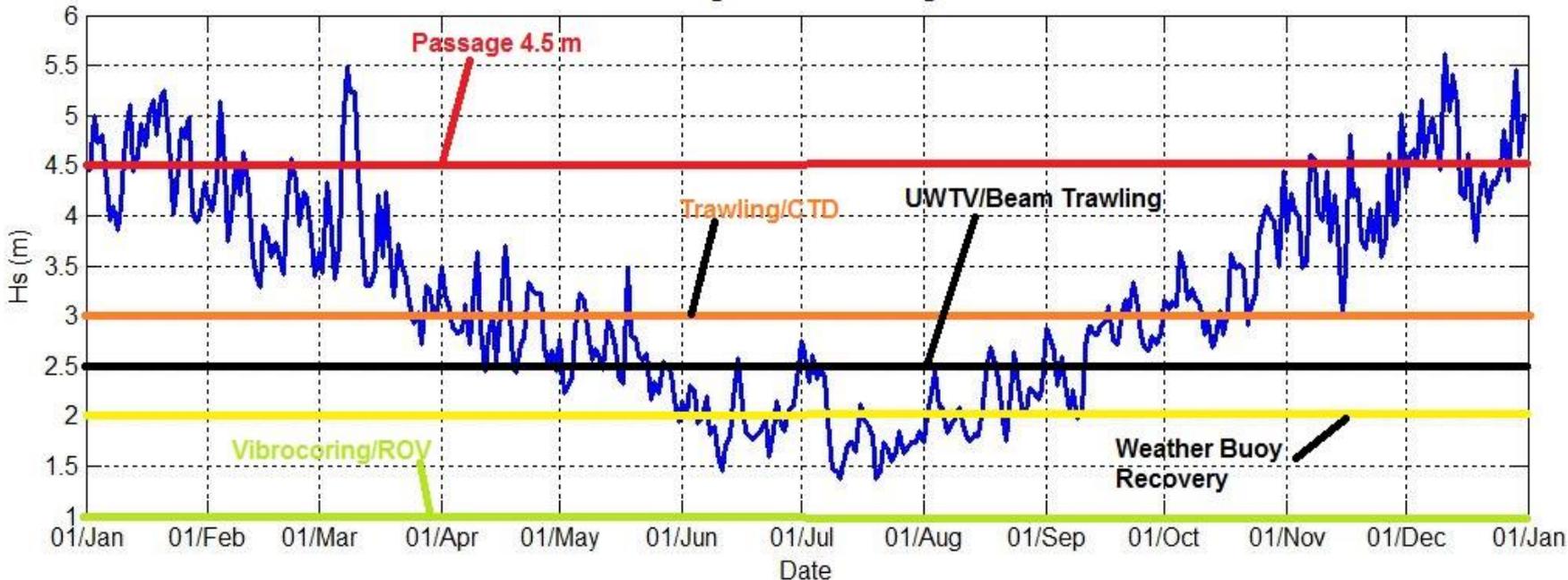
- Size, berths/Lab spaces
- Endurance
- Sea keeping- Weather Downtime
- Deck Space
- Station keeping-No DP for ROV/ Vibrocoring/Weather Buoy service
- Limited lifting /deployment capacity
- Redundancy-single diesel engine with one shaft/ propellor
- Acoustic noise
- Irish Marine Science activity has moved on greatly since vessels arrival in 1997
- Lack of upgrade options
- Age
- Due to demand on Celtic Explorer a lot of academic research work is offered Voyager Time but due to limitations objectives often not achieved



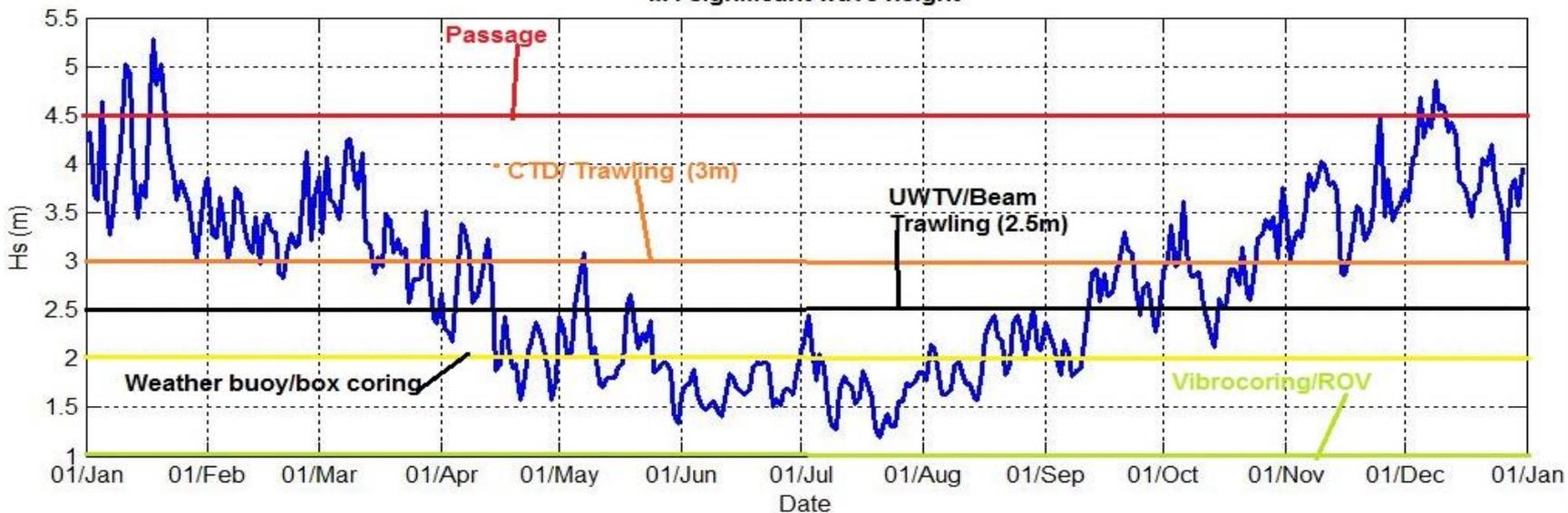
Irish Offshore area/Weather buoy Locations



M6 significant wave height

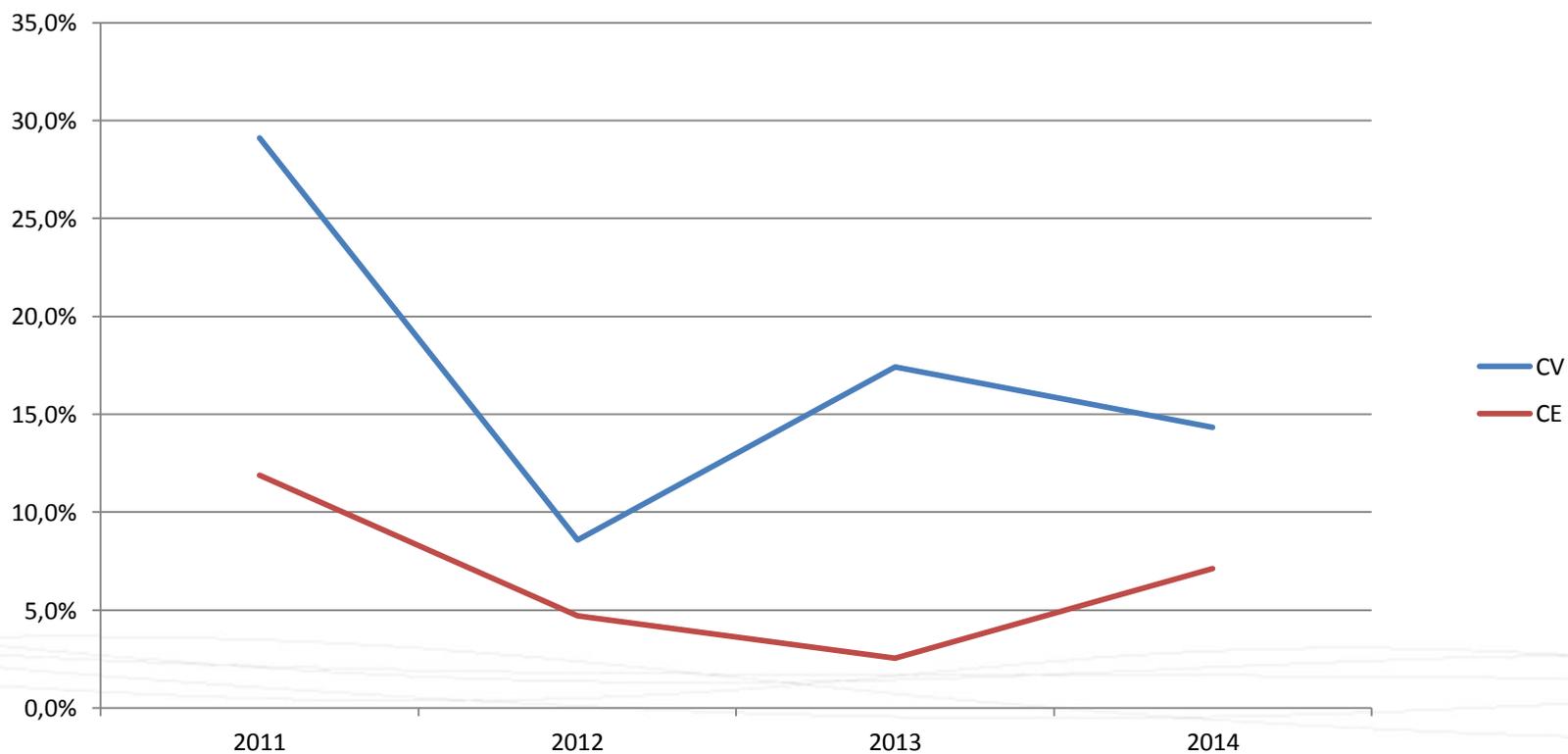


M4 significant wave height



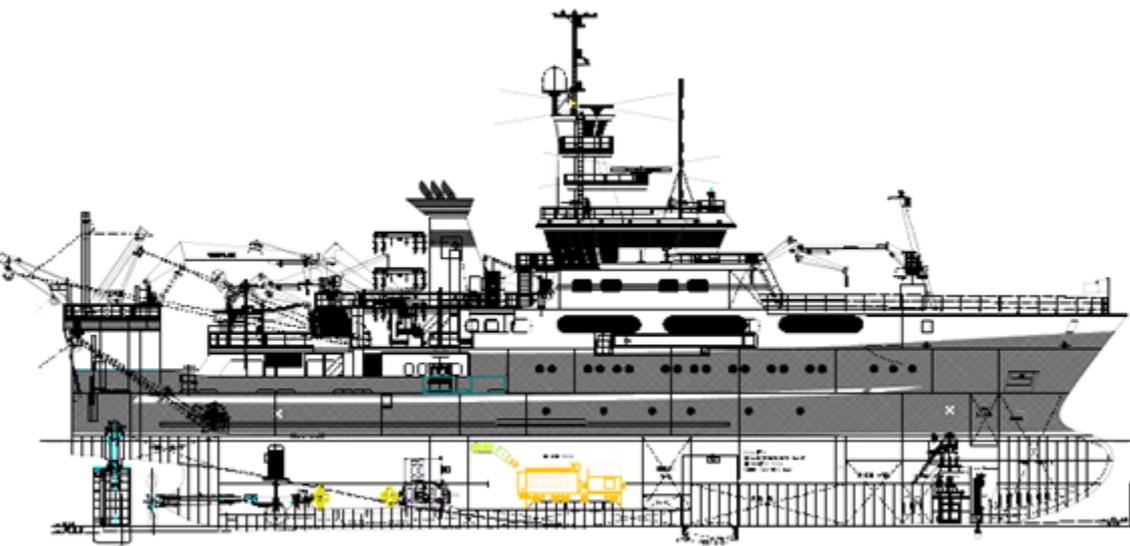


High Levels of weather downtime

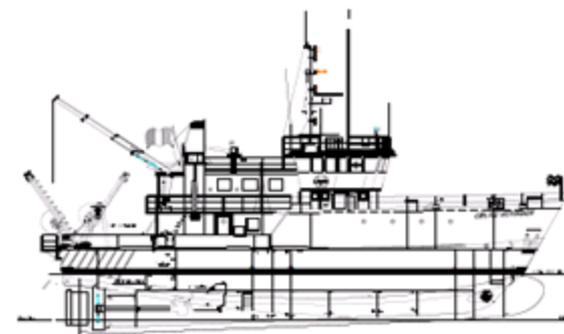




CV vs CE



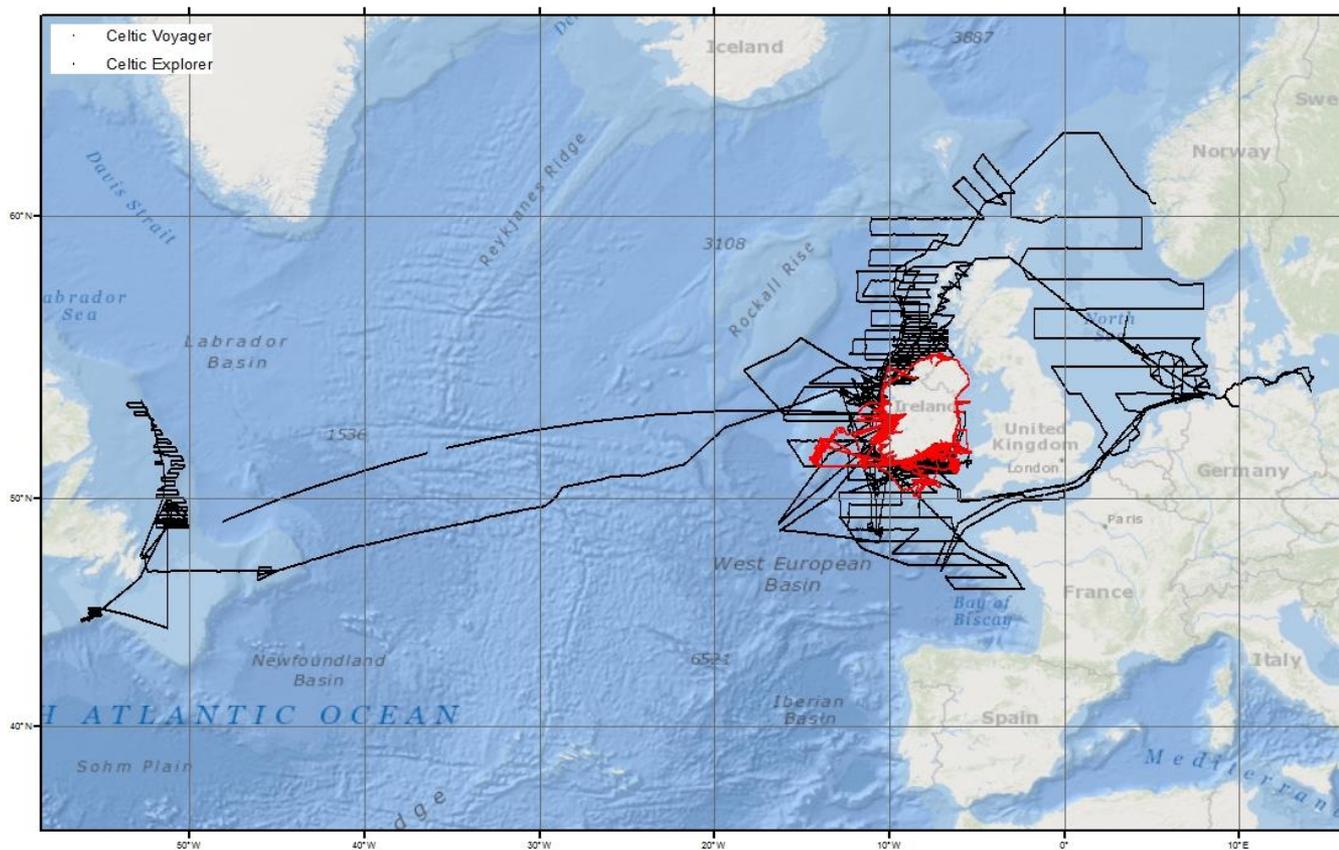
RV Celtic Explorer 65.5m



RV Celtic Voyager 31.4m



Typical operating area for vessels





Options ?

Option 1 : Continue with current vessel.

Fleet becomes more limited as Celtic Explorer demand increases with new fisheries programs, Celtic Voyager becomes less fit for purpose over time , Capacity to complete marine Science research diminishes

Option 2: Refit and extend existing vessel

Expensive option , vessels small size and design make this option not feasible, Many limitations remain and sea keeping ,may in fact dis-improve

Option 3 : Build replacement vessel of c. 46-50m with similar draft as Voyager vessel available to complete existing role, but far more suited to working offshore on existing new projects and acting as a viable back up to the Explorer

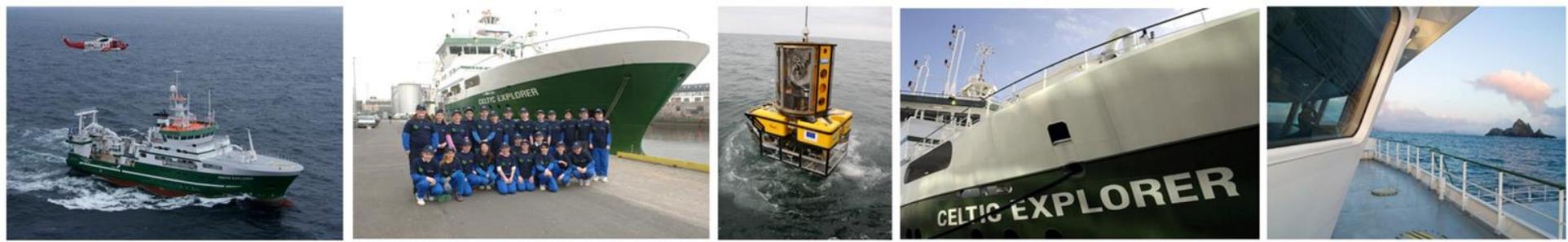


New RV designs

Ramon Margalev/Angeles Alvarino (IEO Spain)

46m DP(1) vessels, Ices 209, Diesel Electric, Drop keel, 20 days endurance





New RV designs

Simon Stevin (VLIZ ,Belgium)

36 m diesel electric, DP (0), silent ship, 5 days endurance , draught 3.5m, 10 scientists





Bipo Inapesca

- 58m Mexican Fisheries Research Vessel, Launched 2014, multi-purpose oceanographic/Fisheries vessel
- Built in Armon Shipyard Vigo...€24M





Eurofleets 2 RRV project

Eurofleets 2 WP 11.3
 Ship Studio (France)
 Aim is to design a Generic and adaptable Regional Research Vessel
 Design
 Design parameters based on requirements of Regional research operators
 However "Regional" varies greatly from region to region





Potential Design

Vessel	Celtic Explorer	Celtic Voyager	New Vessel
Length	65.5m	31.4m	45-50m
Beam	15m	8.5m	10.5-12m
Draft	5.8	4m	4m
Gross Tonnage	2425 T	340T	C. 1000T
Engine /generator	2 x 1620 KW +1 x 1080 KW Wartsilla	1 x 626KW (propulsion), 2 x 69 KW 1 x 38 KW (Generation)	C. 2 X 1080kw + 1X 500kw or 1 x 1200KW + 2 x 600KW
No of crew	13-15	6-8	8-10
No of scientists	20-22	7-8	11-13
Endurance	45 days	14 days	25 days
DP System	DP1	N/A	DP1
Service Speed	10 Knots	9 Knots	10 Knots
Max Speed	16 Knots	11 Knots	14 Knots
Fuel Consumption at service speed (Tons/24 Hours)	5.6 T	2.5 T	4T



Key issues

- Funding!
- ICES 209 or Class silent notation (e.g. Silent R)
- AC or DC?
- Minimise manning levels?
- Special Purpose ship?
- Minimise operating costs