

**A replacement for Celtic Voyager?  
Possible Vessel designs for Marine Institute  
ERVO 2016  
11<sup>th</sup> May 2016**

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## 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

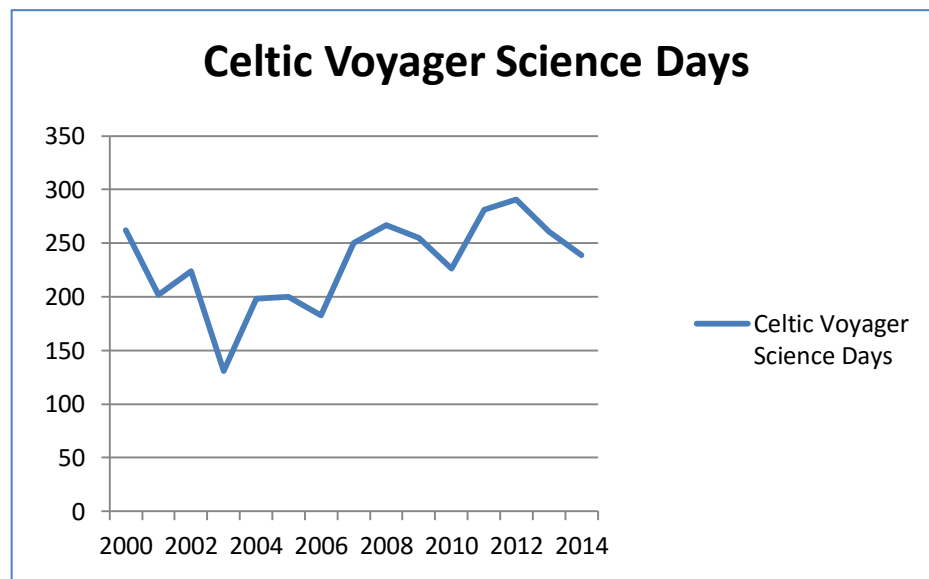


## R.V. Celtic Voyager

- 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
- 300 days in 2016!



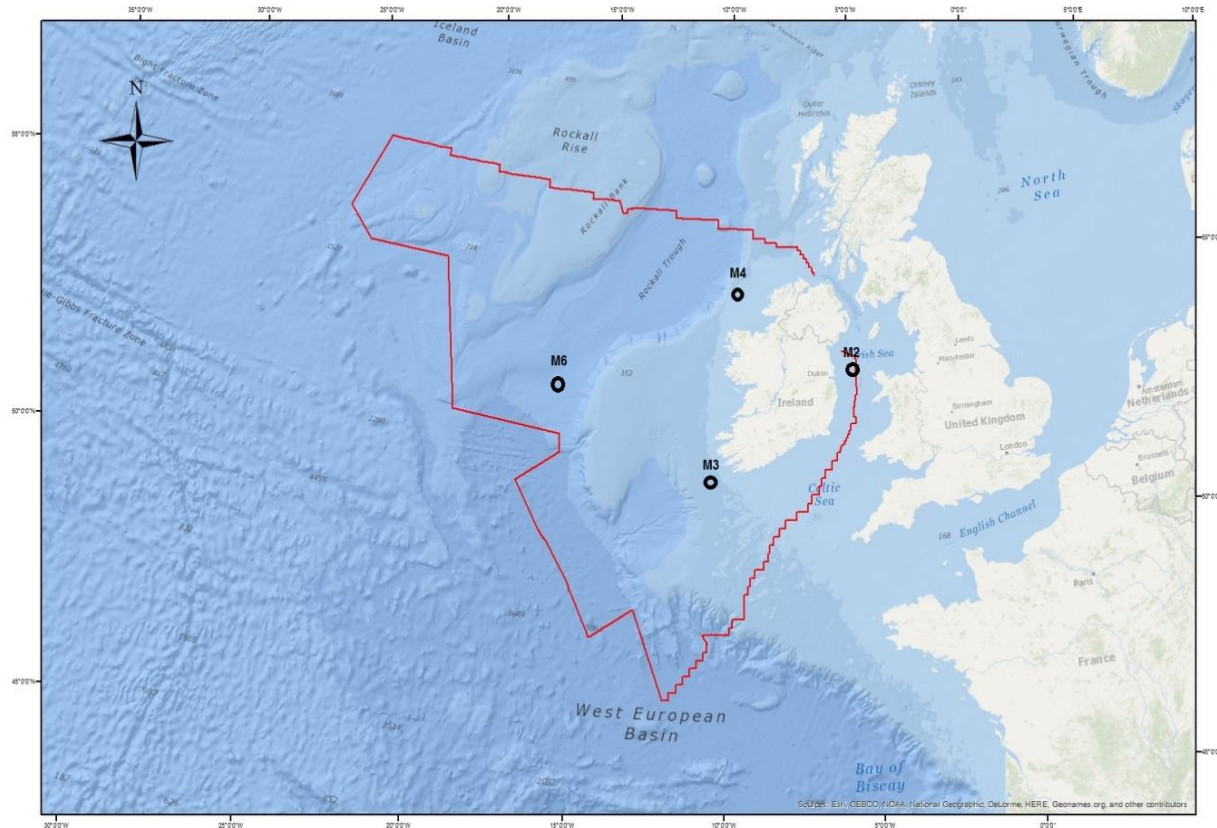


## R.V. *Celtic Voyager* limitations/Issues

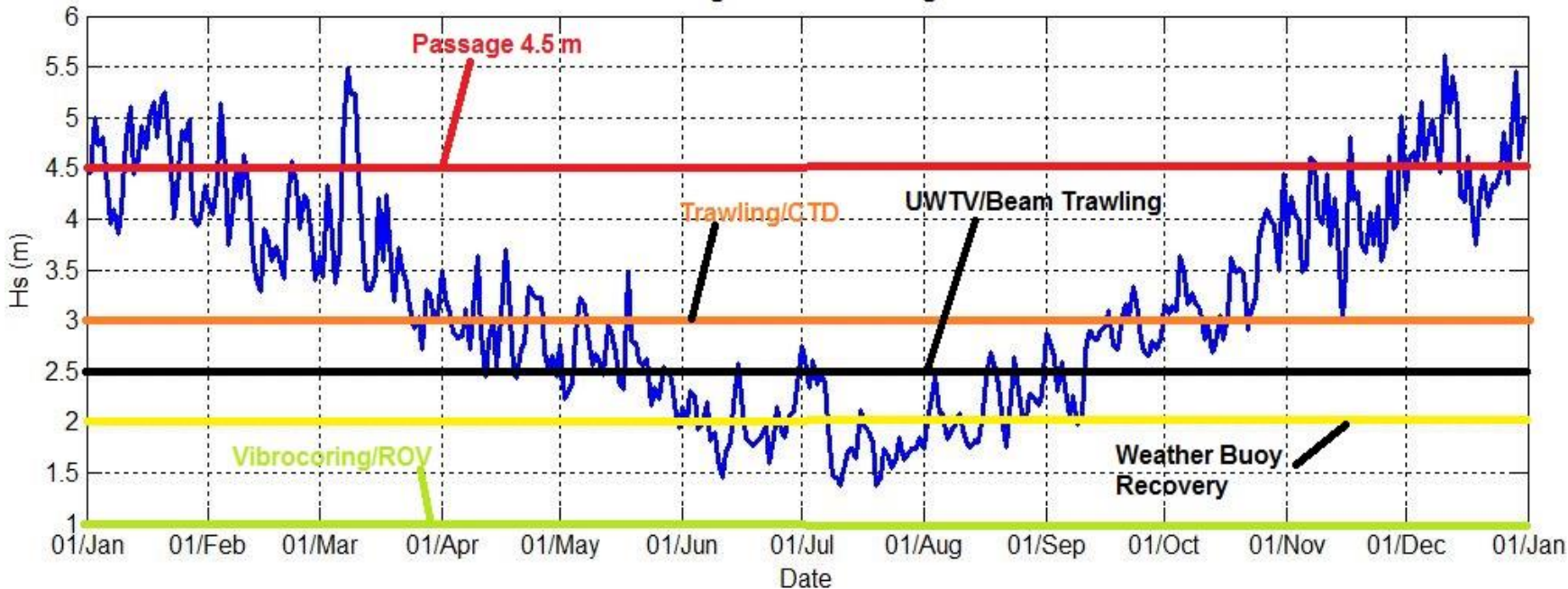
- Size, berths/Lab spaces
- Endurance
- Sea keeping- Weather Downtime
- Deck Space
- Station keeping-No DP for ROV/ Vibrocoring/Weather Buoy service
- Limited lifting /deployment capacity
- Redundancy-single diesel engine with one shaft/ propellor
- Acoustic noise
- Irish Marine Science activity has 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



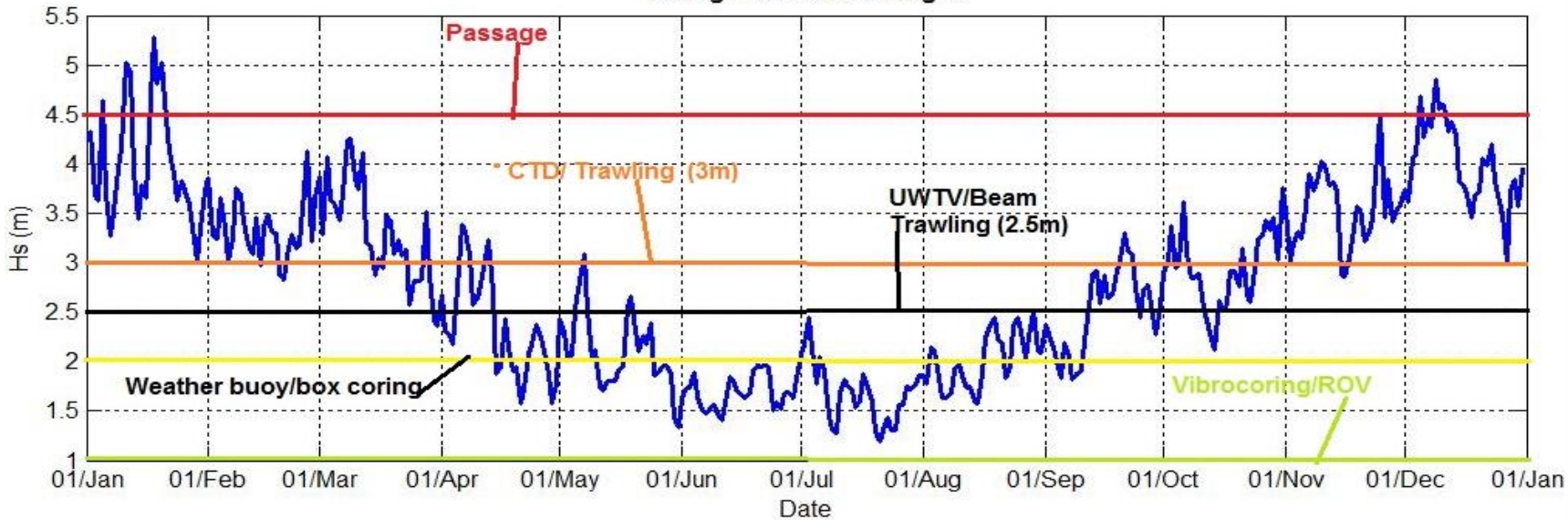
# Irish Offshore area/Weather buoy Locations



M6 significant wave height

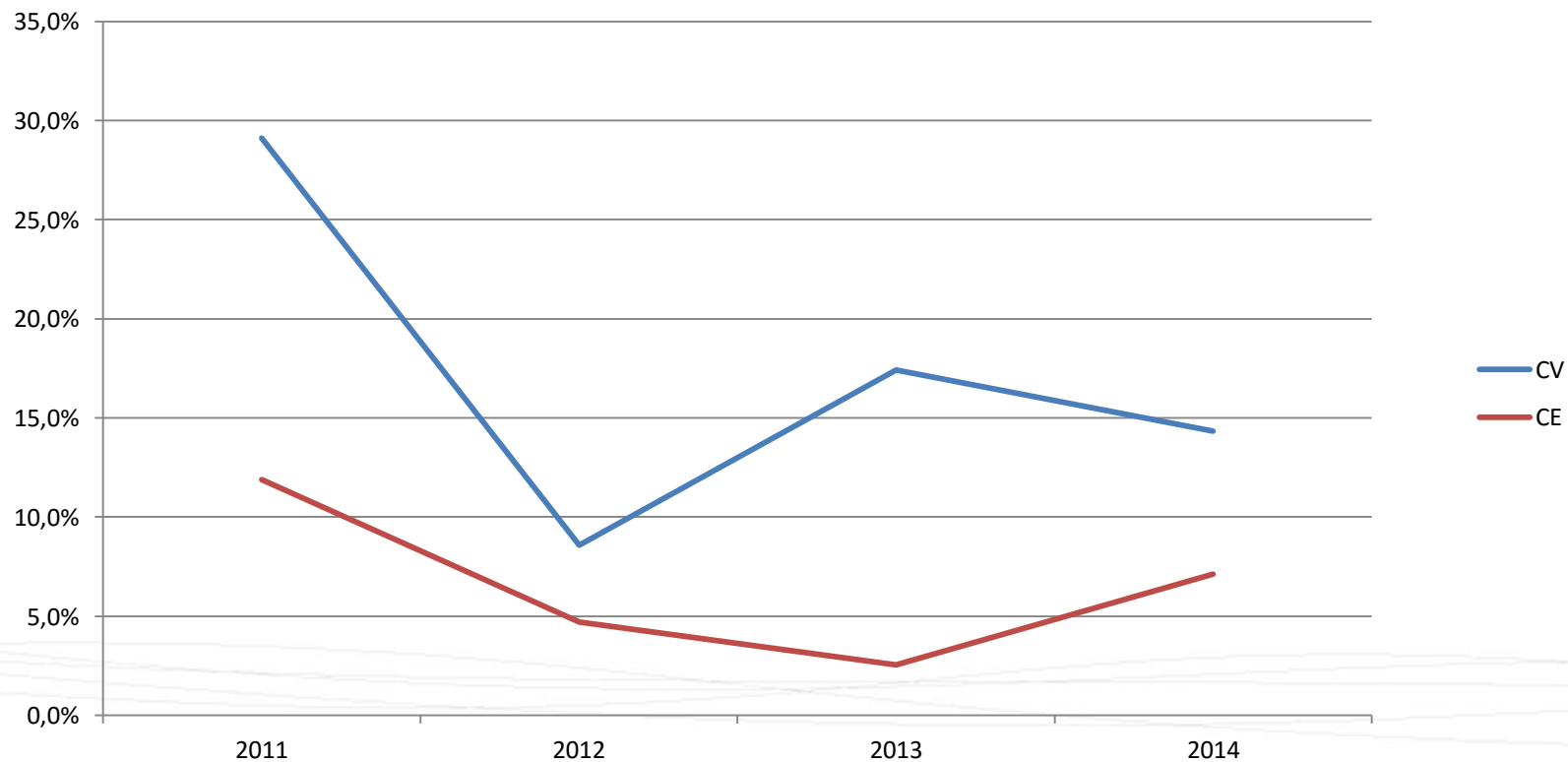


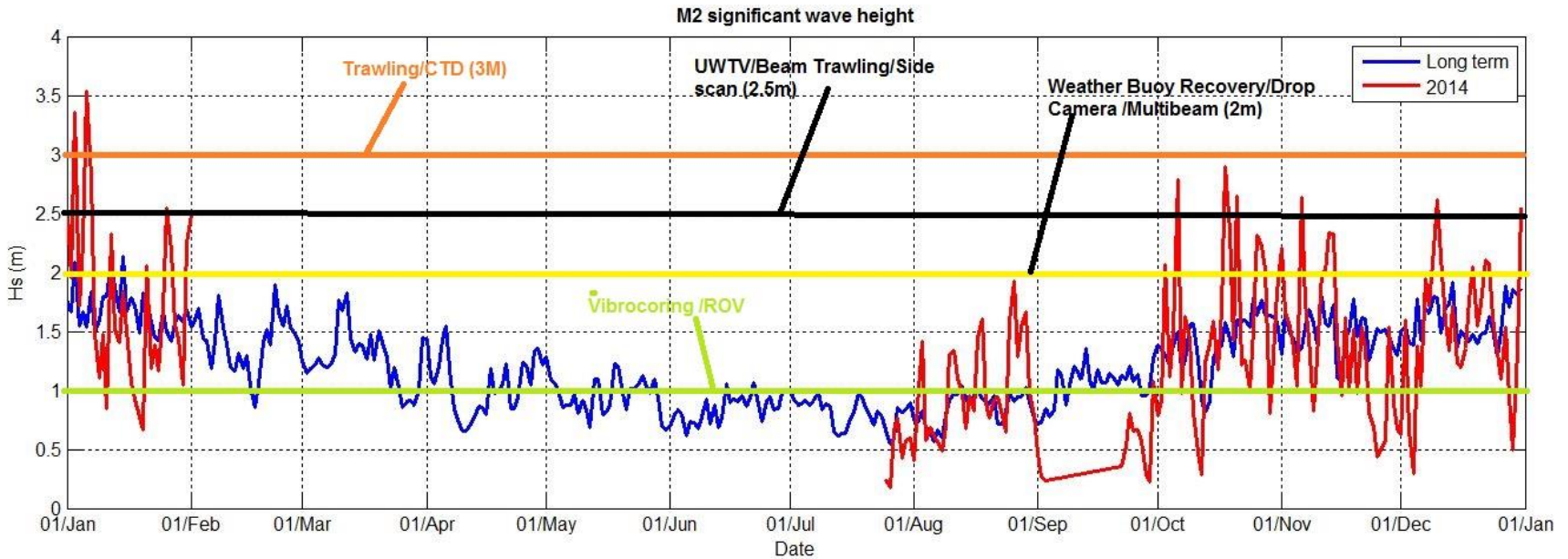
M4 significant wave height





## High Levels of weather downtime

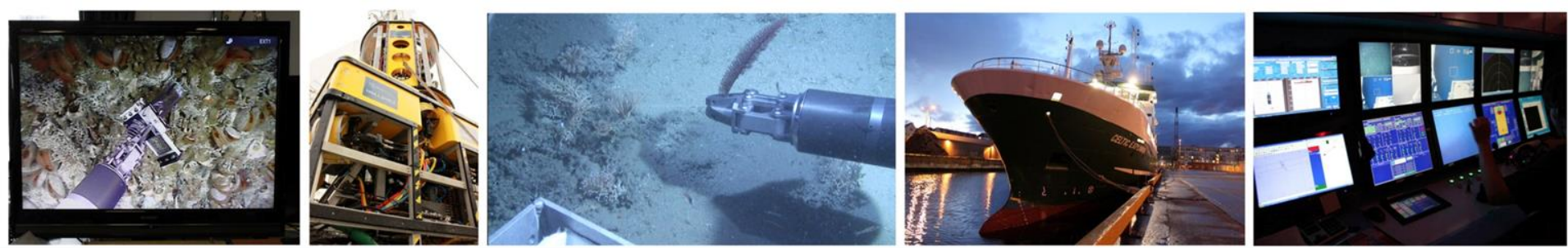




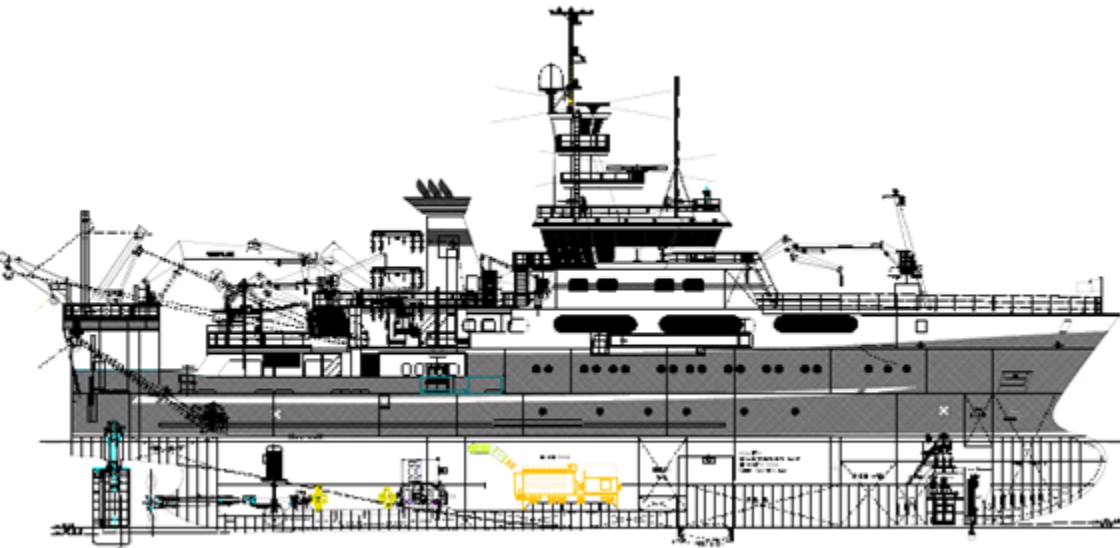
This weather buoy (M2) is located approximately 30 miles east of Howth in the Irish Sea.

This figure clearly illustrates that the R.V. *Celtic Voyager* is more suited to operations in sheltered seas such as the Irish Sea. The R.V. *Celtic Voyager* can operate and complete most operations here in all except the worst winter weather.

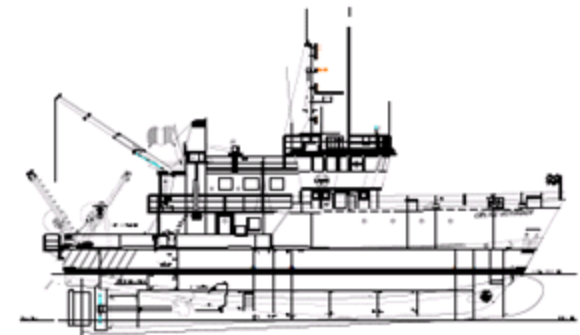




# CV vs CE



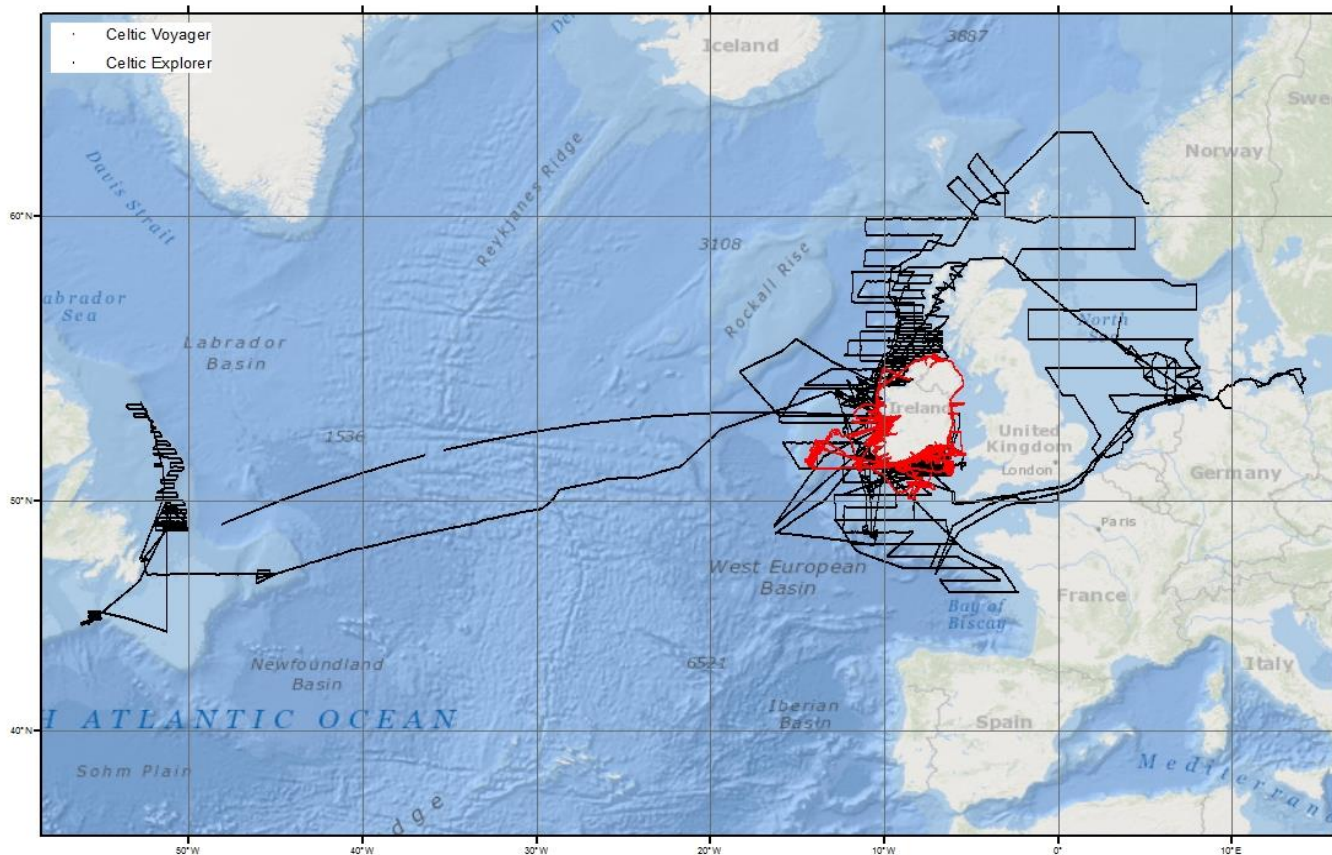
RV Celtic Explorer 65.5m

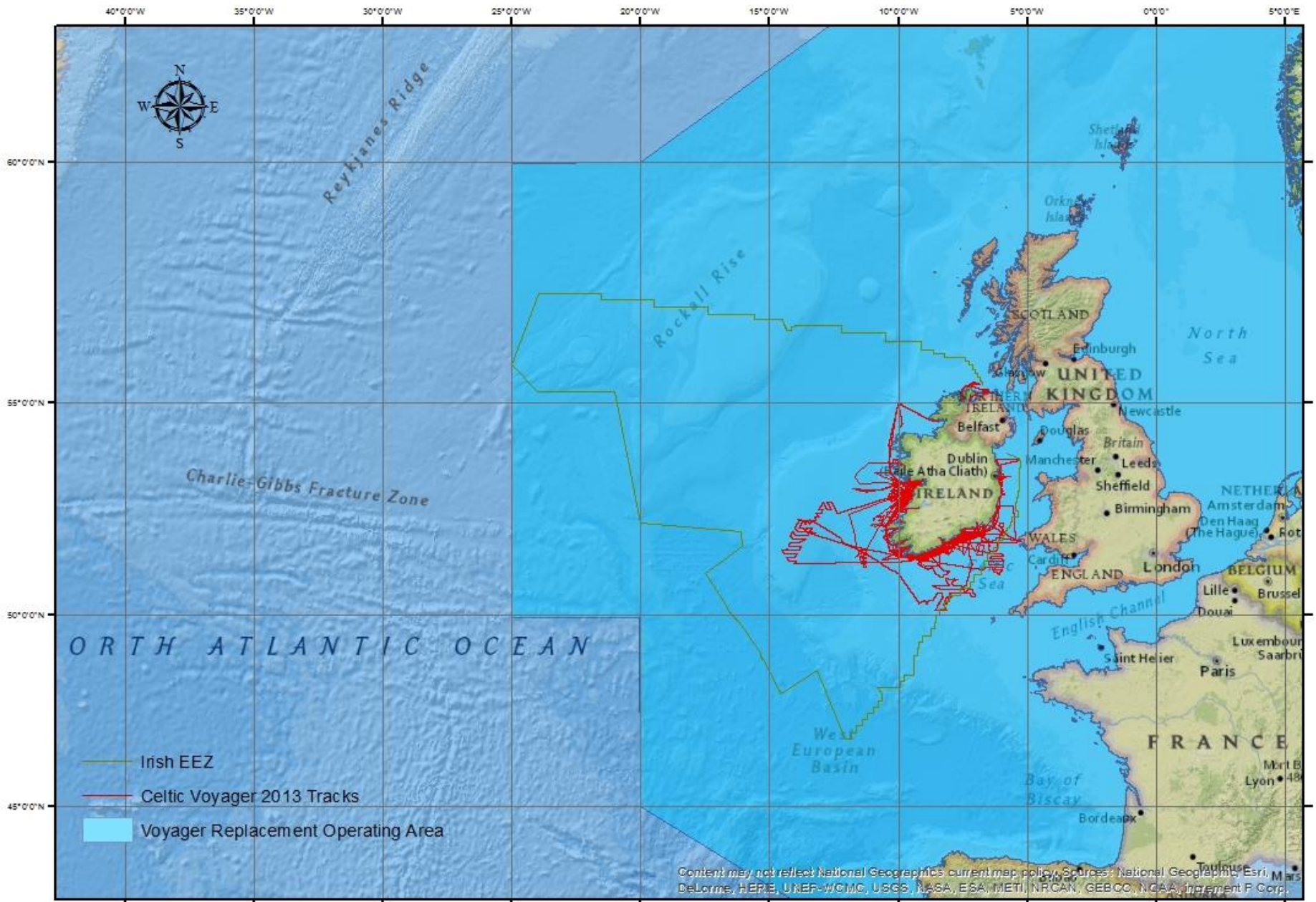


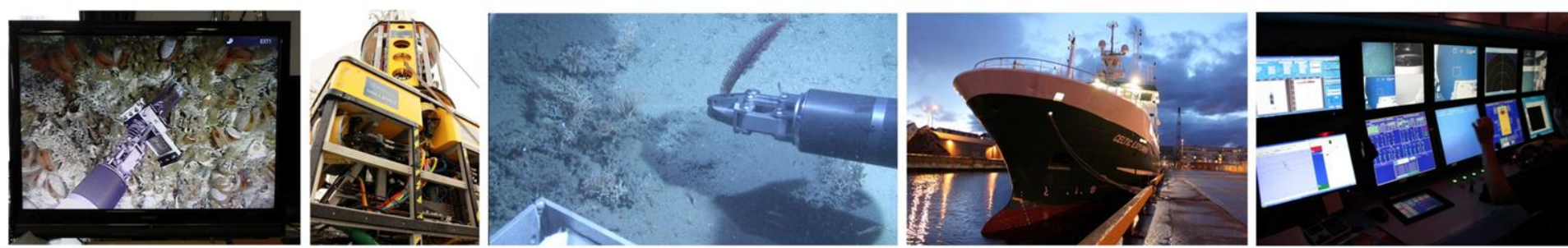
RV Celtic Voyager 31.4m



# 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

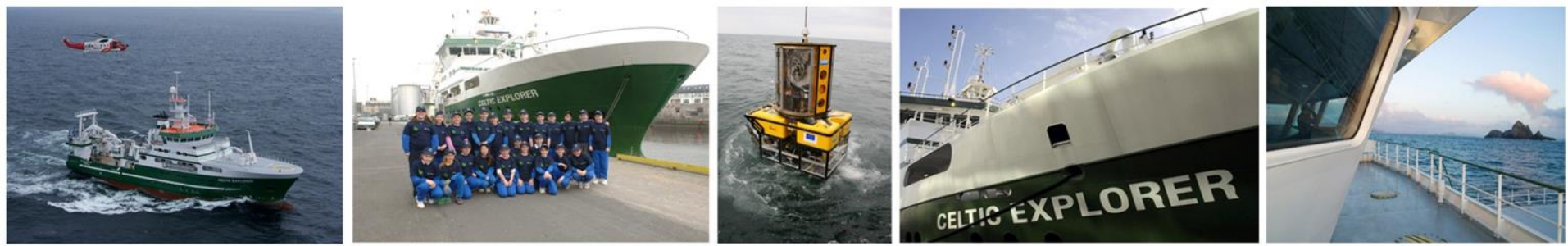


# New RV designs

**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

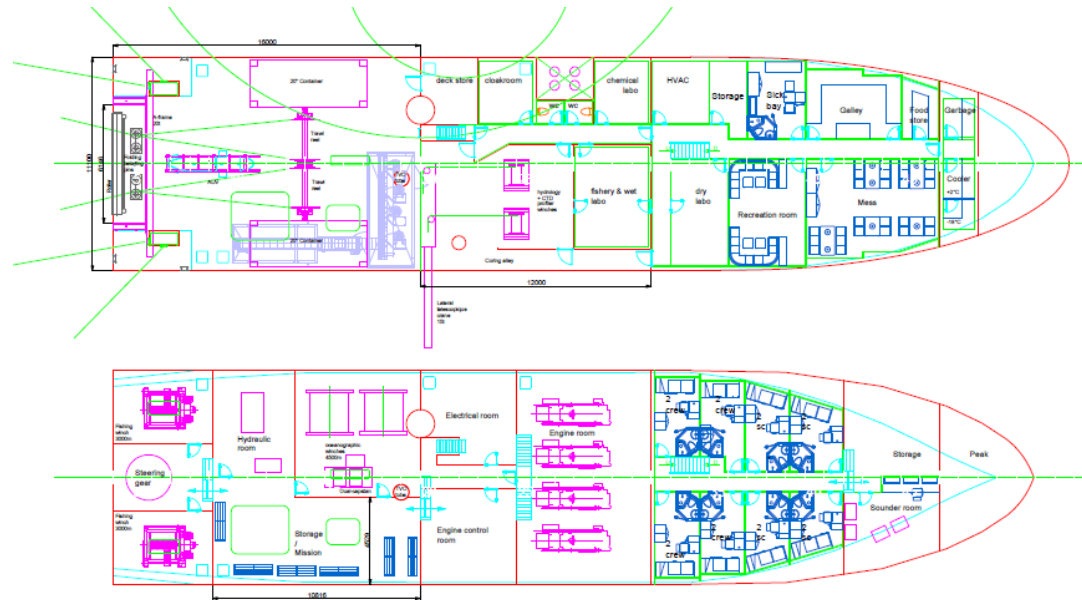
- 58m Mexican Fisheries Research Vessel, Launched 2014, multi-purpose oceanographic/Fisheries vessel
- Built in Armon Shipyard Vigo...€24M





# 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







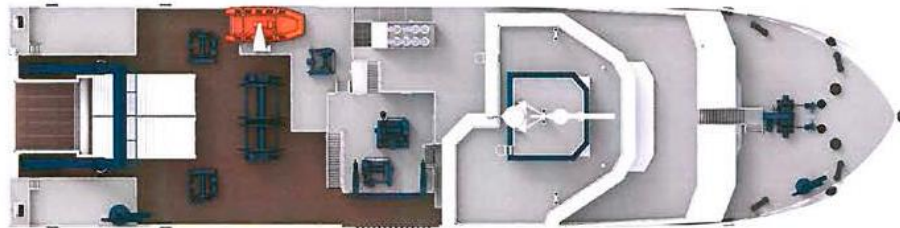
# Potential Design

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











## 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 ....