INFOMAR
Integrated Mapping for the Sustainable Development of Ireland's Marine Resource

EGNOS contribution to INFOMAR surveys.

An Roinn Comhshaoil, Aeráide agus Cumarsáide
Department of the Environment, Climate and Communications

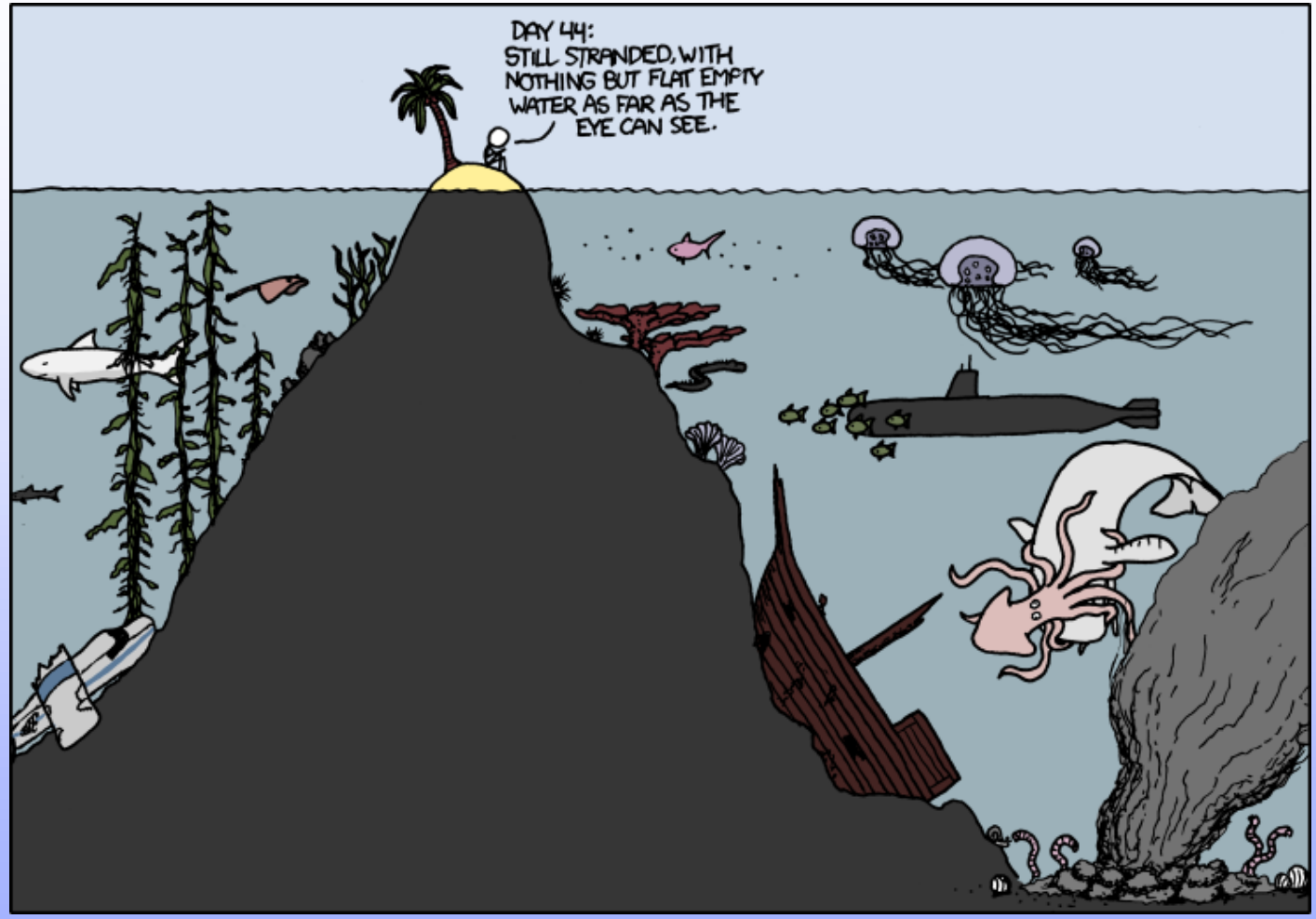
Foras na Mara
Marine Institute

Geological Survey
Suirbhéireacht Gheolaíochta
Ireland | Éireann

INFOMAR
Integrated Mapping for the Sustainable Development of Ireland's Marine Resource

Overview

1. What is INFOMAR
2. Seabed Mapping Overview
3. Meet the Fleet
4. Accuracy Requirements
5. Adoption of EGNOS
6. Experience with EGNOS
7. Takeaways



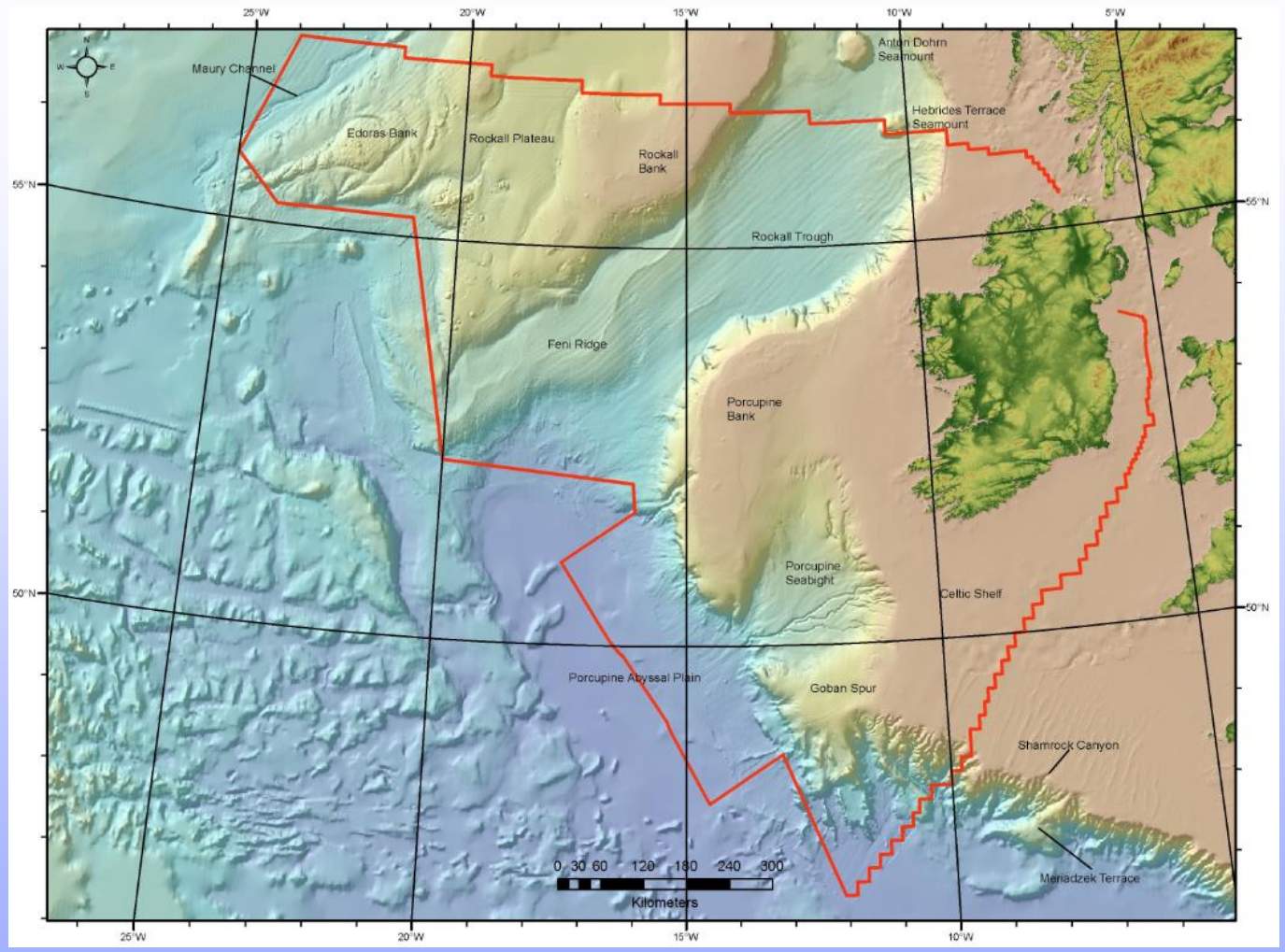
Telescopes and bathyscapes and sonar probes.....the most exciting new frontier is charting what's already here.

www.xkcd.org

INFOMAR
Integrated Mapping for the Sustainable Development of Ireland's Marine Resource

What is INFOMAR?

- Irish, state funded, marine mapping programme –
  - **In**tegrated Mapping **fo**r the Sustainable Development of Ireland's **Mar**ine Resource
- Builds on the success of the preceding **I**rish **N**ational **S**eabed **S**urvey (1999-2005).
- Jointly operated by Geological Survey of Ireland and the (Irish) Marine Institute.
- Funded by the Department of the Environment, Climate and Communications.
- Full details at *www.infomar.ie* and social media (@followtheboats).
- Projected 6-8x return.
- Ambitious 20 year plan – with a finite and variable budget (3-4 million).

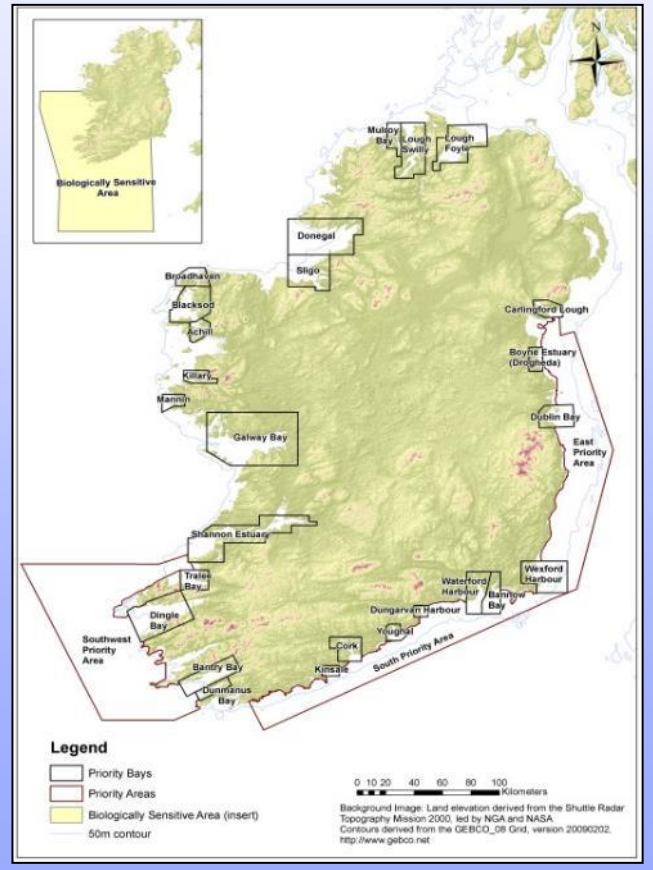


INFOMAR
Integrated Mapping for the Sustainable Development of Ireland's Marine Resource

What is INFOMAR?

PHASE 1: 2006-2016

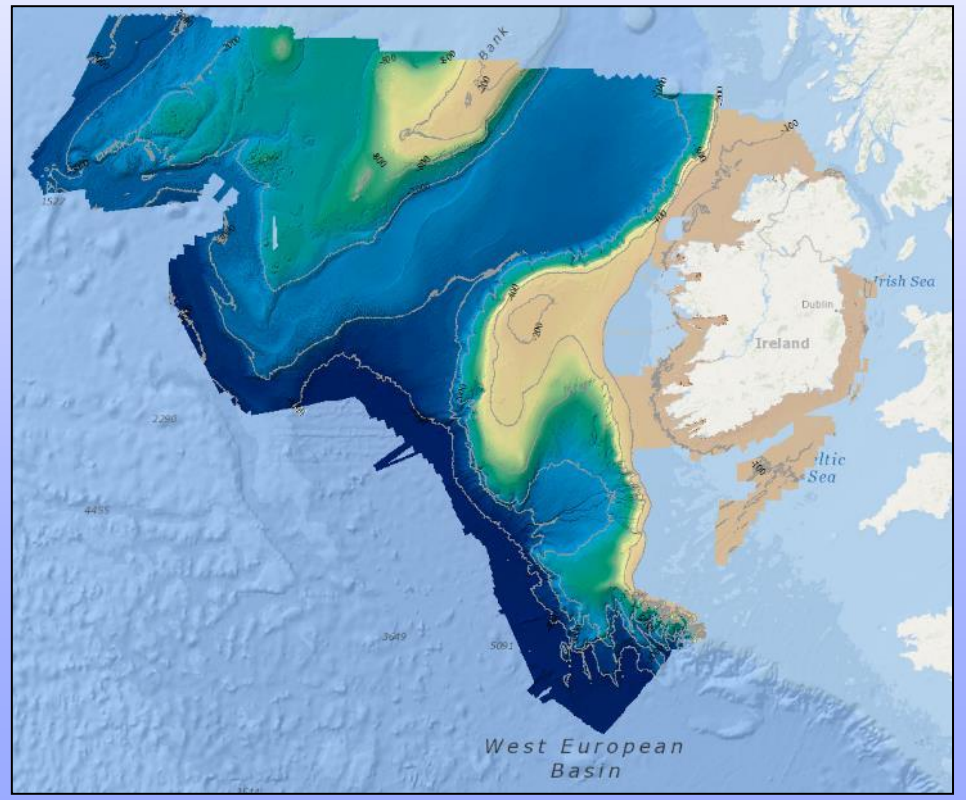
- 26 Priority Bays
- 3 priority areas



PHASE 2: 2016 – 2026

Map remaining areas

- Coastal areas between bays
- Celtic Sea
- Atlantic Shelf

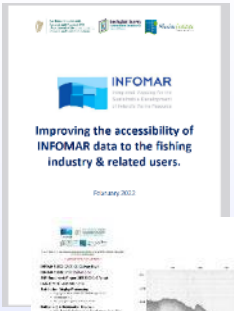


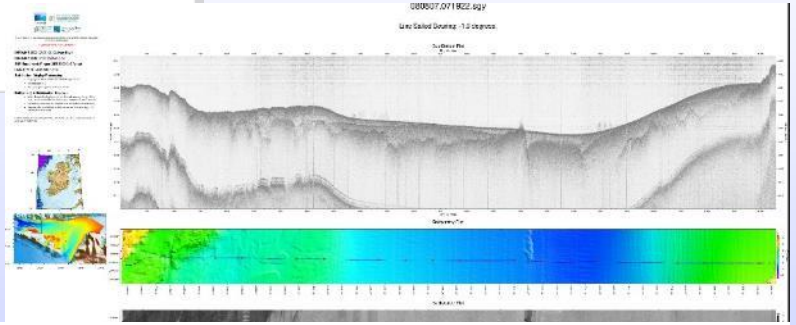
INFOMAR
Integrated Mapping for the Sustainable Development of Ireland's Marine Resource

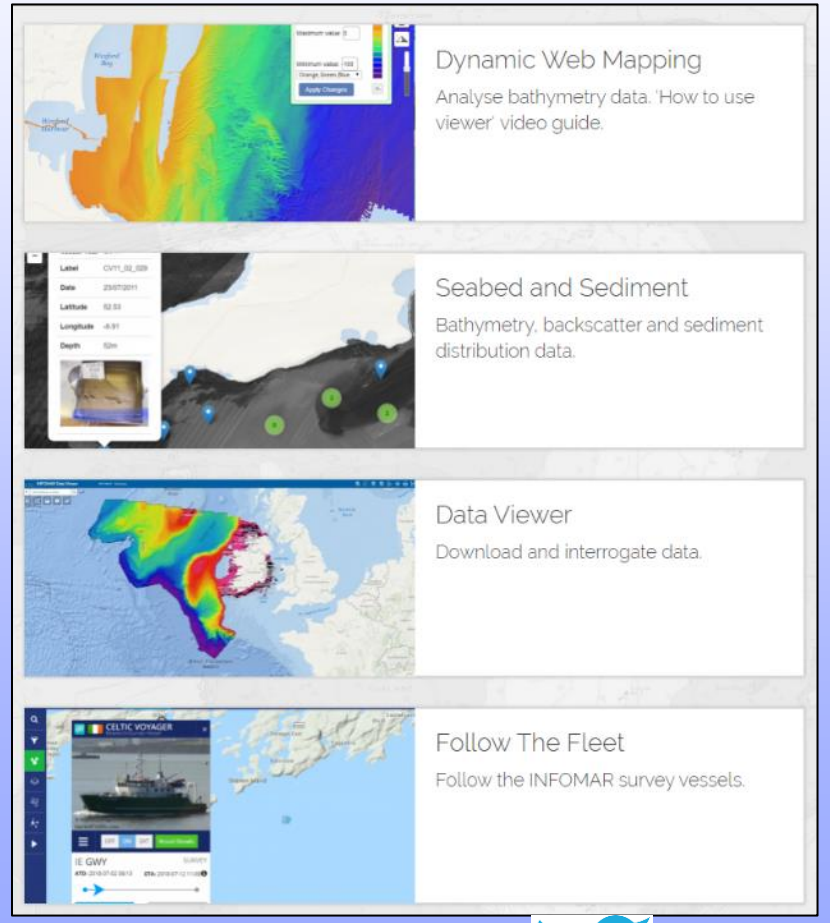
What is INFOMAR?

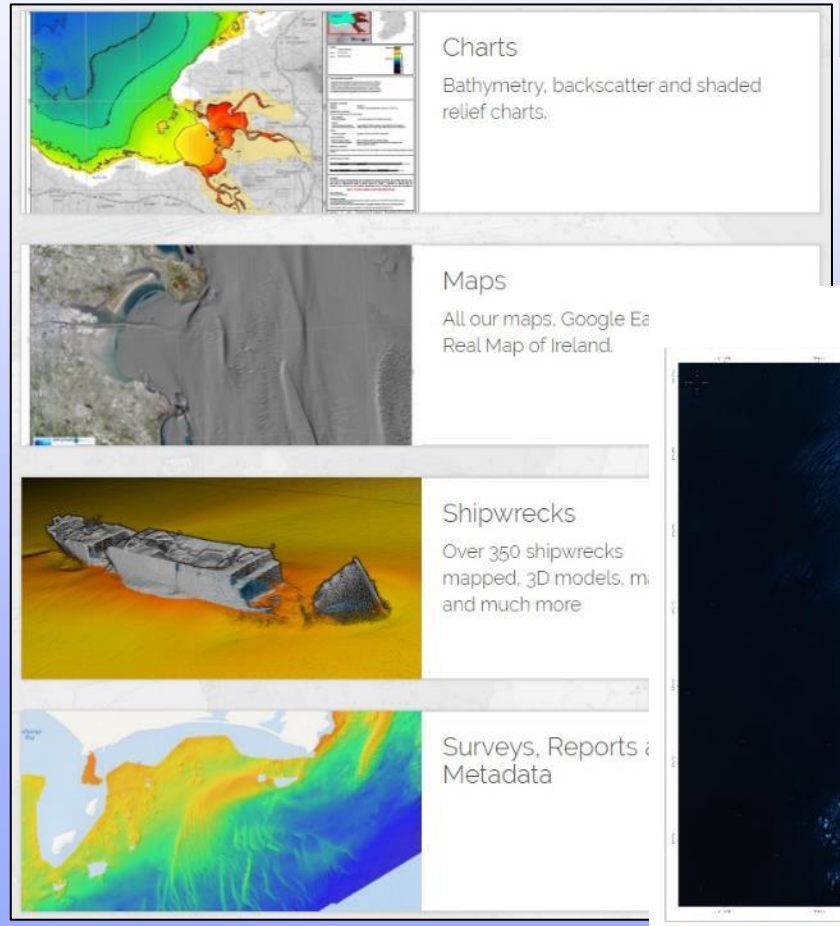
Data Access ⟶ infomar.ie

All data freely available!

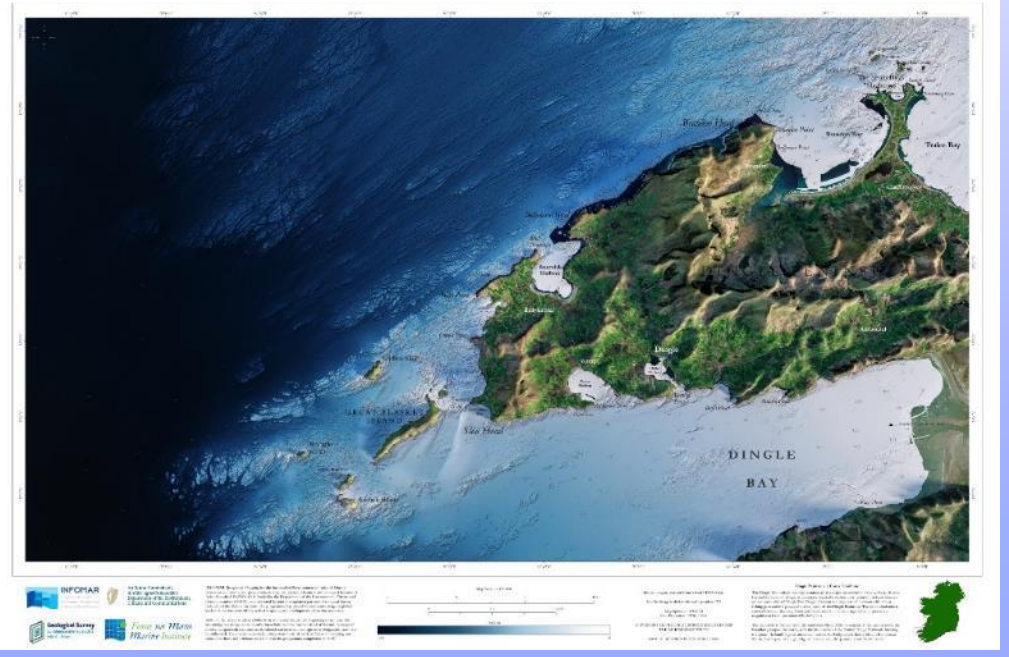








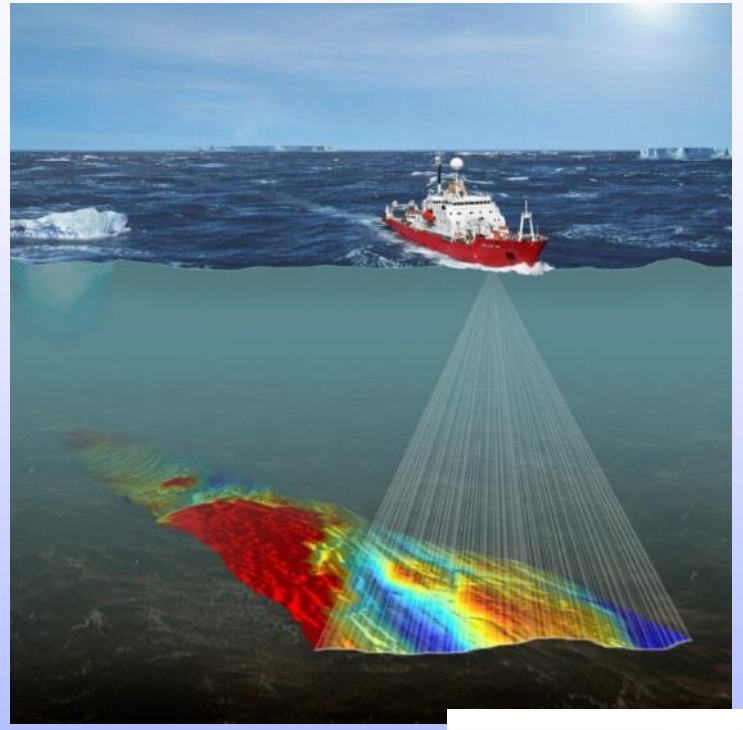
DINGLE PENINSULA

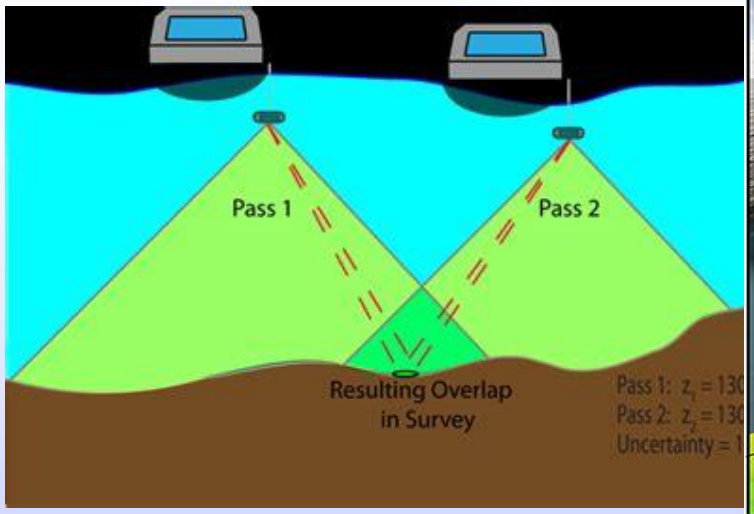


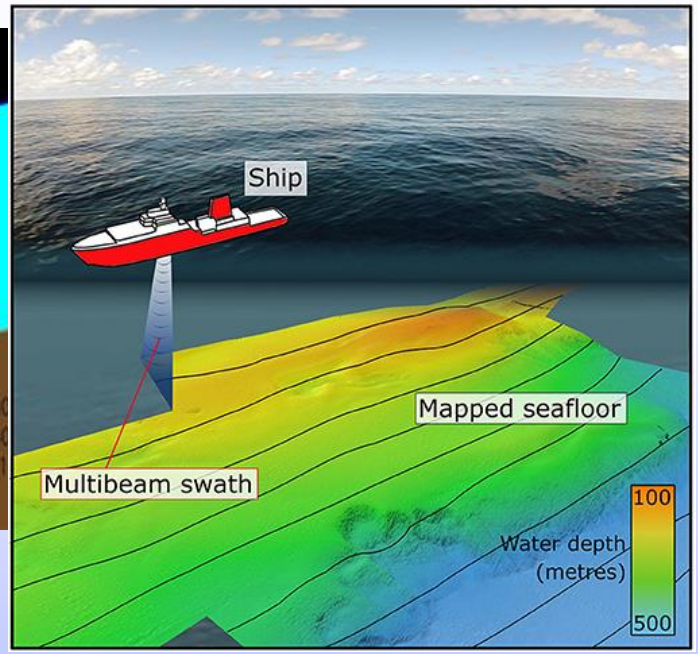
@followtheboats

INFOMAR
Integrated Mapping for the Sustainable Development of Ireland's Marine Resource

Seabed Mapping Overview







INFOMAR
Integrated Mapping for the Sustainable Development of Ireland's Marine Resource

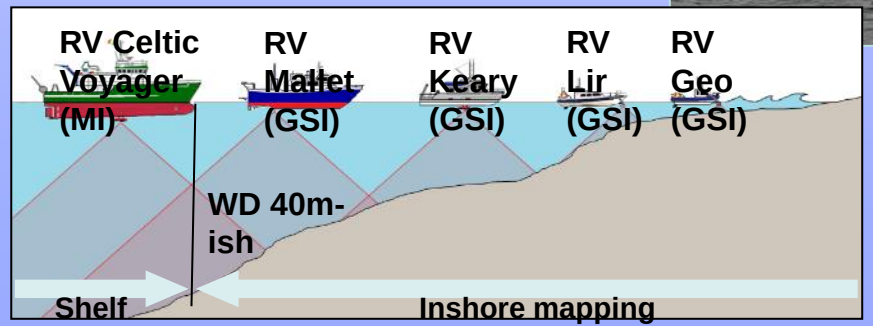
Meet the Fleet

Offshore Fleet (30NM +)

Inshore Fleet (Coastline to 30NM)


RV Tonn

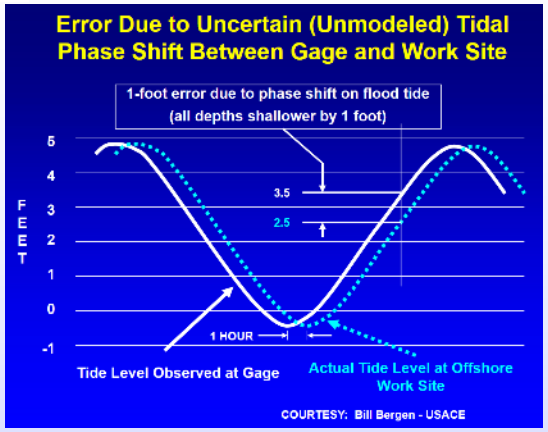

M.V. Cosantóir Bradán (2012 - 2014)

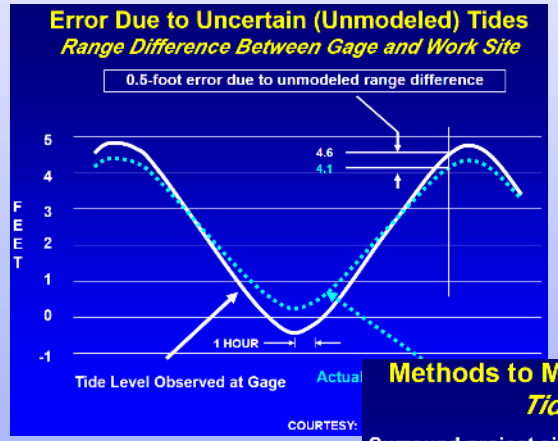


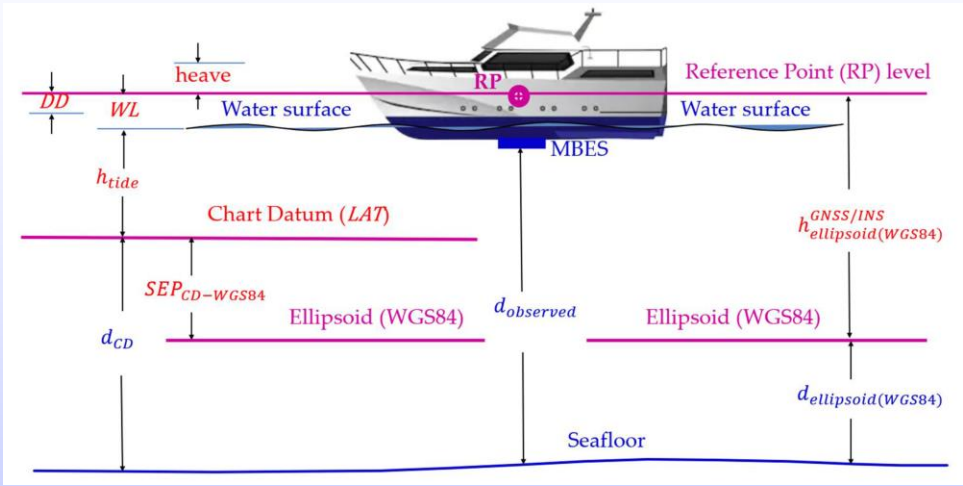
INFOMAR
Integrated Mapping for the Sustainable Development of Ireland's Marine Resource

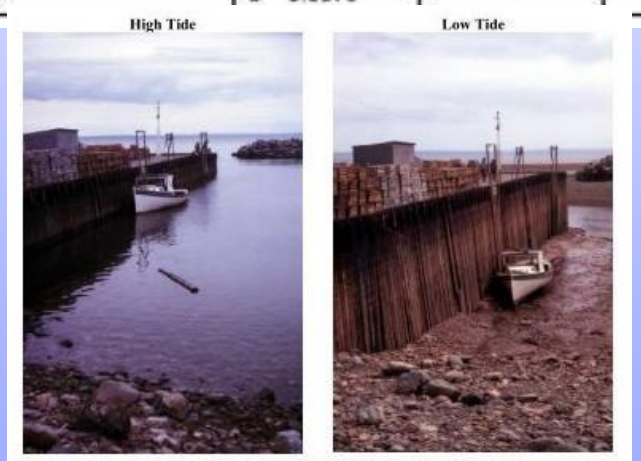
Accuracy Requirements

Order	Special	1a	
Description of areas.	Areas where under-keel clearance is critical	Areas shallower than 100 metres where under-keel clearance is less critical but *features* of concern to surface shipping may exist.	Areas than ' where keel c not co to be for th surfa expec transi
Maximum allowable THU 95% *Confidence level*	2 metres	5 metres + 5% of depth	5 me of dep
Maximum allowable TVU 95% *Confidence level*	a = 0.25 metre b = 0.0075	a = 0.5 metre b = 0.013	a = 0. b = 0.

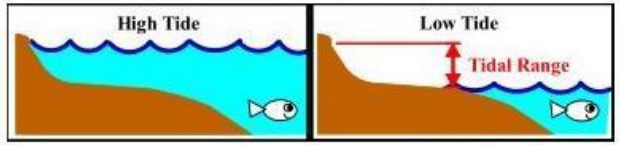


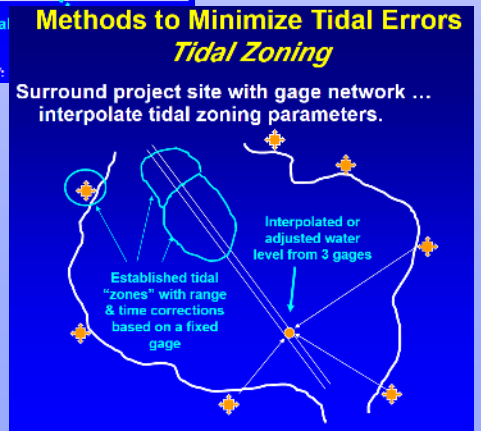


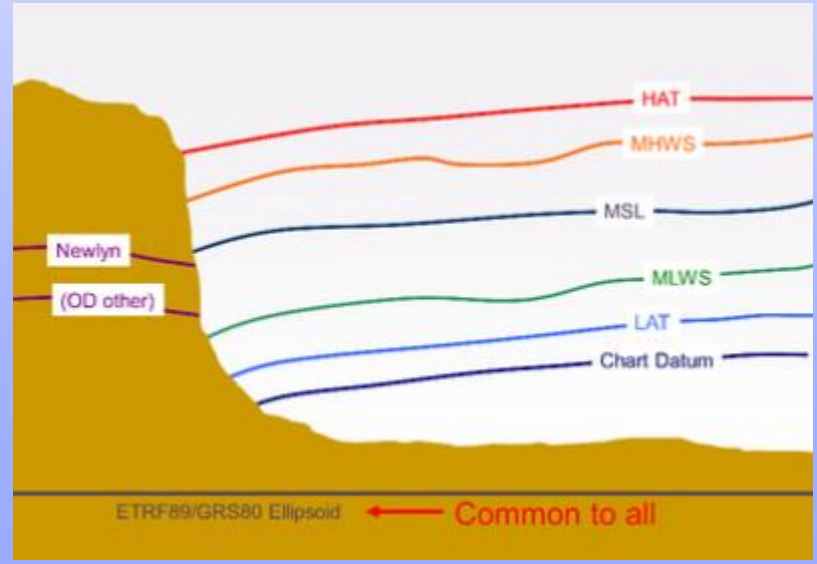




High Tide (right) and **Low Tide** (left). Courtesy of Samuel Wantman (CC BY-SA 3.0).







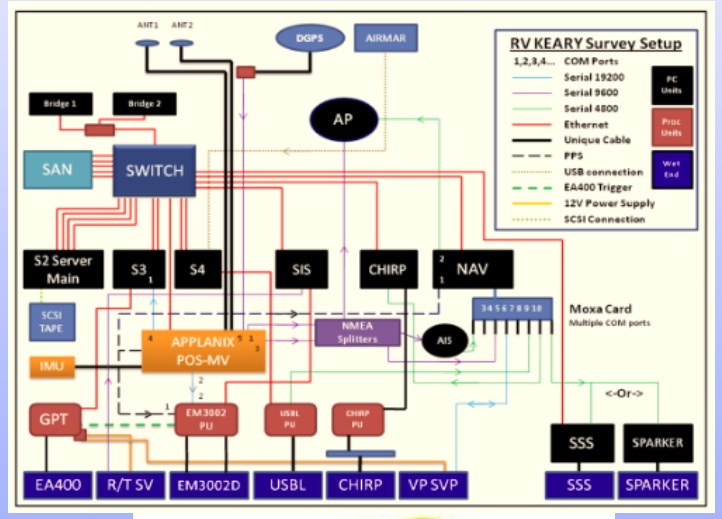
INFOMAR
Integrated Mapping for the Sustainable Development of Ireland's Marine Resource

Adoption of EGNOS

- Final navigation processing requires a vertical accuracy of <10cm to use for tide reduction – limited usable approaches.
- But, still a clear rational for improving real-time GNSS accuracy.

Standalone GNSS	Commercial signals	RTK	Beacon DGPS	EGNOS
Several Meters	Several Decimeters	Several Centimeters	Sub-metre	Sub-metre
-	Immediately	Immediately	Immediately	2010-2011
-	Significant cost	Equipment & time costs.	Minor cost	No cost
-	Often significantly increased complexity	Increased complexity and very limited range.	Slightly increased complexity	No complexity increase.

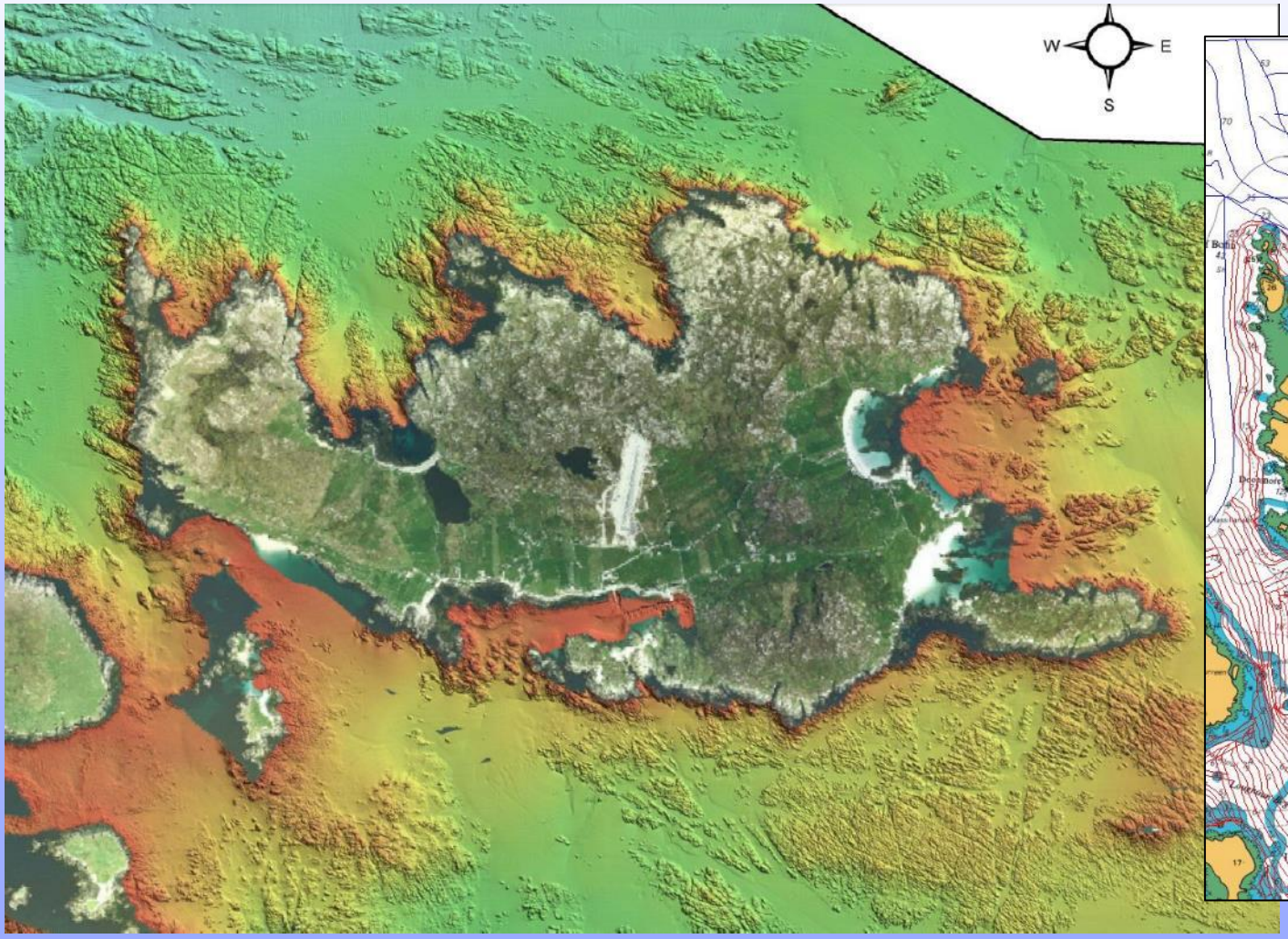
- Accuracy improvement vs. system complexity.
- EGNOS integration with standard survey hardware / firmware.

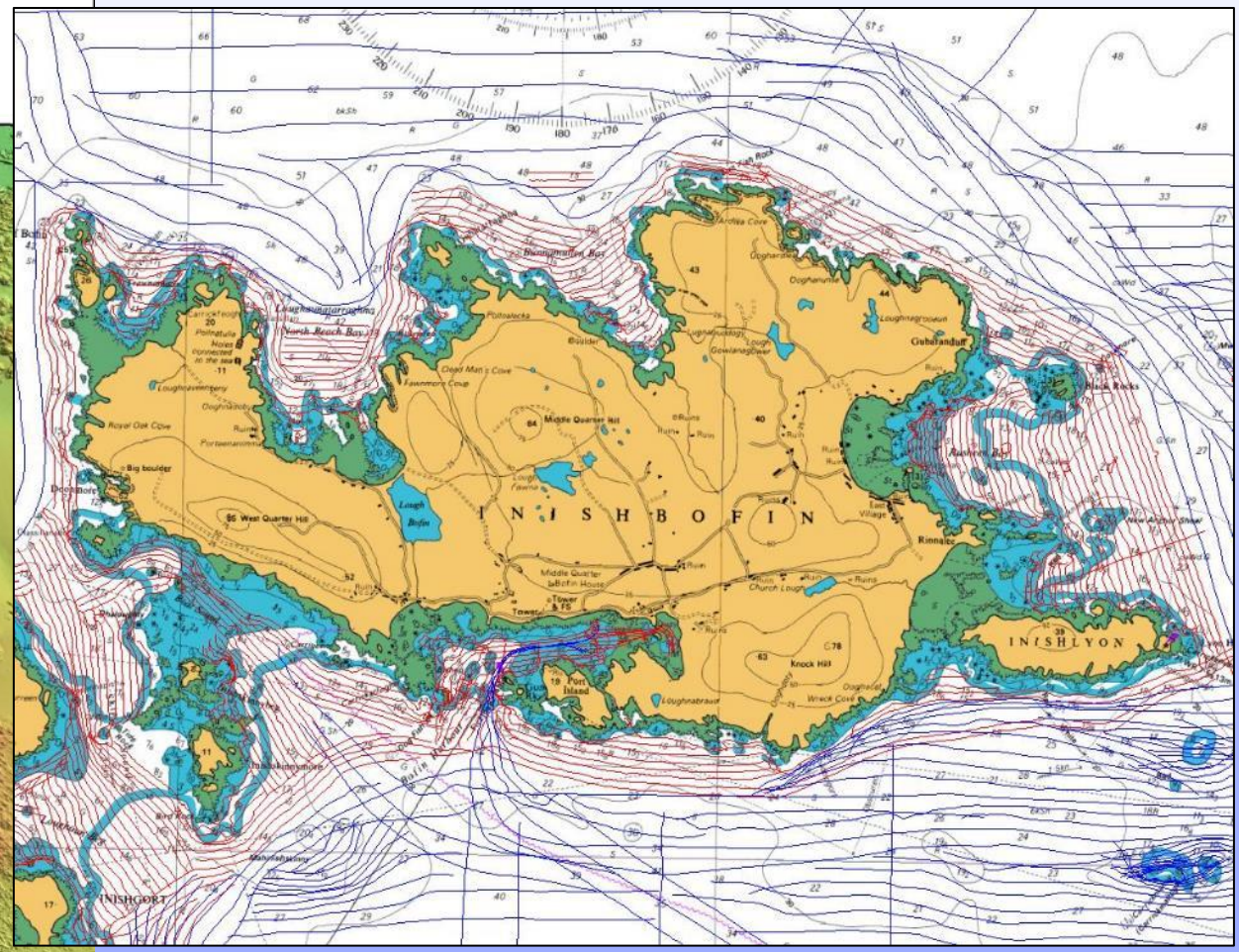


INFOMAR
Integrated Mapping for the Sustainable Development of Ireland's Marine Resource

Experience with EGNOS

- Survey conduct, performance and efficiency – accurate realtime positioning of vessels, enabling high precision line keeping

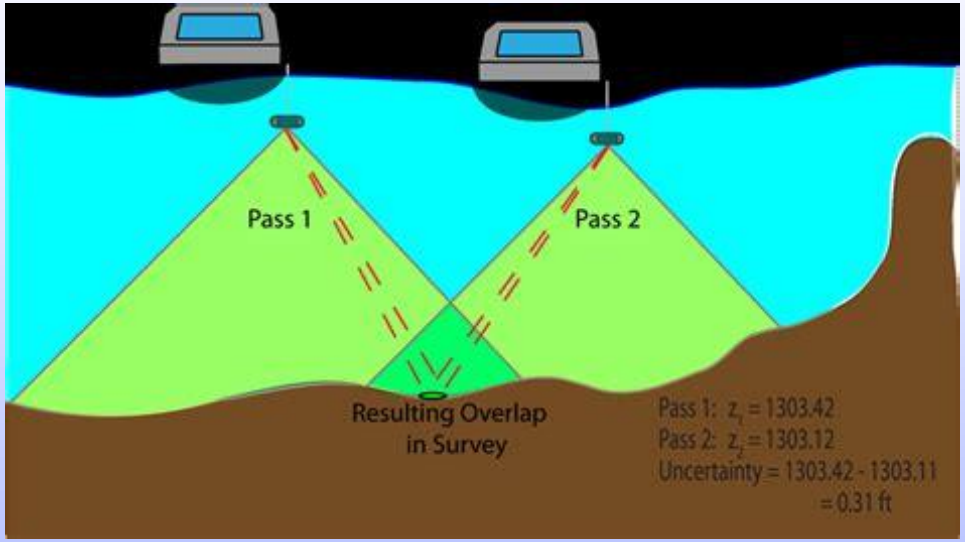




INFOMAR
Integrated Mapping for the Sustainable Development of Ireland's Marine Resource

Experience with EGNOS

- Survey conduct, performance and efficiency – accurate realtime positioning of vessels, enabling high precision line keeping

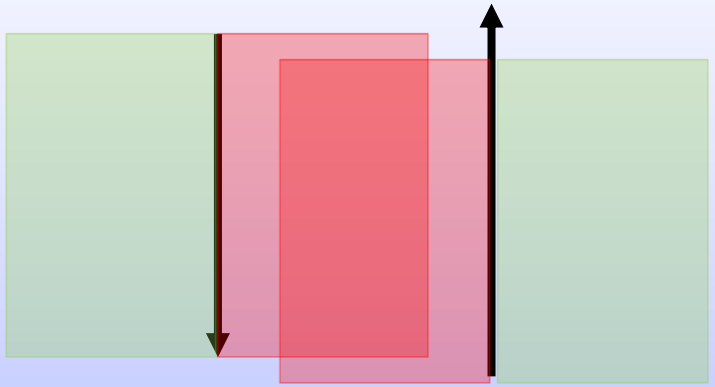


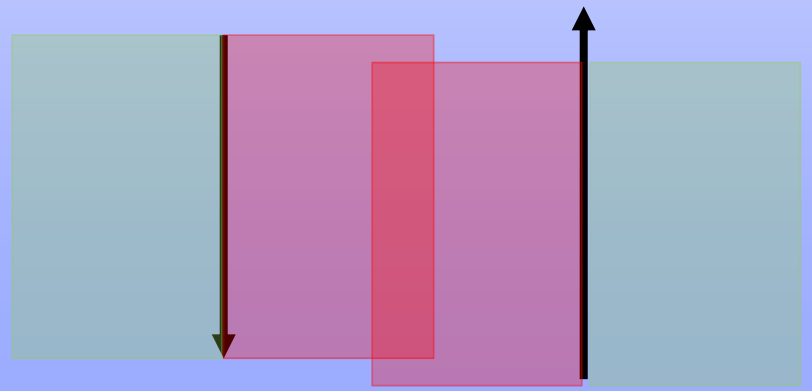
Coverage – 6x WD

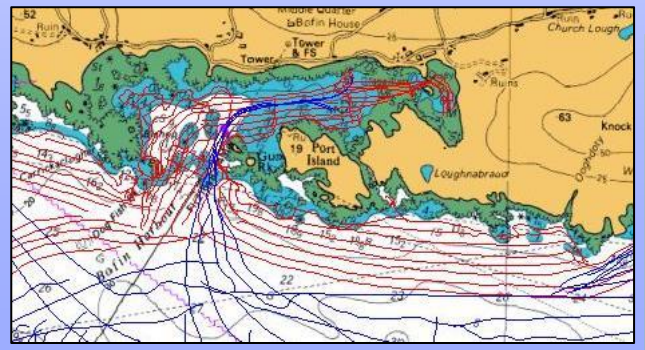
20m – 120m

2m – 12m

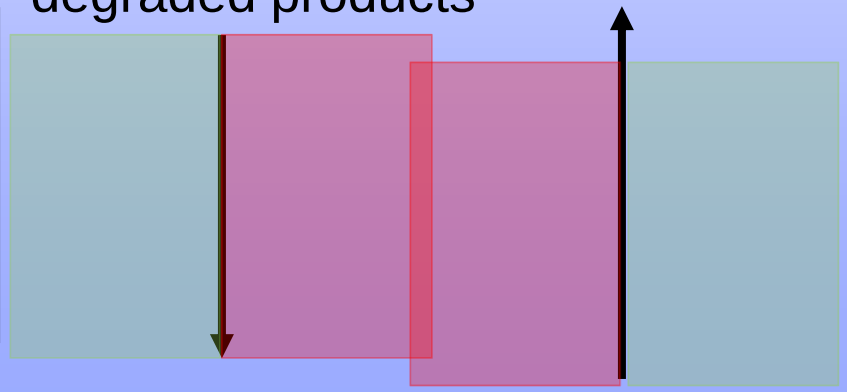
Excessive overlap - inefficient







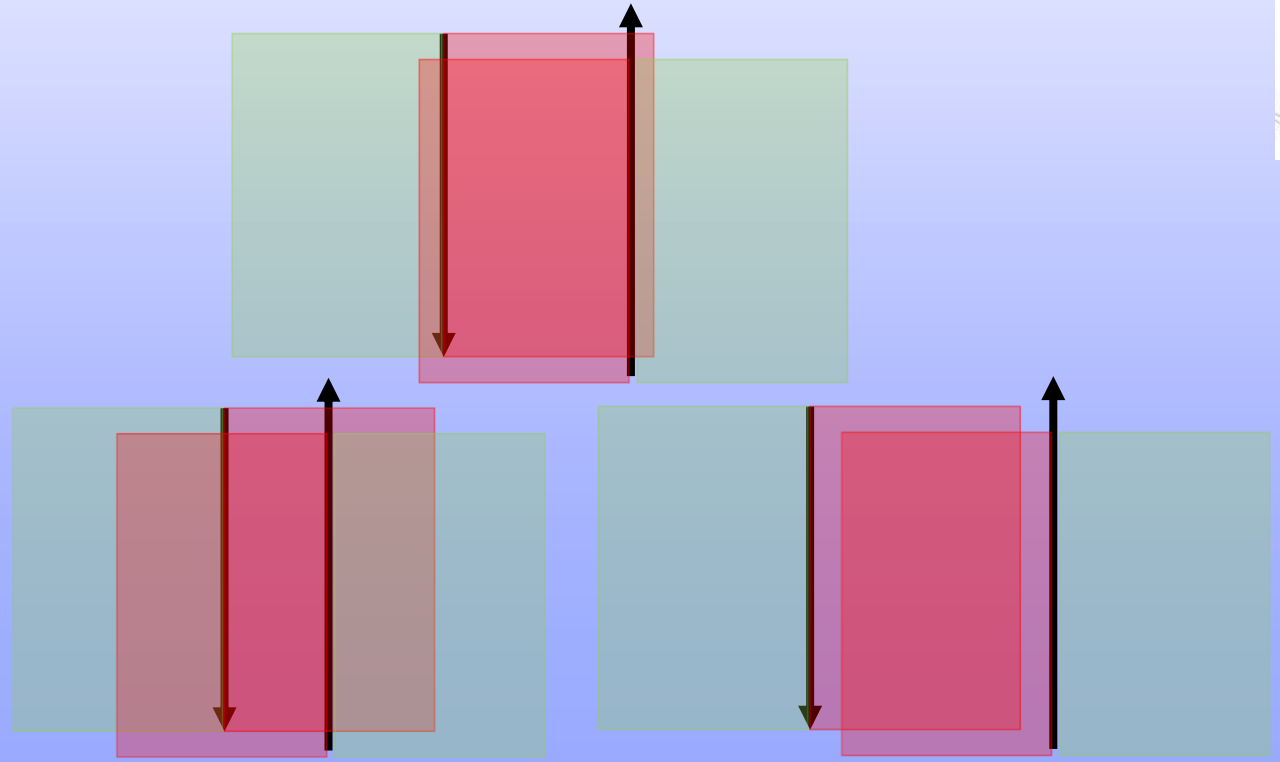
Insufficient overlap/gaps – inefficient or degraded products

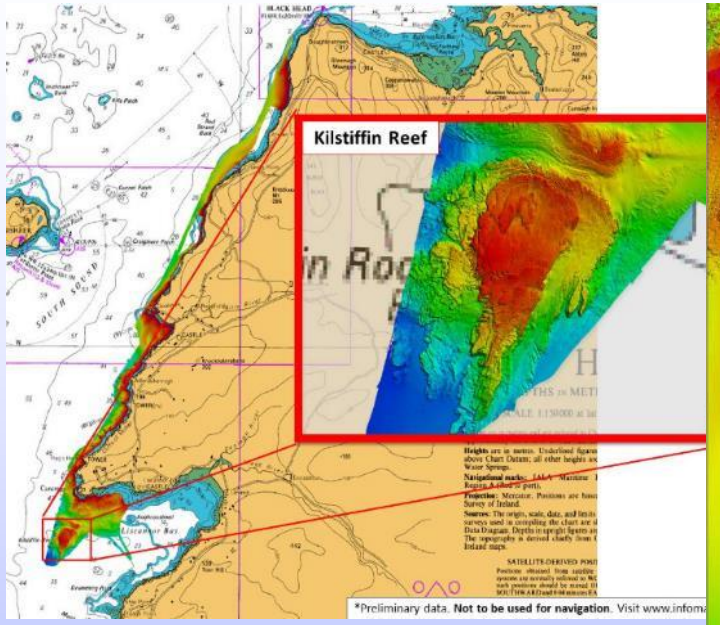


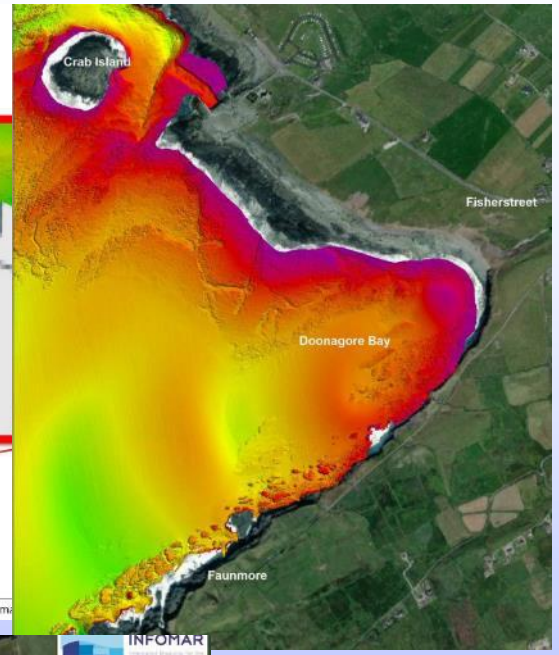
INFOMAR
Integrated Mapping for the Sustainable Development of Ireland's Marine Resource

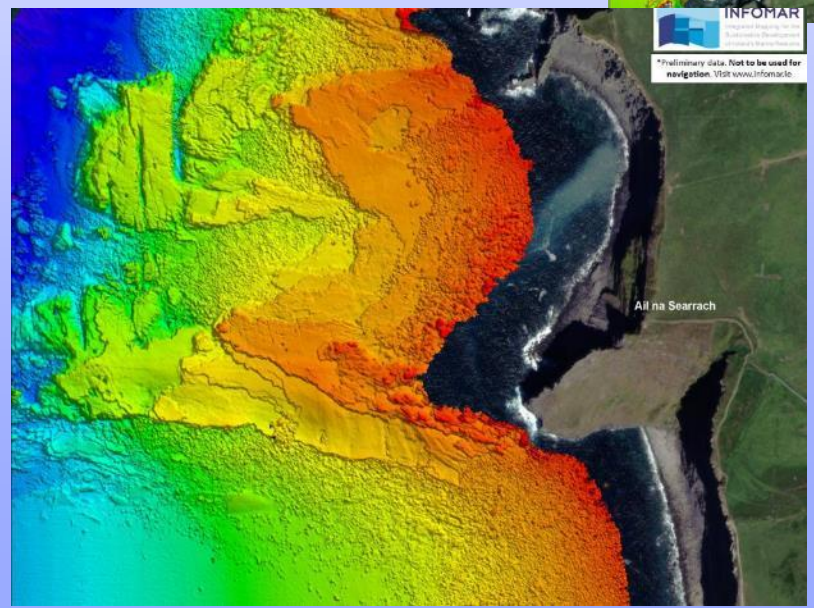
Experience with EGNOS

- Crew safety in operationally challenging areas.





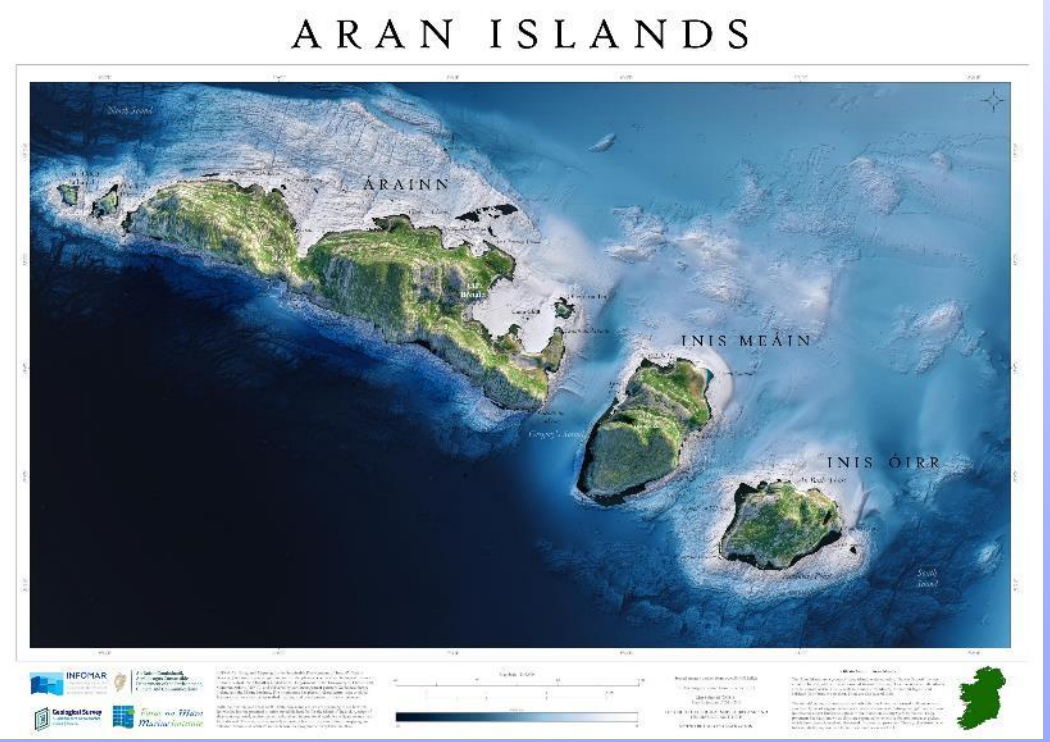




INFOMAR
Integrated Mapping for the Sustainable Development of Ireland's Marine Resource

Takeaways

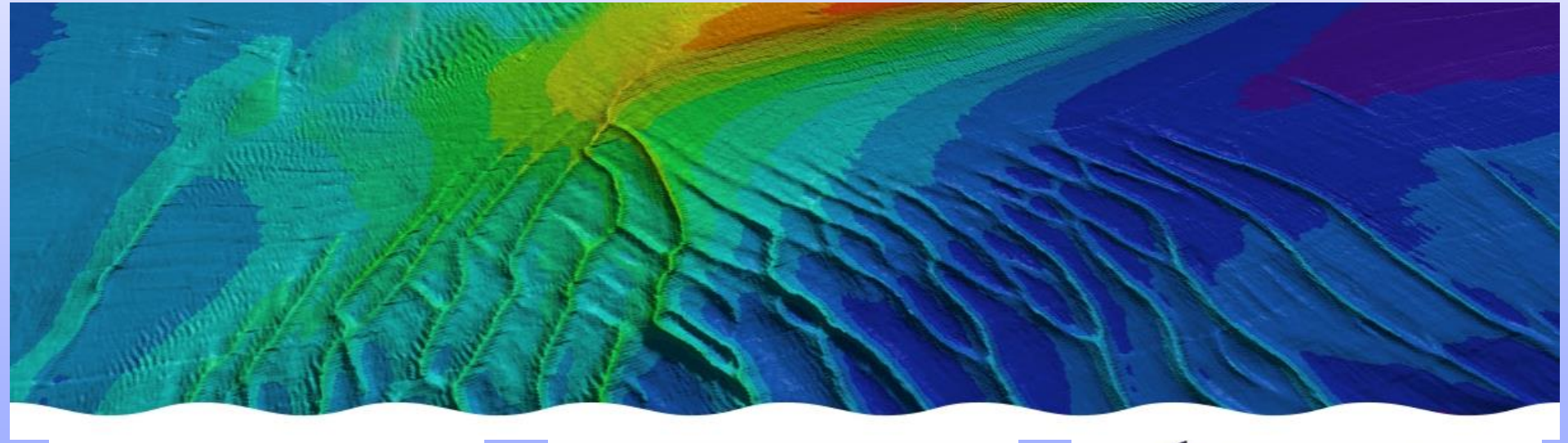
- EGNOS is a key enabling technology for INFOMAR – EU 'public good' service that supports our national 'public good' program.
- Provides improved GNSS performance with lowest system complexity and no incurred cost.
- Improved GNSS performance ensures:
  - Improved crew safety in operationally challenging areas.
  - Improved survey conduct, performance and efficiency through supporting accurate line keeping.



INFOMAR
Integrated Mapping for the Sustainable Development of Ireland's Marine Resource

Thank you for listening!

- Data Access- see *infomar.ie* or email *data@infomar.ie*
- *Email: david.hardy@gsi.ie*



An Roinn Comhshaoil, Aeráide agus Cumarsáide
Department of the Environment, Climate and Communications

Foras na Mara
Marine Institute

Geological Survey
Suirbhéireacht Gheolaíochta
Ireland | Éireann