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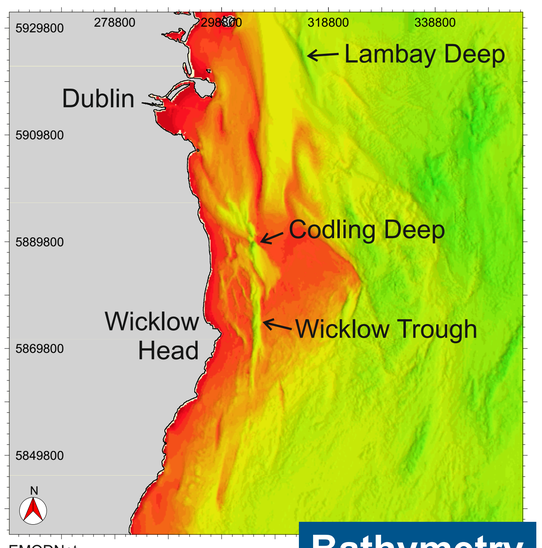
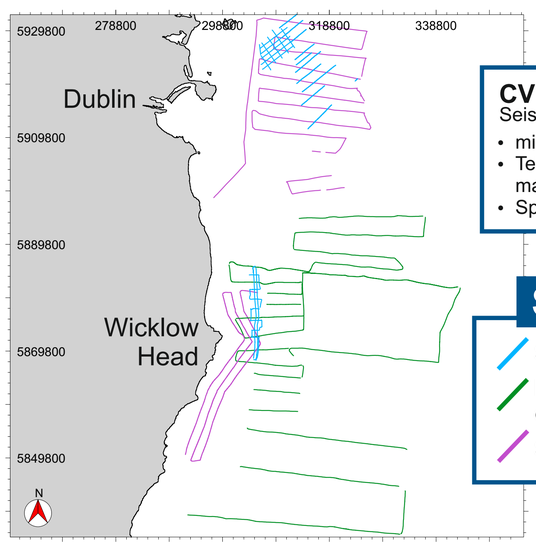
Morphology and development of the deeps and tunnel valleys in the western Irish Sea

SEISMOACOUSTIC DATA IN THE IRISH SEA



Bathymetry



Seismic data

- Sparker data (2009, 2012)
- Multichannel seismic data (2017, CV17013)
- Sparker data (2017, CV17013)

CV17013
Seismic Survey

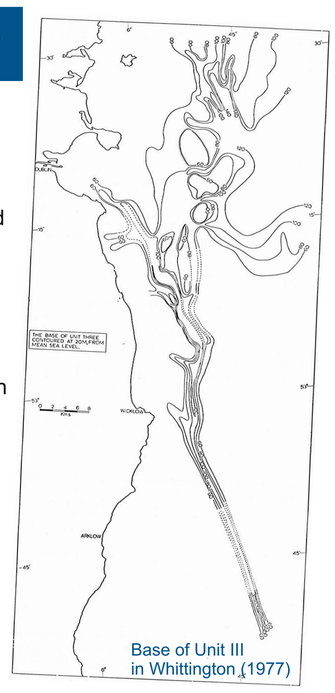
- micro GI gun (central f=200 Hz)
- Teledyne 96-channel streamer (220 m max offset)
- Sparker system (central f=600 kHz)

[TUNNEL VALLEY] SYSTEM?

Deeps and valleys in the western Irish Sea such as the **Lambay Deep**, **Codling Deep** and **Wicklow Trough**, are believed to be part of a complex, linked valley system.
During the last glaciation, the Irish Sea Basin was occupied by the **Irish Sea Ice Stream** that was fed by converging ice streams from British and Irish ice centres of the British-Irish Ice Sheet.

Interpretation of shallow seismic data by Whittington (1977) concluded that a till sheet blankets the pre-Pleistocene surface of the Irish Sea Basin and the valleys were cut into these subglacial sediments.The proposed formation of the channel system was
(1) a sub-aerial fluviatile origin for the Codling Deep and Wicklow Trough during a period of low sea level based on morphology and minor tributaries from onshore rivers and
(2) a subglacial stream erosion (tunnel valley) for the Lambay Deep.
This late- to post-glacial, rectilinear **drainage network** is now partially infilled with Quaternary sediments and at present in parts it is undergoing active erosion.

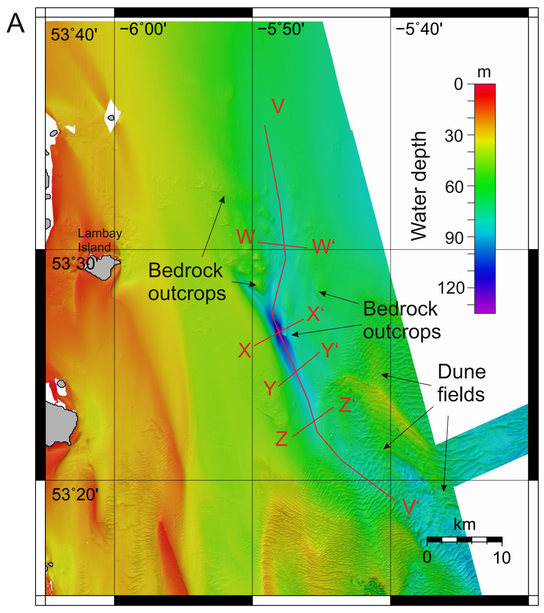
The objective of our study is to reassess the morphology and formation theories of the deeps and valleys based on newly acquired seismo-acoustic data 40 years later and to define a Quaternary stratigraphic framework in the Irish sector of the Irish Sea. This poster displays the groundwork of our ongoing analysis.

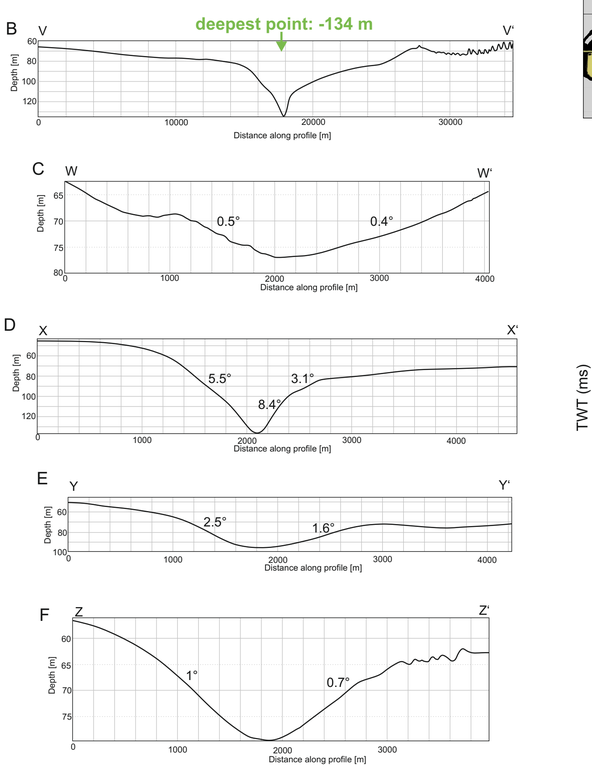


Base of Unit III in Whittington (1977)

PRESENT MORPHOLOGY

Lambay Deep

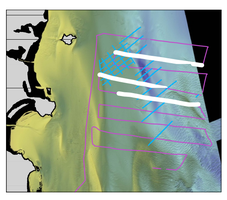


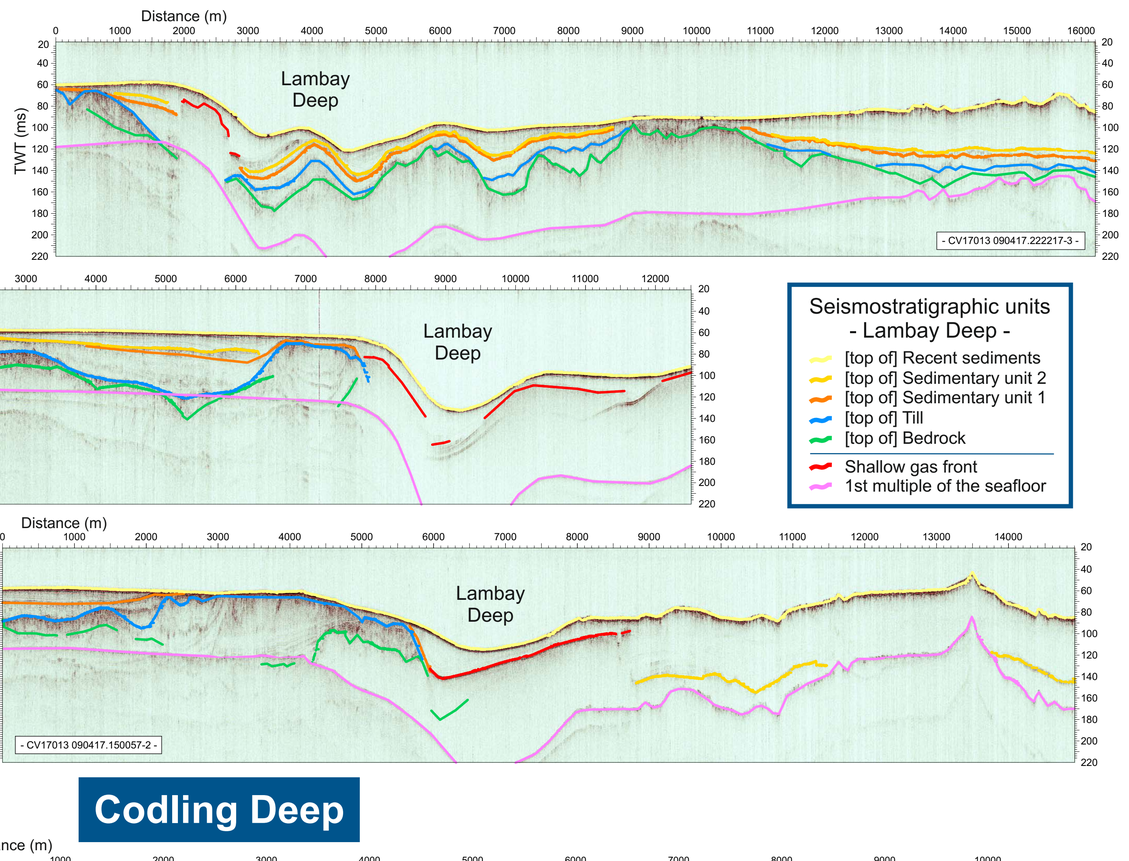


SEISMOSTRATIGRAPHY

Whittington's seismostratigraphy
Unit I = Pre-Pleistocene
Unit II = Till
Unit III = Horizontally-bedded sedimentary deposits
Unit IV = Sand banks, sand waves or recent muds and silts

Lambay Deep

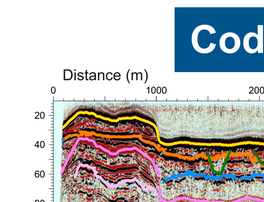




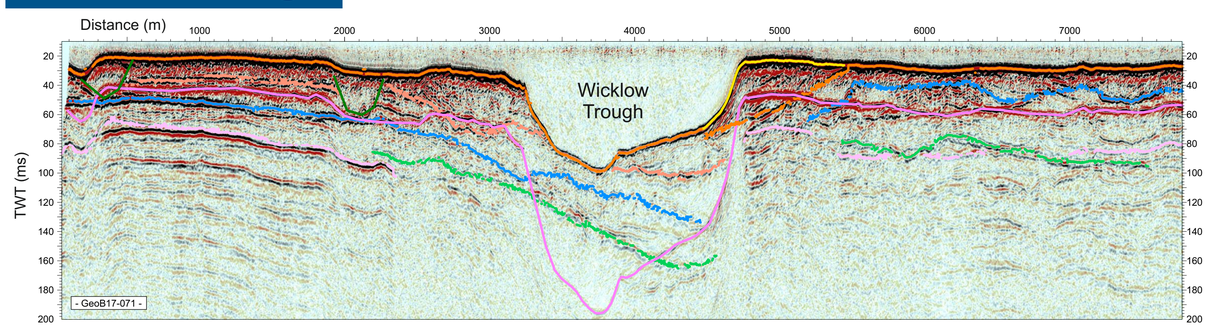
Seismostratigraphic units
- Lambay Deep -

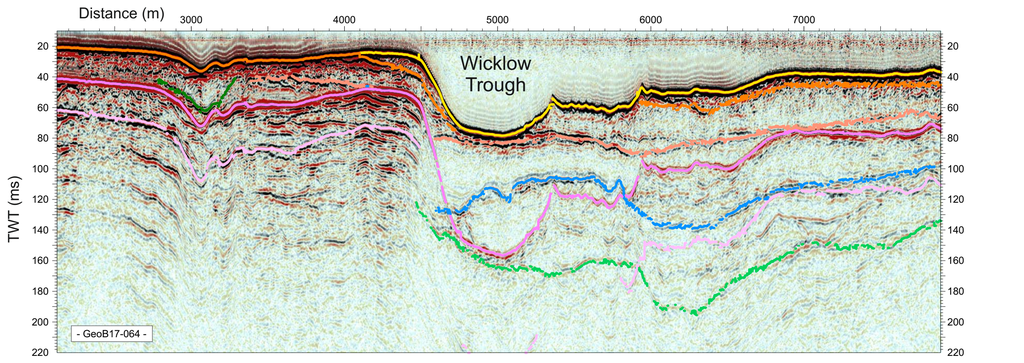
- [top of] Recent sediments
- [top of] Sedimentary unit 2
- [top of] Sedimentary unit 1
- [top of] Till
- [top of] Bedrock
- Shallow gas front
- 1st multiple of the seafloor

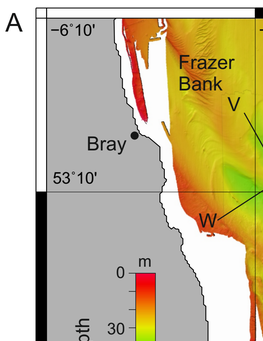
Codling Deep

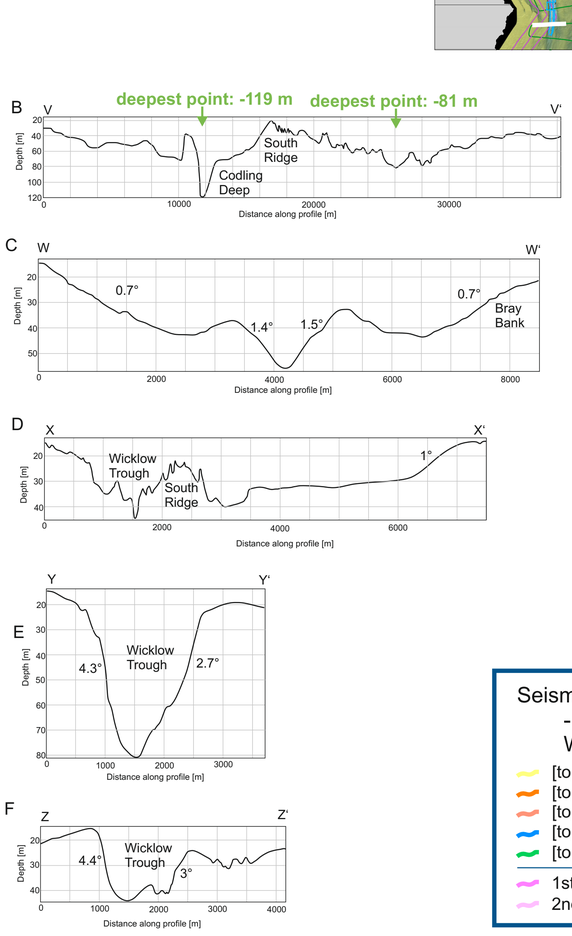


Wicklow Trough









Seismostratigraphic units
- Codling Deep, Wicklow Trough -

- [top of] Recent sediments
- [top of] Sedimentary unit 2
- [top of] Sedimentary unit 1
- [top of] Till
- [top of] Bedrock
- 1st multiple of the seafloor
- 2nd multiple of the seafloor

REFERENCES

Whittington, R.J., 1977: A late-glacial pattern in the Kish Bank area and post-glacial sediments in the Central Irish Sea. In: Kidson, C., Toolet, M.J. (Eds.), The Quaternary History of the Irish Sea. Seel House, Liverpool, pp. 55–68.

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