

IRELAND 2013 - The Status of Exploration Offshore Ireland and a Major New Seismic Survey

Michael Hanrahan & Clare Morgan

Petroleum Affairs Division

Department of Communications, Energy and Natural Resources

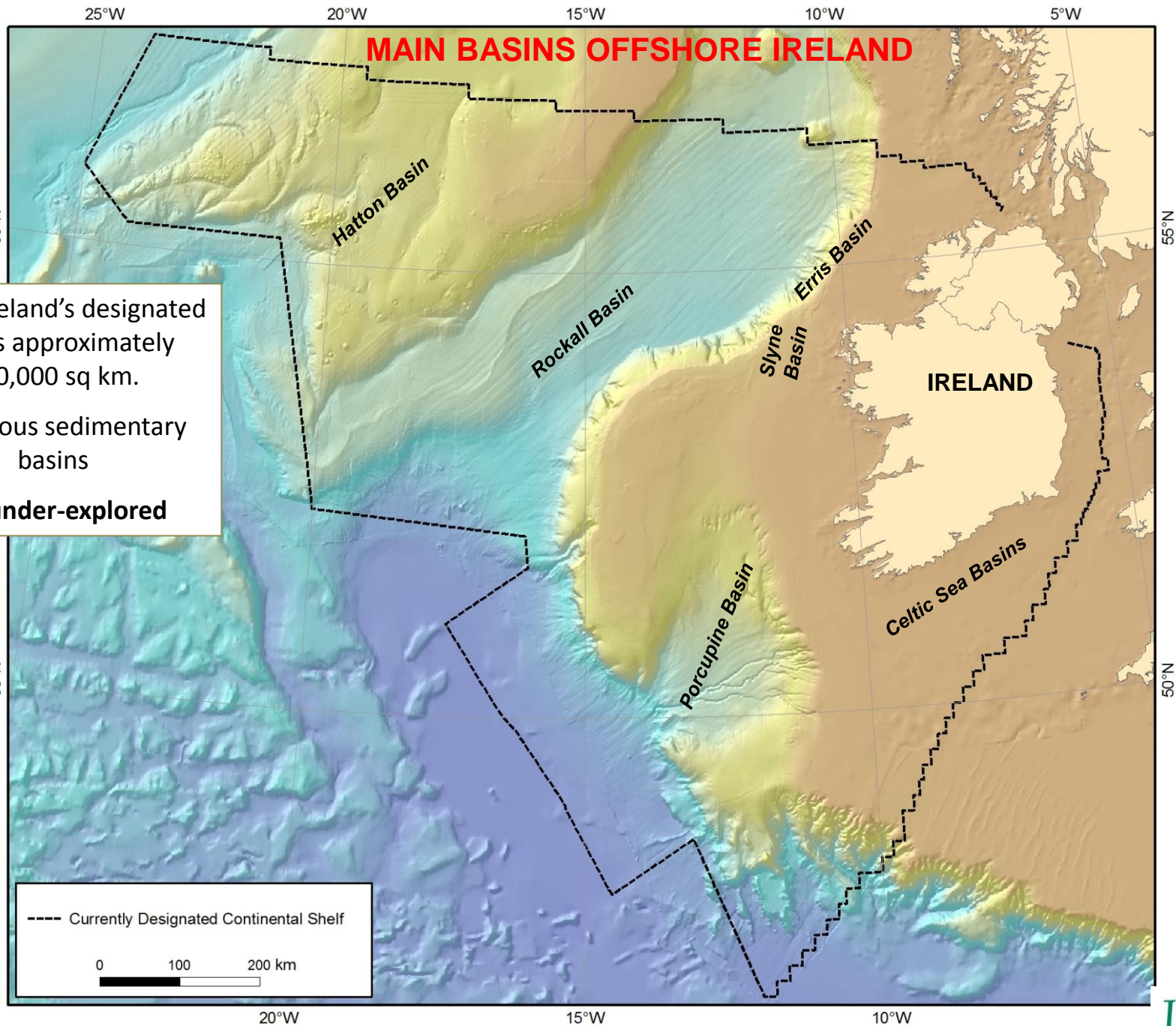
Atlantic Ireland, 11 November 2013



Presentation outline:

- **Status of exploration offshore – drilling, seismic, licences**
- **Examining the outcome of the 2011 Atlantic Margin Licensing Round and recent new company entrants**
- **Summary of the current seismic database, new data including the 2013 regional seismic survey**
- **Summary and Conclusions**





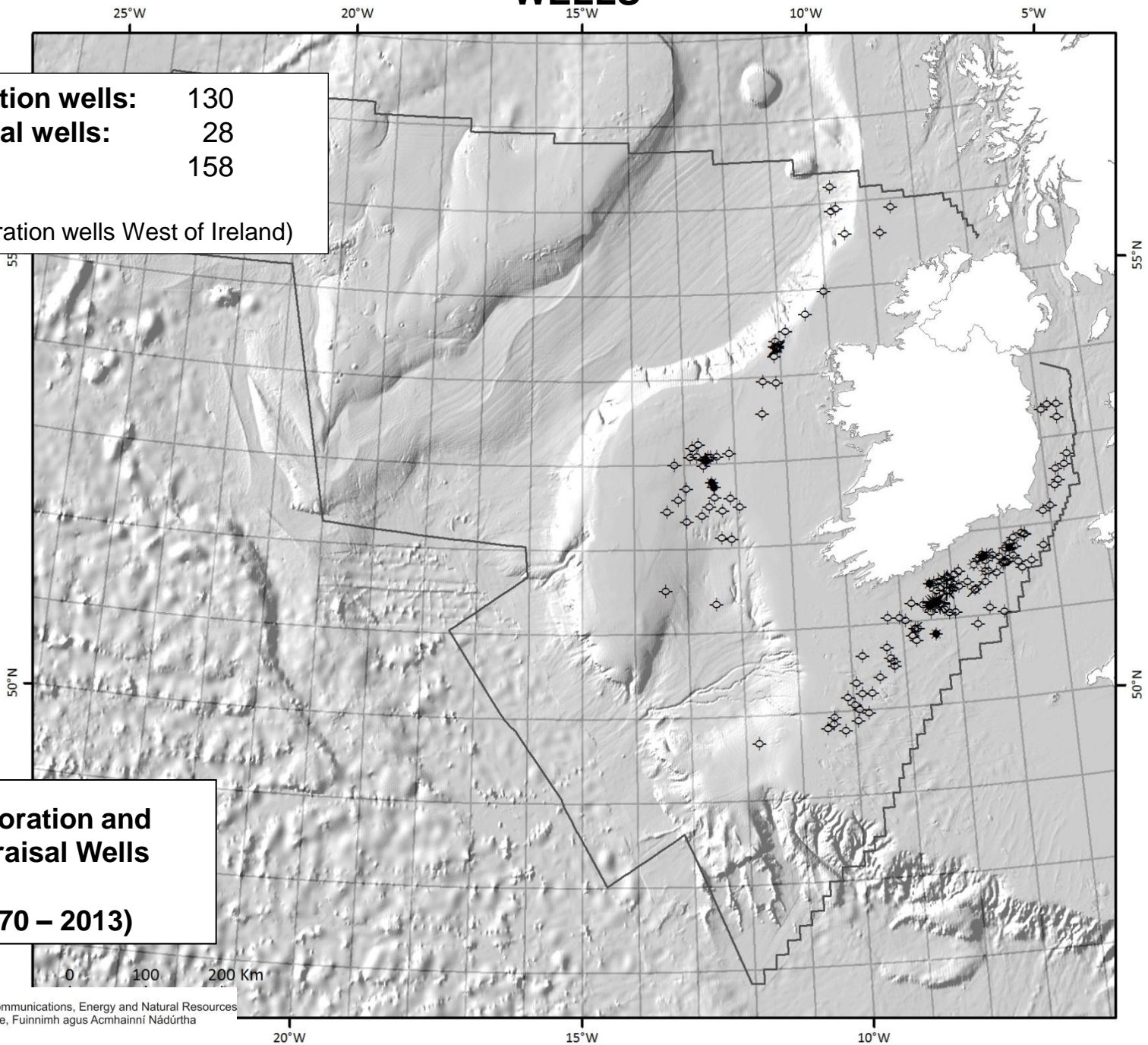
WELLS

Exploration wells: 130
Appraisal wells: 28
Total: 158

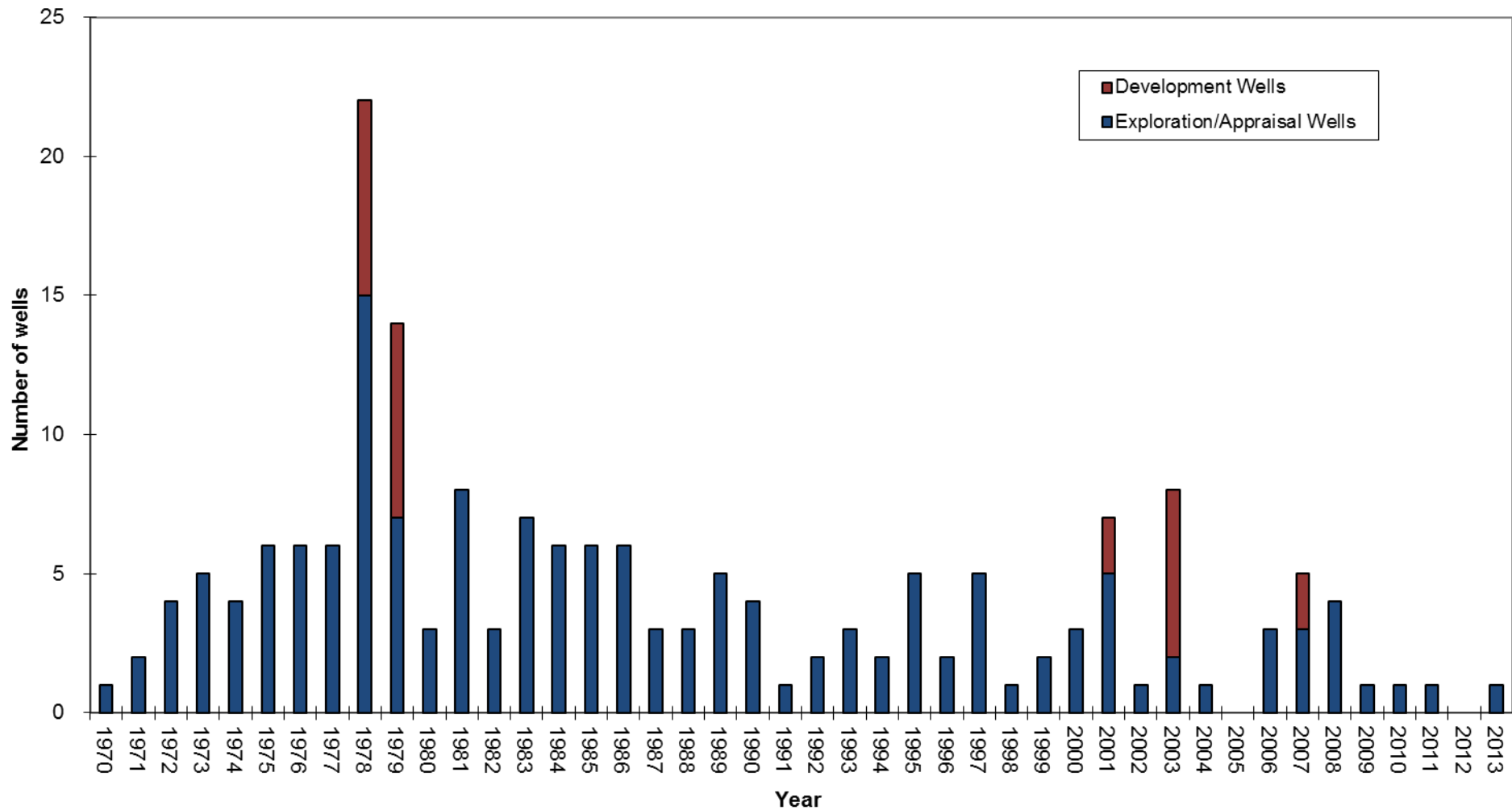
(43 exploration wells West of Ireland)

**Exploration and
Appraisal Wells**

(1970 – 2013)



Wells Spudded and Drilled Offshore Ireland



Drilling 2013 Dunquin

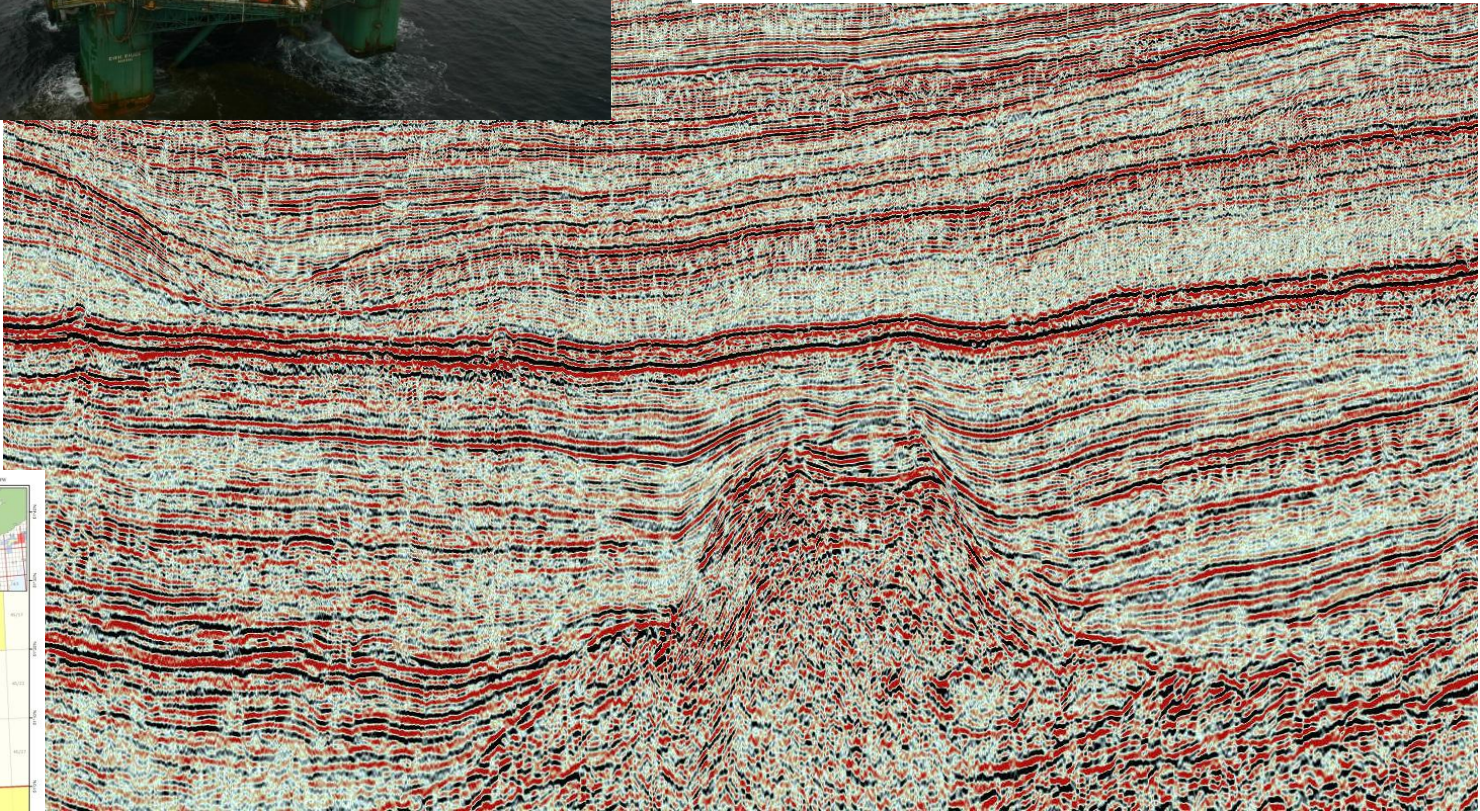


Dunquin Exploration Well 44/23-1

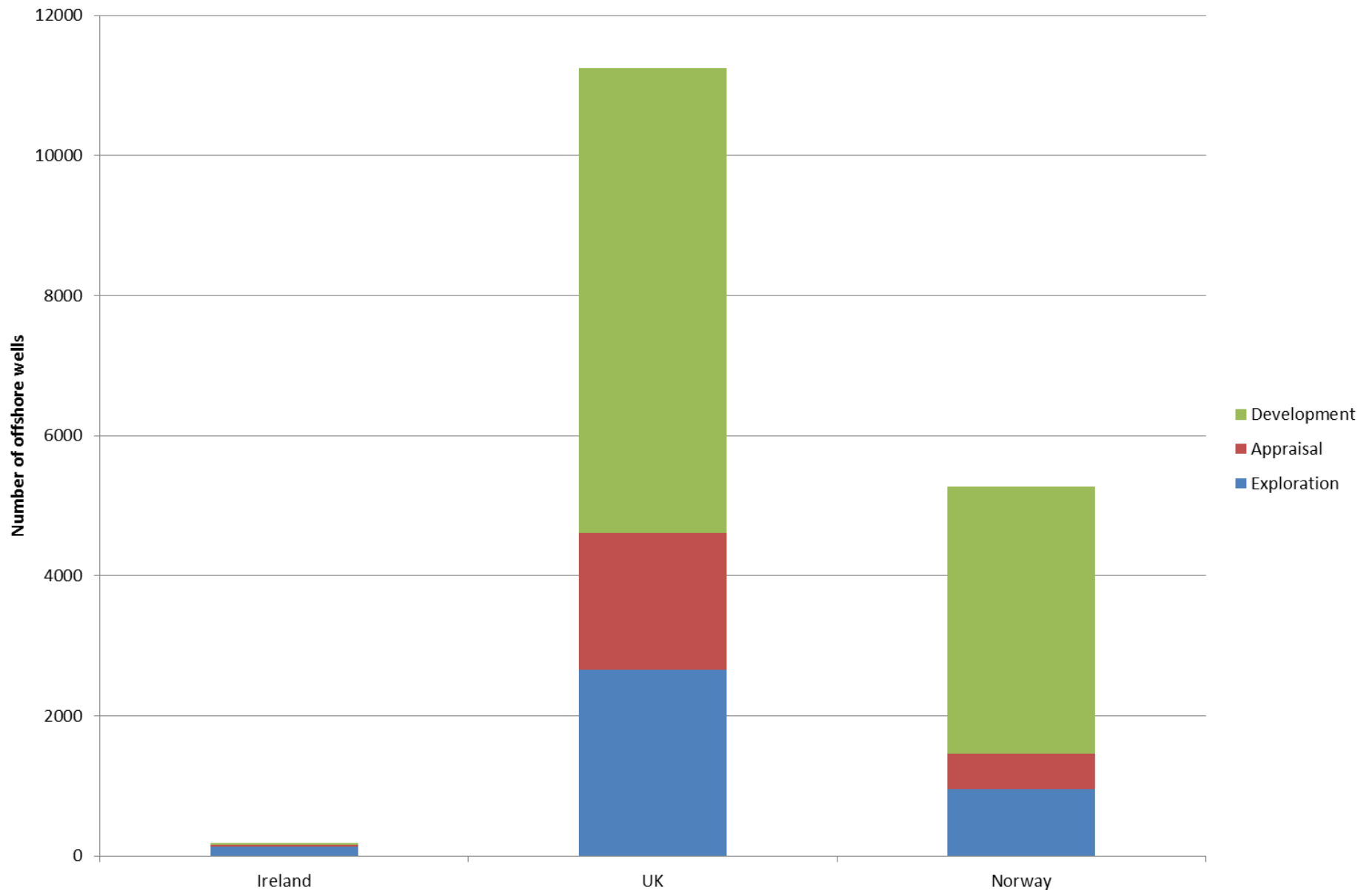
Exploration Licence FEL 3/04

ExxonMobil Exploration and Production Ireland (Offshore) Ltd	25.5%
Eni Ireland BV	27.5%
Providence Resources Plc	16%
Sosina Exploration Ltd	2%
Repsol Exploracion Irlanda SA	25%
Atlantic Petroleum	4%

Well located approximately 160km off southwest coast of Ireland in water depth of 1663m



Wells



Discoveries

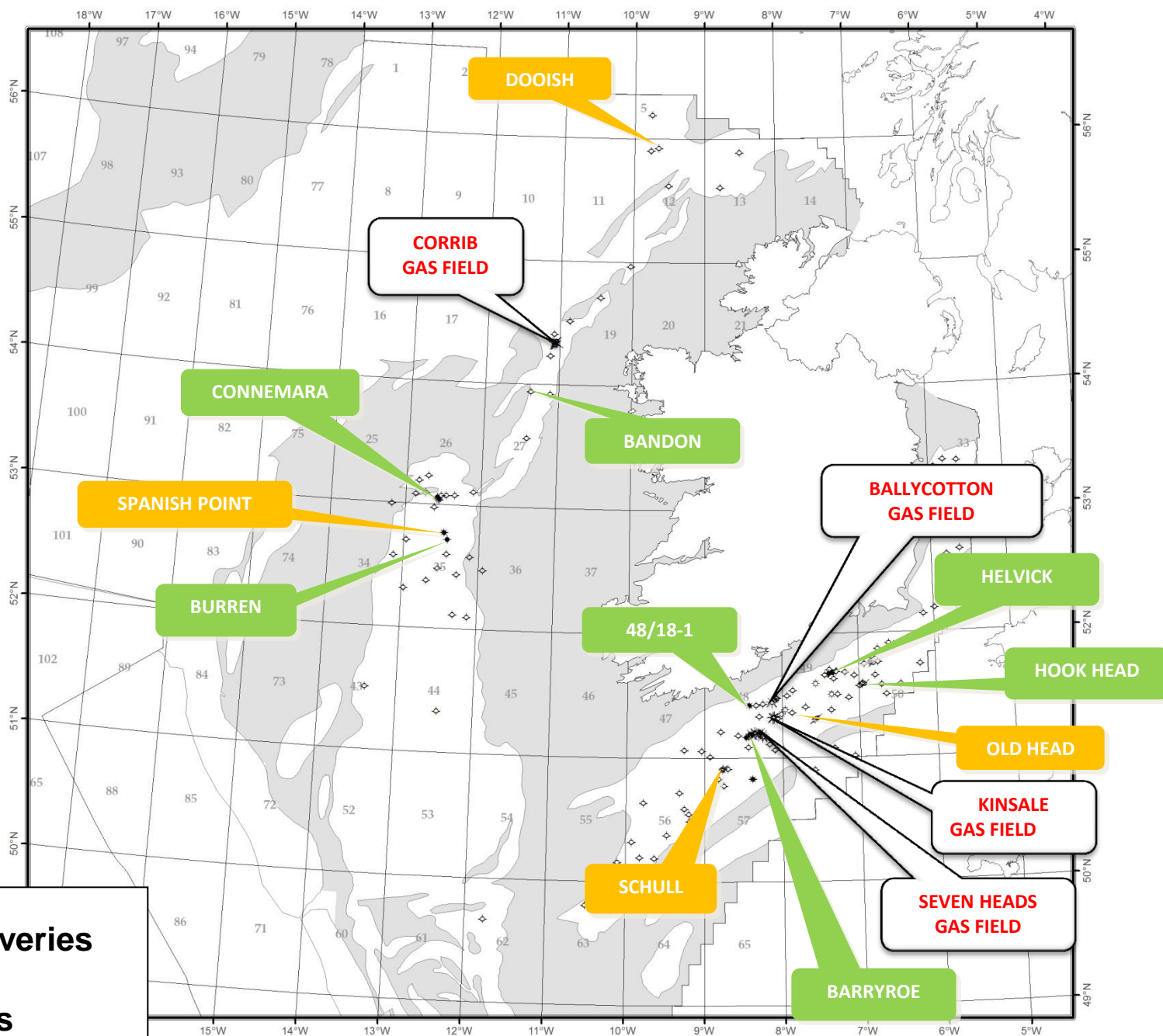


Gas / gas
condensate

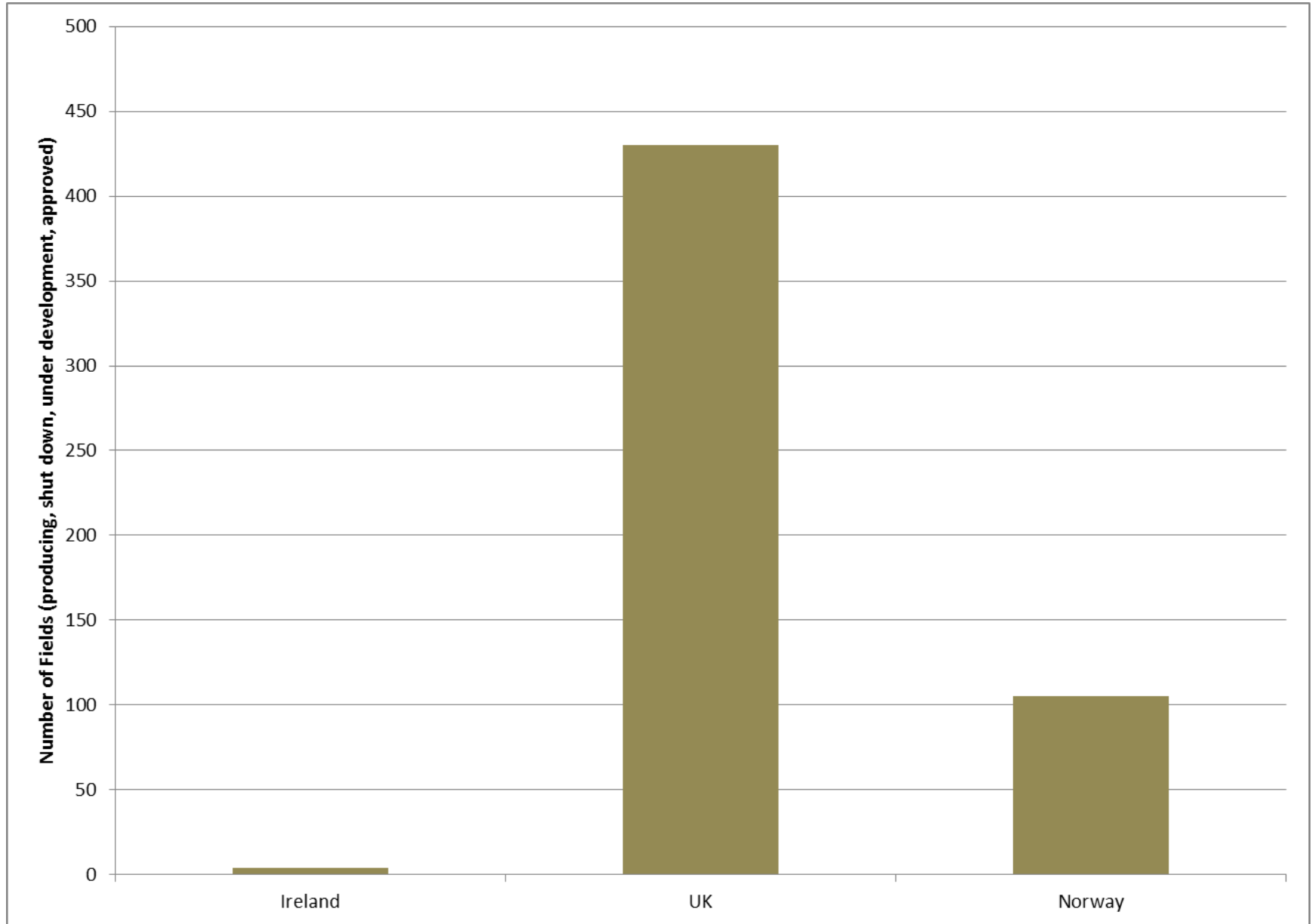


Oil

Key Discoveries & Fields (1970 – 2013)



Fields



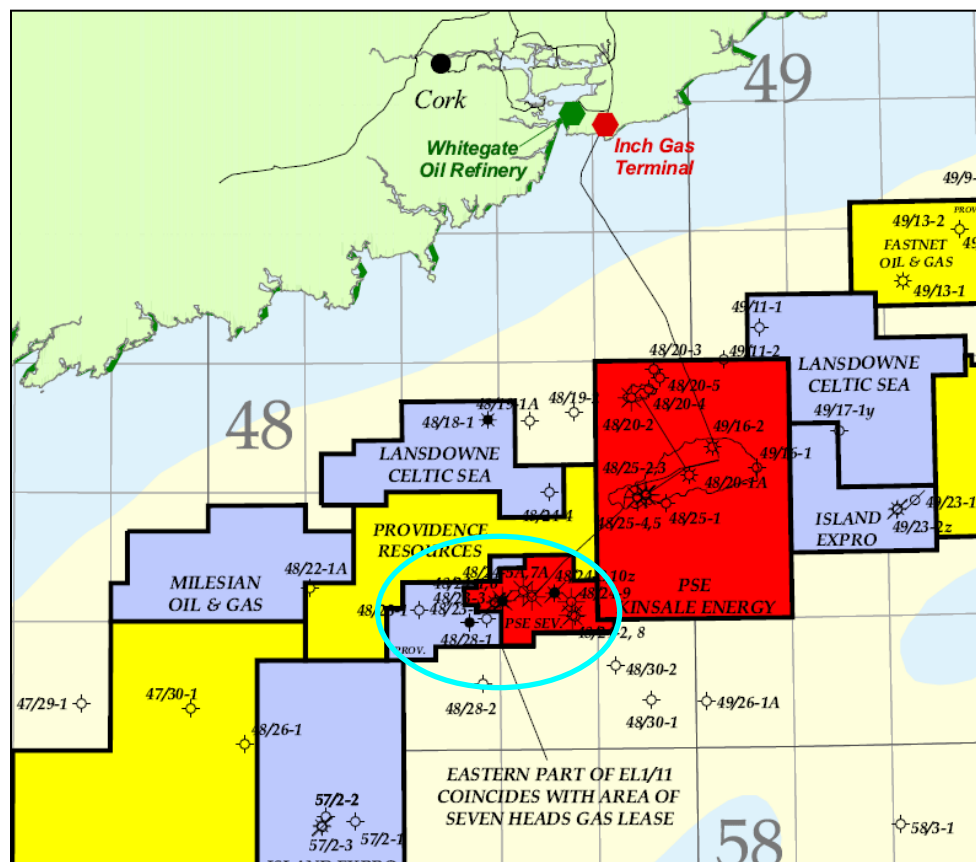
Barryroe Summary

Standard Exploration Licence 1/11

- Providence Resources – 80% (OP)
- Lansdowne Oil & Gas – 20%

Licensing Option 12/4

- Providence Resources – 80% (OP)
- Lansdowne Oil & Gas – 20%

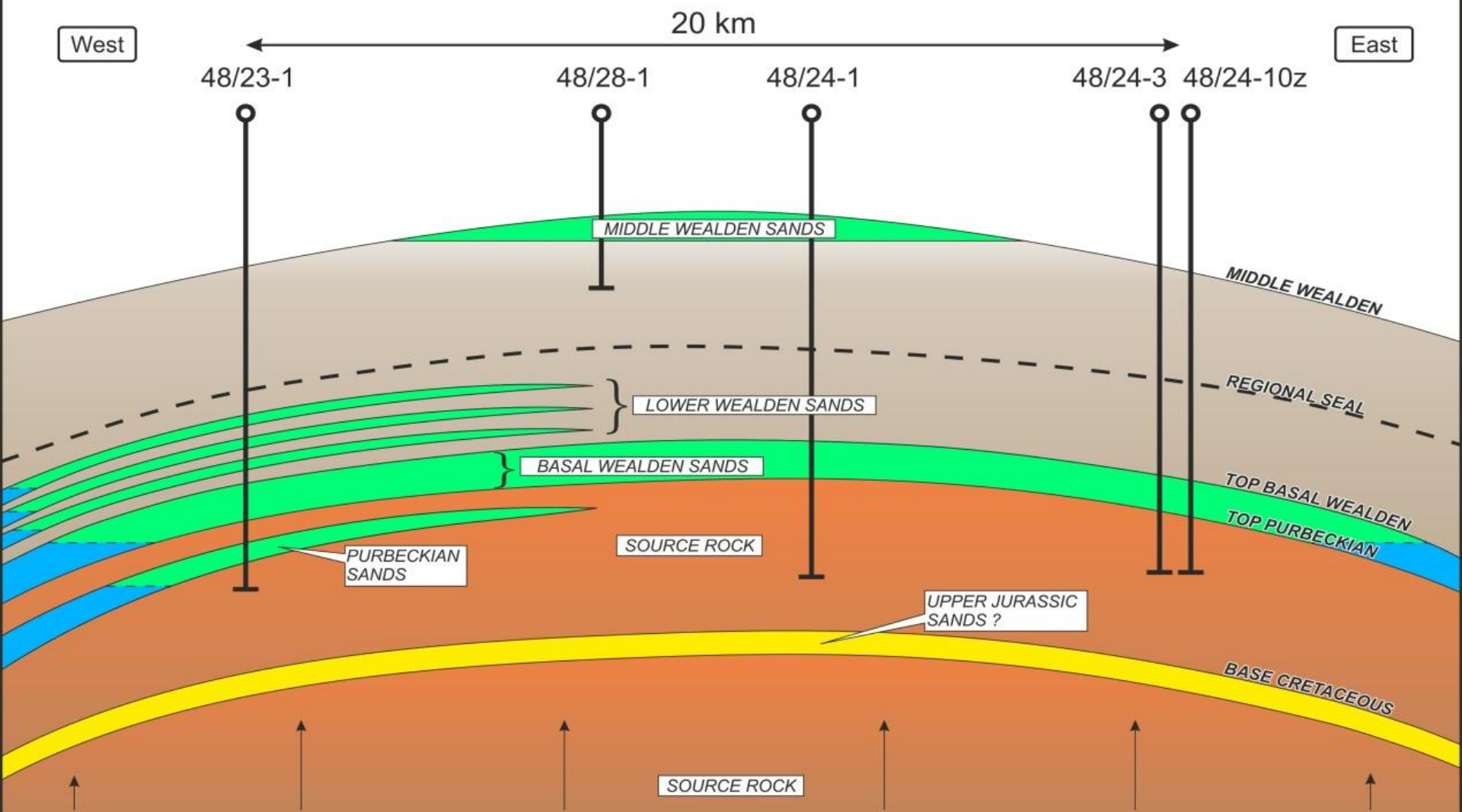


Barryroe Oil Field

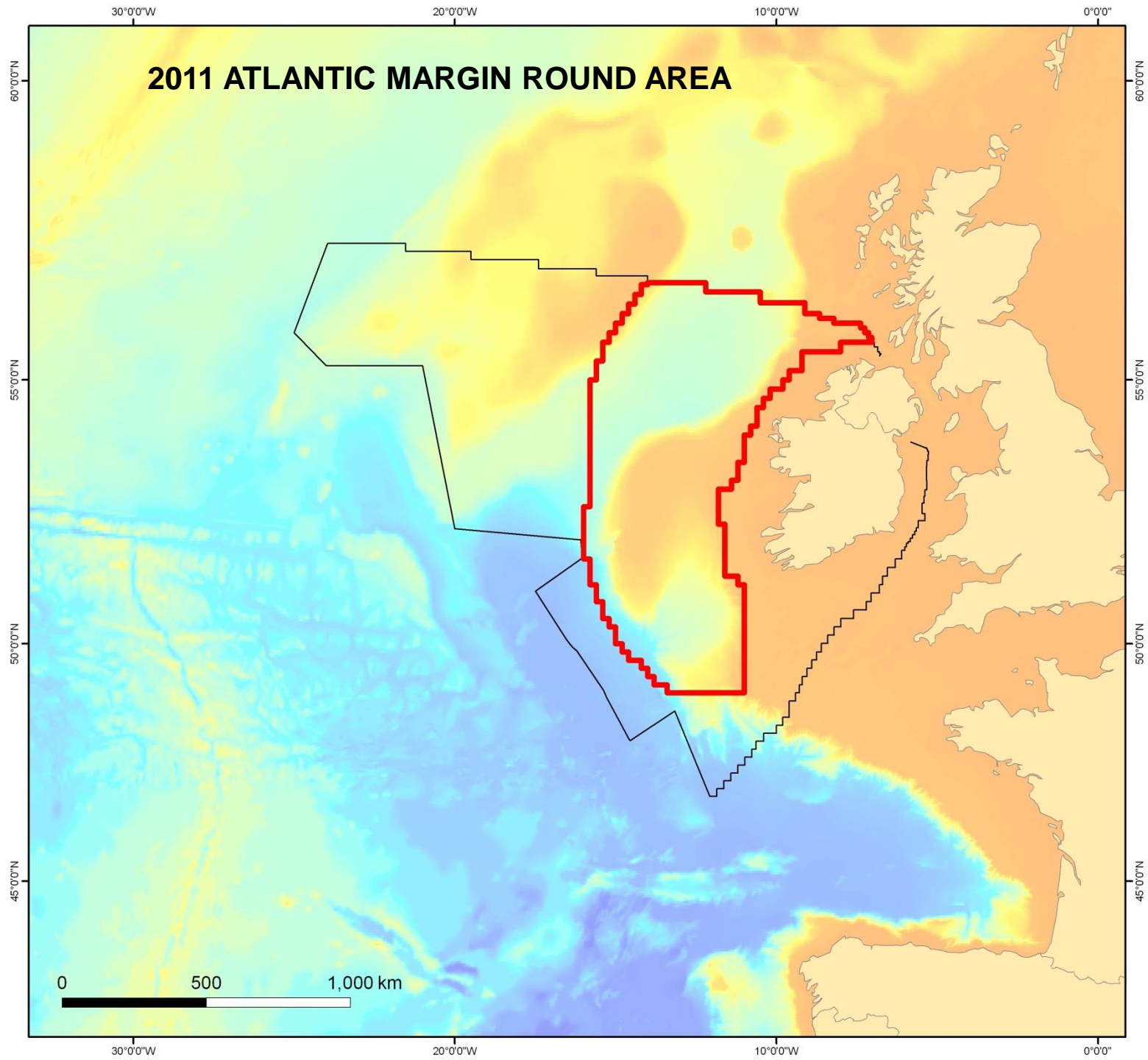
- logged/tested
- exploration



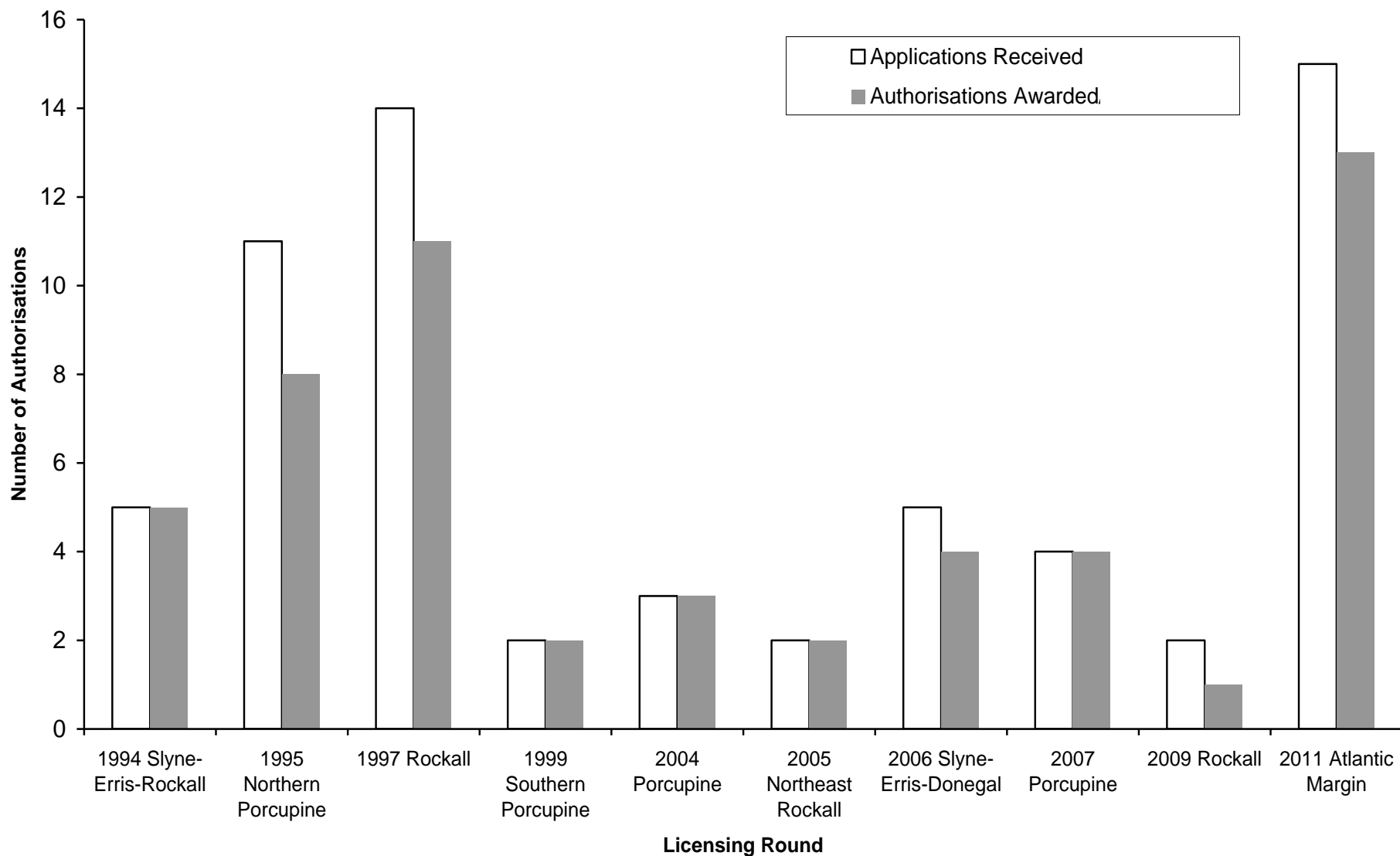
Barryroe Oil Discovery Schematic Cross-section



2011 ATLANTIC MARGIN ROUND AREA



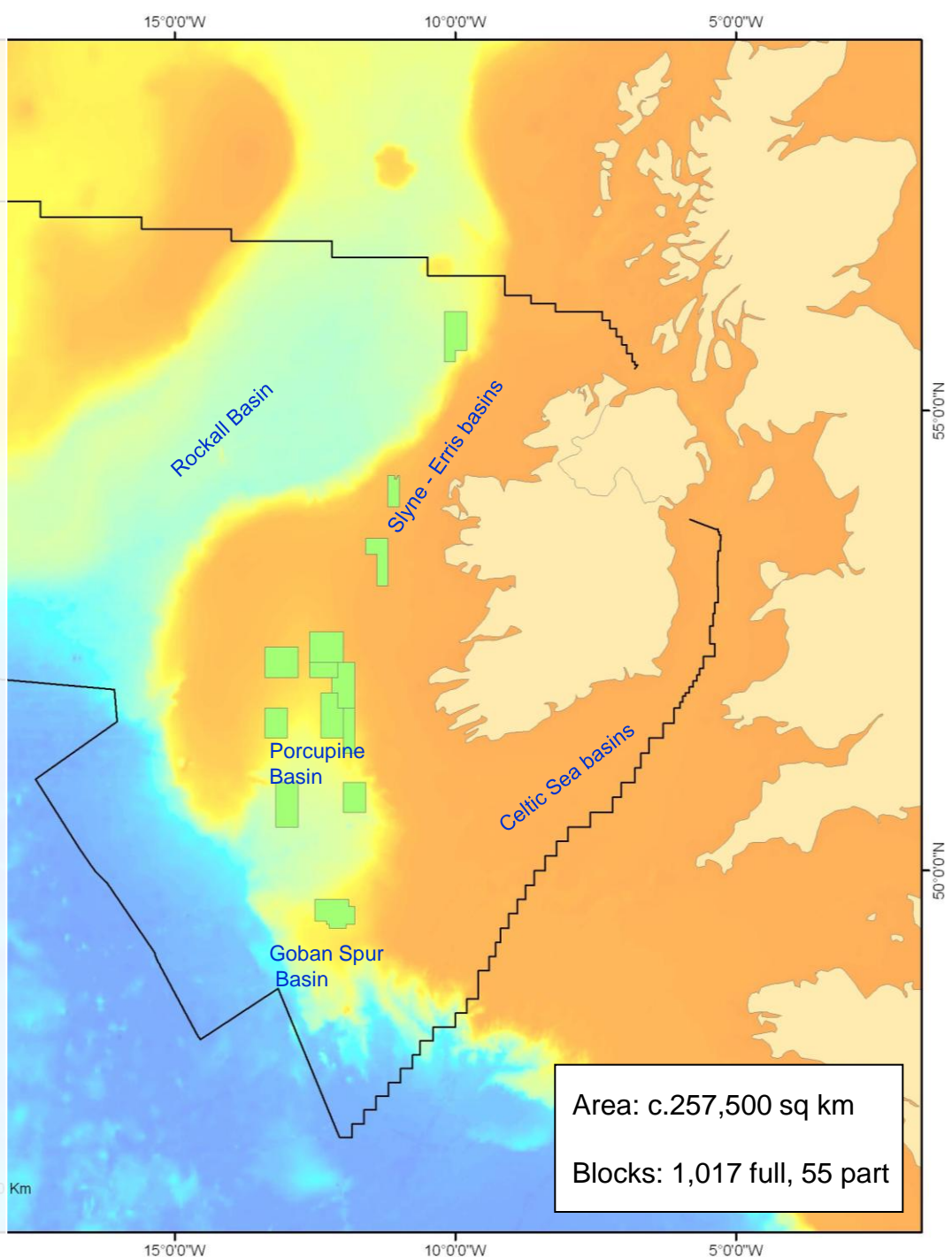
LICENSING ROUNDS



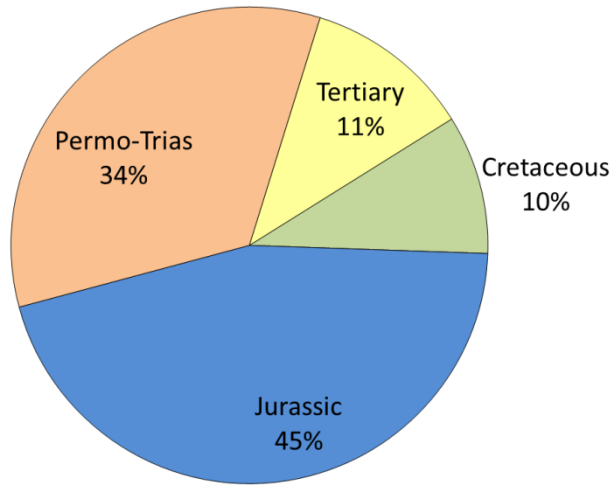
2011 ATLANTIC MARGIN ROUND

Closed 31 May; Awards 1 November

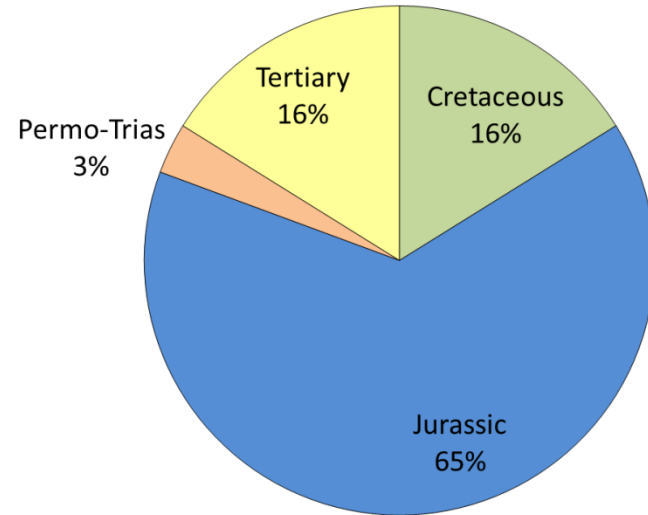
- From 15 valid applications, 13 2-year Licensing Options awarded to 12 companies
- Typical work programmes focus on seismic reprocessing, well/seismic survey design; prospectivity and pre development studies
- Up to 75% of an Option area may be converted into a 15-year Frontier Exploration Licence
- Wide variety of exploration targets recognised from Tertiary to Permo-Trias; from non-marine fluvial & aeolian to basin-floor fans
- **A significant proportion of the Options have Cretaceous deep marine sandstone objectives.**
- Applications were in respect of areas of Atlantic basins where most exploration effort has been focussed to date.
- No applications for the most under-explored areas.



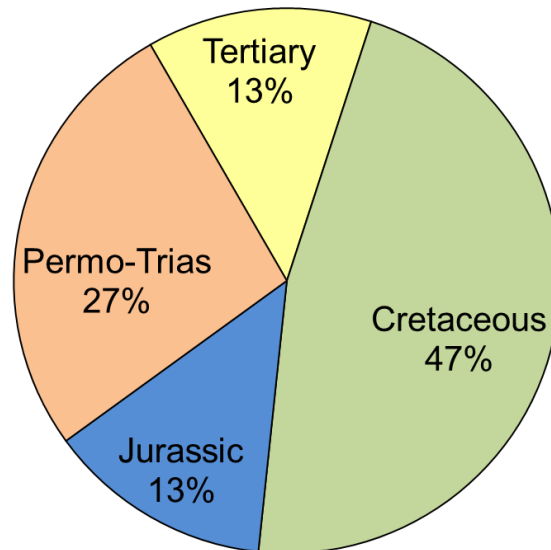
**All Atlantic Margin Basins
Well Primary Objective by Age**



**Porcupine Basin
Well Primary Objective by Age**

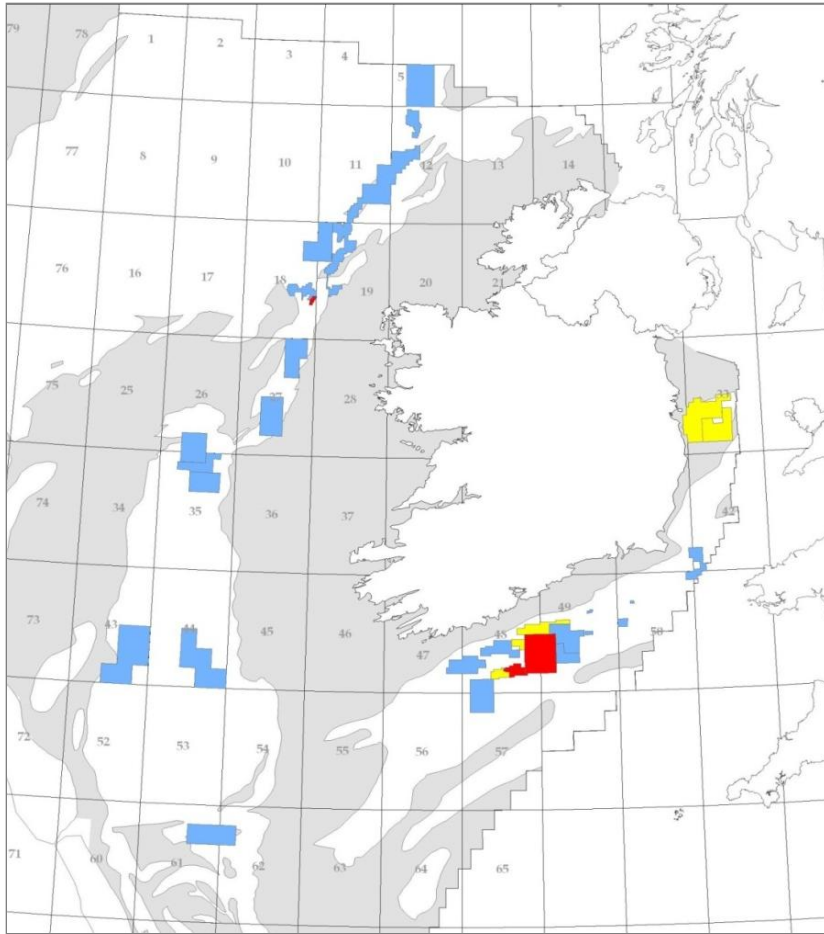


**2011 Atlantic Margin Licensing Round Applications
- Primary Objective Plays by Age**

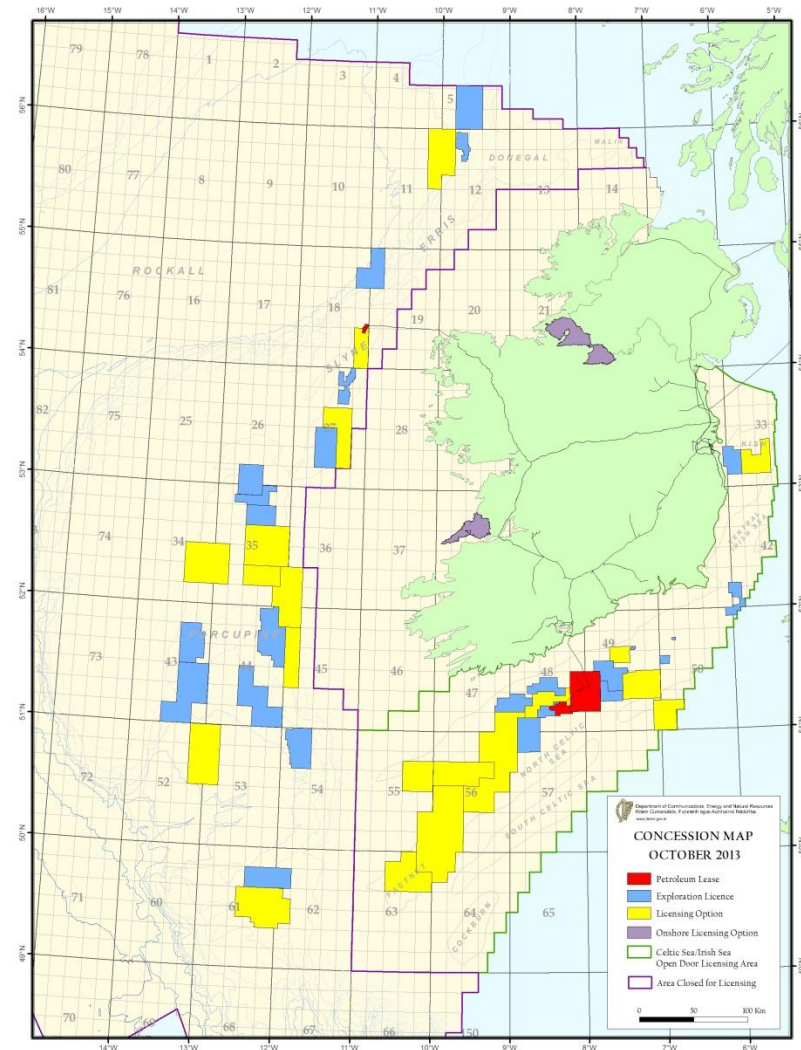


Exploration Authorisations Offshore Ireland

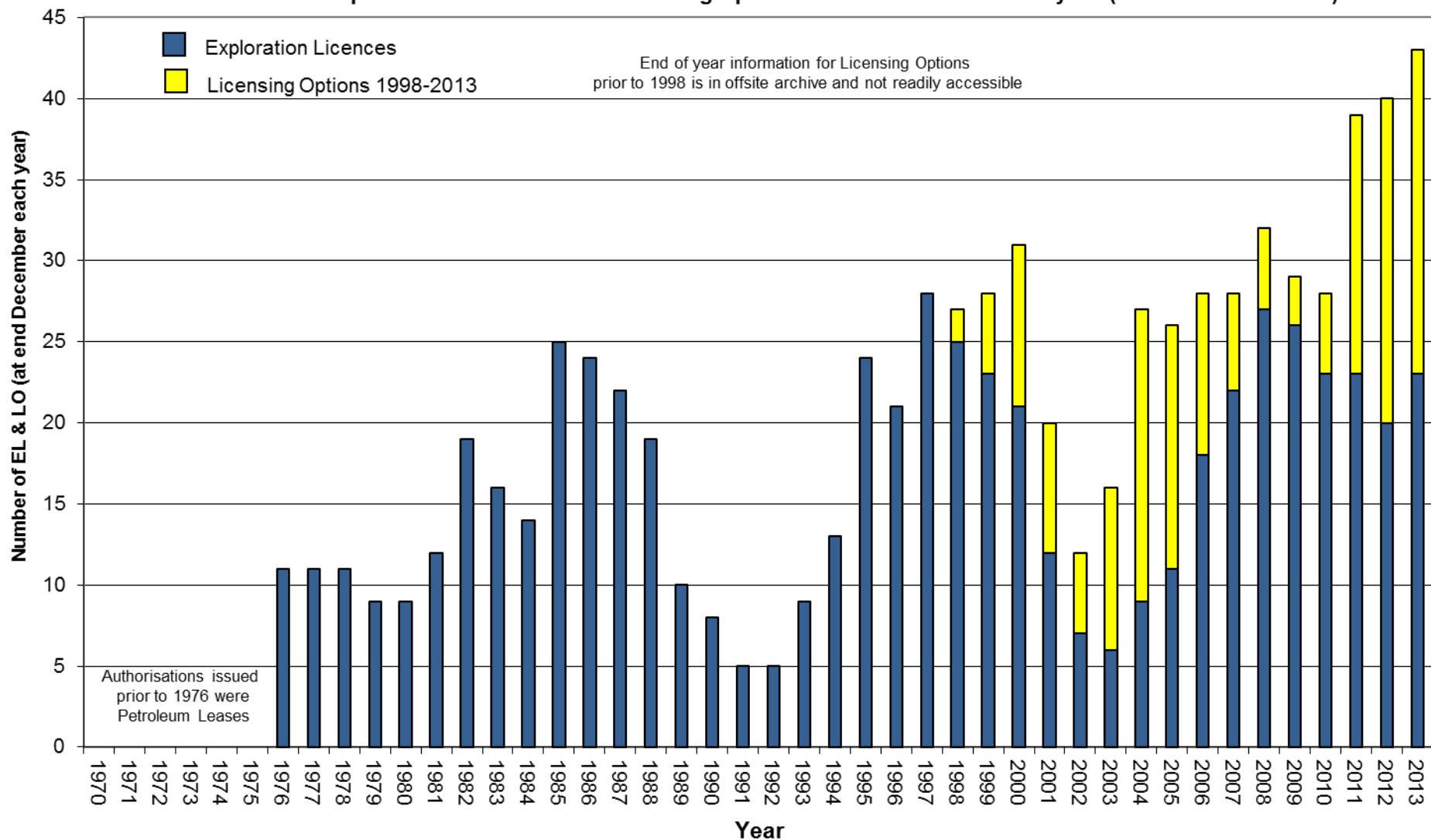
January 2011

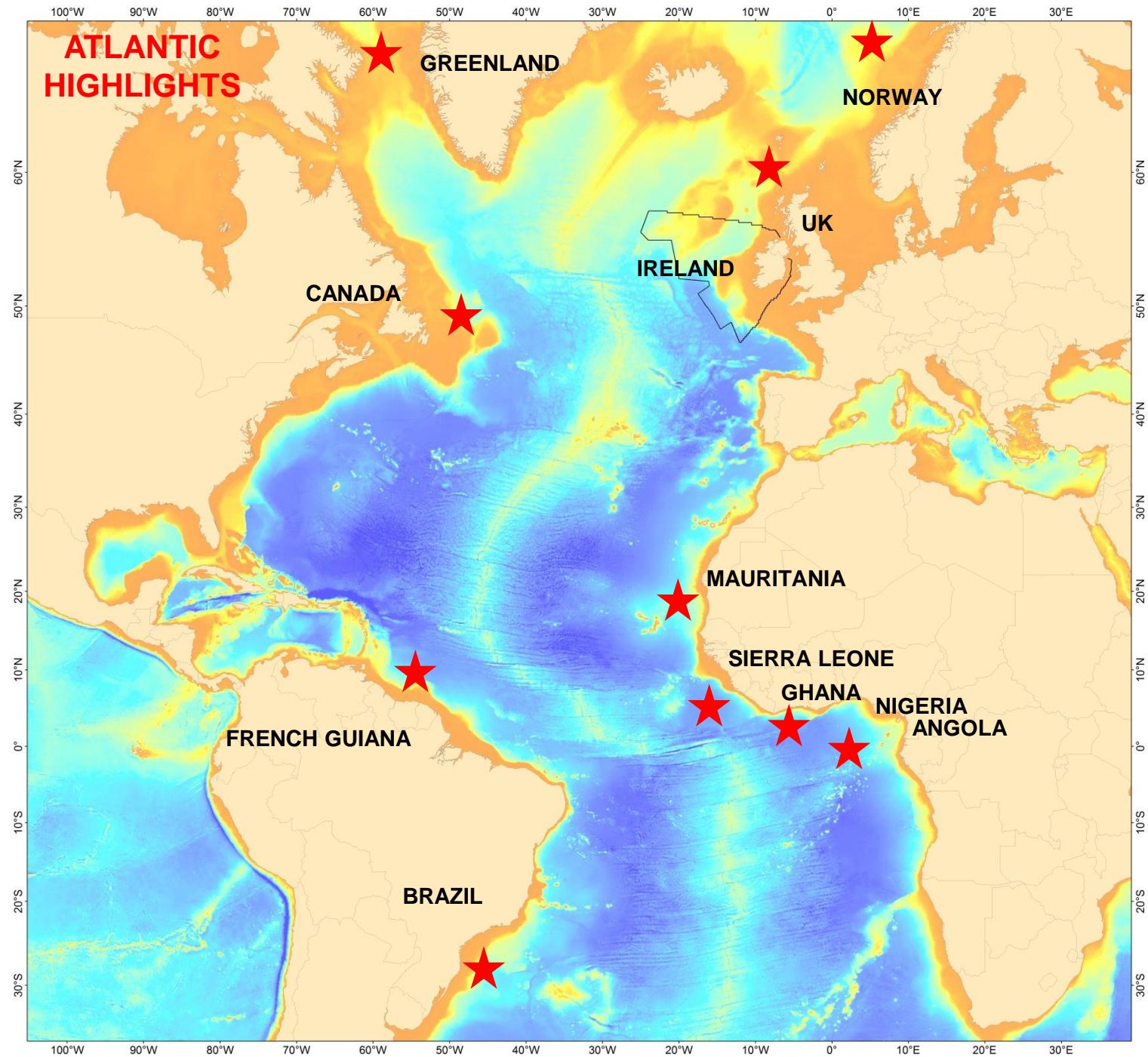


October 2013



Number of Offshore Exploration Licences and Licensing Options at end December each year (1970 - October 2013)





Recent Farm-in Activity West of Ireland

2011 Licensing Round results -
New entrants

Cairn Energy farm into
Chrysaor authorisations

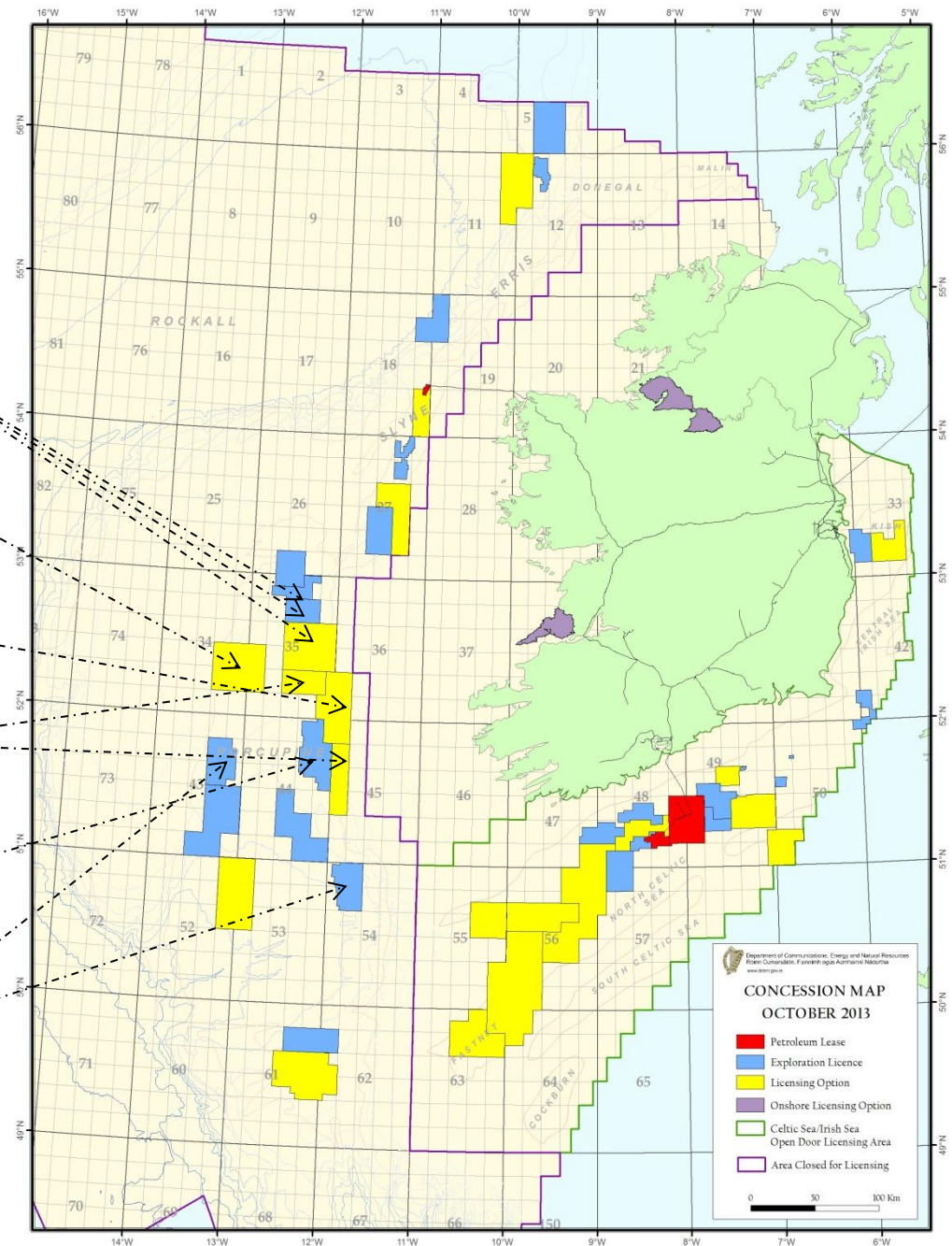
Woodside Petroleum & Strike Oil (PGS) farm
into Two Seas Oil & Gas authorisations

Woodside Petroleum farm into Bluestack
authorisation

Woodside Petroleum farm into Petrel
authorisation

Kosmos Energy farm into
Antrim Energy authorisation

Kosmos Energy farm into Europa
authorisations



3.3 Evaluation of Irish Market Performance

Ireland has fewer global players than Norway and the UK, where most of the major global players hold licences

Figure 10 – Global Players Engaged in Ireland, Norway and the UK

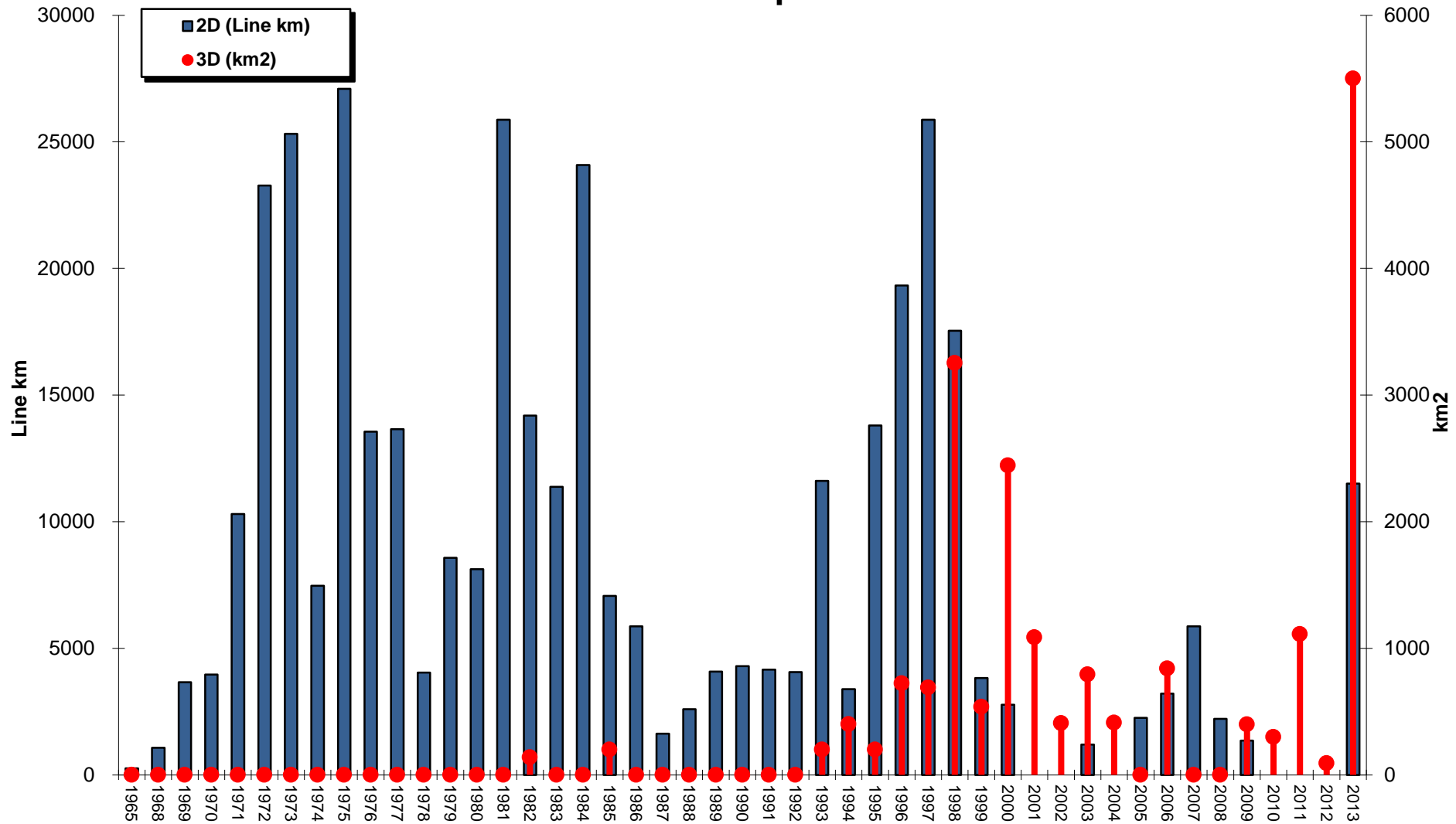


*Making the most of our
natural resources*

May 2013

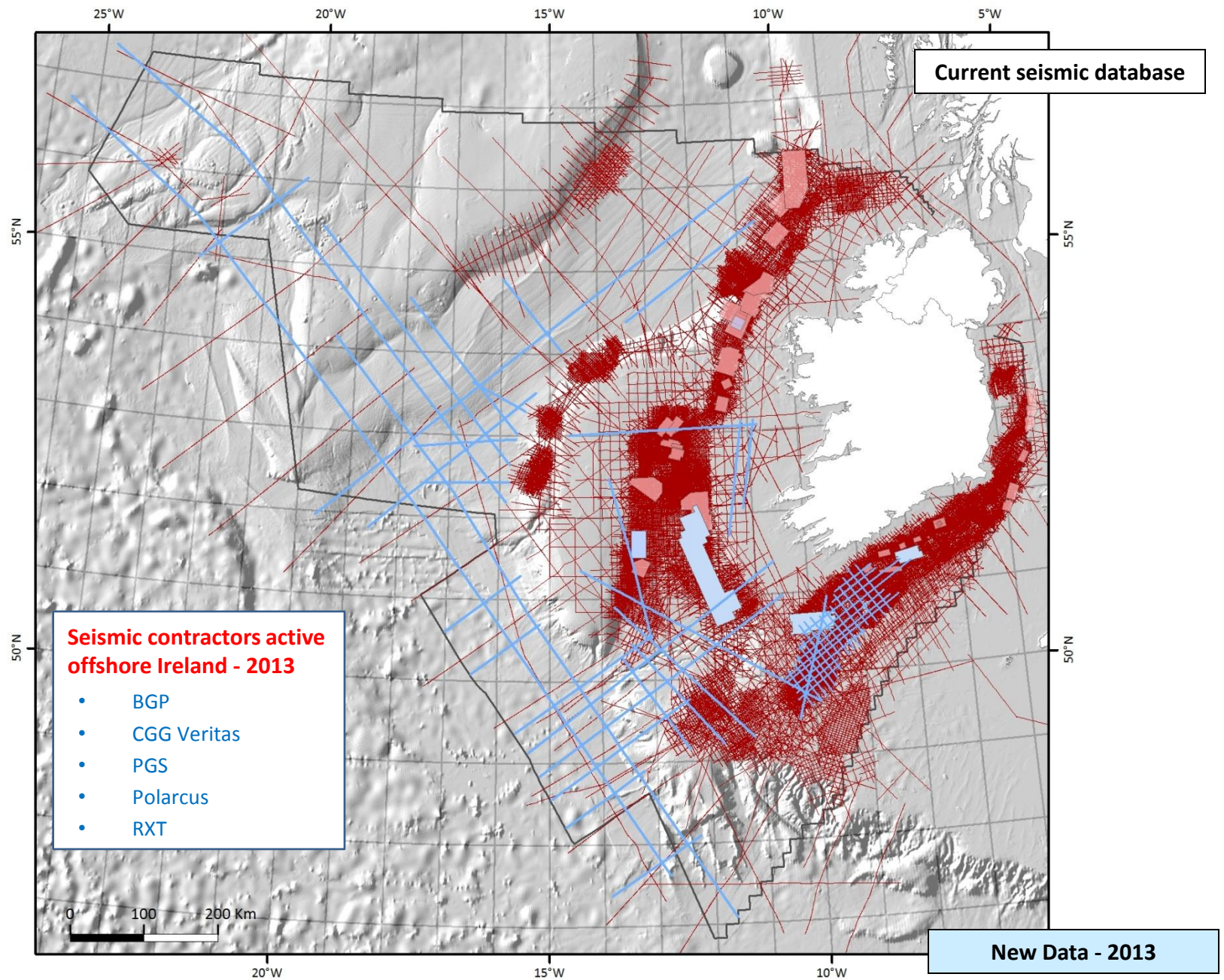
pwc

Seismic Acquired



Exploration History - Seismic





Seismic Surveys 2013

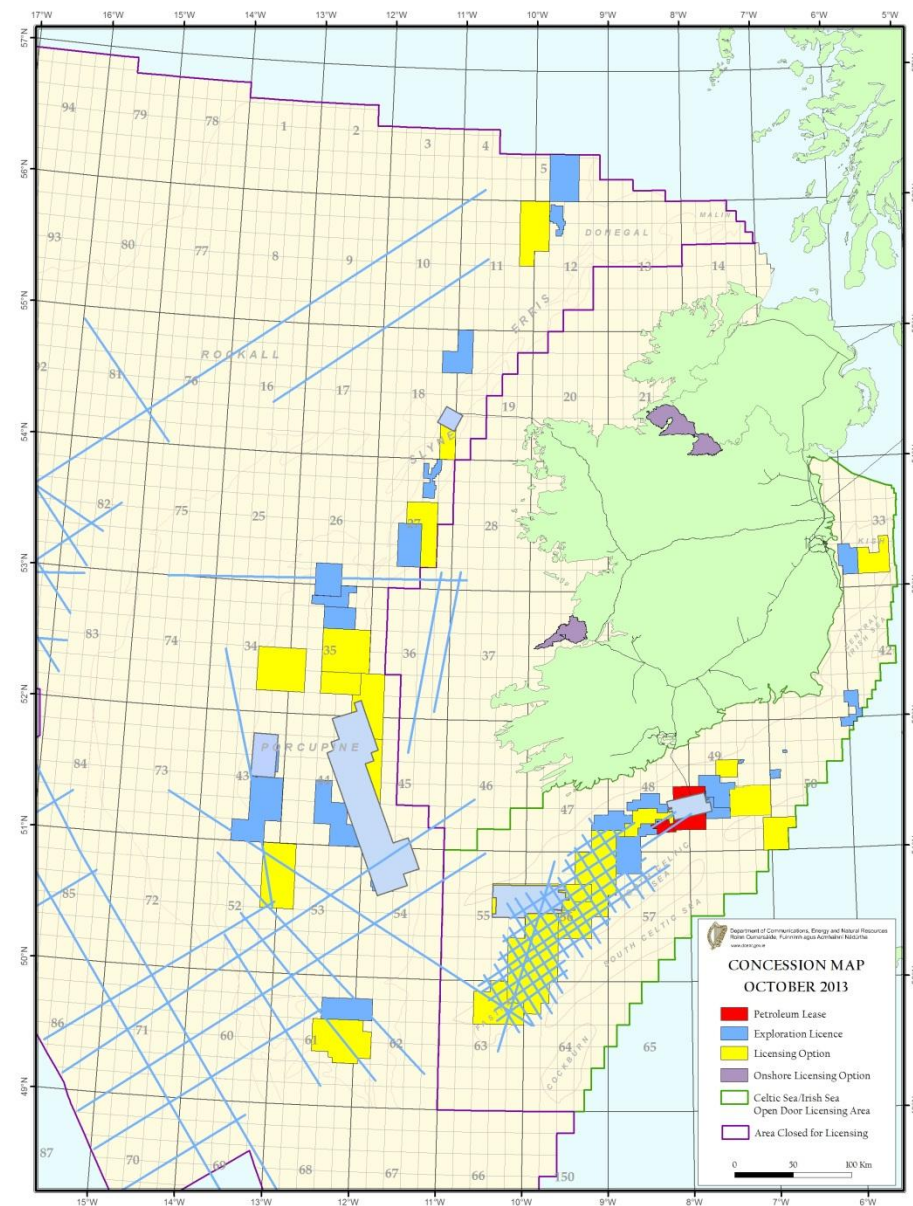
2013 Seismic Acquisition

2013/01: 246km ²	3D	Shell	Corrib
2013/02: 510km ²	3D	Fastnet Oil & Gas	Deep Kinsale
2013/03: 1200km ²	3D	Fastnet Oil & Gas	Mizzen
2013/04: 10175km ²	2D	DCENR/Eni	Regional
2013/05: 3500km ²	3D	Kosmos	Porcupine
2013/06: 3500km ²	2D	Charge Oil	Celtic Sea

Total 2013:

2013 2D: ~13650km²

2013 3D: ~ 5500km²



New Data

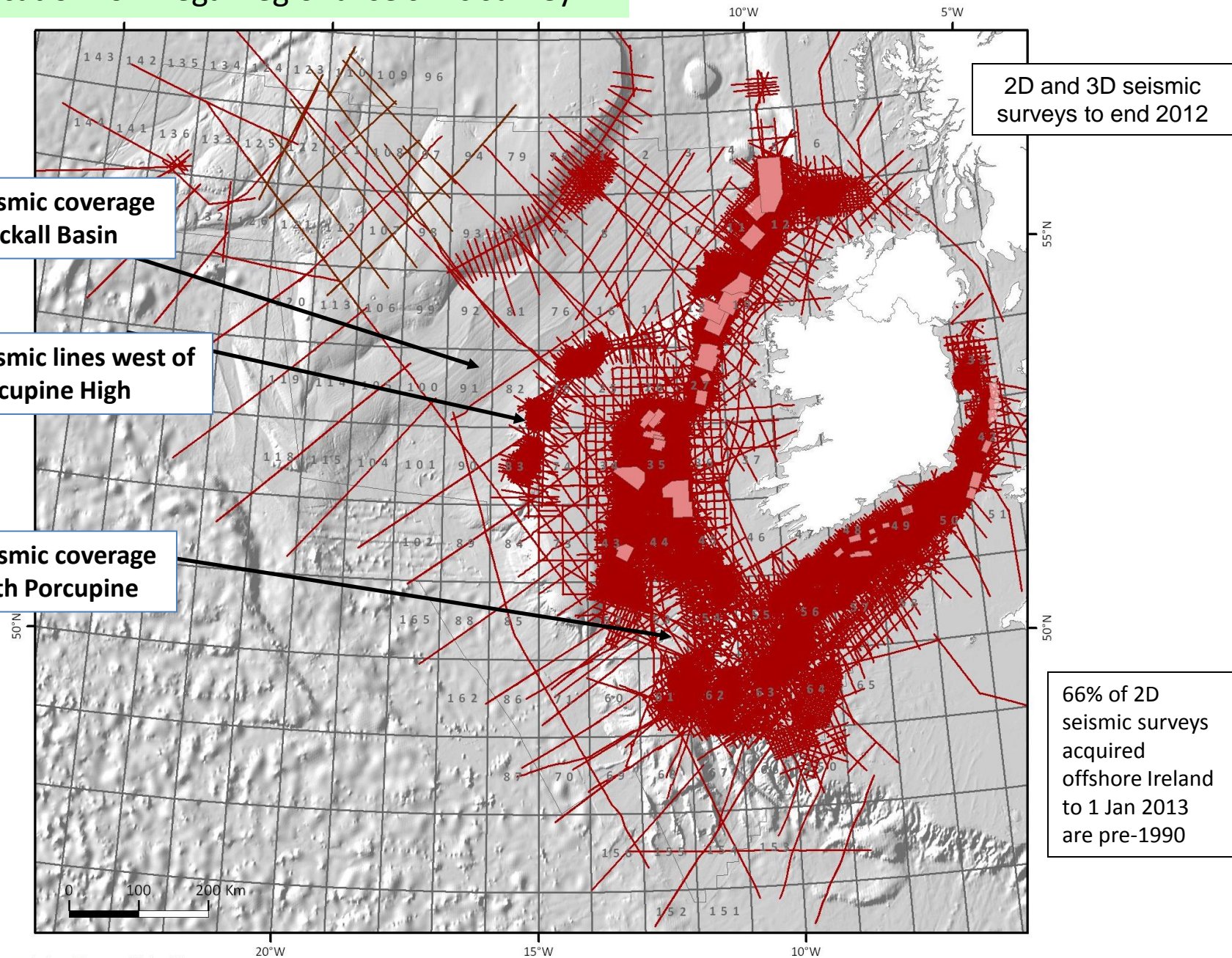


Offshore Ireland – Some firsts acquired in 2013

✓ First Ocean Bottom Cable (OBC) survey	Corrib field	Shell/RXT
✓ First Undershoot seismic	Deep Kinsale, Celtic Sea	Fastnet Oil & Gas/CGG Veritas
✓ First ElectroMagnetic survey	Celtic Sea & Fastnet Basin	Charge Oil/PGS
✓ Largest 3D seismic survey	Porcupine Basin	Kosmos/Polarcus
✓ Largest 2D seismic survey	Mega-regional	DCENR/Eni/BGP



Justification for mega- regional seismic survey

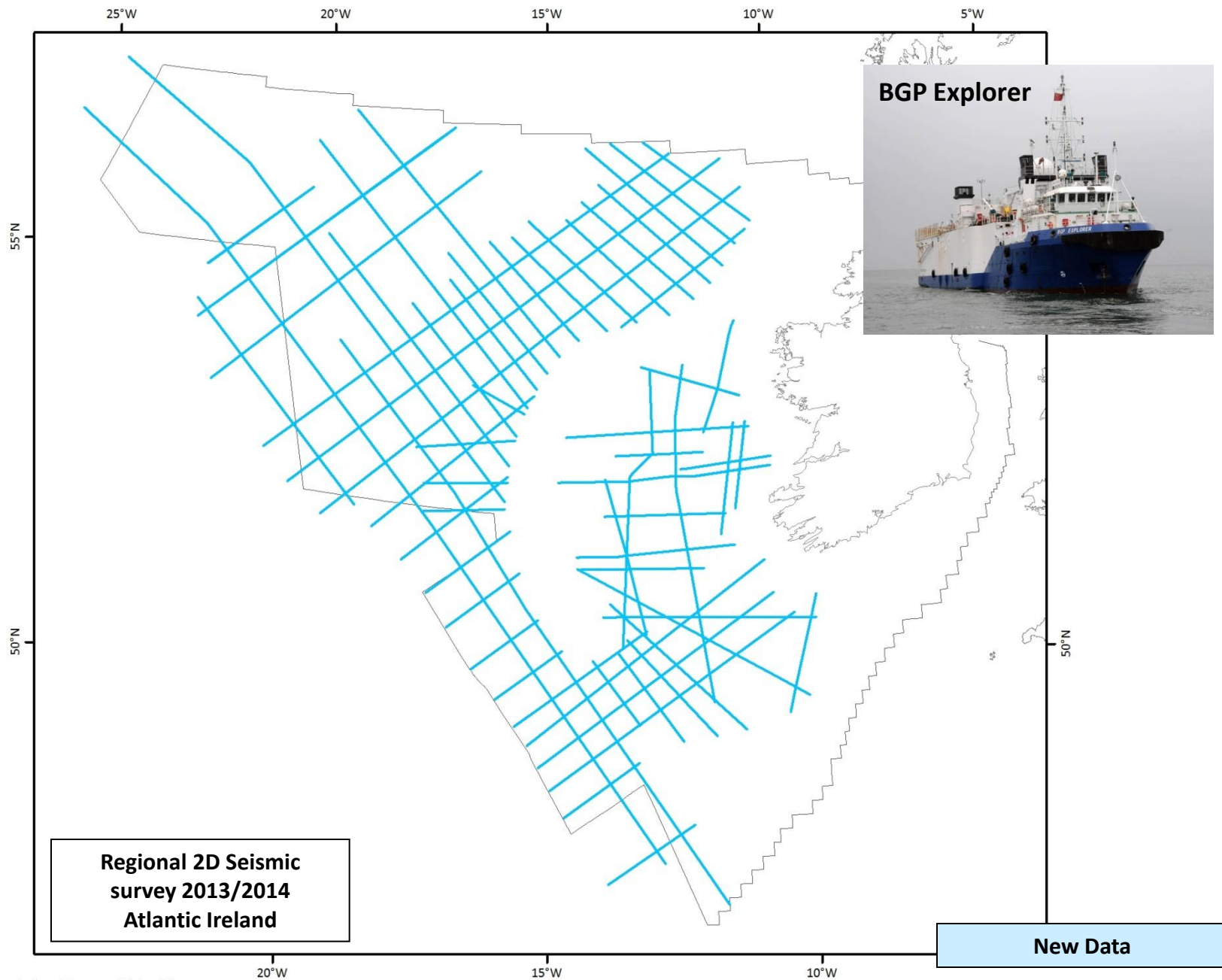


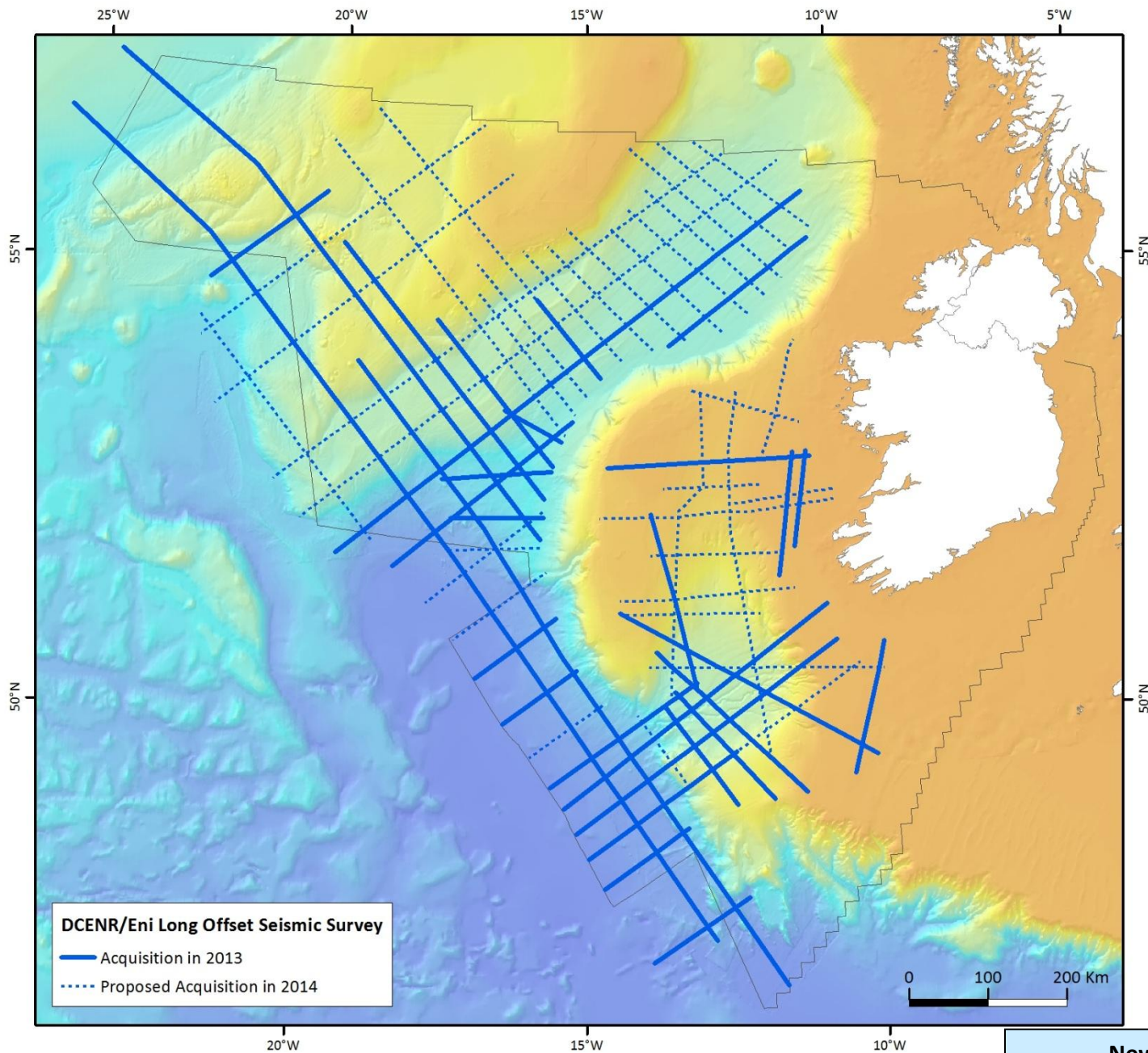
Regional Seismic Survey Project

Overall Objective

The survey is aimed at providing a regional grid of modern seismic data over the Atlantic Ireland frontier basins, to allow imaging of the subsurface geology and to ultimately result in a greater understanding of the prospectivity offshore Ireland.

- Key piece of missing data offshore Ireland is a complete Regional Seismic Survey of Ireland's Atlantic Margin Basins
- Agreement reached on up to 18,000 kilometres of new 2D seismic data programme to commence in 2013
- Commenced the 2013 survey in early June and completed in mid October
- The new data should provide high quality images of the subsurface, infilling existing data and providing new coverage to fill data gaps
- The new data should aid our understanding in identifying areas of prospectivity for oil and gas offshore Ireland and will be of interest to industry and researchers
- The new regional seismic survey will aid the Department in the planning of future Licensing Rounds





New Data

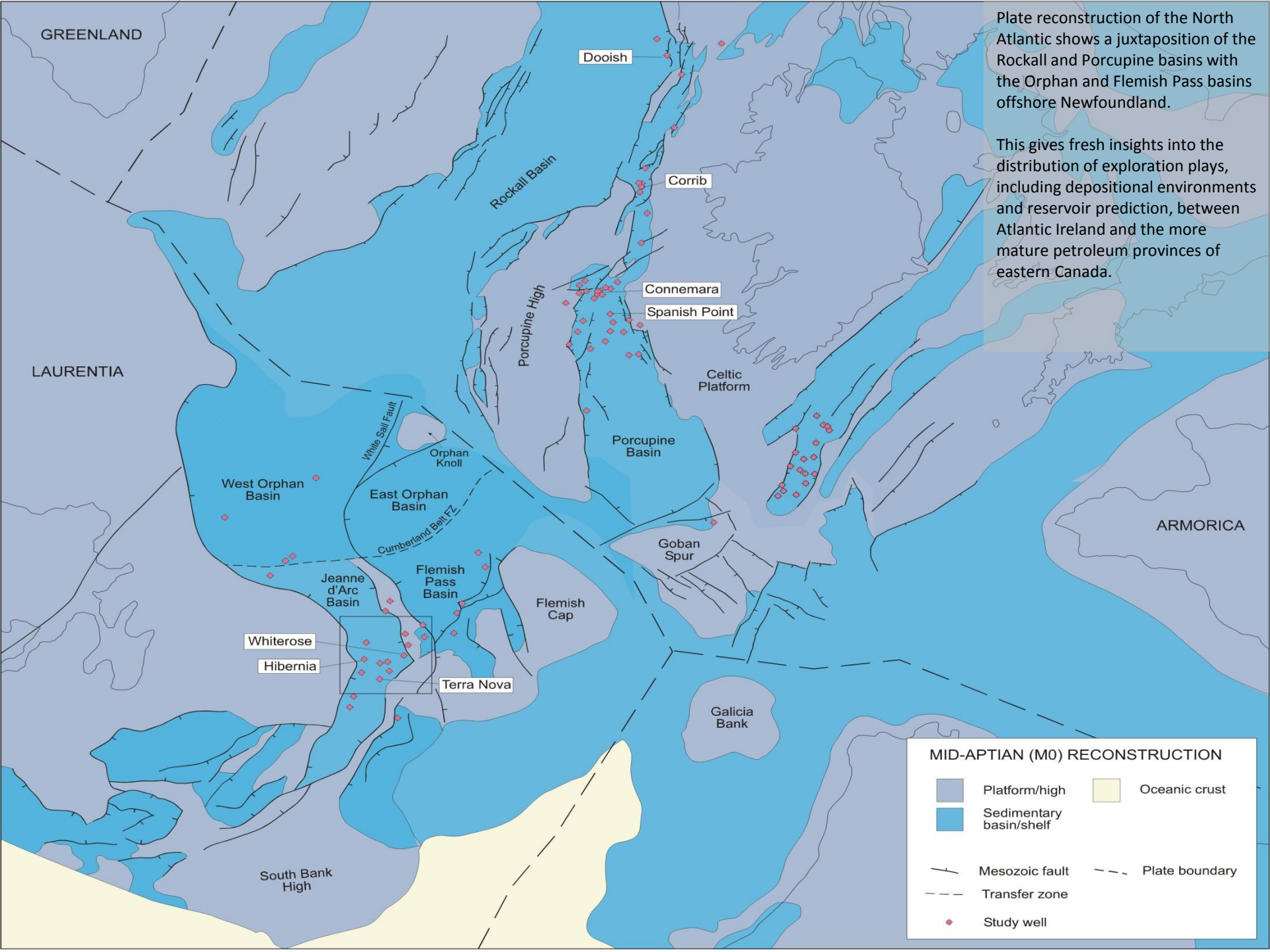
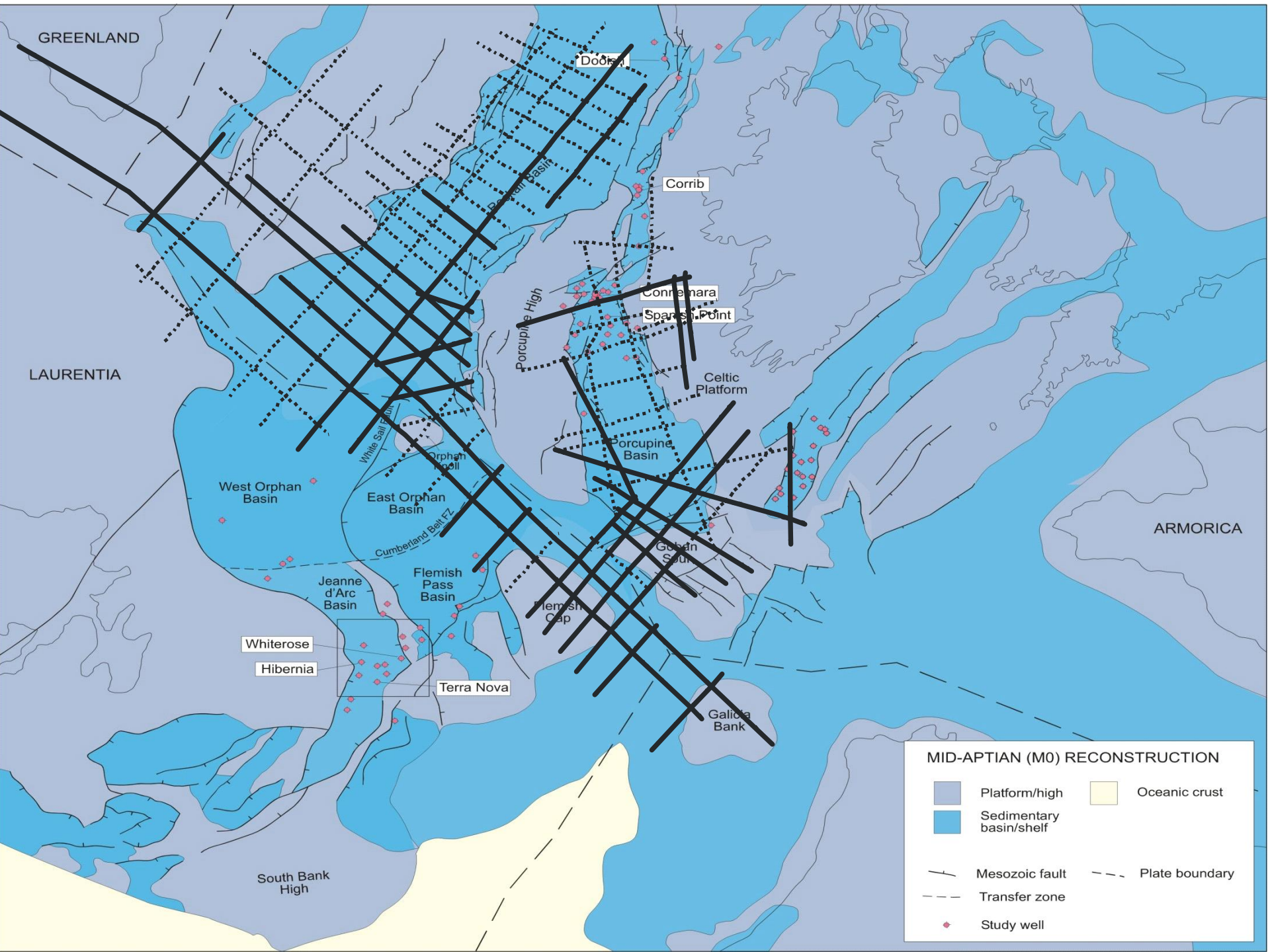
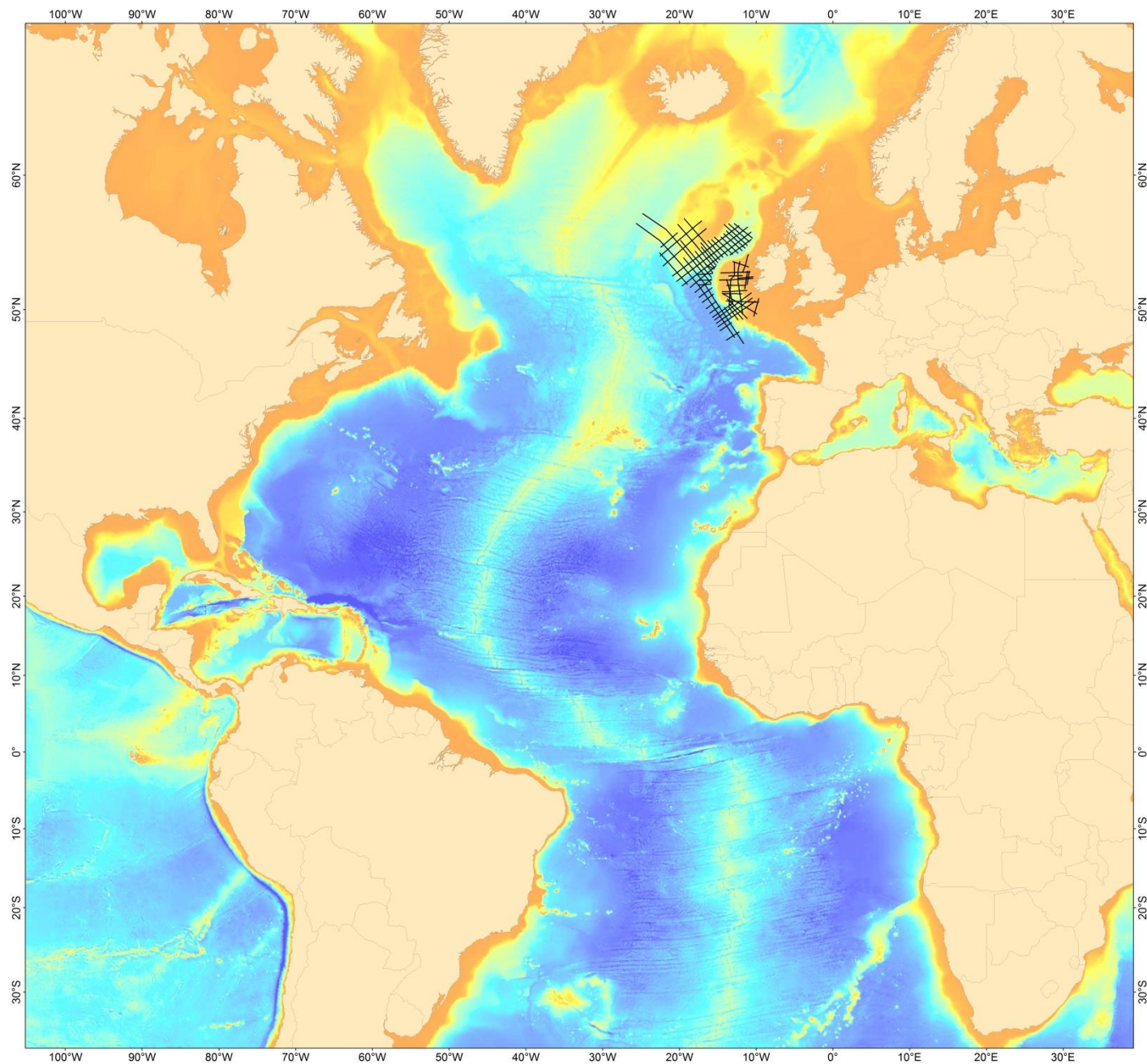


Plate reconstruction of the North Atlantic shows a juxtaposition of the Rockall and Porcupine basins with the Orphan and Flemish Pass basins offshore Newfoundland.

This gives fresh insights into the distribution of exploration plays, including depositional environments and reservoir prediction, between Atlantic Ireland and the more mature petroleum provinces of eastern Canada.





Summary and Conclusions:

- Positive response to 2011 Round and high level of interest being shown in 'Open' areas
- New company entrants and focus on Cretaceous plays
- Multiple undrilled plays and structures remain to be tested
- Expect exploration activity to continue to increase in the coming years, however current drilling rate remains low
- Regional seismic coverage issues are being addressed
- Petroleum research will continue to meet industry & Government needs

**Ireland has petroleum potential but is under explored.
Significant increase in exploration activity this year.**