



**Roinn Cumarsáide, Gníomhaithe
ar son na hAeráide & Comhshaoil**

Department of Communications,
Climate Action & Environment

Status of Exploration Offshore Ireland

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Petroleum Affairs Division

Department of Communications, Climate Action and Environment

ISPSG Atlantic Ireland, Dublin 1st November 2016

Progress since last Atlantic Ireland conference 27 Oct 2015:

- Corrib gas field on production
- 2015 Licence Round Awards (Phase 1 and Phase 2)
- Increased Seismic activity
- Petroleum Research initiatives
- Environmental programmes



Status of Exploration Offshore Ireland 1 November 2016

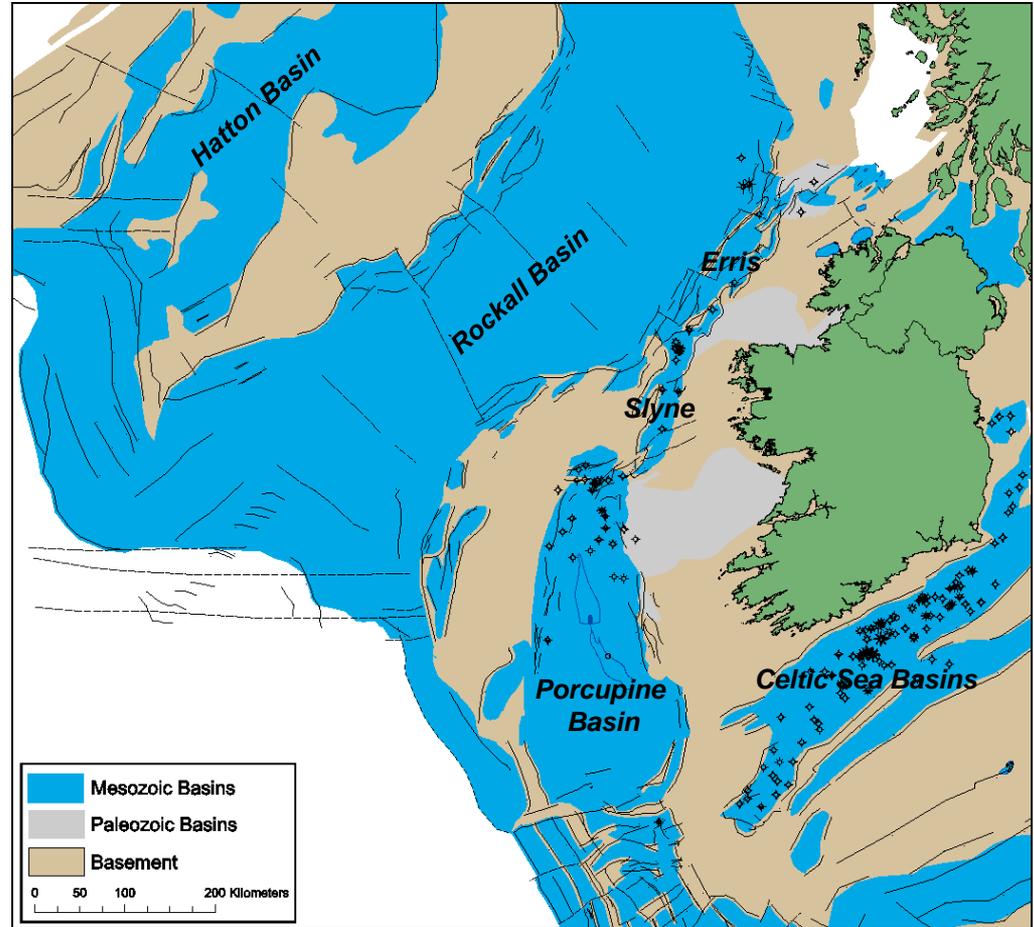
Presentation outline:

- **Licences**
- **Survey Applications**
- **Research**
- **Data**
- **Interpretation**
- **Promotion**



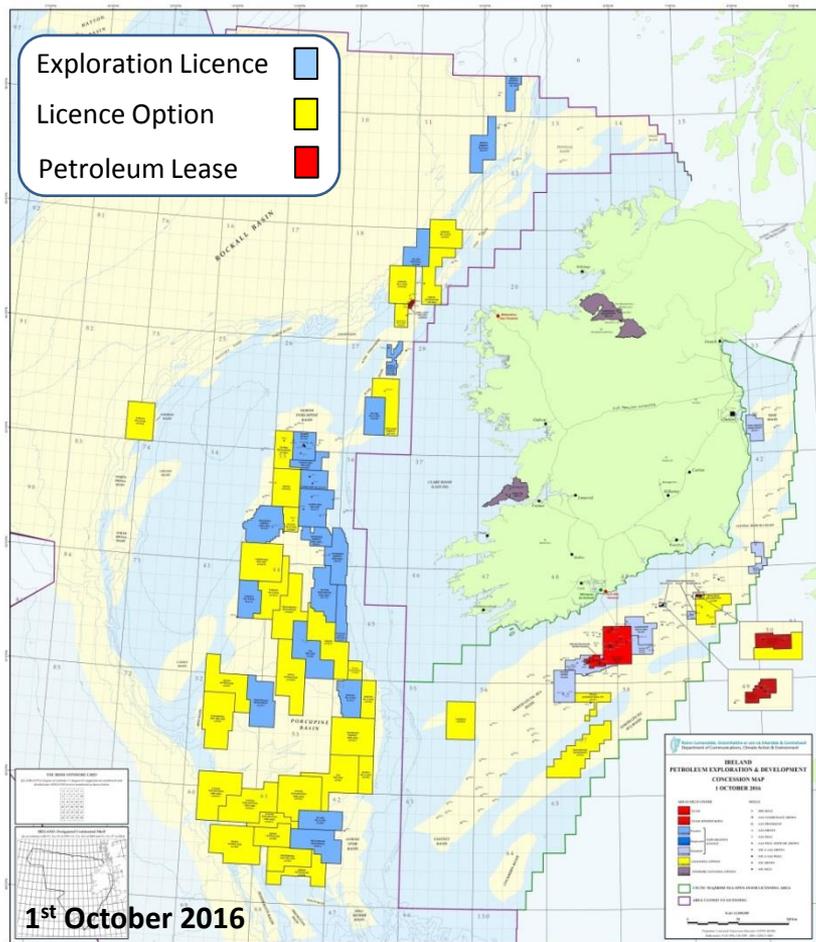
Offshore Ireland is under-explored

Emerging\Frontier Area



Licences

CONCESSION MAP



Current Authorisations:

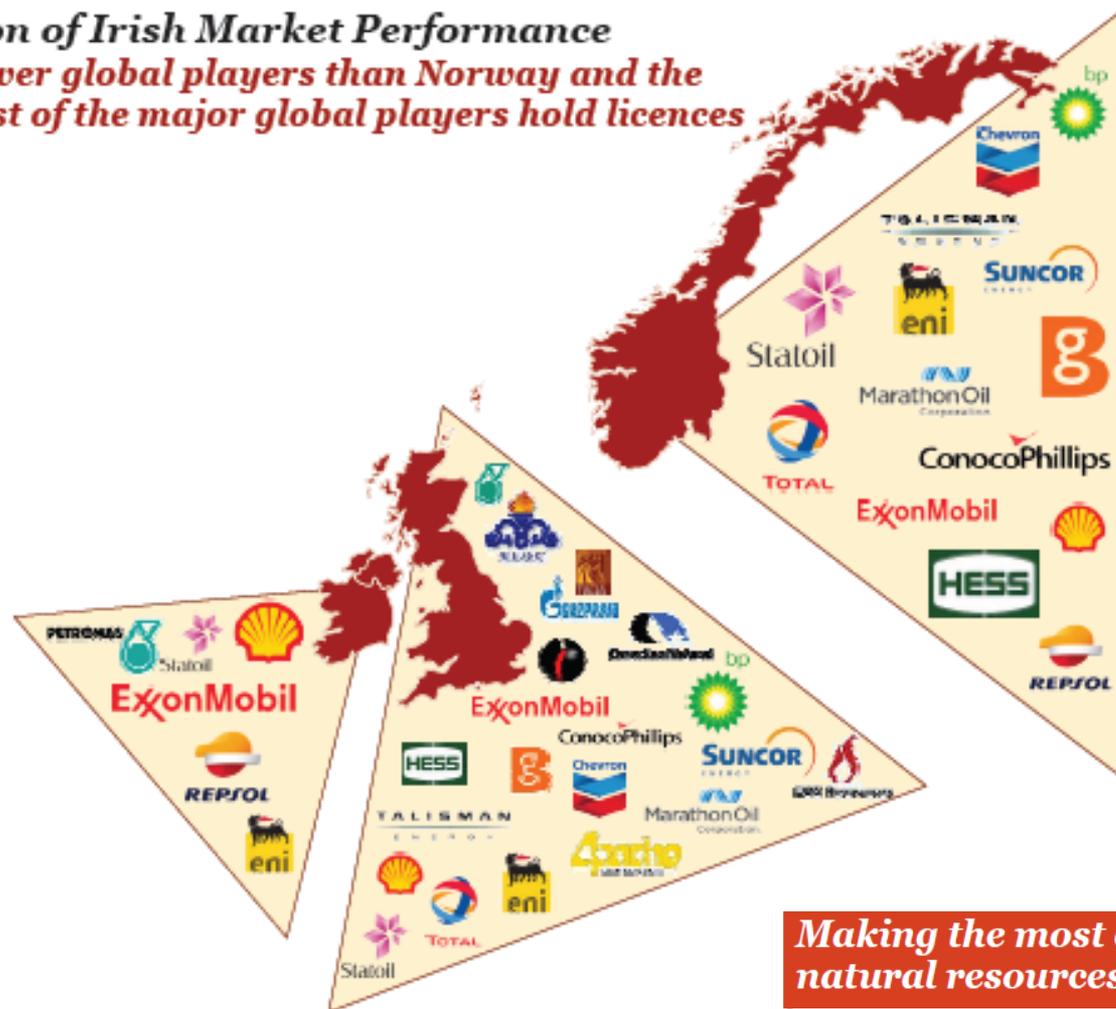
Petroleum Leases		3
Lease undertakings		2
Petroleum Exploration Licences:		27
Frontier	20	
Standard	7	
Licence Options		34
Petroleum Prospecting Licences		11

Total 66 Licences and Leases excluding PPLs

The number of Authorisations is at an all time high

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

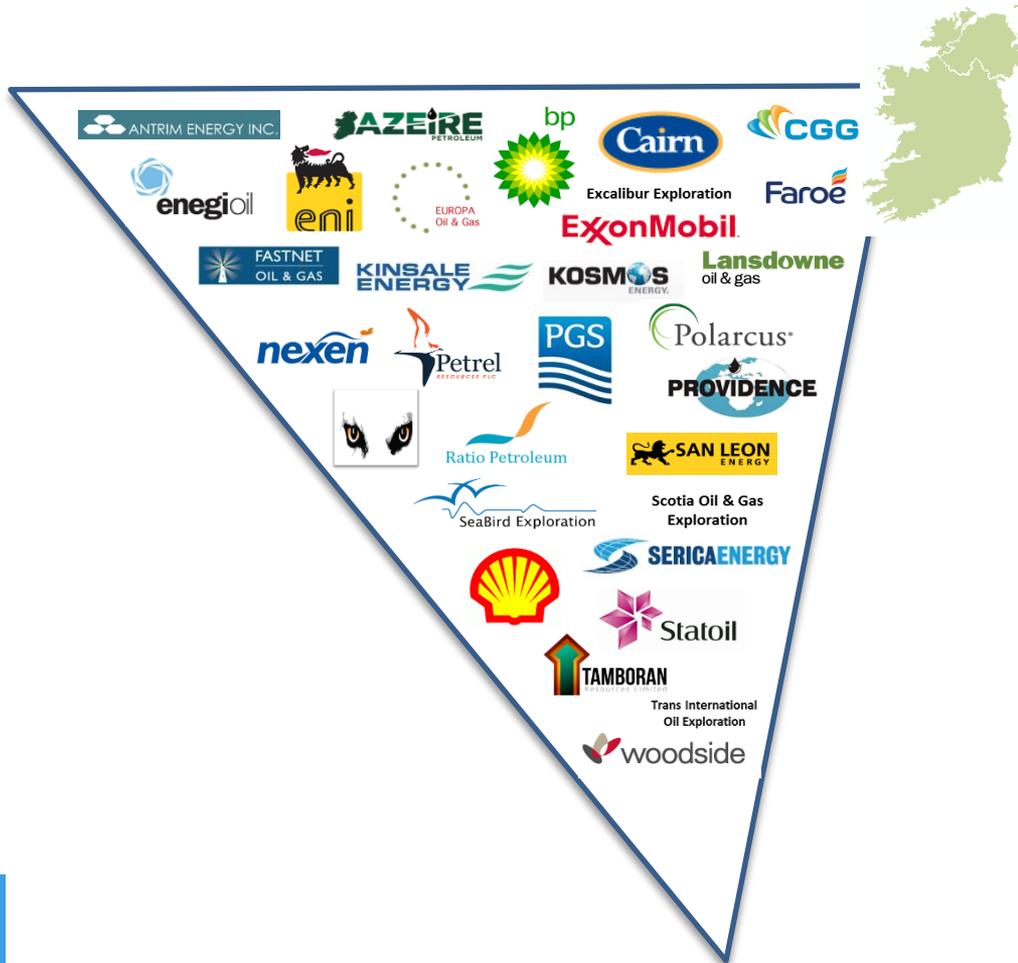


May 2013

Making the most of our natural resources



COMPANIES WITH AUTHORISATIONS OFFSHORE IRELAND

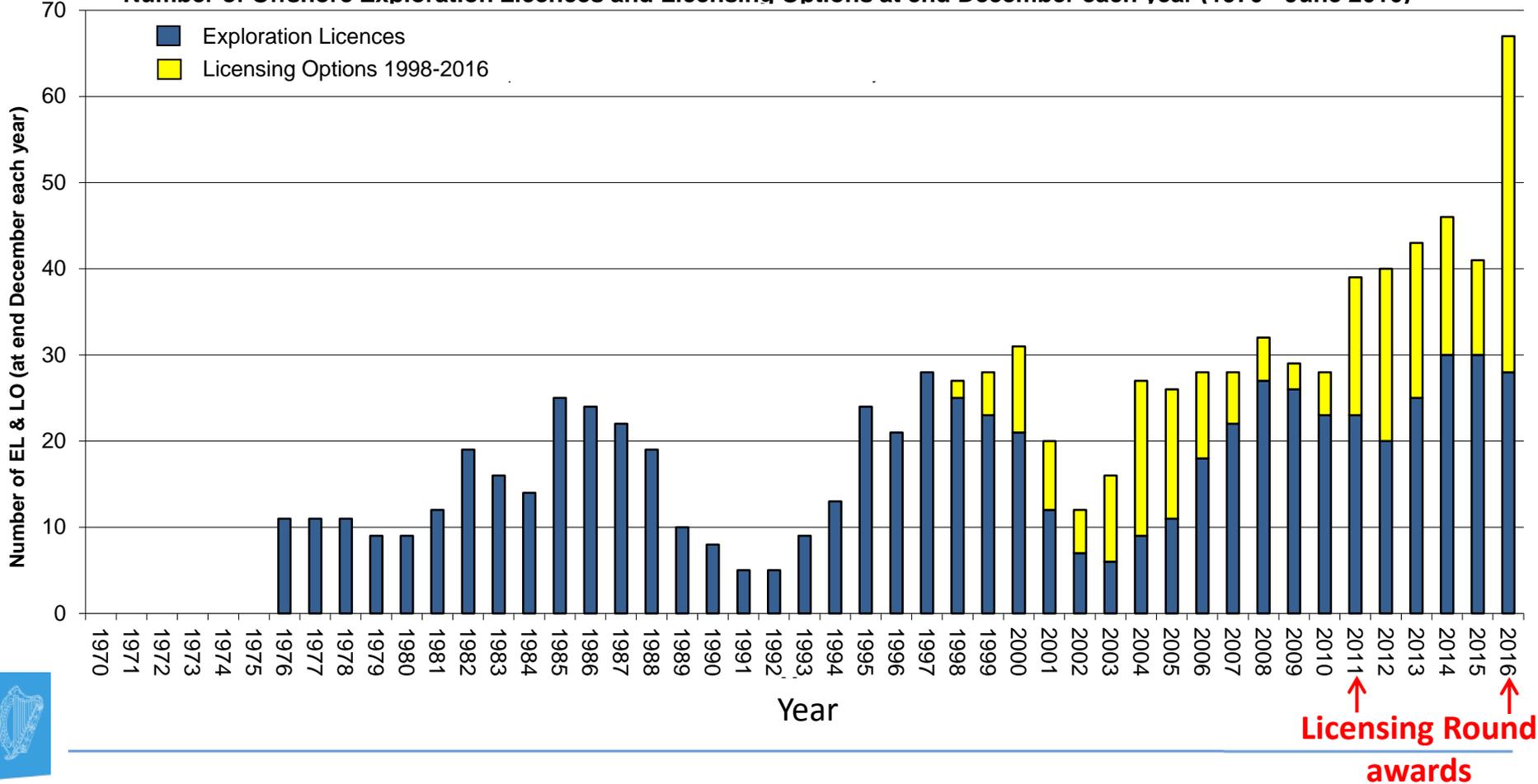


30 September 2016

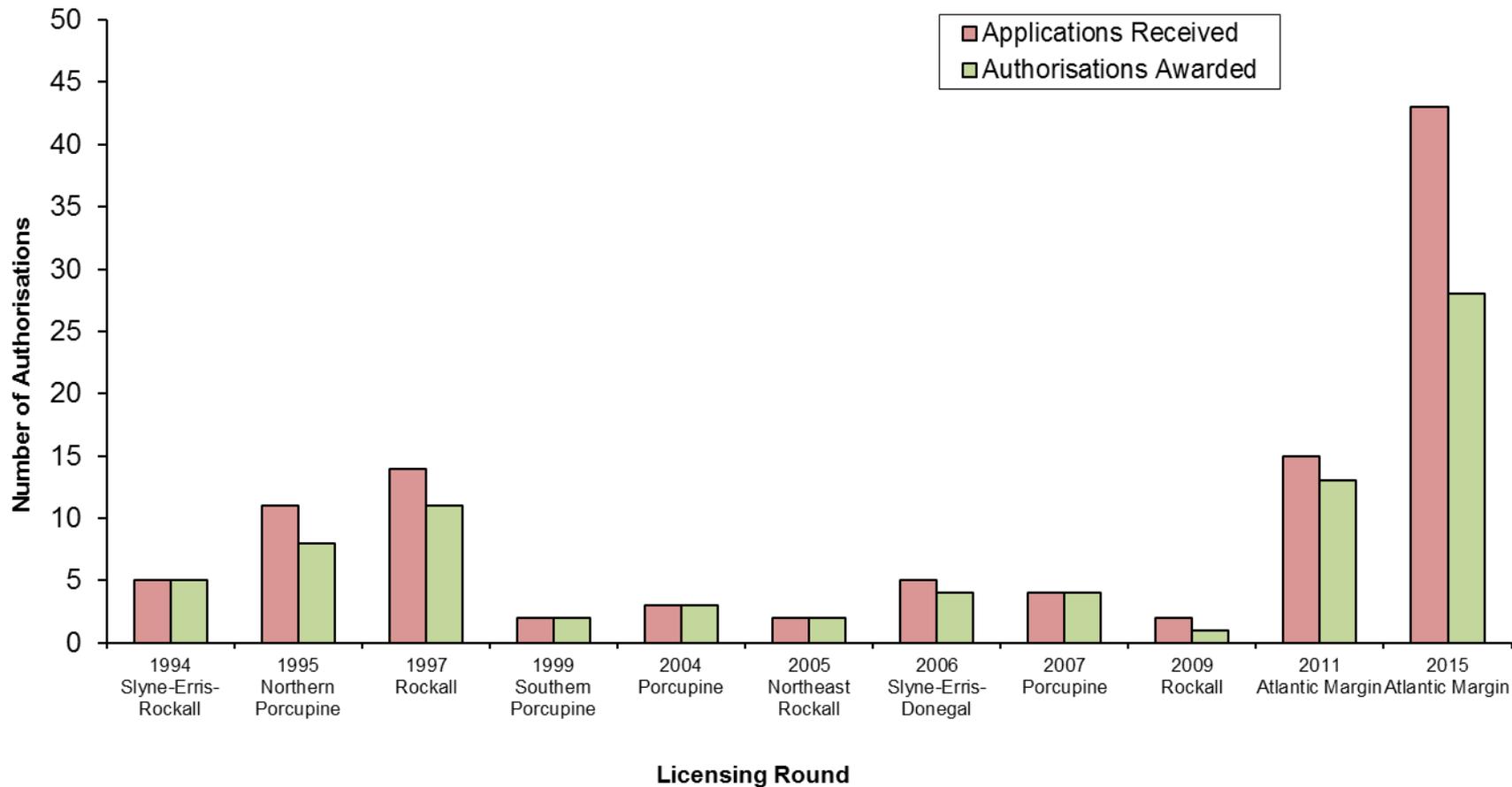


LICENCES OFFSHORE IRELAND

Number of Offshore Exploration Licences and Licensing Options at end December each year (1970 - June 2016)



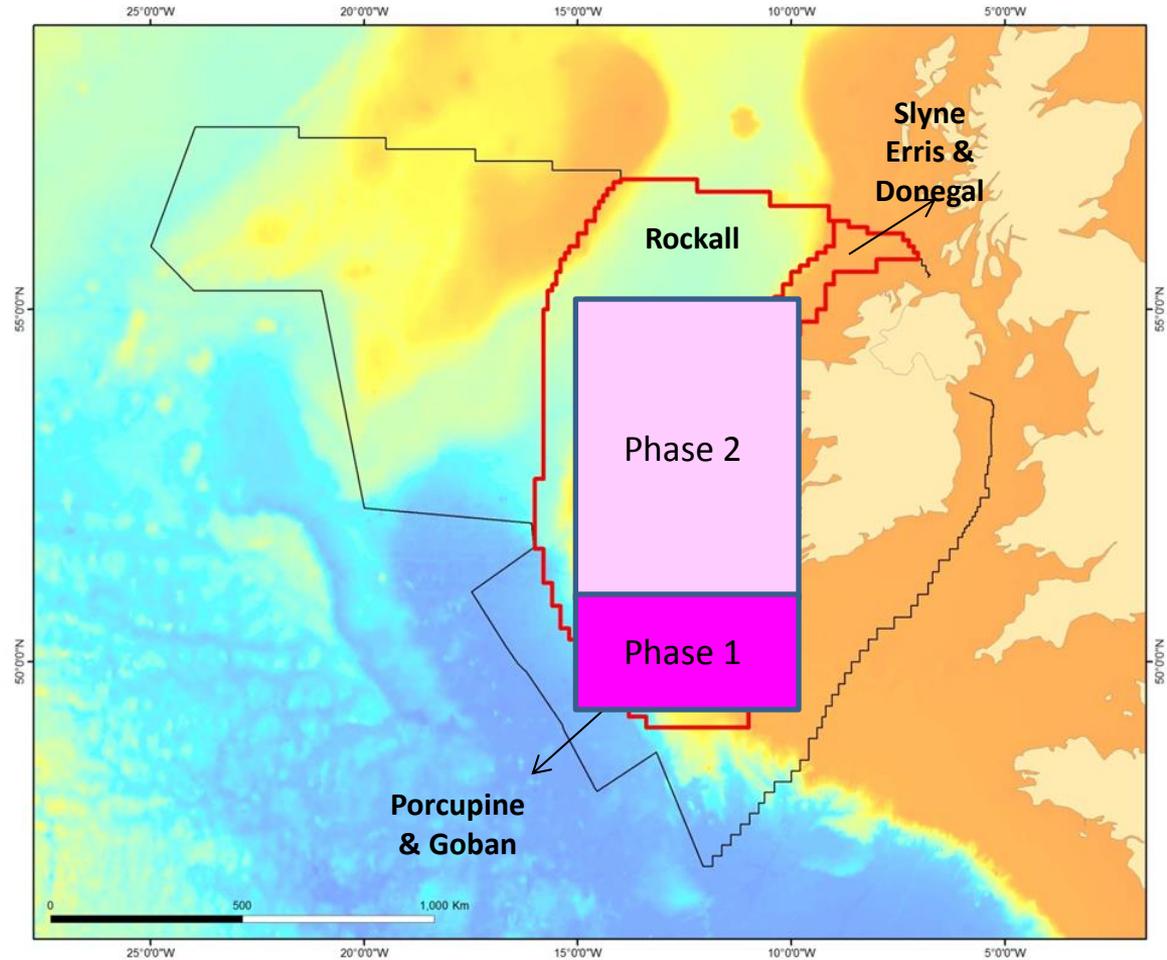
LICENSING ROUNDS



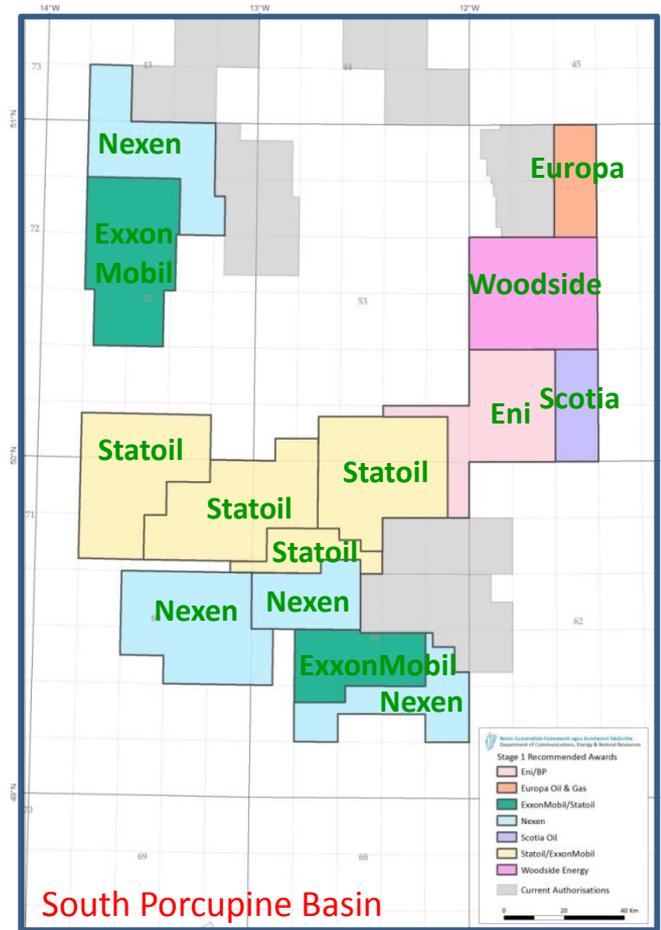
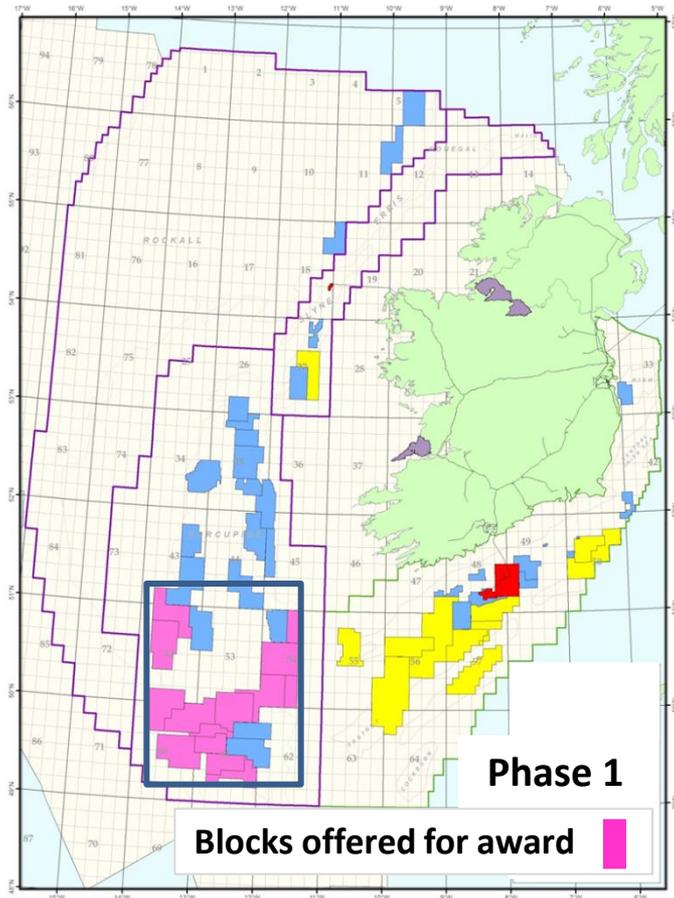
2015 ATLANTIC MARGIN LICENSING ROUND

Licensing Round
Regions —

2015 Licensing
Round Awards



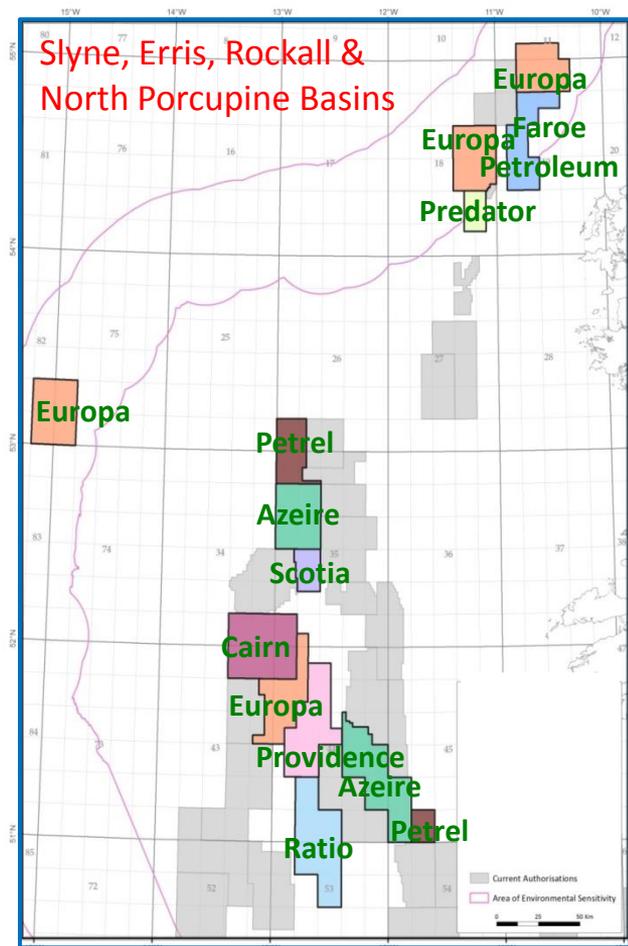
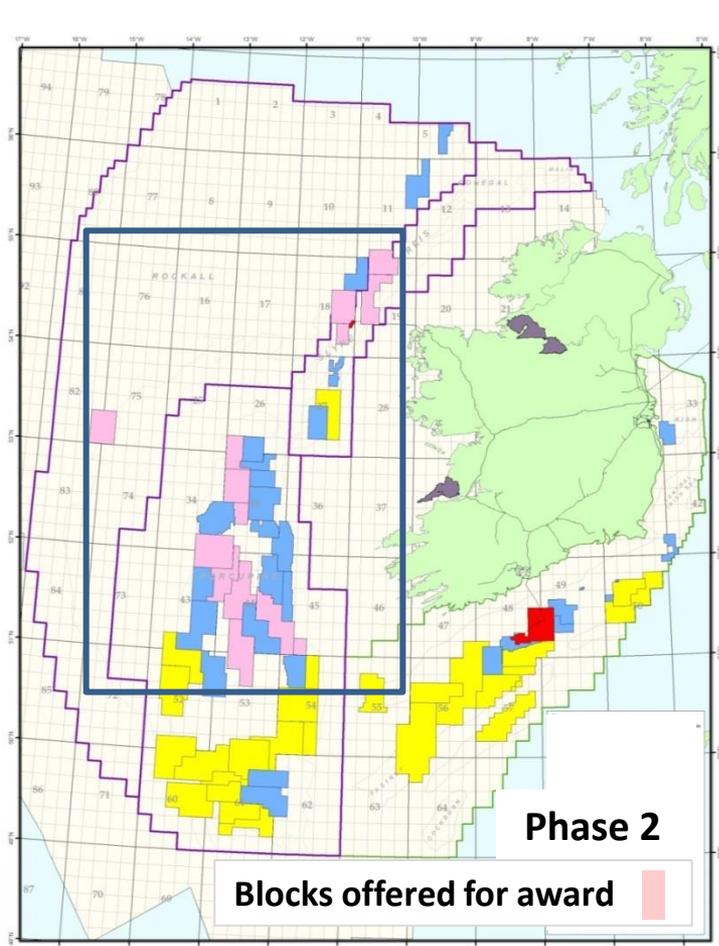
2015 ATLANTIC MARGIN LICENSING ROUND EVALUATION PHASE 1 AWARDS



Acreage offered to 7 company operators



2015 ATLANTIC MARGIN LICENSING ROUND EVALUATION PHASE 2 AWARDS

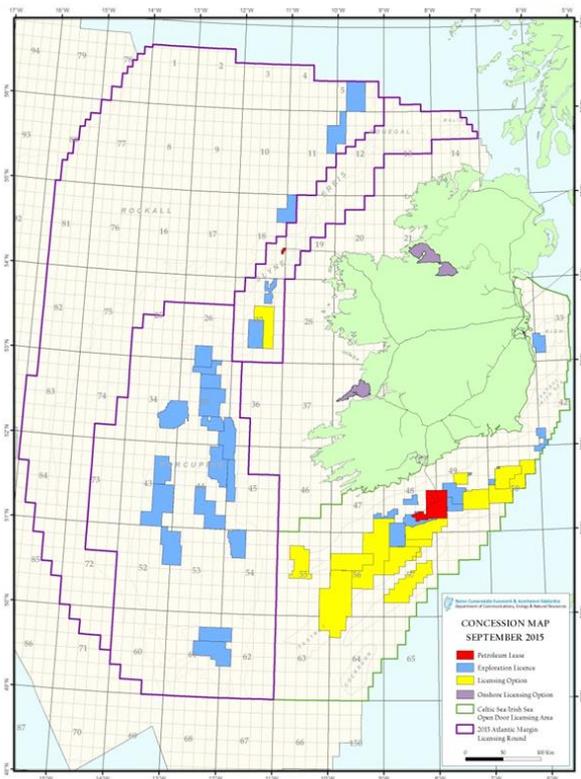


Acreage offered to 9 company operators

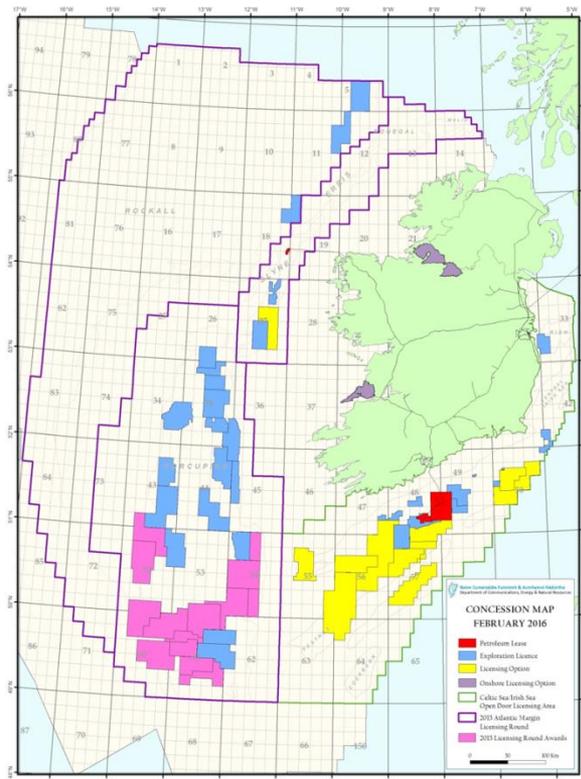


EXPLORATION AUTHORISATIONS OFFSHORE IRELAND

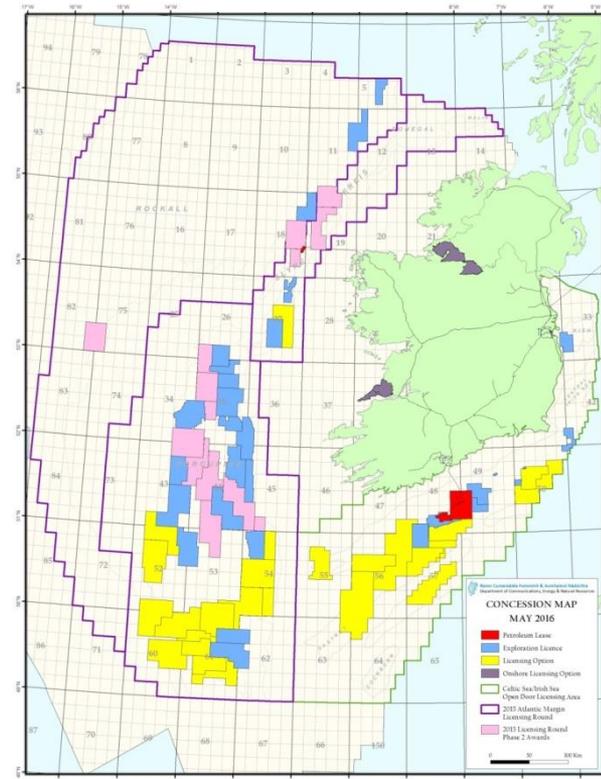
September 2015



February 2016

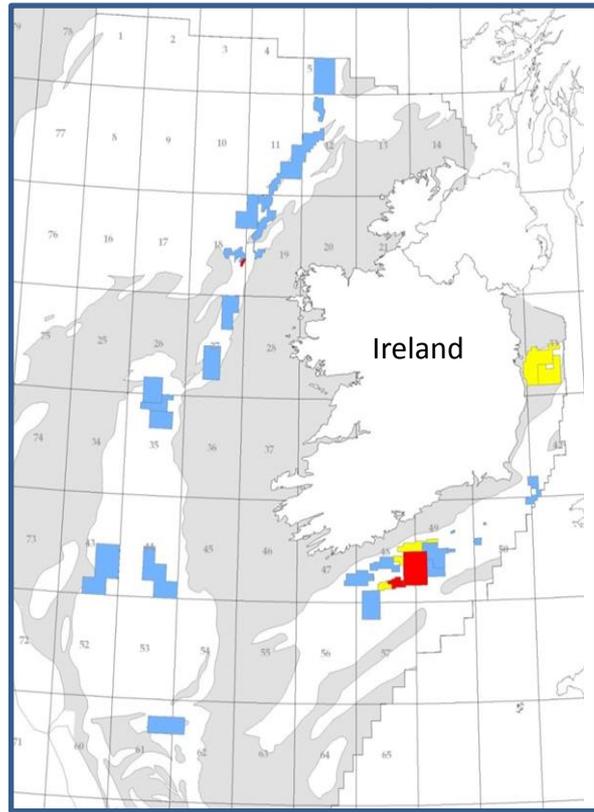


June 2016

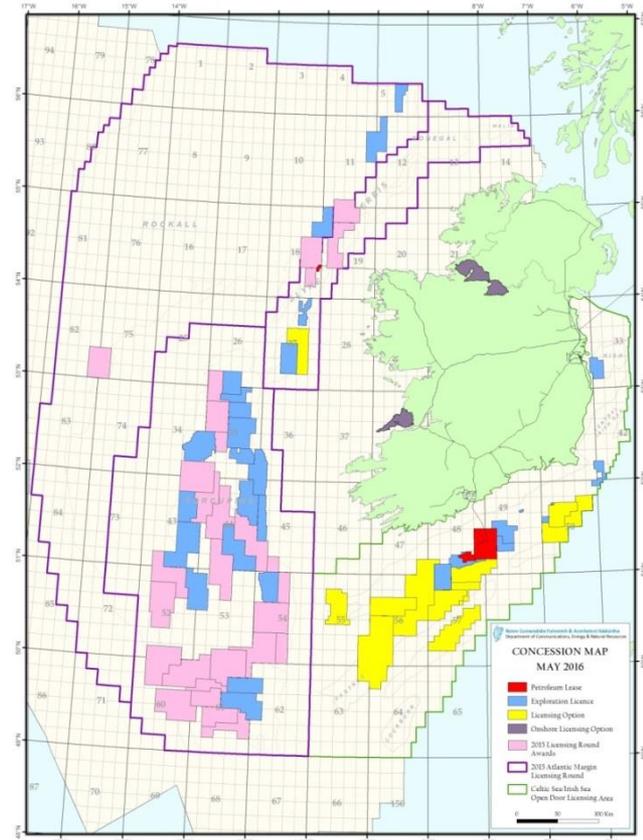


EXPLORATION AUTHORISATIONS OFFSHORE IRELAND

January 2011



June 2016



Exploration Licence



Licence Option



Petroleum Lease



Licence Award 2016



Licensing Round was designed and planned having consulted widely. Underpinned by a considered and deliberate Strategy

- All basins west of Ireland in one Round
- Advance notice (Round Notice issued 18 June 2014; closed 16 September 2015)
- Allowed for 2 Acquisition seasons
- Larger number of blocks
- Licensing Option

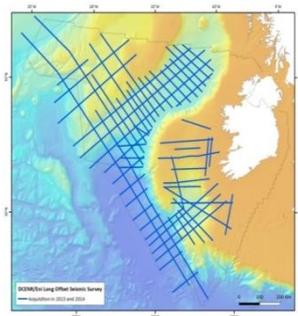
Supported by a number of initiatives to reduce both technical and regulatory risk

- Data gaps addressed
- Dataroom facility
- Promotional campaign
- Petroleum research
- Clarity on Fiscal Terms
- IOSEA5 2015 Strategic Environmental Assessment over all of Ireland's offshore basins

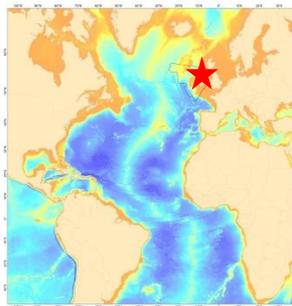


WHY WAS THERE SUCH INTEREST IN THE 2015 ATLANTIC MARGIN LICENSING ROUND?

- **New data**



- **Conjugate margin success**



Analogues. Undrilled prospects offshore Ireland similar to recent discoveries offshore East Canada and West of Africa

The 2015 Atlantic Margin Licensing Round is our most successful to date



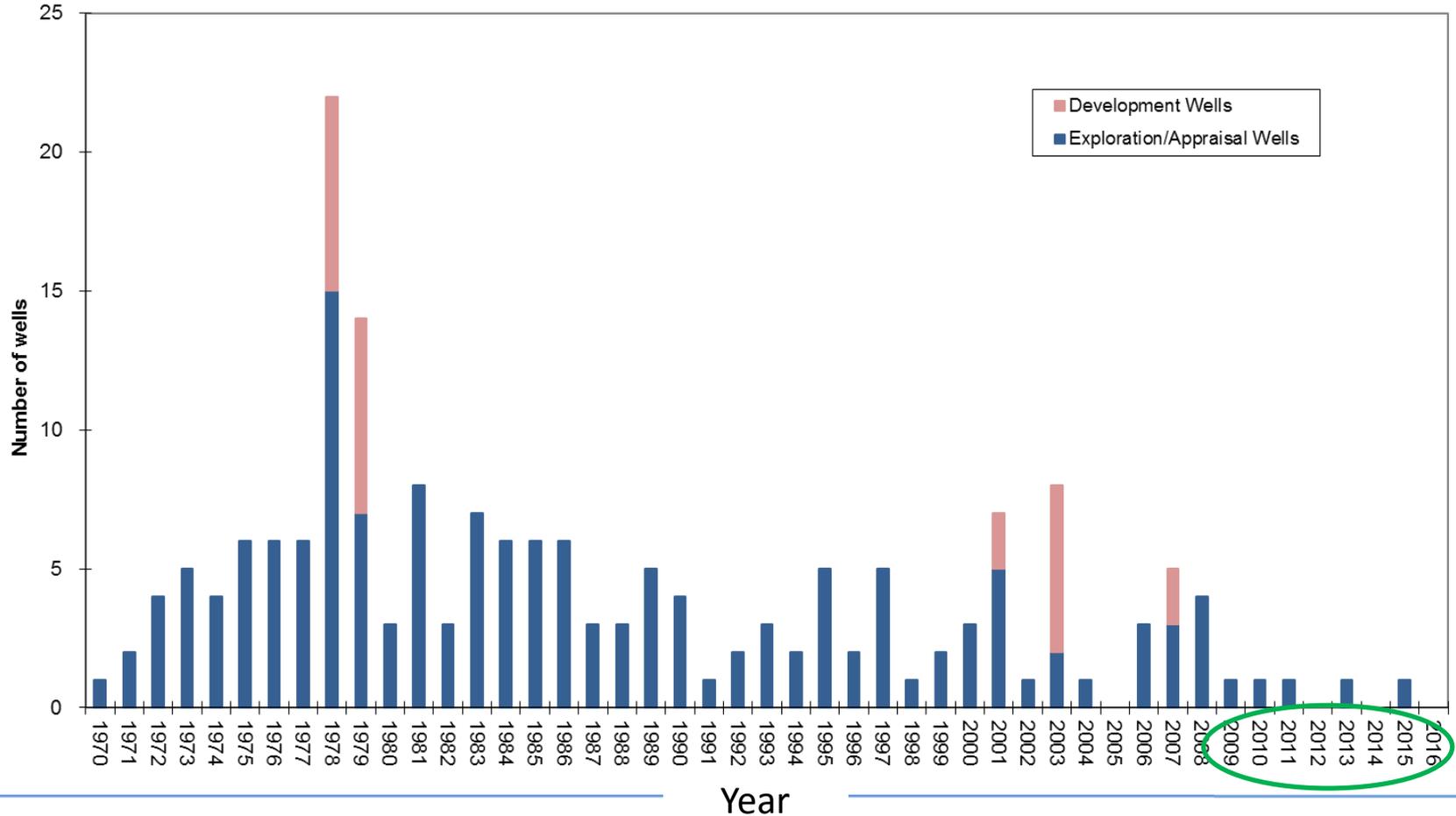


Survey Applications

Wells

WELLS OFFSHORE IRELAND

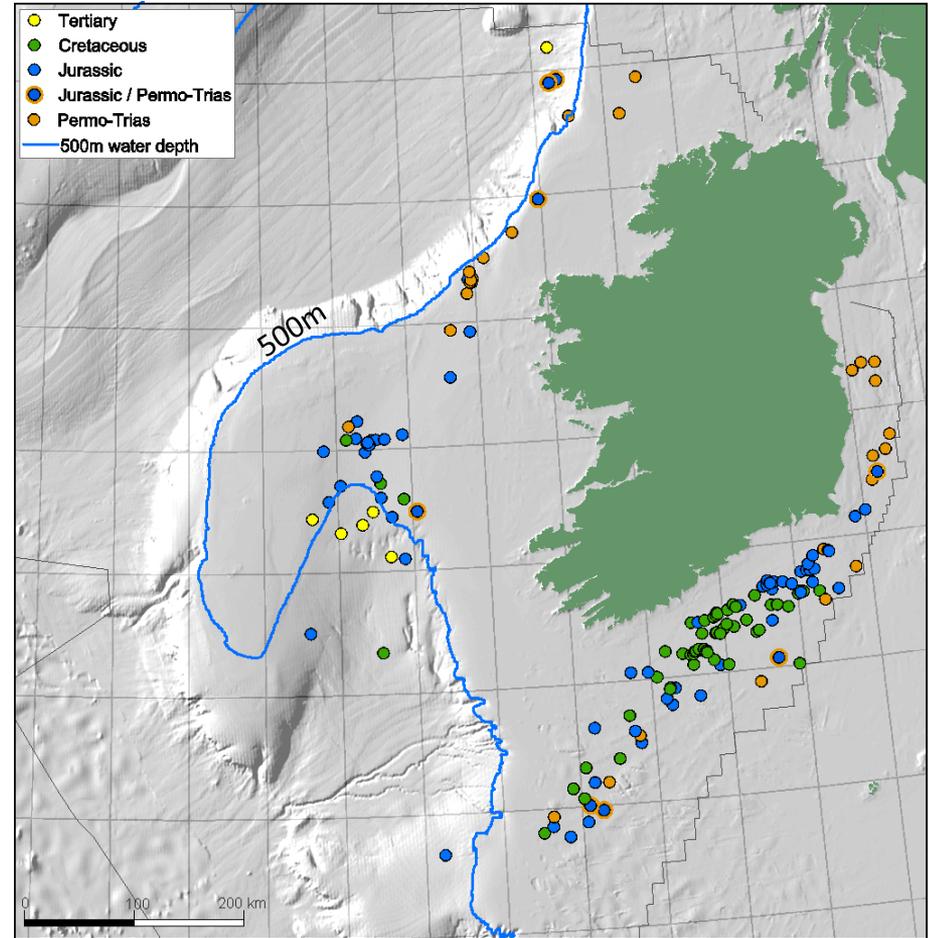
Wells Spudded and Drilled Offshore Ireland



WELLS OFFSHORE IRELAND EXPLORATION AND APPRAISAL (1970-2016)

Exploration wells:	131
Appraisal wells:	28
Total	159

**Irish Atlantic Margin
Exploration (43) & Appraisal Wells(12)
55**



KEY DISCOVERIES AND FIELDS (1970-2016)

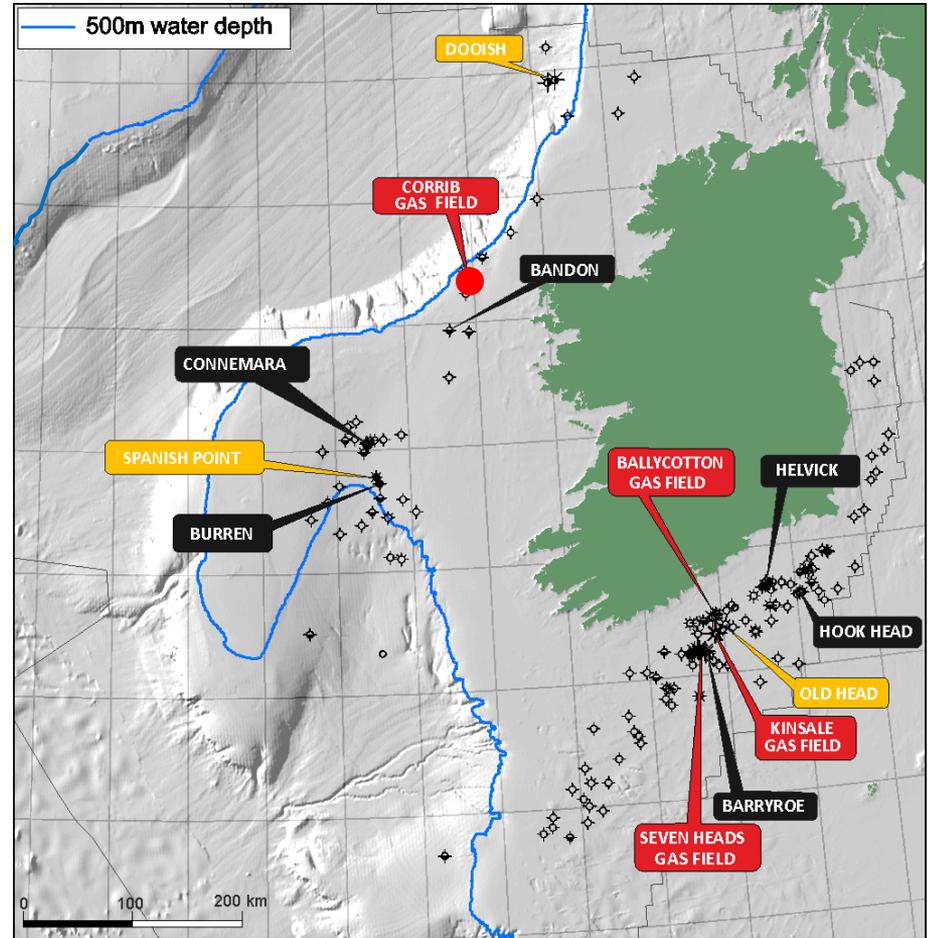
Discoveries

 Gas / gas condensate

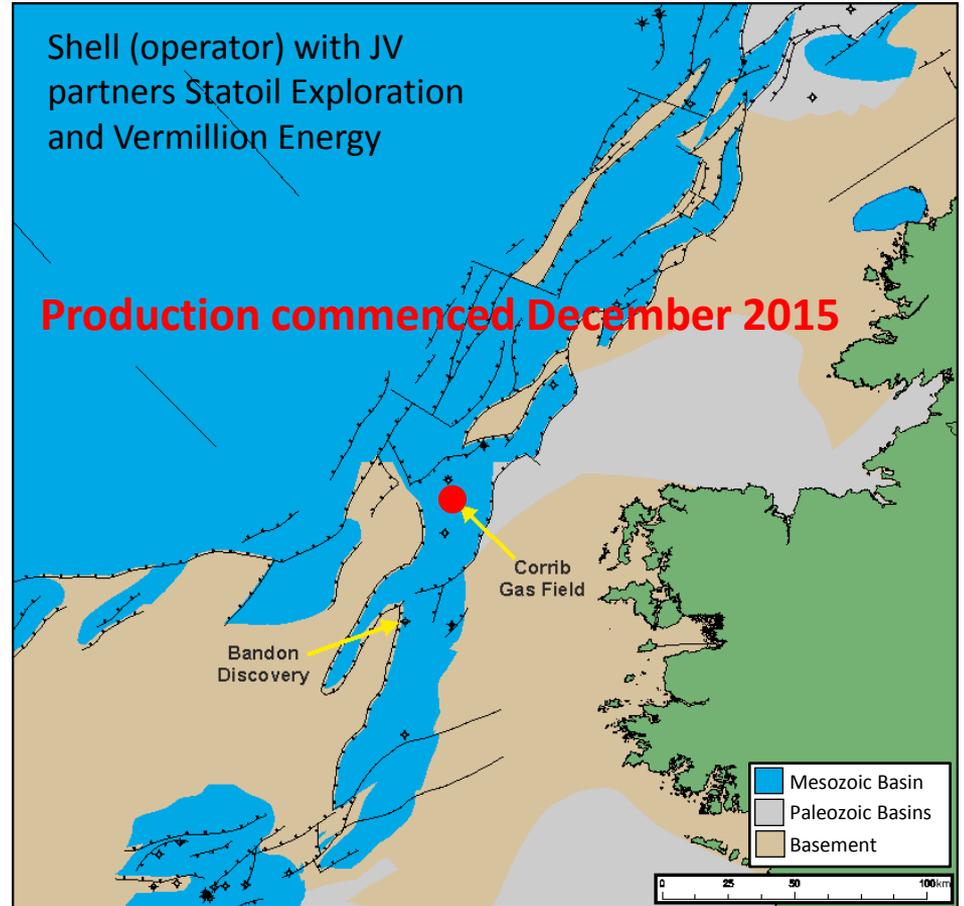
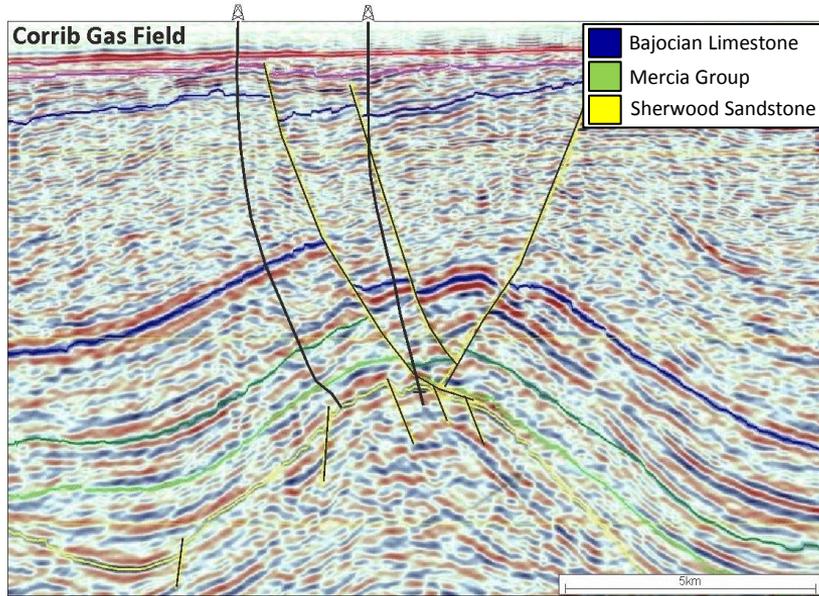
 Oil

Commercial Fields

 Gas Field



CORRIB GAS FIELD SLYNE BASIN



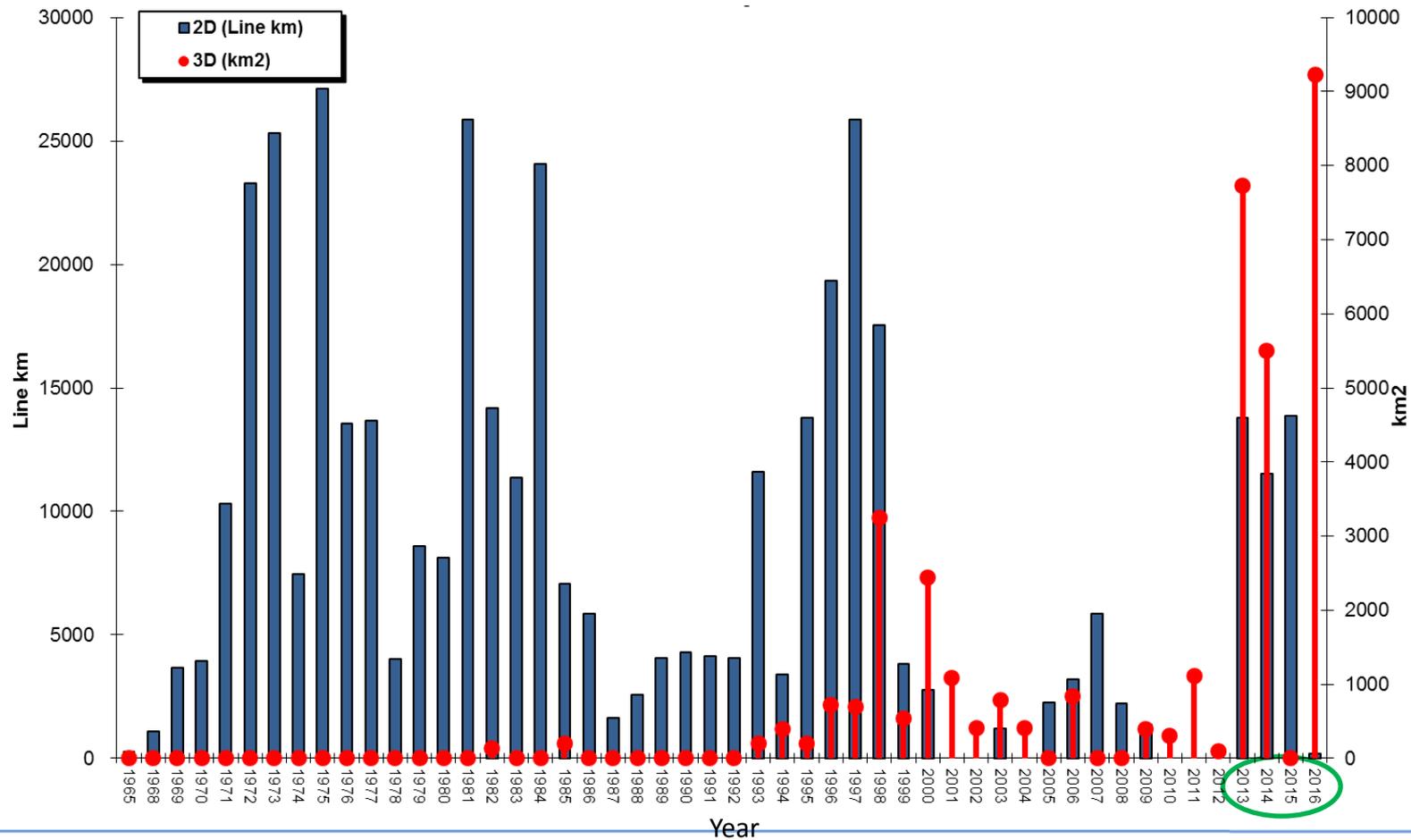
Bellanaboy
Bridge Gas
Terminal



SEISMIC



SEISMIC ACQUIRED OFFSHORE IRELAND



Seismic Totals for last 4 years (2013 to 2016 inclusive) vs other years :

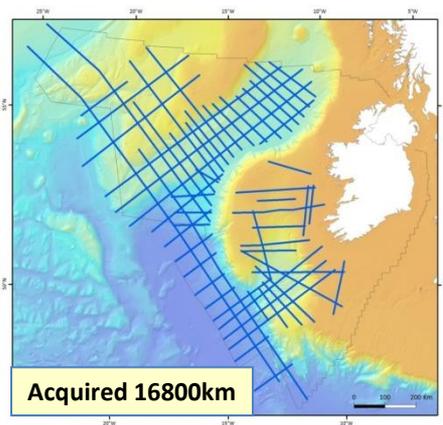
More 2D acquired in the past 4 years than the previous 14 years

The 3D seismic acquired in the past 4 years accounts for about 60% of all 3D seismic acquired



SEISMIC DATABASE offshore Ireland

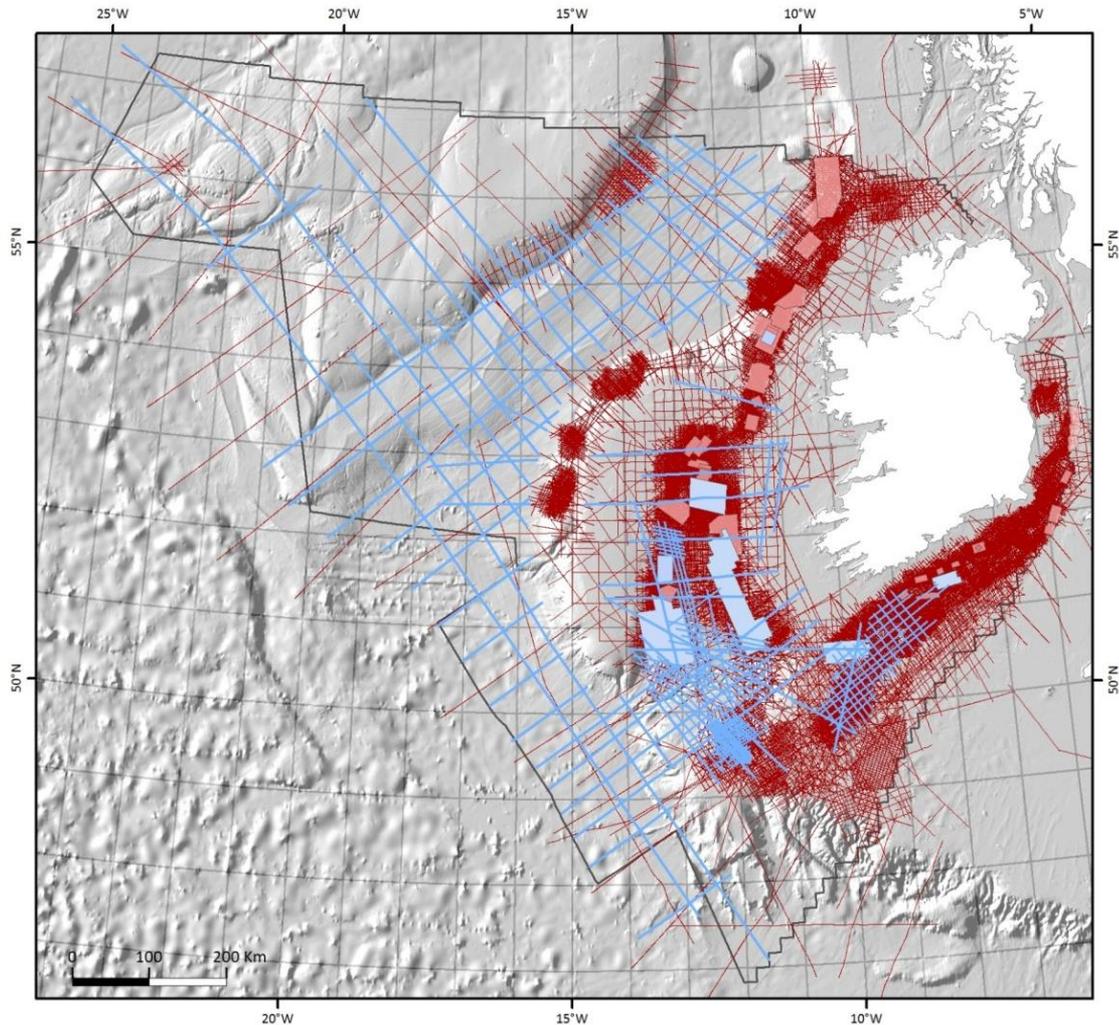
2013 and 2014 Seismic Surveys
in light blue



Total 2013 and 2014 Seismic Acquisition:

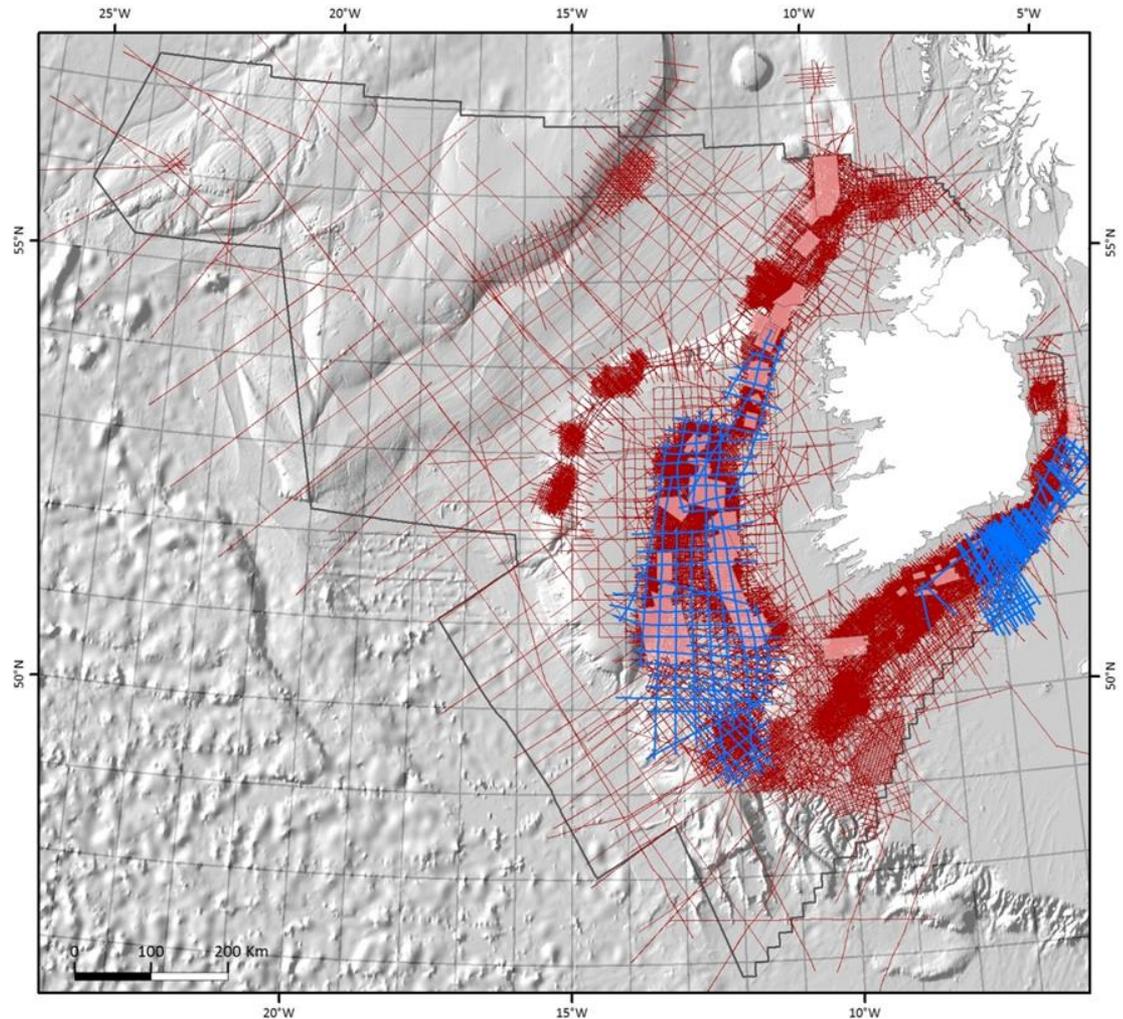
2D: approx. 25,000 km

3D: approx. 11,000 sqkm



SEISMIC DATABASE offshore Ireland

2015 Seismic Surveys in blue



Total 2015 Seismic Acquisition

2D: approx. 14,000 km



SEISMIC DATABASE offshore Ireland

2016 Seismic Surveys in green

2D seismic 1965-2016

410 surveys

Approx. 415,000 km

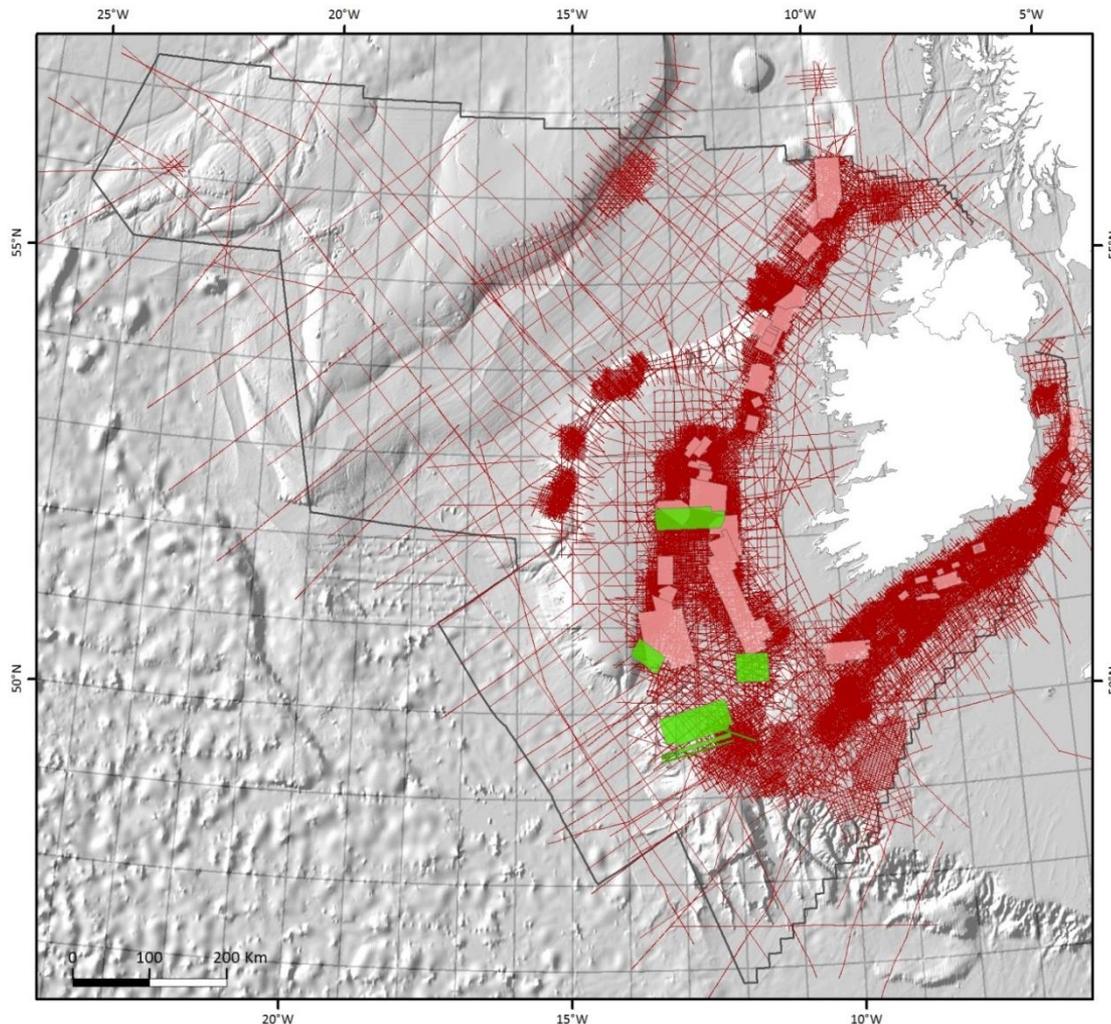
3D seismic 1965-2016

47 surveys

Approx. 39,000 sq km

Total 2016 Seismic Acquisition:

3D: approx. 9,200 km

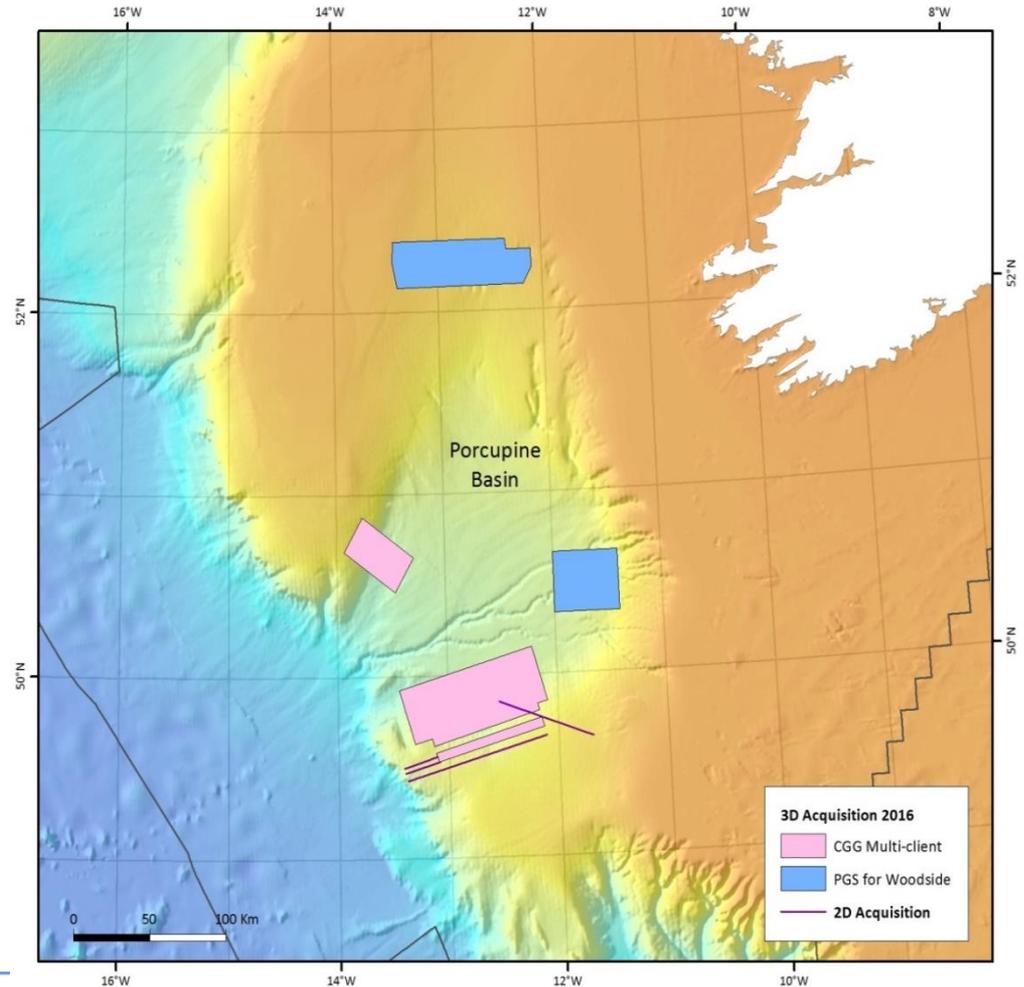


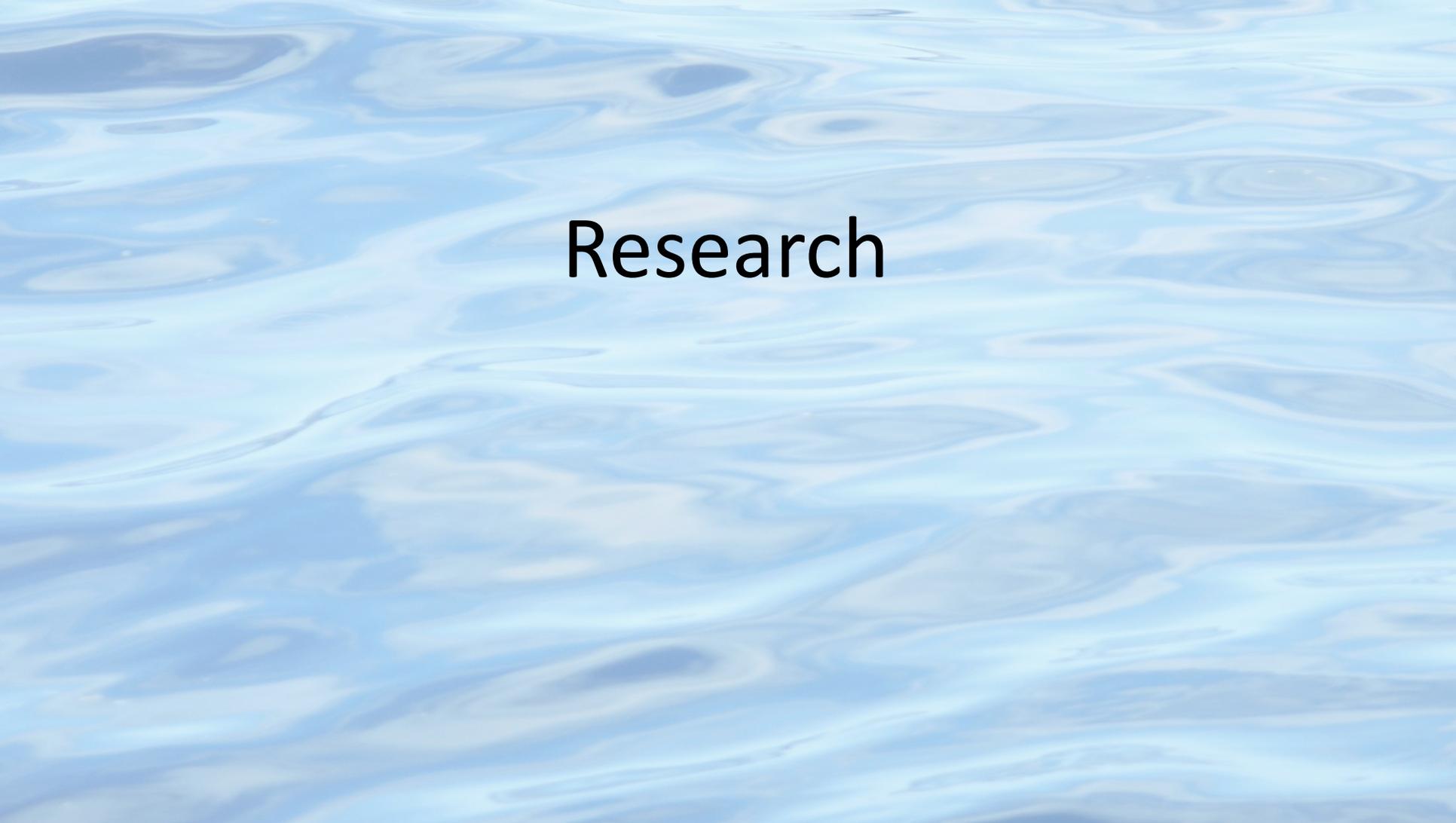
3D Seismic

Woodside Granuaile
Woodside Breanann Acquired by PGS

CGG Caireann
CGG Galway
CGG extended 2D lines

Over 9,200sq km of new 3D seismic data acquired in 2016



The background of the image consists of a continuous pattern of blue water ripples. The ripples are concentric and vary in size and intensity, creating a textured, shimmering effect. The colors range from light, pale blue to deeper, more saturated blues, with some areas appearing slightly darker due to the shadows of the ripples.

Research

Government led Research Significant involvement by PAD/DCCAE

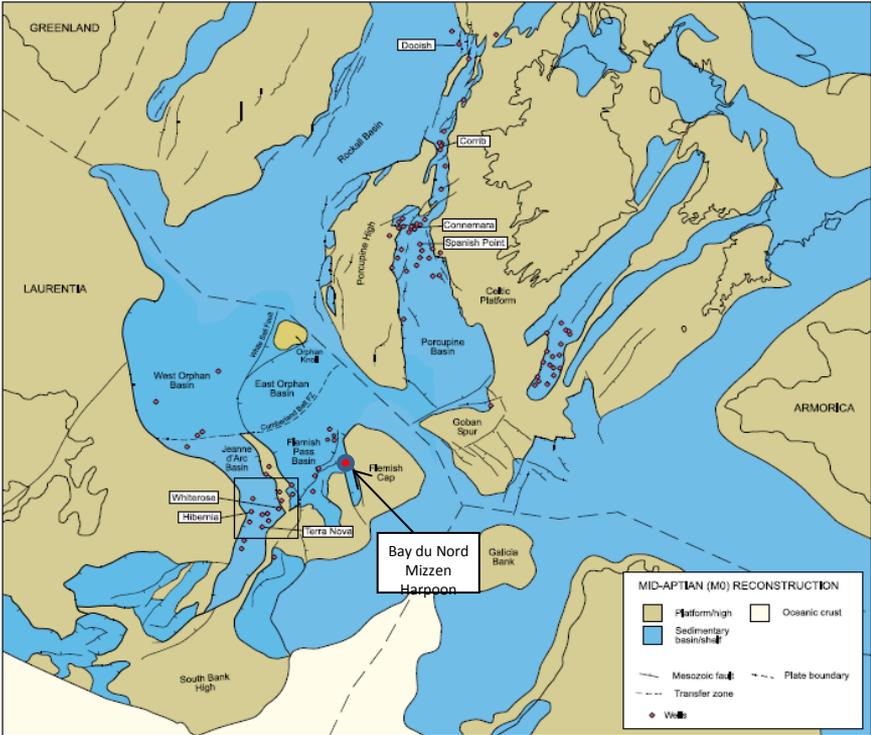
- **Petroleum Infrastructure Programme (PIP)** pip.ie
- **iCRAG - Irish Centre for Research in Applied Geosciences** icrag-centre.org
- **PAD Technical representatives active on Committees and influence project direction**
- **Initiate research, joint research, including international collaboration**
- **Interrogate research and active participants in research workshops**
- **Provide access to data for research**

Investment in Research will complement increased industry investment in exploration activity

Key objective: de-risking Ireland's hydrocarbon potential



Atlas of Source Rocks, Oil Characteristics and Oil-Source Rock Correlation in Mesozoic Basins of the North Atlantic Conjugate Margin, Offshore Ireland and Offshore Newfoundland-Labrador

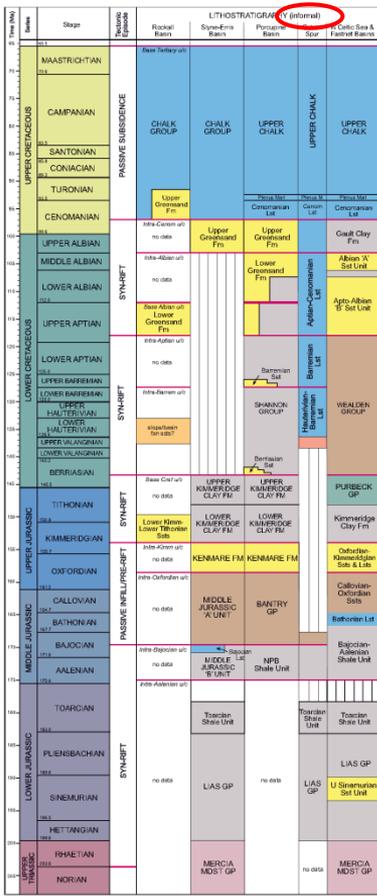


- Work being carried by Beicip-Franlab
- Project jointly funded by Ireland’s Petroleum Infrastructure Programme (PIP) and Nalcor Energy (on behalf of the Offshore Geoscience Data Program with the Government of Newfoundland and Labrador)

Significant involvement by PAD/DCENR – provision of access to Irish data and samples and project direction



An Integrated Lithostratigraphic and Biostratigraphic Framework for Offshore Ireland



- Work being carried by Merlin
- Project funded by Ireland’s Petroleum Infrastructure Programme (PIP)

Significant involvement by PAD/DCENR – provision of access to Irish data and samples and project direction



The background of the image consists of a dense pattern of blue water ripples. The ripples are concentric and irregular in shape, creating a textured, shimmering effect. The colors range from light, pale blue to a deeper, slightly darker blue, with some areas appearing more saturated than others. The overall appearance is that of a calm body of water reflecting light.

Data

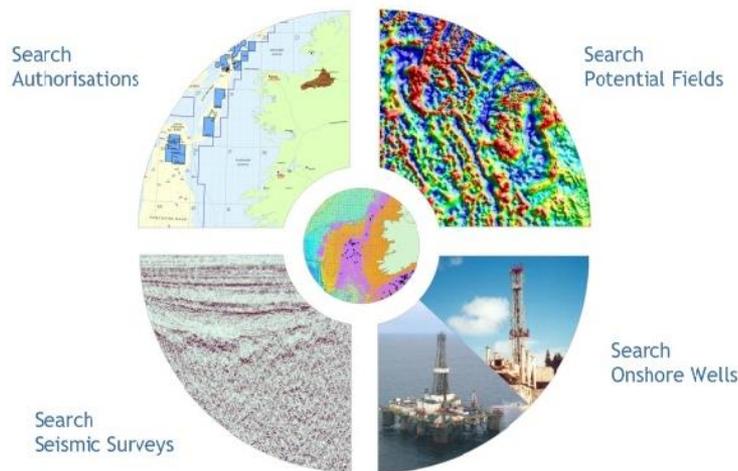
Well and Seismic Data – IHS (Regional Seismic Survey 2013/2014 – PAD/DCCAE)

Technical Studies & Regional Reports – PAD/DCCAE [[Data Rooms](#)]

Rock & Fluid Samples – PAD/DCCAE

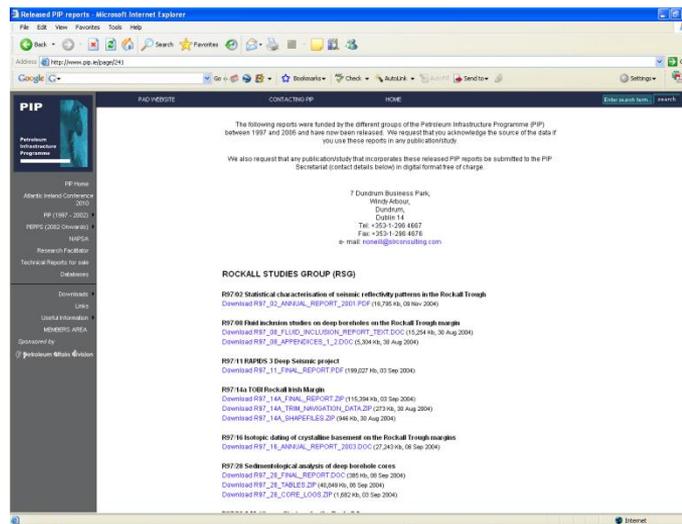
Data Access for Applied Research Related to Petroleum E&P – PIP Secretariat and PAD/DCCAE

Website IPAS ([Integrated Petroleum Affairs System](#))



INDUSTRY DATA
Search Offshore Wells

www.pad.ie

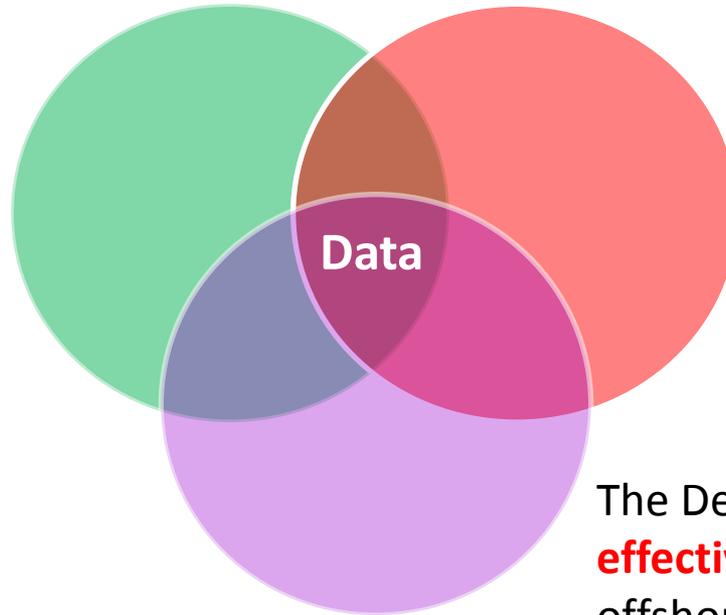


RESEARCH DATA

www.pip.ie

Government, Industry, Academia

Industry's objective is to **discover and develop** hydrocarbons



Researchers aim to **derisk** exploration

The Department wants **effective exploration** in our offshore basins, with safe and environmental best practices

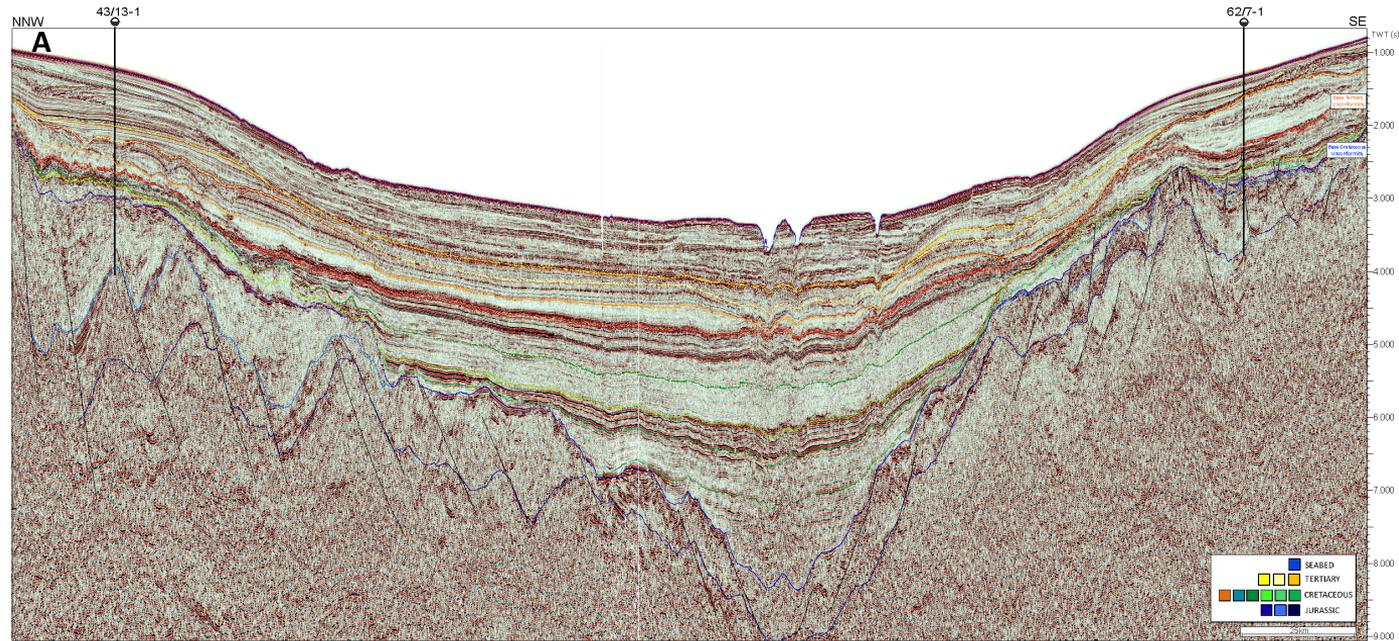
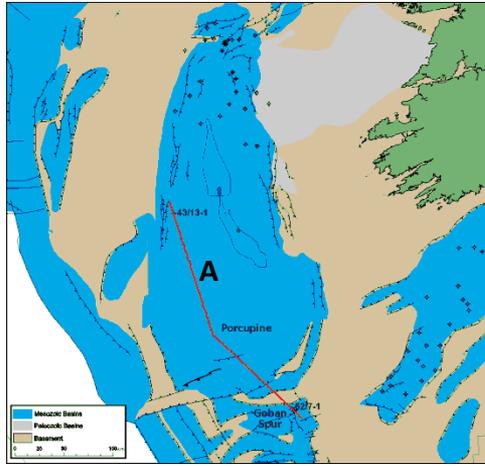
Joined-up thinking by Government, Research Community and Industry



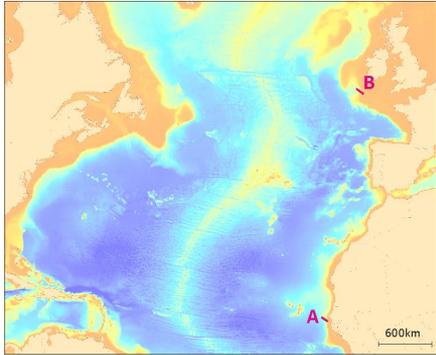
Interpretation

PORCUPINE BASIN AND GOBAN SPUR BASINS

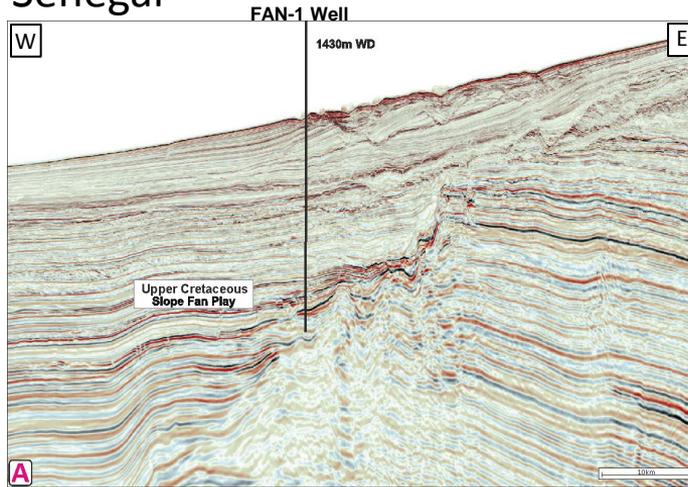
Interpretation of the Department's regional seismic survey is on-going, providing insights into the largely underexplored South Porcupine and Goban Spur Basins.



CRETACEOUS STRATIGRAPHIC PLAY WEST AFRICA ANALOGUE



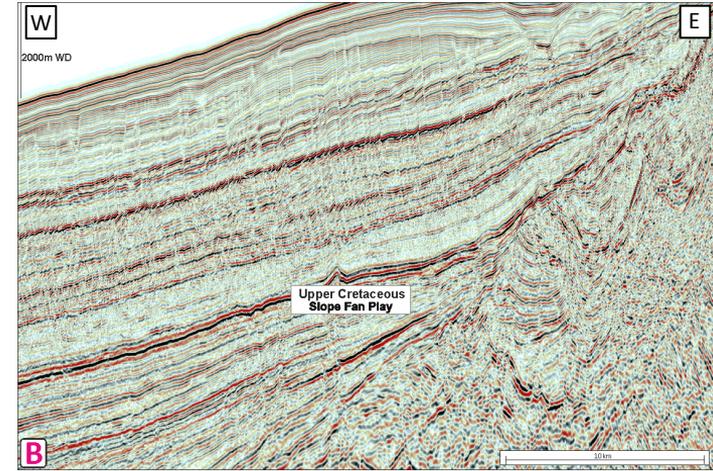
Senegal



(data courtesy of IHS CERA)

Largest oil discovery in 2014
Slope fan play, Shelf edge play

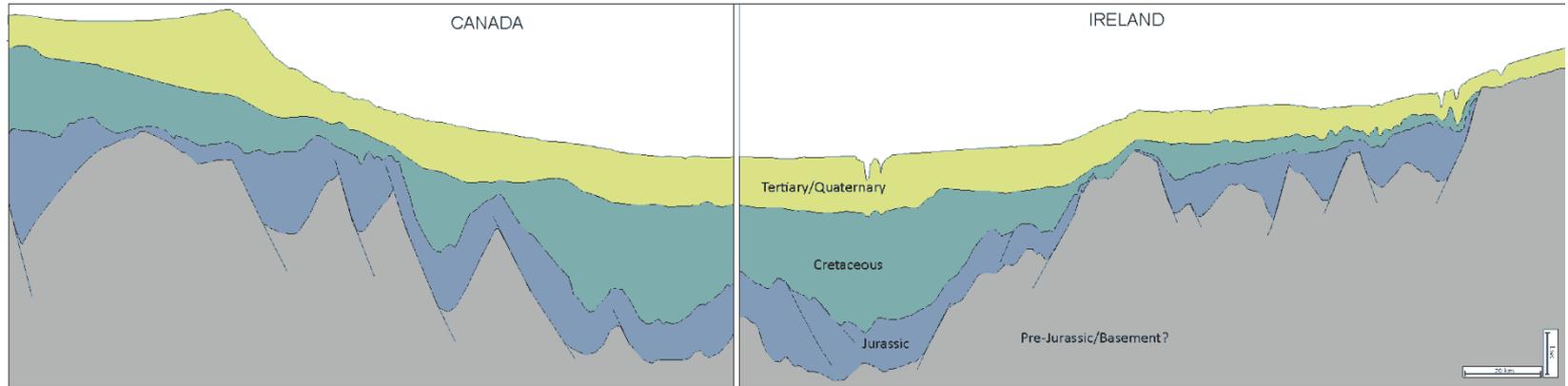
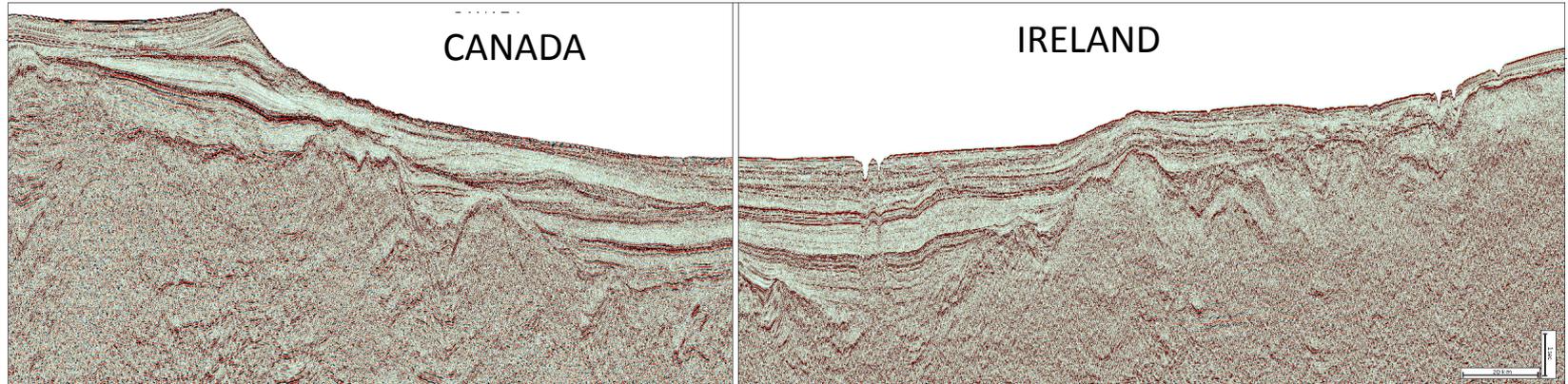
Ireland



Porcupine Basin



CONJUGATE MARGIN ANALOGUES - EAST CANADA



The background of the image consists of a continuous pattern of blue water ripples. The ripples are concentric and vary in size, creating a textured, shimmering effect. The colors range from light, pale blue to a slightly darker, more saturated blue, with some areas appearing as soft, out-of-focus highlights.

Promotion

Exploration status offshore Ireland is healthy

- The number of Authorisations is at a record high; Strong work programmes; Substantial increase in Seismic surveys acquired in the past 4 years
- Petroleum related Research projects are increasing and are collaborative and regional in nature
- Interpretation ongoing to highlight prospectivity in Ireland's offshore basins
- Increased requests for Data provision to industry for enhanced data products, researchers
- Strong demand to visit the PAD Dataroom
- Promotional Campaign effective

The Government through PAD will continue to engage with industry and academia to progress exploration interest offshore Ireland

