

*Atlantic Ireland 2019*

# Significance of the new offshore Ireland stratigraphic framework for exploration within the province and internationally

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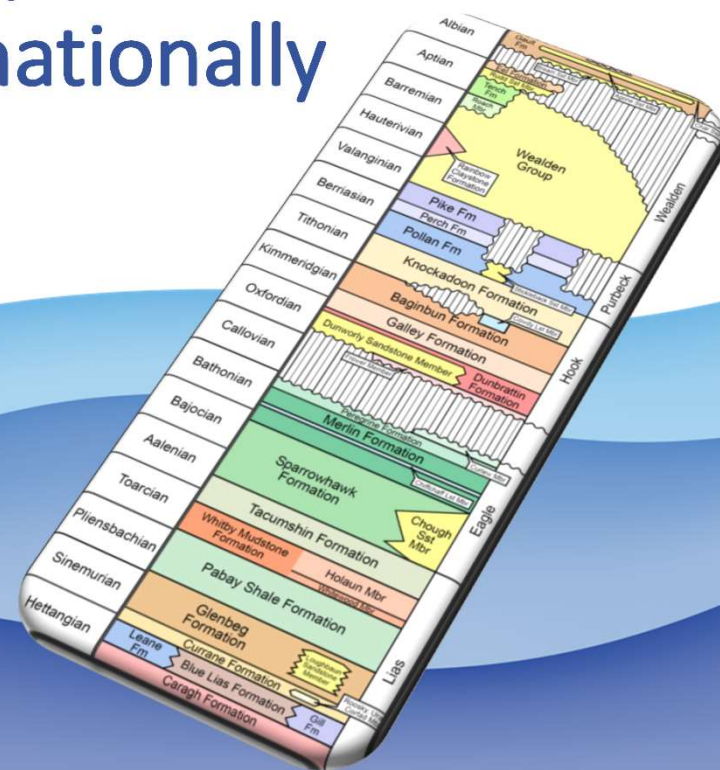
*October 29<sup>th</sup> 2019*



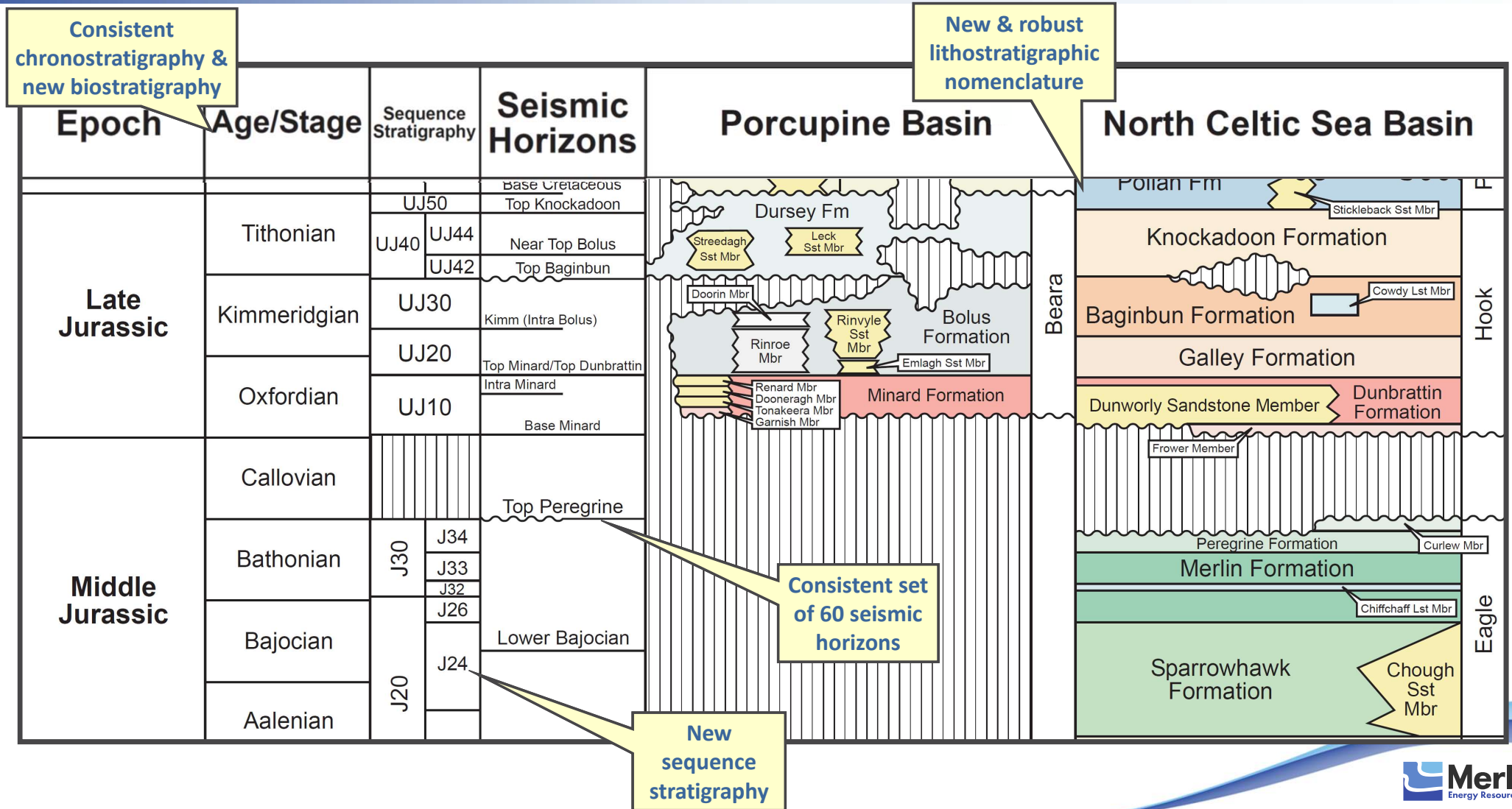
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Department of Communications,  
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# What does the new framework contain?

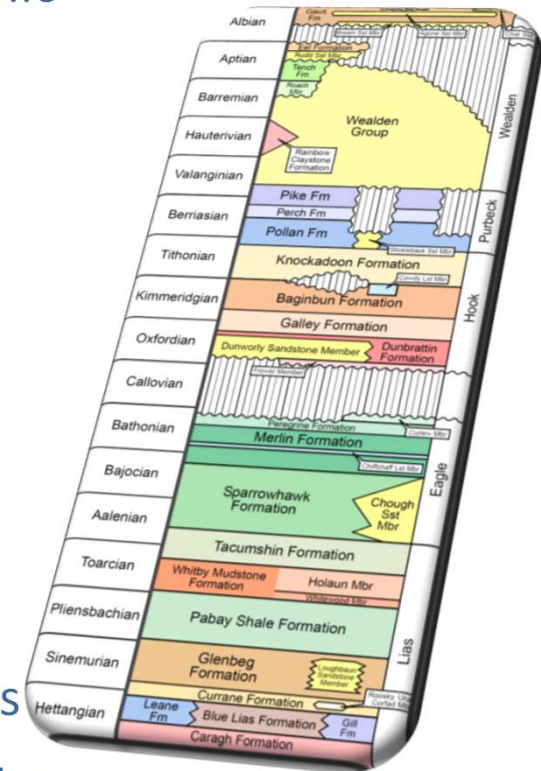


# How does this type of study help us as explorers and academics?

- Stakeholders recognised a need for a consistent stratigraphic nomenclature
  - Reduces uncertainty & improves understanding of geological risk factors for explorers
  - Promotes consistent reporting between Operators, Governments & Academics
  - Potential to open up new plays
  - Old names inconsistent

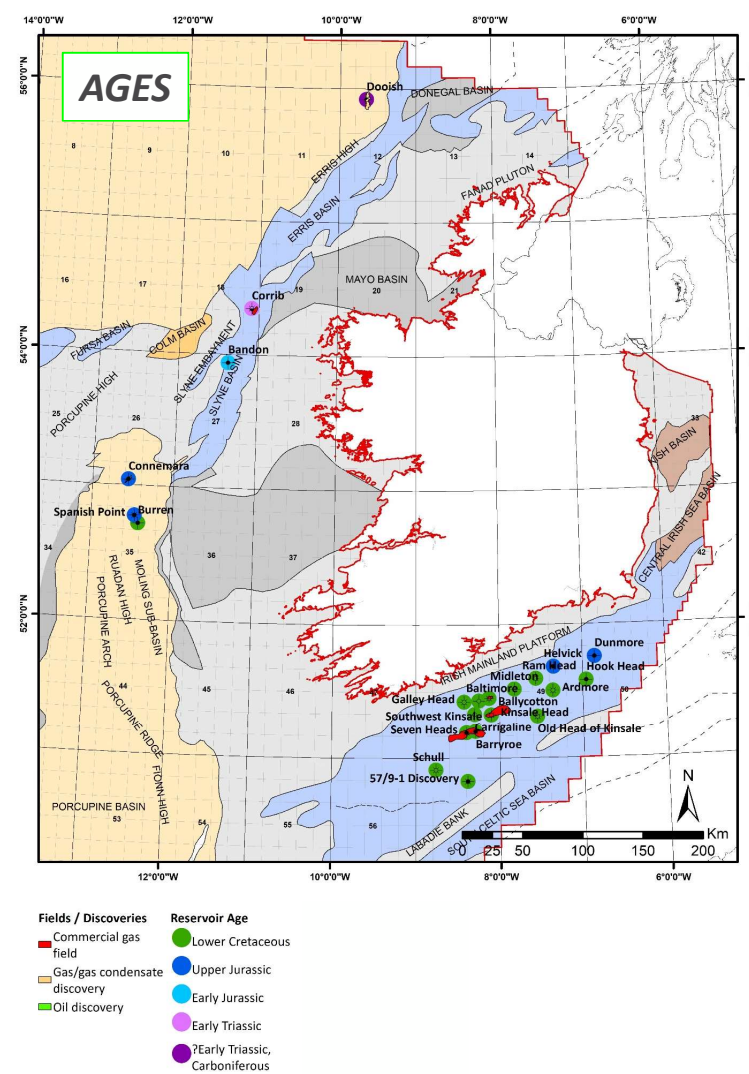
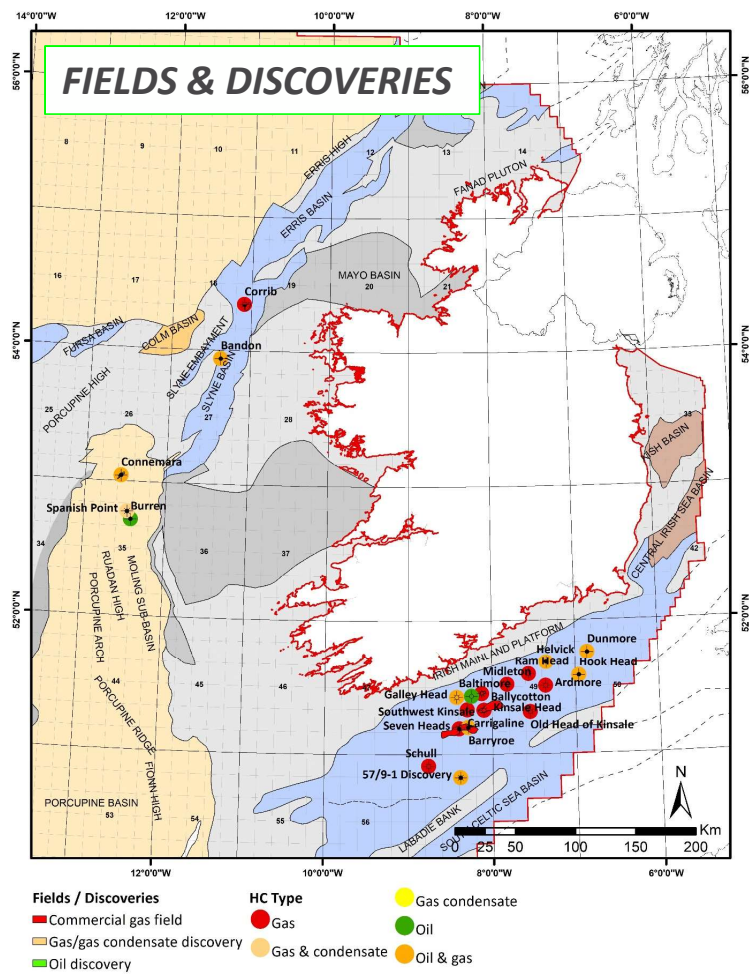
*“is my rock **really** the same as your rock?”*

- Standardised scheme- Gradstein
- Global relevance e.g. major tectonic and climate signatures
- Improved understanding of key petroleum system elements





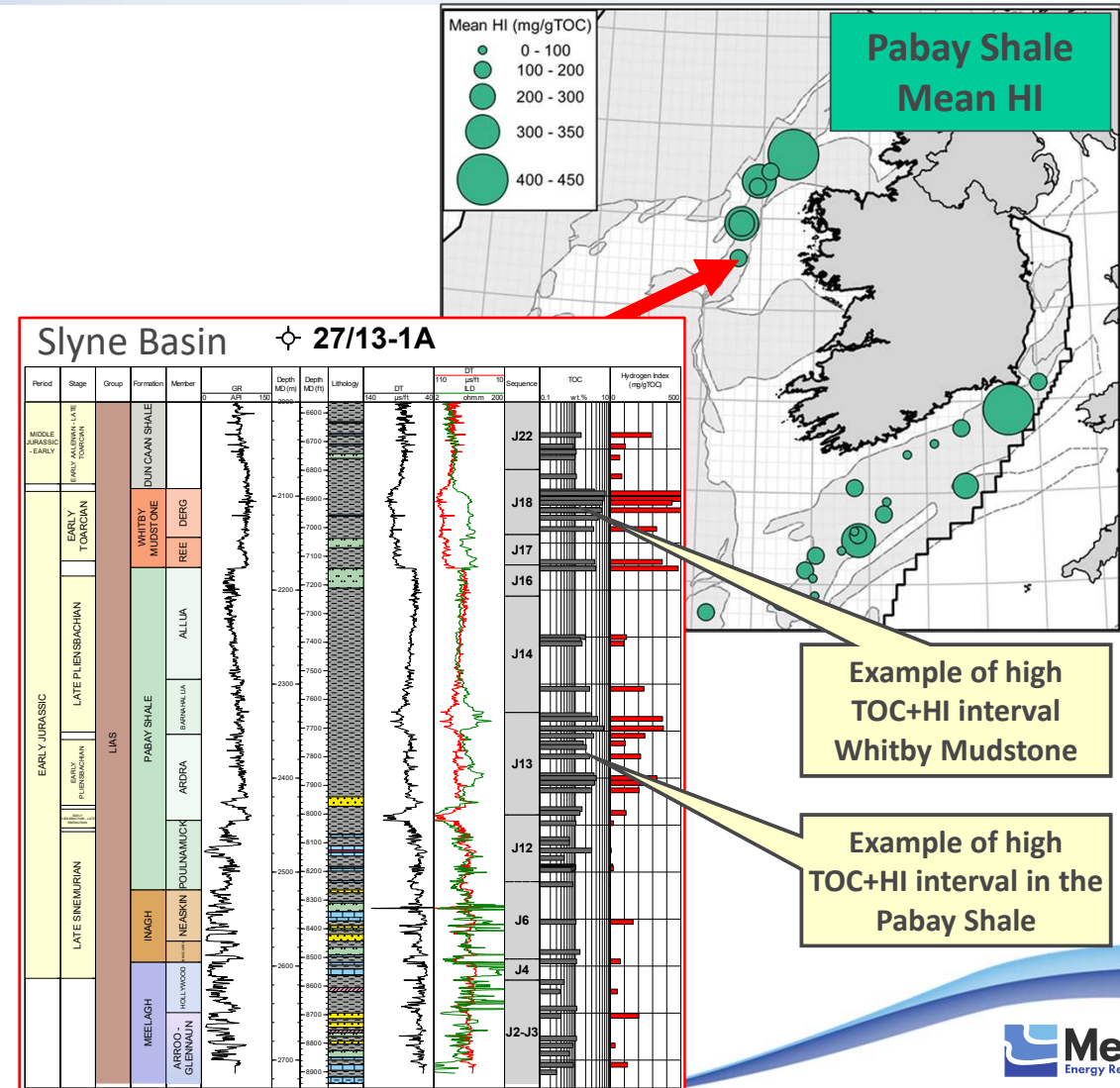
# Offshore Ireland Fields & Discoveries





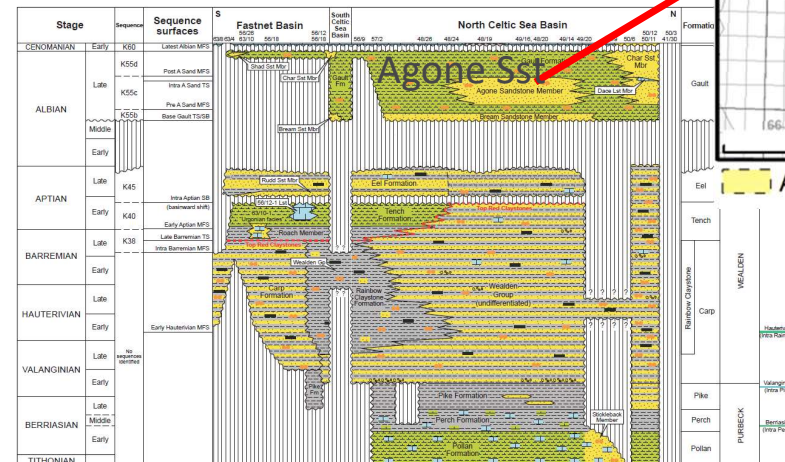
# Play Elements: Source Rocks

- 21 formations with source potential identified (See talk by Gehlen *et al.*)
- Range from Carboniferous to Paleogene in age.
- Data included in the new framework
- New source intervals positive for exploration potential
- Tied to sequences
- Potential next step map the source intervals in detail on seismic data & identify sweet spots?
- Incorporate results into basin modelling?



# Play Elements: Reservoirs

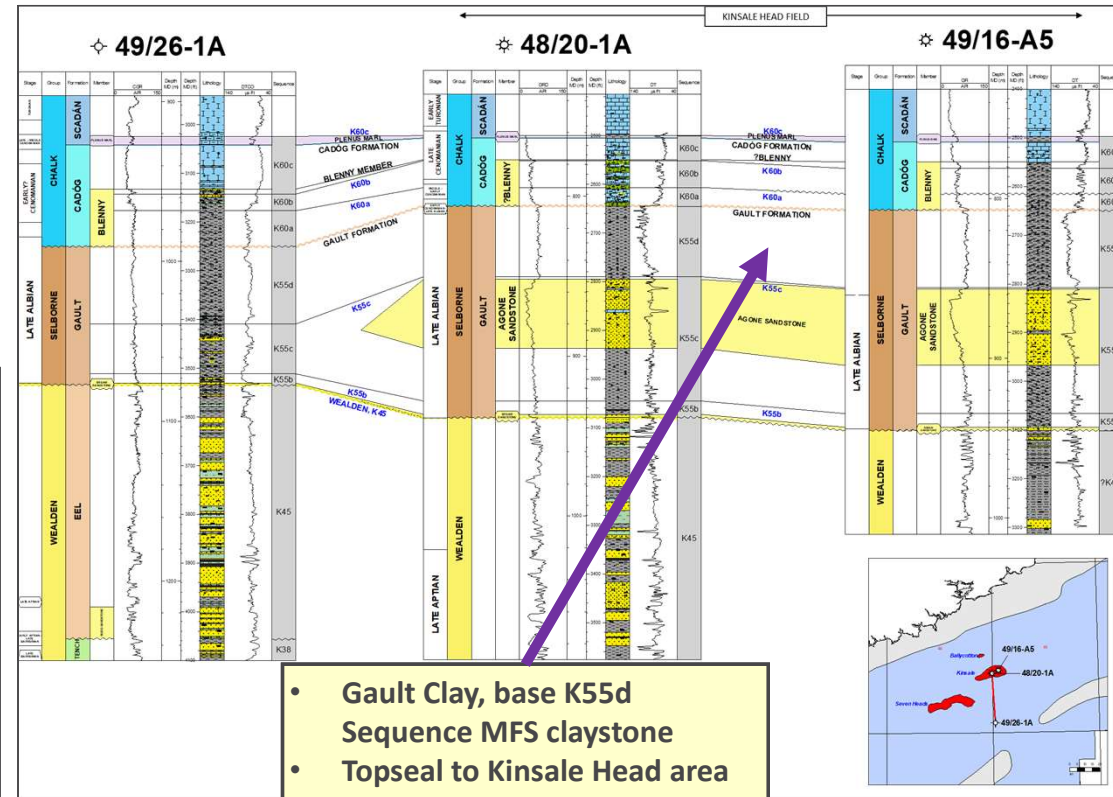
- 4 producing fields and 11 discoveries offshore Ireland
- New naming scheme for all proven and potential reservoirs
- Removes naming duplication
- Enhanced understanding of spatial distribution, facies and ages
- Start to predict reservoir prone intervals e.g. “this interval is sand prone or not”
- Map key units away from penetrations
- Create accurate play fairway maps



Example Summary Diagram

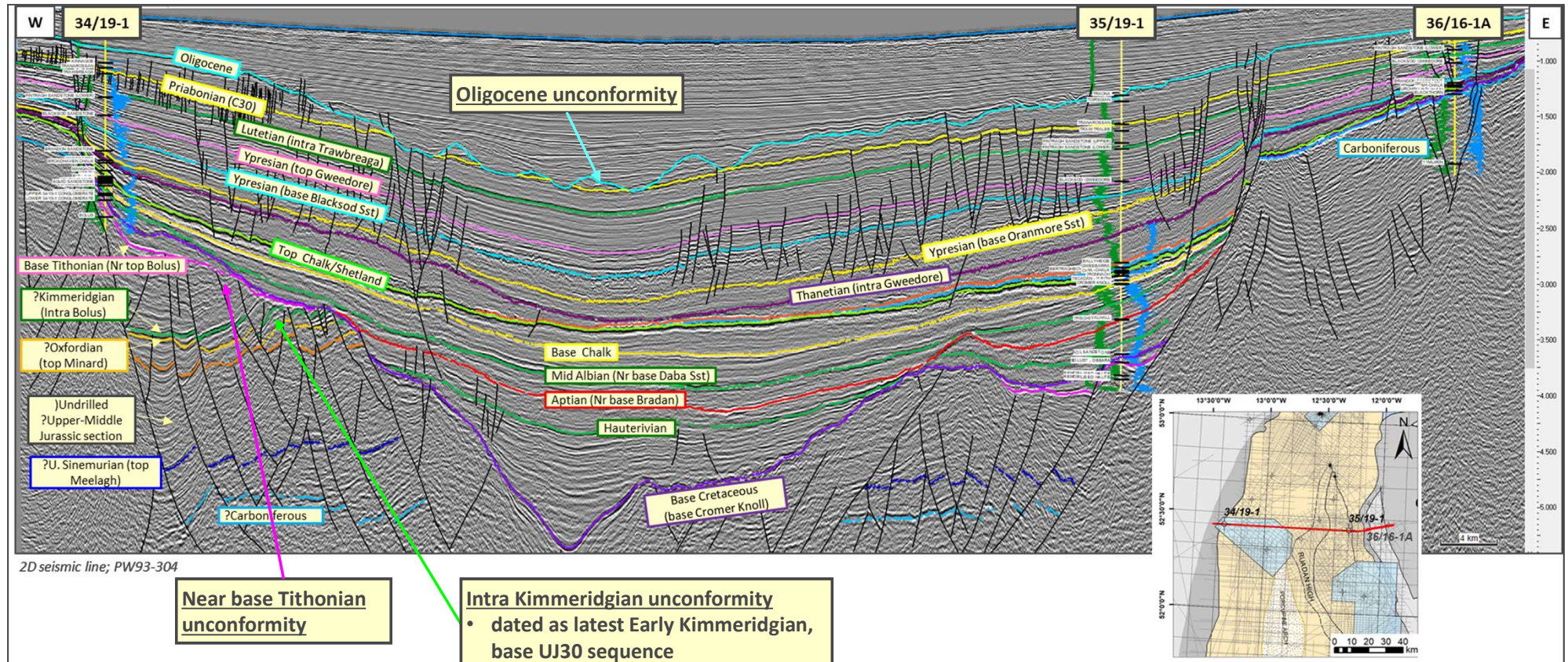
# Play Elements: Top Seals

- Commonly equate to major transgressive claystones
- Mappable using sequence stratigraphy & high quality seismic data
- Map away from fields into untested areas





# Tectono-Stratigraphic Evolution: “Unmaking the cake!”



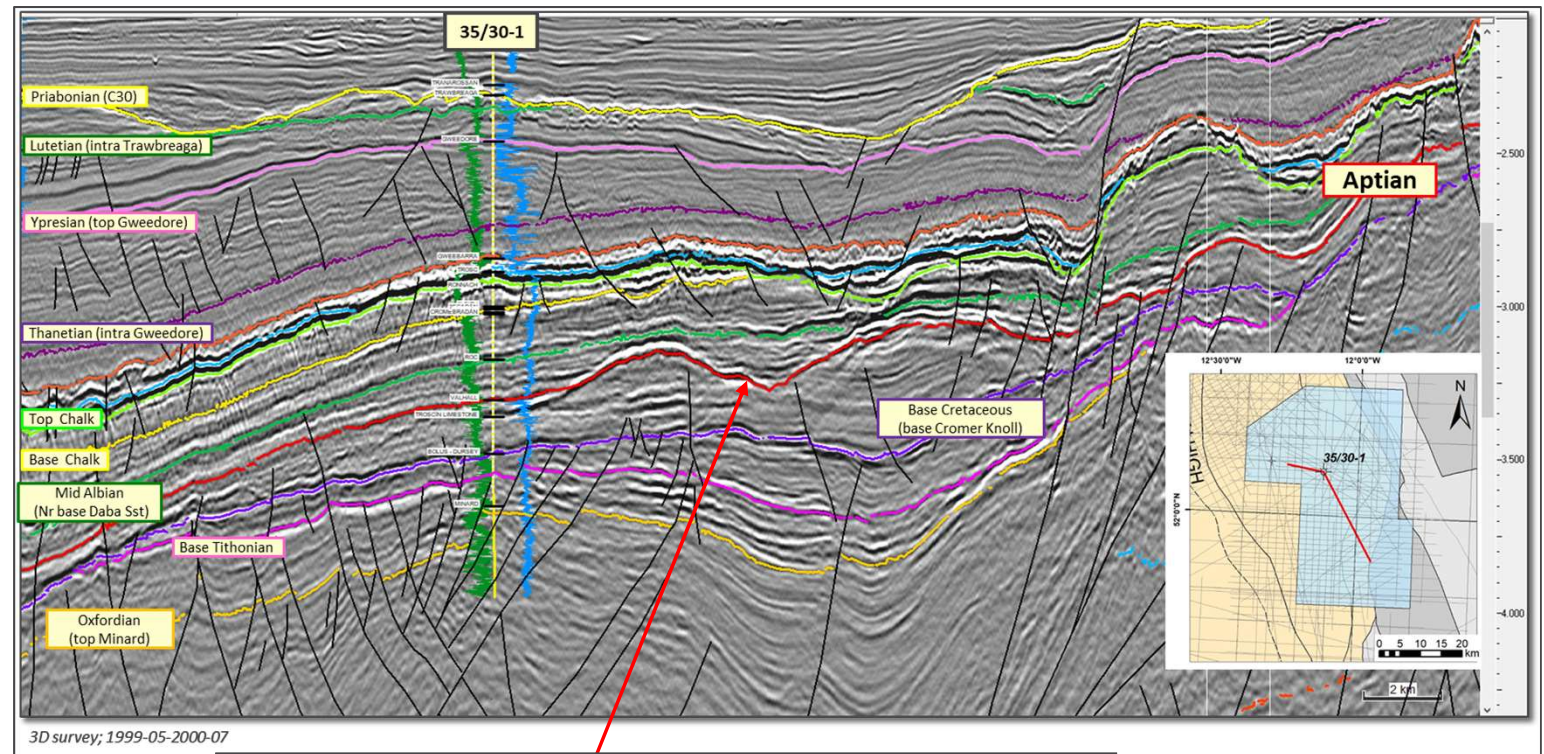
## Project allows enhanced understanding of the structural evolution offshore Ireland

- Major unconformities relate to significant steps in tectono-stratigraphic evolution, e.g. Base Cretaceous, Aptian
- Date major tectonic phases, e.g. rifting + relate to truly regional sequences
- Relates to creation of structures and timing of hydrocarbon migration + basin modelling



# Tectono-Stratigraphic Evolution: Next Steps

- Improve and enhance basin models
- Timing of structures relative to hydrocarbon migration
- Magnitude of uplift and erosion controls reservoir distribution & thermal history
- Map true extent of sand and shale prone sequences



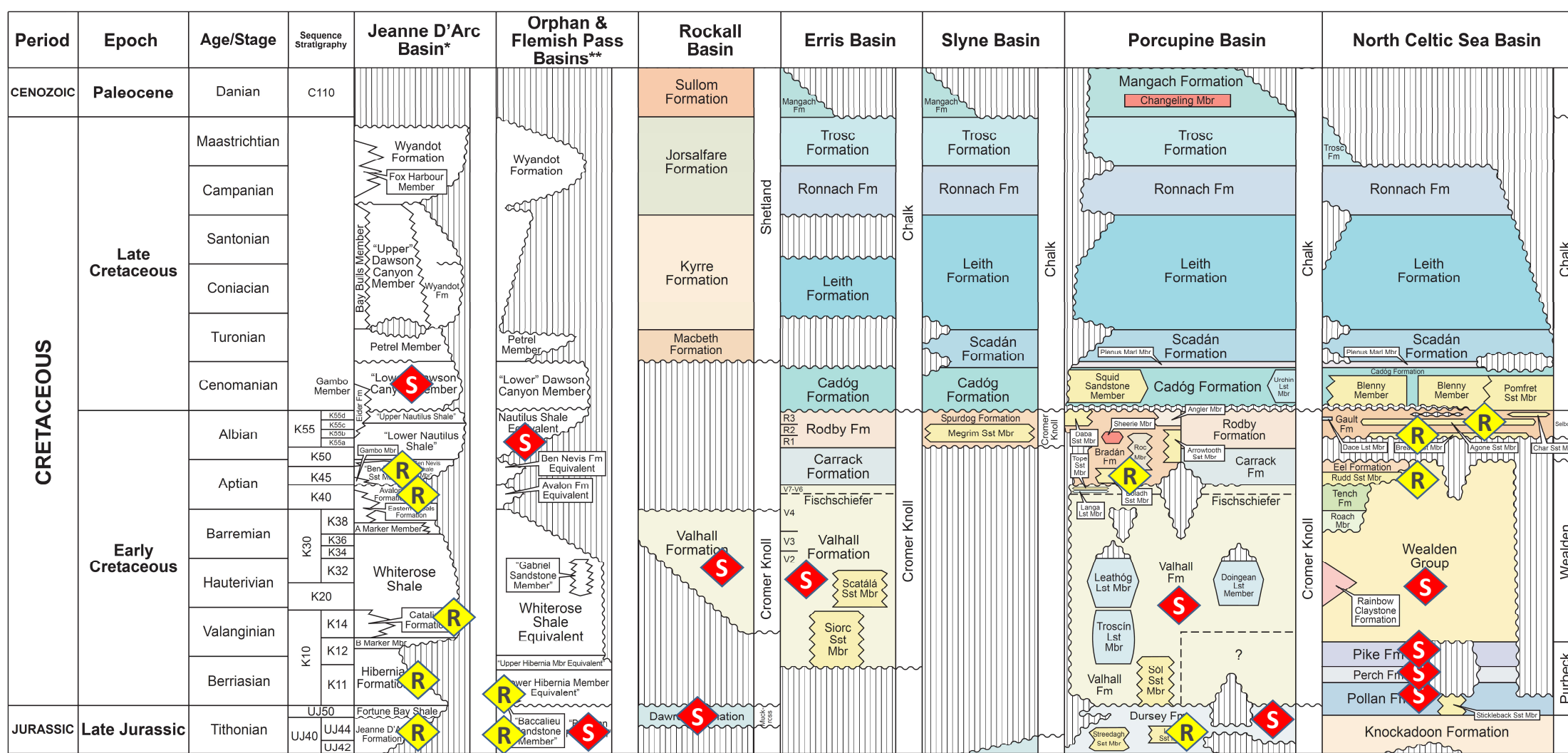
## Aptian unconformity

- Dated as latest Early Aptian, base K45 sequence
- Likely related to initiation of opening of Bay of Biscay & separation of Iberia and Grand Banks (Newfoundland)





# Linking Ireland's offshore basins with Eastern Canada



\*After McAlpine 1990, Deptuck et al. 2003 \*\*In part after Ainsworth et al. 2015

## International significance

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- To our knowledge, no similar study on the same scale has been carried out for any other petroleum province
- Helpful to align new scheme with recently published OGA/Lloyds Register UKCS mapping.
- Potential benefits for producing areas e.g. NE Canada and the UKCS

## Benefits of this study and the collaborative regional approach

- This stratigraphic study reduces uncertainty and improves geological understanding for *all* stakeholders
- Promotes consistent and efficient reporting
- If we are going to produce fossil fuels, it is best to do so efficiently and safely
- Useful for progressive applications e.g. Geothermal, CCS and energy storage



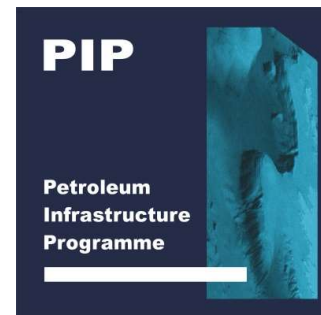


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**Thank you for listening**

