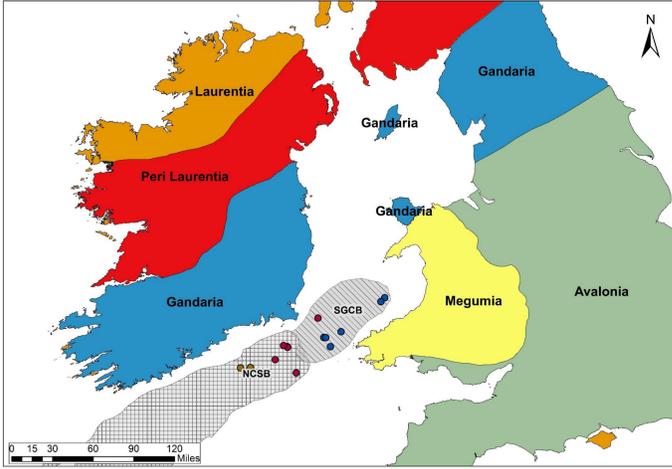


Odhrán McCarthy^(1,4), Dr. Pat Meere^(1,4), Dr. Kieran Mulchrone^(2,4), Dr. David Chew^(3,4),
¹ School of Biological, Environmental and Earth Sciences, University College Cork. ² School of Mathematics – NUI Cork. ³ Department of Geology, Trinity College Dublin. ⁴ iCRAG

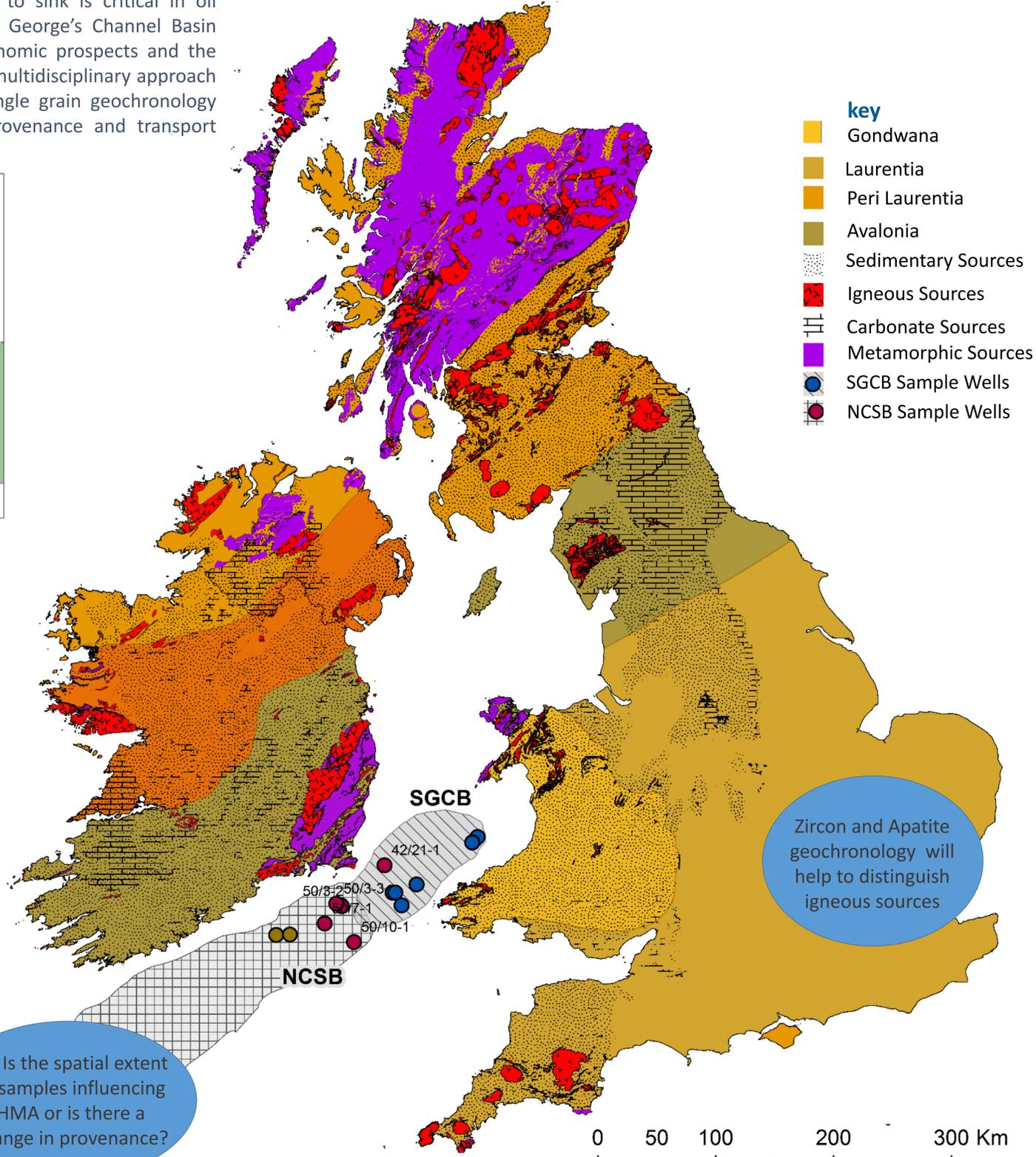
Establishing the provenance of sediments from source to sink is critical in oil

Establishing the provenance of sediments from source to sink is critical in oil exploration. The North Celtic Sea Basin (NCSB) and St. George's Channel Basin (SGCB), offshore of Ireland's east coast, are proven economic prospects and the subject of this study (Fig 1. & 3.). This study will adopt a multidisciplinary approach including quantitative sedimentary petrology, detrital single grain geochronology and heavy mineral analysis (HMA) to elucidate the provenance and transport mechanisms of these Mesozoic Basins.

Available Sediment Source regions Of the Mesozoic



Interpreted Diagram of the Paleocoastlines of Ireland and the UK. Each Paleocoastline feeds sediment with a different composition allowing for the differentiation of source regions.



Zircon and Apatite geochronology will help to distinguish igneous sources

Q. Is the spatial extent of samples influencing HMA or is there a change in provenance?

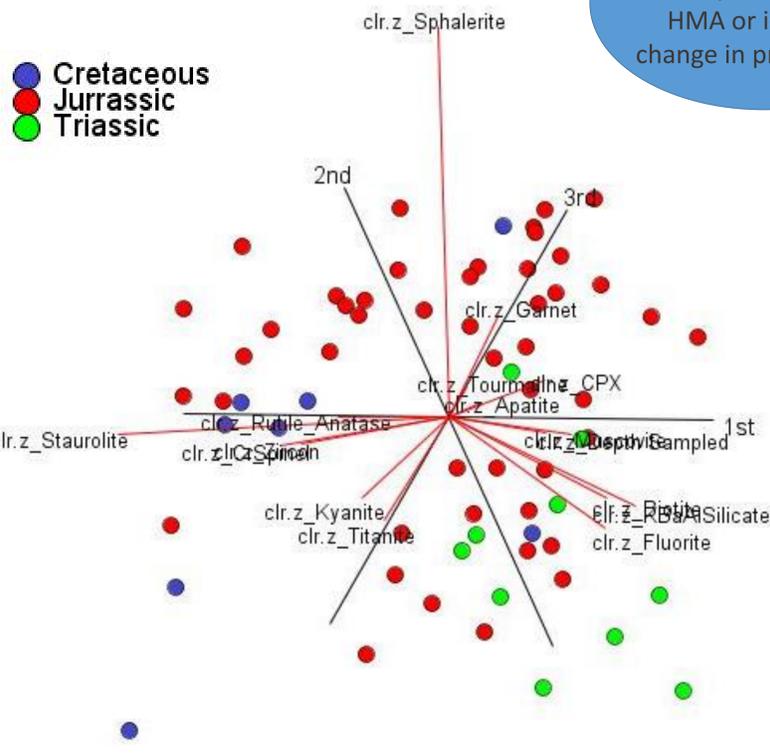
Key Points

- Basins show HMA variation through the Mesozoic
- Spatial variation in HMA also present
- Diagenesis has not affected apatite abundance
- CPX found only with carbonate sediments indicating a carbonate, volcanic source region
- HM analysis can effectively characterise the temporal evolution of Mesozoic sediments

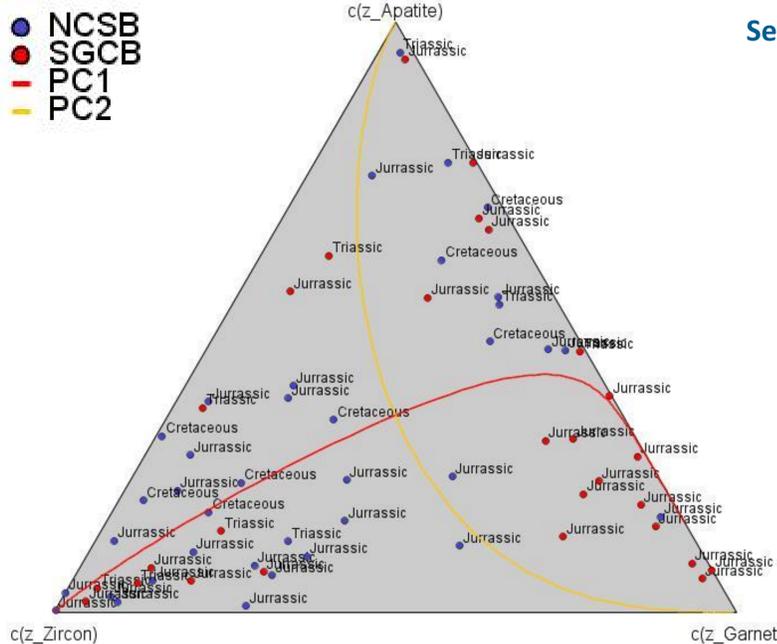
Whats Next?

- Raman spectroscopy analysis
- Geochronology Study:
 - Zircon
 - Apatite

Heavy Mineral Analysis Results

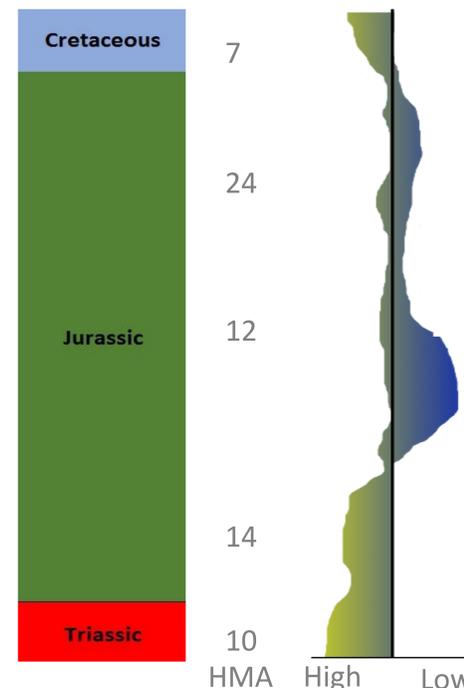


Principle Component analysis biplot of heavy mineral ratios sampled throughout the NCSB and SGCB at different periods.



Ternary diagram of principle component analysis results highlighting the inter period and inter basin variation

Sea level Change through The Mesozoic



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