

## AN OPEN PETROLEUM GEOCHEMICAL DATABASE FOR THE UK CONTINENTAL SHELF

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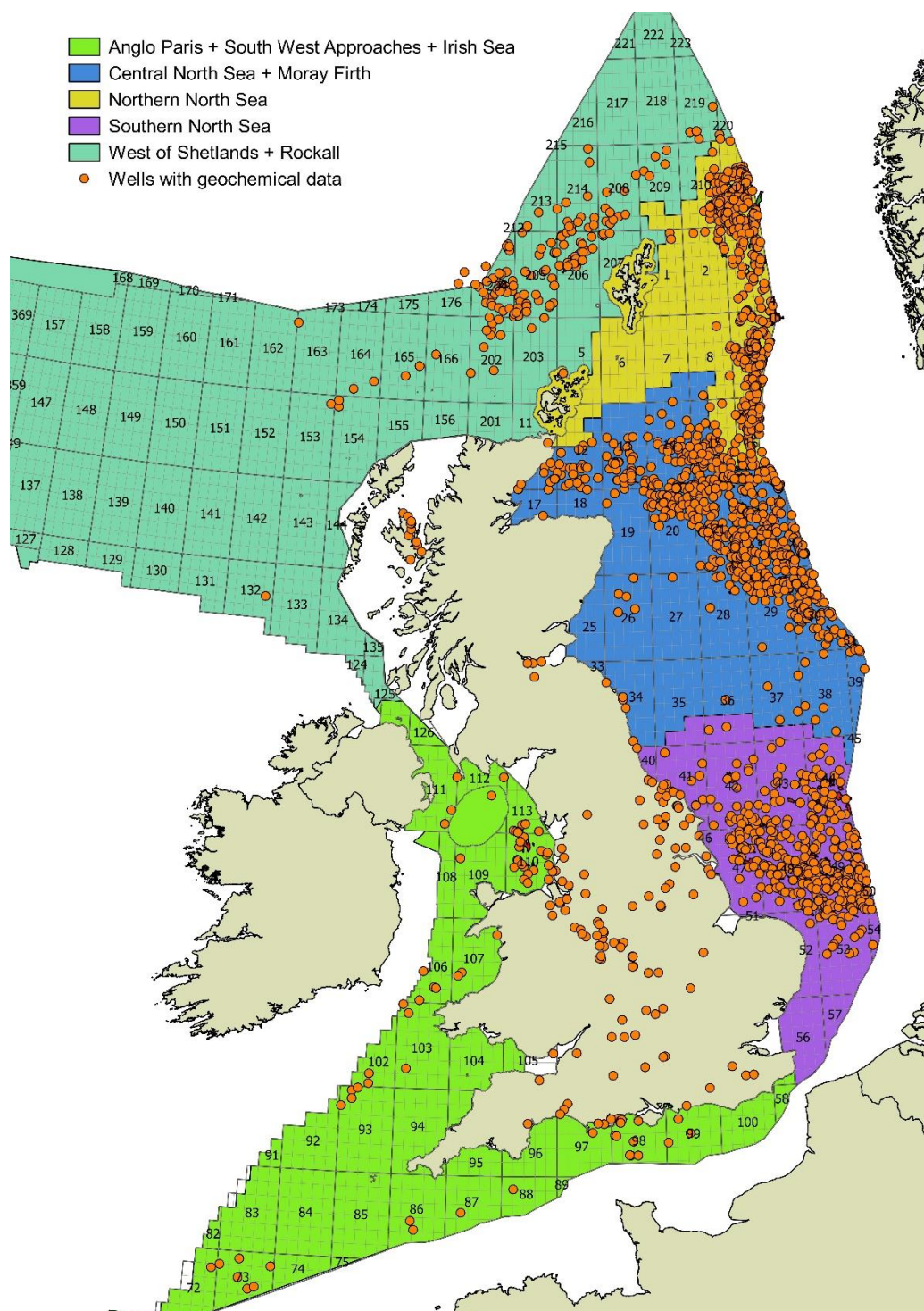
The United Kingdom Continental Shelf (UKCS) is a relatively mature area for petroleum exploration, particularly the North Sea, with over 42 billion barrels of oil equivalent having been produced from the UKCS as a whole. This long history of exploration and development has led to a large knowledge base, which combined with some important discoveries in recent years has maintained strong industry activity and interest in new opportunities on the UKCS.

In the past, geochemical data have not been required by the UK authorities to be released to the broader community, although the Oil & Gas Authority (OGA) has recently made some such resources available. Recognizing the need for a geochemical database for the UKCS to be built and made broadly available to all, the OGA initiated this project which is being conducted by IGI Ltd. and Lloyd's Register (LR), running from June 2018 to March 2019. The public release of this database and associated geological data (in mid-2019) by OGA is intended to facilitate and stimulate exploration and development across the UKCS. This poster presents an overview of the UKCS Geochemical Database, the data sources and workflows involved in compiling the database, and highlights from a high-level interpretation of the petroleum systems.

Geochemical data were obtained from three main sources: (1) several thousand individual reports (mainly PDF & TIFF files) released by companies operating on the UKCS, *via* the Common Data Access (CDA) portal, (2) geochemical data files made available through the OGA, comprising a large regional dataset from Shell/Exxon and one for West of Shetland from Applied Petroleum Technology, and (3) geochemical data held, on behalf of the OGA, by the British Geological Survey (BGS). These source files were in a range of digital formats, and in most cases required tabulated numeric data to be extracted using Optical Character Recognition techniques. The data have been produced by a very wide range of laboratories over a period of over forty years, resulting in diverse methods and nomenclature being reported in the various source data files; consistency and standardisation were critical for the final database.

Figure 1 shows the wells (>2,000; offshore & onshore) for which geochemical data have been examined, extracted and compiled in the UKCS Geochemical Database. Data types include geochemical screening (total organic carbon, Rock Eval pyrolysis, etc.), optical maturity & visual kerogen analysis, bulk fraction and molecular isotopic compositions, and a very wide range of molecular compositional data covering gasolines, diamondoids, aromatic hydrocarbons, biomarkers, etc. (including both GC-MS and GC-MS-MS where available). Available well data and both litho- and chronostratigraphic details have been included into the database for all samples. There is very good geographic coverage, with all the main basins and areas covered, including some of the less extensively drilled areas, and including exploration, appraisal and development wells. The database contains extensive coverage of rock samples, and over 800 wells have at least some form of geochemical data for one or more oil samples.

To be released to all *via* the OGA website in mid-2019, the compiled integrated geochemical database will comprise a particularly extensive quality-controlled dataset, including a comprehensive range of geochemical parameters, which will be of immense value to both industry and academia. In addition to supporting ongoing and future oil & gas exploration and development opportunities, the database will provide extremely valuable test sets of geochemical data for broader use by petroleum geochemists.



**Figure 1** An overview of wells on the UKCS with geochemical data for compilation into the database (coverage at the time of submitting this abstract).