



GWL Cluster Meeting
Thursday May 23, 2019. 18:00 for 18:30
at the Royal Cambrian Academy Crown Lane, Conwy, LL32 8AN

Carbon Capture and Sequestration in the East Irish Sea, by Davide Gamboa

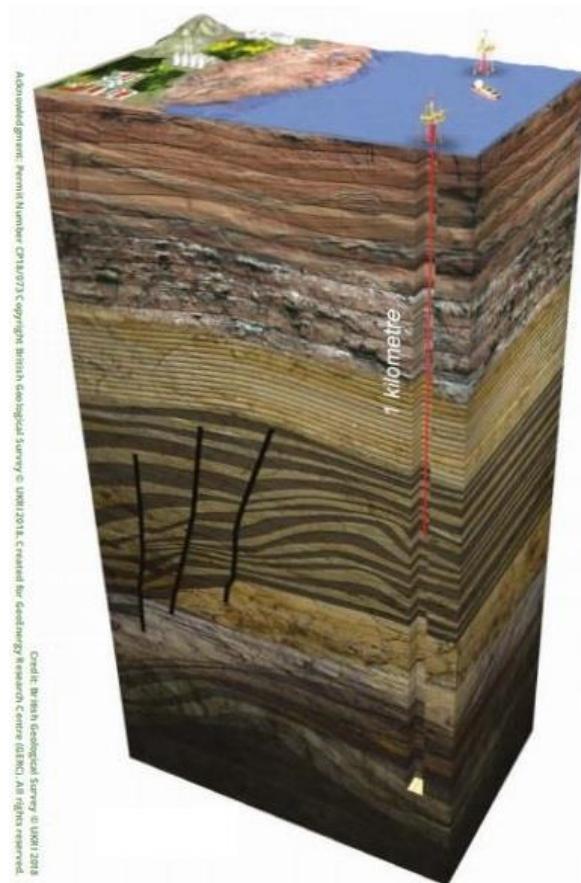
Abstract:

Carbon Capture and Sequestration (CCS) is a key technology towards a low-carbon energy future and will play an important role in the economic future of the UK Continental Shelf (UKCS). The East Irish Sea Basin (EISB) is a prospective area for CCS in the western UKCS, with a storage potential of 1.7 Gt of CO₂.

It is critical to understand the main and secondary sequestration units on the EISB and aspects of potential leakage risks along faults beforehand. The main storage units occur in Triassic strata of the Sherwood Sandstone Formation (SSF), primarily aimed at using depleted hydrocarbon reservoirs and with additional storage potential in closures in saline aquifers. These closures occur predominantly at fault-bounded horsts, with adjacent grabens filled by thick sequences of the Triassic Mercia Mudstone Group (MMG), the main caprock for reservoirs in the region, composed of alternations of mudstones and evaporites.

However, the theoretical storage capacity of the EISB does not regard a secondary storage potential in the lower Permian Collyhurst Sandstone Formation (CSF). The caprock for the Collyhurst sandstones changes laterally, as the Manchester Marls predominate in the south, transitioning to the St. Bees evaporites towards the north. Collyhurst closures to the north underlie large Triassic storage sites, and the spatial overlap favours storage plans including secondary storage units in the EISB.

Stress modelling of the EISB fault network has been conducted using a wealth of well data, complemented by published data. The results suggest that leakage risks for CCS





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operations in the East Irish Sea Basin are limited. The strategic value of the EISB as the main western CCS cluster has increased in the last couple of years, especially with the need for CCS in the implementation of hydrogen fuel networks. This importance is likely to increase as CCS becomes a better established and competitive industry.

About the speaker:

Davide has a first-class undergraduate degree in Geology and Natural Resources from the Faculty of Sciences of the University of Lisbon, during which he spent one year abroad as an Erasmus student at Cardiff University. After completing his degree, he briefly worked for the Terceira Geothermal drilling project (Azores) and in offshore drilling for the oil and gas exploration industry. Davide completed his PhD in 2012 at the School of Earth and Ocean Sciences, Cardiff University. Between his PhD and a following Post-Doctoral position, he spent 7 years at the 3D Seismic Lab (Cardiff University) researching aspects of salt-sediment interactions on Southern Atlantic basins, with emphasis on the Espírito Santo Basin (Brazil) and the Lower Congo Basin (West Africa).

In 2015, he joined BGS (but remained in Cardiff) as a Post-Doctoral Research Fellow for the Sêr Cymru National Research Network for Low Carbon Energy and the Environment. He was part of the Geo-Carb-Cymru cluster, composed of researchers from BGS, Aberystwyth University and Cardiff University, which aimed at studying the CCS potential in and around Wales. He currently does research for IODP after participation in Expedition 372, focused on the Ruatoria mega-landslide offshore New Zealand, and spends an unhealthy amount of time writing job applications.

Venue:

The talk will be held at The Royal Cambrian Academy, Crown Lane, Conwy, LL32 8AN (located behind Plas Mawr).

It will begin at 18:30 promptly. Refreshments will be served from 18:00

For further information please contact us: on 01492 592425 or admin@geoscience.wales

Geoscience Wales Limited

9 Connaught House, Riverside Business Park, Benarth Road, Conwy, LL32 8UB

Phone and Fax; 01492 592425

Email: info@geoscience.wales Web: www.geoscience.wales

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