

Geophysical Survey in Fermanagh

The Dublin Institute of Advanced Studies (DIAS) is a publically funded independent centre for research, carrying out work in the areas of Celtic studies, Cosmic Physics & Geophysics and Theoretical Physics.

DIAS is currently carrying out an academic research program that aims at an evaluation of geophysical imaging methods, which are needed for a better understanding the subsurface. The identification of subsurface structure and properties is important for many potential uses, such as CO2 long term storage or geothermal energy, with a strong commitment to environmental safety.

This research aims at reducing Ireland's CO2 footprint, either by reducing its emissions by reducing hydrocarbon usage, or by inhibiting greenhouse gas emissions from existing producers (e.g. power stations) entering the atmosphere, where it would aggravate human-made climate change. Both, long-term underground carbon storage and the use of geothermal energy, are seen worldwide as technologies which contribute to the smooth movement from the extensive use of fossil fuels to the use of renewable energy sources. While there are no plans for carbon storage in Ireland, geothermal energy may play a limited role in this process. However, a better knowledge of the subsurface, and the development of techniques to reliably image it are essential in the wider framework of European and worldwide research and technology development.

The current project "IRECCSEM" is part of this effort. As academic research it is neither related to any commercial Irish carbon storage project, nor to any shale gas exploration ("fracking technology"). Our research project takes the Northwest Carboniferous Basin as a test area to evaluate whether our geophysical imaging methods are suitable for the discrimination of geological structures which are favourable for the aforementioned uses, or have to be discarded. This area was chosen to test the geophysical surveying, as it already has a database of information on the subsurface, including seismic surveys and drilling from hydrocarbon exploration in the late 1970's and 1980's.

To reach our research objective, we will make passive electromagnetic measurements at many localities primarily in County Fermanagh, and possibly County Leitrim and County Cavan, depending on data quality. The geophysical method used is "Magnetotellurics" (MT), which is a non-invasive, non-destructive, geophysical imaging method in which Earth's naturally-occurring electrical and magnetic fields are recorded and subsequently used to produce an image of the rocks below the surface. The installation of these instruments will cause no damage to fields and offers no risk to crops and livestock. They will remain on site for one to three days and nights only. The survey will be carried out between July 15th and August 30th 2015.

Information on the instruments being deployed in the survey:

[Instruments.pdf](#)

Further information on DIAS is available at:

<http://www.dias.ie>