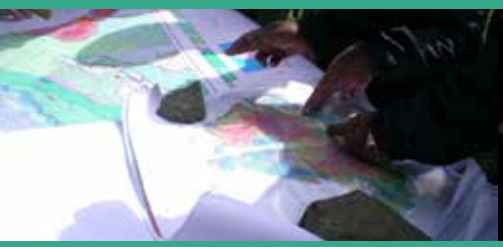
TELLUS BORDER
Understanding Underground

Tellus Border News



Issue 5, Spring/Summer 2013

Introduction

Welcome to the fifth issue of Tellus Border News, the newsletter of the Tellus Border project – a ground-breaking project which is mapping the geology and environment of the border counties of Ireland and extending the work of the Tellus project in Northern Ireland.

The Tellus Border team was pleased to release the airborne geophysical data and present a preview of the geochemical data in February. The data launch event, held at the Davenport Hotel in Dublin was attended by over 80 stakeholders and was officially launched by Minister Fergus O'Dowd and Pat Colgan, CEO of the Special EU Programmes Body.

The early release of this world-class data means that researchers and private enterprise can avail of the free data straight away. While the Tellus Border team continues interpreting and mapping the data, research is underway on ten projects which were awarded funding in April. The request for tender for research services, run by the Geological Survey of Northern Ireland, attracted applications from a wide range of interests.

A conference will be held in October 2013 to officially close this phase of the Tellus project and present the full findings from the border survey and accompanying academic research projects. To register for notifications for upcoming data releases, please email your details to tellusborder@gsi.ie.

The Tellus Border team
May 2013

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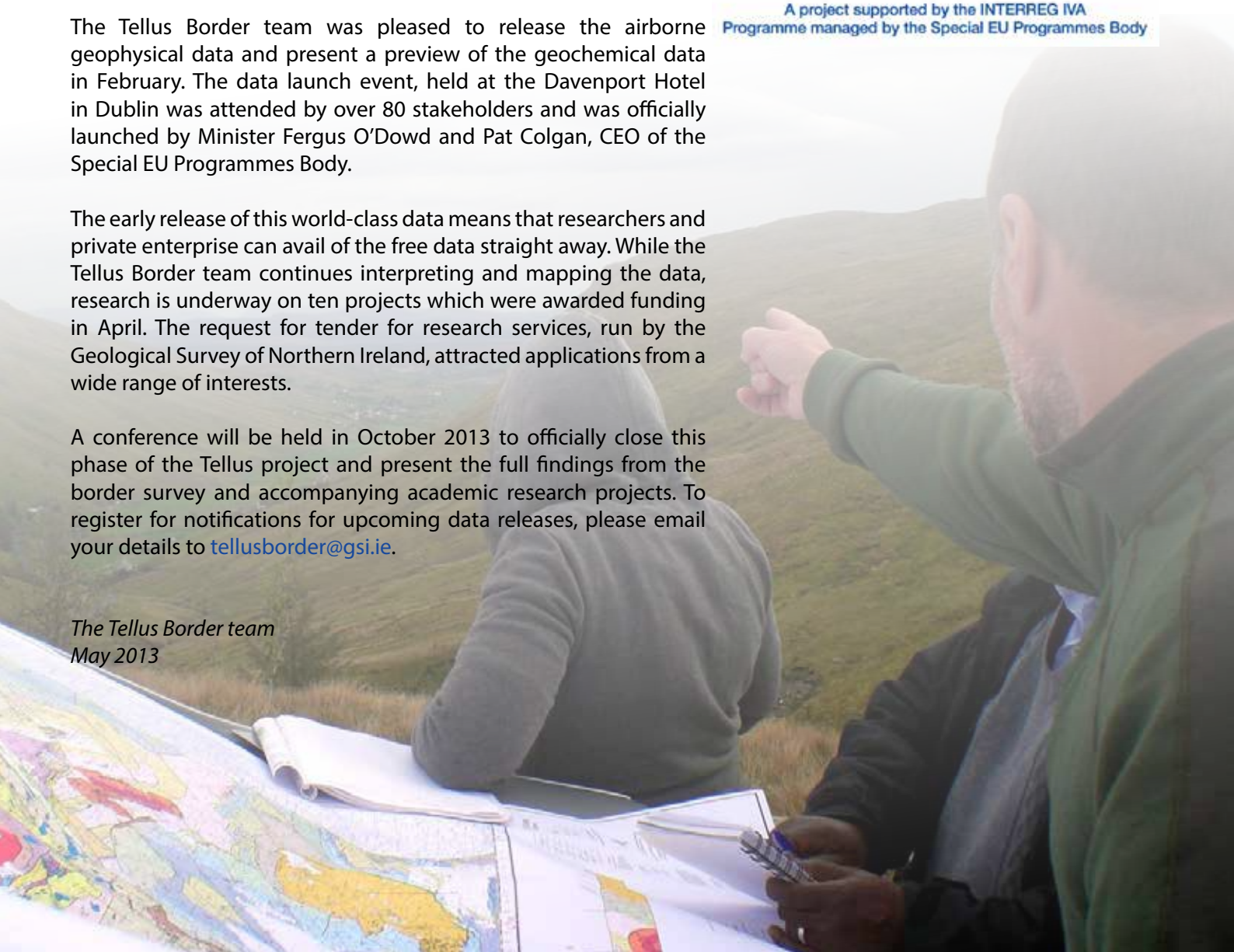
A project supported by the INTERREG IVA Programme managed by the Special EU Programmes Body



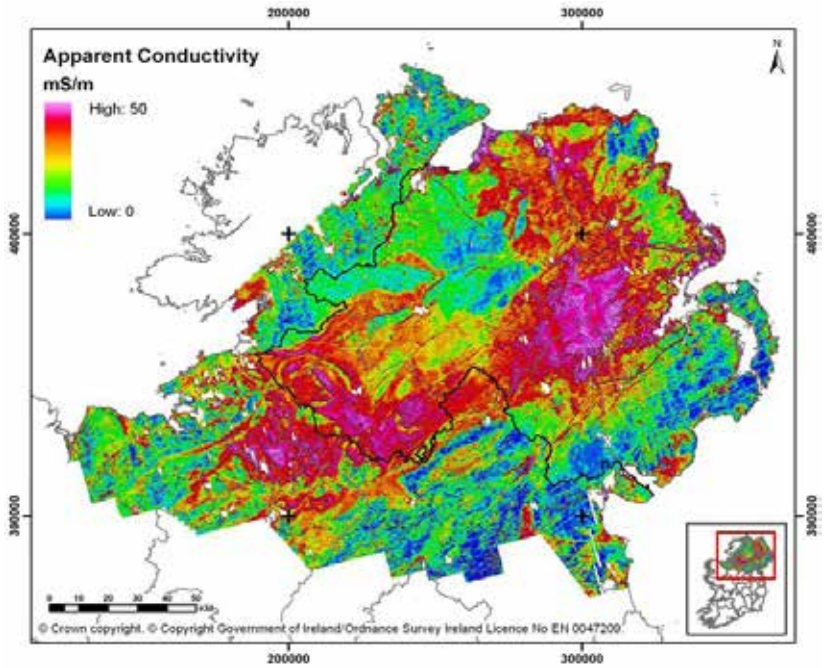
Initial Findings of Tellus Border Project Revealed

Minister for Natural Resources, Mr. Fergus O'Dowd, T.D. unveiled the preliminary findings of the Tellus Border project on 5th February 2013 at the Davenport Hotel, Dublin. Speaking to over 80 stakeholders from central and local government, research and the environmental, agriculture and mineral exploration sectors, Minister O'Dowd said "The maps released today represent a significant body of work which characterises in great detail the geology and environment of the border region. Sustainable environmental management not only protects our environment but supports many sectors of the cross-border economy including agriculture and tourism".

Minister O'Dowd was joined by Pat Colgan, CEO of the Special EU Programmes Body, which manages the INTERREG IVA fund. Welcoming the launch of the Tellus Border data Mr Colgan said "This EU funded project is truly unique and will provide an invaluable source of data that will have many significant benefits, on a cross-border basis. It will greatly enrich our knowledge of the natural environment and also enhance our agricultural capability now and in the future."

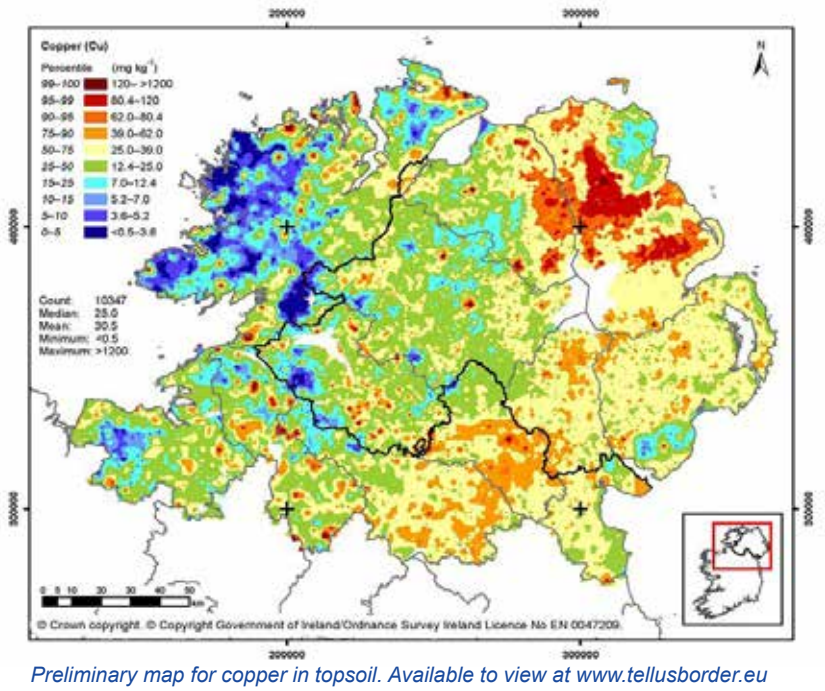
The airborne survey data, now available to the general public free of change, has revealed extraordinary new detail to regional geological features which extend throughout the border region. Before the release of the maps, new survey data was integrated with existing data in Northern Ireland to produce a seamless dataset for the whole area. Various factors were taken into account for the task, including the length of time between surveys, variation in the Earth's magnetic field, equipment calibrations and quality control procedures. A number of overlap lines were incorporated into the survey design to assist with the merging task between datasets. This work has resulted in seamless magnetic, radiometric and electrical conductivity geophysical datasets which can now be viewed and downloaded from at www.tellusborder.eu.

Pat Colgan, CEO Special EU Programmes Body; Dr Marie Cowan, Tellus Border Project Manager and Minister for Natural Resources Fergus O'Dowd view the newly released Tellus Border data on 5th February 2013.



Merged apparent conductivity (low frequency, 3 kHz) airborne geophysical dataset. Available to download and view at www.tellusborder.eu.

The launch event also saw a preview of the geochemical data, which will be released later in 2013 following continuing quality checks and interpretation. Results from the 21,000 soil, water and sediment samples taken as part of the geochemical survey are currently being mapped and interpreted. Maps for forty-seven elements in topsoil are now available to preview online; all soil, water and sediment data will be released for download later throughout 2013. To register for notifications for upcoming data releases, please email your details to tellusborder@gsi.ie.



Preliminary map for copper in topsoil. Available to view at www.tellusborder.eu

Ten contracts awarded for applied research on Tellus and Tellus Border data

Following an OJEU tender process, the Geological Survey of Northern Ireland was pleased to award ten contracts for environmental and natural resources research on Tellus and Tellus Border data on 4th April 2013. The successful projects span a wide range of topics relevant to the objectives of the Tellus projects in Ireland and Northern Ireland, including soil, wetlands, groundwater, agriculture, ecology and mineral resources.

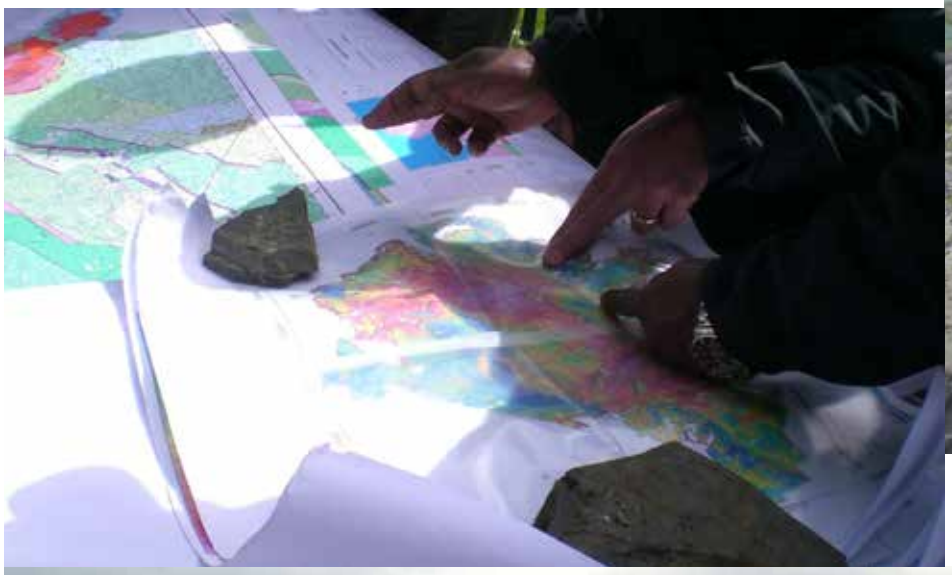
Research contracts for projects of c.6 month duration were awarded to organisations in the private and academic sectors including Queen's University Belfast, University of Exeter, Omagh Minerals, the British Geological Survey, NUI Galway, Howard Fox and Innovation Ulster Ltd. A full list of the projects is available at www.tellusborder.eu/research. Outputs from the projects will be publicly available at the end of 2013 and selected projects will be presented at the Tellus Border Results and Research conference on 24th October 2013.

Tellus Border Field Trip May 2013

Ray Scanlon, Claire McGinn, Mairead Glennon, Kate Knights, Mike Young, Brian McConnell, Mohammednur Desissa, Shane Carey, Koen Verbruggen, James Hodgson and Marie Cowan at Clogherhead, Co. Louth.

On 22nd May the Tellus team took to the road to explore some of the typical rock types of the border region of Ireland with the view to aiding the interpretation of the recently collected geophysical and geochemical data. Led by Dr Brian McConnell of the Geological Survey of Ireland, the team stopped at more than a dozen sites in counties Louth, Sligo, Mayo and Donegal

over four days. True to the diverse geological character of the region, a great variety of rock types were explored including the Longford-Down Siluran metasediments, the Cooley mountains intrusive complex, Carboniferous sedimentary rocks, the Slishwood Division gneiss and serpentinite, Ordovician volcanic rocks and Dalradian metasedimentary rocks. For a detailed description of many of these and other key geological sites in the north of Ireland see *The Classic Geology of the North of Ireland*[1].



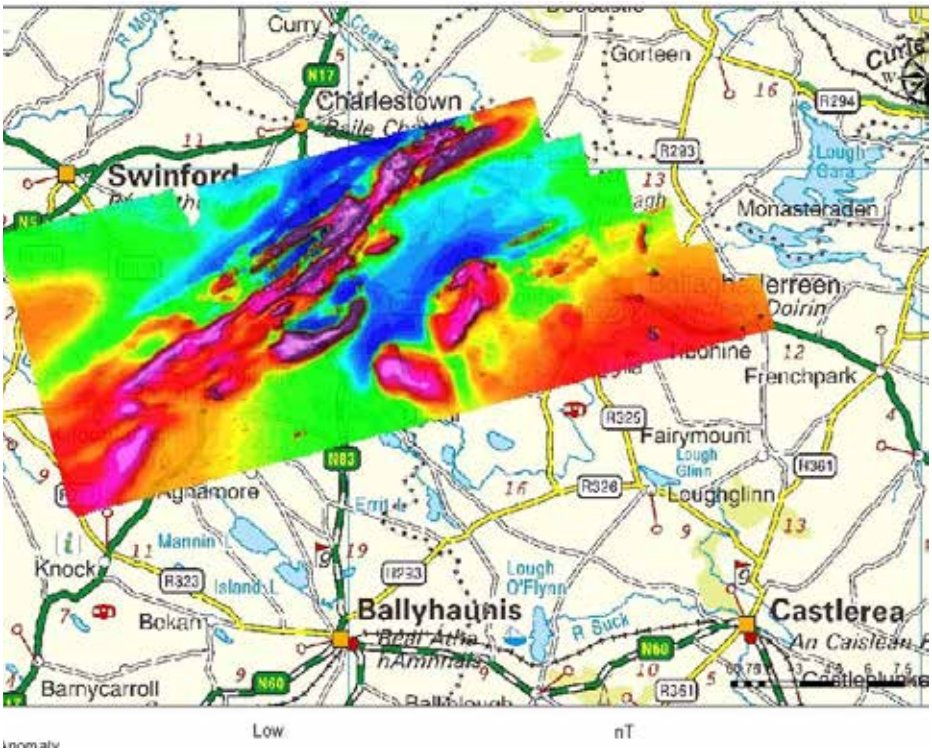
Igneous dyke intrusion in limestone at Inishcrone, Co. Sligo.

Glengesh valley, Co. Donegal.

[1] *Mitchell, I., Cooper, M., McKeever, P. and McConnell, B. (2010) The Classic Geology of the North of Ireland. Geological Survey of Northern Ireland, Belfast. Available to buy online at www.gsi.ie.*

Oriel Selection Trust builds on Tellus Border survey work

Airborne geophysical data for the Charlestown, Co. Mayo region, flown in conjunction with the Tellus Border project in 2012, has been made publicly available by Oriel Selection Trust Ltd. The data includes airborne magnetics, radiometrics and 4-frequency electromagnetics in a 350 km^2 area in east Mayo and north Roscommon, flown by the Sander Geophysics plane used for Tellus Border. Tellus Border gratefully acknowledges Oriel Selection Trust Ltd and their consultants Aurum Exploration Services and Newexco Services Pty Ltd for their contribution in extending the Tellus Border airborne survey in the Charlestown area and making the data publicly available.



Airborne magnetics for area in east Mayo and north Roscommon flown by Oriel Selection Trust Ltd.

Geochemical sample archive now available

Following laboratory analysis, Tellus Border geochemical samples have been returned back to the Geological Survey of Ireland. Analysed soil and sediment samples were delivered from the British Geological Survey lab in Keyworth, UK and from SGS Laboratories in Canada in May. These have now been archived along with vegetation, panned concentrate and subsoil samples in the GSI and are available to researchers upon request.

Tellus More….

As Tellus Border approaches the end of the INTERREG IVA-funded phase in December, project partners at GSI and GSNI are working to bid for new funding for future surveys. According to Ray Scanlon, acting principal geologist at GSI "feedback from stakeholders throughout the island of Ireland has been very supportive during the Tellus Border project and demand to survey further areas of the island – both onshore and offshore is building. We are currently in discussions with several prospective project partners to continue this valuable work throughout Ireland". Industry collaboration has proven a beneficial model for both government and industry, as was demonstrated with Oriel Selection Trust's airborne survey of the Charlestown Inlier as part of Tellus Border. GSI and GSNI are interested in hearing from possible collaborators in the coming months.

Research projects

Progress continues on three research projects which are underway as part of Tellus Border at Queen's University, Belfast (QUB) and Dundalk Institute of Technology (DKIT).

Soil carbon and peat depth assessment (QUB)

Dr. Antoinette Keaney

Ballynahone Bog management committee meeting on site, March 2013.

Analysis of geophysical data at selected sites has highlighted a relationship between the airborne radiometric data and peat depths on the ground. Work continues to update historical peat reports which contain depth data from 1996/1997. Fieldwork results so far have demonstrated changes in peat depths at selected field sites illustrating the benefit of remotely sensed data for monitoring bogs. Coordination with management teams including the Ulster Wildlife Trust, the Royal Society for the Protection of Birds, Northern Ireland Environment Agency and Friends of Ballynahone Bog has provided invaluable data on management practices on site. Analysis of radiometric data has identified areas where the condition of the bog is not as healthy as it is in other areas, allowing targeted management in places where it is needed. Continued work with a Community Heritage Project called ENVISION at An Carn, Maghera has allowed the installation of a weather station on site. This will allow meteorological data to be collected at the same time as the differential GPS collecting data on the natural movement of the bog at Ballynahone. The passage of pressure systems can be assessed and children at the local school and elsewhere can access the real-time data.

Groundwater pollution plumes (Queen's University Belfast)

Martin Robinson

The project aims to evaluate to what extent the Tellus and Tellus Border airborne electro-magnetic (EM) data can be used to map plumes of contaminant-derived fluid emanating from old or poorly-sealed landfill sites.

Field work at a landfill site in Co. Down.

In January the newly appointed members of the plumes project at Queen's University Belfast (Martin Robinson, Jean-Christophe Comte, Rachel Cassidy and Chris Wilson) began reconnaissance field work at several landfill sites in Northern Ireland. Relevant environmental monitoring data were obtained for the selected field sites from the Northern Ireland Environment Agency. This data was scanned and digitised, allowing the site information to be analysed within a GIS framework. Comprehensive surveying was completed at a landfill field site in Co. Tyrone, with electrical resistivity tomography and a multi-frequency EM system being utilised to identify an anomaly to the north-east of the site. A month of field work beginning in May will involve the collection of data at three sites in Northern Ireland and one new site in Co. Monaghan. Recent project work was presented at a poster session at the European Geosciences Union (Vienna).

Wetlands hydrology (Dundalk IT)

Dr. Alec Rolston

Research assistant Patrick Rafferty water sampling on Greenan Lough, March 2013.

The field ecohydrological assessment of five wetland habitats within the border counties of Ireland is continuing on a monthly basis. Results are indicating that four of the five habitats have a level of groundwater input that has the potential to influence both nutrient delivery to the site and the biota that exist within each site. Aspects of the assessment of groundwater at Rockmarshall wetland in County Louth was presented at a technical workshop for the Irish Association of Hydrogeologists conference in Tullamore, County Offaly in April 2013. Further aspects of the wetlands project will be presented at the Society of International Limnologists annual conference in Budapest, Hungary, in August 2013. The Tellus Border Project was represented at the 2013 Scifest science fair for second-level students held at DkIT in May 2013, and Alec Rolston was invited to be a member of the Scifest judging panel. In collaboration with Queen's University Belfast, DkIT have been successful in being awarded funding through the Tellus Border Research Call to investigate the utility of Tellus geochemical datasets for evaluating the impact of land use practices on nutrient levels within groundwater dependent wetlands in the border region of Ireland. The project will run for six months and will involve both desk and field-based assessments of groundwater dependent wetlands.

Tellus Border features in Balmoral Show

Mairead Glennon meets Alex Attwood MLA, Minister for the Environment, at Tellus Border's exhibition stand at Balmoral Show.

Balmoral Show was held this year at the new Balmoral Park showgrounds near Lisburn for the first time and Tellus Border was represented at the Department of Enterprise, Trade and Investment exhibition stand. The exhibit, featuring an interactive multimedia mapping display, provided information on trace elements and soil properties of interest to farmers and agricultural advisors.

Watch out for the Tellus Border stand at the National Ploughing Championships at Ratheniska, Co. Laois on 24–26th September 2013.

Background to the Tellus Border project

The Tellus Border project is funded by the INTERREG IVA development programme of the European Regional Development Fund, which is managed by the Special EU Programmes Body (SEUPB). The SEUPB is a North/South Implementation Body sponsored by the Department of Finance and Personnel in Northern Ireland and the Department of Finance in Ireland. It is responsible for managing two EU structural funds Programmes PEACE III and INTERREG IV designed to enhance cross-border co-operation, promote reconciliation and create a more peaceful and prosperous society. For more information on the SEUPB please visit www.seupb.eu.

Tellus Border is additionally part funded by the Department of Environment, Community and Local Government and Northern Ireland's Department of the Environment.

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A project supported by the INTERREG IVA Programme managed by the Special EU Programmes Body

Enterprise, Trade and Investment
Geological Survey of Northern Ireland

GSI

Queen's University Belfast

Dundalk Institute of Technology

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