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TELLIUS
BORDER

Understanding Underground



Tellus Border Project Overview

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Presentation Outline

- History
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- Impacts

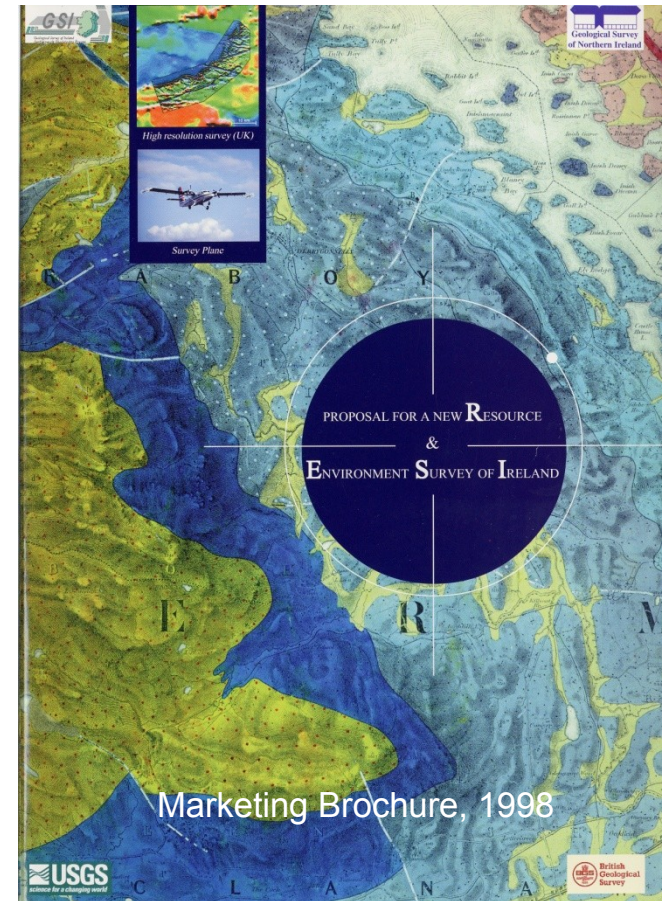


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Tellus History

- Proposed by GSNI, GSI, and BGS with support from USGS as RESI in 1998 as all-island project
- Approved in NI June 2004
- **Tellus Project** July 2004-2007
- **Tellus II** 2008-2011
- **Tellus Border** 2010-2013



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Tellus Border Project Goals

- To produce high quality datasets to ensure the sustainable management and use of natural resources
- To gather and publish baseline environmental data against which future environmental change can be measured
- To measure, map and understand potential hazards to human and animal health e.g. naturally occurring radon, anthropogenic radiation (nuclear fallout) and heavy metals in soils
- To develop new methods to detect groundwater pollution
- To help governments to comply with European Framework Directives on protection and management of natural resources including soils and waters



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Partners

- Geological Survey of Northern Ireland (GSNI) (Lead Partner)
- Geological Survey of Ireland (GSI)
- The Queen's University, Belfast (QUB)
- Dundalk Institute of Technology (DkIT)



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**Geological Survey
of Northern Ireland**



Queen's University
Belfast



Tellus Border Project Summary

- Budget: £4.1 million (c. €5 million) INTERREG IVA
 - Nov 2010 to Dec 2013
- Jobs: 8 full time jobs in GSI and GSNI
 - c. 25 temporary jobs supporting current contracts
- Research: 3 university post-doctoral fellows
- Contracts: communications, geochemical, geophysical, scientific services
- Benefits
 - New world-class environmental data for six border counties
 - Information for sustainable development of natural resources
 - Seamless integration with NI Tellus data



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Legislative Framework

- Water Framework Directive
- Nitrates Directive
- Habitats Directive
- Framework Convention on Climate Change
- Soil Framework Directive (expected)
- Contaminated Land policy
- Environmental Liability Directive
- Raw Materials Initiative



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Ministerial events

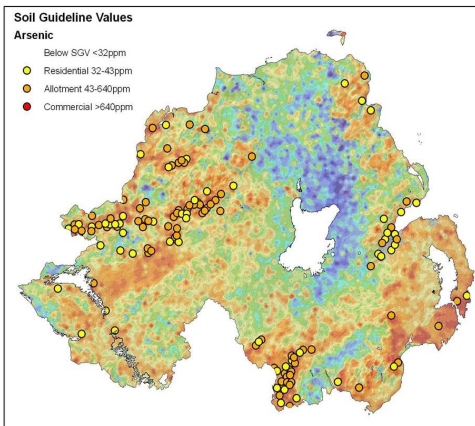


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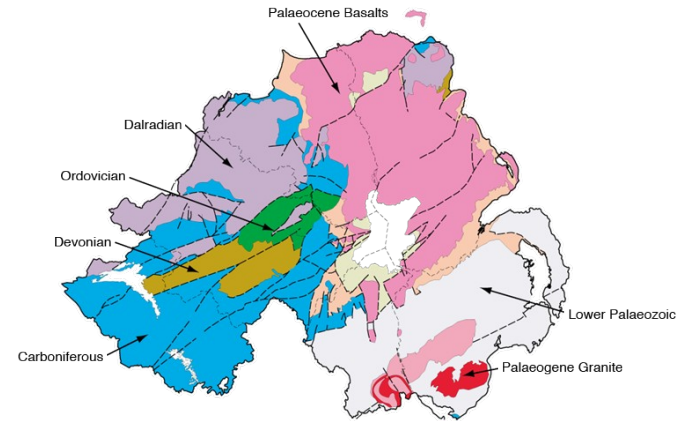


Geochemistry

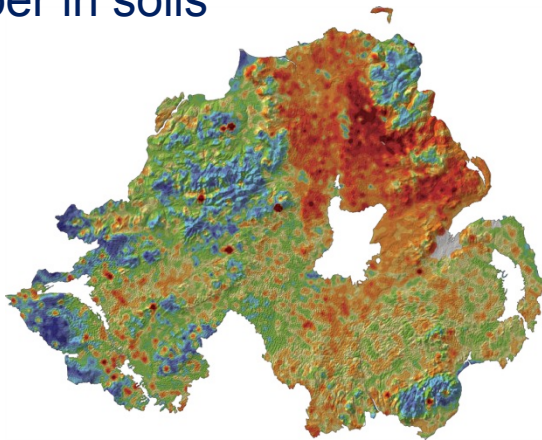
Arsenic in soils



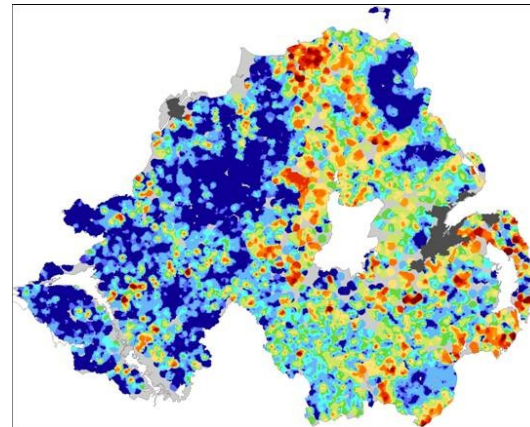
Bedrock Geology



Copper in soils

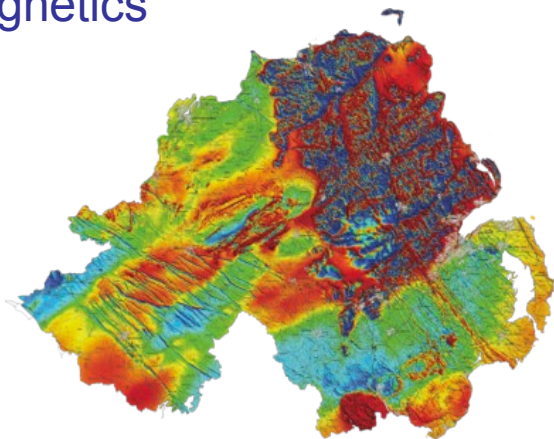


Nitrates in waters

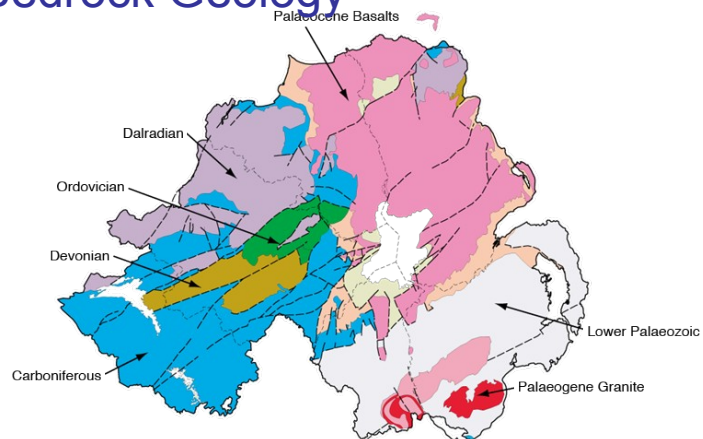


Geophysics

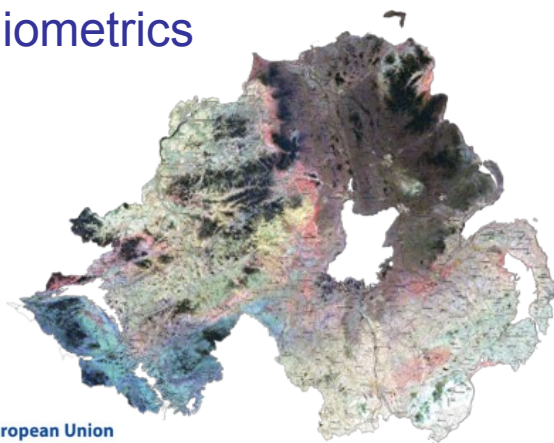
Magnetics



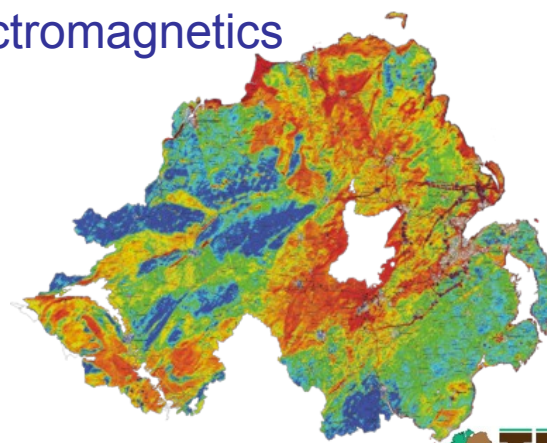
Bedrock Geology



Radiometrics



Electromagnetics



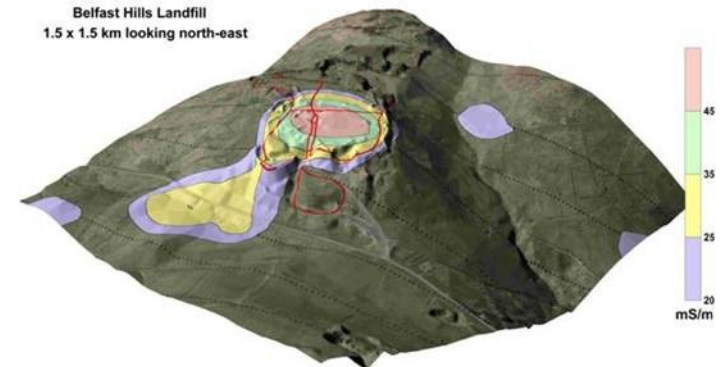
Economic Impact

- Quarry Industry ‘star cluster’ industry
- 5,600 jobs
- £400M, 1.75% GDP
- GSNI/BGS published new county mineral planning maps for DoENI
- Spatial-planning decision making



Environmental Impact

- Magnetic data informing groundwater borehole locations
- Landfill plumes
- Water quality
- GWDTE
- Carbon stocks
- Contaminated land

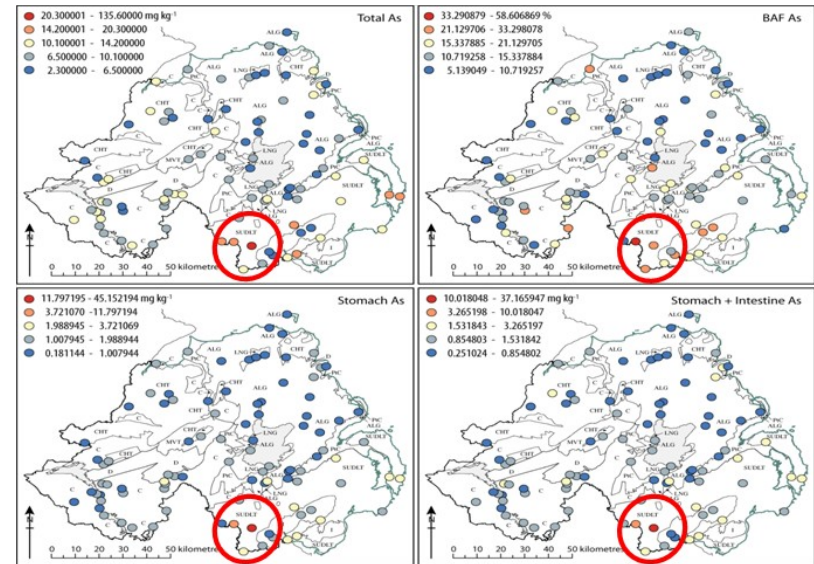


AEM shallow apparent conductivity (25kHz) 200m flight line sampling (dots)
Conductivities > 20 mS/m
5 cell construction in red



Health Impact

- Queen's University Belfast
- Trace elements in soil
- NI Cancer Register data
- Potentially toxic elements (PTEs) (Arsenic and Uranium levels in soils and Radon were identified)
- Cancers: lung, stomach, skin in relation to concentrations of certain PTEs



Elevated total As concentrations and high measured oral bioaccessible fraction

Societal Impact

- 161 media hits in local, national and agricultural press;
- ‘*Opportunity to See*’ of 4,627,899
- 35 radio interviews across all main border county radio stations
- TV coverage- including RTE Nationwide, Cavan Community TV
- Total AVE (not including RTE Nationwide): £53,351 or €66,166
- Total PR Value(not including RTE Nationwide): £160,053 or €198,499
- 78 attendees at official launch event
- Over 800 attendees at Enniskillen airport open day
- 123 attendees at data launch event
- 2 Communication Excellence Awards from CIPR



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Research Projects

Three post-doctoral environmental research projects:

1. Soil carbon and peat
2. Pollution plumes
3. Wetlands hydro ecology



Frontline Science

- Tellus
 - £6m
 - DETI funded
 - Northern Ireland
 - 2 partners
 - Economic impact
 - 34 papers published
 - 10 PhDs
- Tellus Border
 - £4m
 - EU funded
 - Cross-border
 - 4 partners
 - Environmental impact
 - Target 8 publish papers
 - £225k research call



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Speakers

- James Hodgson: Airborne geophysical data
- Kate Knights: Geochemical mapping preview
- Shane Carey: Data delivery
- Ray Scanlon: Forward look



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