

Tellus data viewer information

Overview

Tellus is a national programme to gather geochemical and geophysical data across the island of Ireland. The survey examines the chemical and physical properties of our soils, rocks and waters to inform the management of Ireland's environment and natural resources.

The Tellus Project is managed by the Geological Survey Ireland and is funded by the Department of Environment, Climate and Communications (DECC). For more information on the Tellus Project please visit www.gsi.ie/tellus. Datasets have been merged with data collected from the Tellus Project in Northern Ireland collected by the Geological Survey of Northern Ireland (GSNI).

Geophysical Survey

The airborne geophysical survey collects three different types of data (1) magnetics, (2) Gamma-Ray spectrometry / radiometrics and (3) electromagnetic ground conductivities.

The aircraft flies along survey lines orientated 165 degrees with lines spaced 200m apart. The nominal survey altitude over rural areas is 60m. Magnetic and electromagnetic data was recorded at 10 Hz while the radiometric data was recorded at 1 Hz. All data is recorded in Irish Transverse Mercator and Longitude, Latitude co-ordinates.

Geochemical Survey

The geochemical survey produces 3 different types of data (1) stream sediment, (2) soils (topsoils 'A' and deeper topsoils 'S') and (3) stream waters.

Geochemical samples soil/stream sediment/stream water samples are collected by field samplers and their sites are specifically chosen to best reflect local land use/geology. Samples are analysed through a variety of multi-element techniques depending on sample type. The final data sets are intended to show regional geochemical trends.

Limitations

The available maps on the viewer are intended as regional mapping supports. The review of all airborne geophysical/geochemical data should include consideration of the survey altitude/sample density and achievable resolution of the geophysical/geochemical method. All data should be viewed in conjunction with the associated technical/field reports available from the data download pages www.gsi.ie/en-ie/data-and-maps/Pages/Geochemistry.aspx & www.gsi.ie/en-ie/data-and-maps/Pages/Geophysics.aspx.

Disclaimer

Although every effort has been made to ensure the accuracy of geophysical/geochemical data, complete accuracy cannot be guaranteed. The Geological Survey, Ireland, accept no responsibility whatsoever for loss or damage occasioned, or claimed to have been occasioned, in part or in full as a consequence of any person acting or refraining from acting, as a result of a conclusion taken from these map products.

Credits

Tellus Data in the Republic of Ireland has been collected by, and remains the property of the Geological Survey Ireland, while in Northern Ireland the data is the property of the Geological Survey of Northern Ireland (GSNI). All data is free to use, however, acknowledgement must be given to the Geological Survey Ireland and the Geological Survey of Northern Ireland for use in any publication, map, report or product. ©Government of Ireland.

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GSNI Tellus data is available from

https://www.opendatani.gov.uk/dataset?_organization_limit=0&organization=geological-survey-of-northern-ireland and are made available under the OGL V3

<http://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>.

Contact

For further information please contact Tellus Project Manager at tellus@gsi.ie

Datasets specific information

The available maps on the viewer are intended as regional mapping supports. The review of all airborne geophysical/geochemical data should include consideration of the survey altitude/sample density and achievable resolution of the geophysical/geochemical method. All data should be viewed in conjunction with the associated technical/field reports available on the www.gsi.ie/tellus website. For detailed analysis, the data can be downloaded from www.gsi.ie/en-ie/data-and-maps/Pages/Geochemistry.aspx & www.gsi.ie/en-ie/data-and-maps/Pages/Geophysics.aspx

Magnetic Anomaly

- The magnetic intensity map shows variation in the Earth's Magnetic Field.
- Data are measured in nano Tesla (nT).
- Data are diurnally and IGRF corrected.
- Upward continuation of 150m and reduced to magnetic pole filters have been applied to the data
- Grids were created using Geosoft Oasis Montaj using the minimum curvature method with a grid cell size of 50m. Grids are displayed with illumination.

Magnetic First Vertical Derivative

- The magnetic first vertical derivative map shows gradients derived from magnetic intensity data.
- Data are measured in nano Tesla per meter (nT/m).
- Data are diurnally and IGRF corrected.
- Grids were created using Geosoft Oasis Montaj using the minimum curvature method with a grid cell size of 50m. Grids are displayed with illumination.

Magnetic Tilt Derivative

- The magnetic tilt derivative map shows the derived vertical tilt derivative of the magnetic intensity.
- Data are measured in radians (RAD).
- Grids were created using Geosoft Oasis Montaj using the minimum curvature method with a grid cell size of 50m. Grids are displayed with illumination.

Radiometric Total Counts

- The radiometric Total Counts map shows the total number of gamma-rays measured at each location.
- Data are measured in counts per second (cps).
- Data have been corrected for altitude variations
- Grids were created using Geosoft Oasis Montaj using the inverse distance weighting method with a grid cell size of 50m. Grids are displayed with illumination.

Radiometric Potassium

- The radiometric potassium map shows the amount of potassium at each location.
- Data are measured in percentage (%).
- Data have been corrected for altitude variations
- Grids were created using Geosoft Oasis Montaj using the inverse distance weighting method with a grid cell size of 50m. Grids are displayed with illumination.

Radiometric equivalent Thorium

- The radiometric equivalent thorium map shows the amount of equivalent thorium at each location.
- Data are measured in parts per million (ppm).
- Data have been corrected for altitude variations
- Grids were created using Geosoft Oasis Montaj using the inverse distance weighting method with a grid cell size of 50m. Grids are displayed with illumination.

Radiometric equivalent Uranium

- The radiometric equivalent uranium map shows the amount of equivalent uranium at each location.
- Data are measured in parts per million (ppm).
- Data have been corrected for altitude variations
- Grids were created using Geosoft Oasis Montaj using the inverse distance weighting method with a grid cell size of 50m. Grids are displayed with illumination.

Radiometric Ternary Image

- The radiometric ternary map shows the variation of potassium, equivalent thorium and equivalent uranium at each location. The image is created by combining potassium (red), thorium (green) and uranium (blue) to form a single image. The strength of the three different colours reflects the prominence of the three different elements. Combinations of colours indicate a combination of relative elements. White and black colours indicate high and low values respectively in all three radionuclides.
- Data are measured as ratios.
- Data have been corrected for altitude variations
- Grids were created using Geosoft Oasis Montaj using the inverse distance weighting method with a grid cell size of 50m.

Electromagnetic Apparent Resistivity- 3KHz Equivalent

- The 3KHz equivalent electromagnetic map shows variations in apparent resistivities across the survey area.
- Data are measured in Ohm metres (Ohm.m).
- Data are derived from both frequency and time domain datasets which were equivalent to 3KHz. Details of the processing and merging can be found within the supporting documentation at www.gsi.ie/tellus.
- Grids were created using Geosoft Oasis Montaj using the minimum curvature method with a grid cell size of 50m. Grids are displayed with illumination.

Electromagnetic Apparent Conductivity- 12KHz Equivalent

- The 12KHz equivalent electromagnetic map shows variations in apparent resistivities across the survey area.
- Data are measured in Ohm metre (Ohm.m).
- Data are derived from both frequency and time domain datasets which were equivalent to 12KHz. Details of the processing and merging can be found within the supporting documentation at www.gsi.ie/tellus.
- Grids were created using Geosoft Oasis Montaj using the minimum curvature method with a grid cell size of 50m. Grids are displayed with illumination.

Stream sediments

The data presents the inorganic geochemical data for 56 analytes measured in fine-fraction (sub 150 µm) stream sediment samples across Ireland. Samples were collected from low-order streams between 2011 and 2017, as part of the Tellus geochemical survey project of Geological Survey Ireland.

Data here are shown for 8861 sites in the northern region and southeast of Ireland. Sample sites are distributed at a typical density of at least one site per 4 km², and together they represent a variety of geological domains in Ireland, covering an area of over 31993 km².

Each sample was prepared and chemically measured by a number of techniques. Laboratory tests are for multi-element total analyses of major, minor and trace elements by X-ray fluorescence spectrometry (XRFS); and for gold, palladium and platinum precious metals by lead-collection fire assay fusion with an ICP finish. Analyses by XRFS were conducted by Malvern Panalytical Ltd., UK. Precious metals analyses were conducted by Activation Laboratories, Canada and by ALS Minerals Ltd., Ireland.

Stream waters

The data presents the inorganic geochemical data for 68 analytes measured in stream water samples across Ireland. Samples were collected from low-order streams between 2011 and 2017, as part of the Tellus geochemical survey project of Geological Survey Ireland.

Data here are shown for 6836 sites in the northern region of Ireland. Sample sites are distributed at a typical density of at least one site per 4 km², and together they represent a variety of geological domains in Ireland, covering an area of over 24,145 km².

Each sample was chemically measured by a number of techniques. Field determinations are of pH, specific electrical conductance, and total alkalinity to assess bicarbonate concentration. Laboratory tests are for anions by ion chromatography (IC); multi-element major, minor and trace elements by inductively coupled plasma mass spectrometry (ICP-MS); and non-purgeable organic carbon (NPOC). Analyses were conducted by the Inorganic Geochemistry Facility at the Centre for Environmental Geochemistry, Keyworth, UK.

Topsoils

This data presents the inorganic geochemical data for 111 analytes measured shallow topsoil samples 'A' (nominally c. 5–20 cm depth) and deeper topsoil samples 'S' (nominally c. 35–50 cm depth) across Ireland. Samples were collected between 2011 and 2019, as part of the Tellus geochemical survey project of Geological Survey Ireland.

Data here are shown for almost 10,000 sites covering the north-midlands, northwest and border counties of Ireland. Sample sites are distributed at a typical density of one site per 4 km², and together they represent a variety of geological domains in Ireland, covering an area of over 35,700 km² (50% of the country).

Each sample was prepared and chemically measured by a number of techniques. Laboratory tests comprise: soil pH (CaCl₂); loss-on-ignition at 450°C; multi-element total analyses of major, minor and trace elements by X-ray fluorescence spectrometry (XRFS); and multi-element partial extract analyses of major, minor and trace elements by aqua regia digestion with an ICP finish. Analyses by XRFS were conducted by Malvern Panalytical Ltd., UK. ICP with aqua regia analyses were conducted by SGS, Canada and by ALS Minerals Ltd., Ireland.