

TELLUS AIRBORNE GEOPHYSICAL SURVEY

DATA RELEASE

TELLUS_Cs137_MERGE_2022

March 2022

1. TELLUS SURVEY TO DATE

Tellus airborne survey operations over the island of Ireland started in 2005 in Northern Ireland. The survey has continued to the south and currently covers 87% of the island. The latest survey block A9 Block (southcentral of Ireland), was commenced on 25 July 2021, completed on 21 September 2022 by Sander Geophysics Ltd (SGL) and the final data have now been delivered. Figure 1 shows all completed Tellus survey blocks to date. All data blocks have been merged into one coherent block and are released now as “Cs_Merge2022”.

A total of 79,848 km² are currently covered over the island of Ireland in Cs_Merge2022, including coastal (offshore) areas. The area covered onshore for the island of Ireland is 73,530 km² (excluding overlapping zones and Dublin city). 87% of the island of Ireland is therefore covered by airborne data in this merge. The airborne coverage of the Republic of Ireland is 56,637 km² (excluding offshore areas and Dublin city), which provides approximately 81% coverage for the Republic of Ireland.

The survey technical specifications are listed in Table 1

Survey specification highlights are:

- 1) ¹³⁷Cs merge 2022 data processed from 256 and 512 channel radiometric data at 662 keV gamma ray peak.
- 2) Flight-line spacing: 200 m.
- 3) Flight altitude (ground clearance): nominal 60 m, increasing to 214 m over sensitive areas (e.g., livestock farms) and 305 m over larger population centres.
- 4) Along-line measurement spacing: nominal 60 m (for gamma-ray spectrometer).

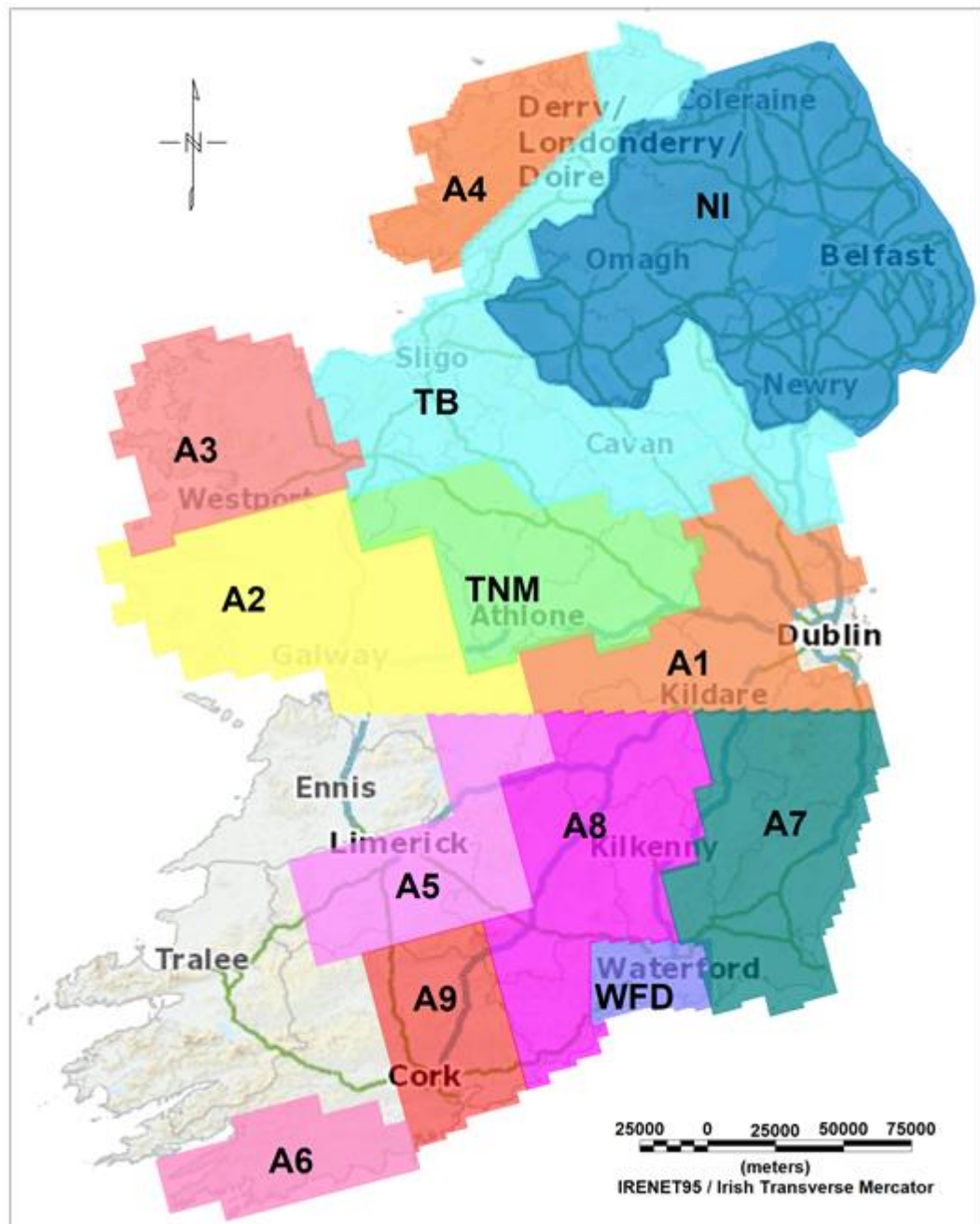


Figure 1. All Tellus airborne survey blocks completed to date, both in the Republic of Ireland and Northern Ireland, and released as one block, Cs_Merge2022.

Table 1. Summary of survey technical specifications: Tellus Airborne data (Island of Ireland).

Geophysical Contractor	1. JAC (NI, CAV) 2. Sander Geophysics Limited (SGL): A1 to A9, TB, Waterford 3. CGG: Tellus North midlands
Survey Start Date	July 2005 (NI)
Survey End Date	21 th September, 2021 (A9)
Aircraft Type	De Havilland DHC-6 Twin Otter (for JAC and SGL). Cessna caravan (TNM)
Total line kilometres	398,805 (merged data only)
Traverse Lines	
Number of Lines	10,266 excluding tie lines (merged data only)
Line Direction:	N15°W
Line Spacing	200 m
Line Spacing	2000 m
Survey Altitude	
Nominal	60 m / 90m (TNM)
Sensitive Areas	214 m
Large Population Centres	305 m
Aircraft Ground Speed Nominal	60 m/s
Instruments Carried	
Gamma-Ray Spectrometer	Total-count, potassium, uranium, thorium windows and 256/512 channel spectral data
Sample Rates	
Gamma-ray Spectrometer	1 Hz (nominal 60 m)
Coordinate System	
Datum	IRENET95
Projection	Irish Transverse Mercator (ITM)

2. URLs FOR DATA DOWNLOAD

Line-based (see Section 3 for details) and grid-based (Section 4) versions of the ¹³⁷Cs Merge 2022 data are provided. Data and supporting documentation may be downloaded from the GSI website at the following URLs:

¹³⁷Cs line data and grids:

[GSI_TELLUS_Cs137_MERGE_DATA_2022.zip] and

[GSI_TELLUS_Cs137_MERGE_GRIDS_2022.zip]

https://gsi.geodata.gov.ie/downloads/Geophysics/Data/GSI_TELLUS_Cs137_MERGE_DATA_2022.zip

https://gsi.geodata.gov.ie/downloads/Geophysics/Data/GSI_TELLUS_Cs137_MERGE_GRIDS_2022.zip

Survey technical report:

[GSI_TELLUS_Cs137_MERGE_2022_Final.pdf]

https://gsi.geodata.gov.ie/downloads/Geophysics/Reports/GSI_TELLUS_Cs137_MERGE_2022_Final.pdf

For support and further information at GSI: Dr James Hodgson, Tellus Project Manager,
jim.hodgson@gsi.ie, +353 (0)1 678 2742.

3. RELEASE INFORMATION FOR LINE DATA

Line based data for all flight lines are provided in ascii-format:

[Cs137_MERGE_2022_WEB.XYZ]

The file format is suitable for direct import into Geosoft Oasis Montaj software or into any other software programme with an ascii, column-based import capacity. The data channel (column) descriptions for each data file are fully specified in the readme.txt files that accompany the data. For reference, the readme.txt files are included below in Section 5 and Section 6.

While the line-based data files contain a number of supplementary data channels (providing, e.g., LINE, DATE, CLEARANCE, SID, and geographic coordinates), the primary data channels of interest to the data user are likely to be:

- “Cs137_MERGE_2022 [kBq/m²]” Temporal correction to 2021, clipped to coast and where Clearance > 100 m, minimum limited to 0, blocks DC shifted for consistency in overlap zones
- “Cs137_MERGE2022_BY_BLOCK [kBq/m²] ” Temporal correction to 2021, clipped to coast and where Clearance > 100 m, minimum limited to 0

4. RELEASE INFORMATION FOR GRID DATA

Grids of the merged data are provided for Cs137_MERGE_2022 data channel and may be located and downloaded at the URLs indicated above. Three file formats are provided: Geosoft Binary (.grd), Grid Exchange Format (.gxf) and georeferenced TIF (.tif). Data are gridded at a 50 m interval, using an Irish Transverse Mercator projection with IREN95 datum.

For reference, readme.txt files associated with the grid data are included below in Section 6 for Cs137_Merge20221 data:

- **TELLUS_Cs137_MERGE_2022.GRD** kBq/m² Temporal corrected, merged Cs137 Data, coast and altitude above 100 m were clipped and minimum data limited to 0
- **TELLUS_Cs137_MERGE_2022.GXF** kBq/m² Temporal corrected, merged Cs137 Data, coast and altitude above 100 m were clipped and minimum data limited to 0
- **TELLUS_Cs137_MERGE_2022.TIF** kBq/m² Temporal corrected, merged Cs137 Data, coast and altitude above 100 m were clipped and minimum data limited to 0

5. Cs137 MERGE 2022 LINE DATA README FILE [TELLUS Cs137_MERGE_2022_ReadMe.txt]

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This readme file relates to data from file: Cs137_Merge_2022_WEB.XYZ

Airborne radiometric geophysical data collected during 2005_2021 by the Geological Survey Ireland, Tellus Project.

Word pad text editor is recommended to read the data.

Data type: The Cs137_Merge_2022_WEB.XYZ is GSI processed Cs137 from spectrometer data at 662 keV gamma ray peak.

Date of collection: Data collected between 01/08/2005 and 21/09/2021.

Geographical extent: The 'Merged Blocks' cover all contiguous Tellus airborne Survey blocks to date over the Island of Ireland.

Contractor: Sander Geophysics Ltd / JAC / CGG

Client: Geological Survey Ireland (GSI)

Date of data release: 30 March 2022

For data queries please contact: tellus@gsi.ie

The data contain the channels described below;

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LINE DATA

File Name: Cs137_Merge_2022_WEB.XYZ

Name	Units	Description
X_ITM	m	X coordinate, IREN95 ITM
Y_ITM	m	Y coordinate, IREN95 ITM
DATE	-	Date YYYYMMDD
Line	-	Line number
CLEARANCE	m	Clearance above Terrain
SID	-	Survey ID
Cs137_MERGE_2022	kBq/m ²	Temporal correction to 2021, clipped to coast and where CLEARANCE > 100 m, minimum limited to 0, blocks DC shifted for consistency in overlap zones
Cs137_MERGE2022_BY_BLOCK	kBq/m ²	Temporal correction to 2021, clipped to coast and where CLEARANCE > 100 m, minimum limited to 0

Summary: Survey Block, SID, Line Name Prefix, Line Numbers

	SID	LINE NAME PREFIX	LINE NUMBERS
Tellus Border	TB	B1	B1000 - B1942
Cavan	CAV	D1	D1001 - D1315
Waterford	WFD	L1	L1003 - L1235
A3	A3	L3	L3002 - L3412
A4	A4	L4	L4003 - L4462
A5	A5	L5	L5001 - L5525
A6	A6	L6	L6007 - L6465
A7	A7	L7	L7001 - L7455
A8	A8	L8	L8001 - L8479
A9	A9	L9	L9001 - L9230
Northern Ireland	NI	L1	L10002 - L19331
Tellus North Midlands	TNM	P1	P10010 - P15950
A2	A2	R2	R2008 - R2698
A1	A1	S1	S1001 - S1657
AURUM	AUR	L34	L3413 - L3457

6. Cs137 MERGE_2022 GRID DATA README FILES [Cs137_MERGE_2022_ReadMe_Grids.txt]

This readme file relates to images/grids presented in the data delivery .zip file.

There are three different georeferenced image/grid formats provided displaying Tellus Cs137_MERGE_2022 data:

.grd files are Geosoft grid files and can be opened in: GIS software including Geosoft, ArcGIS (only with Geosoft ArcGIS plugin) and MAPINFO.

.tiff files are a georeferenced coloured raster files

.gxf are ASCII grid files and can be interrogated as raster files. This format can be opened in many GIS software. Instructions on how to display in correct colour ramp in ArcGIS and QGIS are in the pdf included in this .zip file.

Images are intended to be viewed with in the Geosoft Clra 32 colour ramp. Included in this .zip file are an ArcGIS style files (Geosoft.Style) and an QGIS XML Colour ramp (Geosoft_Clra_32_qgis.XML). Geosoft Clra 32 colour ramps are included in both these files.

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Name	Units	Description
TELLUS_Cs137_MERGE_2022.GRD	kBq/square-m	Temporal corrected, coast and altitude above 100 m were clipped and seamless merged Cs137 and minimum limited to 0
TELLUS_Cs137_MERGE_2022.GXF	kBq/square-m	Temporal corrected, coast and altitude above 100 m were clipped and seamless merged Cs137 and minimum limited to 0
TELLUS_Cs137_MERGE_2022.TIF	kBq/square-m	Temporal corrected, coast and altitude above 100 m were clipped and seamless merged Cs137 and

Grids were created using Geosoft Oasis Montaj using the inverse distance weighting method with a grid cell size of 50m.

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