

OVERVIEW

The School of Geography and Environmental Sciences holds a wide range of digital spatial data, suitable for use within a GIS, which is available for educational use. These datasets cover Northern Ireland unless otherwise noted below. The data includes:

- ◆ raster maps at a variety of scales (from 1:10,000 to 1:1,000,000)
- ◆ raster street maps
- ◆ ortho-rectified aerial photography
- ◆ small and large scale vector mapping (e.g. roads, rivers and lakes, built up areas, administrative boundaries)
- ◆ elevation (contours and DTM datasets)
- ◆ soils
- ◆ geology
- ◆ land cover (NI and GB)
- ◆ historic maps (OSNI historic archive from 1st edition)
- ◆ postcode look-up tables, addresses and gazeteers
- ◆ property valuations
- ◆ LiDAR (only available for small areas within N. Ireland)
- ◆ Near Infra-red (only available for small areas within N. Ireland)

More detail about the datasets is available from the summaries and links below.

There are various restrictions on access to and use of these datasets under academic licence:

- ◆ They cannot be used for any commercial activity as they are only licenced for the purposes of teaching and non-commercial research.
- ◆ You can only use them for the purpose requested and for a fixed period (max. 12 months).
- ◆ You may not pass them to a third party.
- ◆ If any of the data is to be reproduced in publications, you must check requirements regarding copyright statements, royalties etc. with the data provider.
- ◆ In the case of the more detailed and commercially valuable datasets, you can only be given subsets of the data rather than the entire dataset (where these restrictions apply, they are specified in the following sections). However, it may be possible to arrange exceptions to this with the data provider if a strong case is demonstrated or if you are undertaking PhD or funded research.

Please note that a few of the datasets included in the digital data library are now categorised as Open Data and are therefore free of these restrictions – this is noted where applicable below.

You can view and select the datasets you require using the School's digital data library. If your request is agreed in full, you will be sent instructions for accessing the data. If there are any problems with the data request, you will be advised to modify and resubmit the request, or to provide further information. Instructions for accessing the data are given on the final pages of this document.

DATASETS

This section lists the datasets available, organised to reflect the folder structure of the digital data library, and includes links to further information on data provider and/or datasets. Documentation and descriptions relating to some of the datasets are also available in the digital data library's 'Metadata' folder.

Addresses Gazeteers Postcodes Property

- **CPD**
Central Postcode Directory for N. Ireland.
<http://www.nisra.gov.uk/geography/postcode.htm>
- **Gazeteers**
OSNI datasets in text / csv format; the Place names and Street names gazeteers are Open Data, while the 1:50k and 1:250k versions are not.
<https://www.nidirect.gov.uk/articles/gazetteers>
<https://mapshop.nidirect.gov.uk/Catalogue/Digital-products/Address-data-and-gazeteers>
- **Pointer**
LPS database giving x,y location of all buildings in N. Ireland (converted to ESRI shapefile); available to download for individual Local Government Districts; *maximum request normally limited to 3 districts.*
<https://www.nidirect.gov.uk/articles/pointer>
- **Property**
LPS dataset containing the valuation (made in 2005 for rates collection) of each property in N. Ireland.
<https://www.finance-ni.gov.uk/topics/property-valuation/domestic-valuation>

Boundaries

- **Boundaries 1_50k**
OSNI Open Data 1:50,000 scale datasets of county, district, electoral and townland boundaries.
<https://www.nidirect.gov.uk/articles/150000-vector>
<http://osni.spatial-ni.opendata.arcgis.com>
- **Boundaries largescale**
OSNI Open Data largescale datasets of county, district, electoral and townland boundaries.
<https://www.nidirect.gov.uk/articles/large-scale-vector-boundary-area>
<http://osni.spatial-ni.opendata.arcgis.com/>
- **Settlements 1_50k**
OSNI dataset representing large towns, towns, villages and small villages (from 2007)
See also <http://www.nisra.gov.uk/geography/Home.htm> for other data on settlements and urban/rural classification.

Elevation

- **10m Digital Terrain Model**

OSNI Open Data DTM (digital terrain model) in text file format, providing height data based on a 10m grid; data provided as separate text files for each 1:10,000 scale tile (approx. 300 tiles to cover N. Ireland); use the tile layout shapefile called “10m_DTM_layout” to identify the tiles needed (in the digital data library folder “MetaData/Tile Layouts/DTM_10m standard and enhanced layout”).

<https://www.nidirect.gov.uk/articles/10m-digital-terrain-model-height-data>
<http://osni.spatial-ni.opendata.arcgis.com>

- **50m Digital Terrain Model**

OSNI Open Data digital terrain model in text file format, providing height data based on a 50m grid; data provided as a single file for N. Ireland or separate text files for each 1:10,000 scale tile (approx. 300 tiles to cover N. Ireland); use the tile layout shapefile called “50k_Raster_tilelayout” to identify the tiles needed (in the digital data library folder “MetaData/Tile Layouts/50k Raster and 50m standard DTM Tile Layout”).

<https://www.nidirect.gov.uk/articles/50m-digital-terrain-model-height-data>
<http://osni.spatial-ni.opendata.arcgis.com>

- **Contours 5m**

OSNI vector contours (approx. 1:50,000 scale); 5 metre vertical intervals; contour lines derived from digital terrain model with some contours extending beyond the N. Ireland shoreline, so likely to need further processing for some applications.

- **Contours 10m**

OSNI 1:50,000 scale vector contours; 10 metre vertical intervals; clipped to N. Ireland outline.

<https://mapshop.nidirect.gov.uk/Catalogue/Digital-products/1-50-000-Vector-mapping>

- **Enhanced Digital Terrain Model**

OSNI’s most accurate digital terrain model including breaklines denoting distinct changes in elevation, giving a highly detailed representation of topographical variations; DXF format; data provided as separate files for each 1:10,000 scale tile (approx. 300 tiles to cover N. Ireland); use the tile layout shapefile called “10m_DTM_layout” to identify the tiles needed (in the digital data library folder “Tile Layouts/DTM_10m standard and enhanced layout”).

<https://www.nidirect.gov.uk/articles/enhanced-digital-terrain-model-height-data>
<https://mapshop.nidirect.gov.uk/Catalogue/Digital-products/Height-products>

- **NI_DTM_50m zip file**

50 metre resolution digital terrain model for N. Ireland, in the form of a raster grid that has been zipped to enable easy transfer – can be added directly to ArcGIS once the file has been unzipped; derived from interpolation of 1:50,000 scale vector contours.

Geology

- **Drift Geology 1_250k**
GSNI Open Data 1:250,000 scale dataset of the superficial (drift) geology of N. Ireland.
<https://data.gov.uk/dataset/gsni-250k-geology-download>
- **Solid Geology 1_250k**
GSNI Open Data 1:250,000 scale dataset of the solid geology (bedrock) of N. Ireland.
<https://data.gov.uk/dataset/gsni-250k-geology-download>
- **Tellus**
The Tellus project collected samples of soils, stream sediments and stream waters across Northern Ireland; various datasets available in Excel format.
<https://www.bgs.ac.uk/gsni/tellus/> and
https://www.bgs.ac.uk/gsni/tellus/data_licensing/index.html

Historic maps

OSNI historic mapping of Northern Ireland at a variety of scales, with the earliest maps dating from the 1830s (the historic archive contains over 20,000 individual maps); see additional documentation in the digital data library folder “Metadata” for information on dates, naming conventions and availability; use the Historic map tile layout shapefiles to identify the tiles needed (in the digital data library folder “MetaData/Tile Layouts/Historic map Tile Layouts”).

- You can also view these maps via the link below:
<https://mapshop.nidirect.gov.uk/Catalogue/Digital-products/Historical-products>

If you are viewing these maps in ArcGIS, be aware that the default symbology applied when you add the map sometimes produces a very poor quality image; in this case, try changing the Symbology ‘Stretch Type’ to ‘None’.

Land Cover

- **Corine 1990**
Land cover data from 1990 in vector format (1:100,000 scale), described on <http://www.eea.europa.eu/data-and-maps/data/> as follows: “minimum polygon size is 25 hectares. Land cover is organised in 44 different classes distributed into 5 categories (urbanised areas, agricultural areas, natural and semi-natural areas, wetlands, and water bodies) and with 3 levels of detail”. Data uploaded in this folder is available as a single shapefile covering N. Ireland and extending into the Republic of Ireland.
Additional Corine datasets (raster as well as vector format, updates, other European countries) are available online, e.g. via the European Environment Agency and Ireland’s Environmental Protection Agency – see <http://www.epa.ie/soilandbiodiversity/soils/land/corine/datasets/>.

- **Land Cover Map 2000**

LCM2000 records land cover classification for the year 2000, based on habitat type, covering GB and Northern Ireland. The minimum mappable unit for the vector dataset is 0.5 hectares. Data is available for 40km grid squares in N. Ireland, and 100km grid squares in GB. To identify the grid squares for GB data, see the “Metadata/Land cover” folder, “Land Cover Map 2000_product_versions_and_formats” PDF; for Northern Ireland data, use the 40km grid shapefile or georeferenced JPEGs in the digital data library “MetaData/Tile Layouts/40 km grid” folder to help you identify which grid squares you need. *Maximum request normally limited to 3 grid squares.* See <http://www.ceh.ac.uk/services/land-cover-map-2000> for more information.

- **Land Cover Map 2007**

LCM2007 is an update (with modified methodology) of LCM2000, covering GB and Northern Ireland. The minimum mappable unit for the vector dataset is 0.5 hectares. Data is available for 40km grid squares in N. Ireland, and 100km grid squares in GB. LCM2007 uses the same grid referencing system as for LCM2000, explained above. *Maximum request normally limited to 3 grid squares.* See <http://www.ceh.ac.uk/services/land-cover-map-2007> for more information.

- **Vegetation 1_50k**

1:50,000 scale vector polygons denoting woodland in Northern Ireland; shapefile dated Nov. 2009.

Largescale vector data

OSNI’s largest scale vector data of Northern Ireland (1:1250 in urban areas and 1:2500 otherwise) – see <https://mapshop.nidirect.gov.uk/Catalogue/Digital-products/OSNI-Large-Scale-Mapping> and <https://www.nidirect.gov.uk/articles/large-scale-map-tiles> for details.

Access to this dataset is restricted due to its commercial value, but extracts of the data for small areas can be requested. Please email the administrator with details of your requirements.

The large scale vector data is currently available in the following forms:

- **Basemap**

Points, lines and polygons classified into approximately 40 thematic layers (e.g. roads, buildings, water). ESRI Geodatabase format (> 10 GB in size). This format has largely been superseded by the LPS largescale geodatabase and the revised largescale data model.

- **CAD formats**

Largescale vectors in DWG and DXF formats, as individual map tiles (> 17,000 to cover Northern Ireland). Use the tile layout shapefiles in the digital data library folder “Tile Layouts/Largescale Vector Tile Layout” to identify the tiles needed.

- **LPS LargeScale**

ESRI Geodatabase (9 GB) containing large scale vector data organised into feature datasets (themes) in addition to other key LPS datasets. This format is being superseded by the revised largescale data model (below).

- **PRE-RELEASE_Data_Model_March_2016**

Revised data model, organised into a smaller number of themes to make the data more suitable for GIS mapping and analysis. Current version is 'pre-release'.

National and world maps

Background national and world mapping (e.g. national boundaries, rivers, cities etc.) provided by ESRI as part of ArcGIS licence. Data provided as ESRI Geodatabases and organised into three folders (Europe, USA and World). Each folder has been zipped into a single file for convenience of download.

Near Infra Red

OSNI's 4-band near infra-red imagery. This data is not yet an official LPS product and the data is only available for small areas of Northern Ireland.

NI outline and high low water

- **High and low water mark**

Vector shapefiles denoting high and low water, extracted from OSNI's large scale data (1:1250 / 1:2500).

- **NI outline 1_50k**

Vector shapefile of Northern Ireland's outline at 1:50,000 scale.

- **NI outline largescale**

Vector shapefile of Northern Ireland's outline, extracted from OSNI's large scale data (1:1250 / 1:2500).

Orthophotography

OSNI's ortho-rectified aerial photography of Northern Ireland. Different versions of the orthophotographs are available based on date of capture (from 2003 onwards). The orthophotography is referenced using OSNI's 1:10,000 map sheet / tile layout, each of which has been divided into 16 smaller tiles (requiring approx. 4000 tiles for complete coverage of N. Ireland). Use the tile layout shapefiles in the digital data library folder "MetaData/Tile Layouts/Orthophotography Tile Layout" to identify the tiles needed. See <https://www.nidirect.gov.uk/articles/orthophotography> and additional documentation for details.

Raster maps

OSNI's raster maps, for background mapping, are available for all of Northern Ireland at scales varying from 1:1,000,000 down to 1:10,000. Street maps are also available. The 1:1,000,000 and 1:250,000 scale maps are each available as a single tile covering Northern Ireland, while large scale maps are divided into tiles (55 tiles for 1:50,000 scale maps, approx. 1000 tiles for 1:10,000 scale maps). Activity maps (1:25,000 scale) and street maps are available for specific locations. Use the digital data library Tile Layout shapefiles to help you select the tiles or maps you need.

Note that the 1:1,000,000 scale raster and the street maps are now Open Data. A downgraded / less detailed version of OSNI's 1:10,000 scale raster maps is also available as Open Data (named "OSNI OPEN DATA Midscale Raster") – however, if these are not adequate you can obtain the commercial 1:10,000 version maps through the digital data library.

See <https://mapshop.nidirect.gov.uk/Catalogue/Digital-products/Raster-mapping>.

Soils

- **Soils 1_50k**

Vector polygons of soil type in Northern Ireland, produced by AFBI, at 1:50,000 scale. Data has been split into separate shapefiles each covering a 40km by 40km square; use the 40km grid shapefile or georeferenced JPEGs in the digital data library "MetaData/Tile Layouts/40 km grid" folder to help you select the data needed.
Maximum request normally limited to 3 grid squares.

- **Soils 1_250k**

Vector polygons of soil type in Northern Ireland, produced by AFBI, at 1:250,000 scale, in the form of a single shapefile.

Transport

- **Road and railways 1_50k**

OSNI's 1:50,000 scale vector data recording transport (roads and railways) in the form of a line, a point and a text shapefile. Shapefiles dated 2007-2008.

See <https://www.nidirect.gov.uk/articles/150000-vector>.

- **Road network largescale**

OSNI's road network extracted from their large scale vector data.

See <https://mapshop.nidirect.gov.uk/Catalogue/Digital-products/OSNI-Large-Scale-Mapping/OSNI-Road-centreline>.

Water

- **Major loughs**
Vector outlines of Lough Neagh and Lough Erne, extracted from OSNI's large scale data (1:1250 / 1:2500)
- **Water 1_50k**
OSNI's 1:50,000 scale vector datasets showing lakes, rivers, canals etc. for Northern Ireland. Available in the form of a polygon, a line and a text shapefile.

OTHER DATA SOURCES

Many datasets collected or administered by government bodies, such as census data, other population data and small scale mapping are available free of charge. Some of the sources more commonly used for student projects, dissertations etc. are listed below.

Northern Ireland Statistics and Research Agency (NISRA)

Census data, demography, deprivation, neighbourhood statistics, boundaries.
See in particular <http://www.nisra.gov.uk/index.html> and <http://www.nisra.gov.uk/geography/home.htm>.

OSNI Open Data

OSNI datasets that have been withdrawn from sale and designated as Open Data. Please note that the dataset referred to as "OSNI OPEN DATA Midscale Raster" is a downgraded / less detailed version of OSNI's 1:10,000 scale raster maps, which are still available commercially and through the digital data library.
<http://osni.spatial-ni.opendata.arcgis.com/>

Open Data NI

<https://www.opendatani.gov.uk/>

Central Statistics Office (CSO) – Republic of Ireland

Includes census data (e.g. small area statistics) and boundaries
<http://www.cso.ie/en/census/>

Eurostat

Census Hub – Europe-wide database for population and housing census data
<http://ec.europa.eu/eurostat/web/population-and-housing-census/overview>

UK Data Service Census Support

Access to census data for GB and Northern Ireland (1971 onwards)
<https://census.ukdataservice.ac.uk/get-data>

HOW TO ACCESS THE DIGITAL DATA LIBRARY

To view the datasets available

- ◆ Go to the digital data library at <https://vulcan.host.ulster.ac.uk/map-order> (you are advised to use a computer to view the data as the system may not work well on some phones or tablets).
- ◆ You can view documentation about some of the datasets by clicking on the folders and files in the MetaData folder. You can also download all of the metadata as a single zip file and extract it on your own computer (this file is named 'AllMetadata.zip' and is in the MetaData folder).
- ◆ To view the list of datasets available on a particular theme, click on the Data folder, then on the relevant folder. In some cases you may need to go down through a few levels of folder before you are able to see shapefiles or other datasets listed.
- ◆ To go up one level in the folder structure, click on the pair of dots listed at the top of each page [..].
- ◆ To go to the top of the folder structure, click on 'Root' (top left of page, above 'File name').

To identify tiles or subsets required

- ◆ Some datasets are available as a single shapefile – for example, administrative boundaries, geology, rivers and roads each exist as individual shapefiles covering all of Northern Ireland.
- ◆ Others (particularly datasets that are larger scale, i.e. more detailed) are divided geographically into multiple maps or 'tiles'. For these datasets, you will need to know which tiles cover the area for which you need data.
- ◆ The MetaData folder contains Tile Layouts, which are shapefiles or images containing the outlines and numbers of each tile. There are a number of different tile layout shapefiles, as the tile layouts vary depending on the scale and type of data; please check the data summaries above to find out which tile layout is required for each dataset.
- ◆ To identify which tile(s) cover your area of interest, download the appropriate tile layout and view it in ArcGIS. You may find it useful to add one of the ArcGIS Basemaps along with the tile layout shapefile for spatial context. For Northern Irish datasets, you may also find the 1:1,000,000 scale rasters useful. You can download these from the Metadata/Tile Layouts folder (named "1_M scale rasters NI.zip"). Tile numbers are included as an attribute in each tile layout shapefile table.
- ◆ For some datasets (e.g. Land Cover Map 2000 & 2007), images of the tile layouts are available as part of the metadata documentation rather than as shapefiles.

To request datasets

- ◆ Navigate to the folder containing the data you want and select the dataset by clicking on the file name. When the dataset has been selected, it will be highlighted in green and the full pathname will be shown towards the top of the page next to 'Last added'. The name of the dataset will also be added to the Cart.
- ◆ If you make a mistake, you can unselect the last dataset selected by clicking on 'Remove' (top right of the screen). Alternatively, you can unselect any of the selected datasets by going to the Cart and removing them individually (the link to the Cart is at the top right of the screen).
- ◆ From the Cart screen, you can go back to viewing the Data or MetaData folders by clicking on 'Return' or on the 'Map Explorer' link at the top of the page.

- ◆ You can continue to navigate around the Data folders to select further datasets, if required.
- ◆ Each data request is limited to 15 datasets; if you require more than 15 you must submit your request and start a new one.
- ◆ When you have finished selecting datasets, click on 'Cart' and then 'Check Out'. Enter your name, select your user type and provide your Ulster University email address (please note that requests will not be processed if the email address is not an Ulster University account).
- ◆ You will receive an email to confirm that your request has been received. If you have not already provided a licence agreement form, please download it from the link given in the email or from the MetaData folder of the digital data library. Complete the form and email it to s.cook@ulster.ac.uk, from your University email account.
- ◆ If you have requested a large number of datasets, or datasets that are restricted, you may be contacted to discuss the request.

To download the datasets

- ◆ When your request has been approved, you will be sent a link (to your University email address) from which you can download the data (as a zip file). This file will be deleted from the server one week after the request has been approved.