Shared Past

Accessing LIDAR data

- via the Internet
- using freely available software

Where to look? What's available?

EASY - Several sites / options are available, but these three online sites are a great place to start. They provide instant results with little effort or knowledge.

- **National Library of Scotland (England, Scotland & Wales)**
- **Lle (Wales)**
- **Houseprices (England & Wales)**

Moderate - This downloadable (Windows) program is well worth a try, it's simple, powerful yet easy to use. It does require some background knowledge.

- **Relief Visualisation Toolbox (RVT)**

Advanced - For the more advanced and ambitious user, there is QGIS. Not for the feint hearted, but once mastered, a very powerful application for manipulating any geospatial data.

- **QGIS**

National Library of Scotland

- Start here for an overview
  - https://maps.nls.uk/guides/lidar/index.html

- Explore a (single) map
  - https://maps.nls.uk/geo/explore/#zoom=5&lat=56.00000&lon=-4.00000&layers=1&b=1

- Or use two maps side by side
  - https://maps.nls.uk/geo/explore/side-by-side/#zoom=5&lat=56.00000&lon=-4.00000&layers=1&right=ESRIWorld

National Library of Scotland - Overview

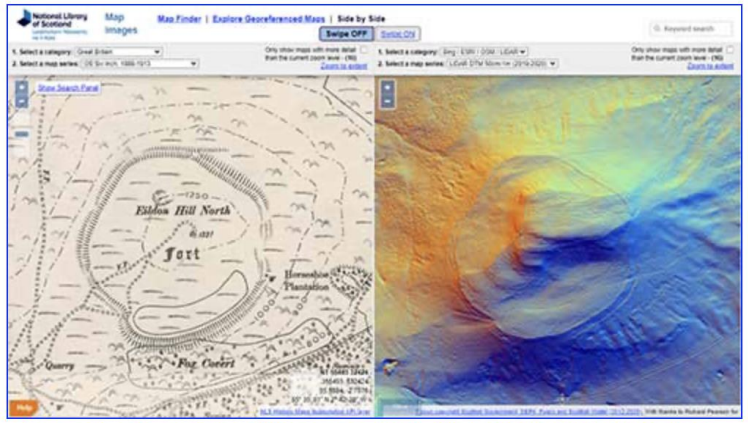
National Library of Scotland
Leabharlann Nàiseanta na h-Alba

Map images

Keyword search

August 2021

Using LiDAR layers for landscape research

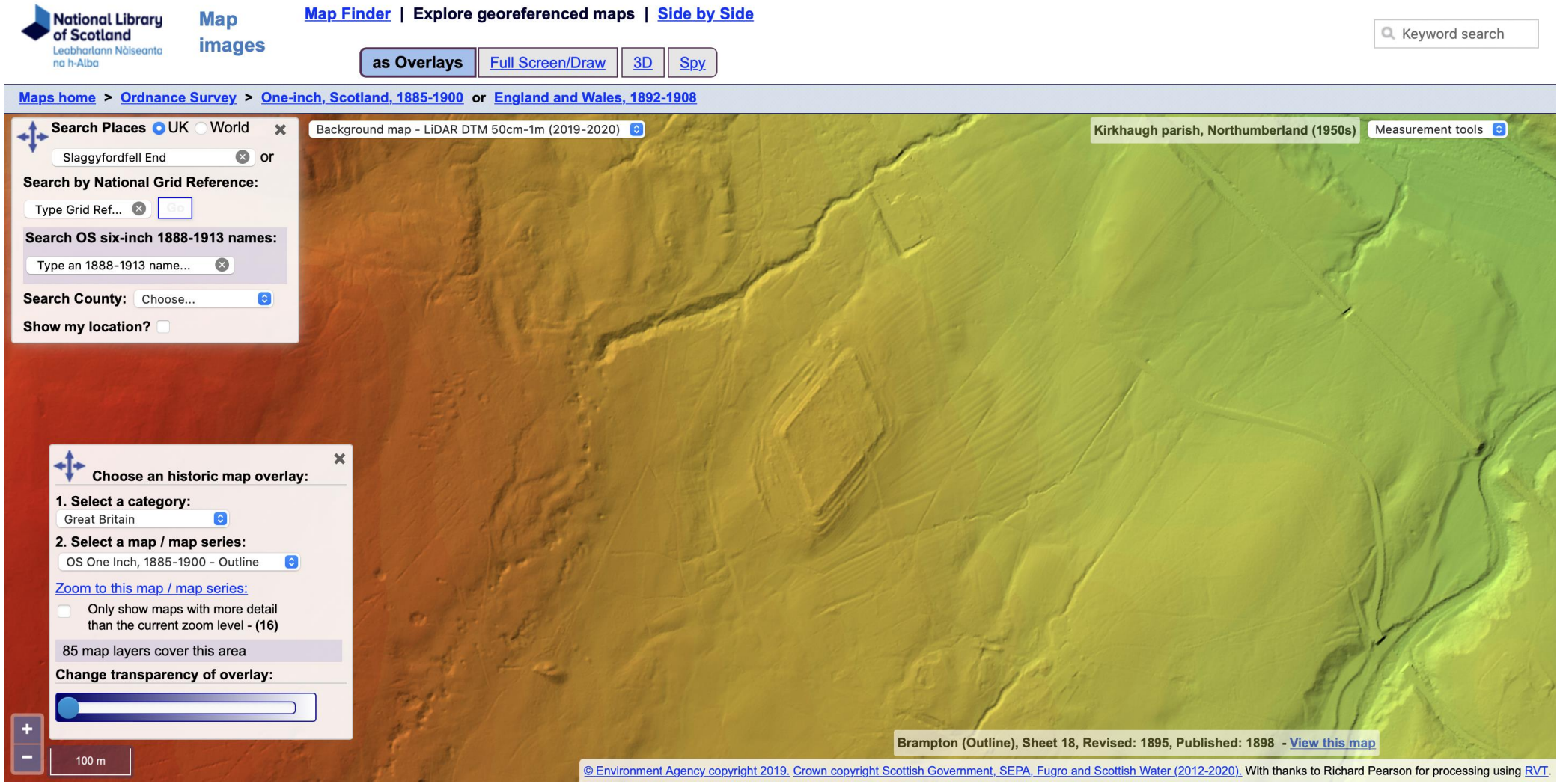


Comparing OS six-inch 1900s mapping (left) with LiDAR DTM (right) for Eildon Hill North, near Melrose

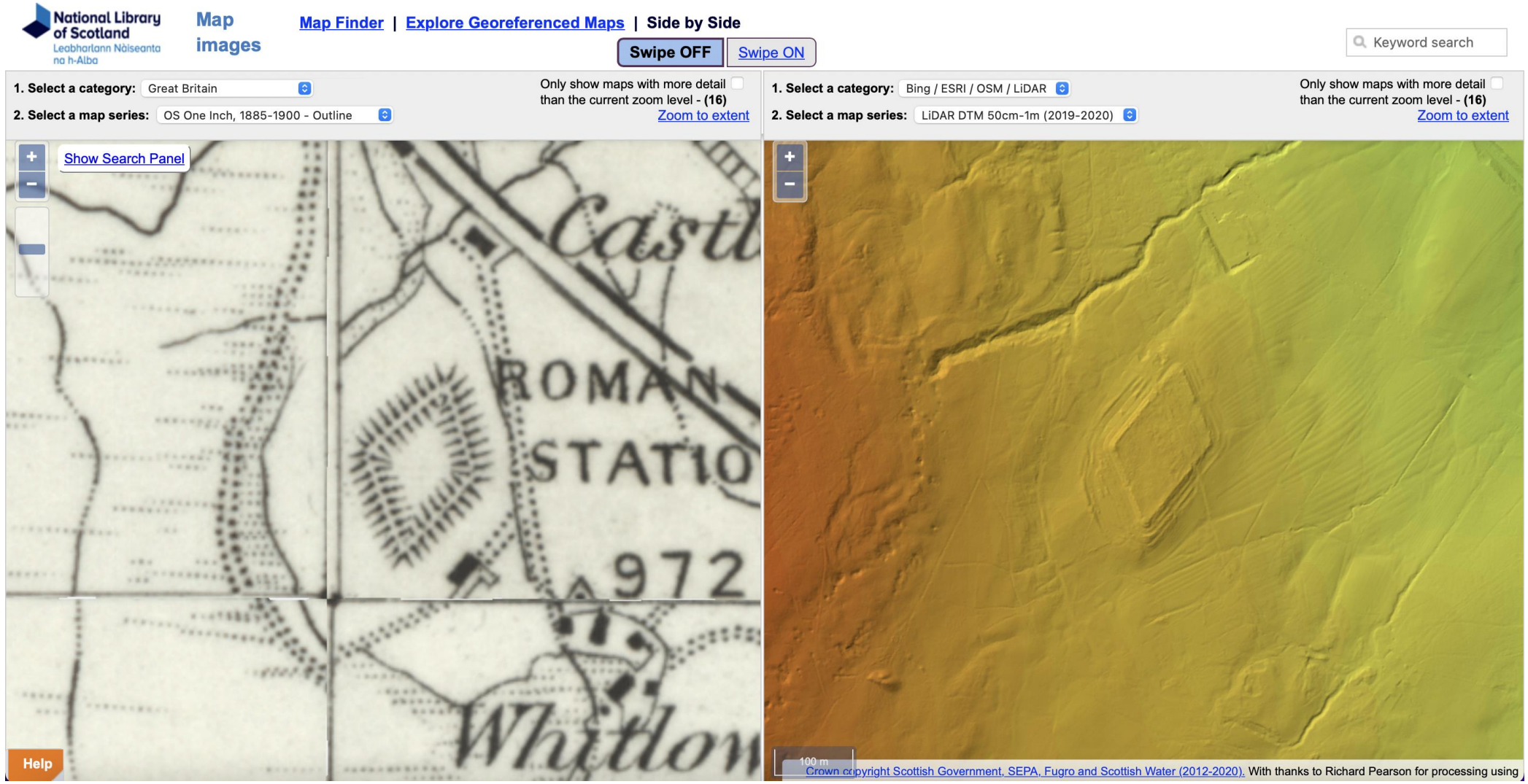
Light Detection and Ranging (LiDAR) is an airborne mapping technique, which uses a scanning laser to very accurately measure the distance between the aircraft and the ground. It allows highly detailed representations of relief or terrain models to be generated, often at spatial resolutions of between 25 cm and 2 metres.

LiDAR has many **uses**, and is particularly valuable for showing subtle variations in relief or elevation on the ground. Slopes and small streams are easy to spot, as well as types of trees and their densities. LiDAR can also be ground based rather than airborne and is often used in self-driving vehicles for showing relief and obstructions. LiDAR data has many archaeological applications due to its ability to show the underlying land surface with vegetation removed and to show up patterns of small variations in elevation which are often not visible to the human eye at ground level.

NLS – Map (Epiacum)



NLS – Side by Side (Epiacum)

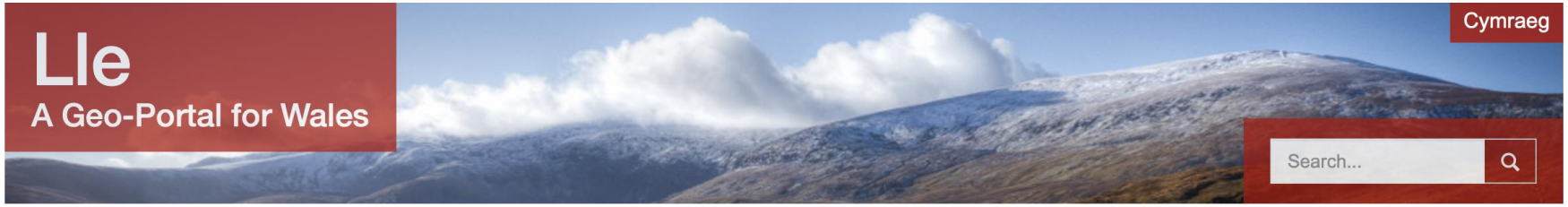


Lle (Wales)

- Start here for an overview
  - http://lle.gov.wales/catalogue/item/LidarCompositeDataset/?lang=en

- Explore the map using the beta map browser -
  - http://lle.gov.wales/map#m=-3.159,51.47832,8&b=europa&l=108h;109h;110h;111h;112h;113h;114h;115h;
  - Or click LLW Map Browser on LLE Home (LIDAR) page

Lle - Overview



LiDAR Composite Dataset

Natural Resources Wales

Summary | **Preview** | **Endpoints (16)** | **Downloads (1)** | **Metadata (1)**

Light Detection and Ranging (LiDAR) is an airborne mapping technique, which uses a laser to measure the distance between the aircraft and the ground. Up to 100,000 measurements per second are made of the ground, allowing highly detailed surface and terrain models to be generated at different spatial resolutions.

The Natural Resources Wales composite dataset contains **digital elevation data** derived from surveys carried out over several years and covers approximately 70% of Wales. We are making available 25cm, 50cm, 1m and 2m datasets, supplied as terrain models (a representation of the ground level) or surface models (a representation of object heights such as vehicles, buildings and vegetation). In addition to the height information, georeferenced, coloured, shaded relief images at the same resolution as the input LiDAR data grids are available.

25cm Data - This dataset is derived from a combination of all data that is 25cm resolution or better which has been merged and re-sampled to give the best possible coverage.

50cm Data - This dataset is derived from a combination of all data that is 50cm resolution or better which has been merged and re-sampled to give the best possible coverage.

1m Data - This dataset is derived from a combination of all data that is 1m resolution or better which has been merged and re-sampled to give the best possible coverage.

View in Lle Map Browser

Currency

See metadata

License

Open Government Licence for Public Sector Information

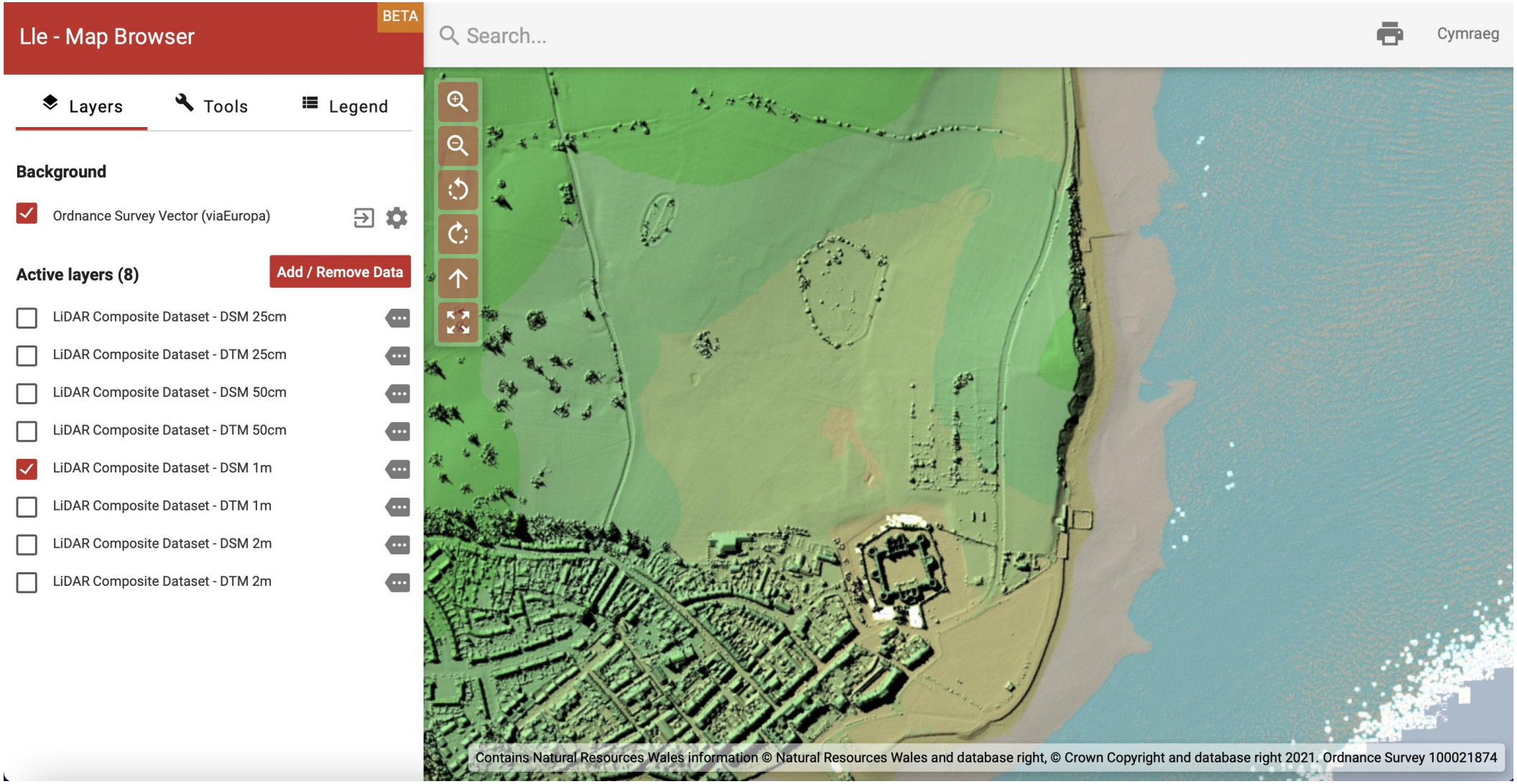
Copyright

Contains Natural Resources Wales information © Natural Resources Wales and database right

Appears under

Environment | Earth Observation | Spatial data

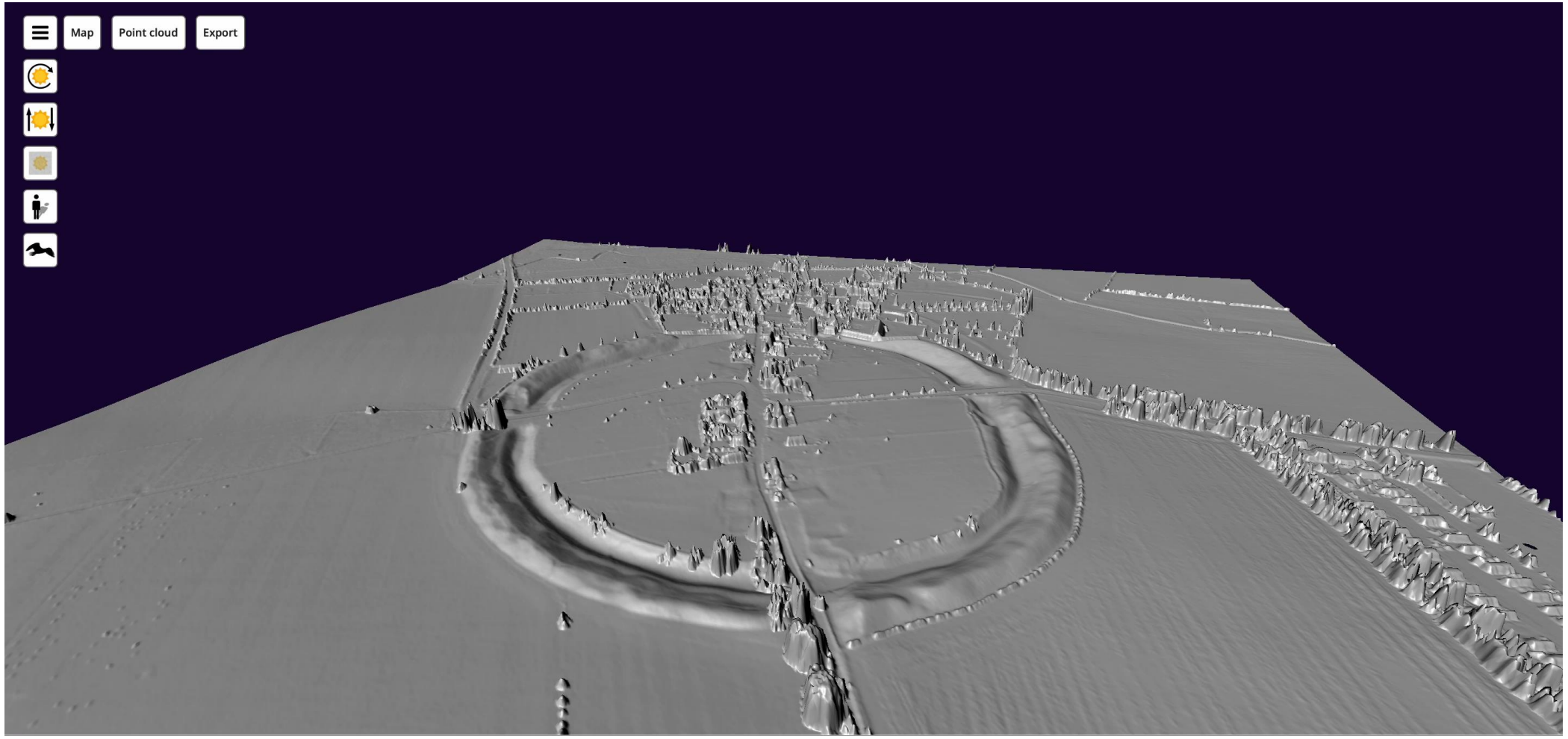
Lle – Map (Beaumaris)



Houseprices (England & Wales)

- Start page
  - https://houseprices.io/lab/lidar/map
- Click search icon and enter your search criteria
- Zoom in to your area of interest
- Click the 3D button
- On resultant image, try adjusting: Light Rotation, Light Altitude, Haze, Shadows to give you the best image.
- Click the ‘Fly Around’ button (a bird) to see the results.

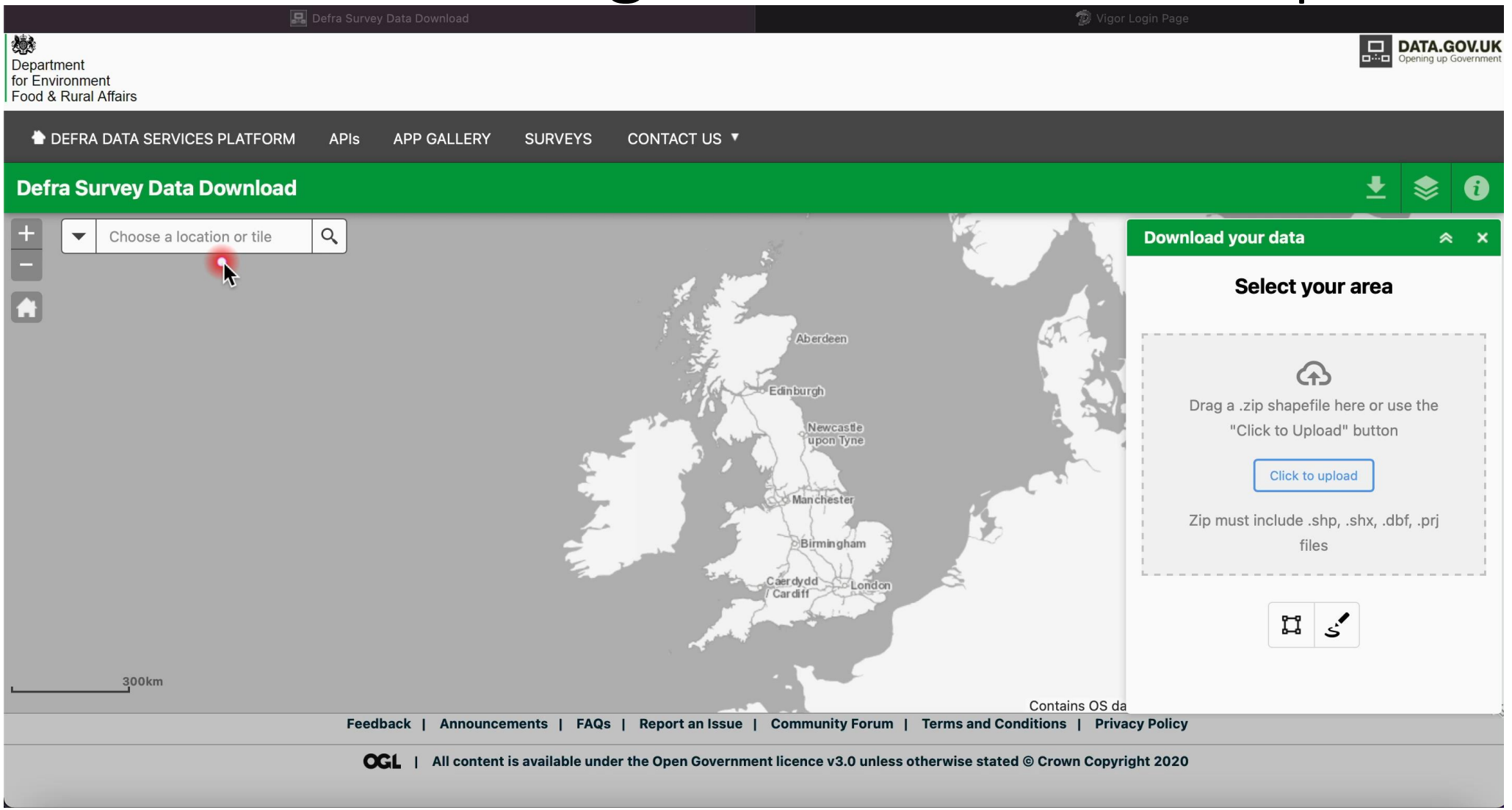
Houseprices – 3D Fly Around (Avebury)



Obtaining LIDAR raw data - DEFRA

- In the UK, the first place to look for free, publicly accessible data is the DEFRA (**D**epartment for **E**nvironment **F**ood & **R**ural **A**ffairs) website
  - **https://environment.data.gov.uk/DefraDataDownload/?Mode=survey**
- For a beginner, it is (initially) a little quirky to use, but once you're familiar with it, the process is quite straightforward.
  - Search for a location then zoom to the scale you require.
  - Use the drawing tools to sketch out on the map the area you are interested in, once complete, search for the tiles that are available.
  - Download the data.

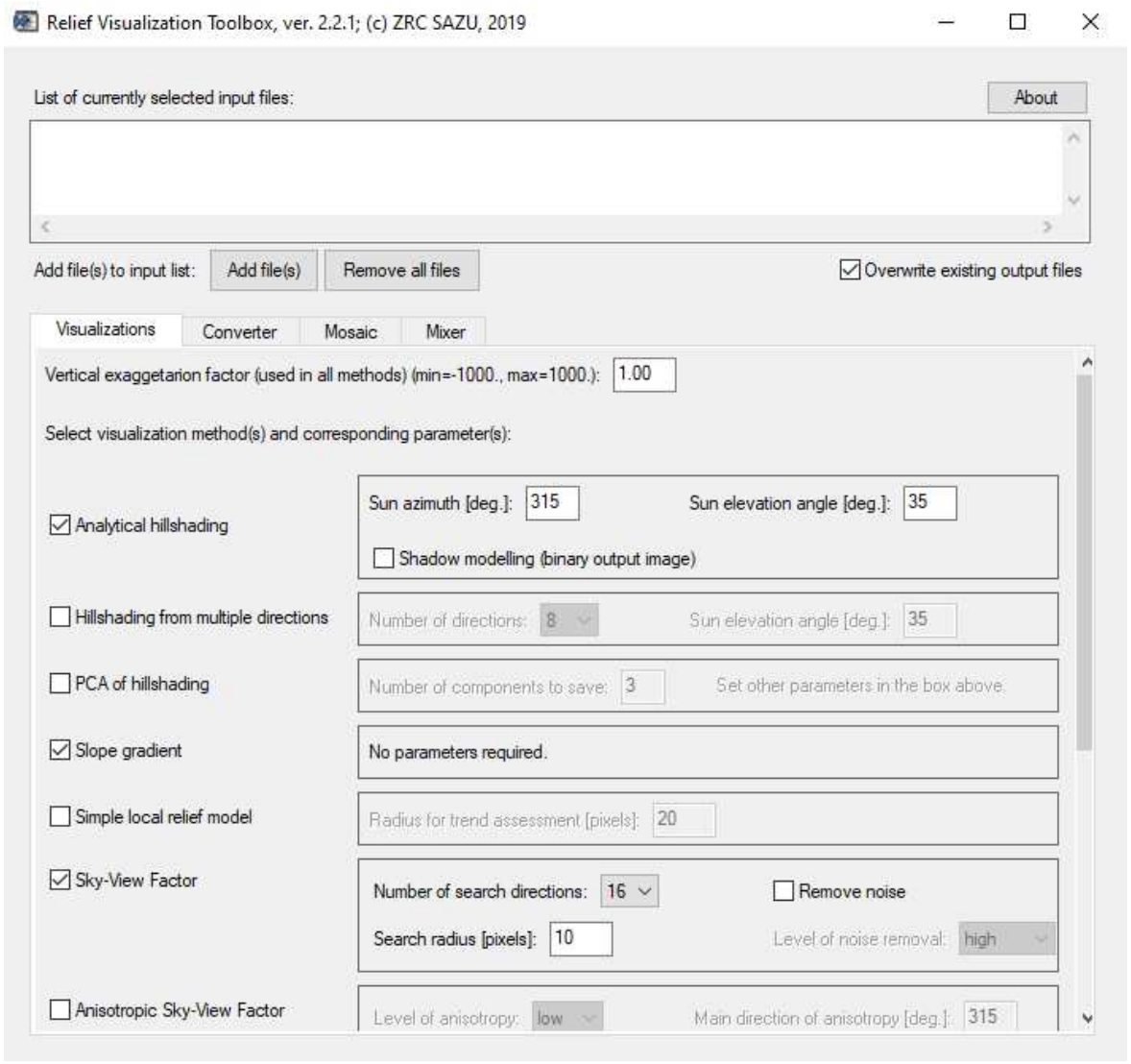
DEFRA – Obtaining LIDAR data - Example



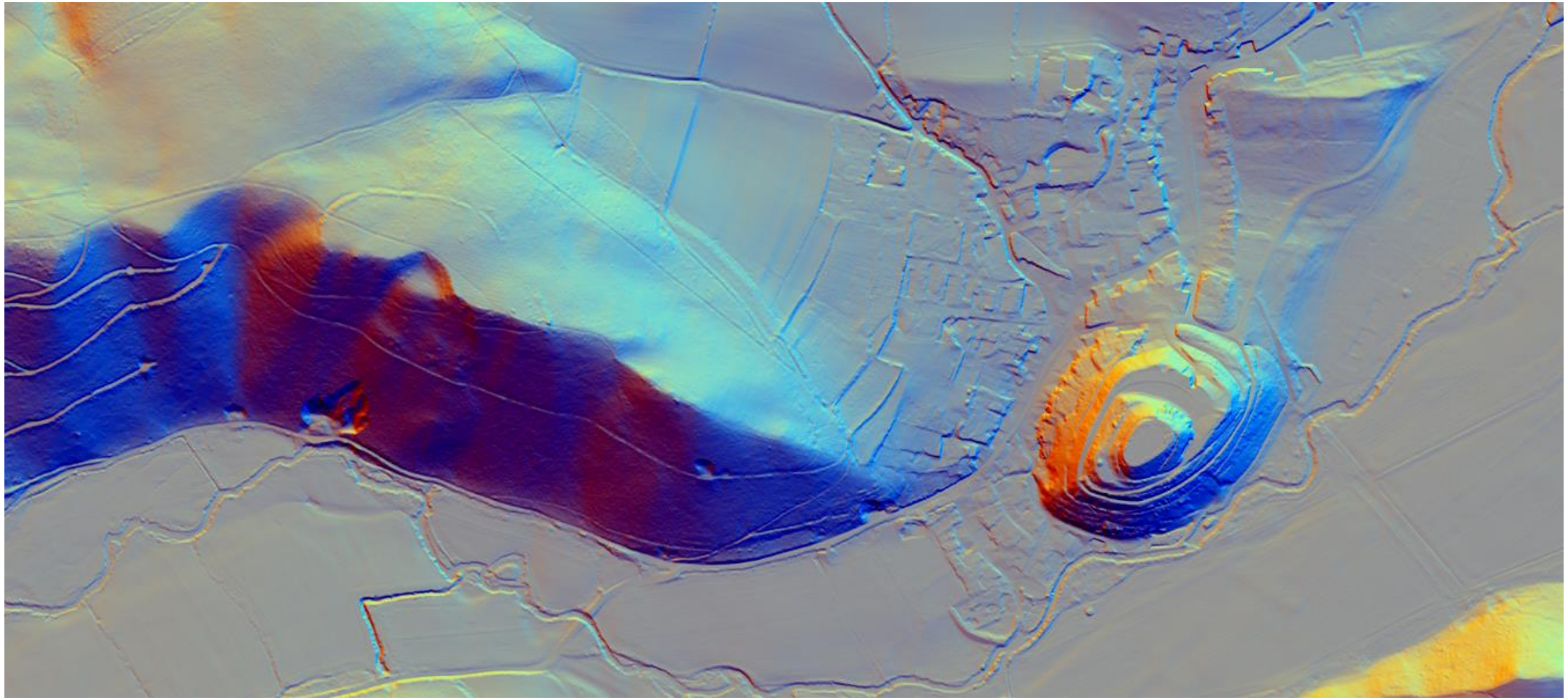
Relief Visualisation Toolbox - RVT

- Website and initial overview:
  - https://iaps.zrc-sazu.si/en/rvt
- Download latest version (Microsoft Windows only)
- Extract the zip file and run directly from the resultant folder
- You'll need some raw data, please see previous slides on how to obtain this.
- Import the data, select the options you require and start processing
- Resultant files will be seen in the folder the original tif file was located

RVT – Program Start



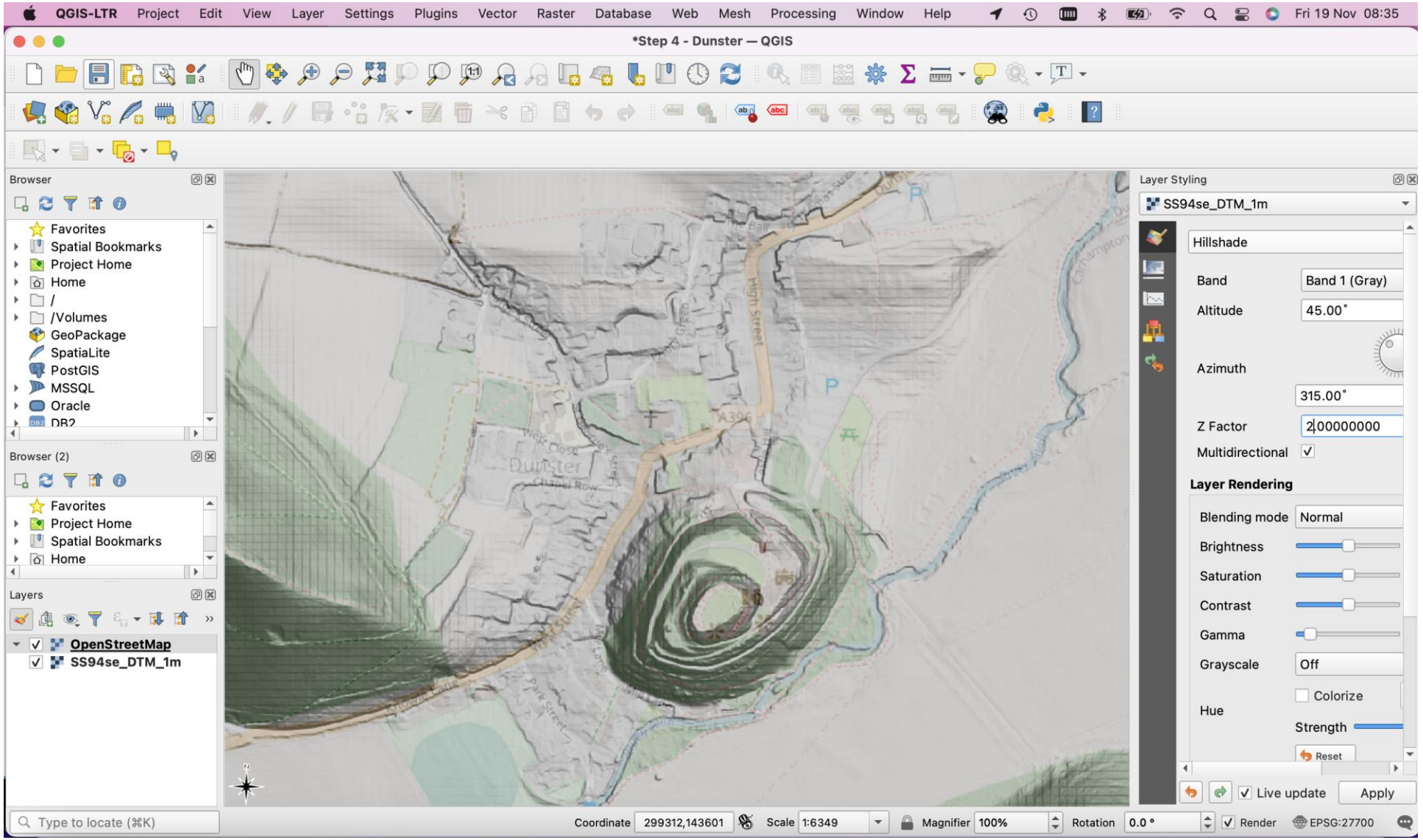
RVT Output – Hillshade RGB (Dunster)



QGIS

- From Wikipedia: QGIS (formally **Q**uantum **G**raphical **I**nformation **S**ystem) is a free and open-source cross platform GIS application that supports viewing, editing and analysis of geospatial data.
- Please refer to the QGIS Website for instructions on installation and instructions for use. Please be aware this will require a degree of technical knowledge to be successful. It runs on Windows, Mac and Linux.
  - https://www.qgis.org/en/site/
- It is not the intention in this training session to give any insight on how to install and use QGIS.
- What QGIS offers is:
  - The ability to process and manipulate LIDAR data based on your own requirements.
  - Display that data as a layer in a georeferenced data set.

QGIS – Dunster (Hillshade)



QGIS - Dunster (Singleband Pseudcolour)