



ABOVE LEFT An OS map snip of 4km square around Ivinghoe Beacon. ©Crown copyright 2023 Ordnance Survey. Media 002/23 ABOVE RIGHT A contour-only map of a 4km square around Ivinghoe Beacon. Contains OS data © Crown copyright [OS OpenData 2023]

DIY contour maps

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When teaching map and compass navigation skills, an understanding of contour lines takes interpretation of the landscape to another level. Recognising ring contours, cols, ridges, valleys and re-entrants focuses the mind on permanent features we can use to navigate.

This contrasts with more transient features such as fences, woods, fields and even over a longer period roads and buildings. The 8th century Chinese poet Du Fu put this most succinctly – ‘The nation is ruined, but mountains and rivers remain’.

However, whilst we as navigation teachers may want our more advanced students to focus on the contour lines, sometimes the map works against this. Ivinghoe Beacon in Buckinghamshire is close to me. It is a rare treasure trove in lowland Britain of ring contours, steep slopes, ridges and valleys. Yet on the map it is cluttered with writing, roads, viewpoint and carpark symbols, trig points, rights of way, ancient monuments and more. They are all of interest but clutter up the contour lines.

You can buy contour-only maps of popular walking areas of the country, but wouldn't it be great if you could create a contour-only map of your local area to help your students? Well, you can, and it's really quite easy. No technical knowledge required, no code, just a question of clicking a few buttons.

The first thing you need is the contour data. This comes from the Ordnance Survey's Data Hub. Currently only 10m interval contour data is freely available, but that still produces a good

result if you are used to the 5m contour intervals in lowland Britain. Secondly you need a Geographic Information System (GIS) app to interpret the data and produce the map. QGIS can do this. So, place this article beside your computer, and off we go:

- To download the contour data, go to osdatahub.os.uk, click on 'Get free OS OpenData downloads' and scroll down to OS Terrain 50. Select the GML (Contours) option and download it.
- Download QGIS from qgis.org
- Go back to the OpenData file. It will be a zip file, so you'll need to extract the data – there should be a tab with 'Extract all' on your menu ribbon enabling you to do this (or right click on the icon and select 'Extract all').
- Decide on the area for which you want to produce the contour map. Taking the example of Ivinghoe Beacon in Buckinghamshire, the trig point at the summit is SP 960168. The name of the folder in your download will be the 100km square letters, plus the first easting and the first northing; in other words SP91. This is a 10km by 10km square.
- Now open the contour data folder, which should be in your downloads and called 'terr50_cgml_gb'. Open the 'Data' folder in the next view, then scroll down to the 'sp' folder. Open this, then scroll down to the 'sp91_OST50CONT_20220506' folder and open it. Now copy the 'SP91.gml' file inside, and paste to an obvious location on your computer, for example your desktop where it is easy to find.
- Now open QGIS. From the top menu bar, click on Layer > Add Layer > Add Vector Layer.
- Click on the three dots to the right of the Source box and browse for the file you copied and pasted.
- When the link to the file appears in the Source box, click 'Add'.
- In the next pop-up highlight 'ContourLine LineString (215)' and then 'Add Layers'.
- The contour map should now appear on your screen.

This is a vector map. In other words, you can zoom in as much as you want and it will not pixelate. If you want to add grid lines, go to View > Decorations > Grid and choose how often you want them. If you want it set to 1:25 000, just enter that figure in the 'Scale' box at the bottom.

If you want to print it, go to Project in the menu bar > Import / Export > Export to PDF. You then have the option to print at whatever scale you want, and providing your printer settings are correct it will print perfectly to scale.

An important note with regard to copyright. It doesn't matter whether the mapping is on paper or in digital form, if you are only publishing OS OpenData (or exempted derived data dataset), you just need to include this attribution statement:

Contains OS data © Crown copyright (database right and year)
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In this instance it would be: Contains OS data @ Crown copyright (OS OpenData 2023)

Then you're good to go. ■



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