

Converting feature data to raster datasets and View as 3D Model

1. Preparing OS Land-form PROFILE DTM 1:10000 Data (or OS Land-form PANORAMA DTM)

Log in to Digimap through the University of Greenwich Portal and navigate to the Data Download Services. Select the data required in DXF format.

Welcome to the Data Download facility







This facility allows you to select, search for and download Ordnance Survey map data.

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1. Product/Format 2. Search 3. Search Results 4. Choose Data 5. Download










Choose Product & Format: Please select **ONE** product option below then click **Continue** at the bottom of the page.


Products available under Digimap Agreement:

 OS 1:10000 Scale Raster <input type="radio"/> TIFF (Compressed)	 OS 1:25000 Scale Colour Raster <input type="radio"/> TIFF (Compressed)	 OS 1:50000 Scale Colour Raster <input type="radio"/> TIFF (Compressed)
 OS VectorMap Local <input type="radio"/> GML (GZIP compressed)	 OS Land-Form PROFILE, 1:10000 <input type="radio"/> NTF <input type="radio"/> DXF	 OS Land-Form PROFILE DTM, 1:10000 <input type="radio"/> NTF <input checked="" type="radio"/> DXF

The dataset consists of a 10 metre grid of height values

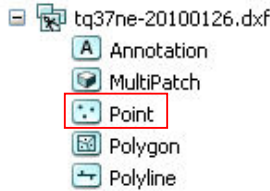

OS Opendata Products [More Info](#) (opens in new window):

 OS Street View (Raster) <input type="radio"/> TIFF (Compressed)	 OS VectorMap District (Raster) <input type="radio"/> TIFF (Compressed)	 OS 1:250000 Scale Raster <input type="radio"/> TIFF (Compressed)
 OS MiniScale 1:1000000 (Raster) <input type="radio"/> TIFF (ZIP compressed)	 OS VectorMap District <input type="radio"/> SHP	 OS Meridian 2, 1:50000 <input type="radio"/> NTF <input type="radio"/> DXF
 OS Meridian 2, 1:50000 <input type="radio"/> MID/MIF <input type="radio"/> SHP	 OS Strategi, 1:250000 <input type="radio"/> NTF <input type="radio"/> DXF <input type="radio"/> SHP <input type="radio"/> MID/MIF	 OS Land-Form PANORAMA, 1:50000 <input type="radio"/> NTF <input type="radio"/> DXF

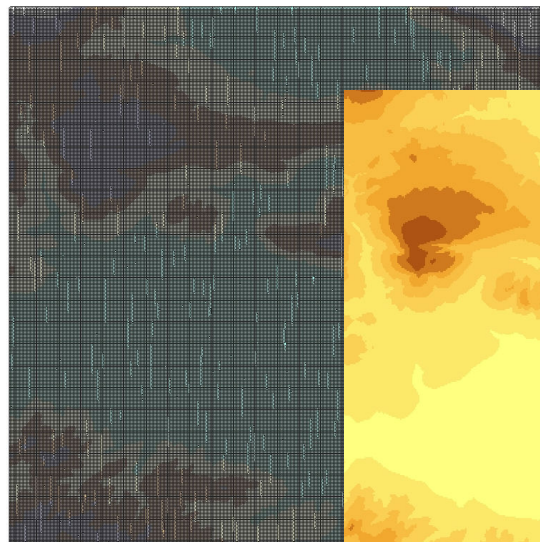
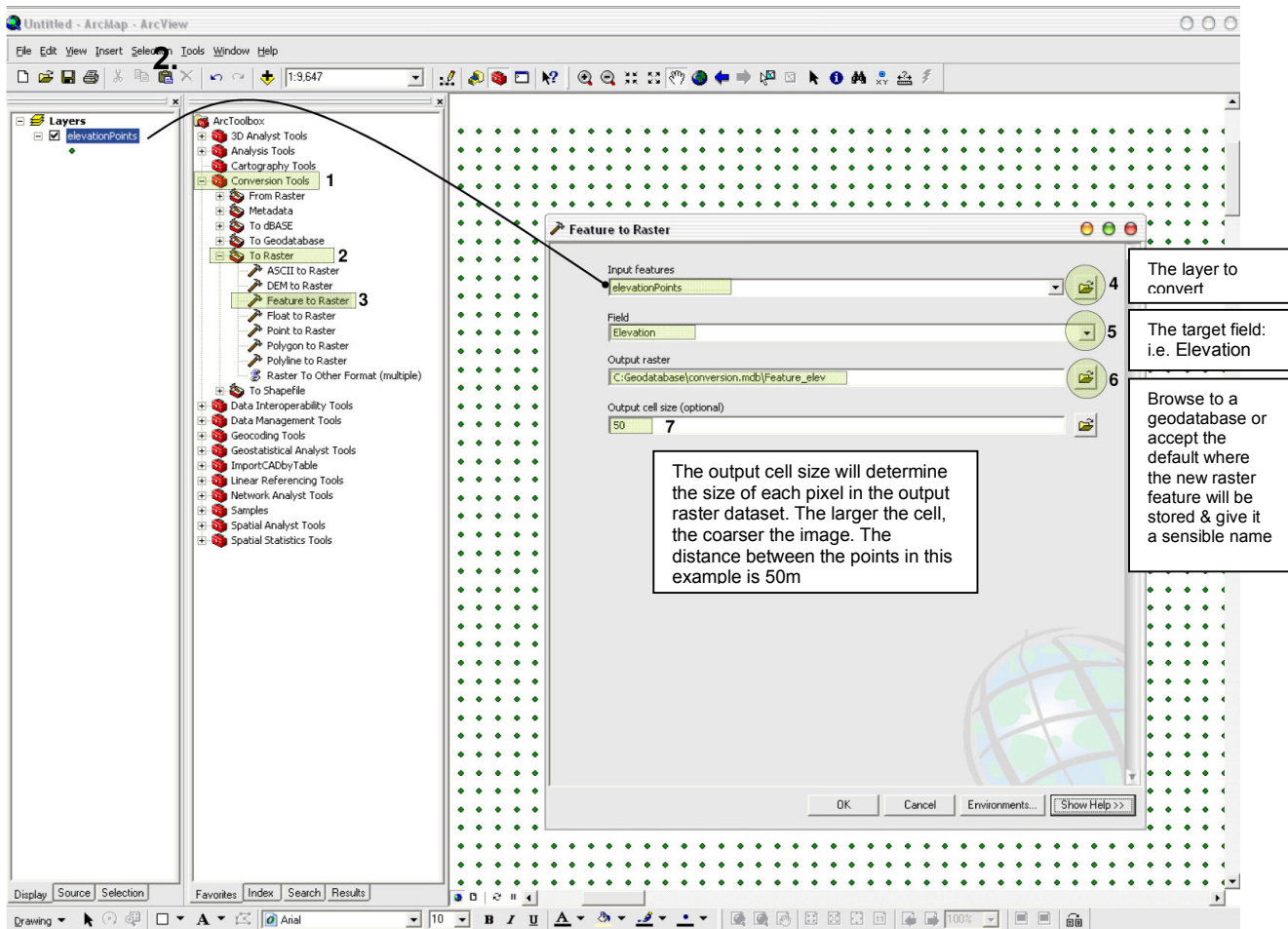
 OS Land-Form PANORAMA DTM, 1:50000 <input type="radio"/> NTF <input checked="" type="radio"/> DXF <input type="radio"/> ASC

The dataset consists of a 50 metre grid of height values

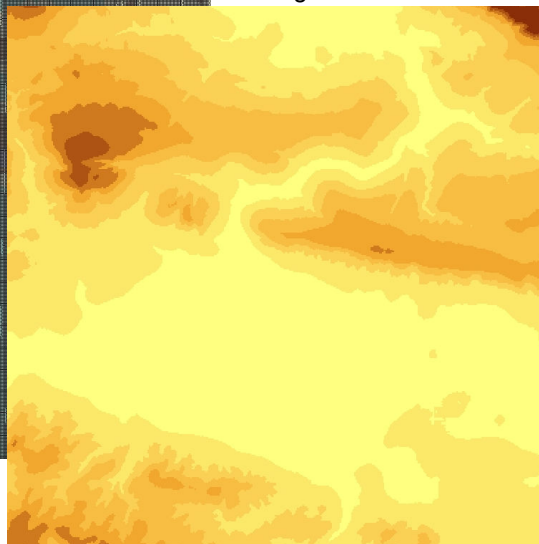
[Continue](#)

- Once the data is downloaded and unzipped, open ArcMap (**Start → All Programs → ArcGIS → ArcMap**) and add the point data clicking on the ArcCatalog tab, navigating to the folder where the data is stored then drag and drop it onto the working area. Wait patiently - this may take a while! When it appears, zoom in and you will see that this dataset is composed of a vast number of points. If you measure the distance between the dots they will be either 10 or 50m depending on the data you've chosen (1:10000, or 1:50000).
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- Right-click on the Points layer in the Table of Contents and select Properties. In the Properties window change to the Symbology tab. Click to show Quantities with Graduated Colours. Select the Value field as Elevation (ignore the maximum sample size message). The system defaults to an elevation palette. Click **OK** to display these colours (patience!).
 - Before we can drape other layers over this elevation data we need to convert these points into a surface.
 - Open ArcToolbox  (see image below: steps 1-7)
 - Select **Conversion Tools → To Raster → Feature to Raster**.
 - In this window check that the **Input Features** is the panorama .dxf point data. Change the **Field** to **Elevation**. Make sure the **Output raster** will be written somewhere sensible and give it a name. Change the **output cell size** to 10 – if using 1:10000 DTM or 50 if using 1:50000 DTM data. Click **OK** and waiting for the processing to finish. The output will be displayed.
 - Close ArcMap (no need to save the map).

Converting Feature to Raster steps 1-7

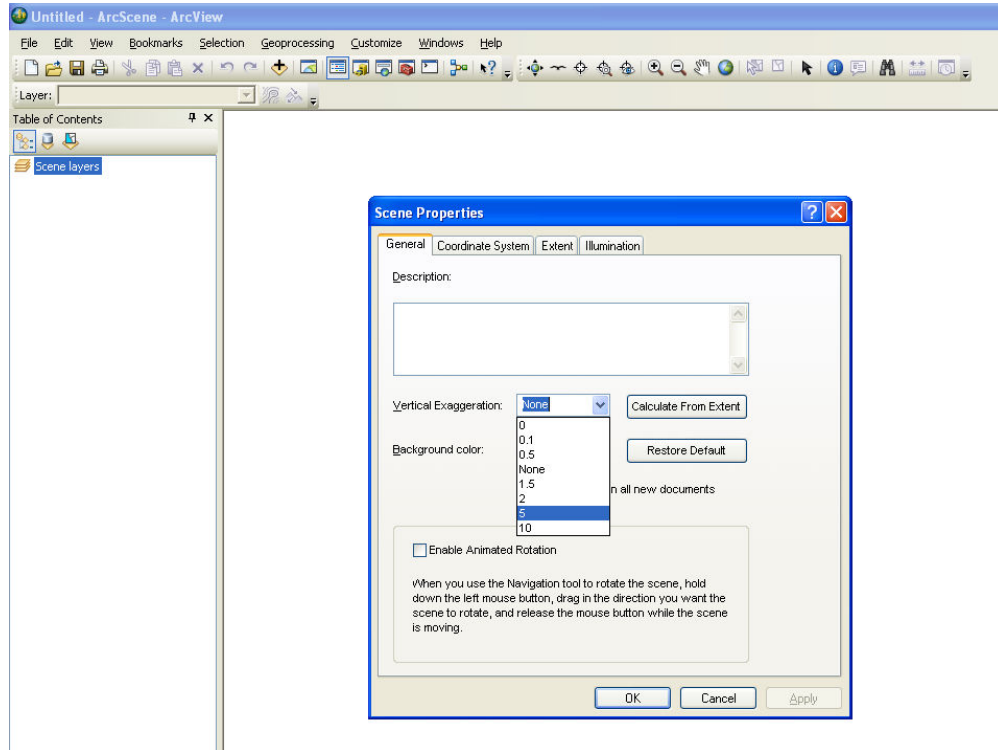


A new raster layer will be created and look similar to the image on the right.

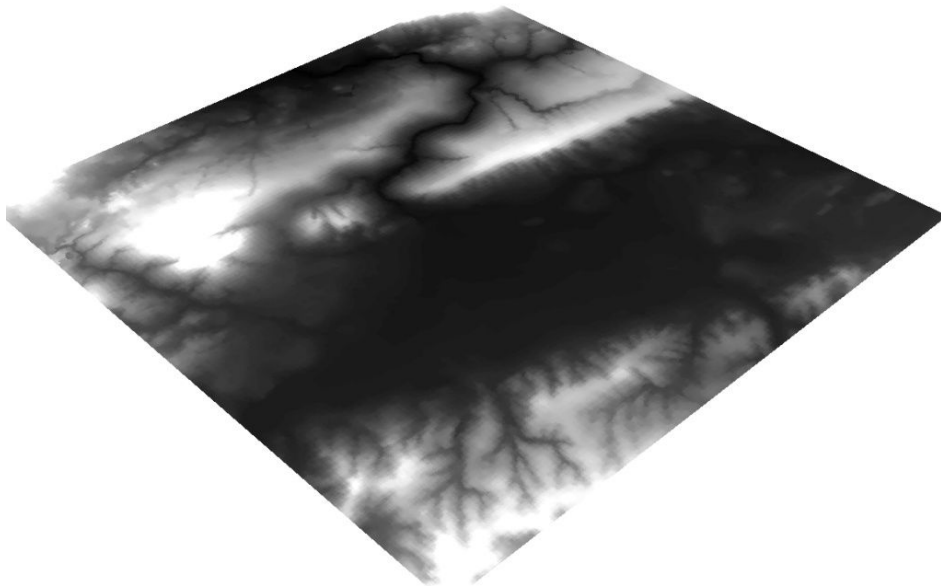


Viewing 3D Data

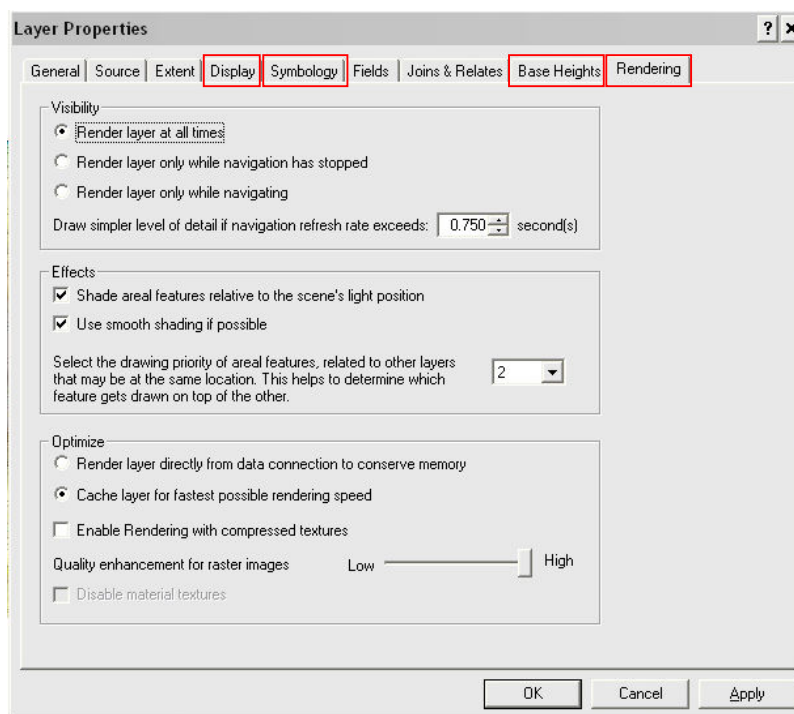
- Open ArcScene (Start → All Programs → ArcGIS → ArcScene). Right click on 'Scene Layers' and select 'Layer Properties'. Click into the 'Vertical Exaggeration' box and select an arbitrary number – say, 5 to begin with. This can be changed later.



- Add your new elevation raster layer (drag and drop it from ArcCatalog). It will appear greyscale until the symbology is adjusted.



- Double-click on your new raster layer in the Table of Contents to open the **Layer Properties** and select the **Base Heights** tab.
- In the **Height** group change the option to **Obtain heights for layer from surface** and then check that your raster surface is selected.
- Click on the **raster resolution** button and set the X & Y cellsize to be 10 or 50 (to match the original surface). Click **OK**.
- Select the **Rendering** tab. In the 'Effects' group change the drawing priority drop down to '2' if necessary – this 'nudges' the position of the layer slightly for a better viewing result.

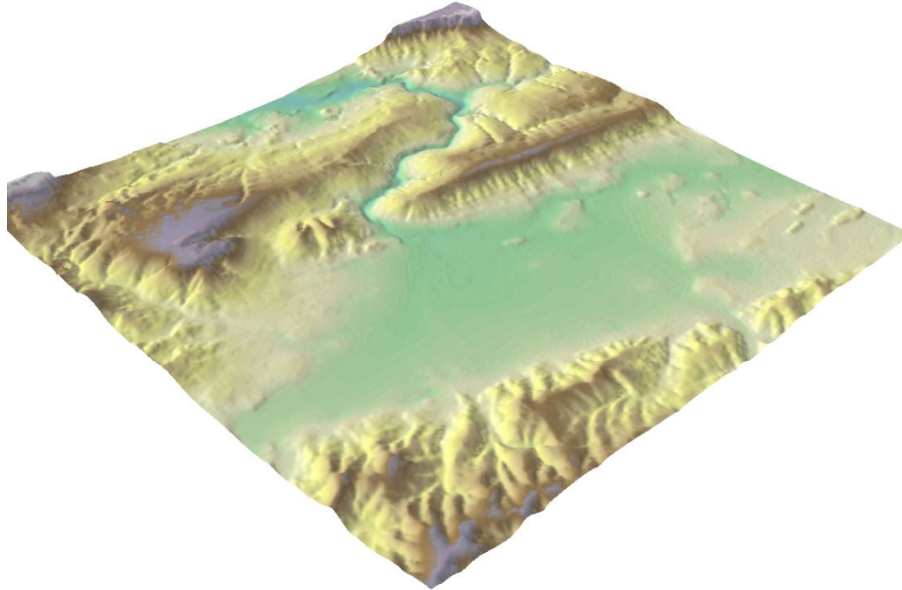


- Click on the **Symbology** tab and change the colour ramp to something suitable for elevation – there are presets 'Elevation #1 or #2'. Click **OK**.
- Click on the **Display** tab, on the drop down below 'Resample during display using' select Bilinear Interpolation (for continuous data) and set the 'Transparency' to 40%.

- The area is displayed in 3D. Try out some of the 3D Analyst tools

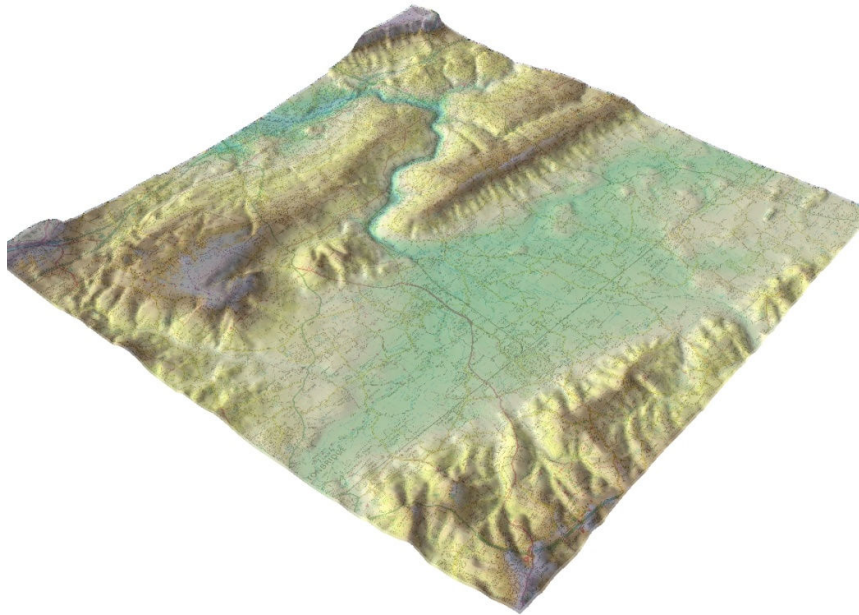


and explore the data. When you know what the tools do and have some level of control then move onto the next steps.



- We can drape over any georeferenced data layers on this surface. Add, for example, OS Scale Raster (looks like a street map) or OS Historical data. Turn off the elevation surface to see this layer. It will appear 'flat' and hiding below the elevation surface.
- Right-click on the **name** of one of those other layers in the table of contents and select Zoom to Layer. Then open the Properties window and repeat the procedures above.
- Click on the **base heights** tab and in the **Height** group change the option to **Obtain heights for layer from surface** and then check that your raster surface is selected. Leave the **Raster Resolution** on the defaults. Click **OK**.

- Explore the OS Scale Raster in 3D (the Elevation raster is clicked on as well).



- Other datasets (e.g. feature classes/shapefiles) can be added to the 3D display by draping the datasets over the DEM (digital elevation model) using the same method as above.