

## Sources of digital elevation data – the Coastal Channel Observatory

### Overview:

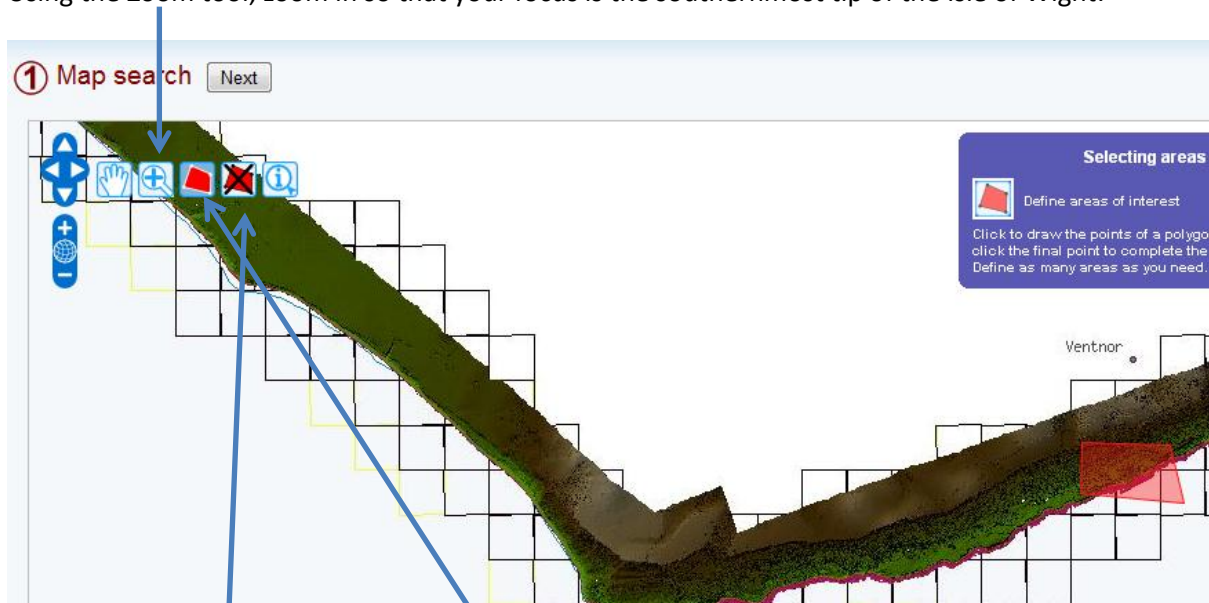
In this exercise, we will look at how you can download elevation data (and high resolution aerial photography) from the coastal channel observatory, a facility that provides geospatial data for coastal areas of England and Wales. In particular, this provides a means of accessing high spatial resolution LiDAR elevation data.

### Practical instructions:

Point your web browser at <http://www.channelcoast.org/> and click on the *map view and data catalogue* link in the top panel. Click on the *registration form* link and complete the details here. You should receive an email with a password to use the site at the end of this process.

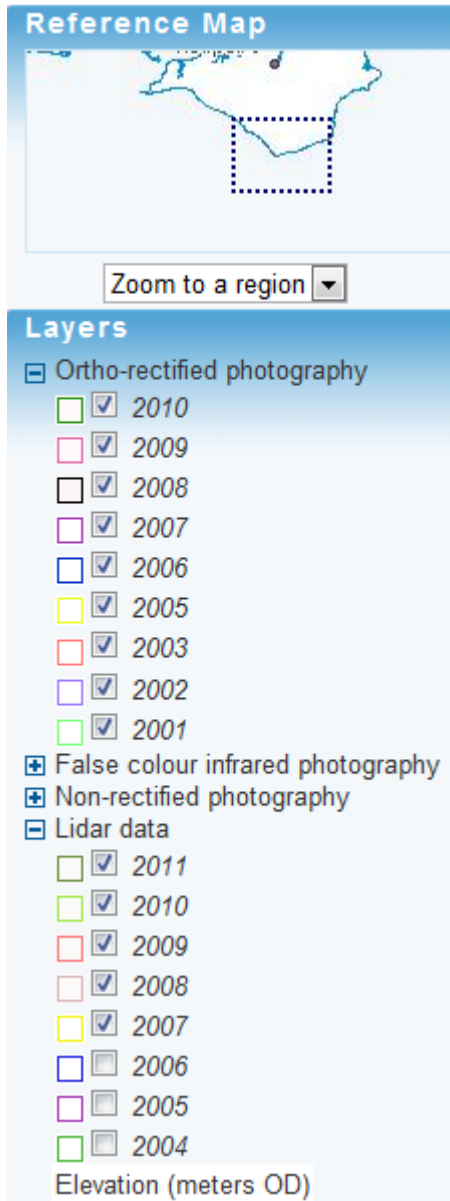
Next, go back to <http://www.channelcoast.org/> and click on the *map view and data catalogue* link in the top panel once again.

Using the Zoom tool, zoom in so that your focus is the southernmost tip of the Isle of Wight:

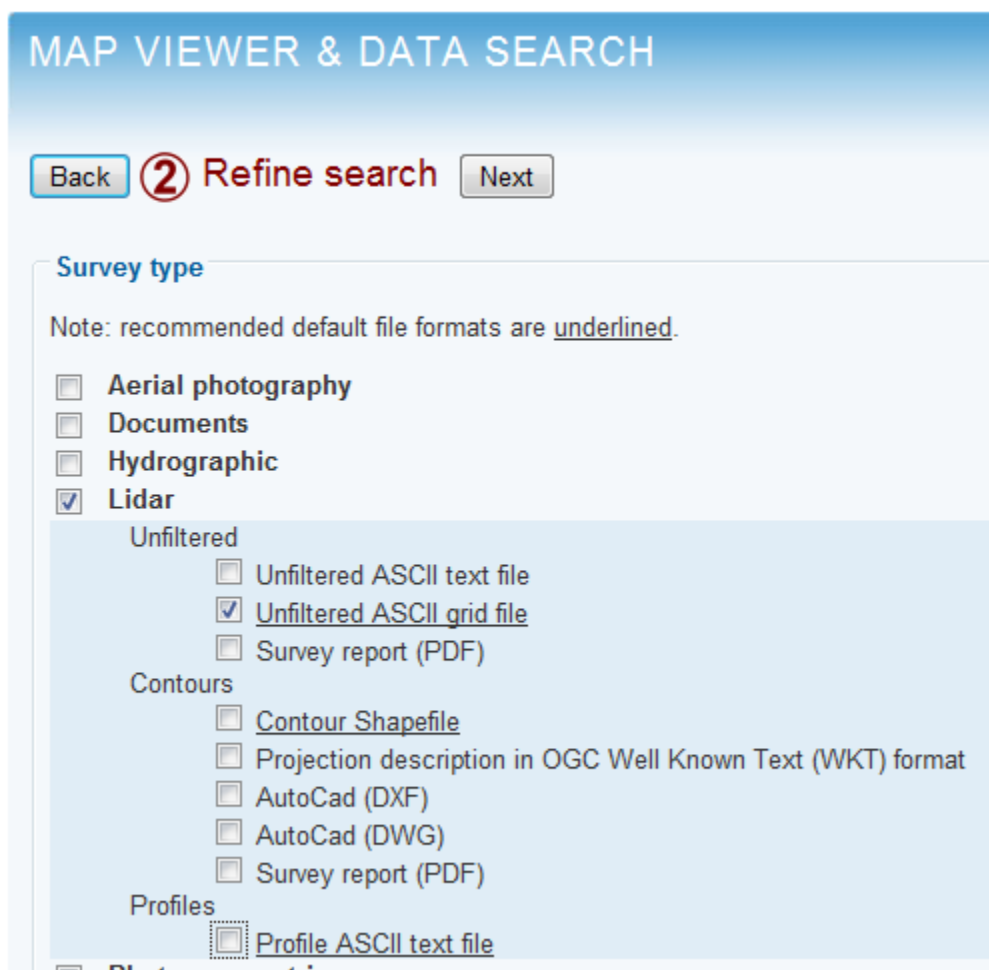


Draw a region of interest using the relevant tool. You can create a red polygon by clicking once to draw a point on its boundary and double-clicking to finish the polygon. You can delete your region of interest via this tool. Since there are many tiles of data available and the data are very high resolution, make sure that your region of interest is quite small so that you are not overwhelmed with many data tiles in subsequent steps (see the example in the screenshot above as an illustration).

In the left-hand panel of available map layers, click on *Lidar data*, then be sure to select 2007 so that you do see some elevation data for this part of the Isle of Wight:



Click the *next* button at the top of the screen to refine your search. Aside from LiDAR data, note that there are also aerial photographs and other data resources that we can download here. However, for this exercise, check off the *Lidar* option only, and so that you are not overwhelmed with a great many data files, be sure to select just the *unfiltered ASCII GRID option* and to unselect the various other options here (e.g. profiles, contour shape files, etc):



Click *next* to view the results:

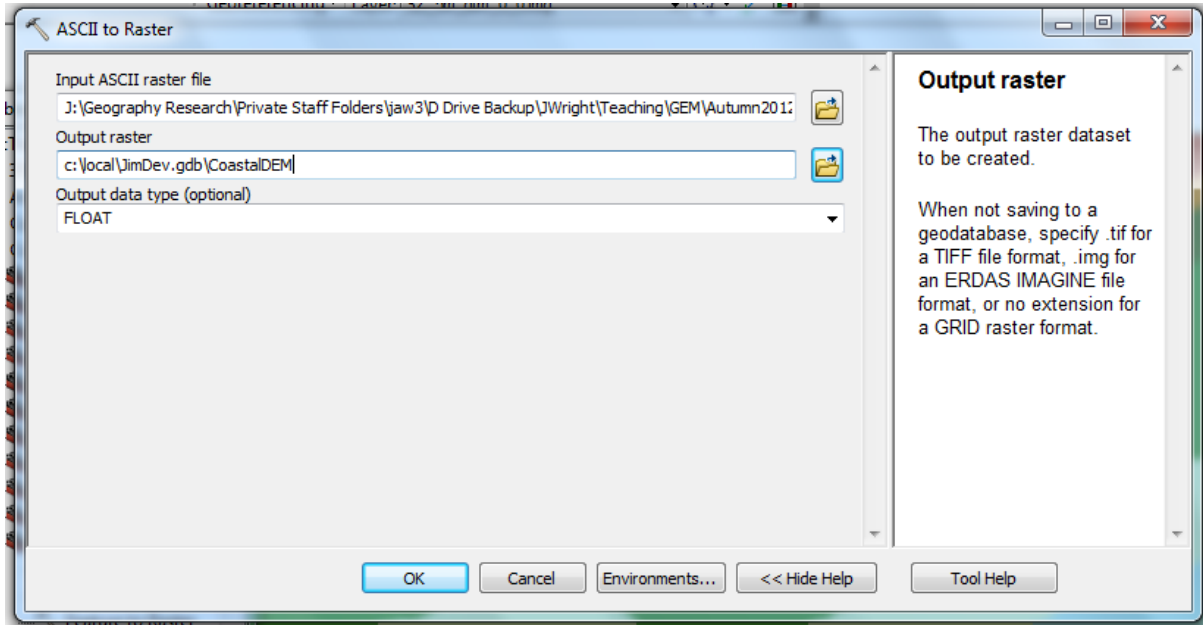


Check *Add all items on this page to your basket* to add the various files to your basket (Note: you may have more than one page of hits, but this exercise we will download only the first page worth of data).

Next select *view your basket* in the top left of the screen to see the list of map layers that you have selected. Click on *Download basket* to download these files for use. You will now be asked to log in (if you have not done so already), so now log in with the username that you created earlier.

Check the box to say that you agree to the terms and conditions, then specify your use as 'university student research'. After clicking OK, you will then be presented with a .zip file that you can download. If you unzip the contents of this zip file, you will find Excel format meta-data that you can look at, as well as terms and conditions for the data that you should read.

The data themselves are stored in a series of .asc files. Within ArcMap, these can be imported by heading for the ArcToolBox, selecting *conversion tools, to raster*, and then *ascii to raster*. If you run this tool, you should be able to choose any one of the files that you just downloaded under *input ASCII raster file* and you should also be able to select a location for your *output raster*. Under *output data type*, set this to **float**, meaning that any fractional parts of the numbers that you are downloading will be retained.



If you now press OK, you should find that the data you have downloaded will import and be displayed. Note from the meta-data that many of the map layers that you import will express elevation in millimetres rather than metres (you would have to divide by 1000 using the *spatial analyst tools / math / divide* option in the ArcToolBox to convert this back to metres). By default, you will see that the data are organised into tiles and you may wish to combine these tiles together, e.g. so that all tiles are displayed using the same elevation range.

If you wish to combine multiple raster elevation tiles into a single new output raster grid, you can do so as follows:

- Go the ArcToolBox, then head for *data management / raster data set / mosaic to new raster*
- Select your various contiguous LiDAR elevation map layers under *input rasters* (see screenshot below)
- Set the number of *bands* to be 1 (unlike remotely sensed imagery where we might be storing multiple band values for each pixel – such as red, green and blue reflectance – here we are storing a single elevation value per pixel).
- Choose an appropriate *location* and *raster data set name* for the new, combined file that will be created.
- Click OK and you should find that a single new, combined raster data set is created that contains the information from all of your input tiles.

