

MANTRA ArcGIS Practical Introductory Material

This practical consists of 4 exercises. Each exercise is provided as a separate document. The practicals are designed to be completed in order starting with practical 1 and finishing with practical 4. Please read the introductory material provided in this document and then start Exercise 1.

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- Part 1: Explore project datasets.
- Part 2: Create new Geodatabase.
- Part 3: Load data into Geodatabase.
- Part 4: Add data from Geodatabase to ArcMap project

Exercise 2: Derive new datasets from inputs and carry out Multi-criteria analysis in order to identify the fieldwork sites.

- Part 1: Use Spatial Analysis to find sites visible from West Highland Way.
- Part 2: Use Spatial Analysis to find sites which are also within 1km of West Highland Way.

Exercise 3: Using layer files to store Cartographic styling in ArcGIS.

Exercise 4: Preserve datasets for future use and create metadata records.

- Part 1 – Export dataset from Geodatabase as a Shapefile.
- Part 2 – Create Geospatial Metadata record.
- Part 3 – Create documented data archive.

1. Practical Aims.

Through an exercise scenario in which a researcher needs to identify a set of fieldwork sites, this practical will provide a hands-on demonstration of best practices for research data management within the ESRI ArcGIS 10.2 desktop GIS software.

2. Learning outcomes.

Upon completion of this practical the student will have:

- gained practical experience of best practices for setting up a Geodatabase in ArcGIS for the storage and processing of research project data.
- gained practice in documenting data processing steps carried out within ArcGIS.
- understand the strengths and weaknesses of different GIS data formats at different stages of the data lifecycle.
- gained familiarity with and practice in creating geospatial metadata records within ArcGIS.

3. Requirements.

- Access to ArcGIS 10.2 software is required. The ESRIUK Productivity Suite (version 3.4) should also be installed and is required to view and create metadata records that meet the UK Gemini geospatial metadata standard.

To get hold of ArcGIS and the ESRIUK Productivity Suite see <http://eduserv.org.uk/services/Chest-Agreements/Esri-2014>.

Edinburgh University users who wish to obtain ArcGIS 10.2 and the Productivity Suite should get in touch with the Edinburgh University Software Services team: <http://www.ed.ac.uk/schools-departments/information-services/computing/desktop-personal/software/contact-details> .

- All data used during the exercise will be included.
- It is assumed that the student is familiar with the ArcGIS 10.2 interface and has used geospatial datasets in the past.
- 100MB of disk space is required to store data during the practical.

4. Datasets used during practical.

The practical uses example geospatial datasets to demonstrate the principles of research data management. These datasets have been derived from a number of Open data sources:

- Ordnance Survey Strategi vector GIS datasets provided as a Shapefile.
- Ordnance Survey 1:50,000 scale place name gazetteer provided in CSV format.

All of the above Ordnance Survey datasets are available under a UK Open Government Licence as part of the Ordnance Survey OpenData initiative.

- 250m spatial resolution Digital Terrain Model (DTM) derived from Panorama 50m Digital Terrain Model made available through ShareGeo Open service

See <http://www.sharegeo.ac.uk/>

5. Exercise Scenario.

A researcher needs to carry out fieldwork in the Scottish Highlands and wishes to use Multi-criteria evaluation analysis within ArcGIS to determine the location of a set of fieldwork sites. Criteria for the selection of fieldwork sites is that they form a significant part of the natural landscape feature – that they appear as named hills on the Ordnance Survey's 1:50,000 series of maps and that they are both visible from and within close proximity to a section of the West Highland Way long distance footpath. In identifying the sites from the provided data, best practices for research data management within ArcGIS will be explored.



Figure 1. Photograph of section of the West Highland Way long distance footpath looking towards Bridge of Orchy. Photograph by ingo.ronner from <http://www.flickr.com/photos/25143217@N05/4655819097/in/photostream/>.