

Data structures for elevation – some sample data from Mozambique

Overview

The attached .zip file contains three elevation models that are all for exactly the same area. The aim of providing these files is to illustrate how the three main DEM formats actually store elevation data. The area concerned is a smallholder farming area in central Mozambique called Nhambita (once a stronghold of the Renamo guerrilla organisation during Mozambique's civil war). Elevation data for this area are important, since run-off from here during tropical storms has previously led to flooding in the coastal plains near the city of Beira. Understanding the shape of the terrain here can help to predict likely patterns of run-off and so organise responses and protection against flooding events in the future.

Data Files

A Digital Elevation Model of the same area is provided in three different formats:

GRID:

- **moz_contgrid:** This is a continuous raster grid of elevation for the study area, in ESRI floating point format. To view this grid, you will first need to go to the ArcToolBox, choose *conversion tools*, then *to raster*, and then *float to raster*.

CONTOURS AND SPOT HEIGHTS:

- **moz_contours:** These are contours for the study area, digitised from a Soviet era 1:200,000 scale map of the area. The contouring interval (difference in height between neighbouring contours) is 20 metres. The attribute field **data_value** contains the elevation for each contour in metres.
- **Moz_spots:** Spot heights for Nhambita, stored as a vector point file. These spot heights have also been digitised from a Soviet era 1:200,000 scale map of the area. The attribute field **data_value** contains the elevation for each spot height in metres.

TRIANGULATED IRREGULAR NETWORK (TIN)

- **Moz_tin:** This is a shape file of lines that shows the edges of a TIN for the Nhambita area. Note that in the background, Idrisi stores a file with a .TIN extension that can be used to generate grids and undertake other operations. The edges of the TIN do not have elevation values attached and so the fields **rec_num** and **data_value** both contain unique IDs for each edge.
- **Moz_tin_critical_points:** These are the so-called 'critical points' (or nodes) of the TIN for Nhambita, stored as a point shape file. You can think of the critical points as being the corner points of the constituent triangles that comprise the facets of the TIN. The attribute field **data_value** contains the elevation for each node of the TIN in metres, whilst the field **rec_num** contains a unique ID for each node.

Task

By viewing the three different DEM's on screen, familiarise yourself with the way the elevation data are stored in all three formats.