MERCURY

Digital Terrain Model Analysis (DTM)
[ArcGIS Pro]

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Introduction:

This program is designed to give an understanding of DEM and DTM, their use to describe the ground undulations. For you to learn the use to extract various terrain parameters such as slope, aspect, roughness and perform application analysis such as line-of-sight analysis and watershed structure generation.

The course further addresses the use ArcGIS Pro and ArcGIS Spatial Analyst tools to derive new data from an elevation raster. The results can be used to model and visualize the earth's surface, perform analysis, and support decision making for a variety of applications.

Targeted Groups:

- Engineers
- Architects
- Anyone who has a desire to explore the application of DEM and DTM.

Course Objectives:

At the end of this course the participants will be able to:

- Derive slope, hill shade, and aspect surfaces.
- Identify locations in an area of interest that meet elevation, slope, and aspect criteria.
- Generate contour lines to represent elevation measures on a map.
- Create a viewshed raster.

Course Content:

Unit 1: General Introduction

- DTM and DEM
- DEM representation

Unit 2: The main representation model of DEM

- Regular grid model
- Contour model
- Irregular triangulation TIN model
- Hierarchical model

Unit 3: Inter-transformation between DEM models

- TIN generation from irregular point Sets
- Grid DEM to TIN
- Retain important points
- Heuristic Discarding Method DH-Drop Heuristic

- Conversion of contour to grid DEM
- Extraction of contours by grid DEM
- TIN to Grid DEM

Unit 4: DEM data acquisition method

- DEM acquisition by digital photogrammetry
- DEM data quality control

Unit 5: Analysis and application of DEM

- Application of Grid DEM
- Fitting of topographic surface
- Stereoscopic perspective
- Visibility analysis
- Watershed feature geomorphology extraction and terrain automatic segmentation
- DEM calculates terrain properties

Unit 6: Analysis and application of triangular network DEM

- Triangular network interpolation
- Contour tracing