Slope, Aspect, and Curvature

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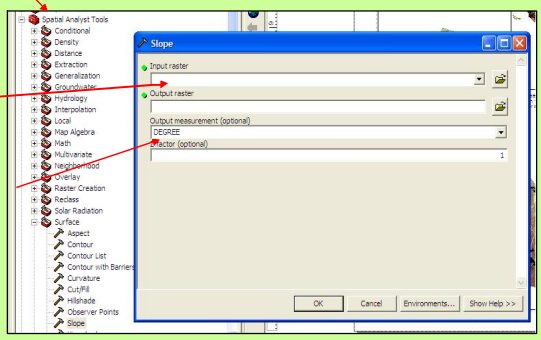
Slope

- The slope tool can be found in the spatial analyst tool box.
- In order to create a slope layer a Digital Terrain model (DTM) or TIN is required.
- The units of the output are in degrees.



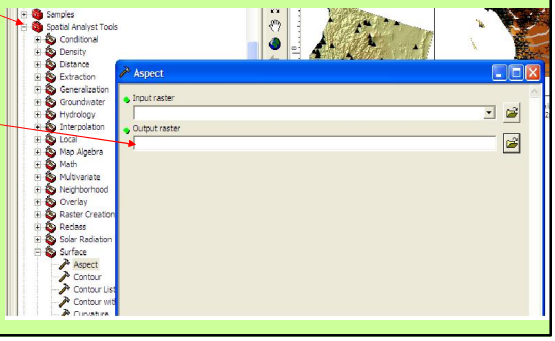
Slope

Figure 2.1: Terrain Classification by means of Slope and Relief

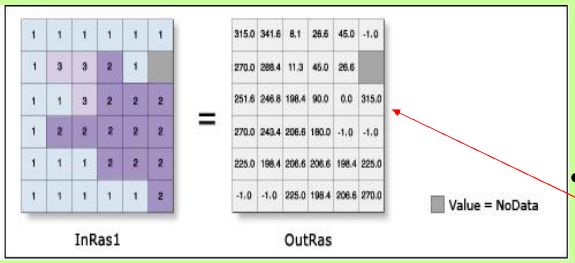
Terrain Type	CI (m)	Slope (degrees)	Relief (Height Range) (m)
Plain	5	<2	<80
Upland	10	2-6	80-300
Hill	20	6-25	300-600
Mountain	20	>25	>600

Aspect

- The aspect tool is located in the spatial analyst toolbox under surface.
- The output will be a new raster.



Aspect



- The output raster has units in degrees and range from 0-360.
- The degree value is the bearing or azimuth of the slope direction

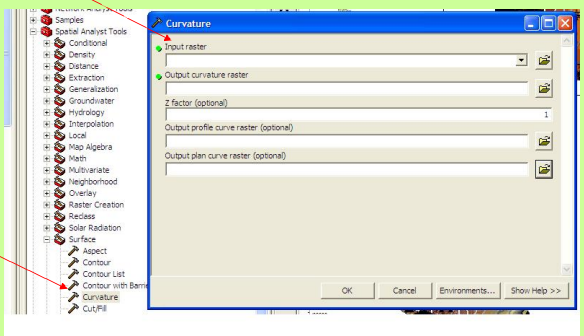
Curvature

- Curvature is a way to measure roughness of a terrain.
- The roughness of a DTM surface is the ratio of surface area (S) and its projection onto a horizontal plane (A).

$$Roughness = \frac{S}{A}$$

Curvature

- In order to create a curvature you need to have an input raster.
- The tool is located in the spatial analyst toolbox, under surface.



Curvature

- If the ratio of roughness=1, which is the smallest value, the surface is a horizontal DTM
- The higher the curvature value, the greater the roughness of the surface.

Questions

1. What does a greater curvature value tell you about a given surface?

2. What type of data is needed to create a slope or aspect layer?

3. What is the definition of Aspect?

4. What does the output value within a cell mean after the aspect tool has been used?