

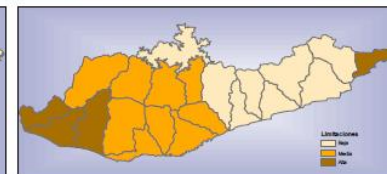
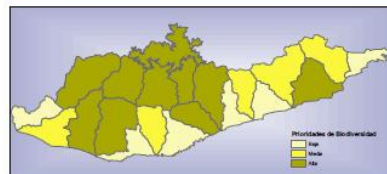
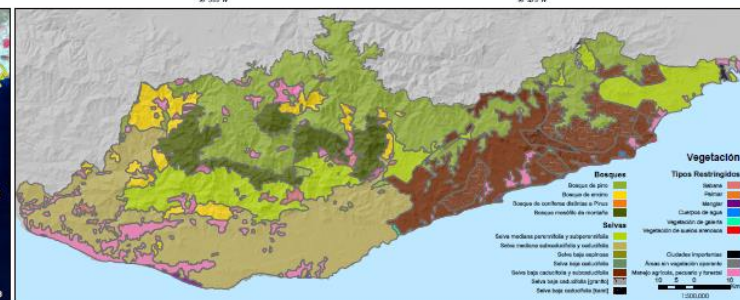
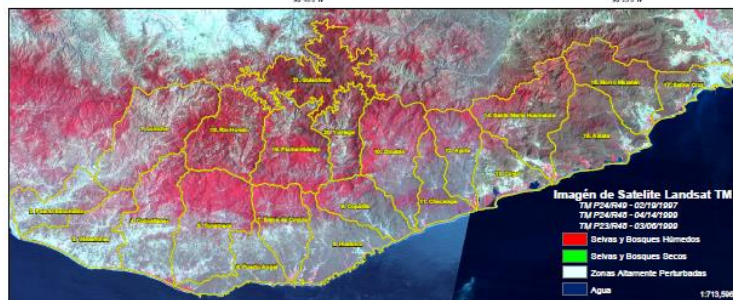
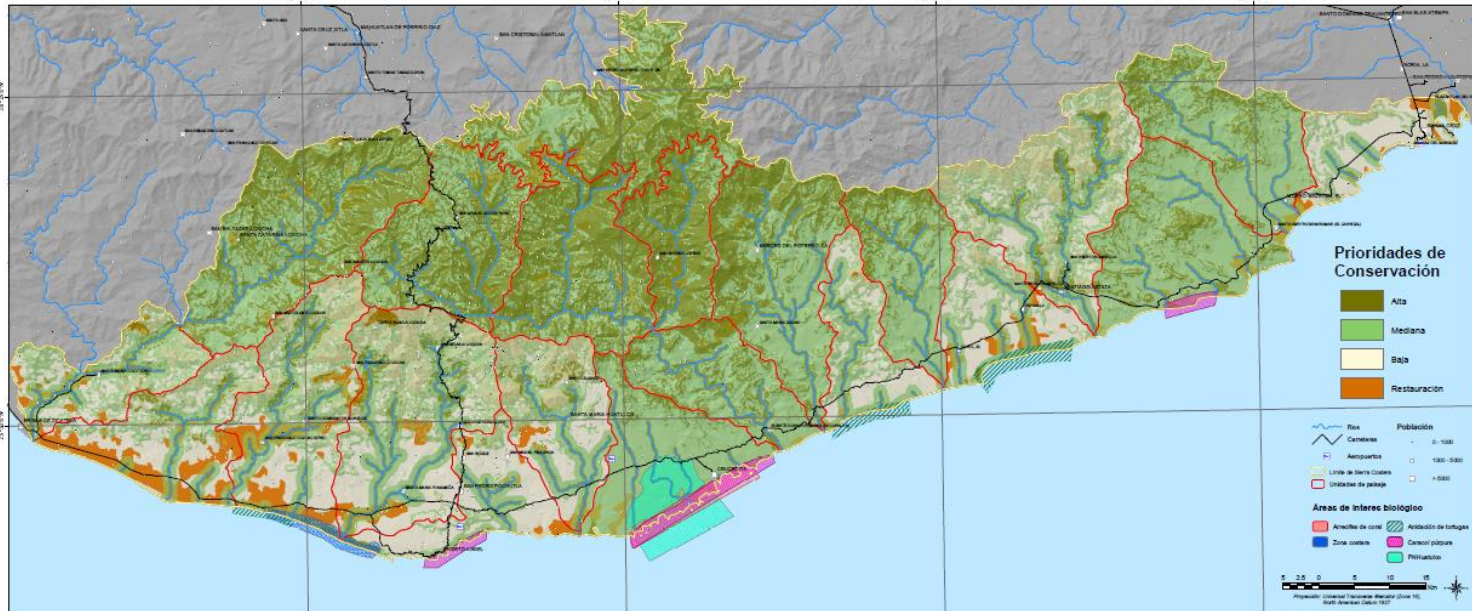
Project 2: Sierra Costera Site Analysis

ENVIRON 761

Geospatial Applications for
Conservation & Land Management

Sierra Costera de Oaxaca

Prioridades de Conservación de la Sierra Costera de Oaxaca



WWF

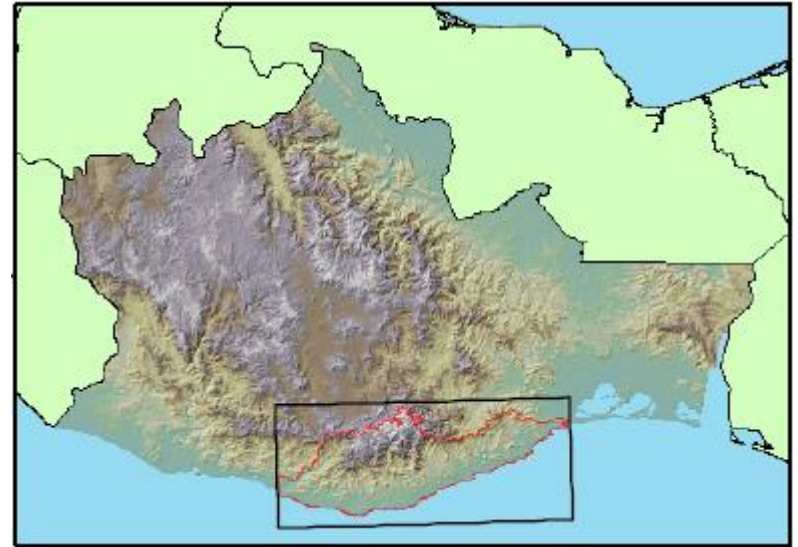
Center for Conservation Biology

Fig. 1. S. Martínez y C. Galindo et al. 2002. Prioridades de Conservación de la Sierra Costera de Oaxaca. Mapa WWF-Oaxaca, México.

Sierra Costera de Oaxaca



Scenario



- Create stream map from DEM...
- Determine drainage areas for 5 gauge sites and determine topographic characteristics for each...

Source data: 15 and 90m DEM

Datos de Relieve



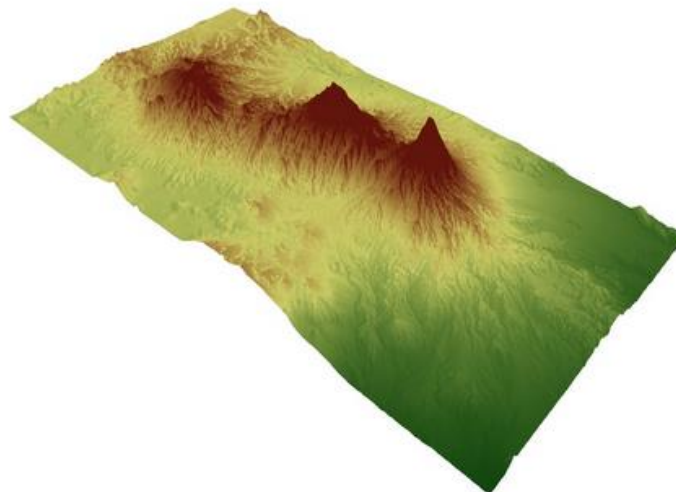
- [Definición](#)
- [Objetivo](#)
- [Antecedentes](#)
- [Ventajas](#)
- [Aplicaciones del CEM en el INEGI](#)
- [Características](#)
- [Descargar](#)

Continental

Continuo de Elevaciones Mexicano 3.0 (CEM 3.0)

Definición

El Continuo de Elevaciones Mexicano 3.0 (CEM 3.0) es un producto que representa las elevaciones del territorio continental mexicano, mediante valores que indican puntos sobre la superficie del terreno, cuya ubicación geográfica se encuentra definida por coordenadas (X, Y) a las que se le integran valores que representan las elevaciones (Z). Los puntos se encuentran espaciados y distribuidos de modo regular.



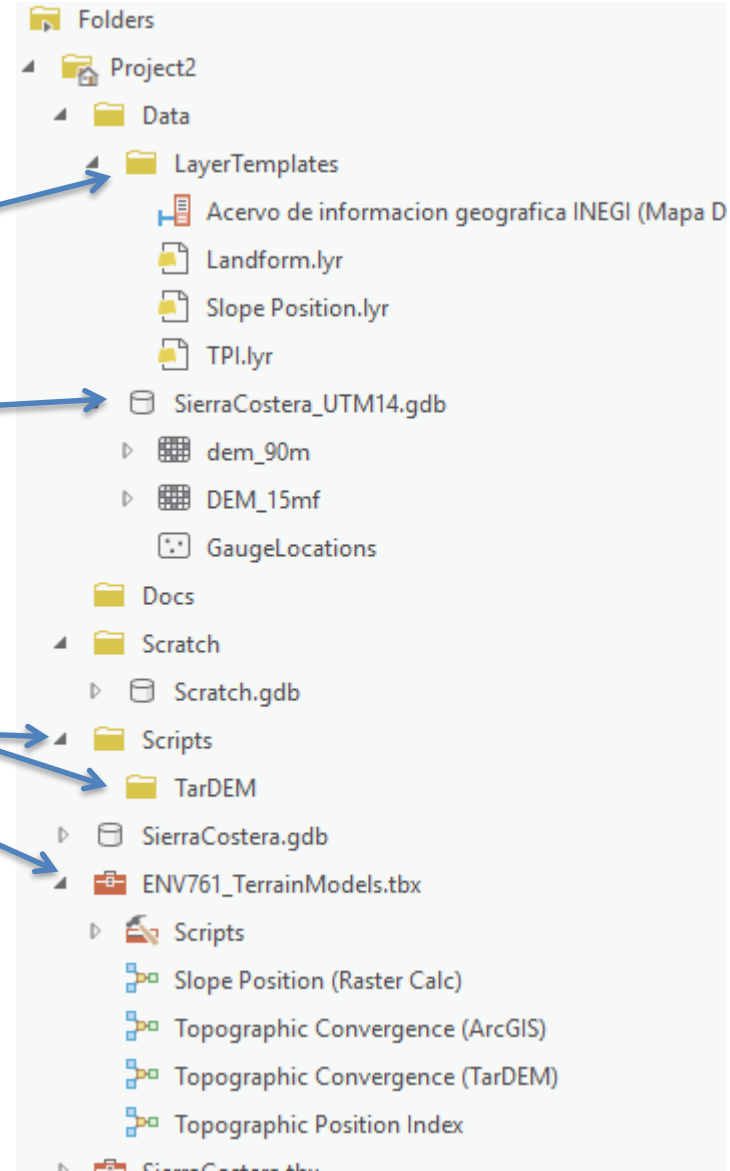
Overview

- **Prepare workspace**
- **Surface analyses**
 - Slope, aspect, hillshade, *analytical* hillshade
- **Hydrographic analyses**
 - DEM conditioning, stream network, catchments
- **Terrain analyses**
 - TCI, TPI, slope position, land form
- **Riparian analyses**
 - Flow length

Prepare workspace

Project2Data.zip

- LayerTemplates
- SierraCostera_UTM14.gdb
- TarDEM
- ENV761_TerrainModels.tbx
- CalcLandform.py
- pyTarDem.py
- SlopePosition.py














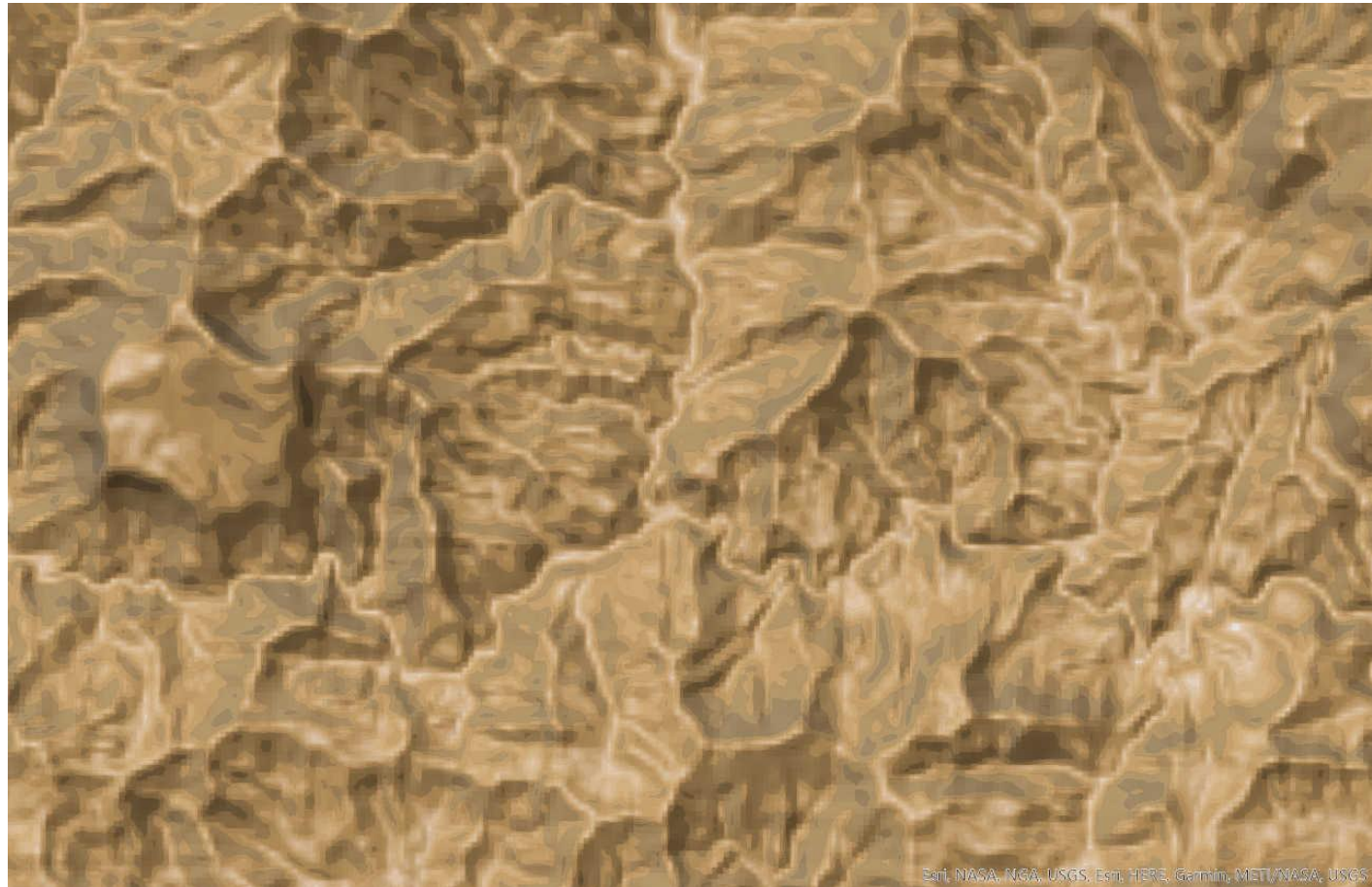
Surface analyses

Slope

Slope_90m

Value

	≤1.72
	≤3.43
	≤5.71
	≤8.53
	≤11.3
	≤14.04
	≤16.7
	≤21.8
	≤30.96
	≤45
	≤90



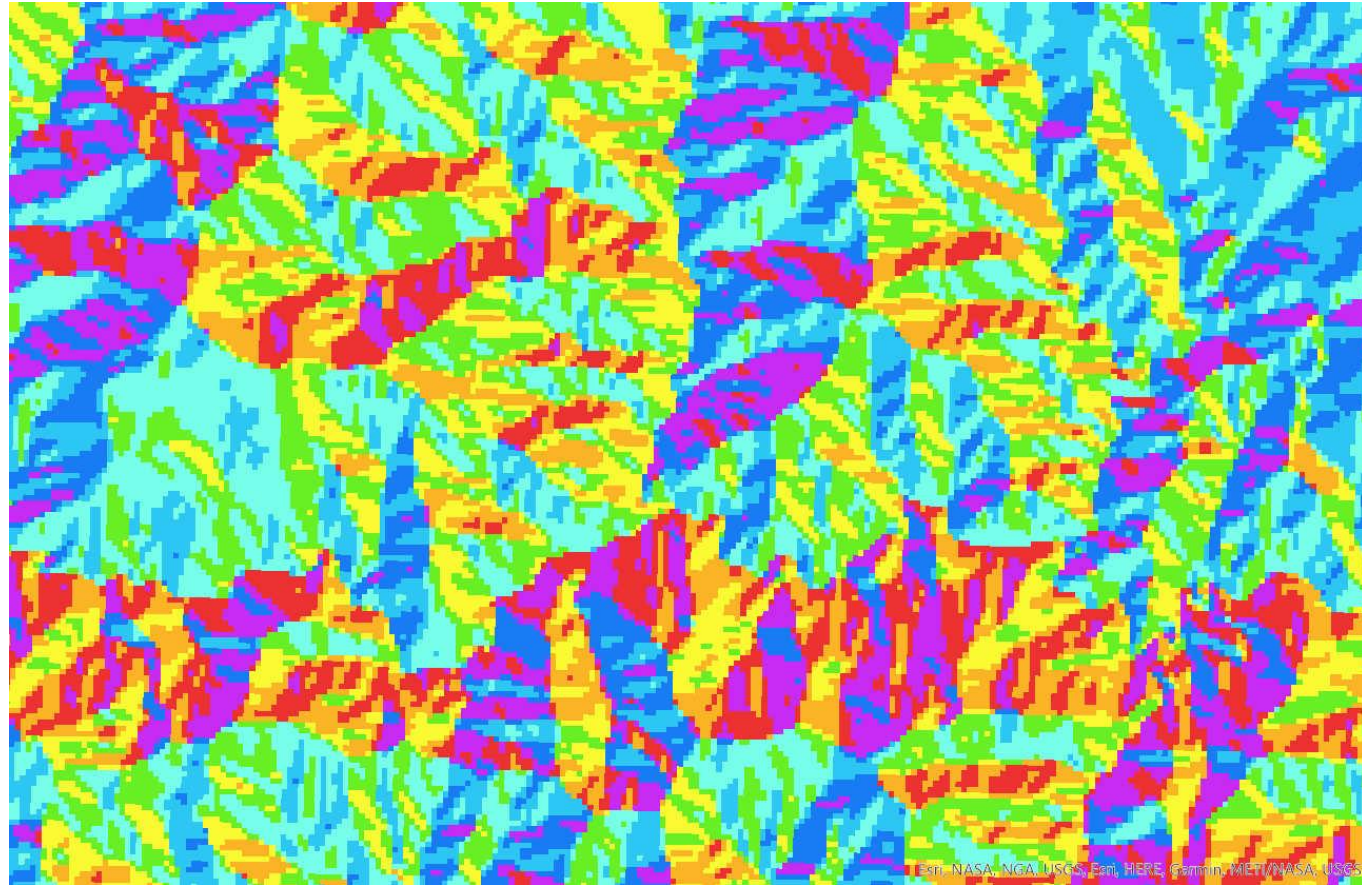
Surface analyses

Aspect

Aspect_90m

Value

- Flat (-1)
- North (0-22.5)
- Northeast (22.5-67.5)
- East (67.5-112.5)
- Southeast (112.5-157.5)
- South (157.5-202.5)
- Southwest (202.5-247.5)
- West (247.5-292.5)
- Northwest (292.5-337.5)
- North (337.5-360)



Surface analyses

Hillshade

HillShade_90m

Illumination



Surface analyses

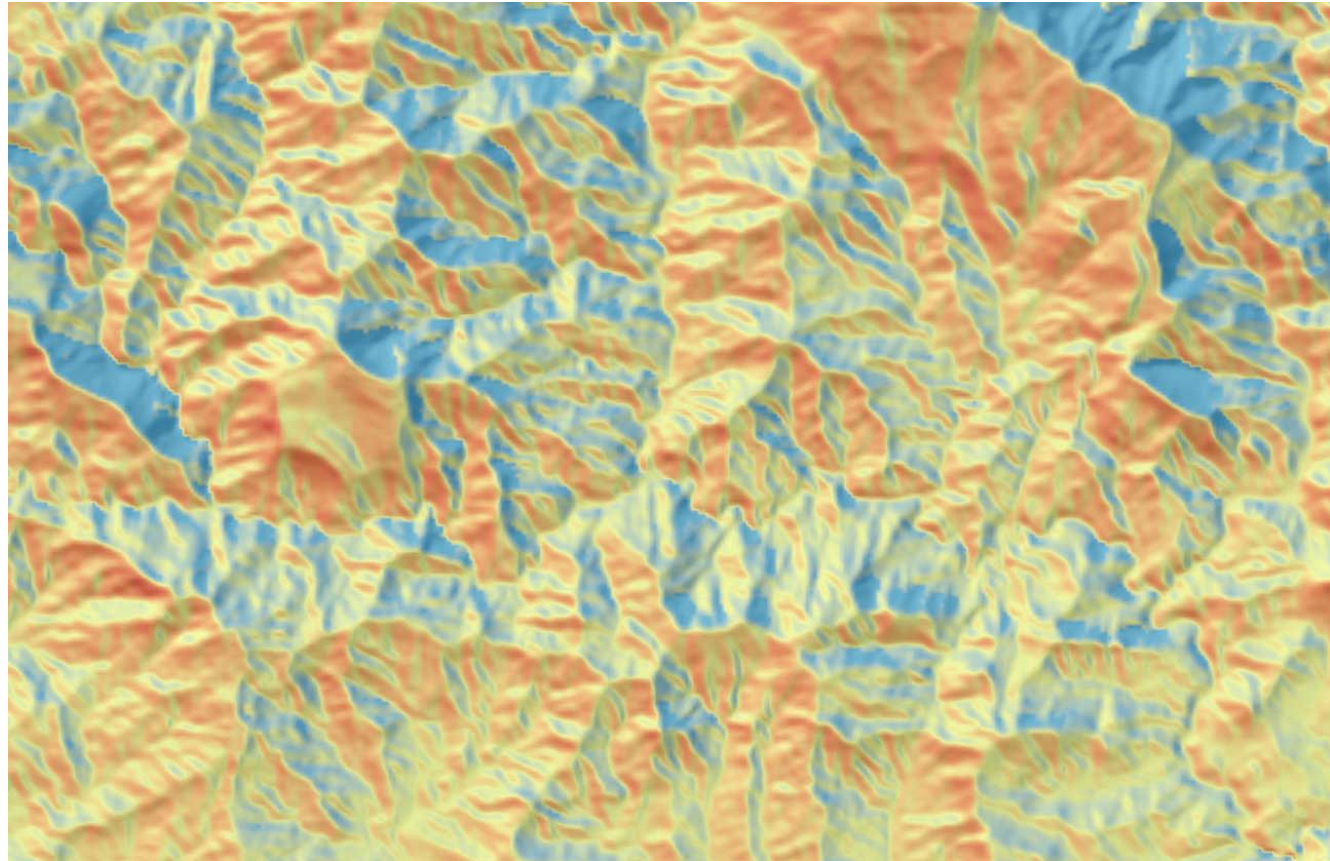
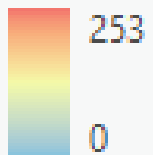
Insolation

Azimuth = 225°

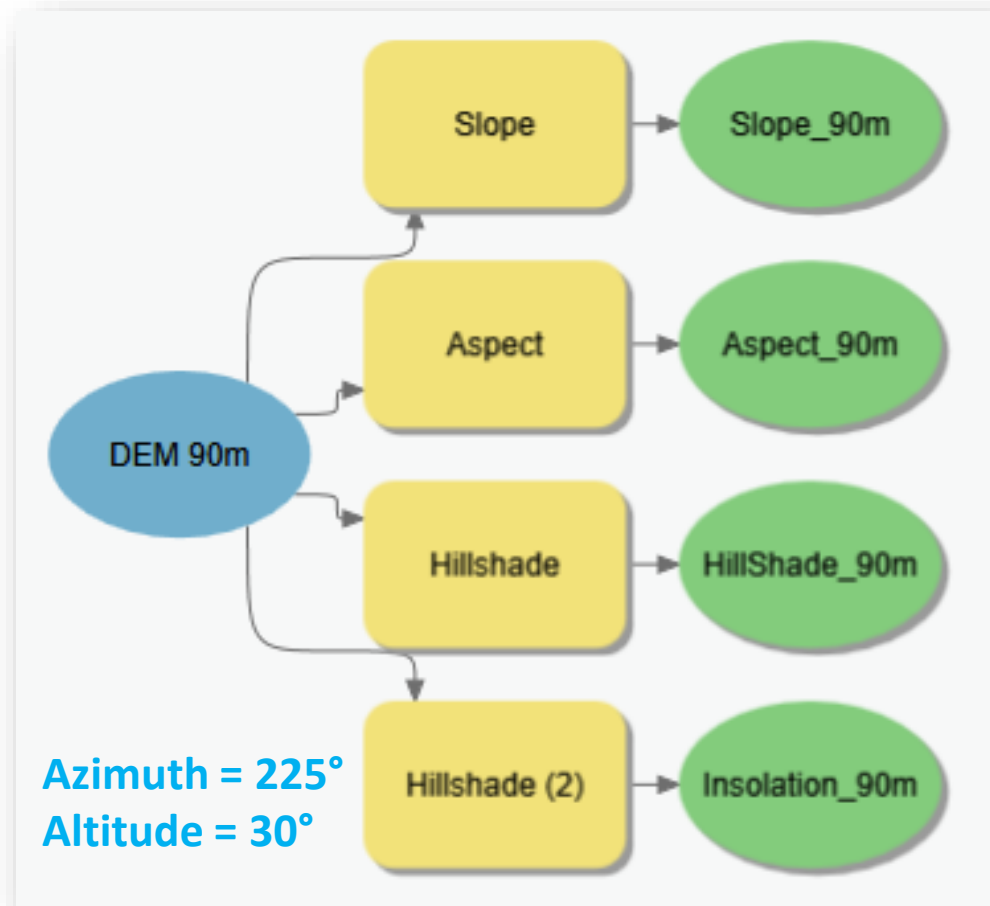
Altitude = 30°

Insolation_90m

Relative solar radiation



Surface analysis

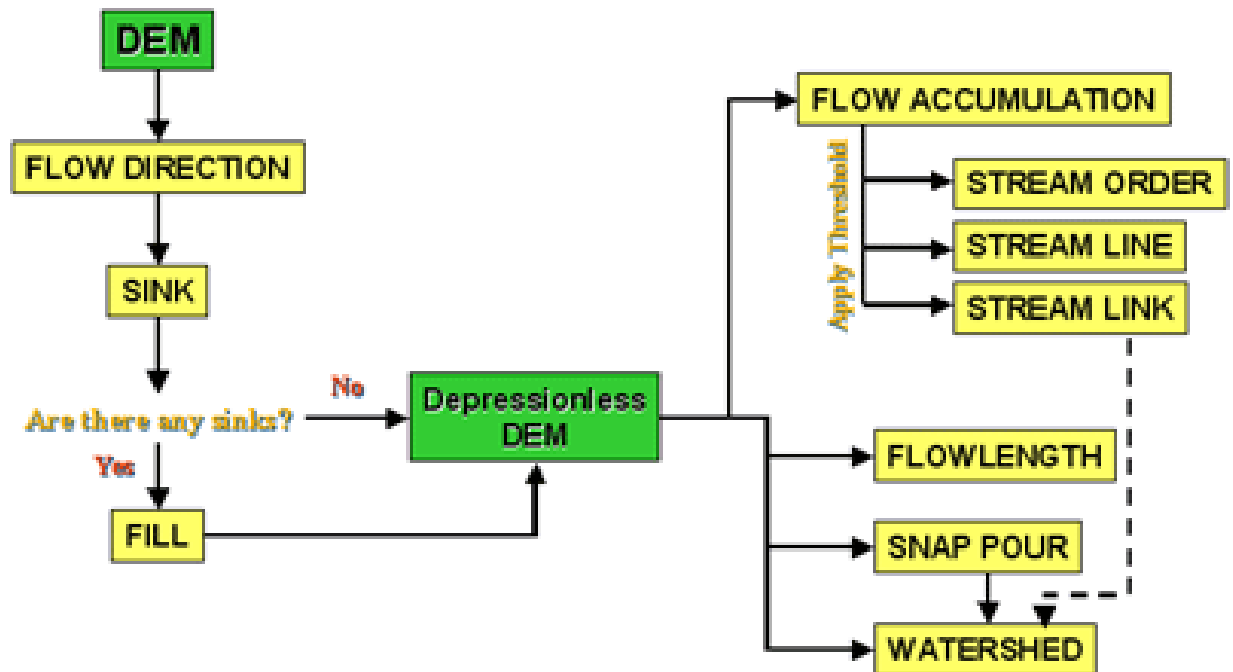


Geodesic or planar?

If you examine the help note associated with the choice of using planar or geodesic distances, you'll find that our extent falls a bit in the gray area between the two. You could very well argue that geodesic is the best answer. However, we'll stick with planar in our choices just to be consistent.

Hydrographic Analyses

- Spatial Analyst Tools
 - Conditional
 - Density
 - Distance
 - Extraction
 - Generalization
 - Groundwater
 - Hydrology
 - Basin
 - Fill
 - Flow Accumulation
 - Flow Direction
 - Flow Distance
 - Flow Length
 - Sink
 - Snap Pour Point
 - Stream Link
 - Stream Order
 - Stream to Feature
 - Watershed



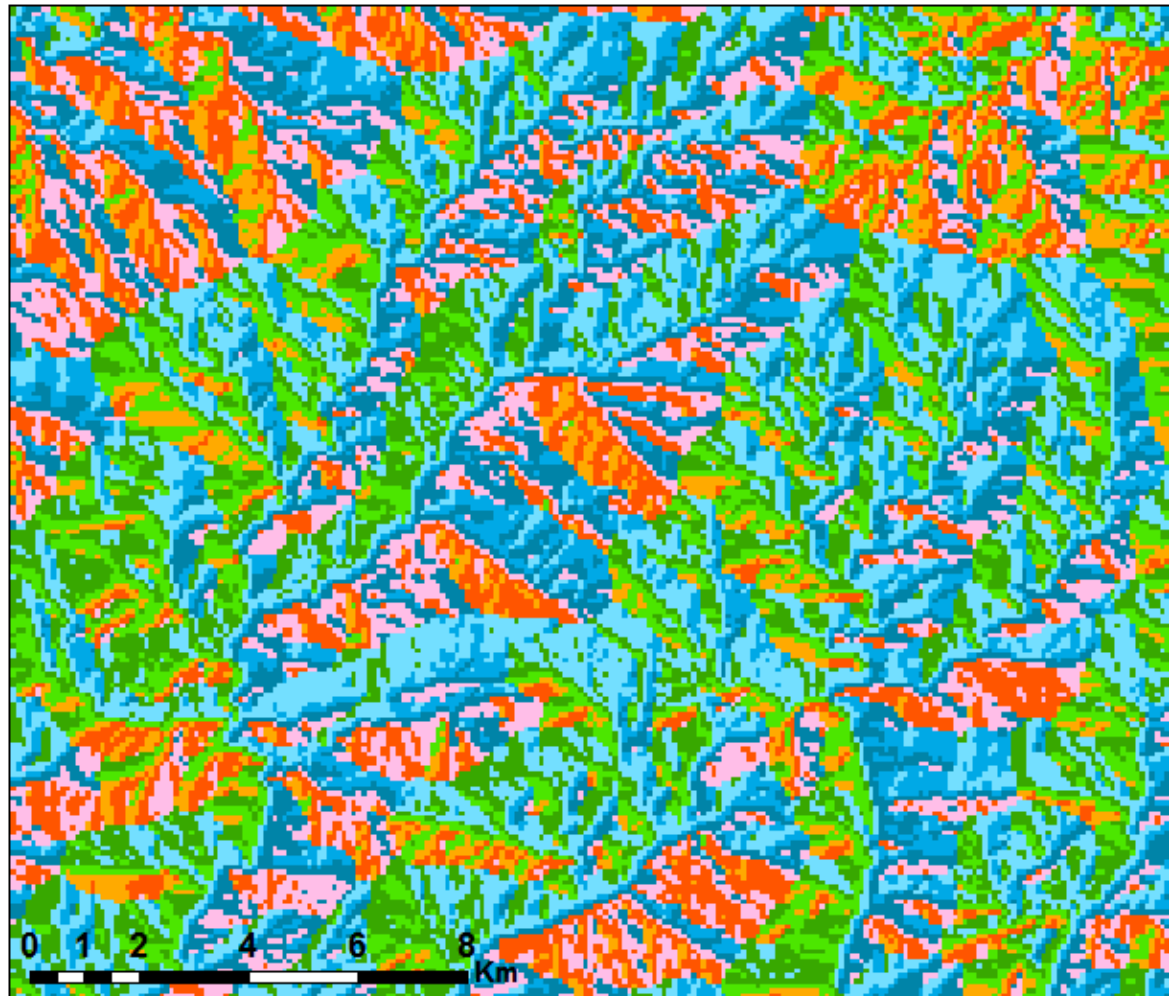
Hydrographic analyses

- Flow direction

32	64	128
16	↑	→ 1
8	4	2

Direction Coding

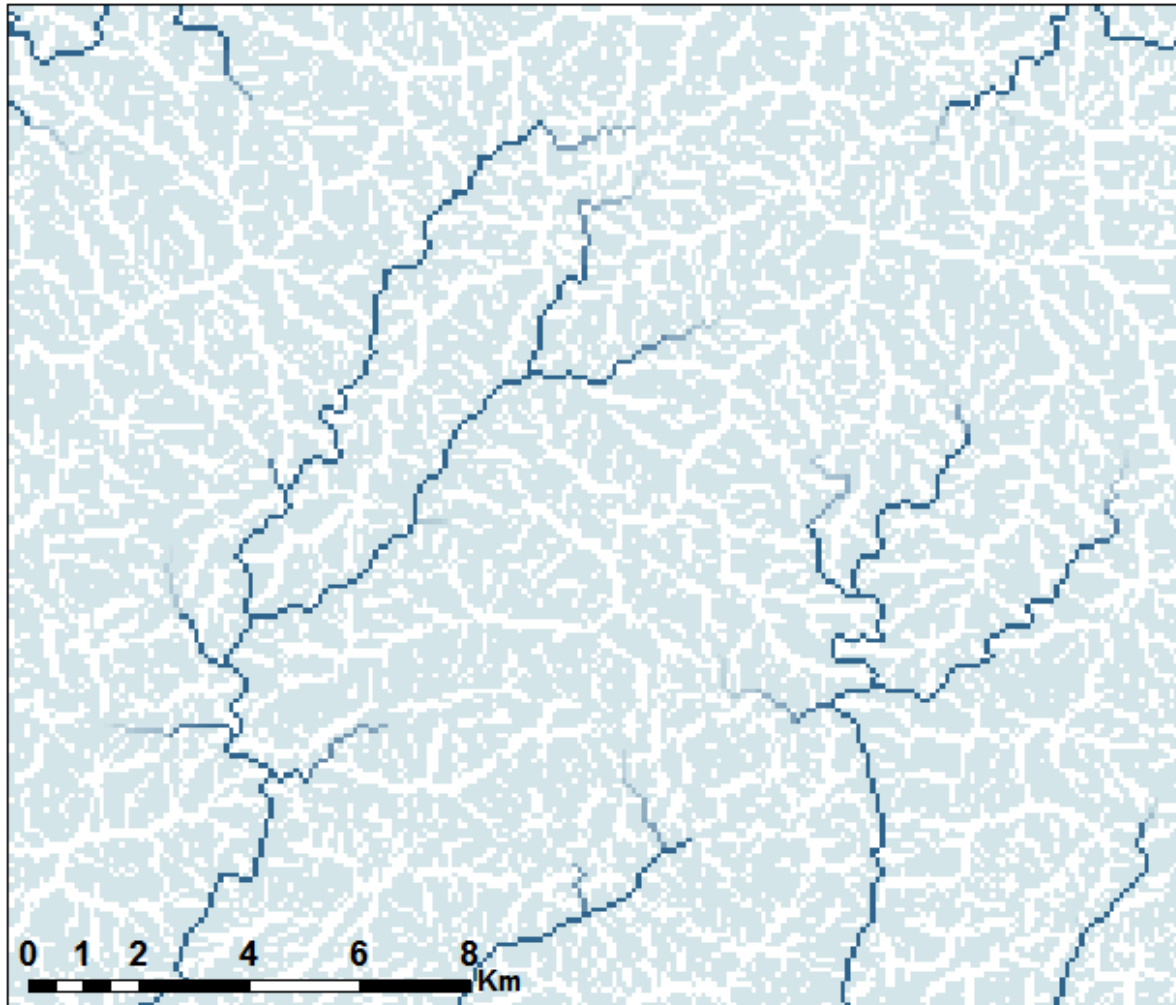
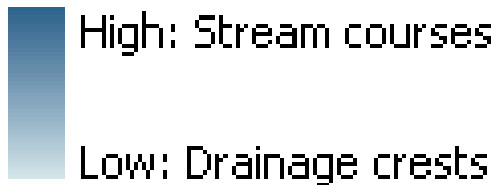
*Any other values indicate errors in the DEM



Hydrographic analyses

- Flow accumulation

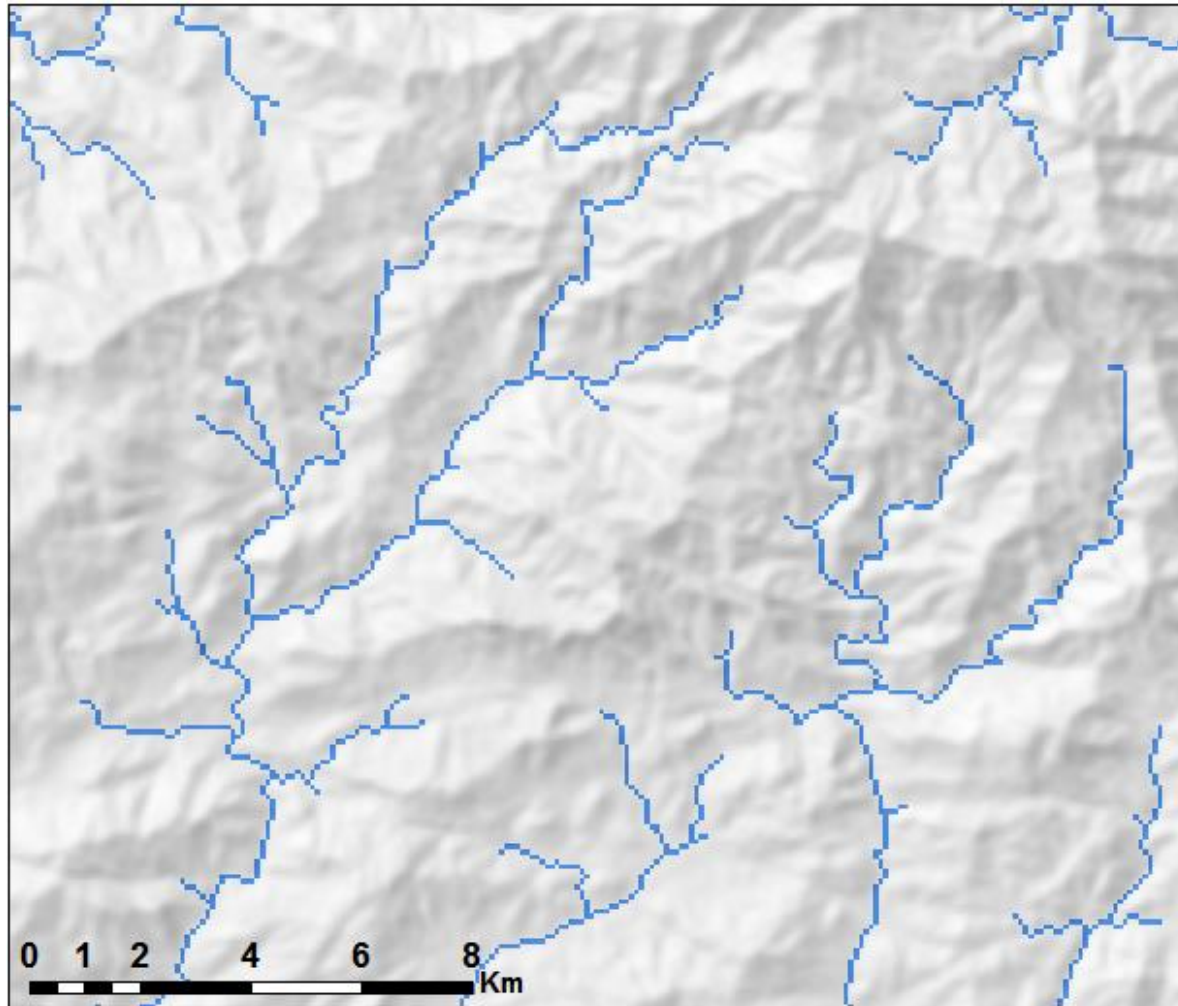
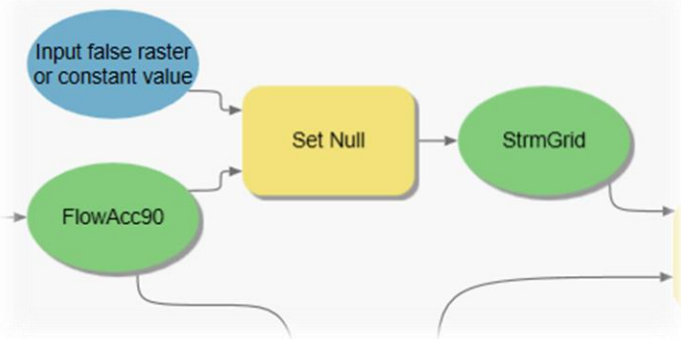
How many cells flow into a given cell?



Hydrographic analyses

- Streams (raster)

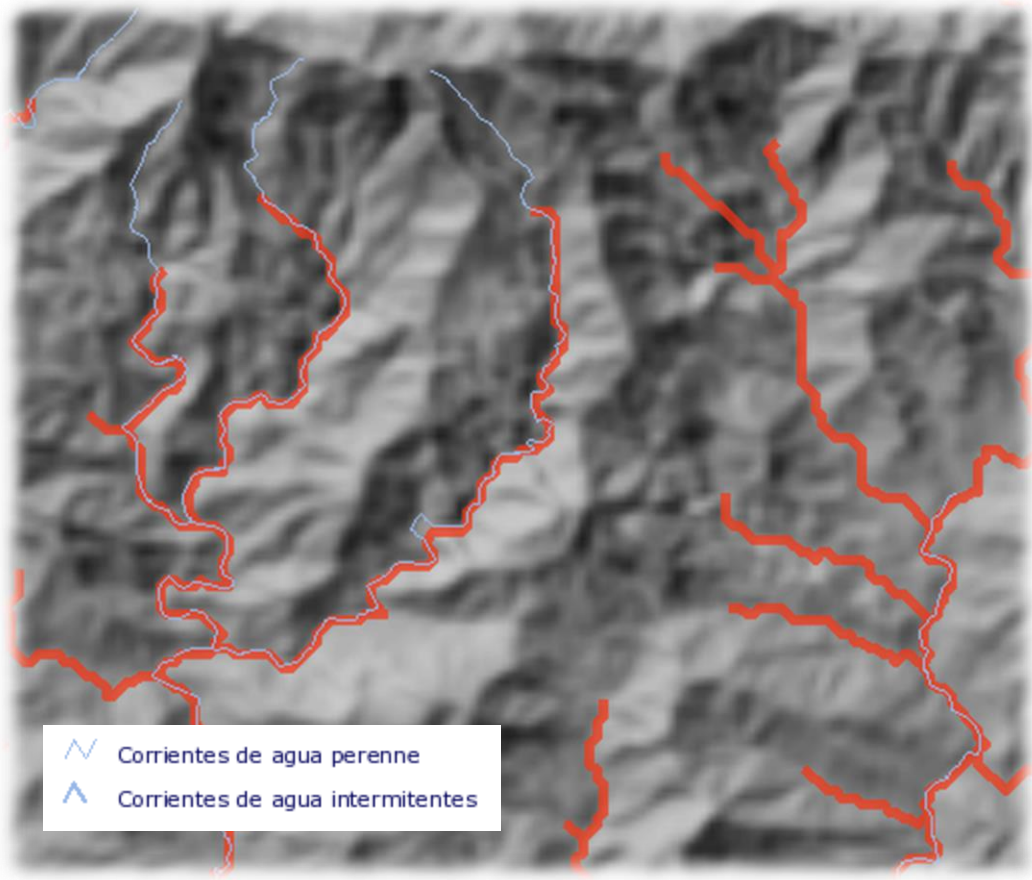
*Isolate cells above
a threshold
accumulation*



Hydrographic analysis

1:100,000

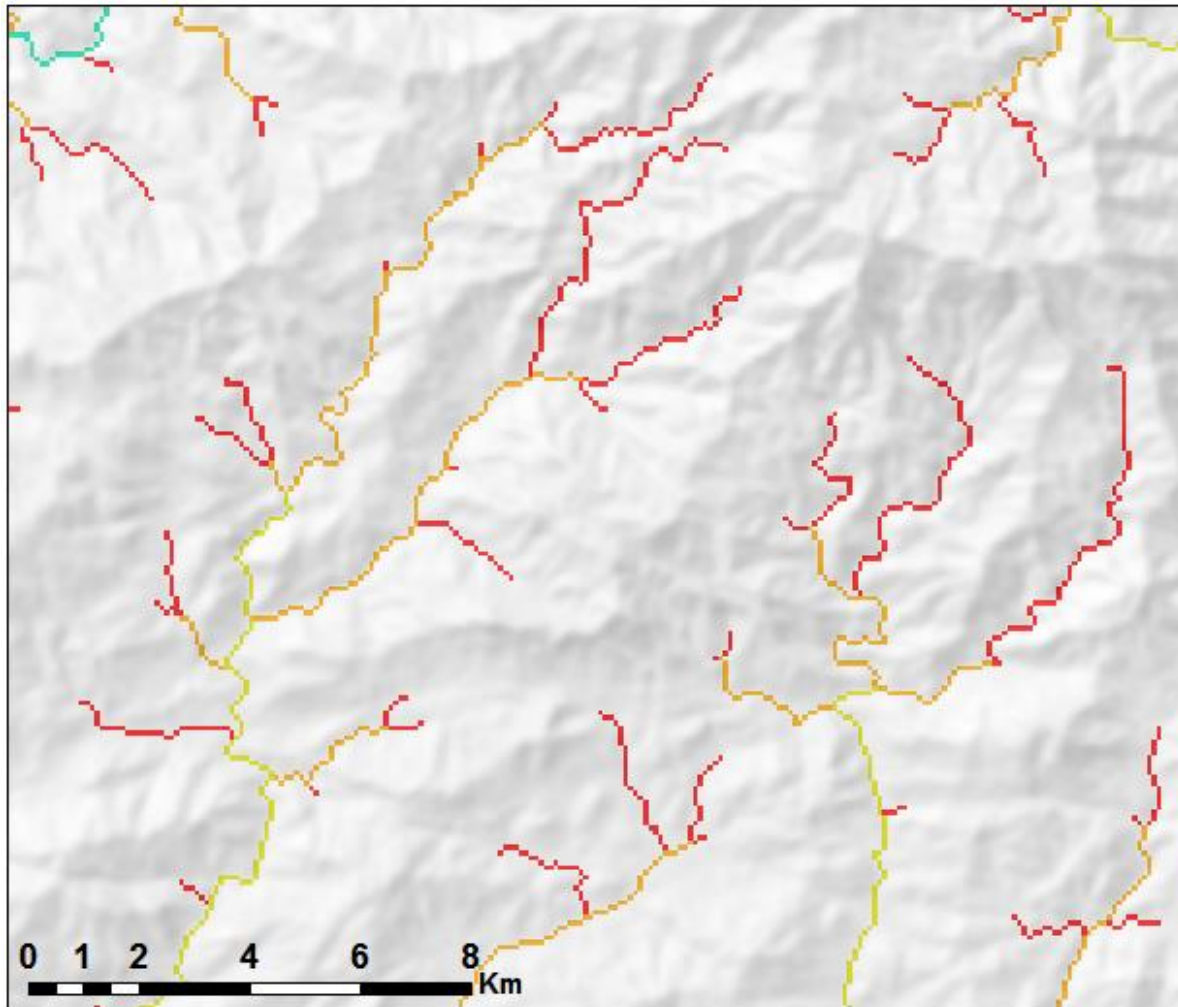
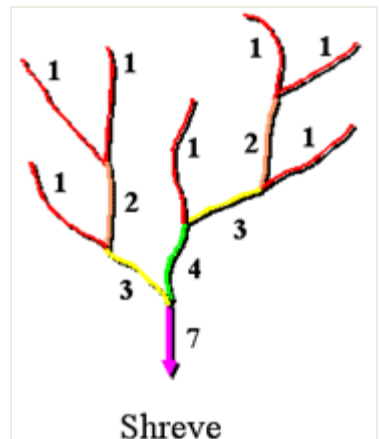
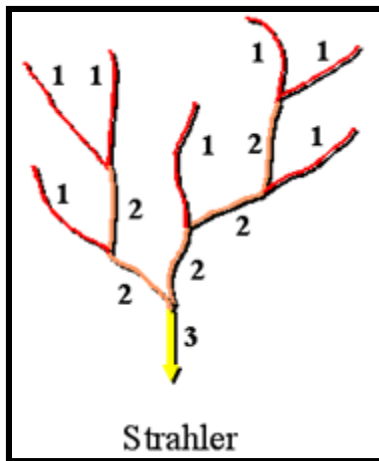
- StrmGrid
 - Value
 - 1
- Servicio WMS
 - Corrientes de Agua
 - Corrientes de agua perenne
 - Corrientes de agua intermitentes
- dem_90m
 - Value
 - 3704
 - 13
- hillshd90
 - Value
 - 254
 - 0



Corrientes de agua perenne
Corrientes de agua intermitentes

Hydrographic analyses

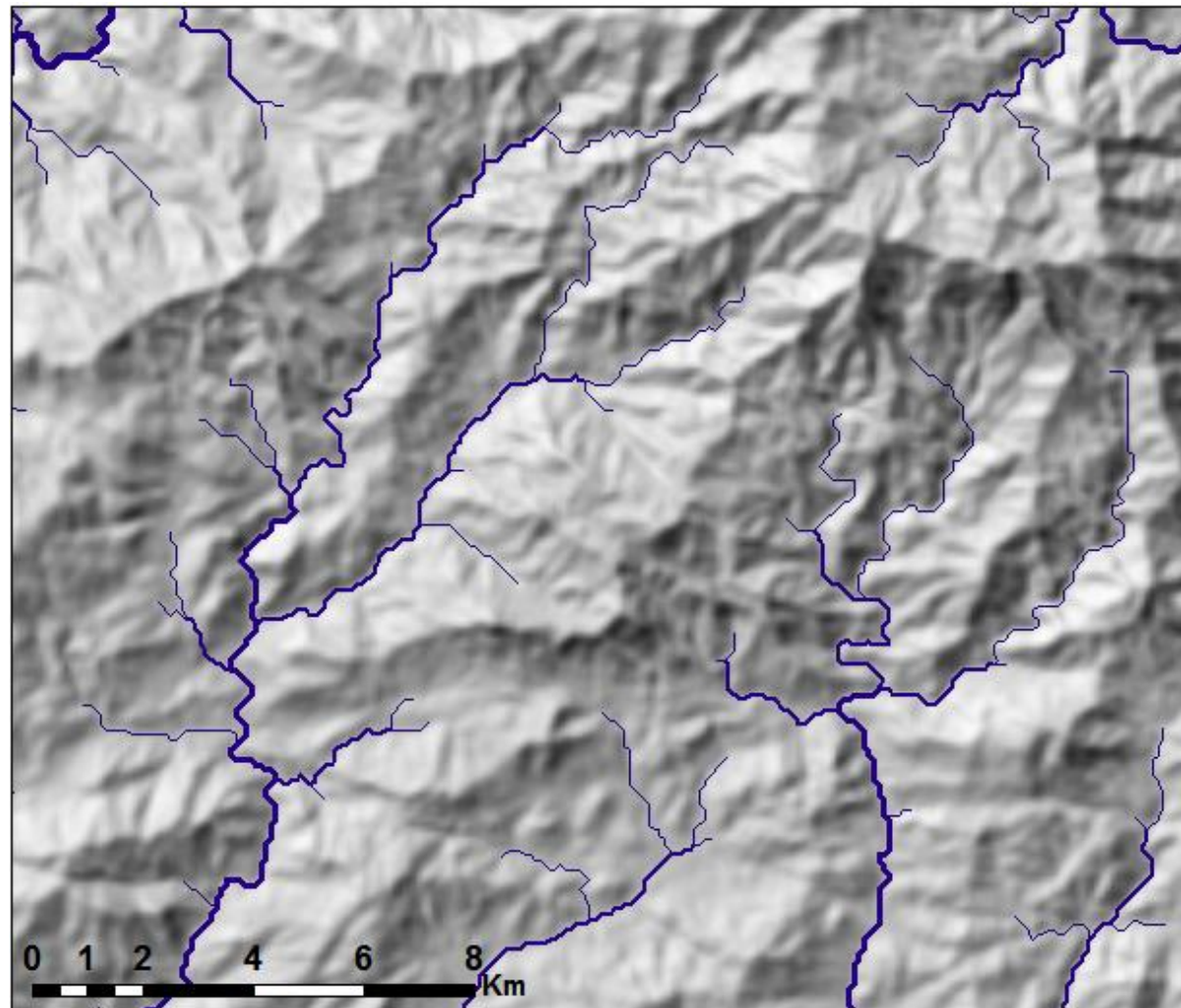
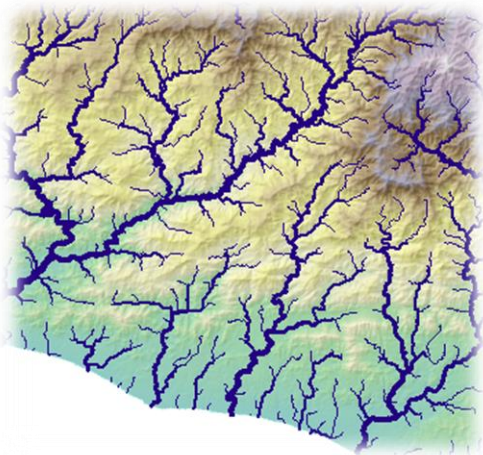
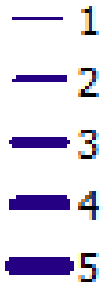
- Stream order



Hydrographic analyses

- Stream to feature

GRID_CODE



Hydrographic analyses

End first part...

