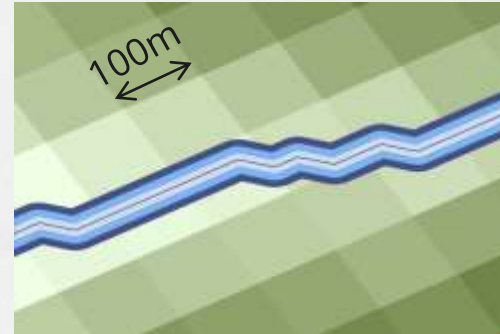


# PREPARING INPUTS

# SPATIAL CAVEATS

- Ensure all data have same projected coordinate system
- Verify the units
- Select an appropriate resolution for your goals
  - Overall detail needed
  - Interaction between layers
  - Speed/memory



Stream buffers  
← or  
threat distance

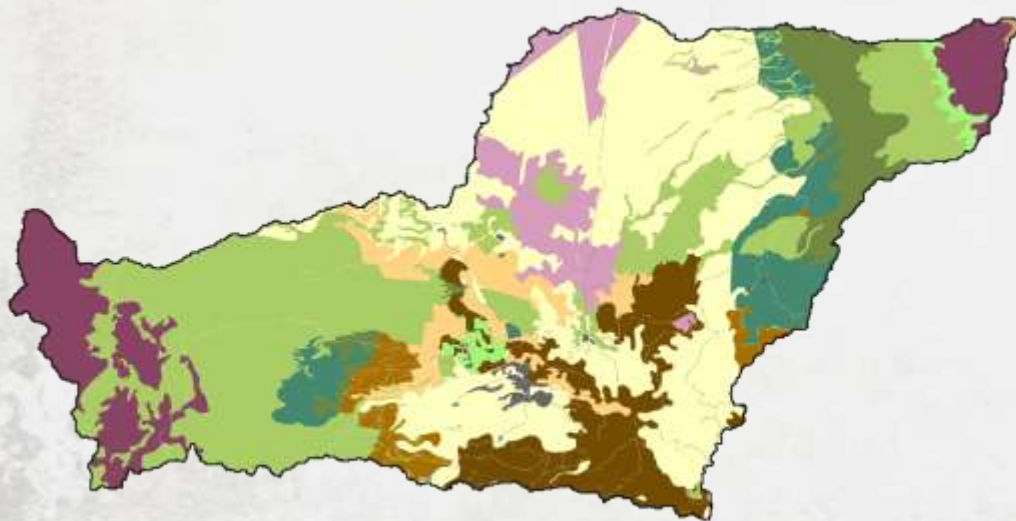
# DATA SOURCES

- The best data is as local as you can get, as detailed as you need
- National, local governments and agencies, NGOs...
- Literature search – LULC coefficients, carbon values, etc.
- Global sources:
  - Land cover: MODIS, GlobCover
  - DEM: NASA, USGS, WWF HydroSheds
  - Soils: FAO Harmonized World Soil Database



# LAND USE

Choose an appropriate number/types of land cover classes

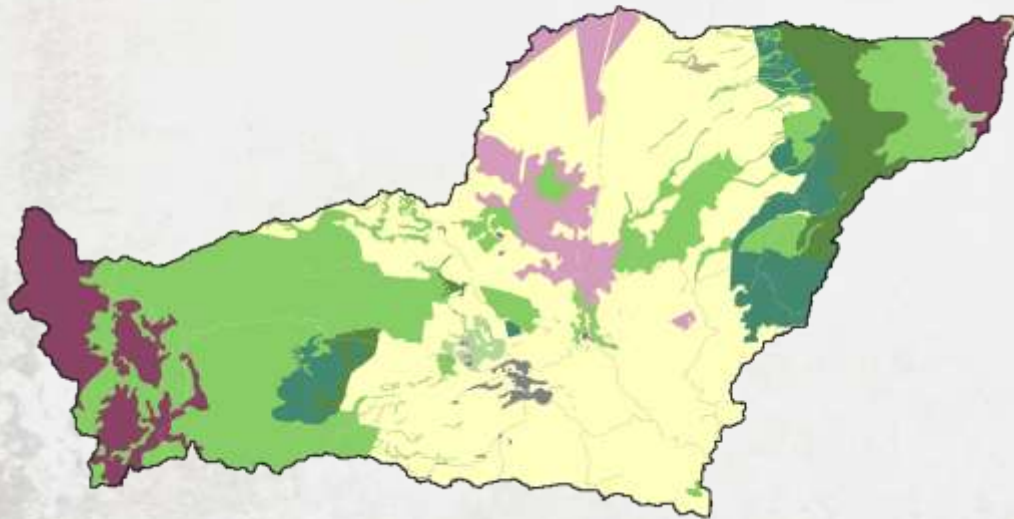


LULC classes

- |                            |                           |
|----------------------------|---------------------------|
| Bare rock                  | Grass                     |
| Bare soil                  | Native montane bunchgrass |
| <b>Coffee</b>              | Shrub                     |
| <b>Corn</b>                | <b>Tea</b>                |
| Evergreen forest           | Unpaved road              |
| Forest                     | Urban                     |
| Forest plantation          | Water                     |
| <b>General agriculture</b> |                           |

# LAND USE

Choose an appropriate number/types of land cover classes



LULC classes

- |  |  |
|--|--|
| <span style="background-color: yellow; border: 1px solid black; padding: 2px;">Agriculture</span>              | <span style="background-color: pink; border: 1px solid black; padding: 2px;">Grass/pasture</span>  |
| <span style="background-color: tan; border: 1px solid black; padding: 2px;">Bare soil/rock</span>              | <span style="background-color: purple; border: 1px solid black; padding: 2px;">Native grass</span> |
| <span style="background-color: darkgreen; border: 1px solid black; padding: 2px;">Evergreen forest</span>      | <span style="background-color: lightgreen; border: 1px solid black; padding: 2px;">Shrub</span>    |
| <span style="background-color: green; border: 1px solid black; padding: 2px;">Forest</span>                    | <span style="background-color: gray; border: 1px solid black; padding: 2px;">Urban/Roads</span>    |
| <span style="background-color: darkslategrey; border: 1px solid black; padding: 2px;">Forest plantation</span> | <span style="background-color: blue; border: 1px solid black; padding: 2px;">Water</span>          |



# TOPOGRAPHY/HYDROLOGY

- Preparing the DEM: Mosaic, fill holes, fill sinks, burn streams
- Verify watersheds and/or create with ArcHydro/ArcSWAT/AGWA/BASINS...
- Determine threshold flow accumulation

Threshold = 10,000



Threshold = 100



# CLIMATE DATA SOURCES

- WorldClim: Monthly precipitation
- CGIAR: Monthly precipitation, potential and actual evapotranspiration
- NCAR: Climate change scenarios (precip. only)
- Erosivity: Can be derived from annual precipitation
- AET: From InVEST Water Yield model, or CGIAR



# CLIMATE

- Precipitation from weather stations, gridded local or global data, climate change scenarios
- Average over 10+ years
- If weather stations:
  - Best to have full coverage
  - Test out interpolation methods
  - Adjust for elevation?
- Derive PET, AET, erosivity from same precip





# BUDGET DATA SOURCES

- The best data is as local as you can get, as detailed as you need
- National, local governments and agencies, NGOs...
- Literature search – LULC coefficients, carbon values, etc.
- Global sources:
  - Land cover: MODIS, GlobCover
  - DEM: NASA, USGS, WWF HydroSheds
  - Soils: FAO Harmonized World Soil Database, SOTER

# **TERRESTRIAL HELPER TOOLS**

- C:\InVEST\_3\_0\_0\_x86\invest\_helper\_utils\
  - Prepare the DEM
  - Create servicesheds
  - Calculate change between scenarios\*
  - Multi-service landscape ranking\*

# PREPARE THE DEM

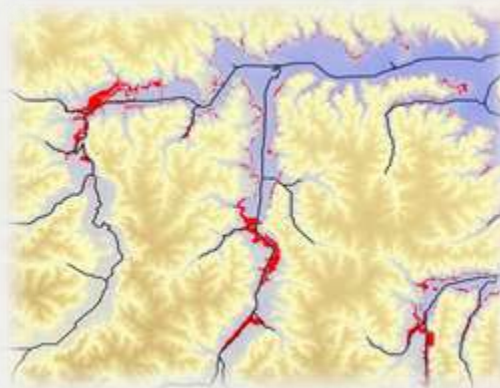
- Fills holes (missing data)
- Burns streams
- Fills sinks

## Inputs:

- DEM
- Streams / depth

## Output:

- Processed DEM



# CREATE SERVICESHEDS

Uses Arc Hydro to create watersheds/servicesheds



## Inputs:

- DEM
- Outlets
- Stream threshold

## Outputs:

- Stream raster/shapefile
- Servicesheds shapefile

An aerial photograph of a vast, arid landscape. In the foreground, there's a large, irregularly shaped body of water with a mix of blue and brownish-green hues, suggesting shallow water or marshland. A prominent, light-colored sandbar or peninsula extends from the right side into the water. The background features rolling hills and mountains under a clear, pale blue sky. The overall scene conveys a sense of isolation and natural beauty.

**QUESTIONS?**