

# WATER YIELD DATA AND PREPROCESSING

May 22, 2014

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# COMMON DATA ISSUES

*Projections:* All GIS layers must have the same projected coordinate system

*Clipping:*

- Rasters should completely cover watershed
- Use watershed boundary as a mask
- Can resample coarse layers or buffer

*Tables:* Required field names and data types

*DEM:* Fill in missing data, fill sinks, check hydrology

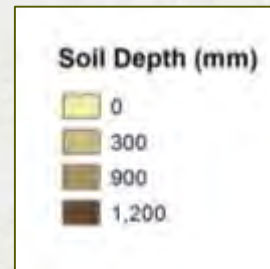
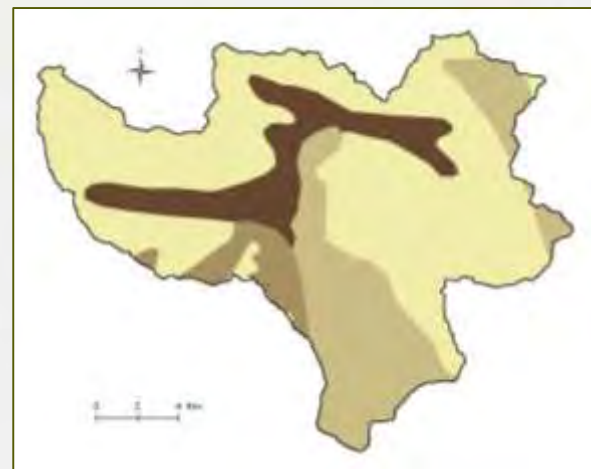
Check for correct units on all inputs



# SOILS

Soil Survey of India: soil depth may be estimated using the given classes:

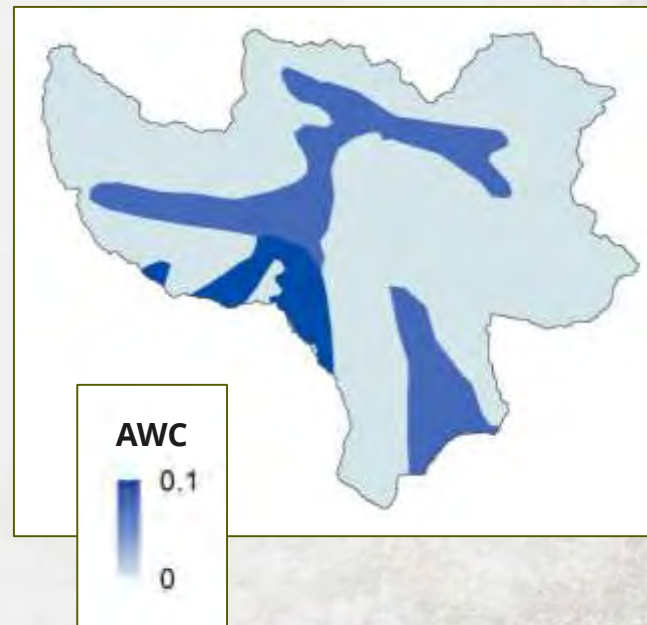
Depth description	Soil depth (mm)
Rocky outcrops	0
Shallow	300
Medium deep	900
Medium deep to deep	1050
Deep	1200



# SOILS

## Soil Survey of India: Available Water Content

- Estimate soil texture from the TYPE field ("Loamy Soils; Sandy-Skeletal Soils...")
- Use this texture with the Hydraulic Properties Calculator from the USDA

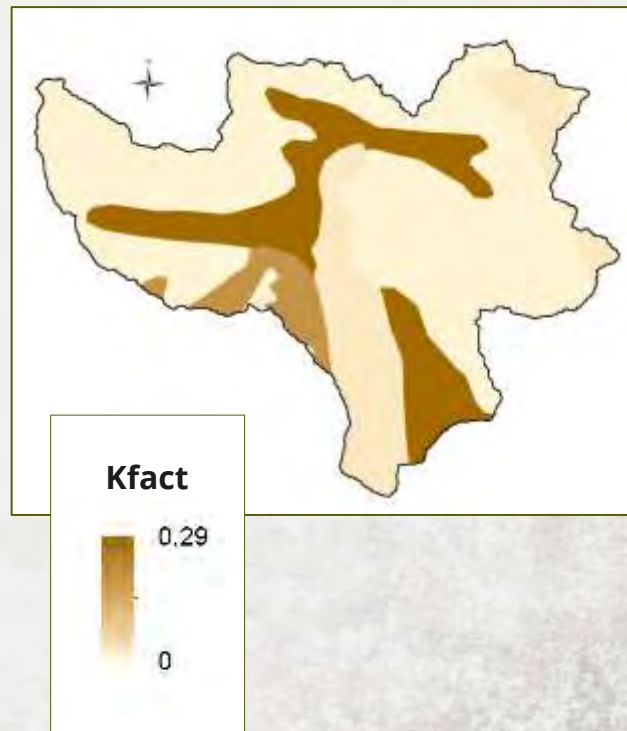


# SOILS

## Soil Survey of India: Erodibility (Kfact)

- Use same texture classes derived from TYPE field for water yield AWC
- Map texture class using the Roose table in the InVEST User Guide

Textural Class	Spanish Texture Class	Soil composition			Mean K (based on % organic material)		
		Sand	Silt	Clay	unknown	< 2%	≥ 2%
Clay	Arcilloso	0-45	0-40	40-100	0.22	0.24	0.21
Sandy Clay	Arcilloso arenoso	45-65	0-20	35-55	0.2	0.2	0.2
Silty Clay	Arcilloso limoso	0-20	40-60	40-60	0.26	0.27	0.26
Sand	Arenoso	86-100	0-14	0-10	0.02	0.03	0.01





# CLIMATE

- Precipitation from weather stations (IMD), gridded local or global data (CRU, WorldClim), climate change scenarios
- Average over 10+ years
- If weather stations:
  - Best to have full coverage
  - Test out interpolation methods
  - Adjust for elevation?
  - May be able to combine with global grids

IMD Gauges



# RIOS DATA

## CLIMATE

Precipitation is used to derive:

- Rainfall erosivity - equation from Singh et al
$$79 + .363 * \text{annual\_precip}$$
- Potential evapotranspiration - Modified Hargreaves method
  - Monthly min/max temperatures
  - Monthly precipitation
  - Average monthly extraterrestrial radiation
- Actual evapotranspiration - from InVEST Water Yield model

# TOPOGRAPHY/HYDROLOGY

- Sources: NASA, USGS, SRTM (90m)...
- Preparing the DEM: Mosaic, fill holes, fill sinks, burn streams
- Verify watersheds and sub-watersheds and/or create with ArcHydro/ArcSWAT/AGWA/BASINS...
- Determine threshold flow accumulation

Threshold = 10,000



Threshold = 100





# NATCAP SUPPORT

User Guide: Installed with InVEST or online:

[http://ncp-dev.stanford.edu/~dataportal/invest-releases/documentation/current\\_release/](http://ncp-dev.stanford.edu/~dataportal/invest-releases/documentation/current_release/)

User Forums:

<http://ncp-yamato.stanford.edu/natcapforums/>

Data Sources – Spatial and Sediment/Nutrient coefficients:

<http://naturalcapitalproject.org/database.html>