Instytut Geofizyki
Polskiej Akademii Nauk

GEOPLANET

hum drought

Data Preparation and Hydrological Modeling using SWAT model

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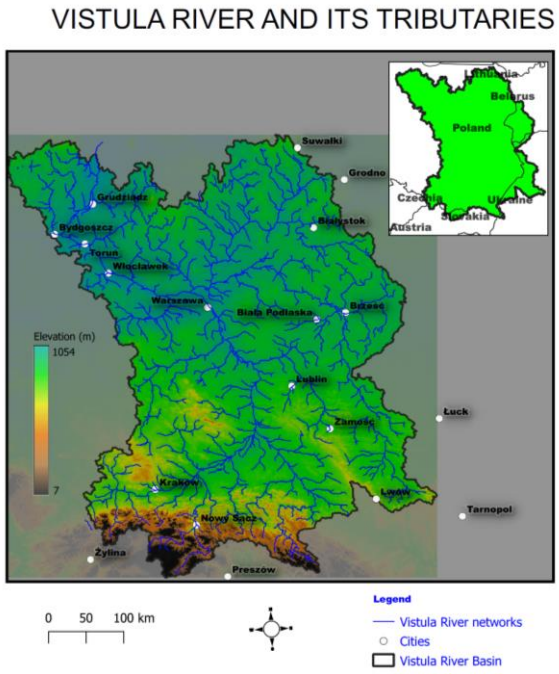
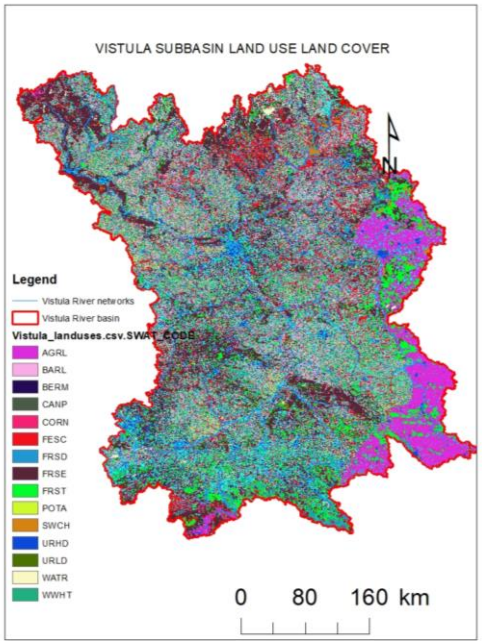
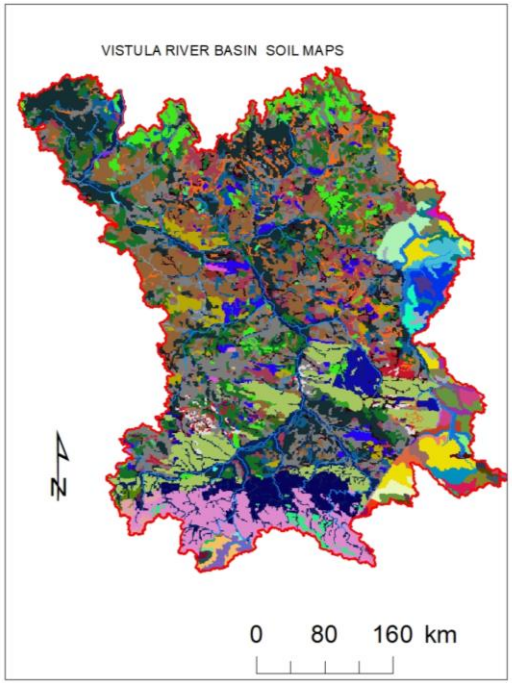
Data preparation [1/4]

- GIS data: DEM, land use map and soil map
- Meteorological data: Precipitation, temperature, wind speed,…
- Hydrological data: streamflow and groundwater level

GIS-Data: Source: CHASE-PL-Natural Hydrology (Piniewski et al. 2015)

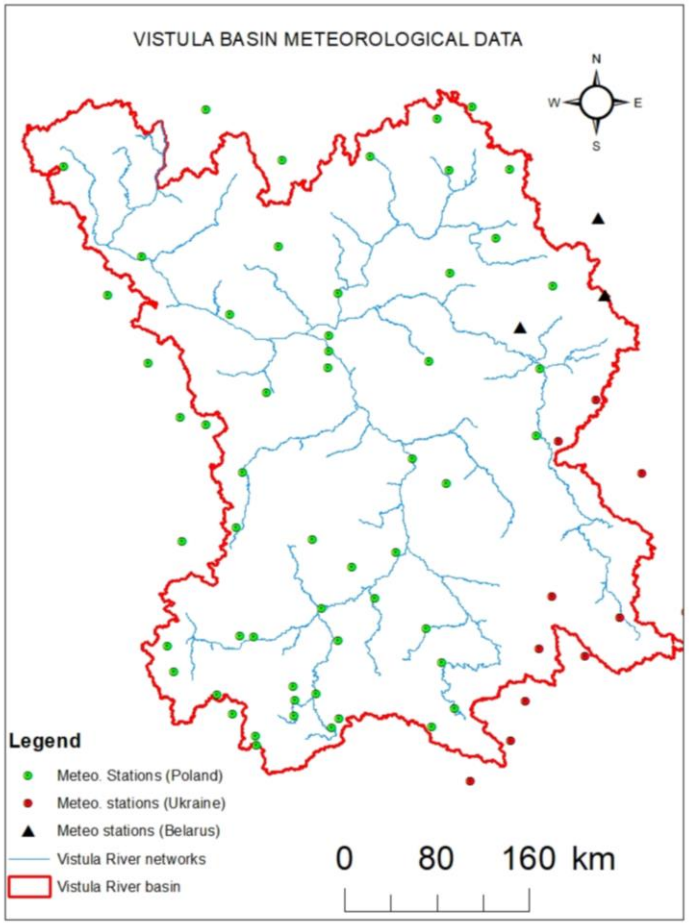


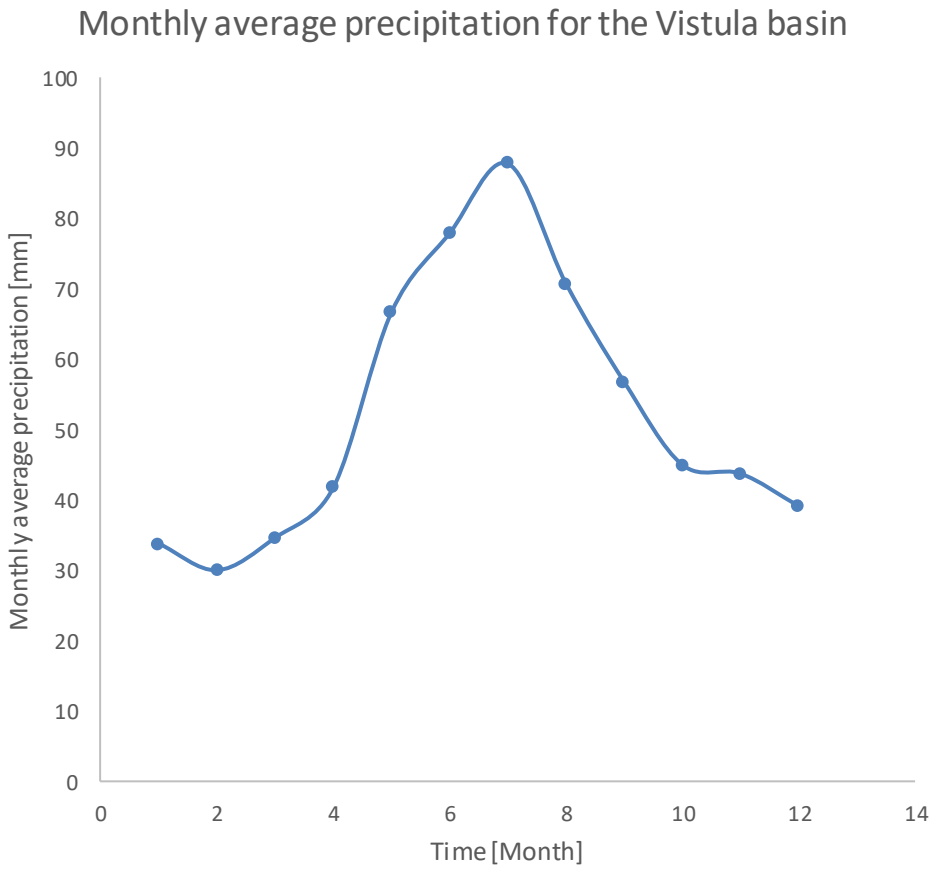




Data preparation [2/4]

2. Meteorological data

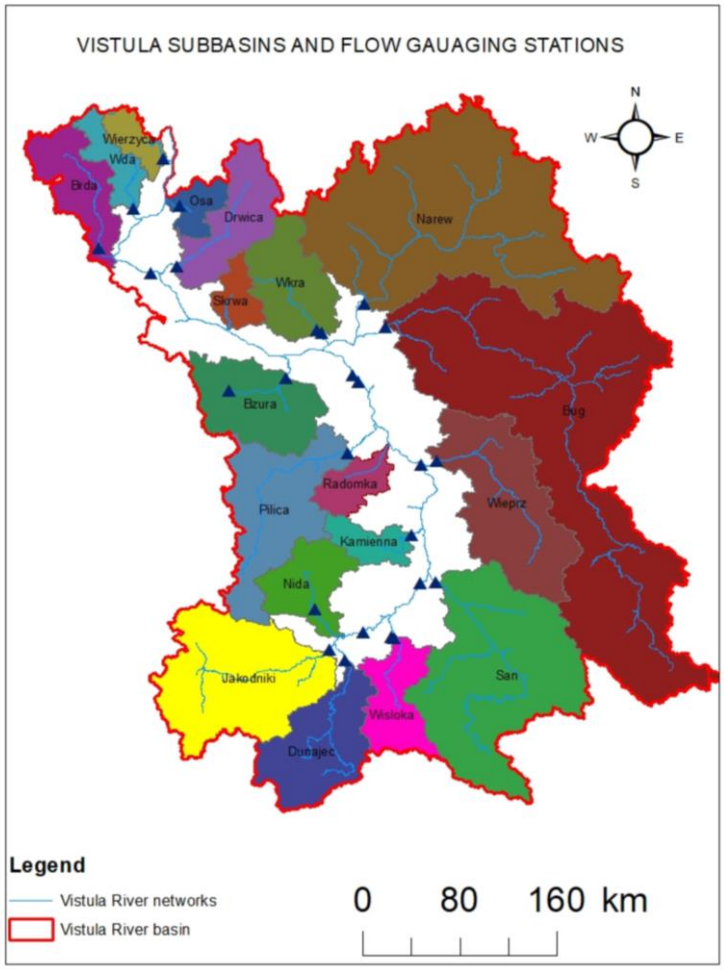


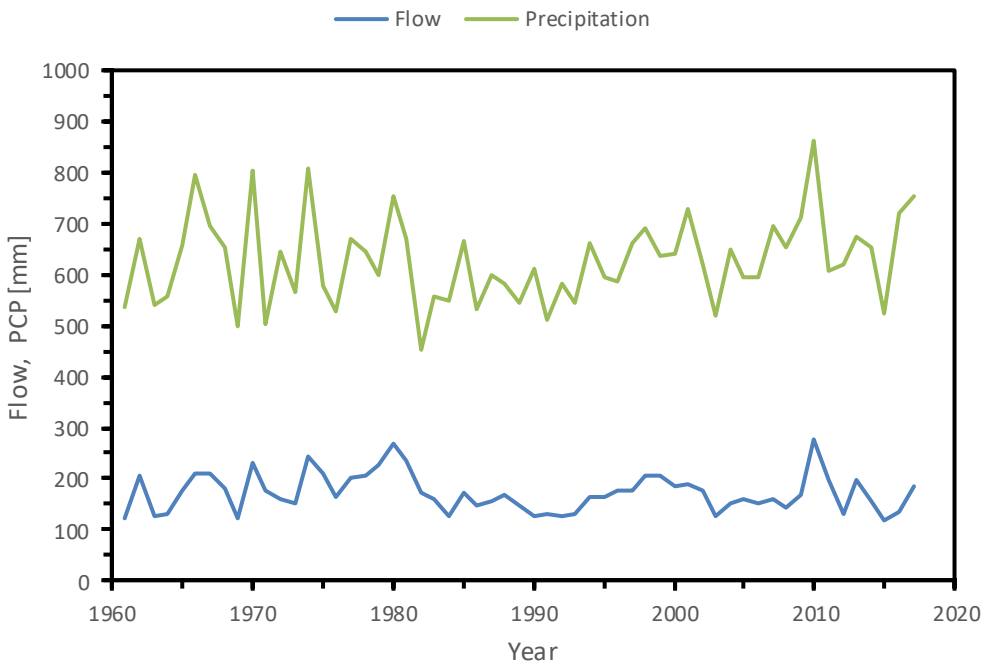


, **Source:** Institute of Meteorology and Water Management (IMGW) and European Climate Assessment and Dataset (https://www.ecad.eu/)

Data preparation [3/4]

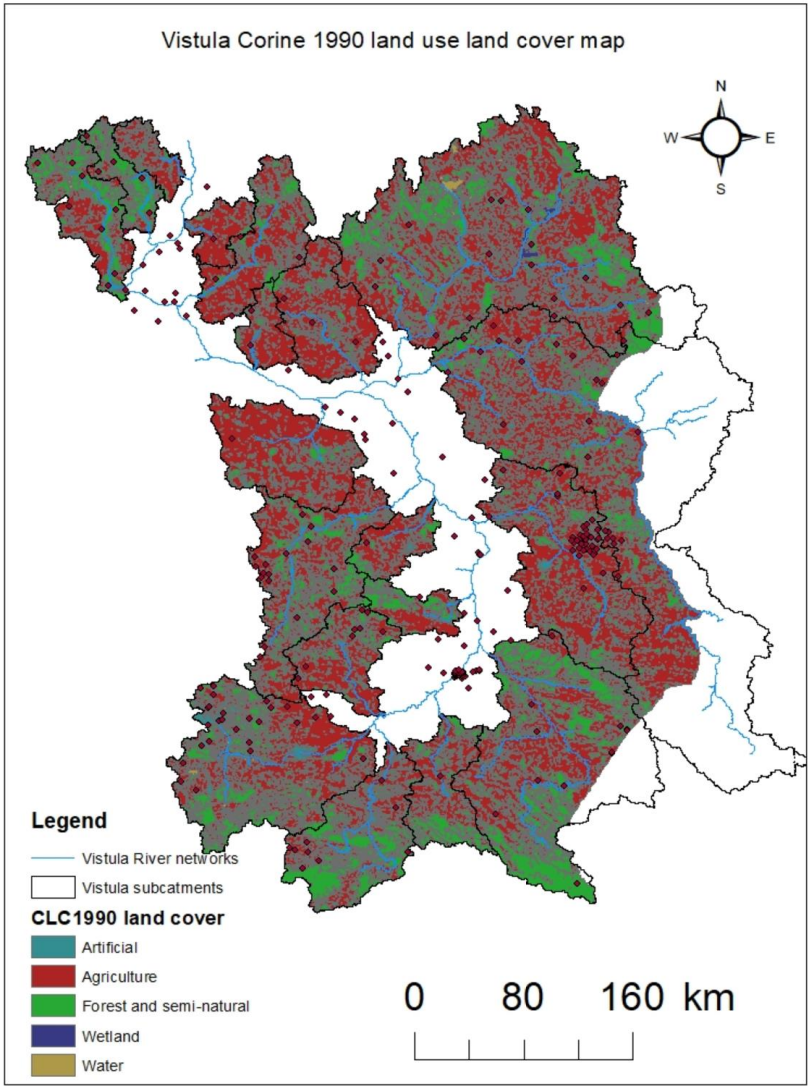
Flow data

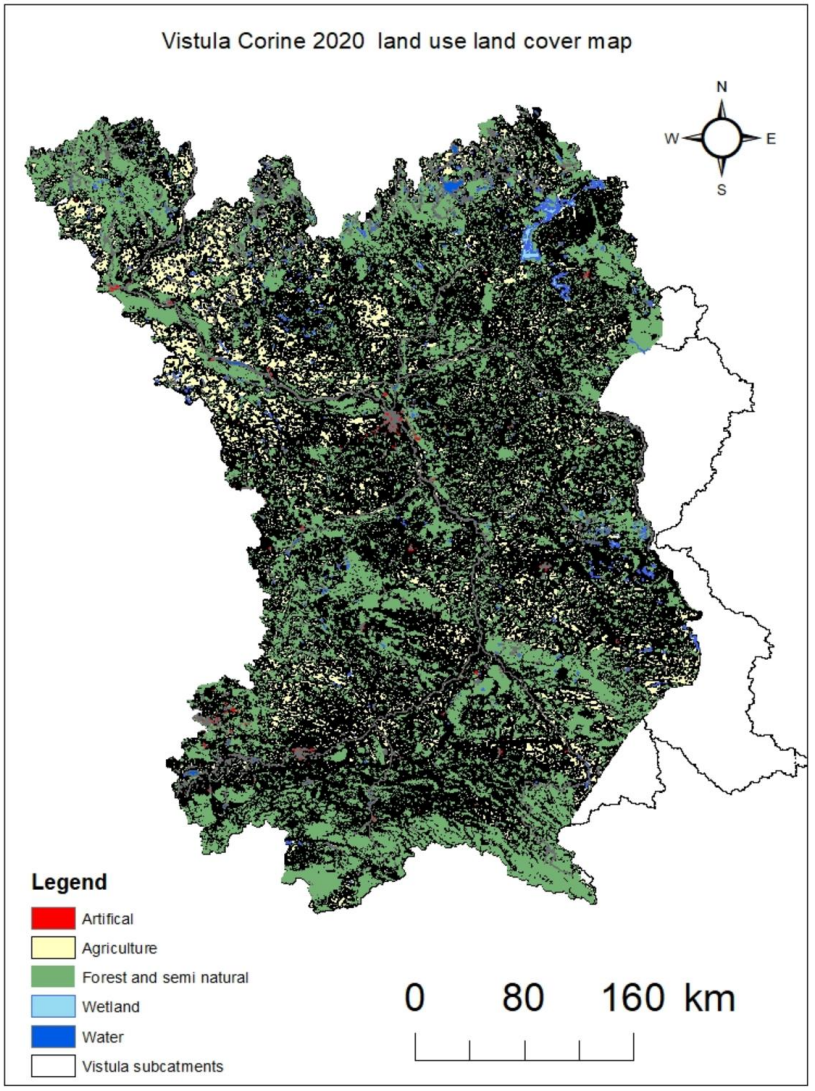




Source: Institute of Meteorology and Water Management (IMGW)

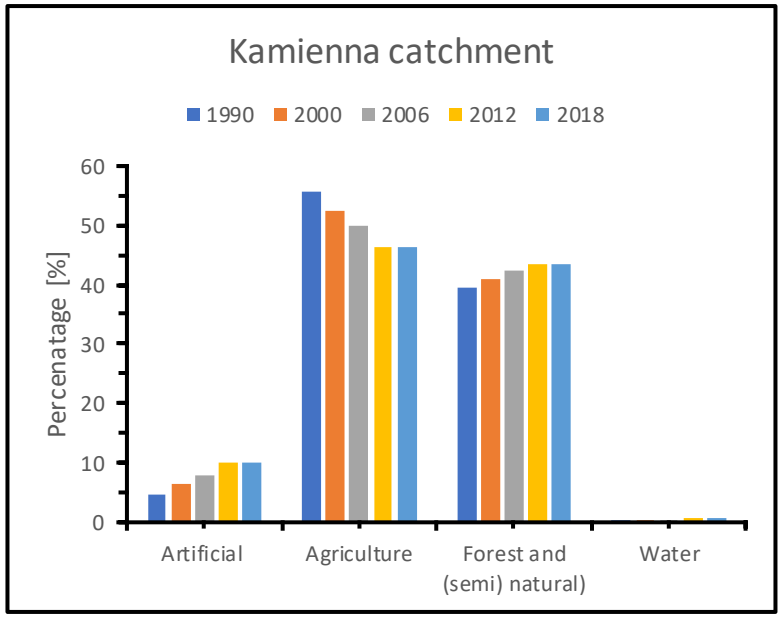
Land use land cover [1/2]

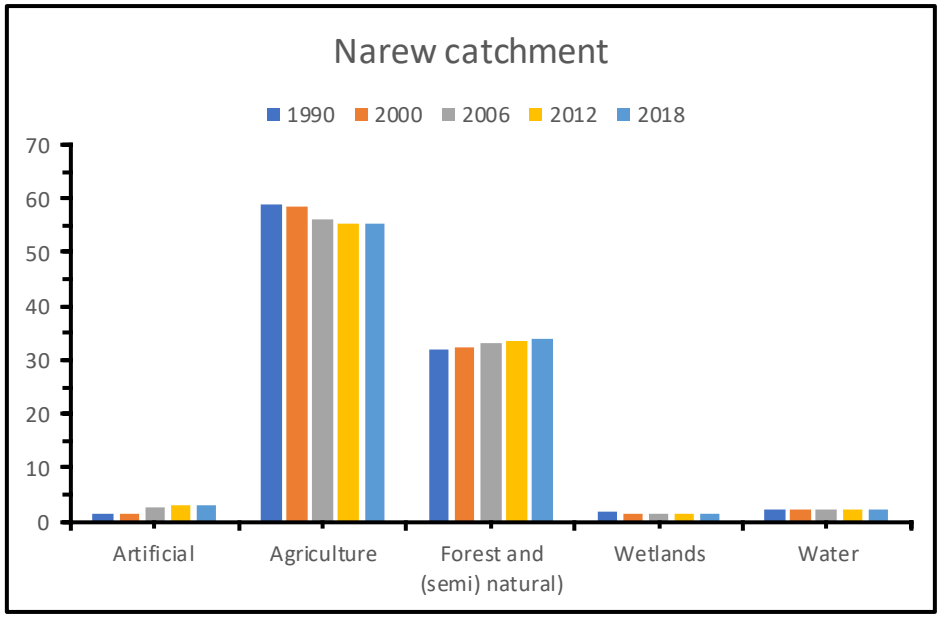




Land cover data (https://land.copernicus.eu/pan-european/corine-land-cover)

Data preparation [2/2]





human activities and CC on drought [1/1]

- Identifying contribution of human activities and climate change in the Kamienna River basin

1961 1982 2019

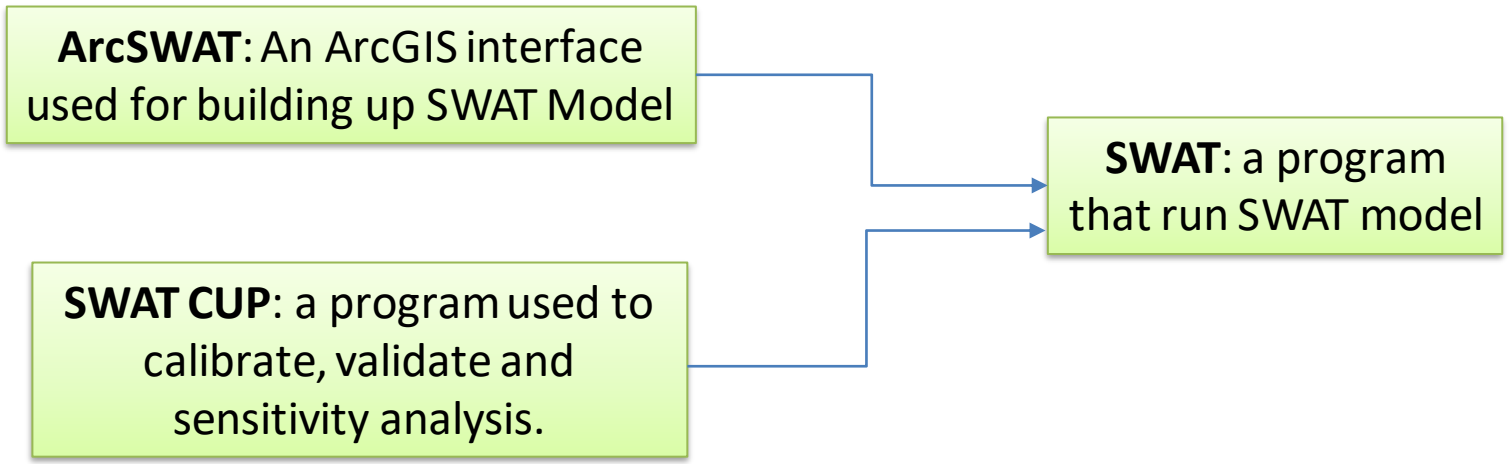
Pre-change period Pre-change period

- Separation of climate change and huma activities using hydrological model:

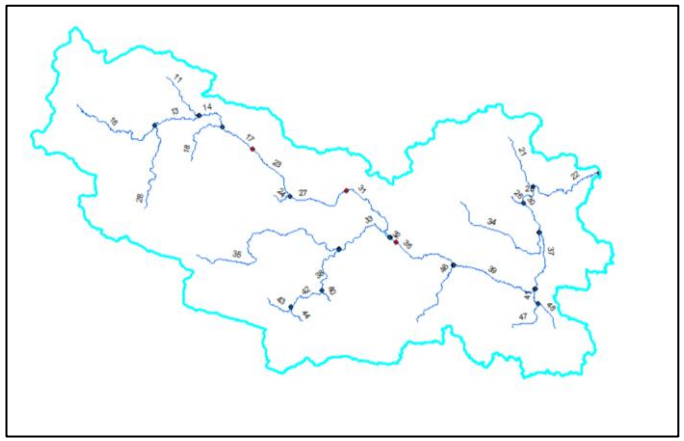
  1. Soil and Water Assessment Tool (SWAT)

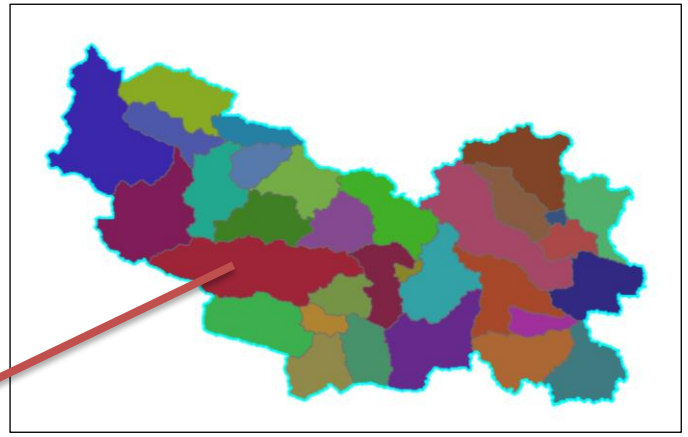
Hydrological modeling SWAT [1/3]

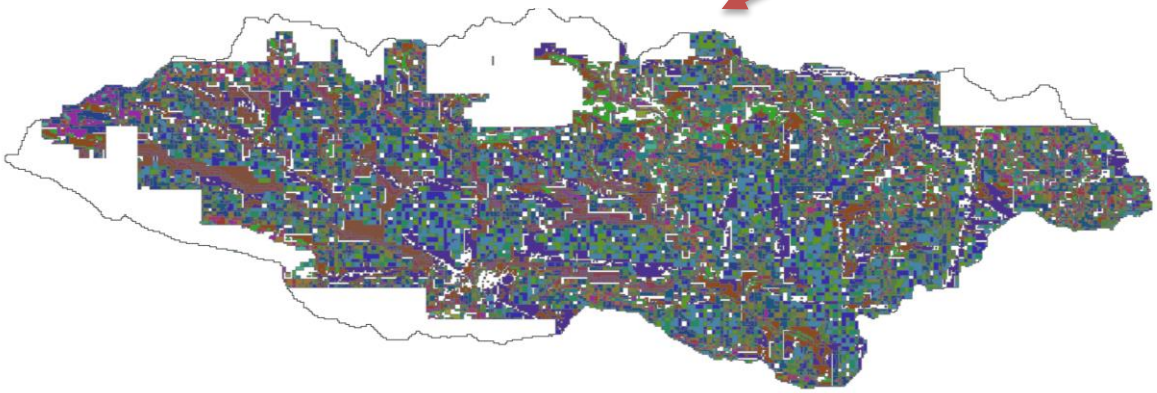
- The Soil and Water Assessment Tool (SWAT) is small to large watershed model developed by USDA-Agricultural Research service.
- It is **semi-distributed**, and a continuous time model that operates on **daily time step**.

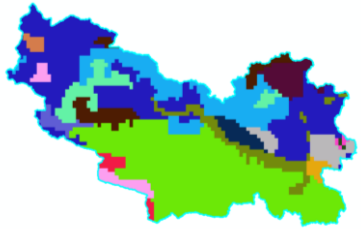


Hydrological modeling using SWAT [2/3]

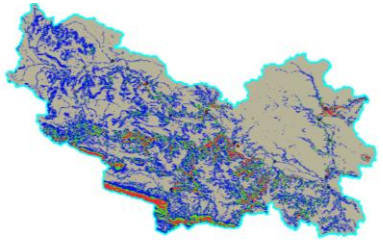




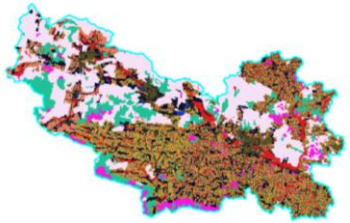




Soil map

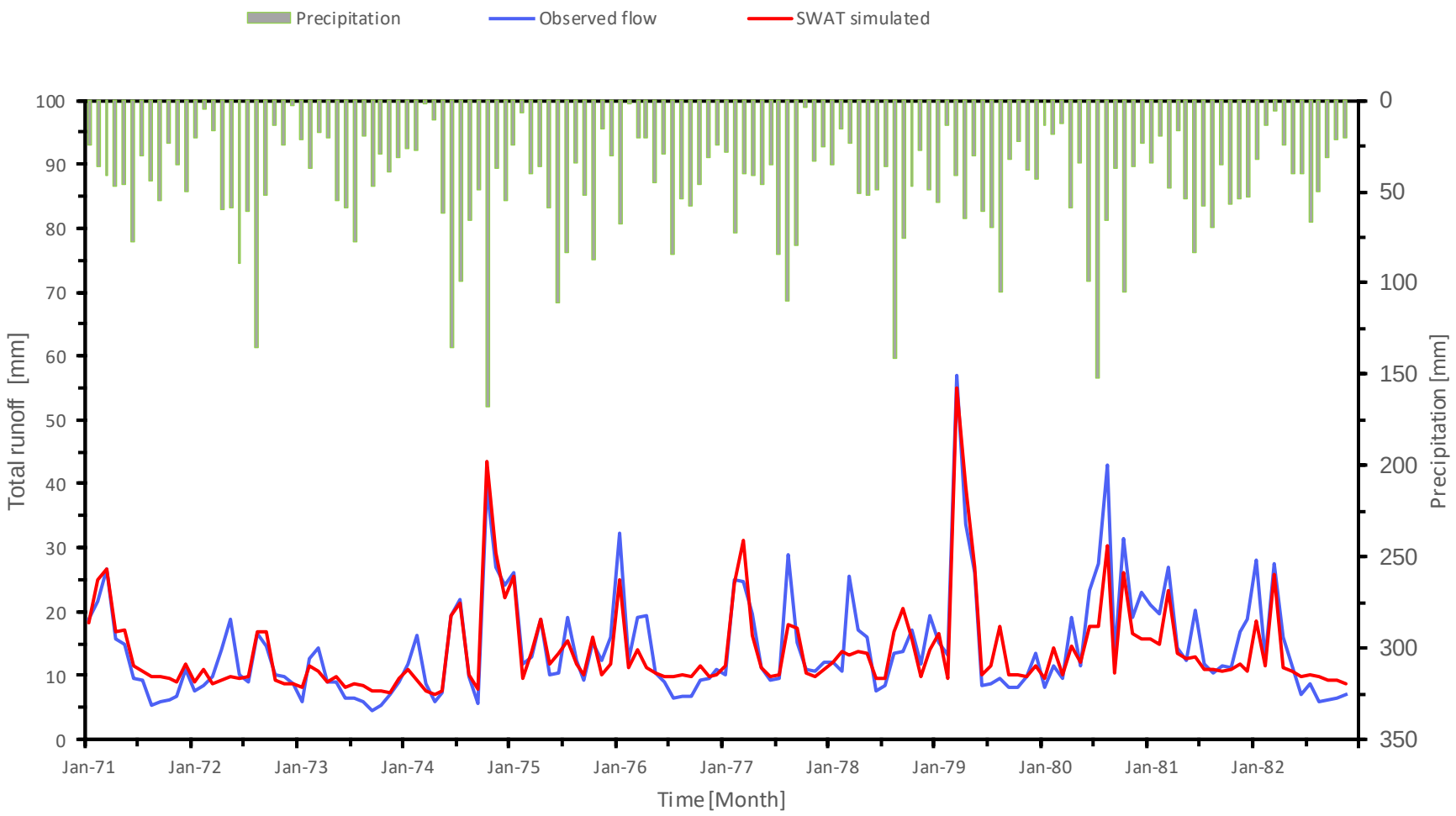


Slope classes



Land use

Hydrological modeling SWAT [3/3]



Thank you for your attention!