HYDRO-INFORMATICS

Assignment -1

Title: Drought Characterization using SPI and GIS

Create a **code and analyse** the following tasks:

- Input: shapefile for the selected basin and rainfall within the basin
- Calculate the drought index-SPI using the rainfall data at each point within the basin boundary. SPI should be calculated for the user defined accumulation period such as SPI-1, SPI-2,…SPI-12
- Spatial Interpolation for the calculated SPI values at each point within the basin. (Output should be in the raster format)
- Estimate and visualise the Drought Characteristics like Intensity, Frequency, duration, and spatial extent.

Deadline: 22/03/2024 (No extensions will be entertained)

Any doubts should be raised only in the Moodle forms.

Instructions about the Data:

- Select a river basin in India and identify the districts available within the selected basin then download the rainfall data within each district available within the selected basin from the given website https://indiawris.gov.in/wris/#/ (Instructions for downloading the data are given in Instructions.pdf). Note: "When accessing the website for rainfall data, there are occasional issues with slow loading and unresponsiveness. If you encounter such problems, try to access the website using an incognito window or other browsers and wait for it to respond."
- While downloading the rainfall data, ensure long-duration data is available, and the selected points may be uniformly distributed in the basin. Maintain the **same time period** for all points selected within the district.
- The selected point's latitude and longitude should be taken from the given website.
- The rainfall station data can be given to the code as input, which can be extracted from the direct website link, or you can directly give the downloaded rainfall data from the given website. (Rainfall data will be available at the points within the district boundaries)