

A Study On The Impact Of Errors In Weather Parameters Generated By Stochastic Weather Generators In Hydrologic Simulations

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Outline

- Background of study
- Introduction
- Study area
- Results
- Conclusions

Introduction

- Weather data with high spatio temporal resolution are needed for impact assessment studies
- Accuracy and availability of observed data is critical
 - generating realistic sequences of weather information
- Widely measured weather variables
 - rainfall and temperature
- Relative humidity, Solar radiation
 - rarely measured
 - lacks long series of historic data
- Stochastic weather generators – provide weather variables
- Weather generator generates daily weather time series using statistical approach
- Precipitation is the prime among all the weather variables in weather generators

Objectives of the study

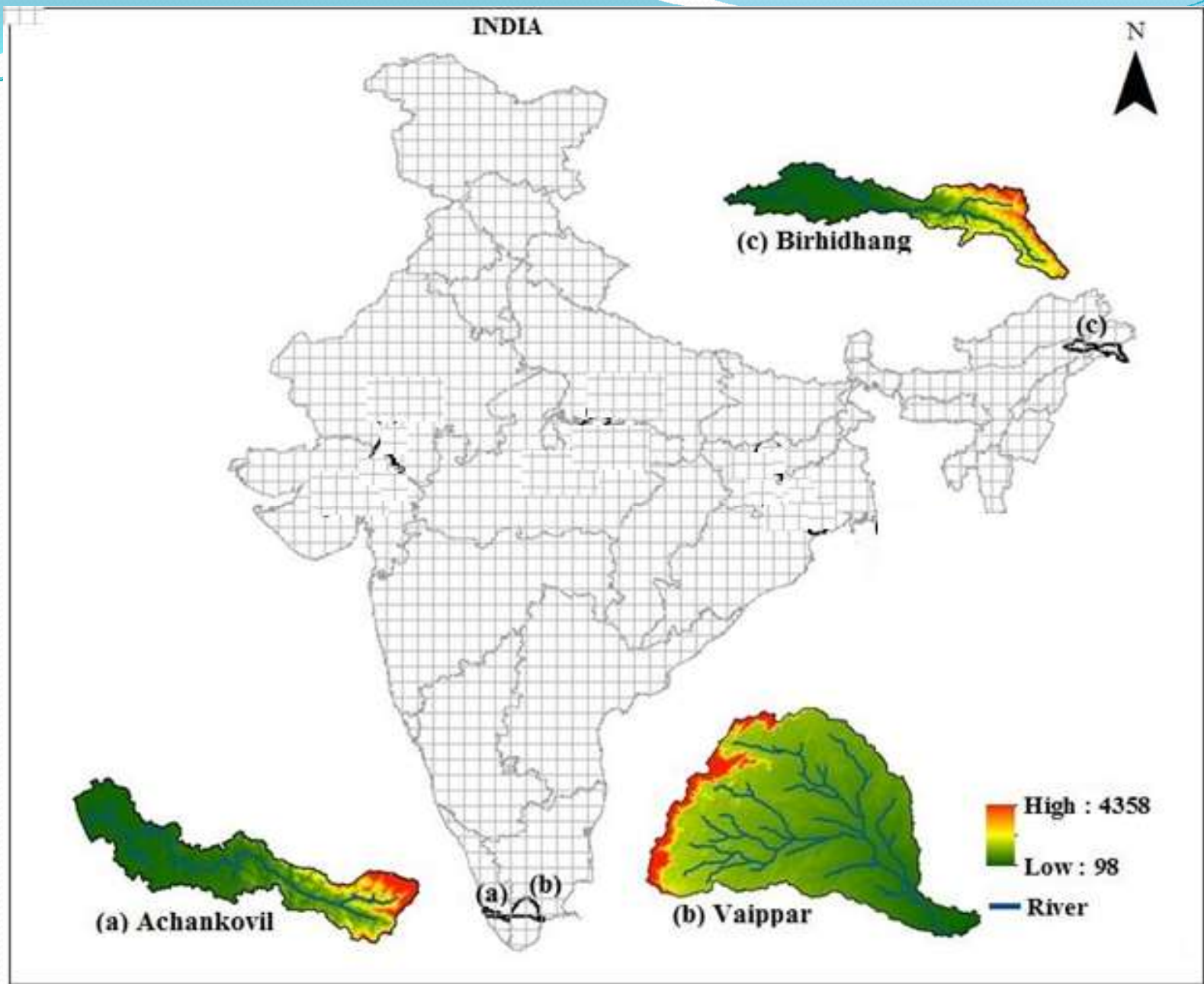
- To assess the impact of error in weather parameters on the performance of statistical Weather Generators.
- To assess the effectiveness of statistical weather generators in hydrologic simulations using SWAT.
 - Watersheds with different hydrological characteristics.

Study Area

- Achankovil(Tropical Wet)
- Vaippar (Semi arid)
- Birhidhang(Humid sub tropical with no dry season)

Data

- Climate Forecast System Reanalysis (CFSR) weather data (1979-2014)
- CLIGEN
- Scenarios - $\pm 10\%$ and $\pm 25\%$ error in RH and SR



Study Area

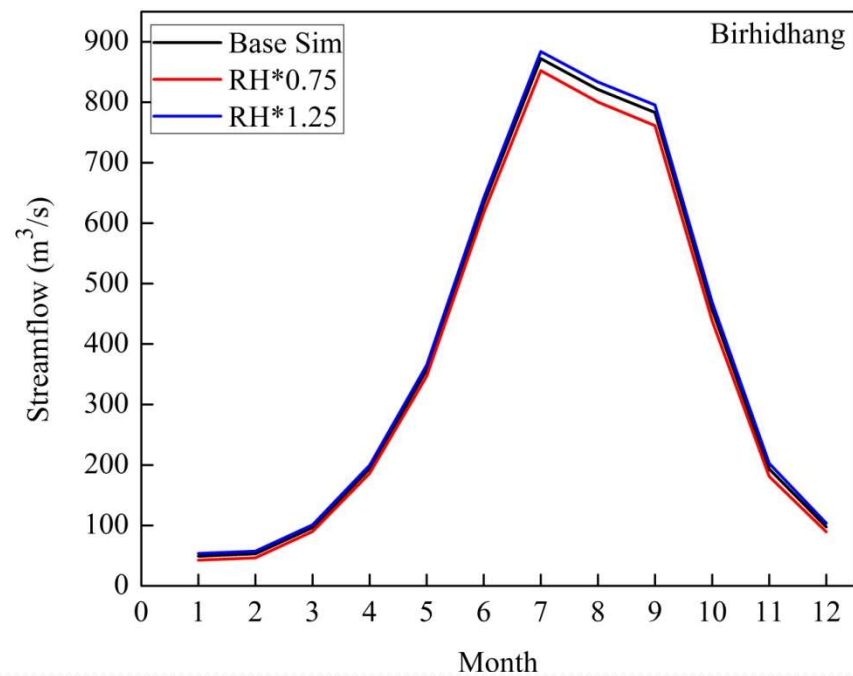
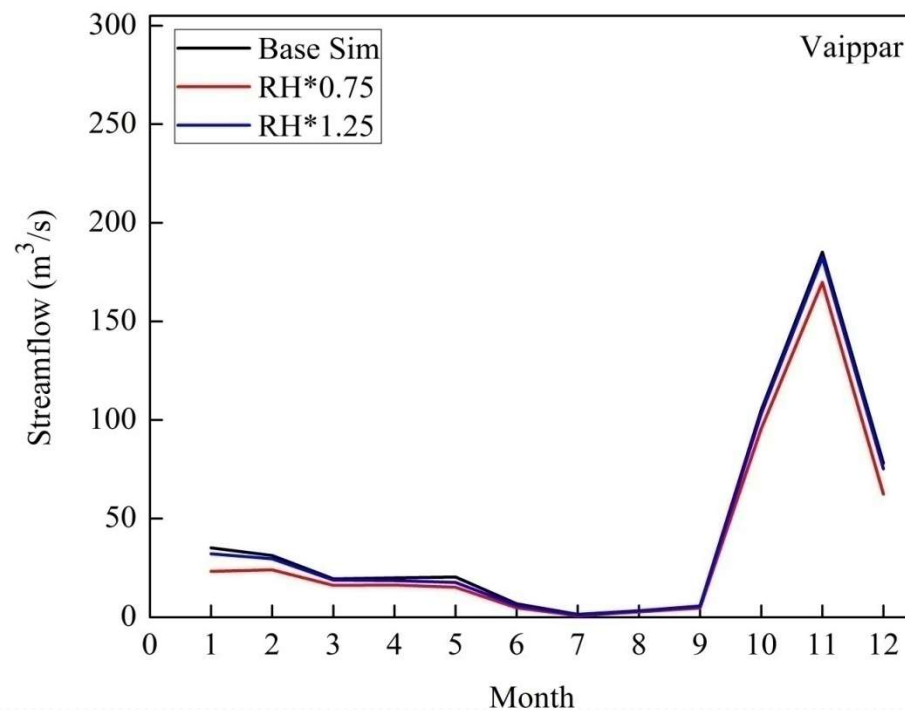
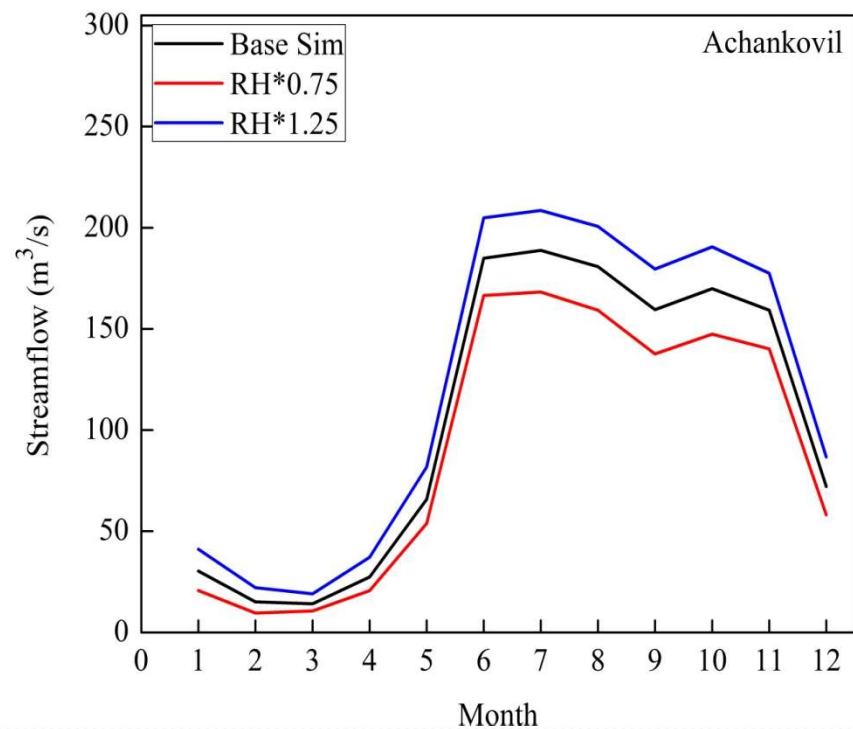


Fig. Impact on streamflow due to variability in RH

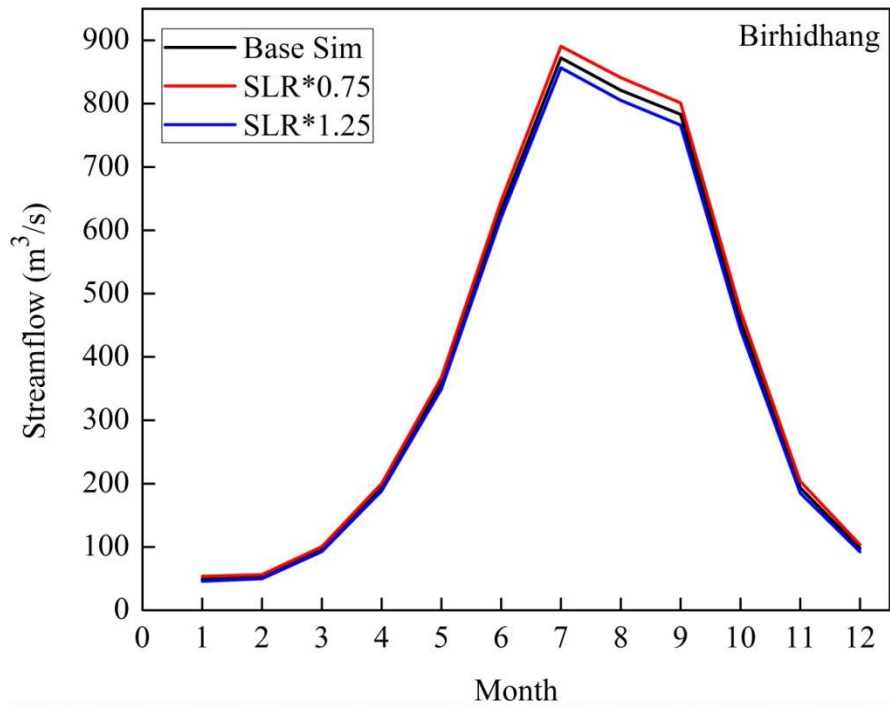
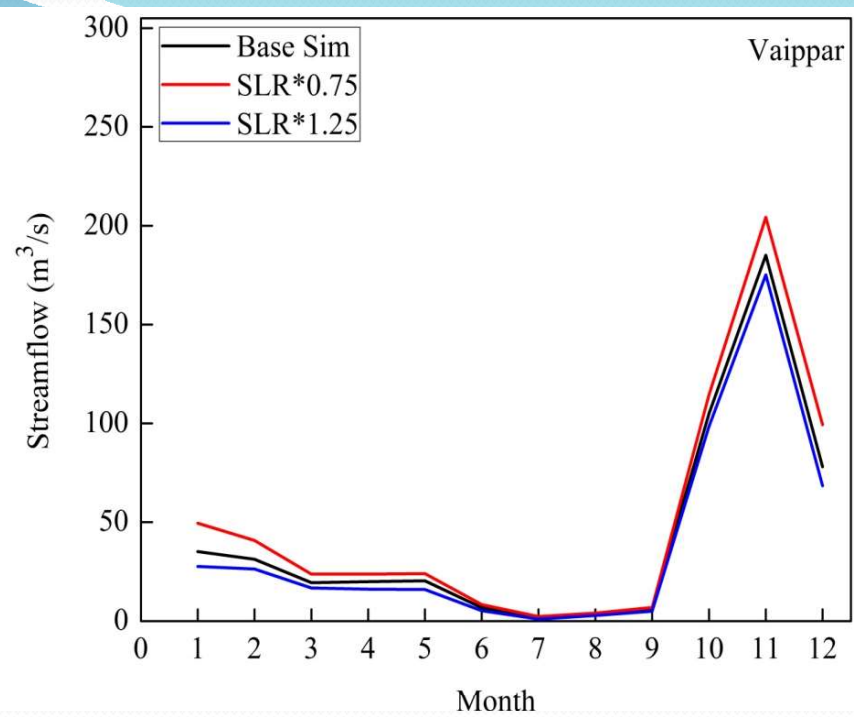
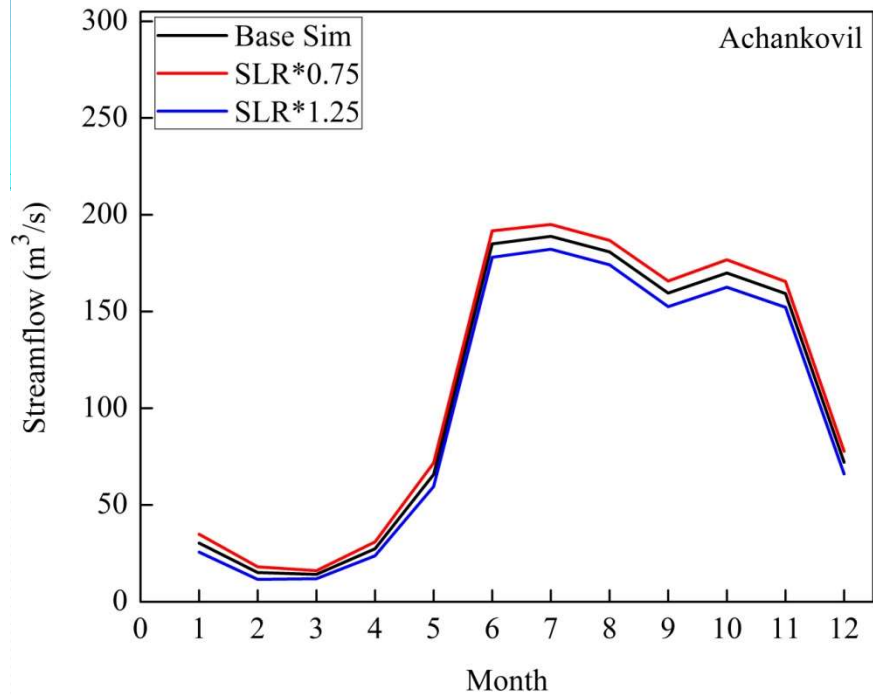


Fig. Impact on streamflow due to variability in SLR

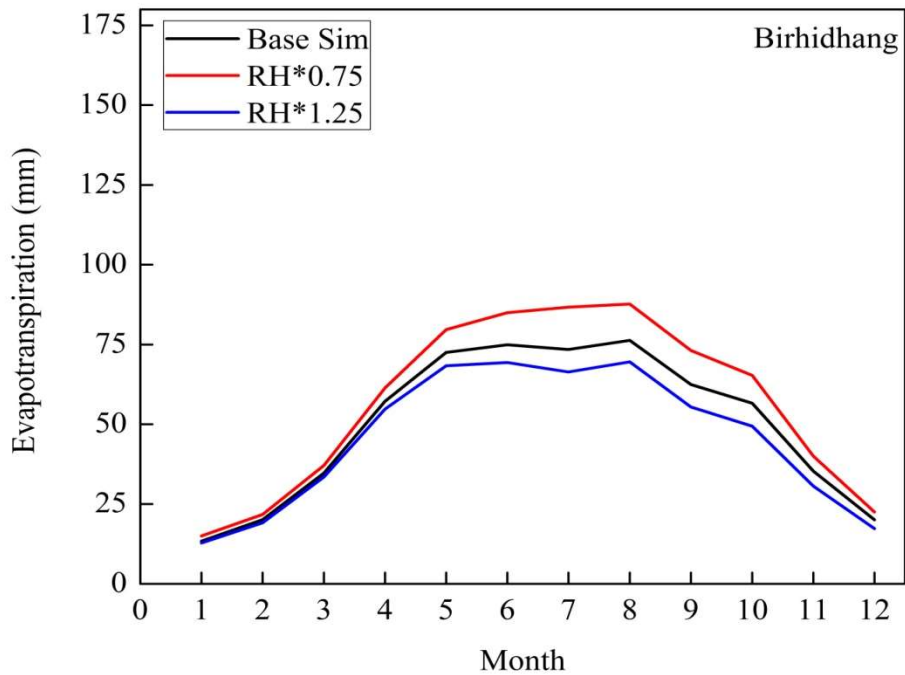
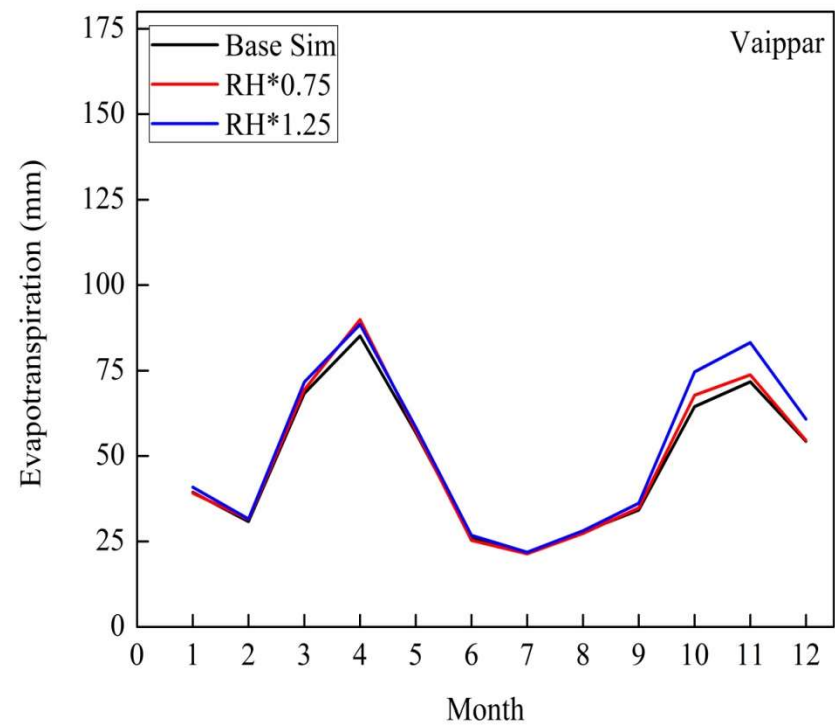
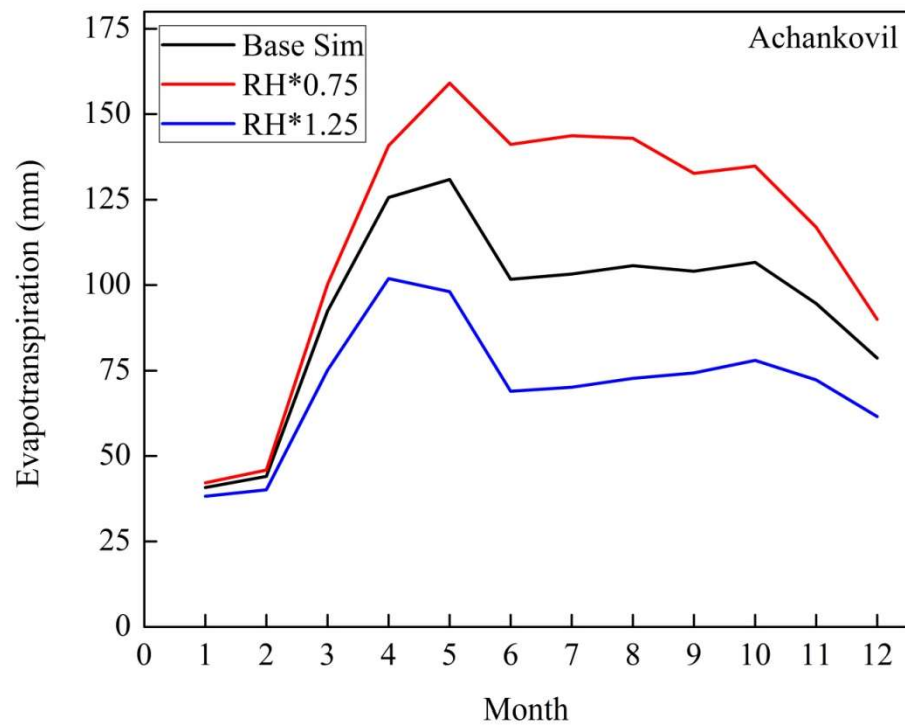


Fig. Impact on ET due to variability in RH

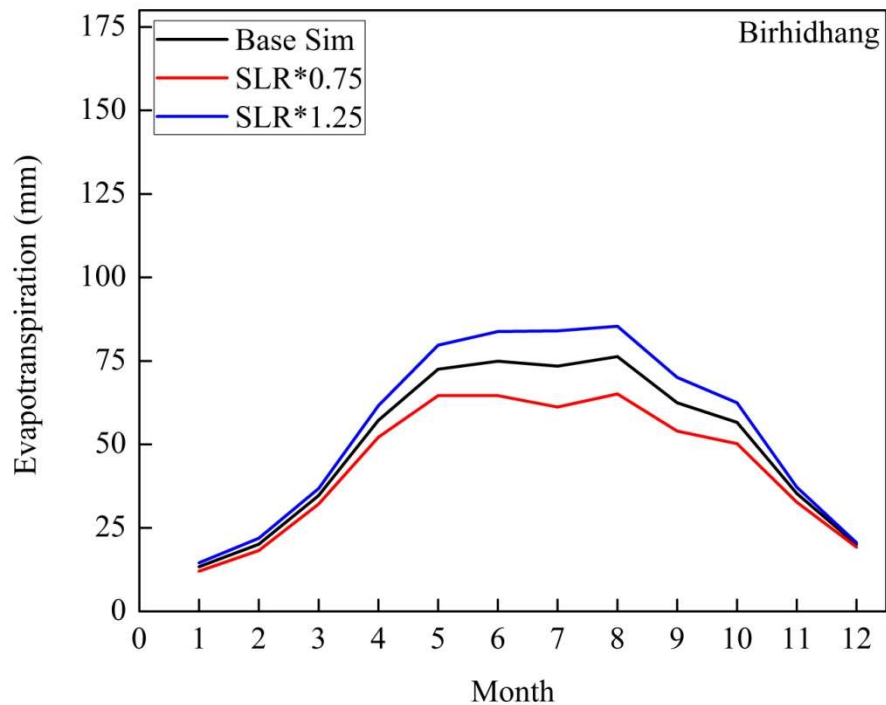
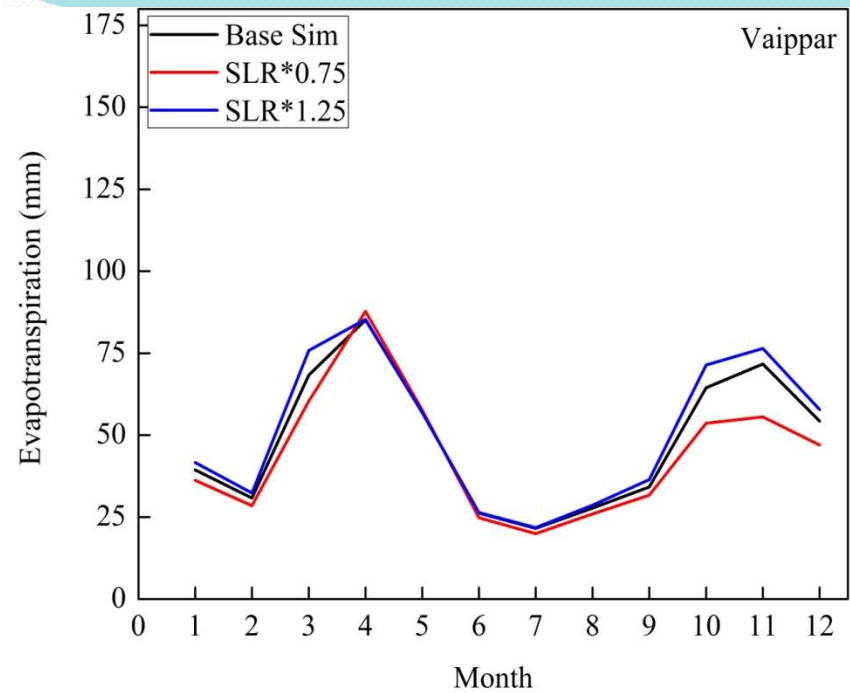
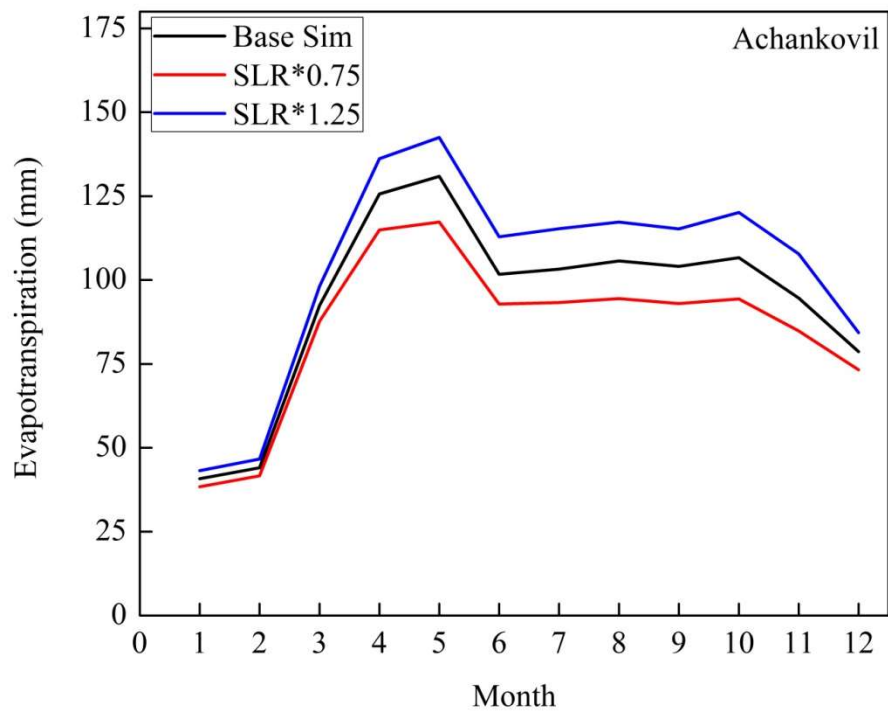


Fig. Impact on ET due to variability in SLR

Conclusions

- Based on Preliminary analysis
- Errors in relative humidity have little effect on the streamflow in arid region (Vaippar basin)
 - But in Achankovil significant influence is visible
- Errors in relative humidity have little effect on the ET in arid region (Vaippar basin)
 - But in Achankovil and birhidhang significant influence is observed



Thank You