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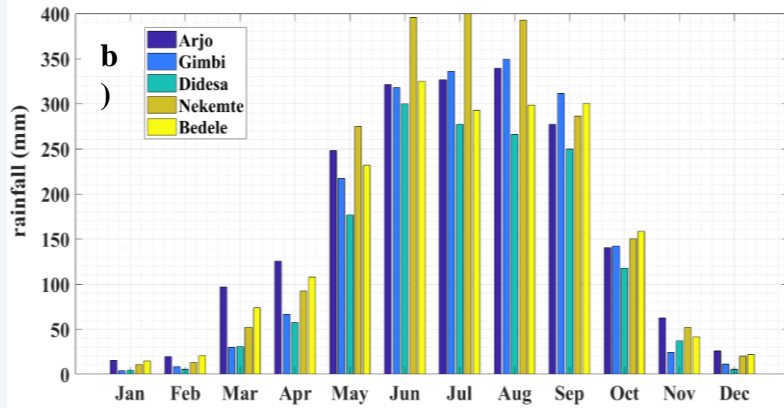
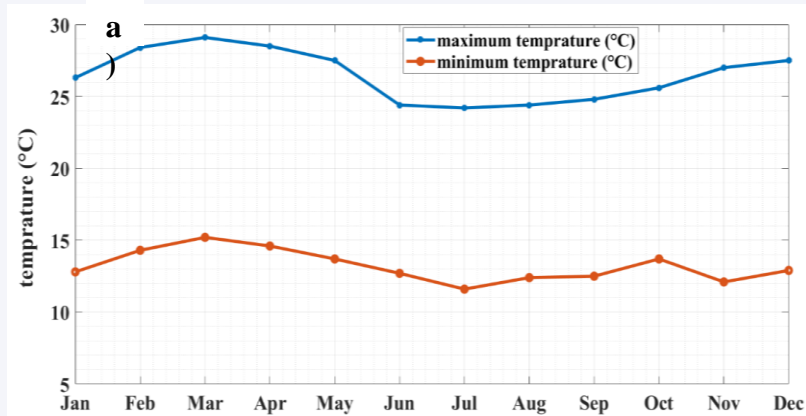
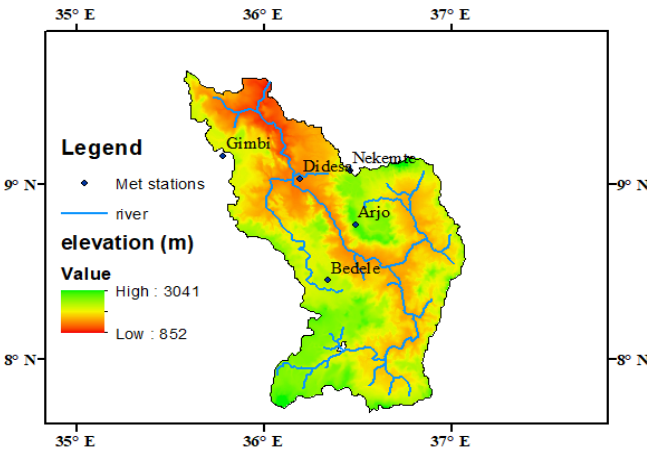
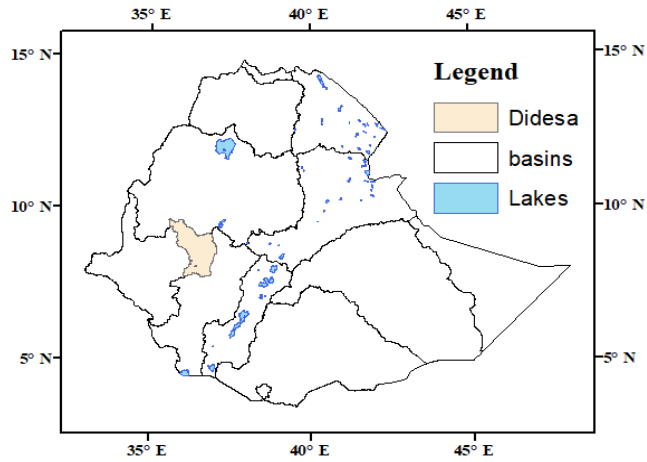


Modelling the impacts of the changing climate on  
streamflow in Didesa catchment, Abay basin, Ethiopia

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# Introduction

- About half of the global population is experiencing severe water scarcity due to climatic and non-climatic factors for some part of the year
- The Didesa catchment, which is the second largest subbasin of the Abay basin, significantly contributes to the Blue Nile's outflow.
- Understanding the dynamics of water availability under the changing climate assists in proper planning of land use and other development activities.
- The aim of this study is to analyze current and projected changes of climatic elements and its consequence on streamflow



Latitudes: 7.7°N - 10°N

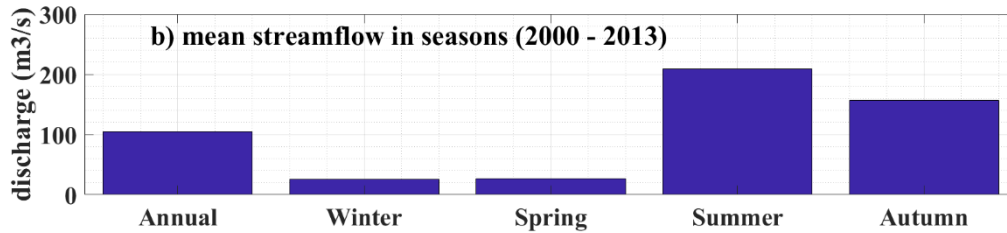
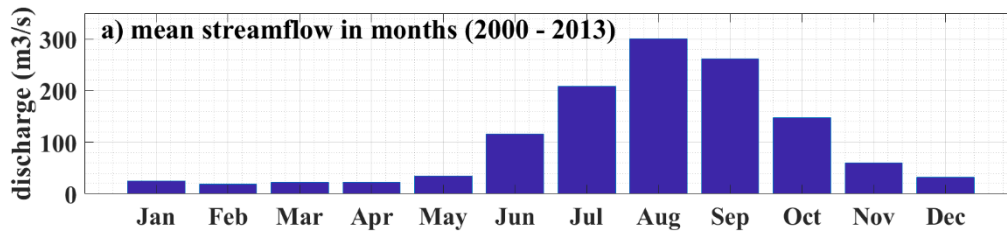
Longitudes: 35.5°E - 37.3°E

Elevation: 852 m - 3041 m

Annual rainfall: 1450 mm - 2050 mm

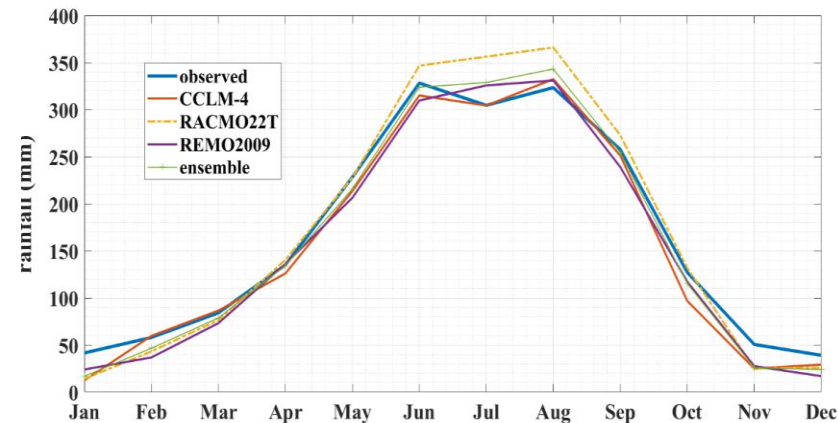
Max temp.: 21°C - 30°C

Min temp.: 10°C - 20°C

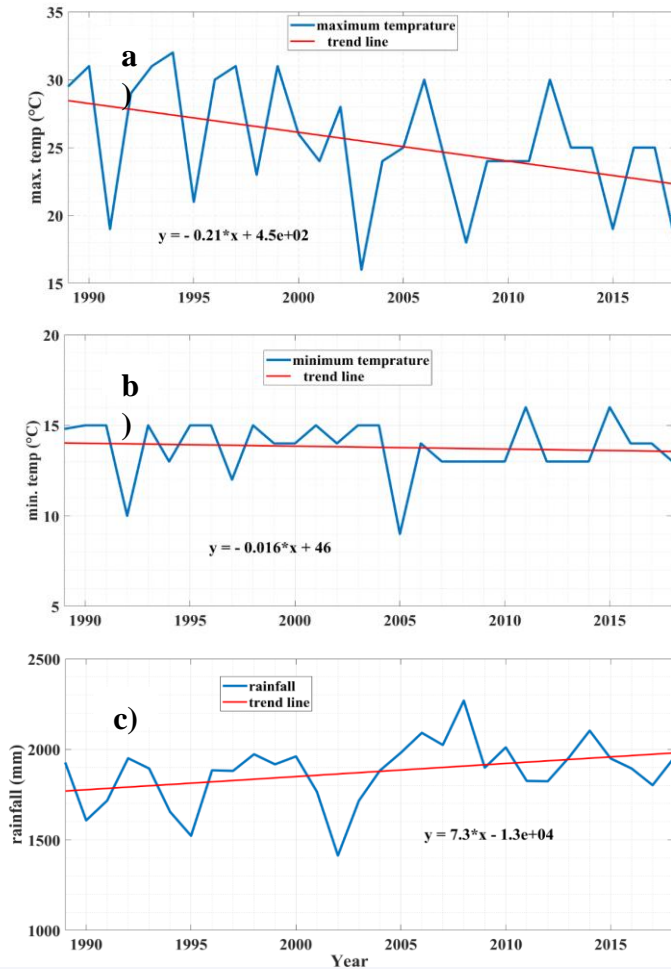


## Data:

- Met data from EMI
- Flow, DEM, land use/land cover from MWE
- RCM from cordex Africa domain
- Evaluation
- Bias correction



- ET0: Hargreaves
- Trend: the modified nonparametric MK trend test
- SWAT model: for impact analysis

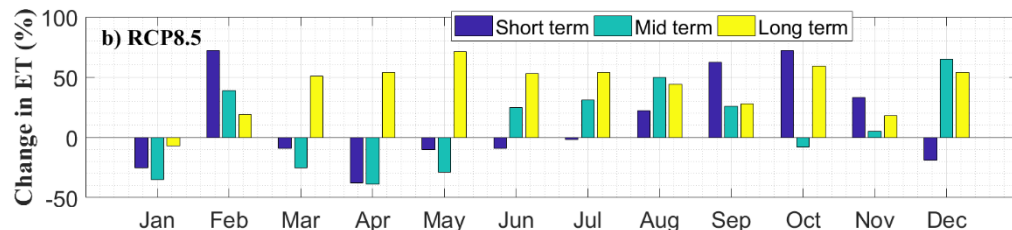
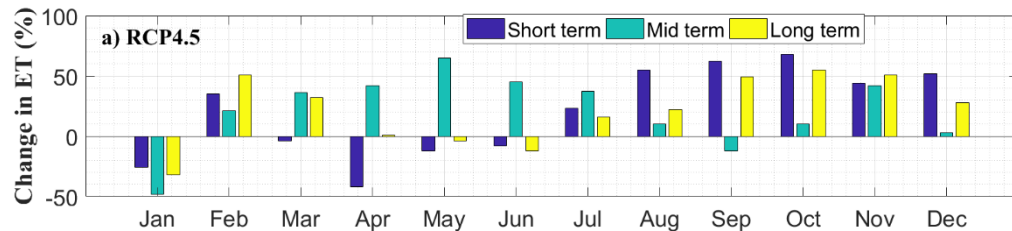
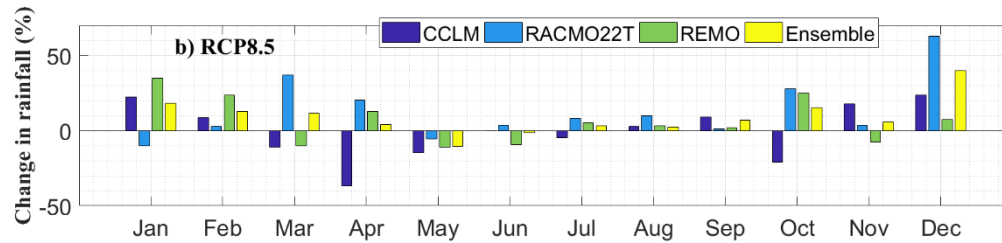
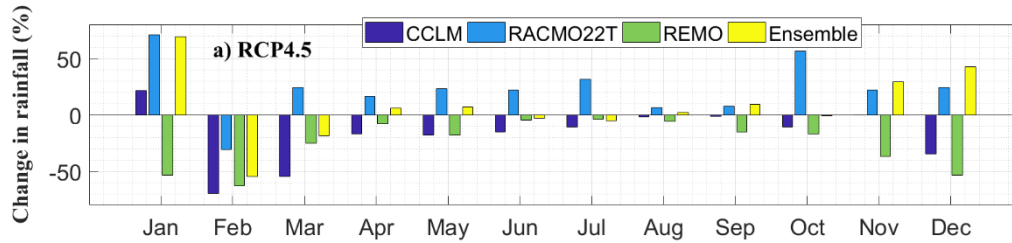


## Historical

- A slight increasing trend in rainfall
- A slight decreasing trend in max and min temp

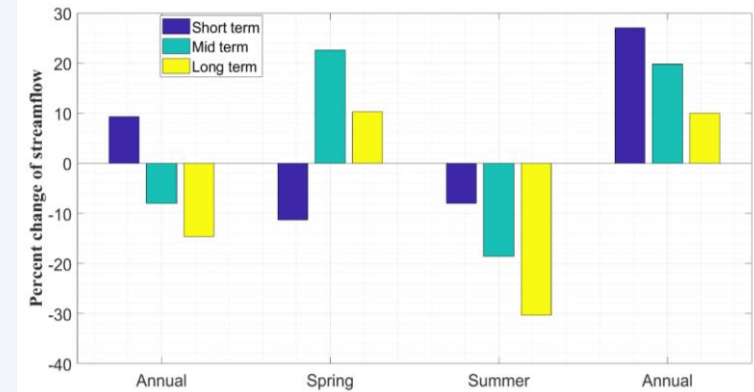
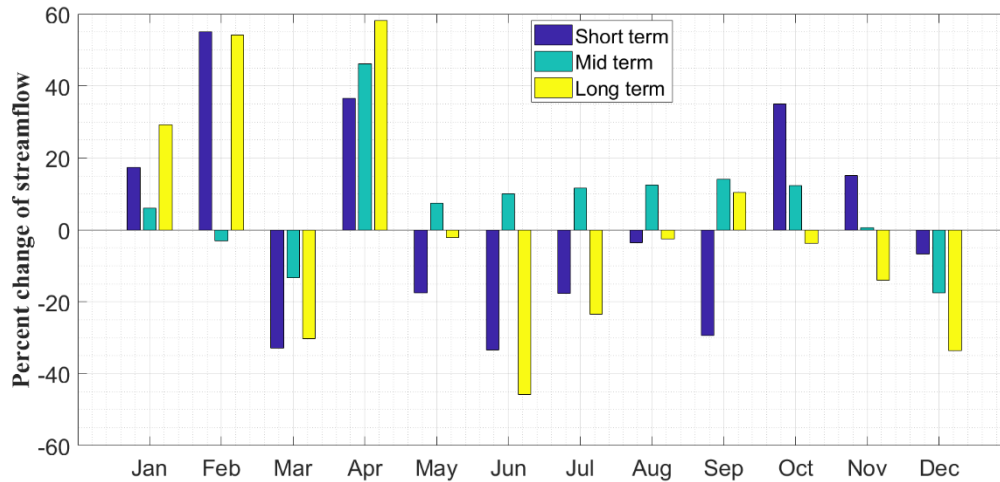
## Projected

- No consistent trend pattern in rainfall
- An increasing trend of max and min temp (in all periods and in RCP4.5 and RCP8.5)
- Expectation: increasing ET and decreasing streamflow



- No distinct pattern in rainfall
- Change in ET ranges from 5 to 80%
- Change in ET is mostly positive (increase in ET in future)

<i>Period</i>	<i>R<sup>2</sup></i>	<i>NSE</i>	<i>PBIAS</i>
<i>Calibration (2000-2009)</i>	0.74	0.71	14.5
<i>Validation (2010-2013)</i>	0.70	0.67	-4.0



- Changes in streamflow is positive for dry months
- Changes in streamflow is negative for wet months
- Changes in streamflow is positive for spring season
- Changes in streamflow is negative for summer season

# Recommendations

- *water resources availability should be included in any planning and the resources should be used wisely*
- *Any activity related to soil water conservation is recommended to cope up with the exped decrease of streamflow.*





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**THANK YOU!**