

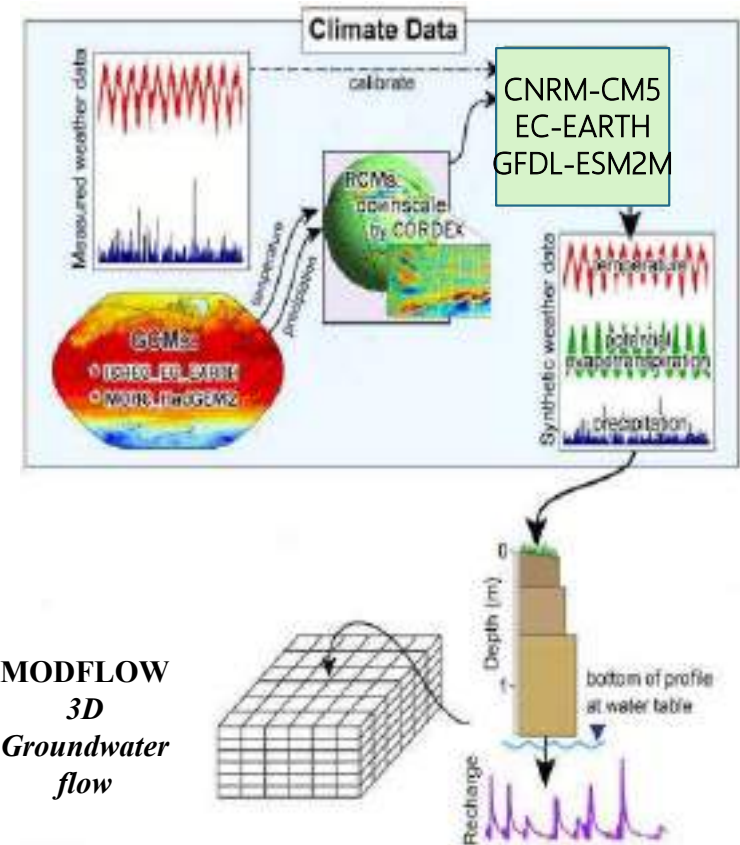
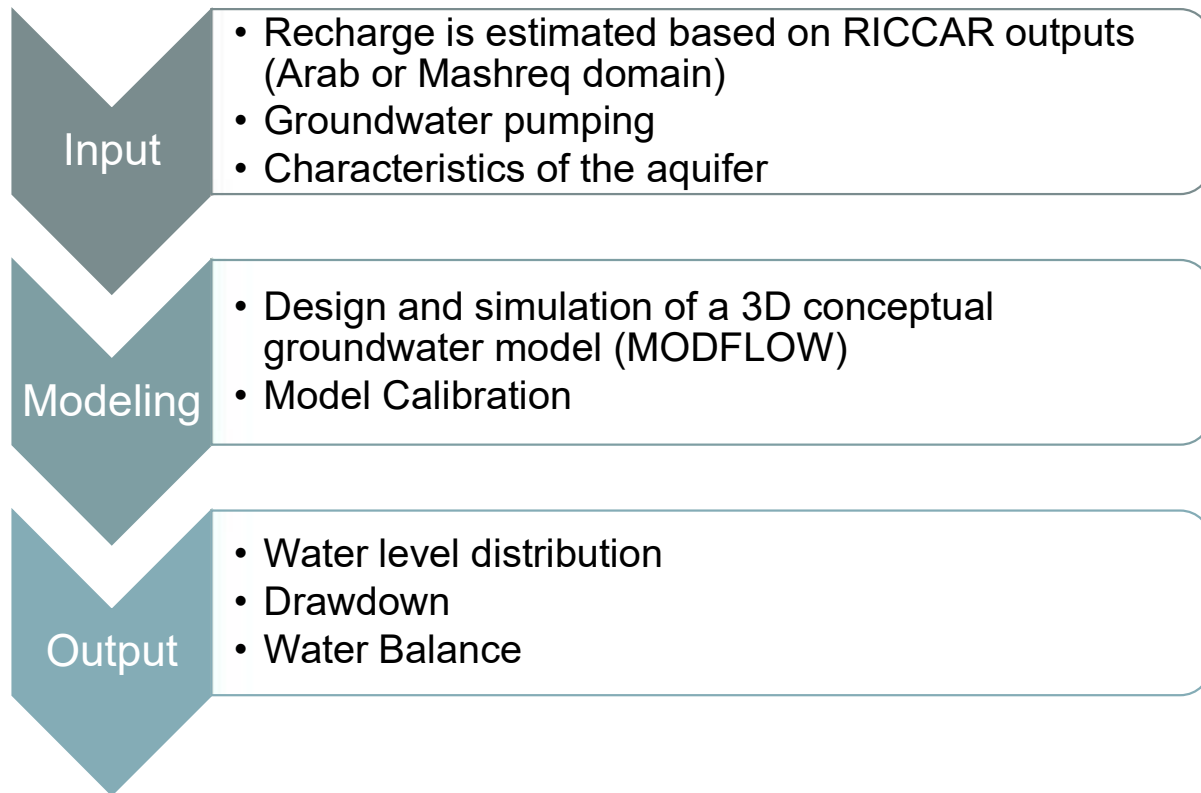


Shared Prosperity Dignified Life



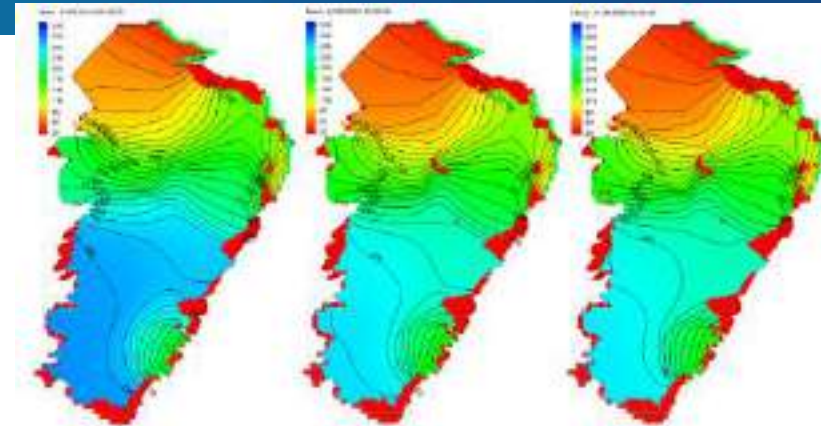
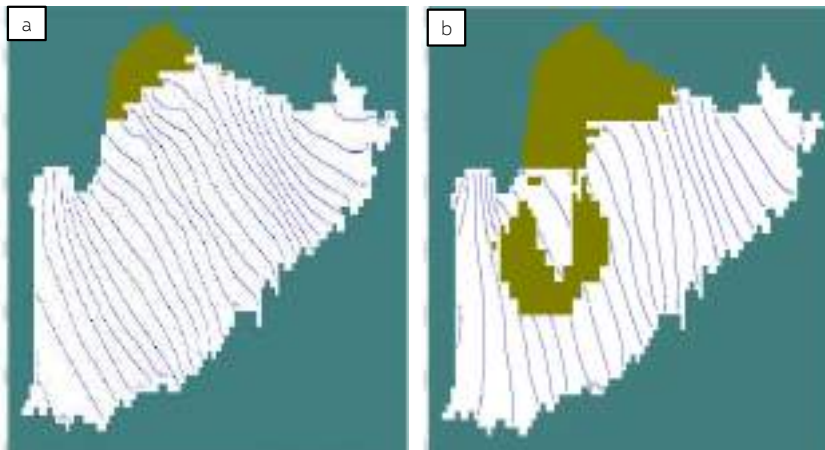
Overview on RICCAR Practical Examples

Groundwater Modeling to Assess the Impacts of Climate Change



Climate Change Impacts on Groundwater

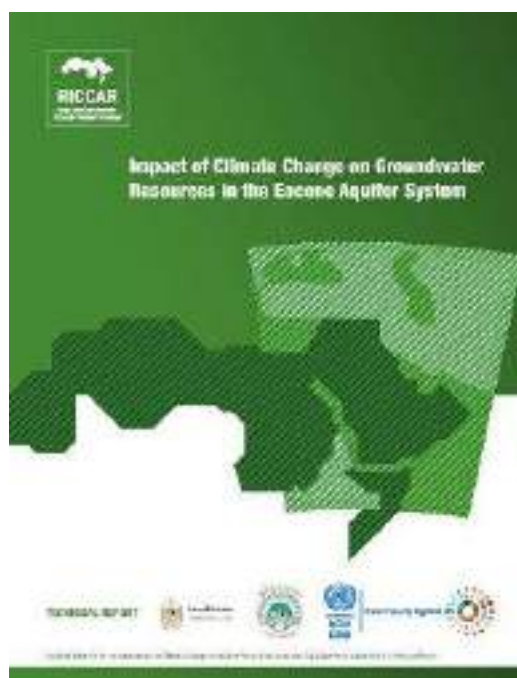
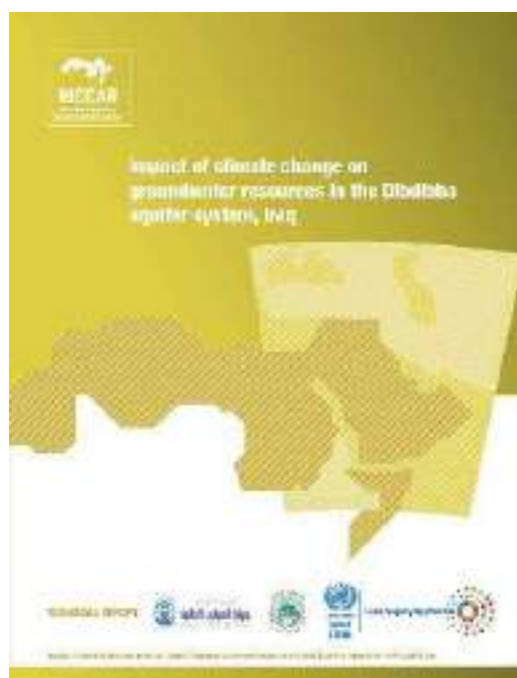
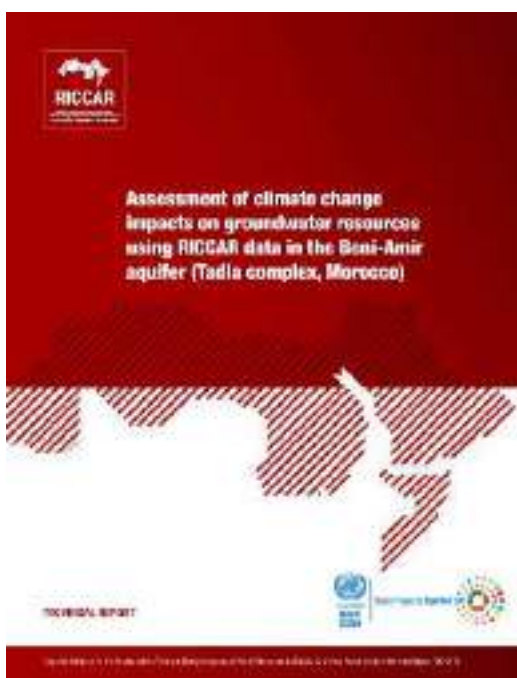
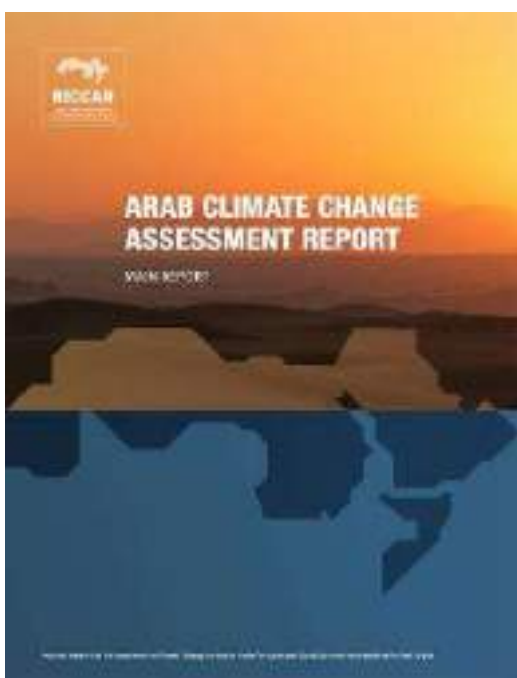
- Eocene Aquifer System, Palestine
- Dibdibba Aquifer System, Iraq
- Beni-Amir Aquifer, Tadla Complex, Morocco



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Selected RICCAR Publications



Transboundary cooperation in climate change adaptation

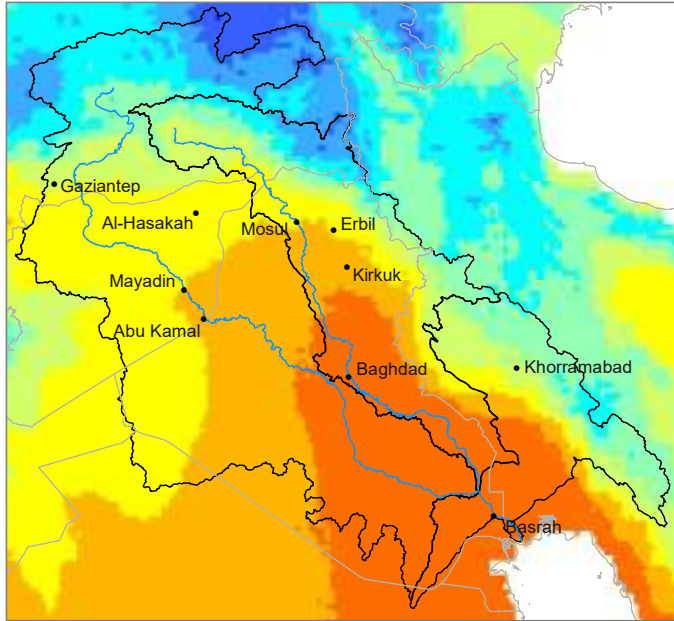
- More efficient adaptation: enlarging the planning space and identification of better priorities, sharing of data
- Addressing floods and droughts more efficiently
- Reducing uncertainties, preventing unilateral adaptation measures
- Enhancing adaptation planning and implementation at the country level



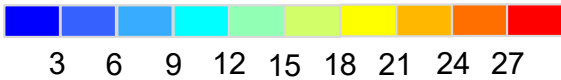
Sharing costs and benefits

Mean annual temperature change (°C) – SSP5-8.5

1995 – 2014

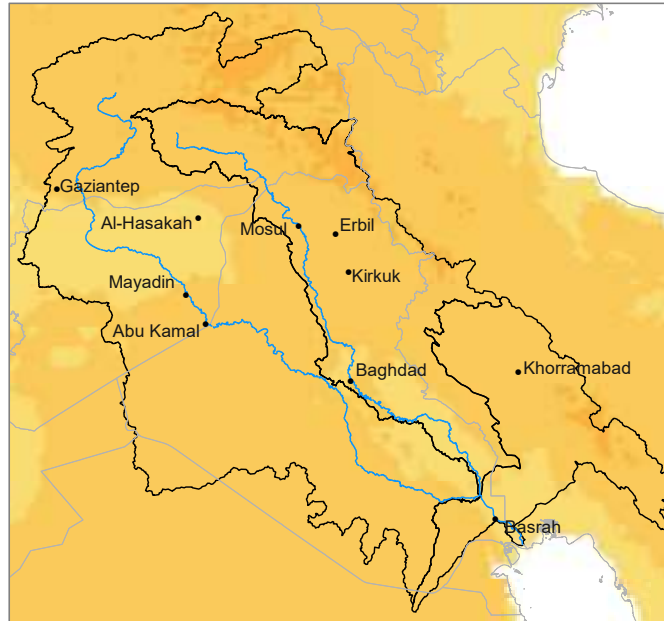


Temperature (°C)

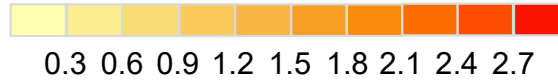


Downstream Tigris-Euphrates

2021 – 2040

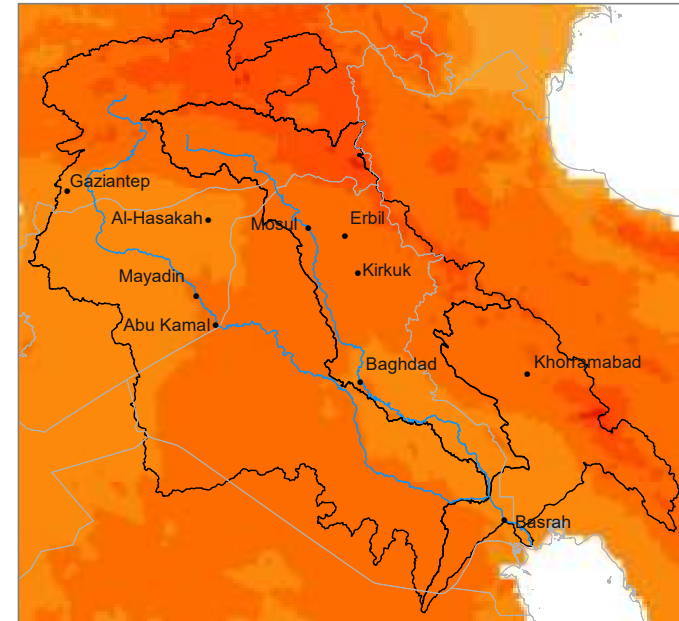


Change in temperature (°C)

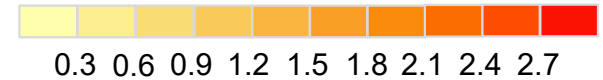


Iraq: +0.9 °C on average
(Up to +1.3 °C)

2041 – 2060



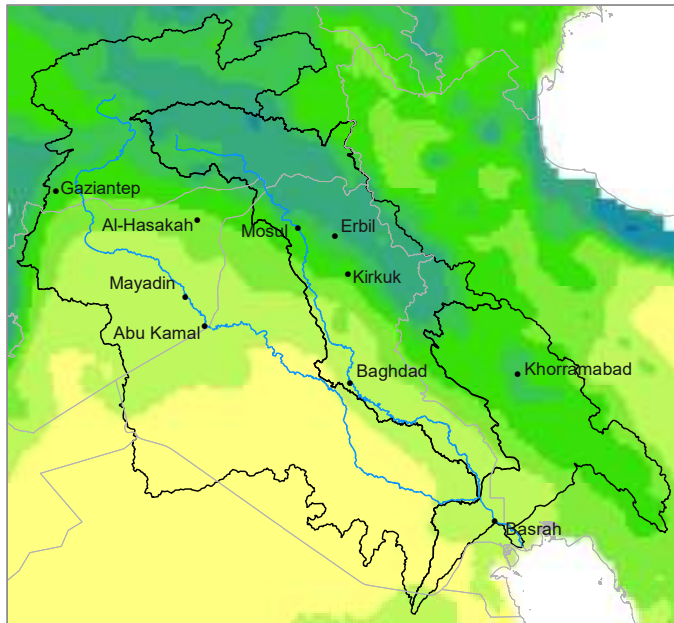
Change in temperature (°C)



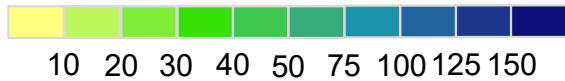
+ 2.2 °C on average
(Up to +2.7 °C)

Mean annual precipitation change (mm/month) – SSP5-8.5

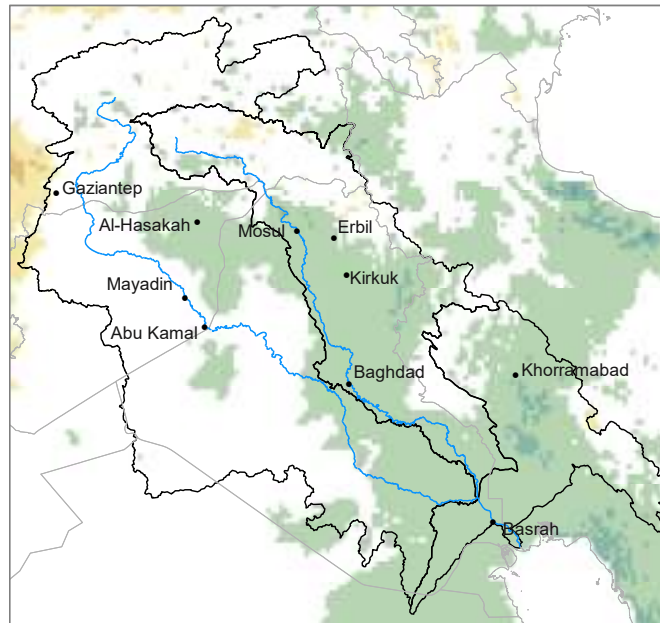
1995 – 2014



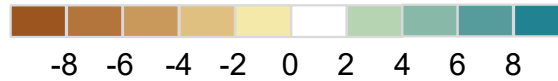
Precipitation (mm/month)



2021 – 2040

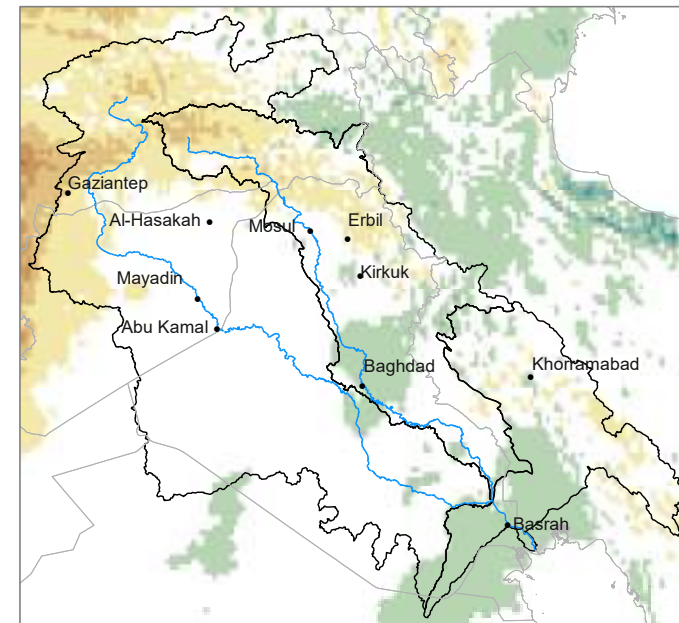


Change in precipitation (mm/month)

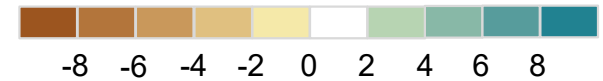


Iraq: +13% on average

2041 – 2060



Change in temperature (°C)



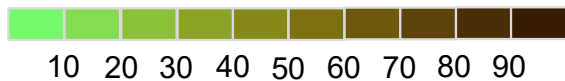
Iraq: +8% on average
(Up to -8% in upper basin)

Mean drought frequency (based on SPI-12) – SSP5-8.5

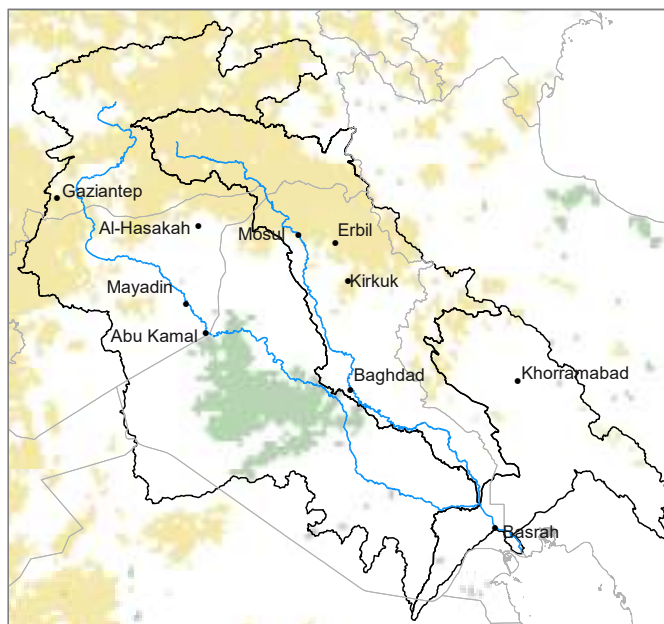
1995 – 2014



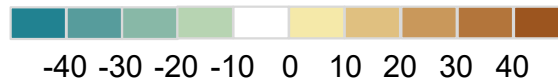
Drought frequency (%)



2021 – 2040

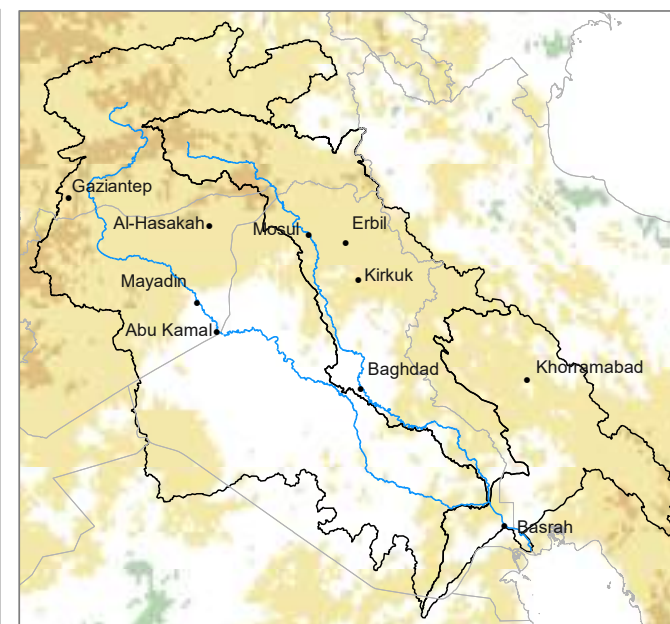


Change drought frequency (%)

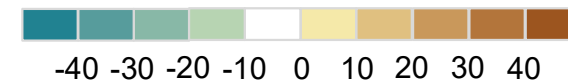


Iraq: up to 7.5% increase in drought frequency

2041 – 2060

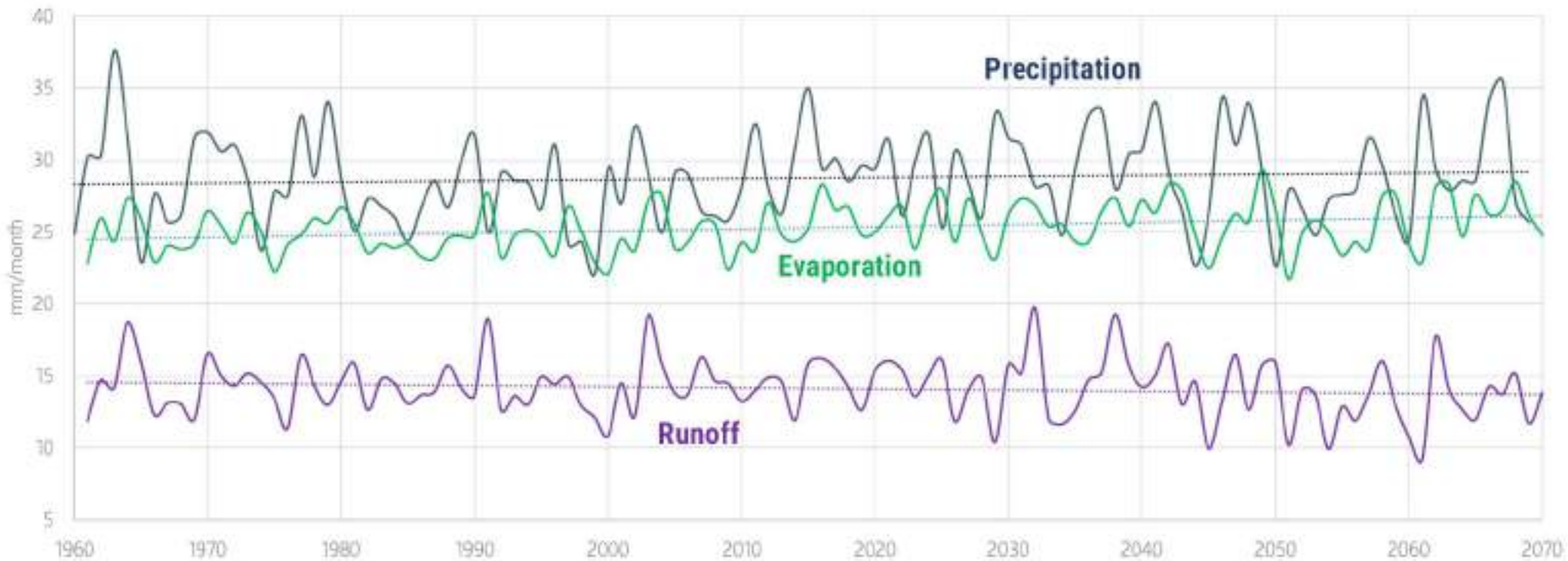


Change drought frequency (%)



Iraq: up to 11% increase in drought frequency

Change in water availability



Although annual precipitation generally increasing very slightly:

- Precipitation wide interannual variability will continue
- Evaporation projected to increase at slightly greater rate due to increasing temperatures
- Runoff projected to decrease due to less water resources stored as snow



Shared Prosperity Dignified Life



Thank you

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