Cli-Op-Thaya

Climate Scenarios for the Thaya catchment

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Initial conditions

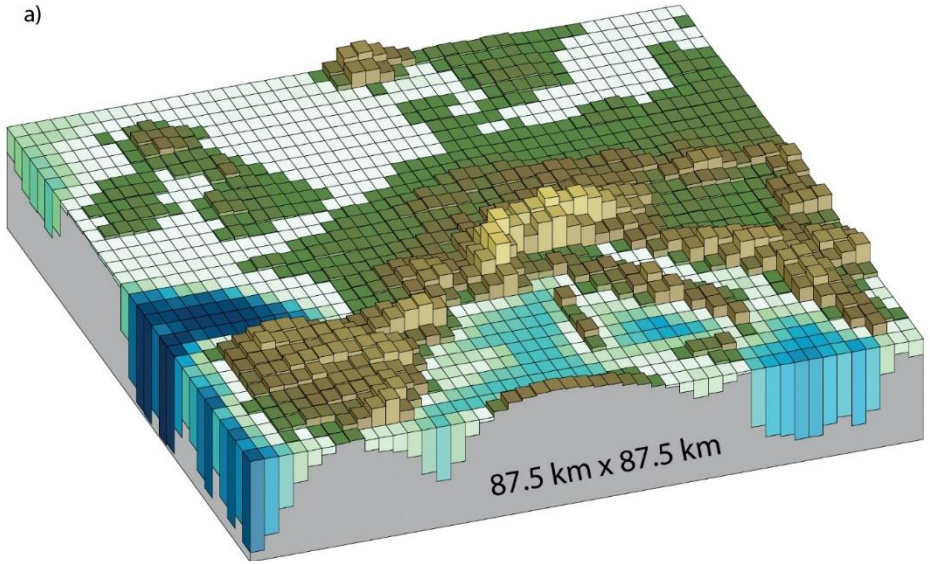
- Aim: Assessment of future climate conditions in the Thaya basin and data base for rainfall-runoff modelling

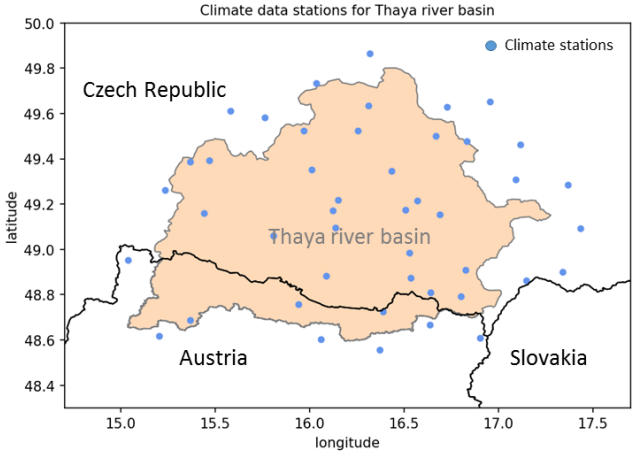
  - Data: Climate Simulations of the 5th (CMIP5) and 6th (CMIP6) generation of Global Climate Models

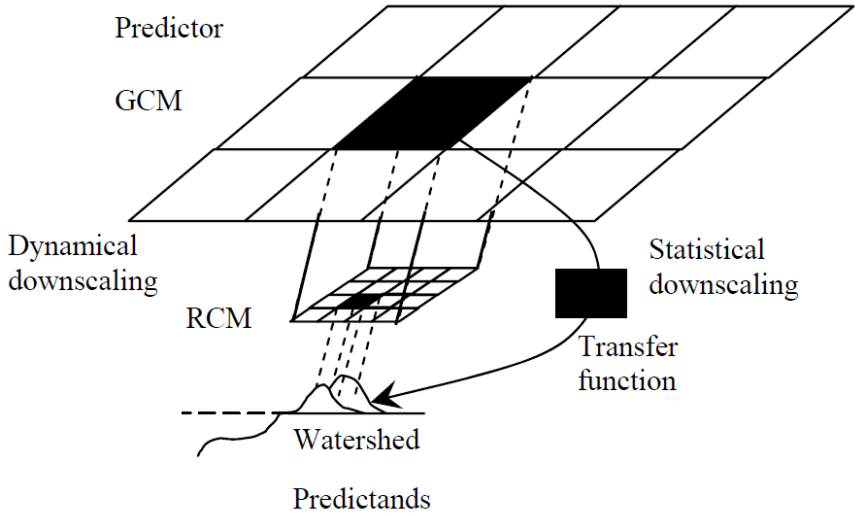
  - „Downscaling“ for station measurements in the Thaya catchment

  - Interpolation onto regular grid

  → **Input for hydrological modelling**



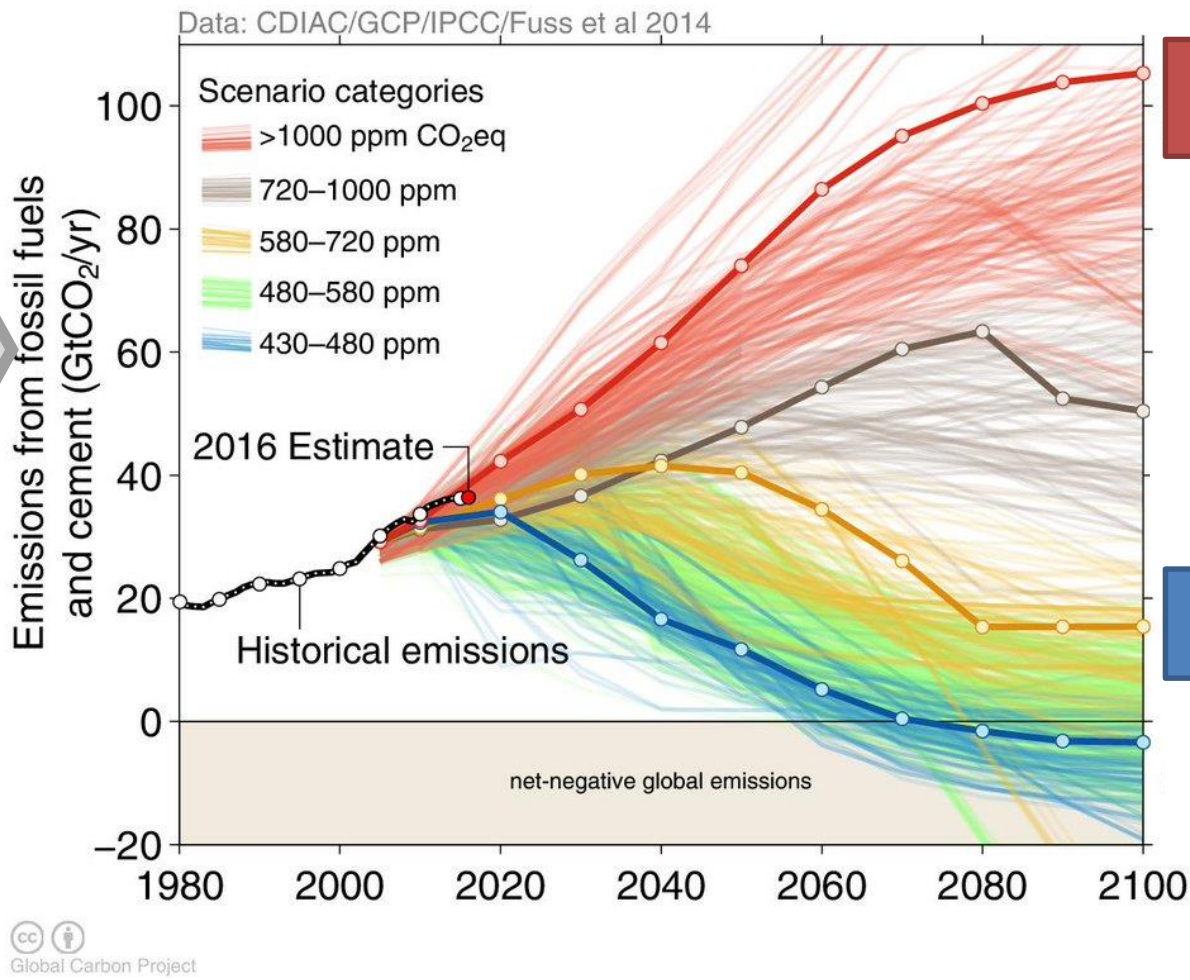




Wetterhall 2005

Emissionscenarios

Socioeconomic development:
Globalization vs. Regionalization?
Population increase?
Adaptation and/or mitigation?
…



RCP8.5 „Worst Case“

RCP8.5

RCP4.5 Climate Protection

RCP4.5

Climate Models

CMIP5 (ZAMG)

- RCP4.5 (4 Models)
- RCP8.5 (6 Models)

CMIP6 (CzechGlobe)

- SSP126 (7 Models)
- SSP245 (7 Models)
- SSP370 (7 Models)
- SSP585 (7 Models)

Latest and previous generation of climate models

Ensemble of climate models for each scenario

Downscaling
„EPISODES “

Downscaling
„Advanced Delta Method“

Two different methods for downscaling

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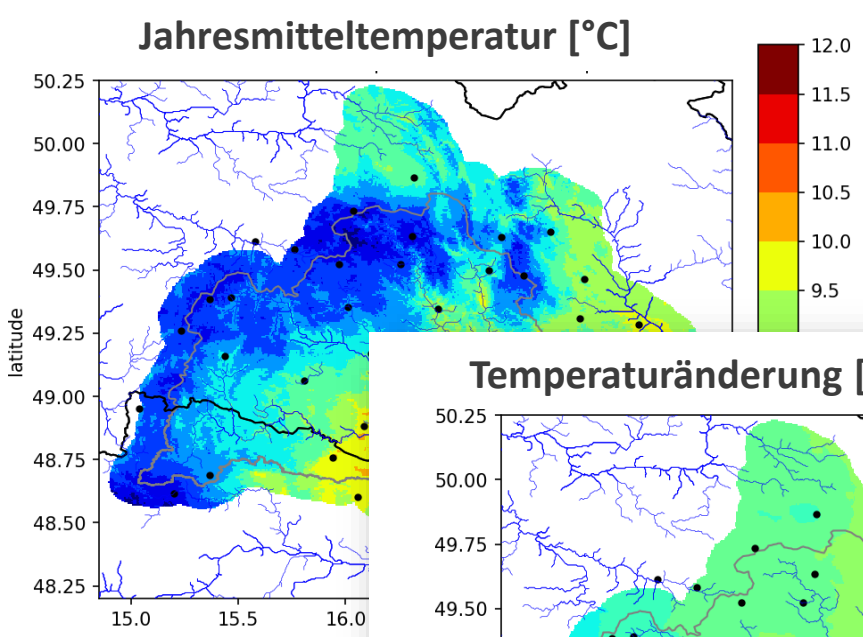
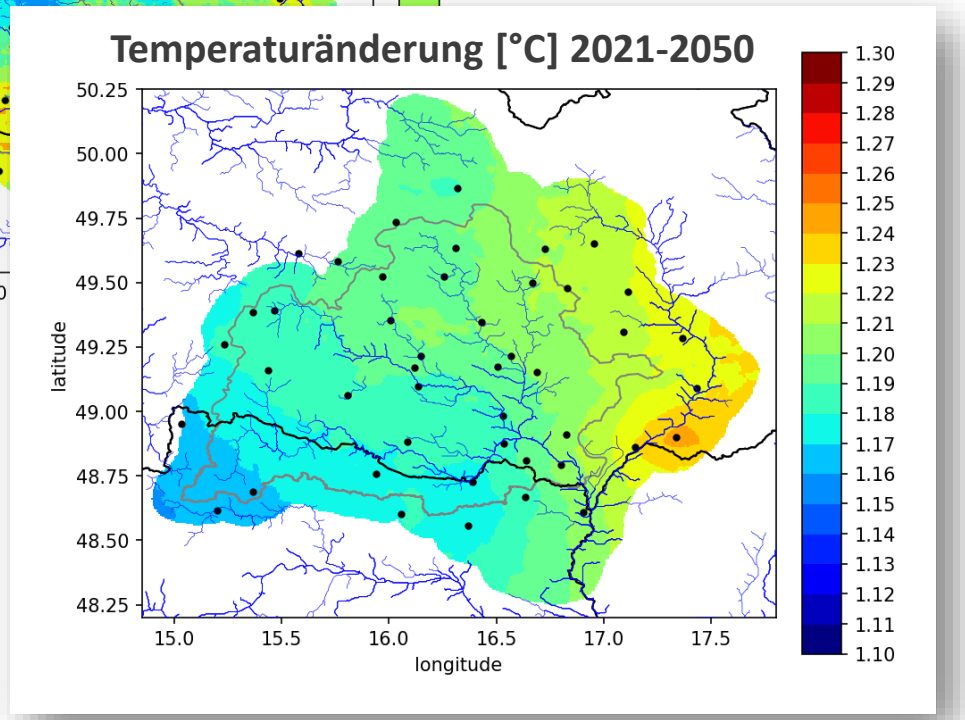
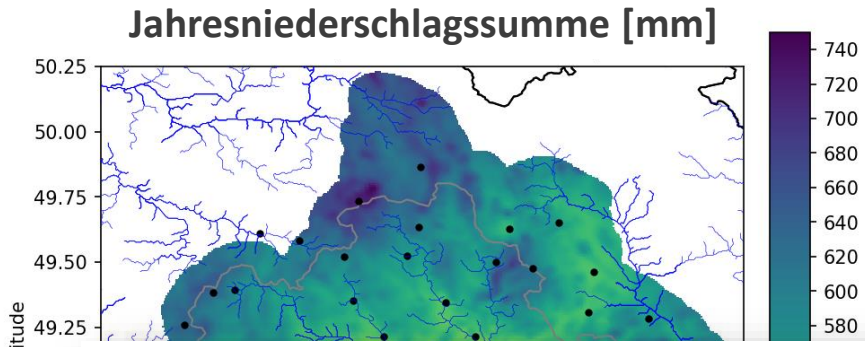
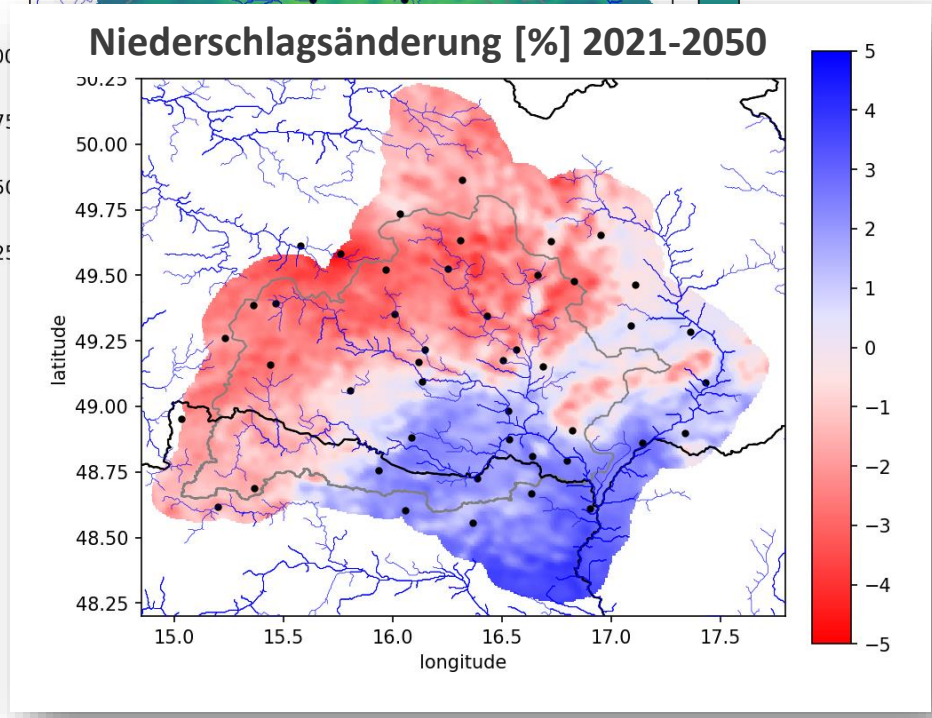
Results ZAMG

- Climate Change Signal: Ensemble Mean (across all models), „Worst Case“ Szenario (RCP8.5)



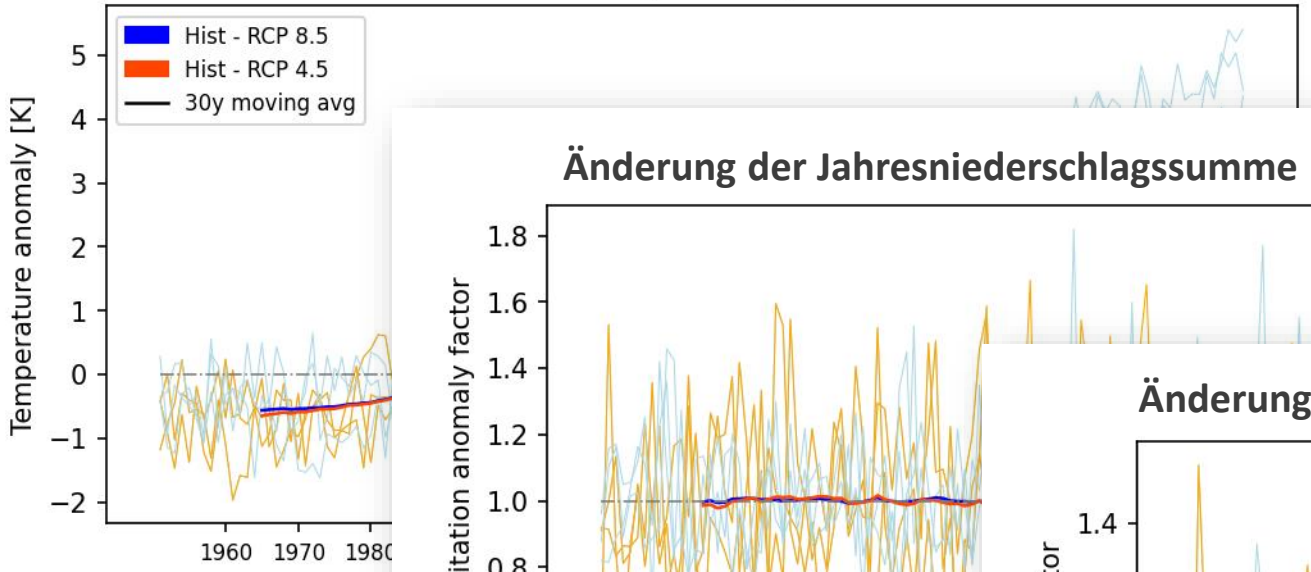




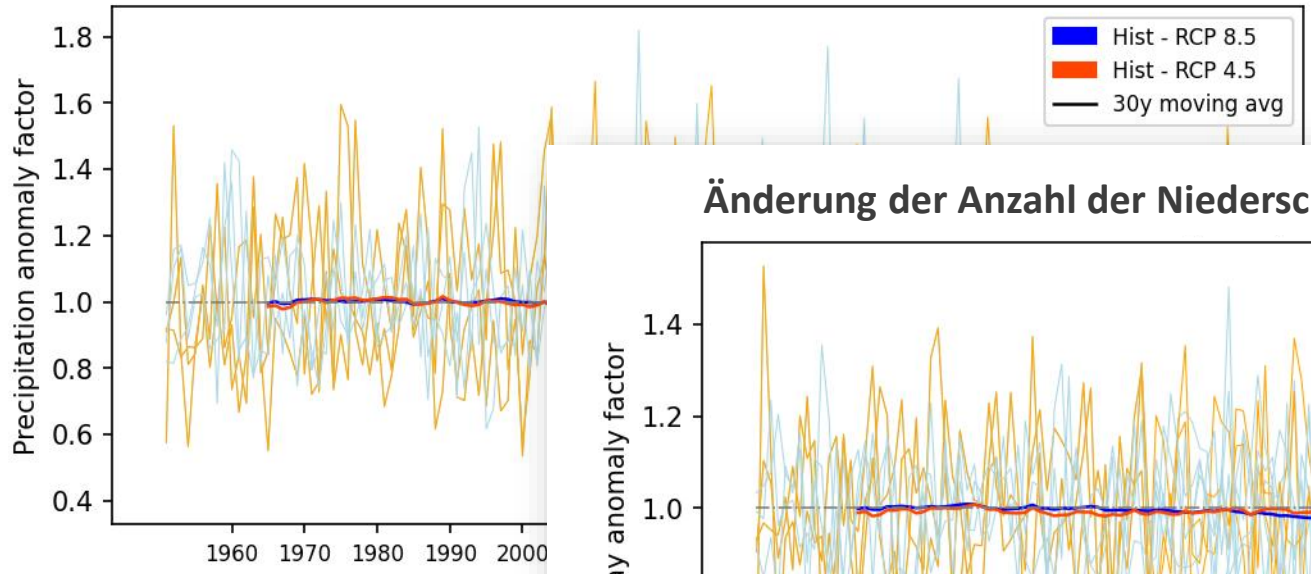


Results ZAMG

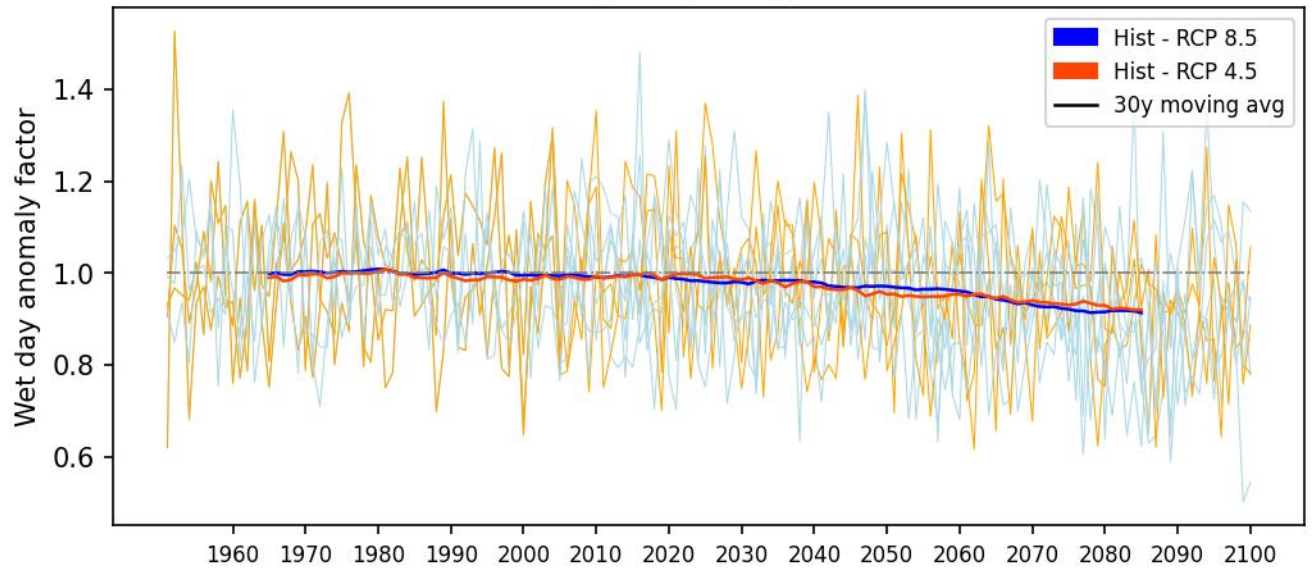
Änderung der Jahresmitteltemperatur [°C] (Ref: 1981-2010)



Änderung der Jahresniederschlagssumme [mm] (Ref: 1981-2010)

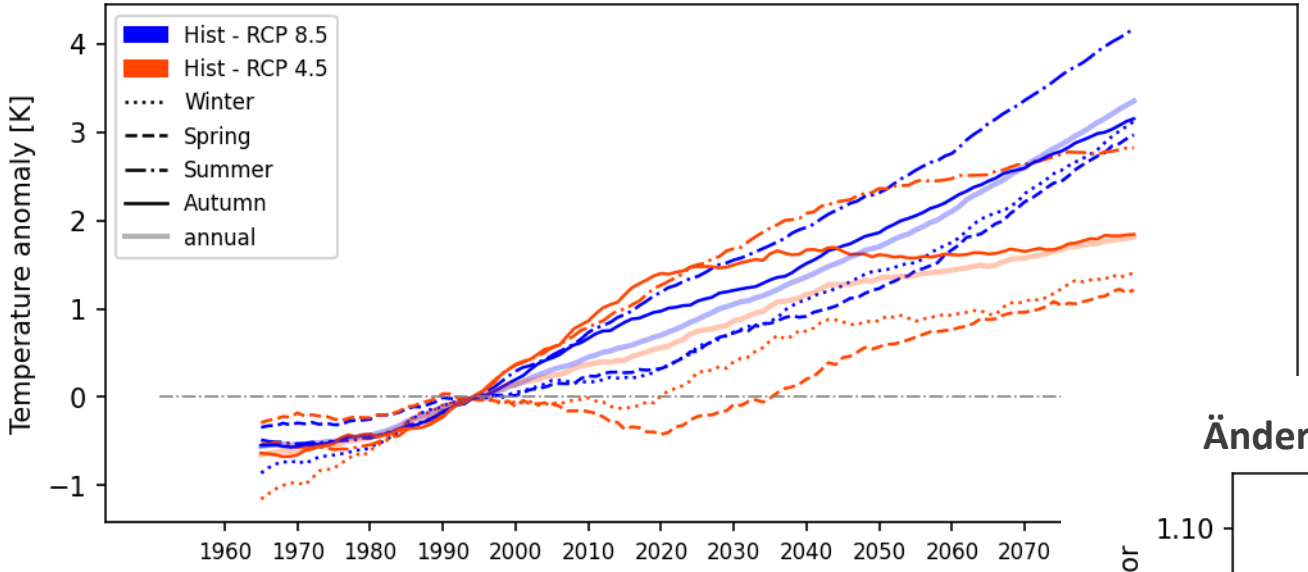


Änderung der Anzahl der Niederschlagstage [%] (Ref: 1981-2010)

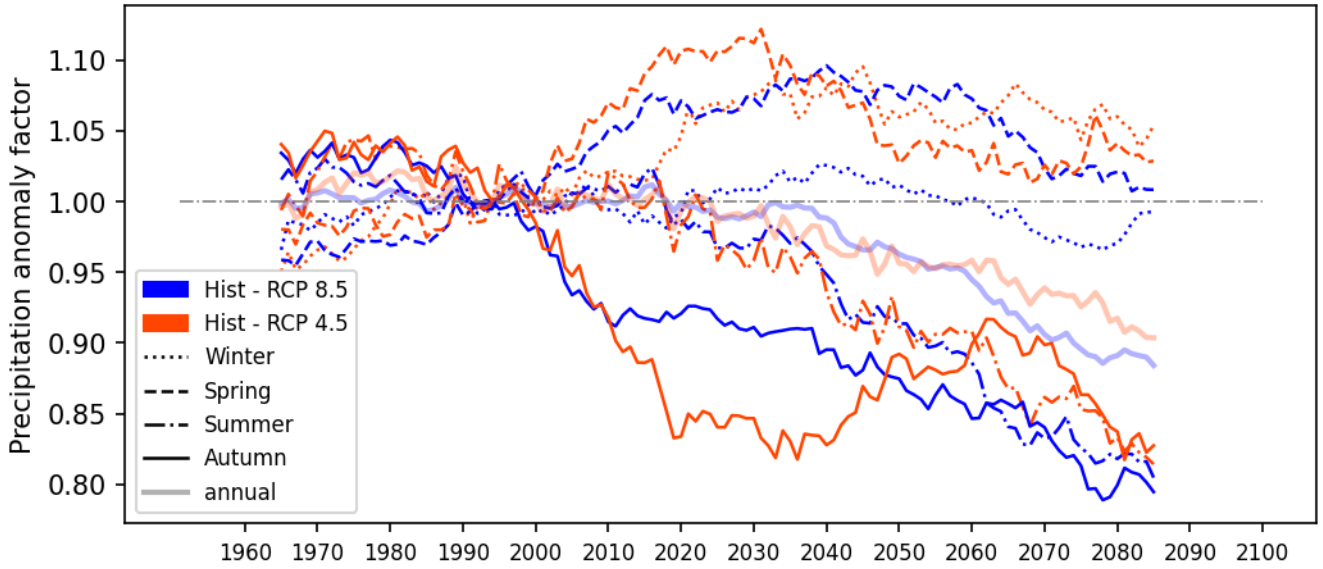


Results ZAMG

Änderung der saisonalen Mitteltemperaturen [°C] (Ref: 1981-2010)



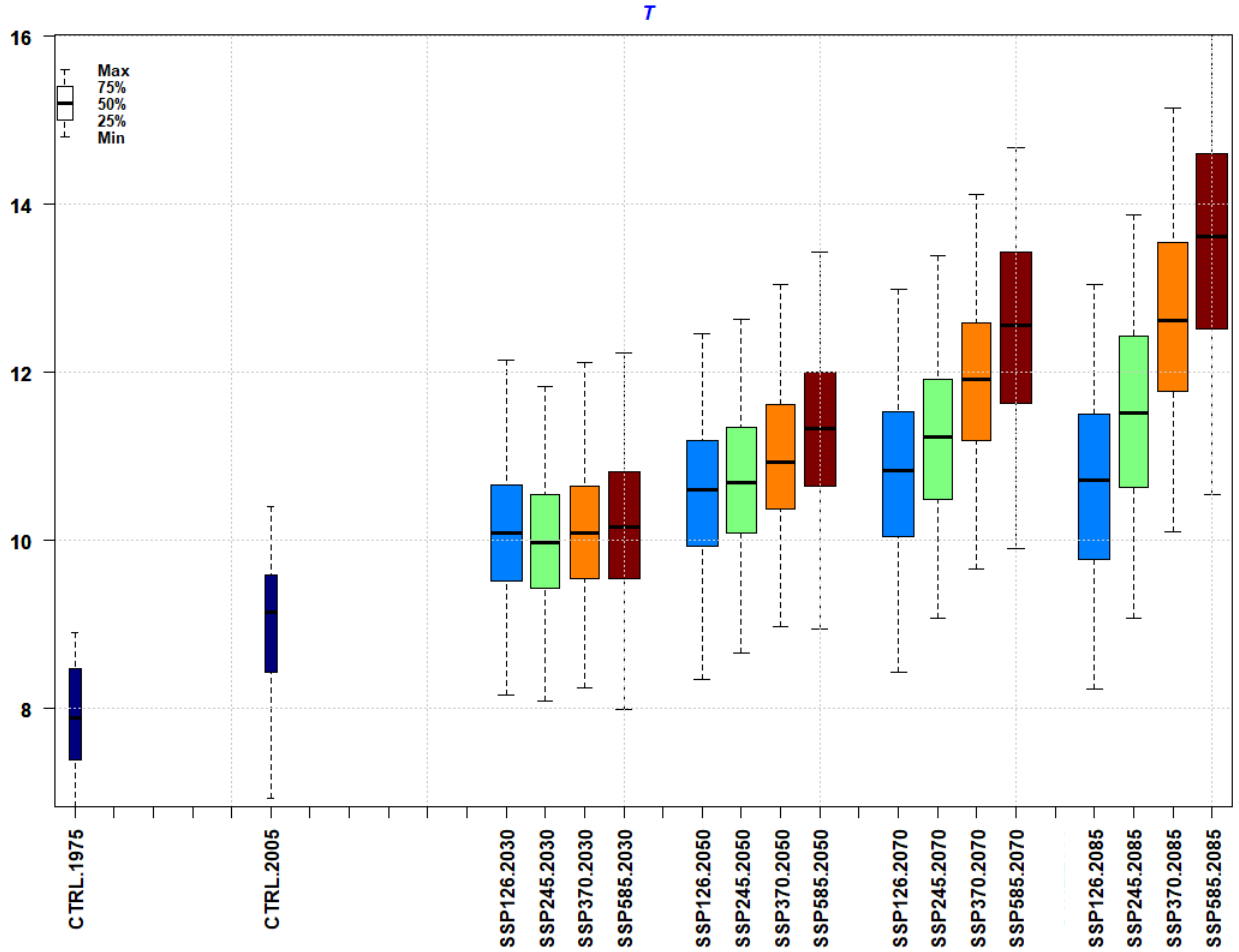
Änderung der saisonalen Niederschlagssummen [%] (Ref: 1981-2010)



Results CzechGlobe

Climate change based on various emission scenarios

Mean temperature



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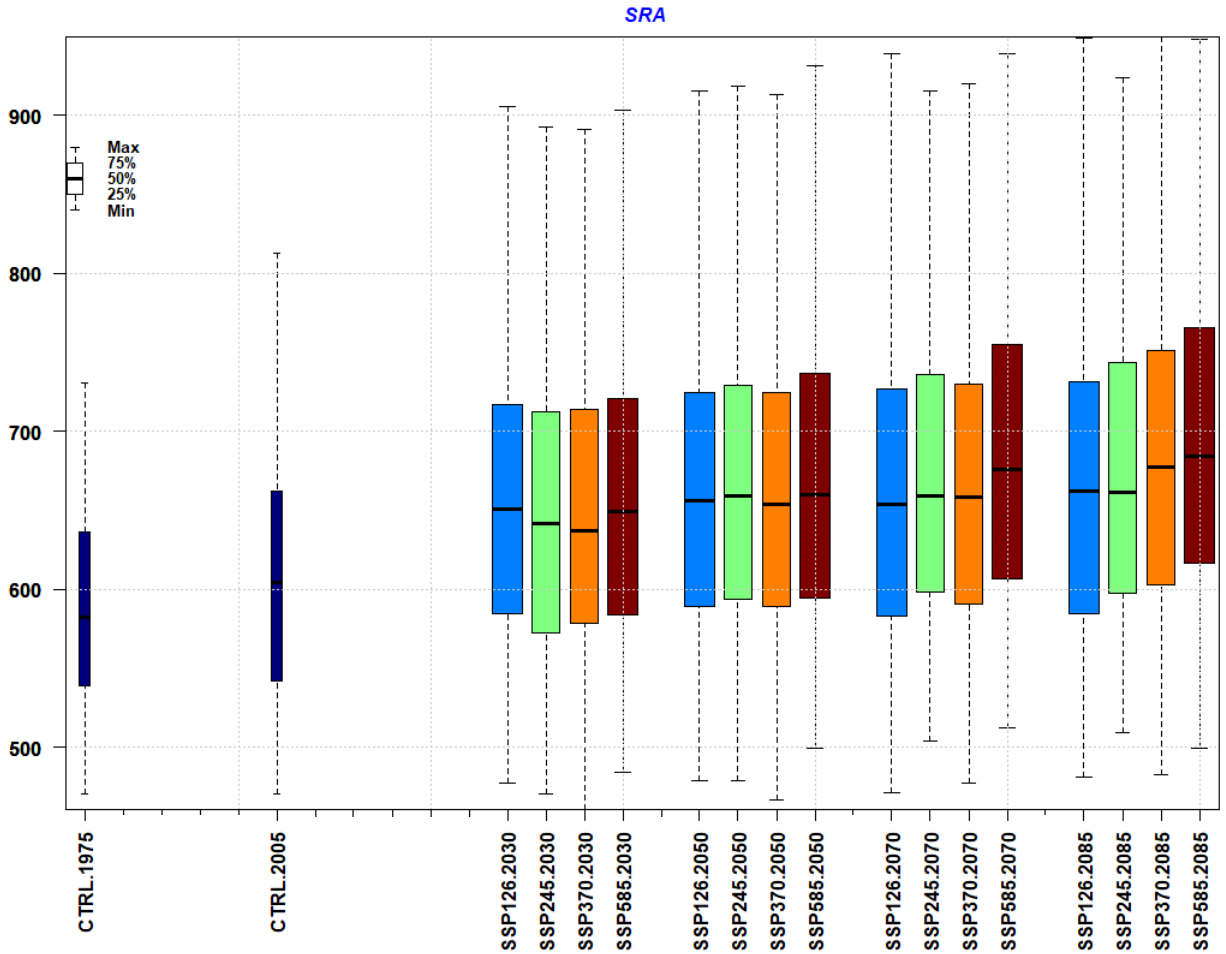
Results CzechGlobe

Climate change based on various emission scenarios

Precipitation



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Summary

Mean Climate Change Signal - **Annual**

ZAMG (CMIP5/EPISODES)

	„Climate protection“ / „worst case“	
	2021/2050	2071/2100
Temperature	+1,0 °C / +1,2 °C	+1,8 °C / + 3,4 °C
Precipitation	-2 % / -1 %	-10 % / -12 %

CzechGlobe (CMIP6/Advanced Delta Method)

	„Climate protection “ / „worst case“	
	2035/2064	2071/2100
Temperature	+1,2 °C / +1,7 °C	+3,0 °C / + 5,0 °C
Precipitation	+8 % / +9 %	+12 % / +15 %

Mean Climate Change Signal - **Summer**

ZAMG (CMIP5/EPISODES)

	„Climate protection “ / „worst case“	
	2021/2050	2071/2100
Temperature	+1,6 °C / +1,9 °C	+2,8 °C / + 4,1 °C
Precipitation	-6 % / -4 %	-20 % / -20 %

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Thank you for your attention!

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