

Kras. Voda. Človek.”

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REPUBLIKA SLOVENIJA
MINISTRSTVO ZA OKOLJE IN PROSTOR



ZRC SAZU
Inštitut za raziskovanje krasa

Glavne značilnosti krasa

Slovenijo zaznamuje stik Alp in Dinaridov – tj izjemno vodnato kraško razvodje med povodjem Jadrana in Črnega morja

- Podzemna prevotljenost
- Zelo skromna samočistilna sposobnost voda
- Velika ranljivost za onesnaženje
- Količinsko izjemno bogata podzemna vodna telesa





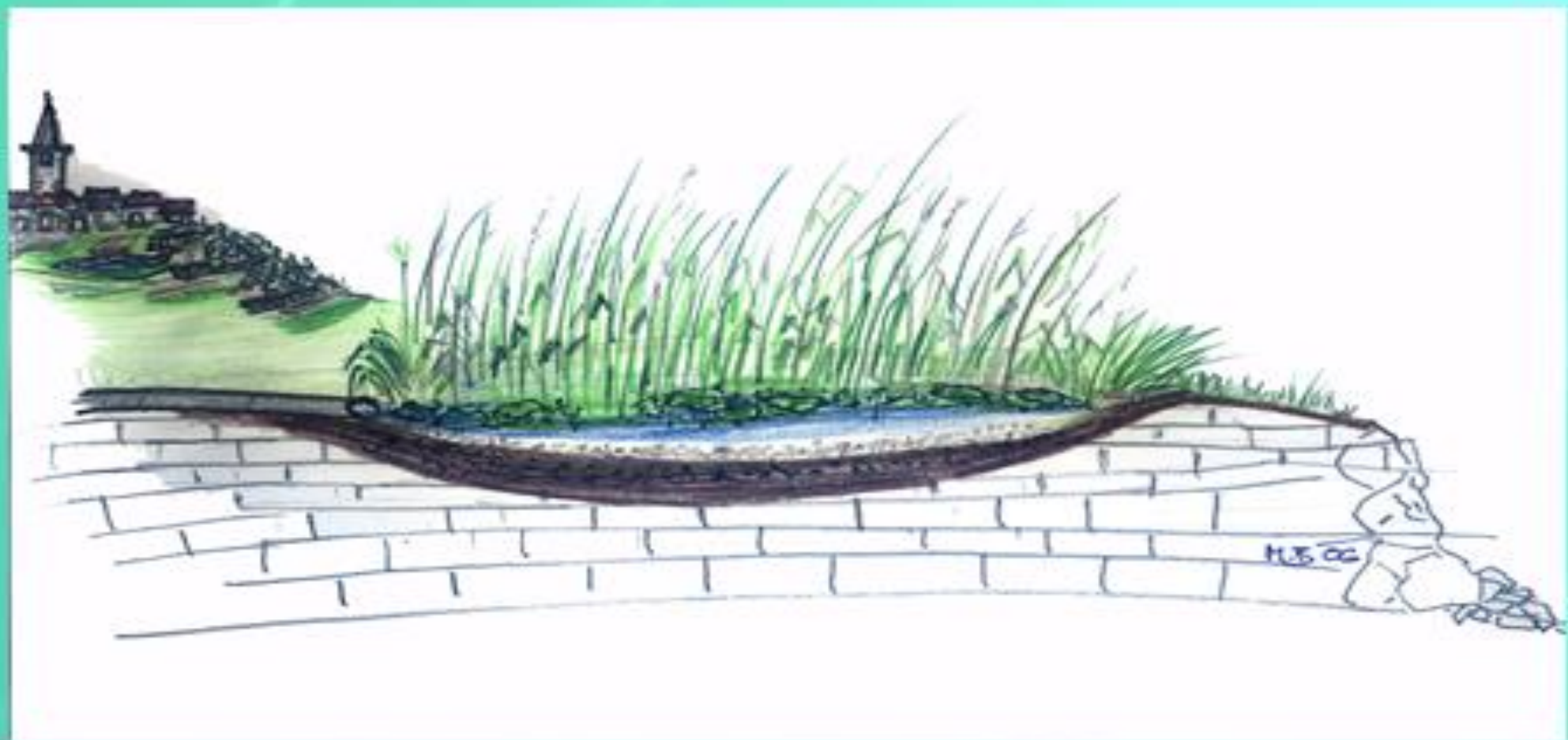
2018: EU/ SLO- IT project for **Green infrastructure of the rivers**

Bay of Trieste: junction of river, coast and marine ecosystems

TSO 2017, Škocjanski zatok: Delavnica EUSALP/EUSAIR „Eco-conectivity/Green infrastructure“

Sonaravno upravljanje z vodnimi viri

Kras



kraška obala v Izoli



Primer dobre prakse



Točka 4 – Ponikve (najmanjše slovensko kraško polje)

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Slovensko kraško polje

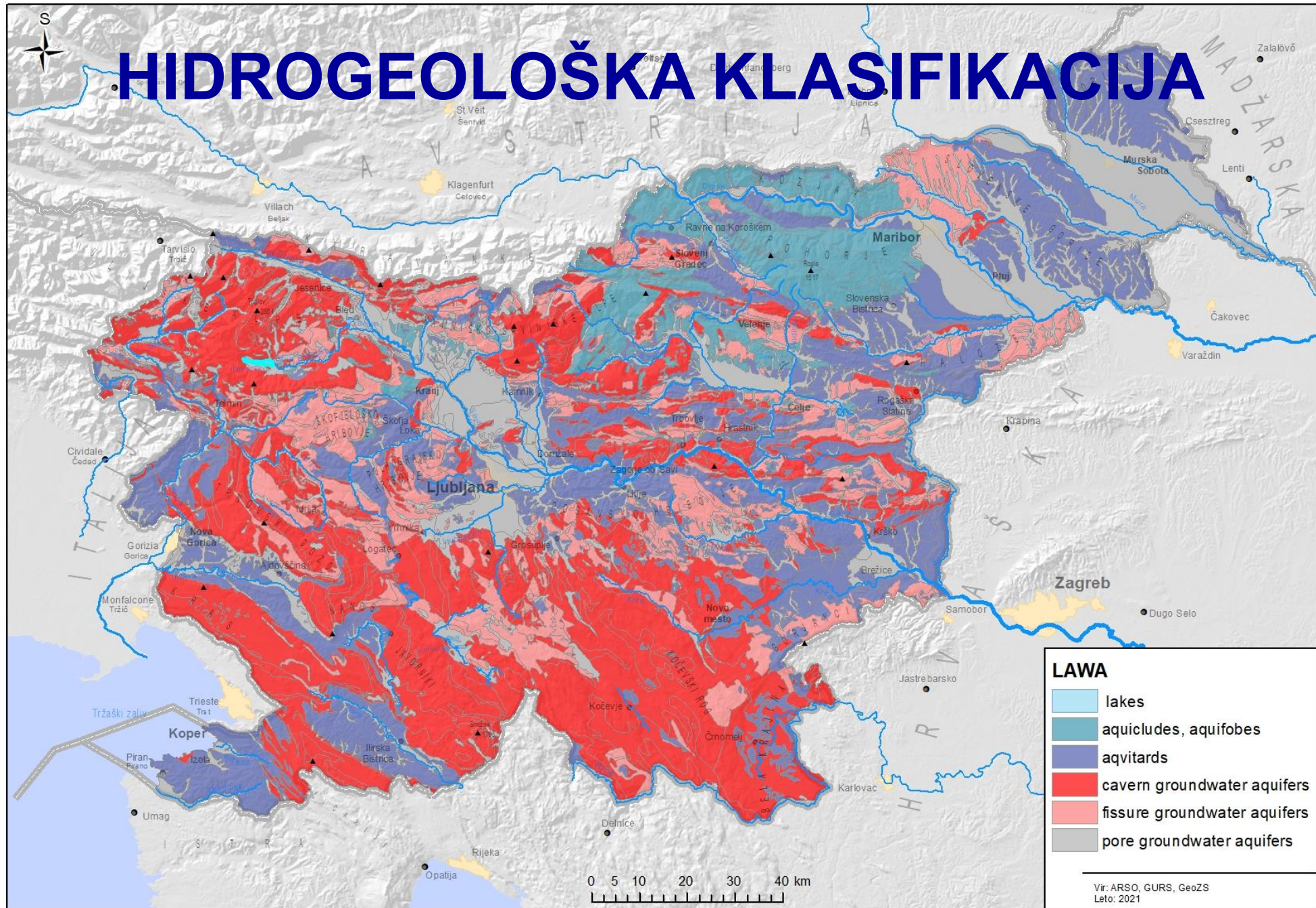
Kraška voda v Ljubljani





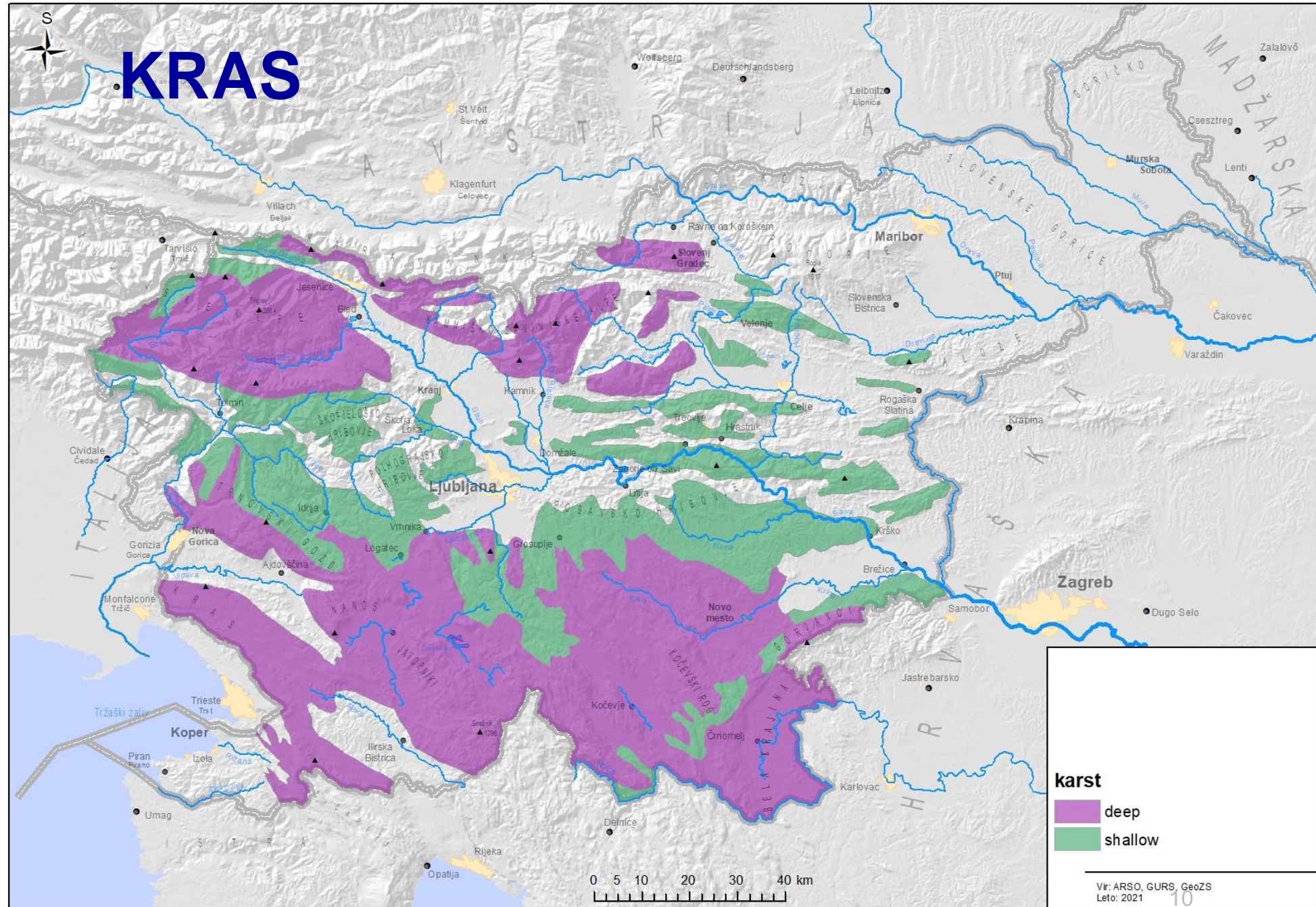
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HIDROGEOLOŠKA KLASIFIKACIJA





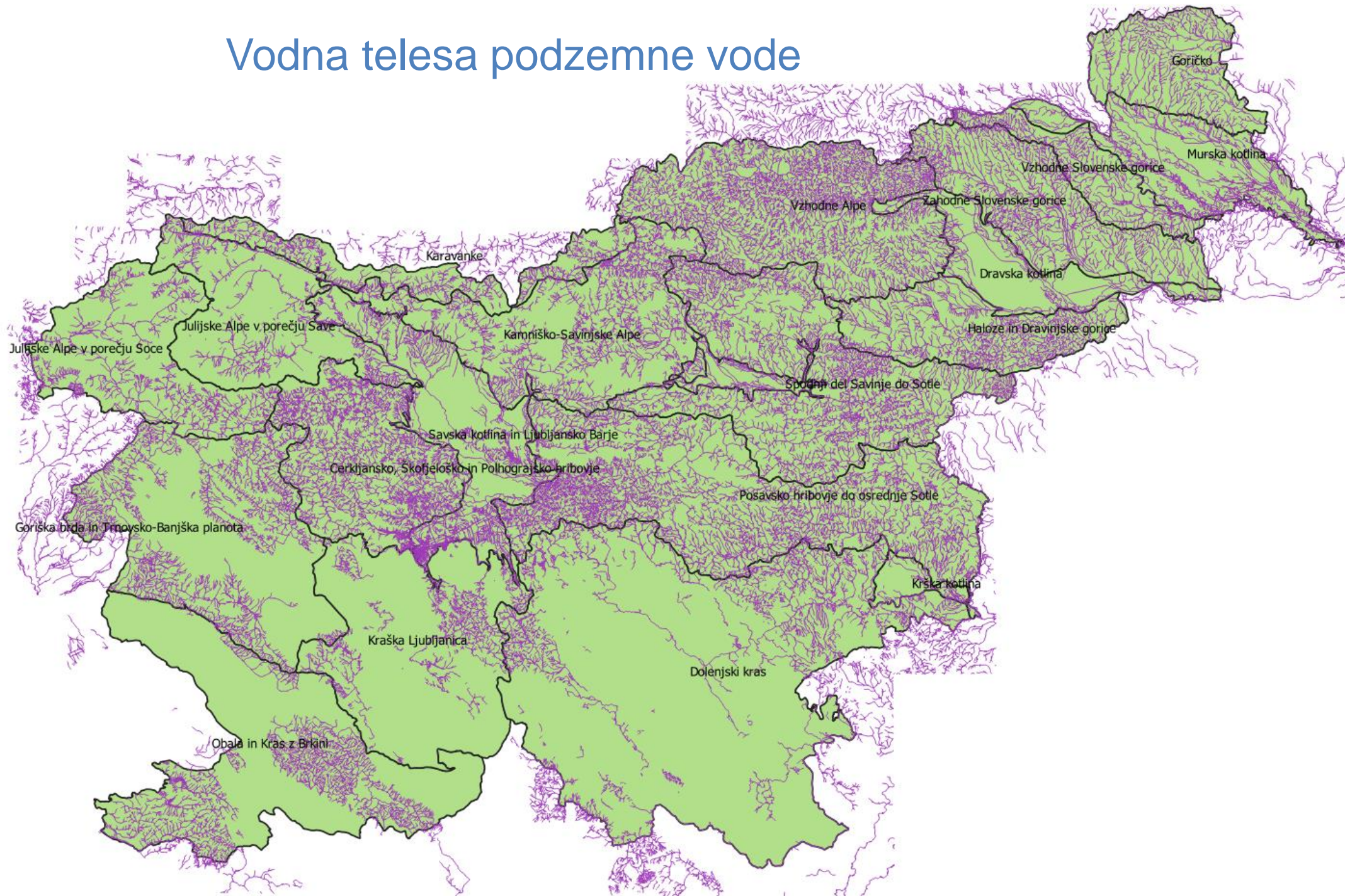
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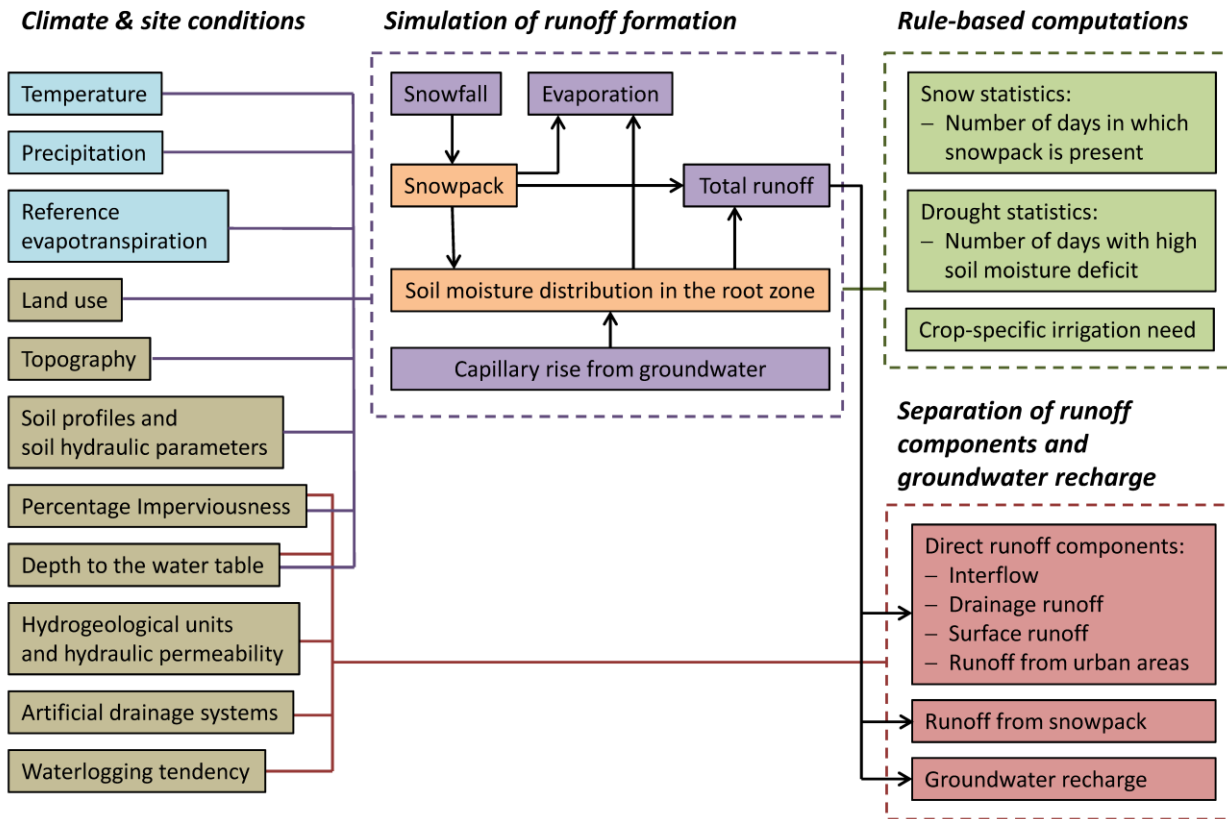
Vodna telesa podzemne vode



Vodna telesa podzemne vode



mGROWA water balance model



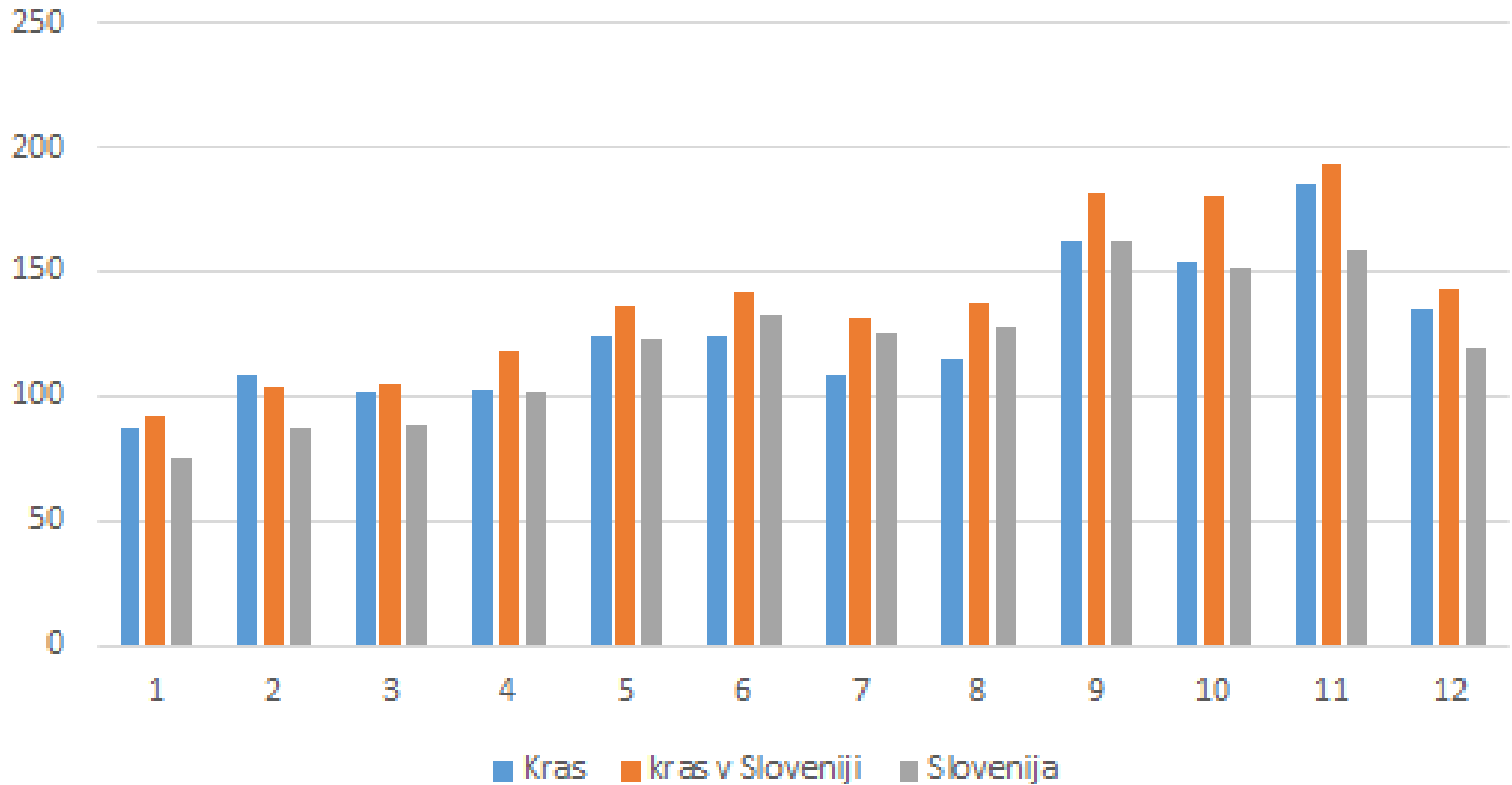
mGROWA – Deterministic distributed model for balancing and projecting water availability on river basin or state level:

- To determine runoff components in high spatial and temporal resolution (i.e. days, 100 m grid)
- To predict the impact of climate variability and change on soil water balance, irrigation need and groundwater resources
- To identify the relevant pathways for nutrient input into groundwater and surface waters

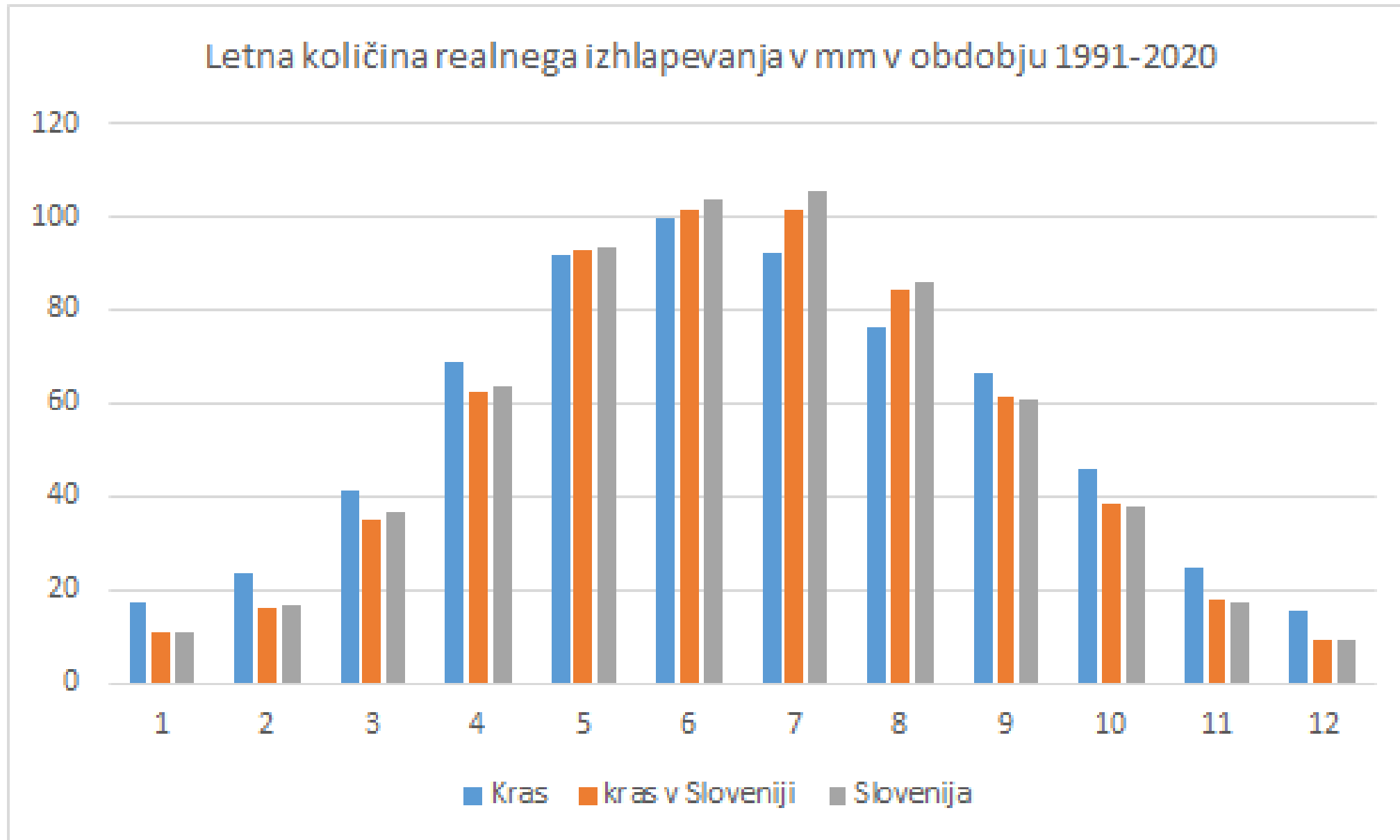


Kras – mGROWA rezultati - Padavine

Letna količina padavin v mm v obdobju 1991-2020

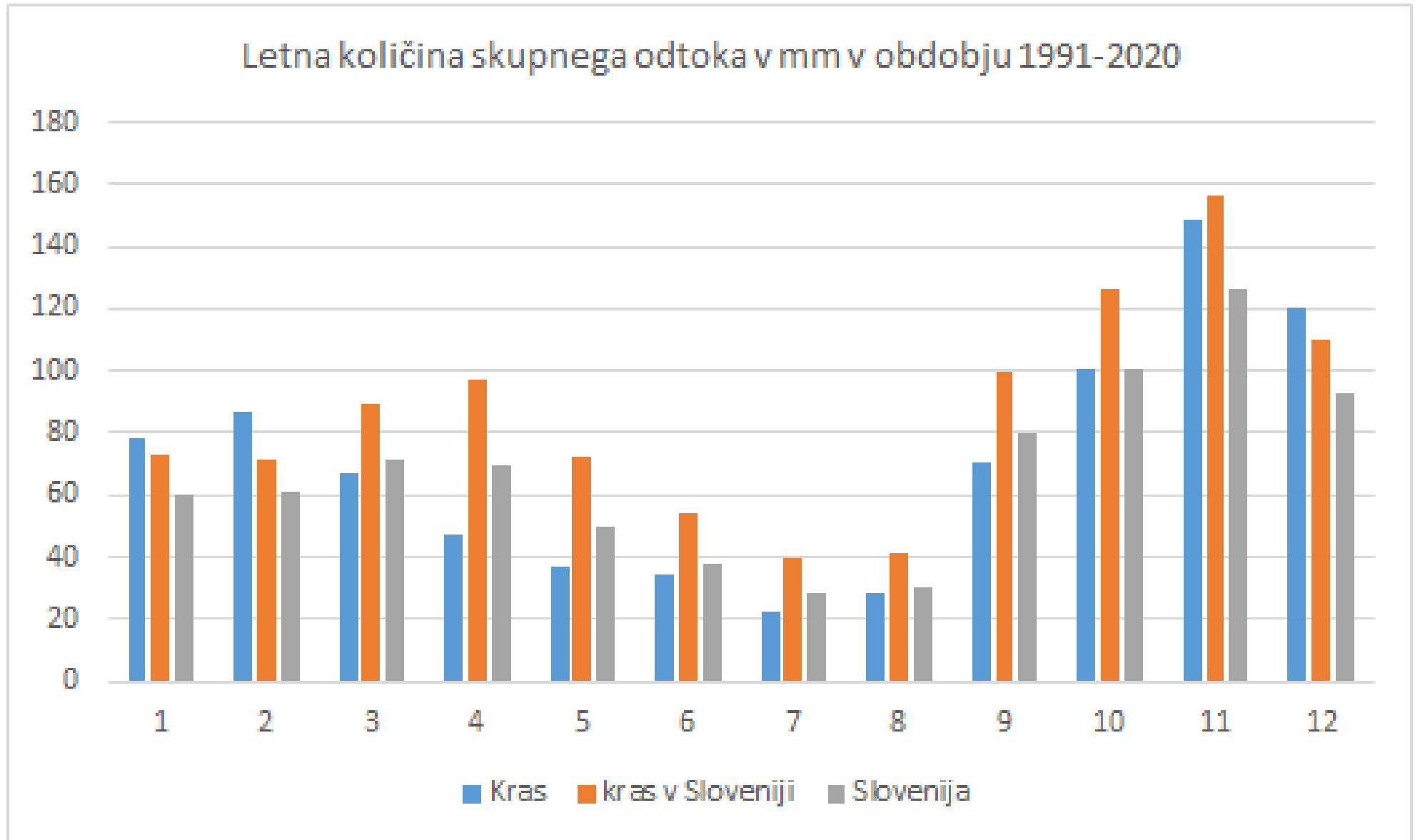


Kras – mGROWA rezultati - ETA



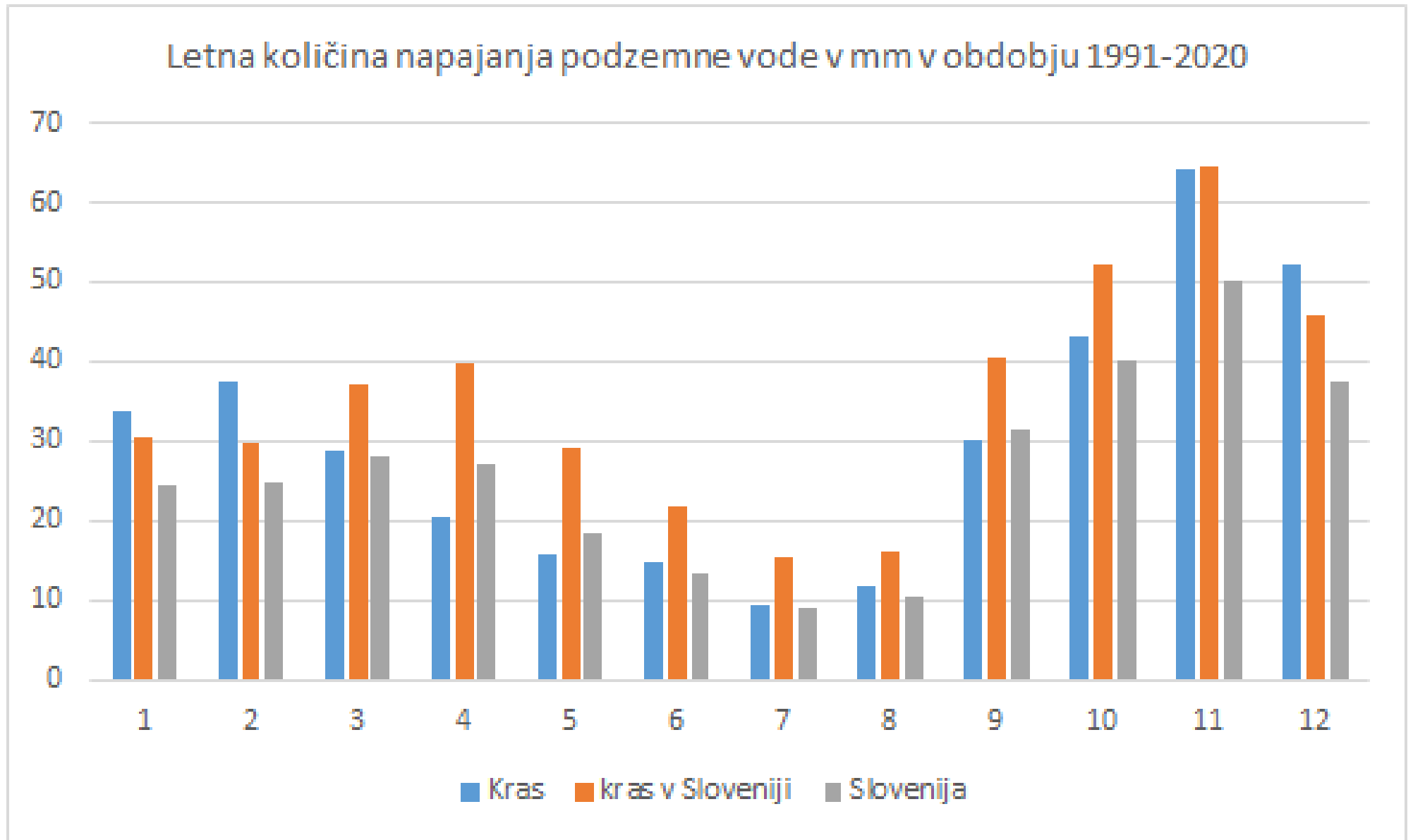


Kras – mGROWA rezultati - Odtok





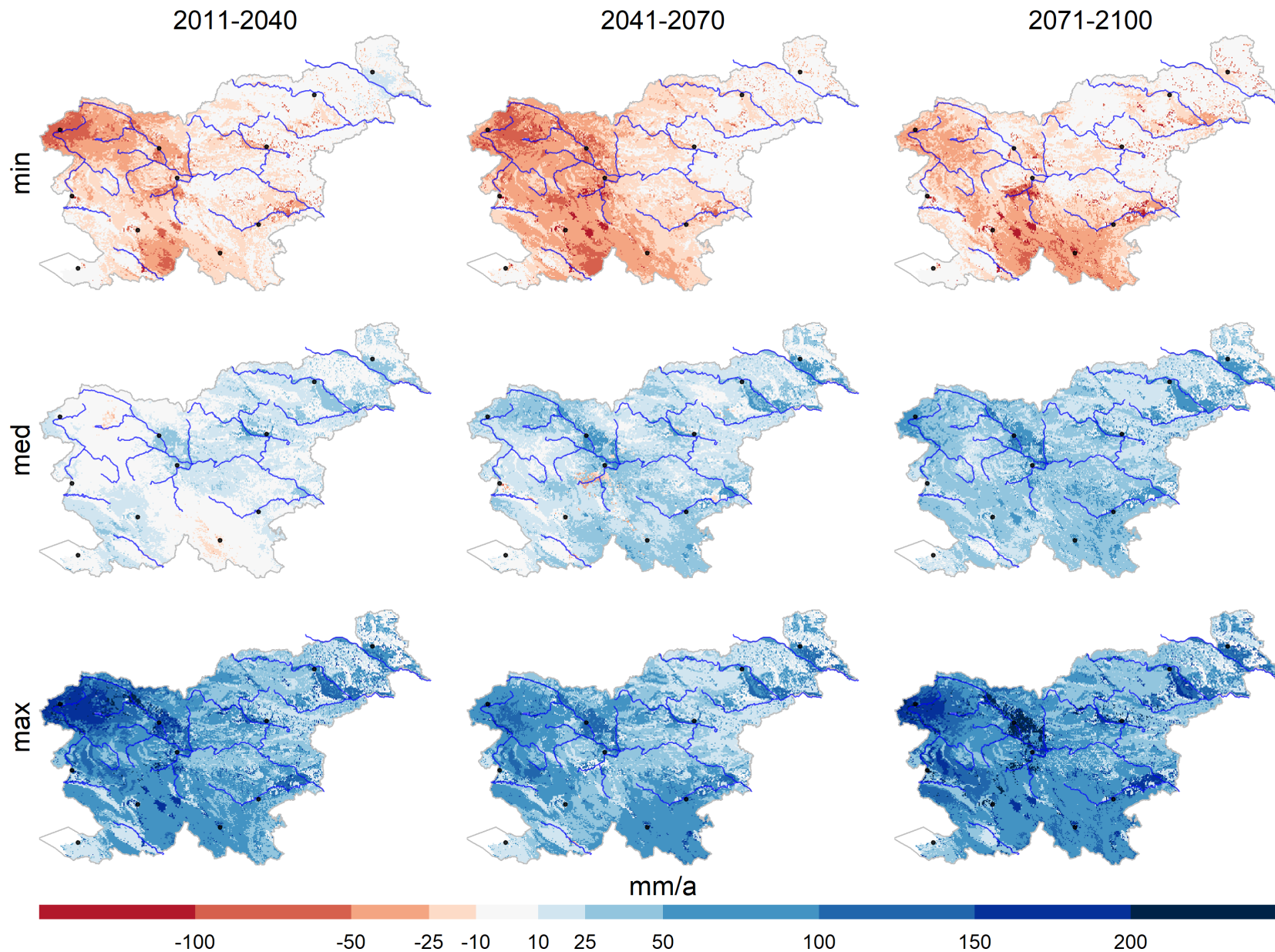
Kras – mGROWA rezultati – Napajanje podz.vode



Sprememba napajanja podz. vode (RCP4.5)

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GW recharge
change (RCP4.5)



Sprememba napajanja podz. vode (RCP8.5)

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2011-2040

2041-2070

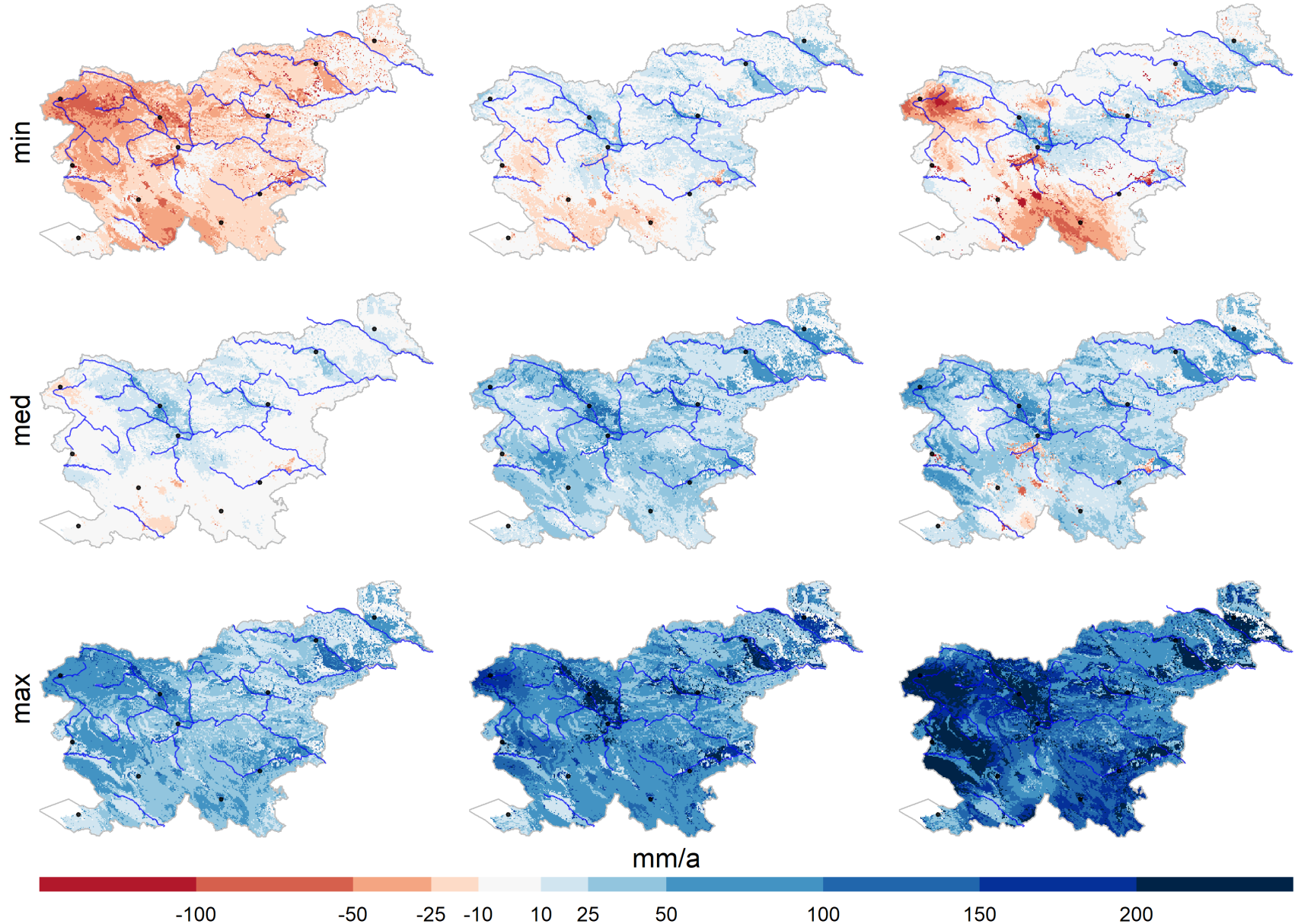
2071-2100

min

med

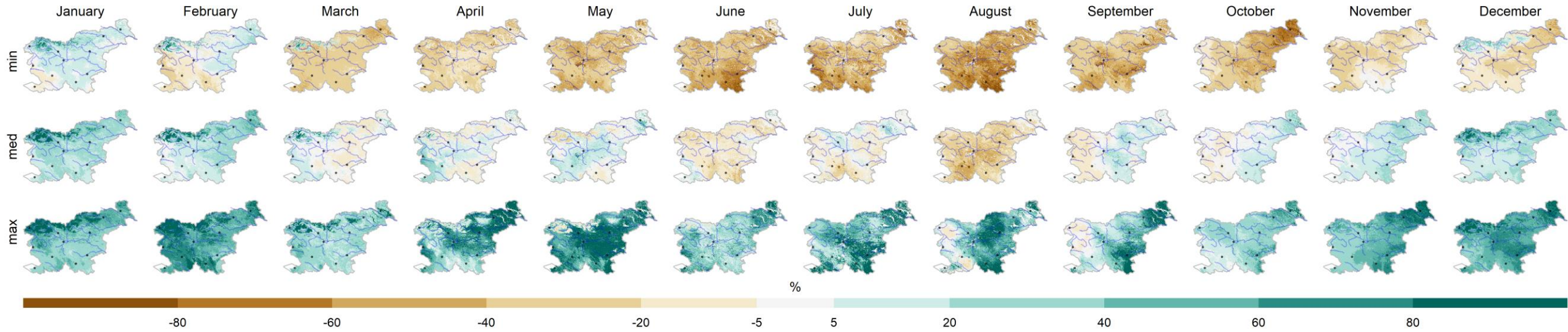
max

GW recharge
change (RCP8.5)

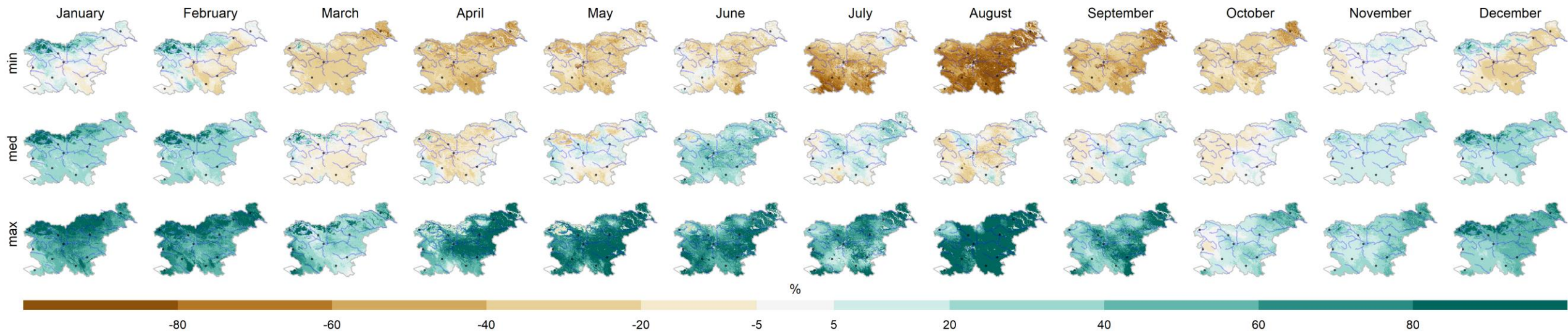


Mesečna odstopanja

Deviation of groundwater recharge, RCP4.5, period 2041-2070

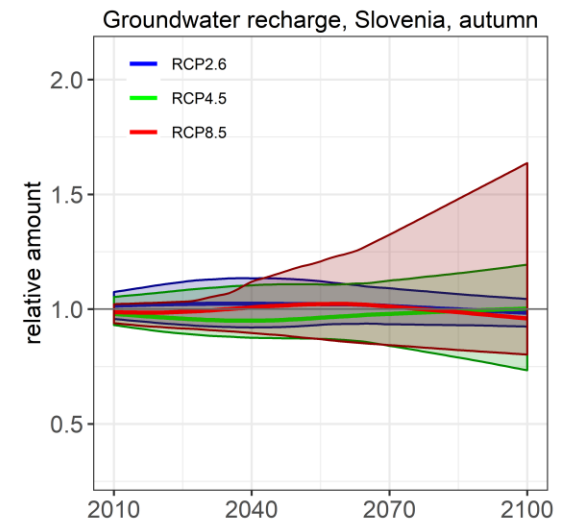
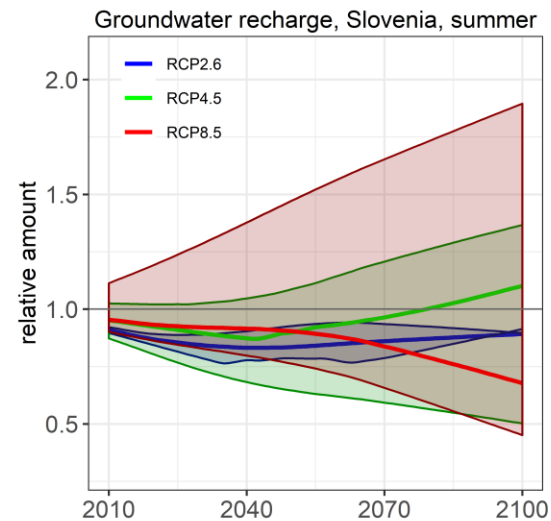
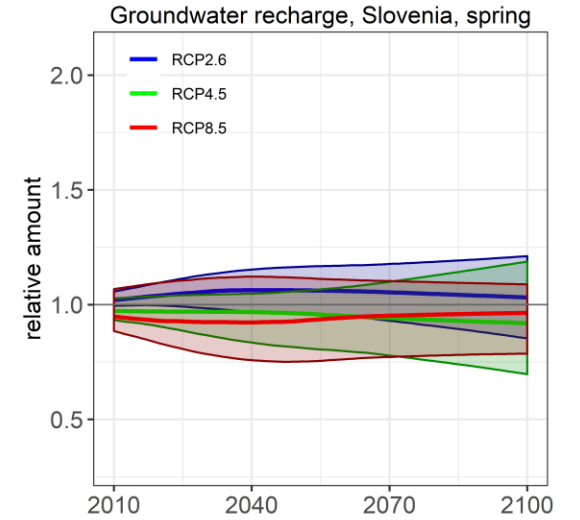
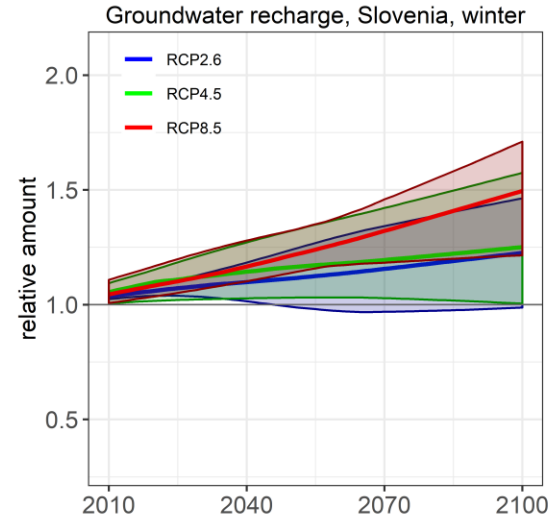
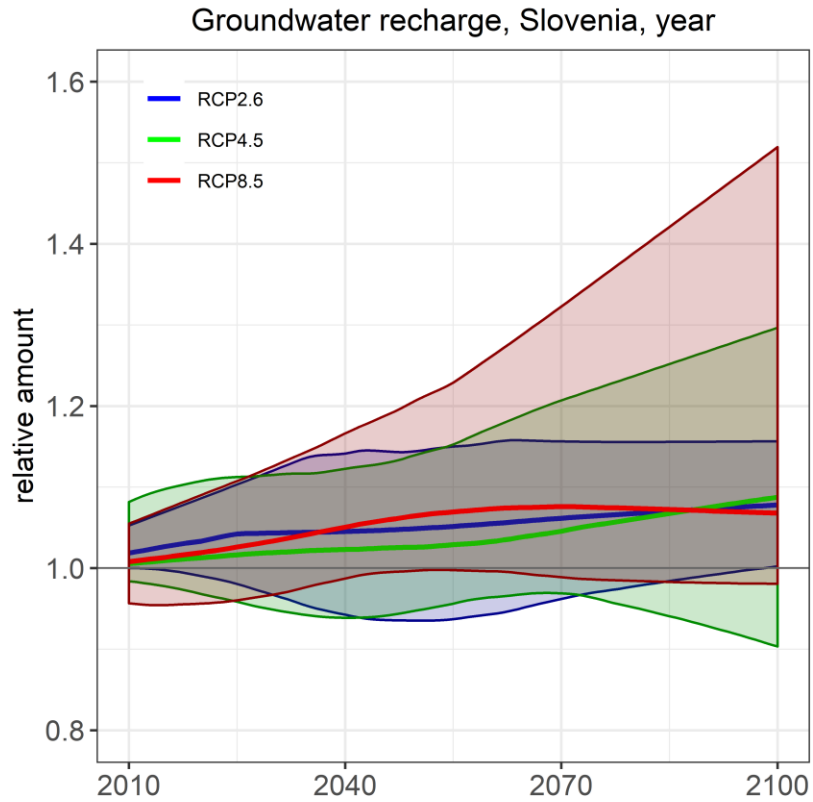


Deviation of groundwater recharge, RCP4.5, period 2071-2100



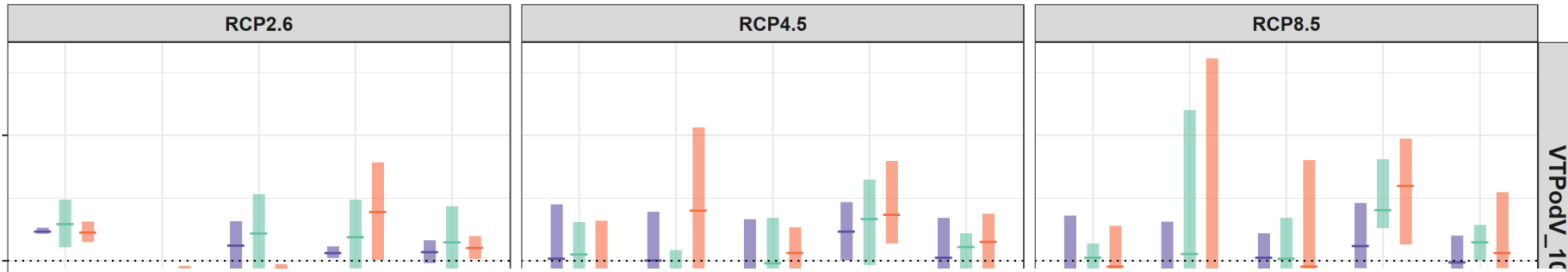
Napajanje v prihodnosti – Slovenija

Future GW recharge - Slovenia

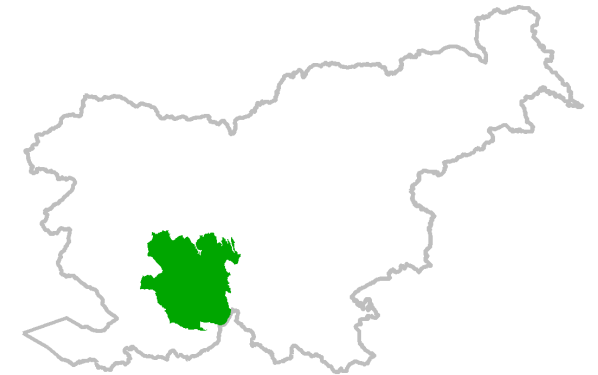


Napajanje v prihodnosti Future GW recharge

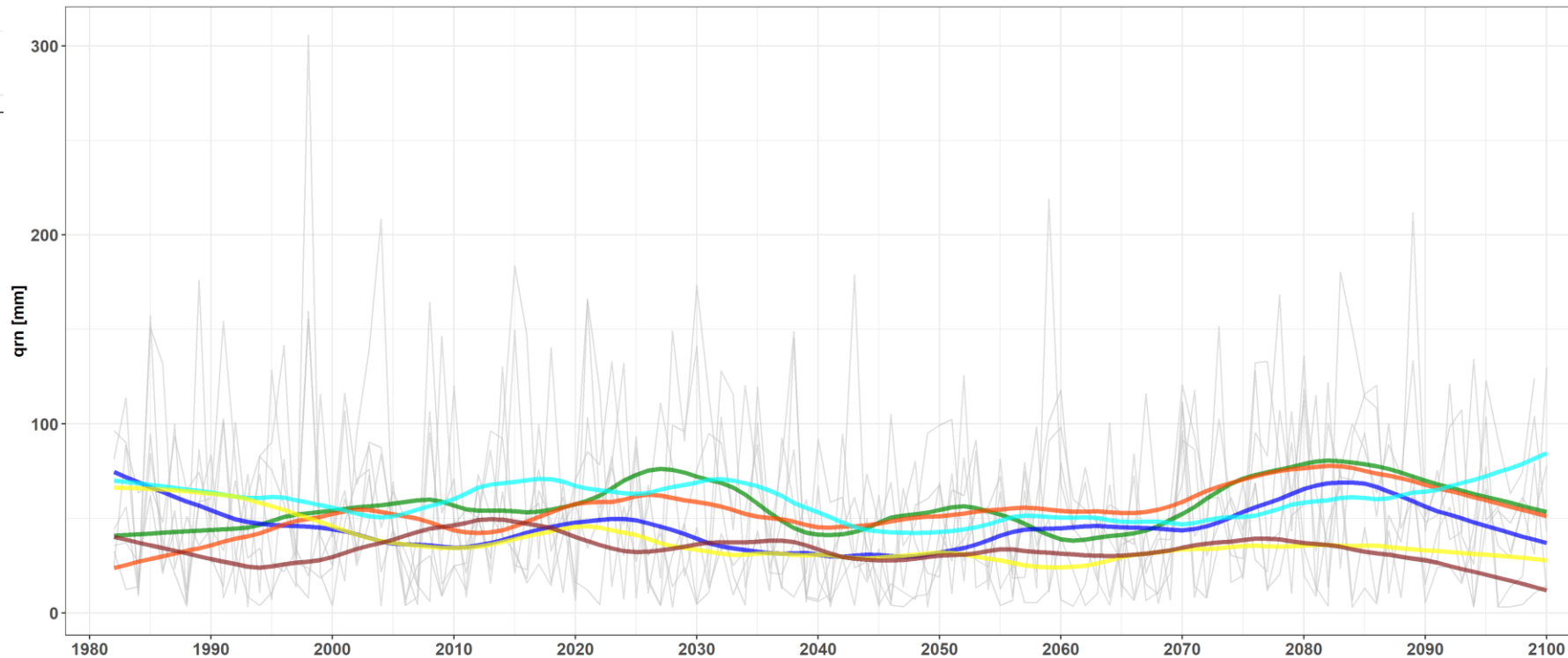
ARSO VODE



Kraška Ljubljana



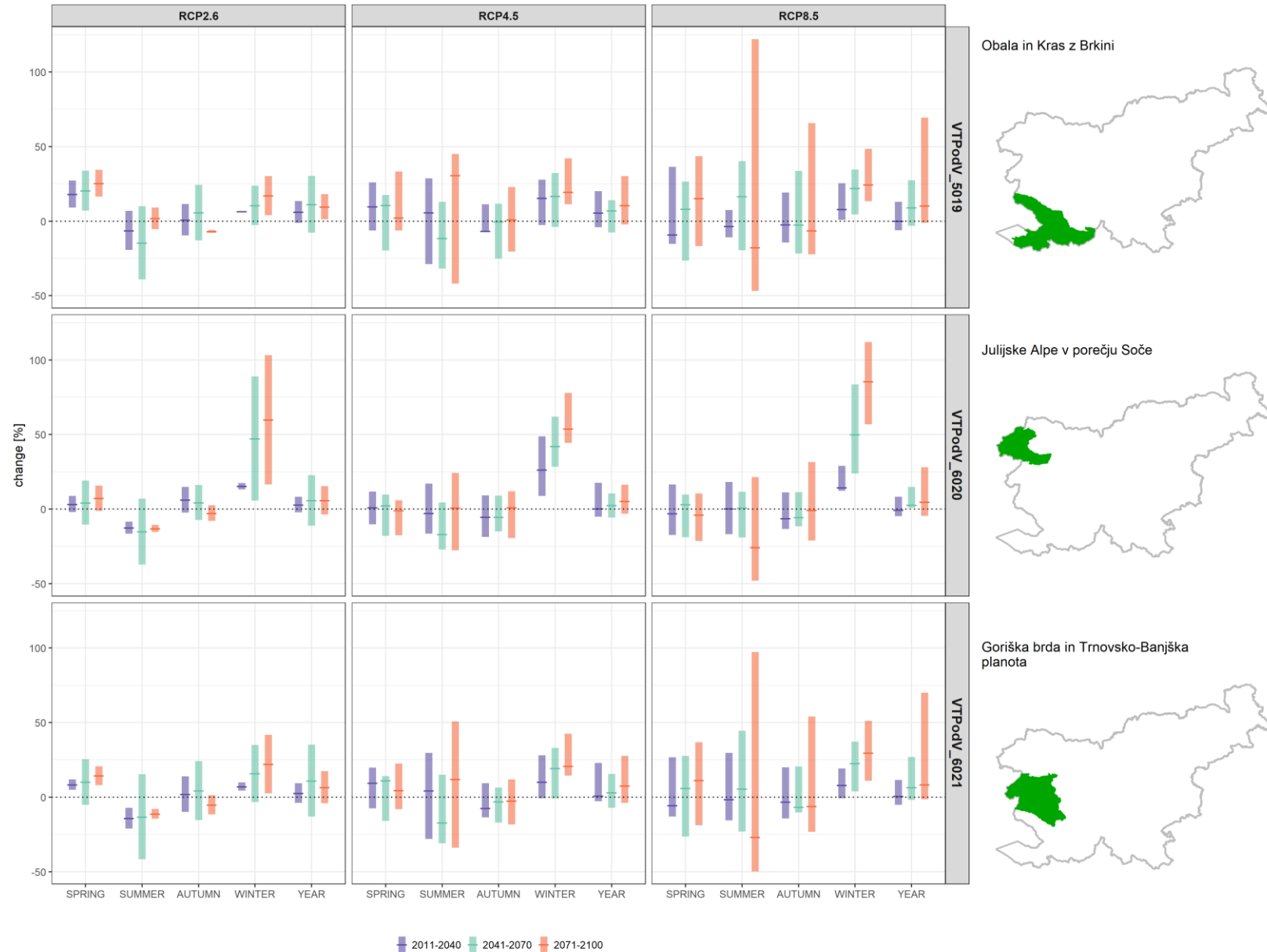
Napajanje podzemne vode, poletje, Kraška Ljubljana, RCP4.5



CNRM-CERFACS-CNRM-CM5_CLMCom-CCLM4-8-17
IPSL-IPSL-CM5A-MR_IPSL-INERIS-WRF331F
MPI-M-MPI-ESM-LR_CLMCom-CCLM4-8-17
ICHEC-EC-EARTH_DMI-HIRHAM5
MOHC-HadGEM2-ES_KNMI-RACMO22E
MPI-M-MPI-ESM-LR_SMHI-RCA4

Napajanje v prihodnosti

Future GW recharge



- Podzemna voda predstavlja 97% pitne vode v Sloveniji
- Kraški vodonosniki so strateško pomembni viri pitne vode v Sloveniji ter na čezmejni in regionalni ravni
- **Kras zaznamuje velika povezanost površinskih in podzemnih voda**
- **Za upoštevanje ranljivosti kraških voda pri načrtovanju razvoja je treba za večjo vodno varnost mlade generacije nemudoma:**
 - **A) okrepiti izobraževanje na lokalni ravni (šole/občine)**
 - **B) izobraževanje na državni ravni (ministrstev)**
 - **C) okrepiti čezmejno in regionalno sodelovanje.**