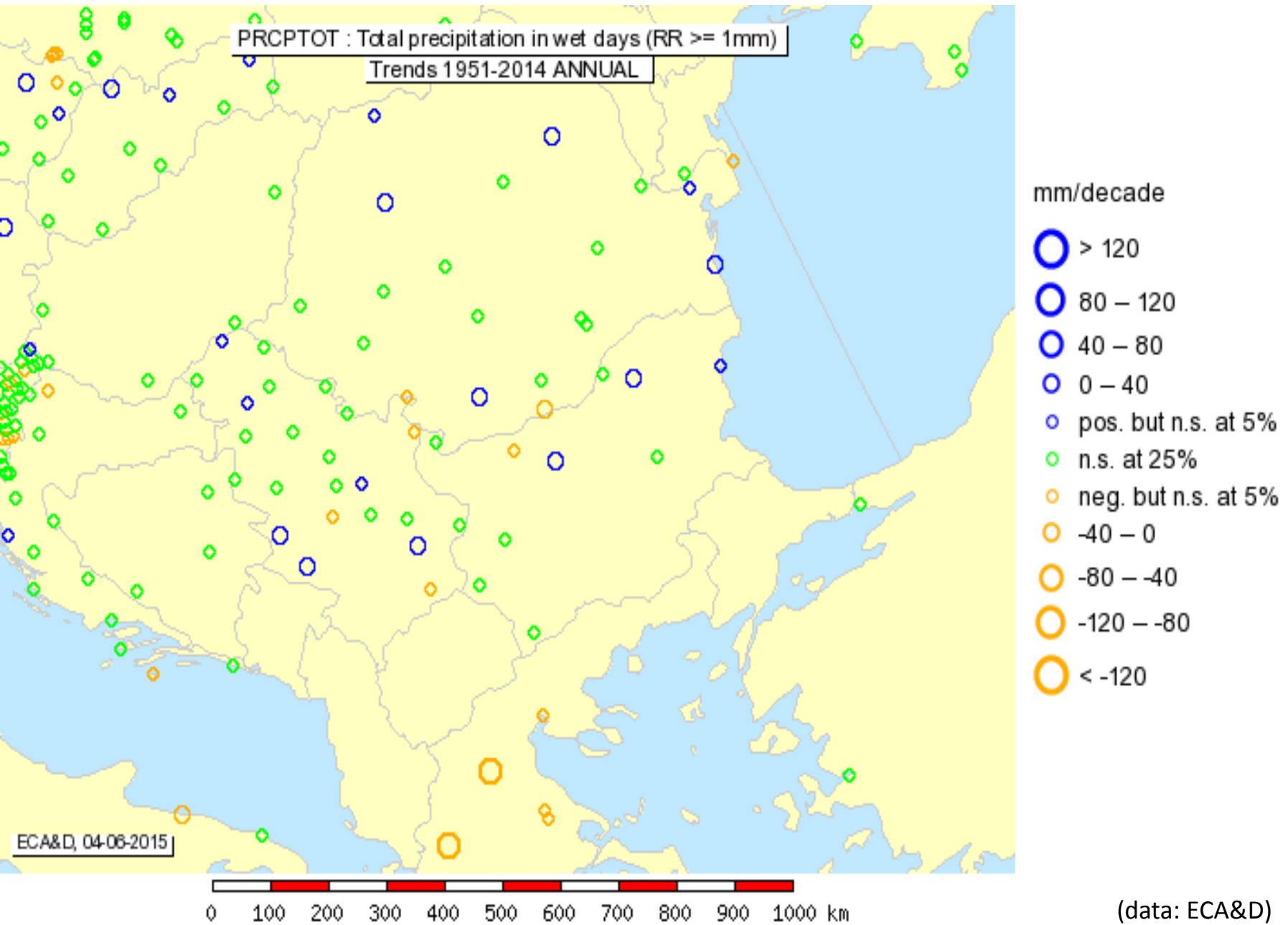


Da li je čaša pola puna ili prazna?

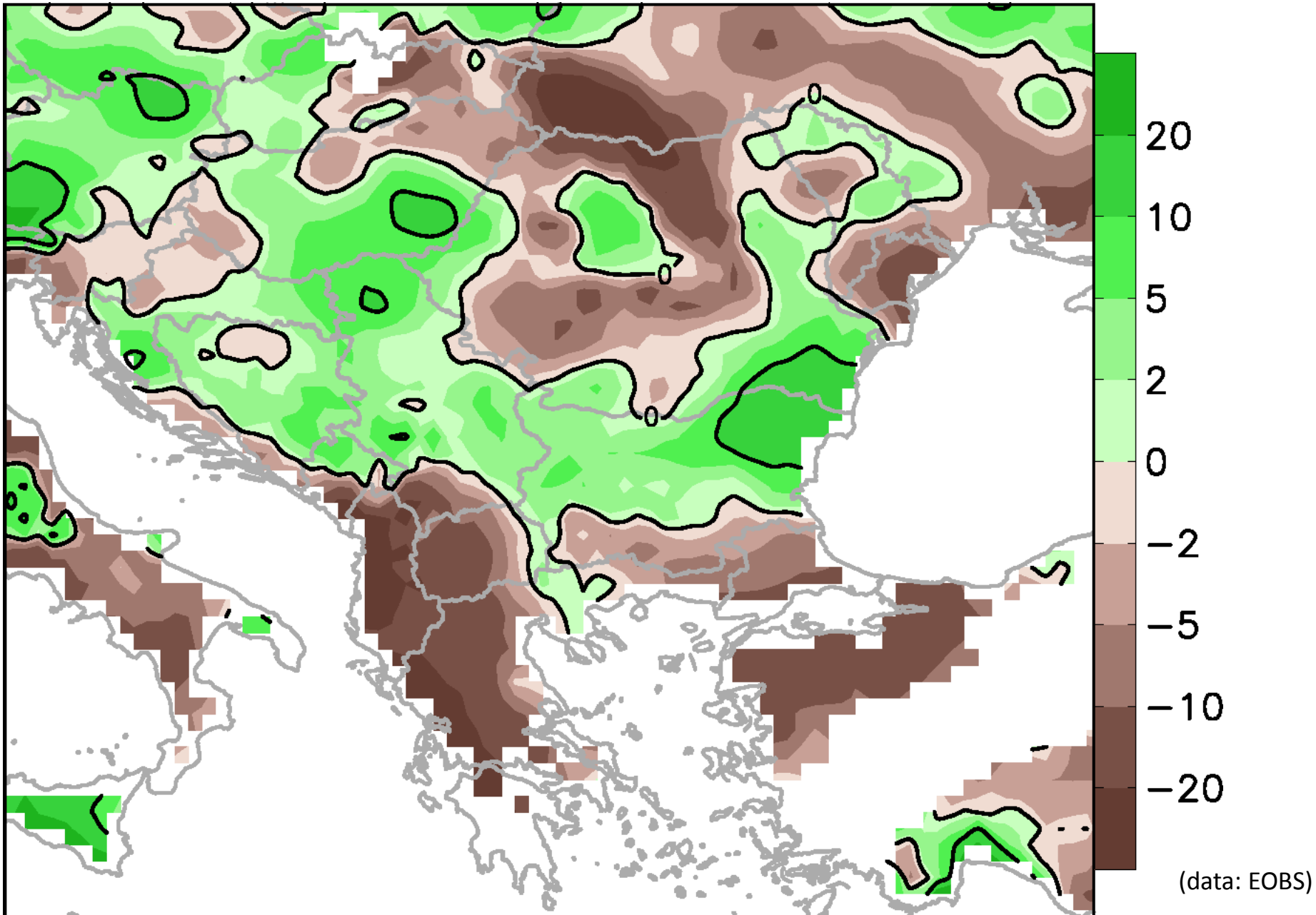
Vladimir Djurdjevic



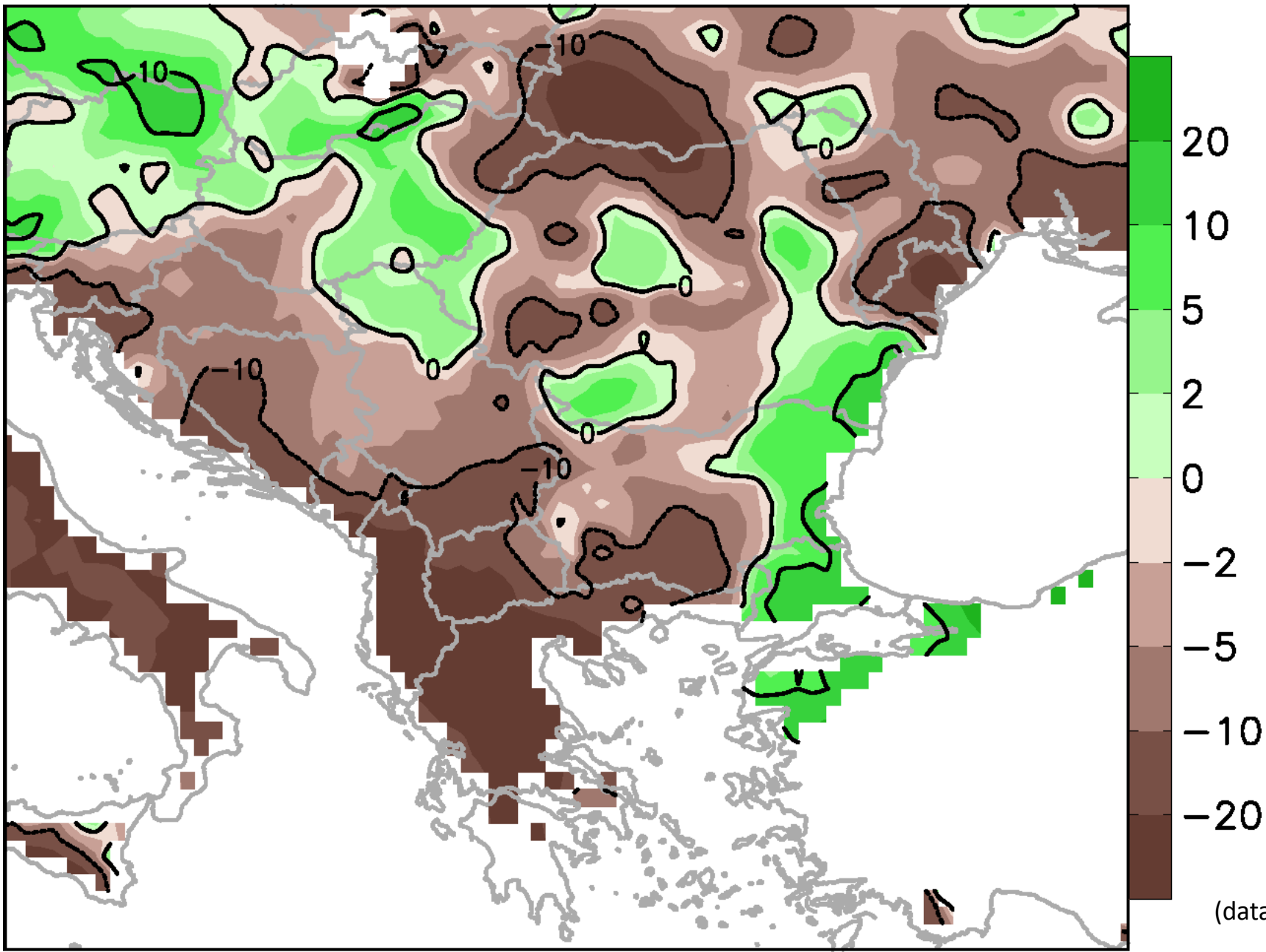
Trend padavina (PRCPTOT ≥ 1 mm/day) za period 1951-2014



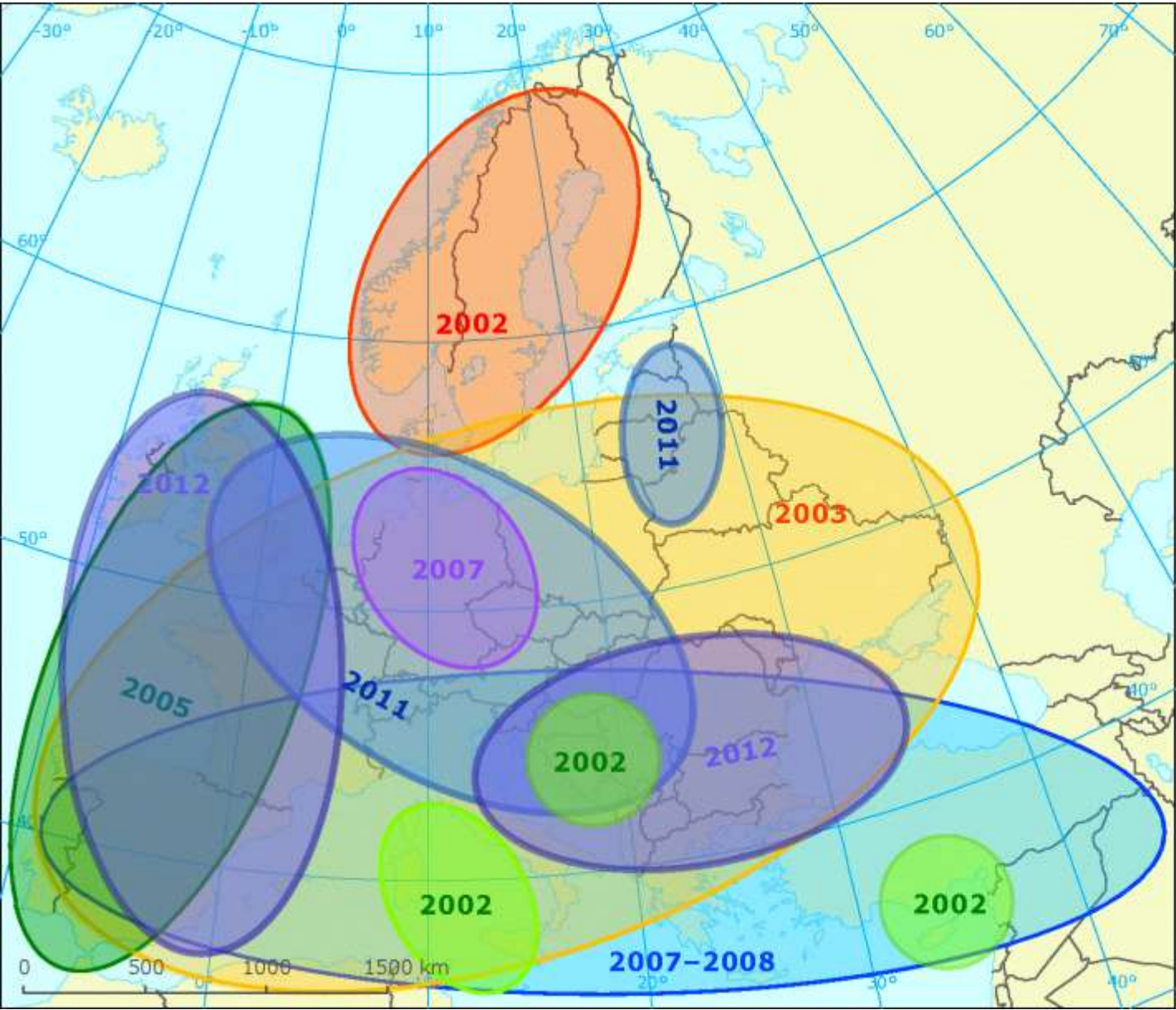
Anomalija godišnjih padavina (%) u periodu 1985-2014 (poslednjih 30 godina) u odnosu na 1961-1990



Anomalija padavina (%) leti (**jun-jul-avg**) u periodu 1985-2014 (poslednjih 30 godina) u odnosu na 1961-1990



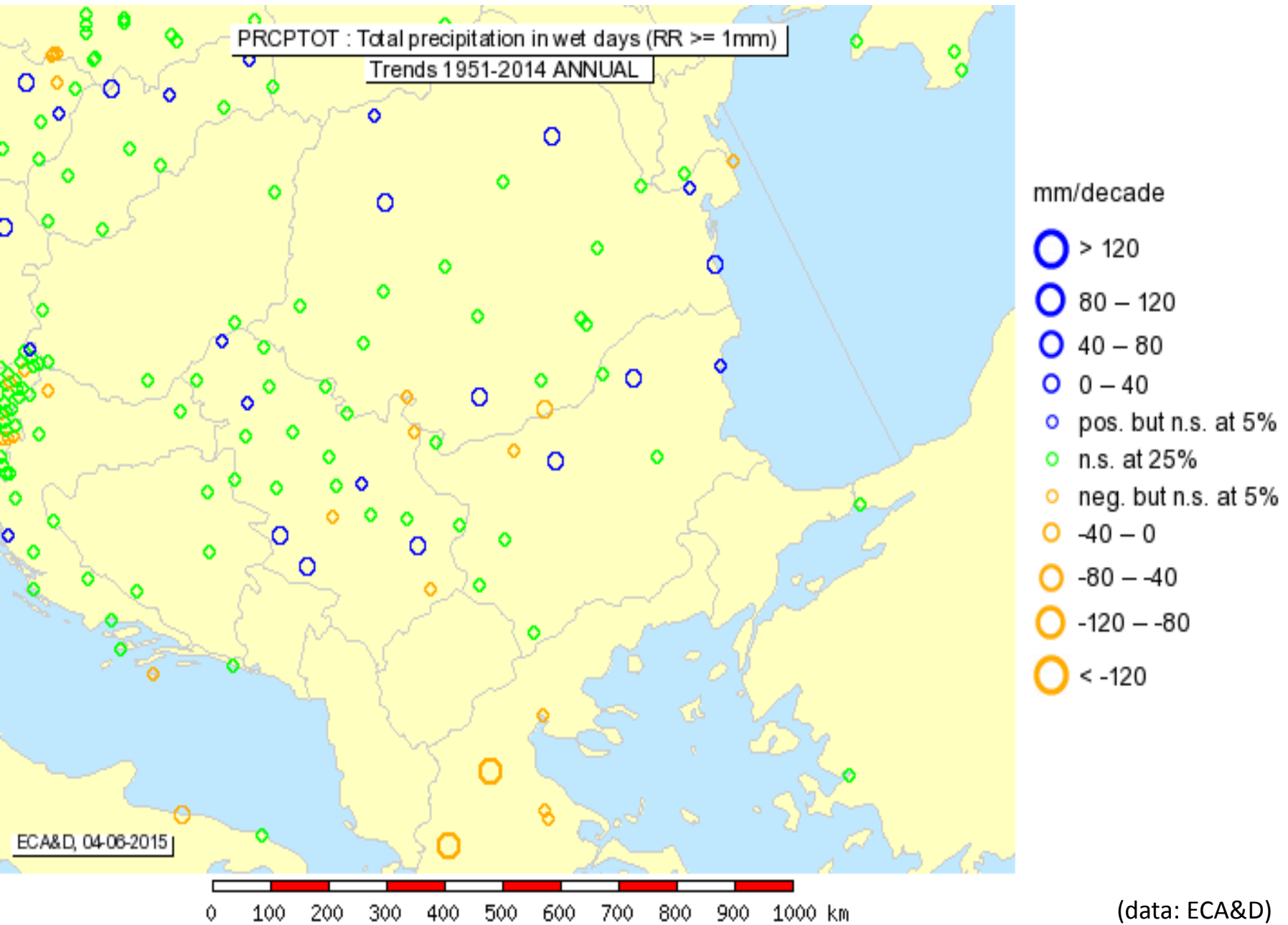
Epizode suša od 2002.



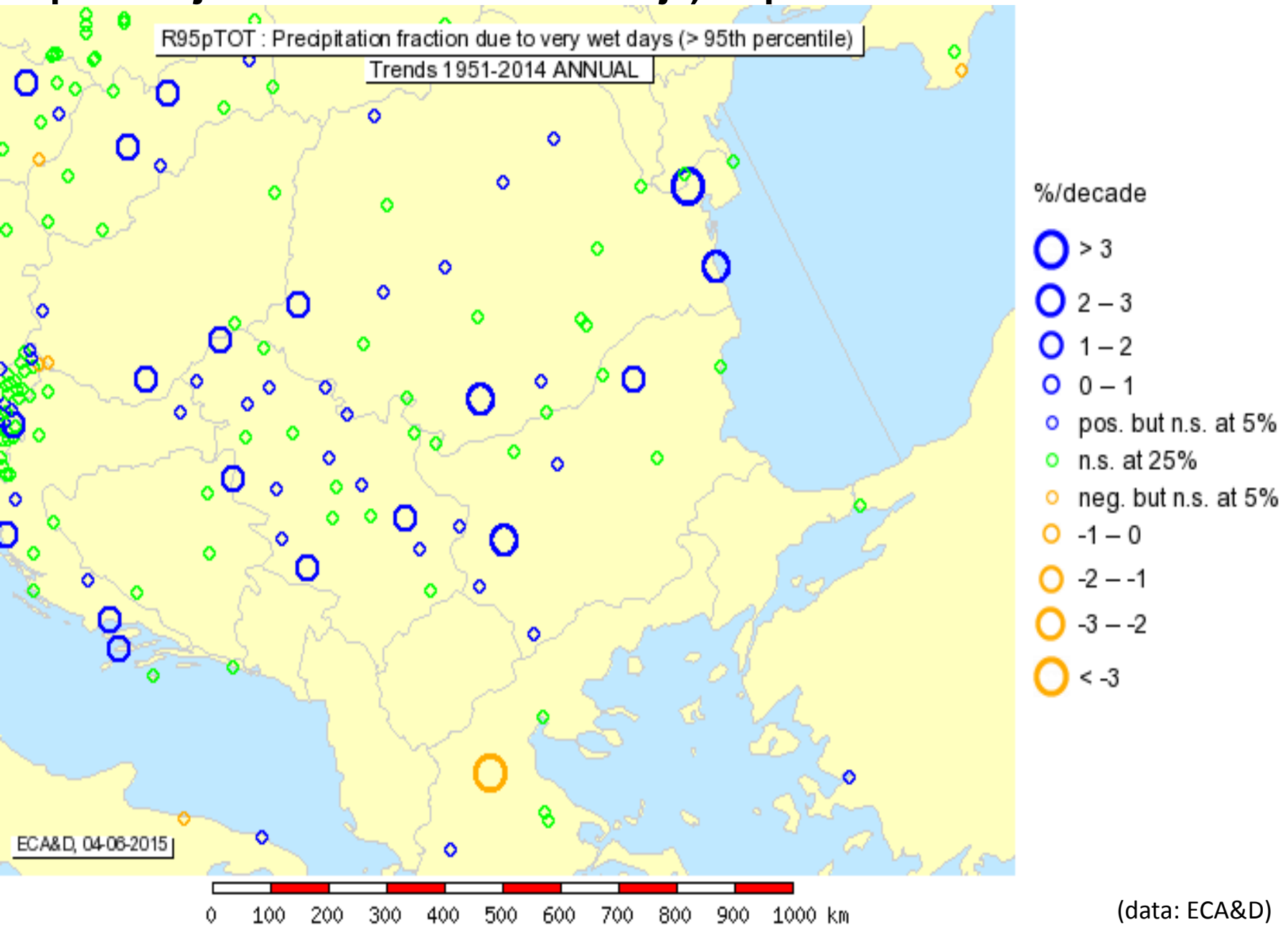
Water scarcity and drought events in Europe during the last decade

(EEA, 2012)

Trend padavina (PRCPTOT ≥ 1 mm/day) za period 1951-2014



Trend padavina sa ekstremnim dnevnim akumulacijama (R95pTOT - top 5% najvećih dnevnih akumulacija) za period 1951-2014



Scenario A1B

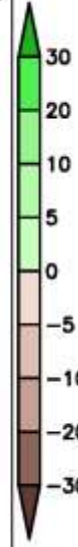
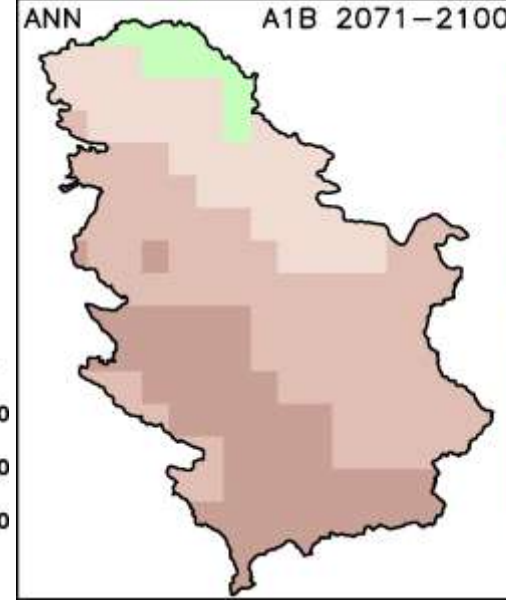
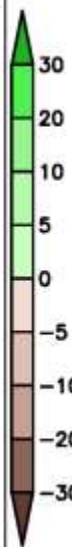
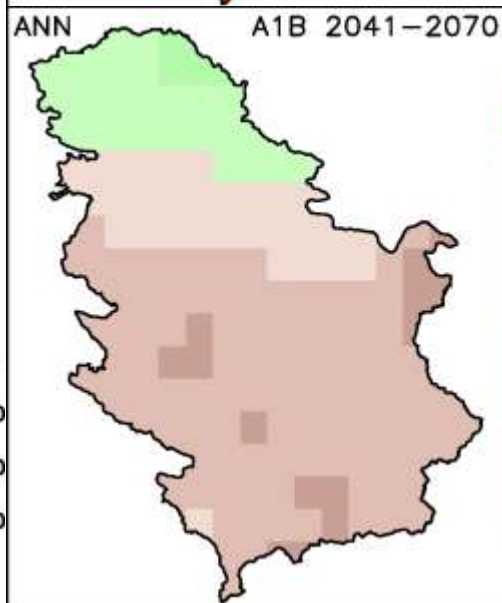
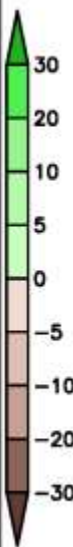
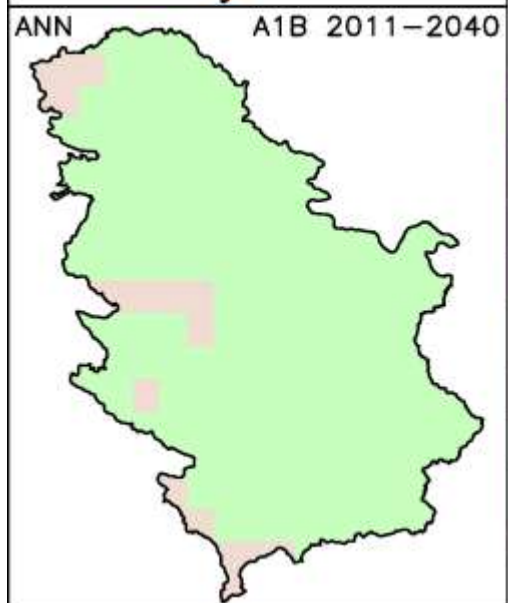
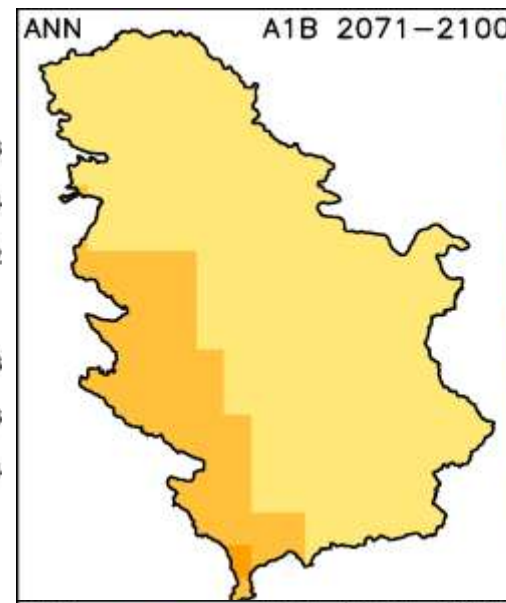
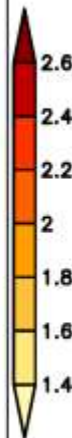
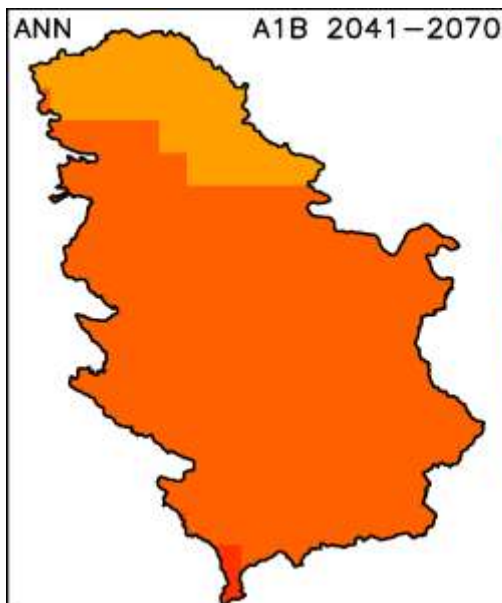
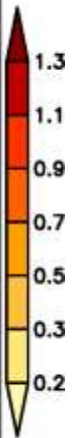
Promena temperature
u odnosu na 1961-1990

Promena padavina
u odnosu na 1961-1990

2011-2040

2041-2070

2071-2100



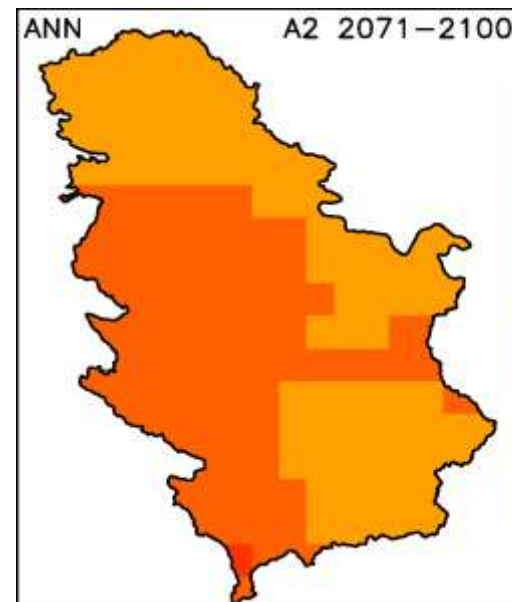
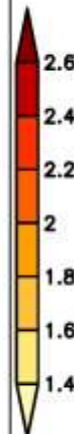
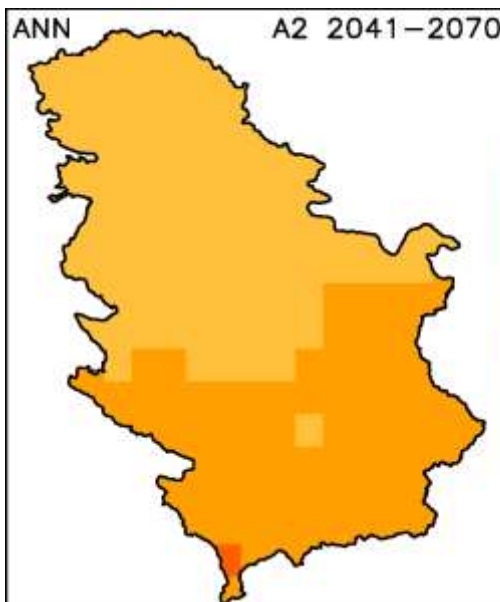
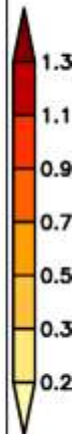
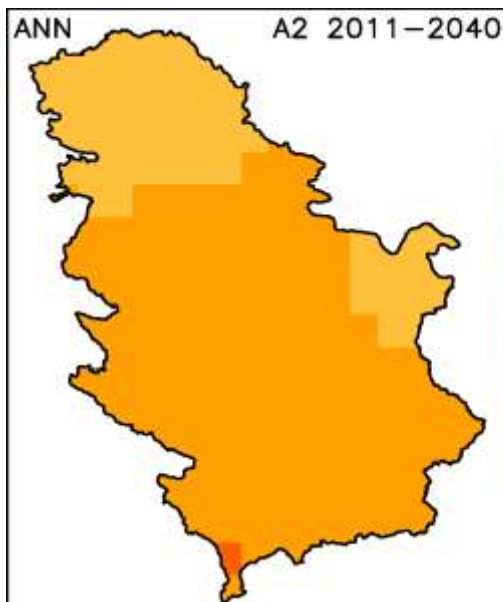
Scenario A1B (EBU-POM model)

2011-2040

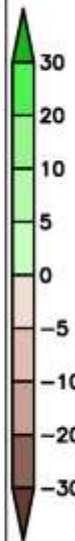
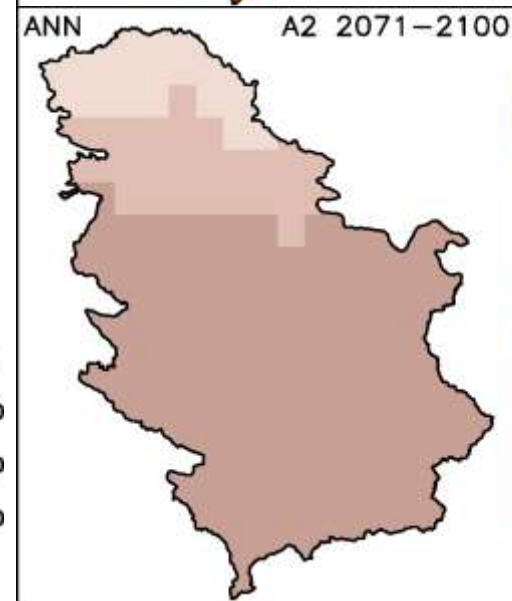
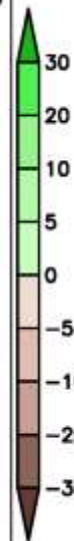
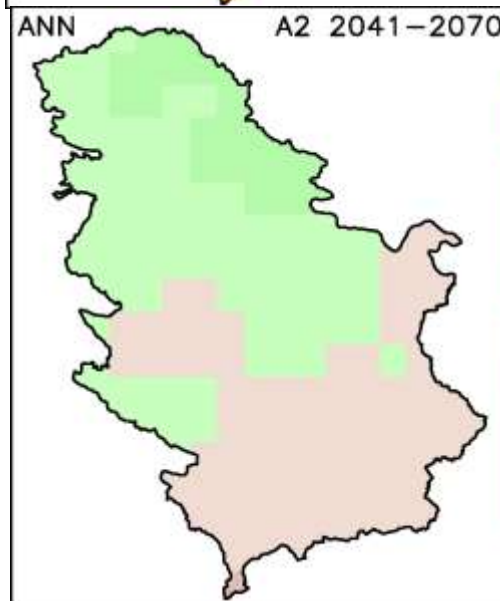
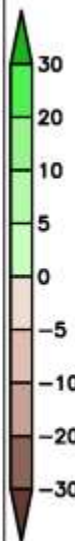
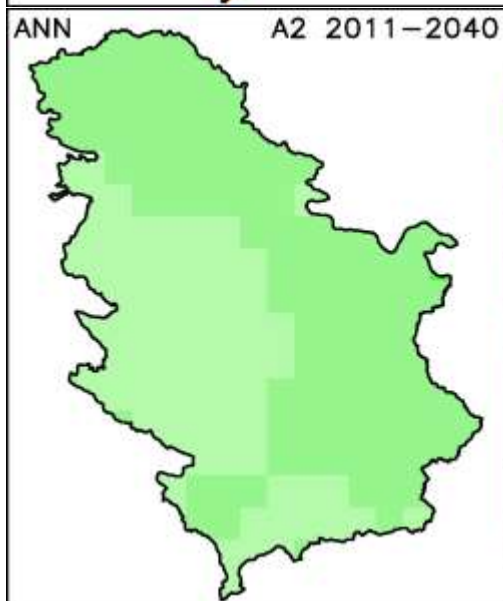
2041-2070

2071-2100

Promena temperature
u odnosu na 1961-1990

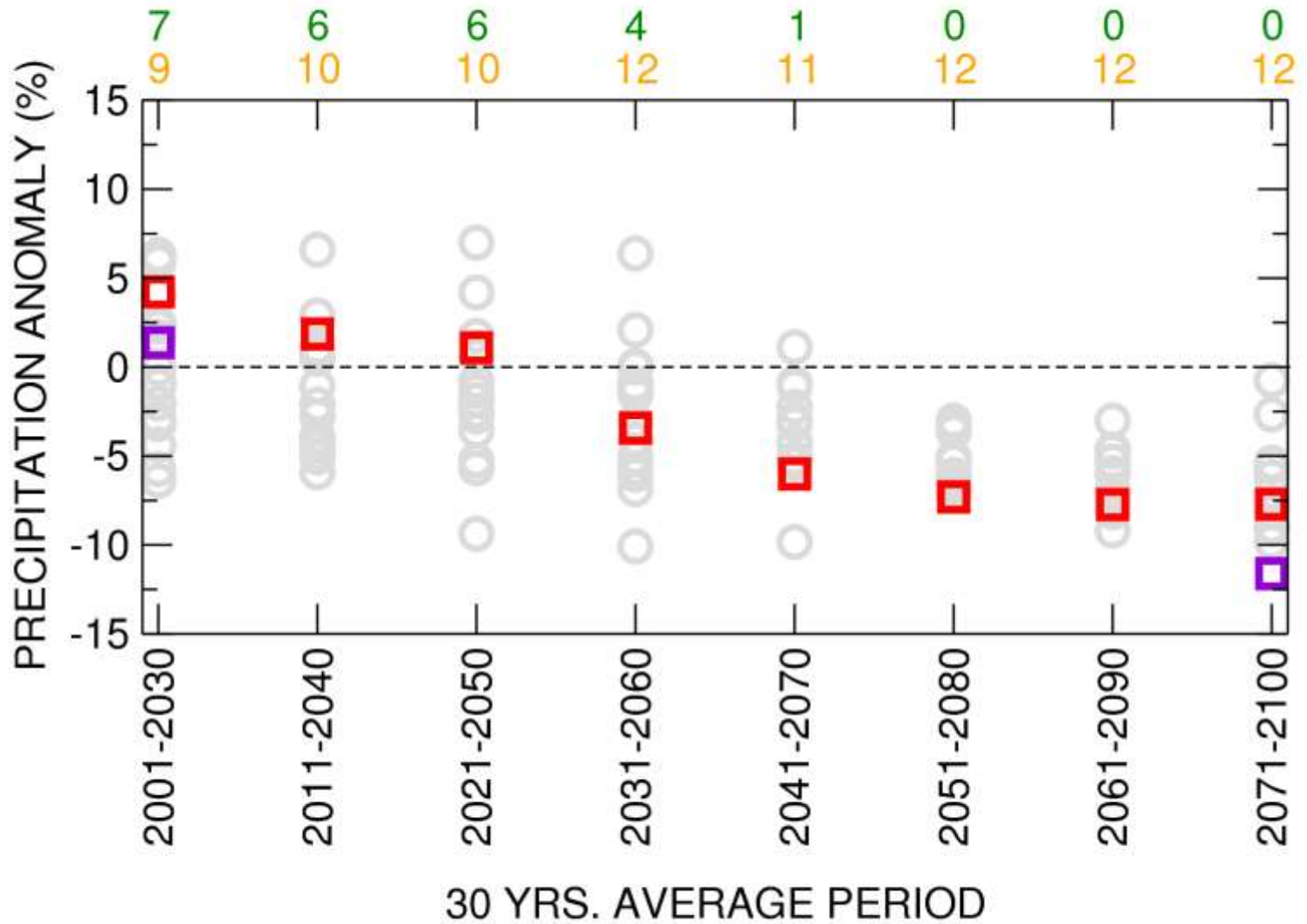


Promena padavina
u odnosu na 1961-1990



SRES A1B

- ENSEMBLES RCMs
- EBUPOM - ECHAM5
- EBUPOM - SXG

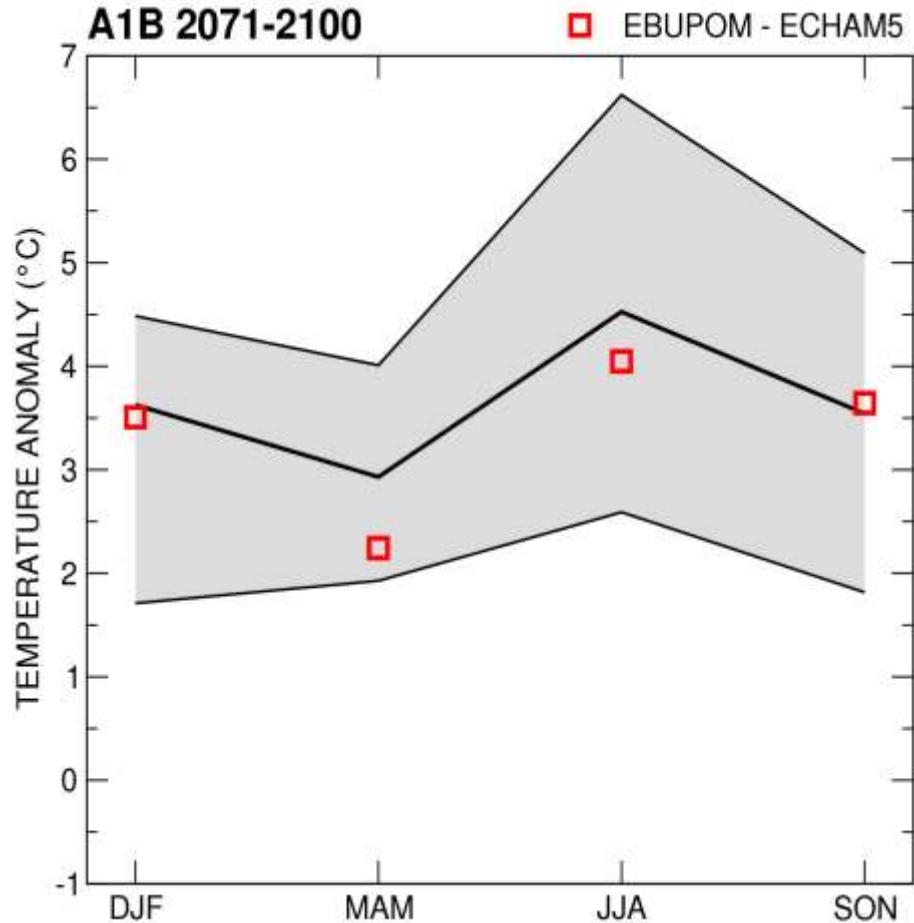


x - number of models with positive anomaly

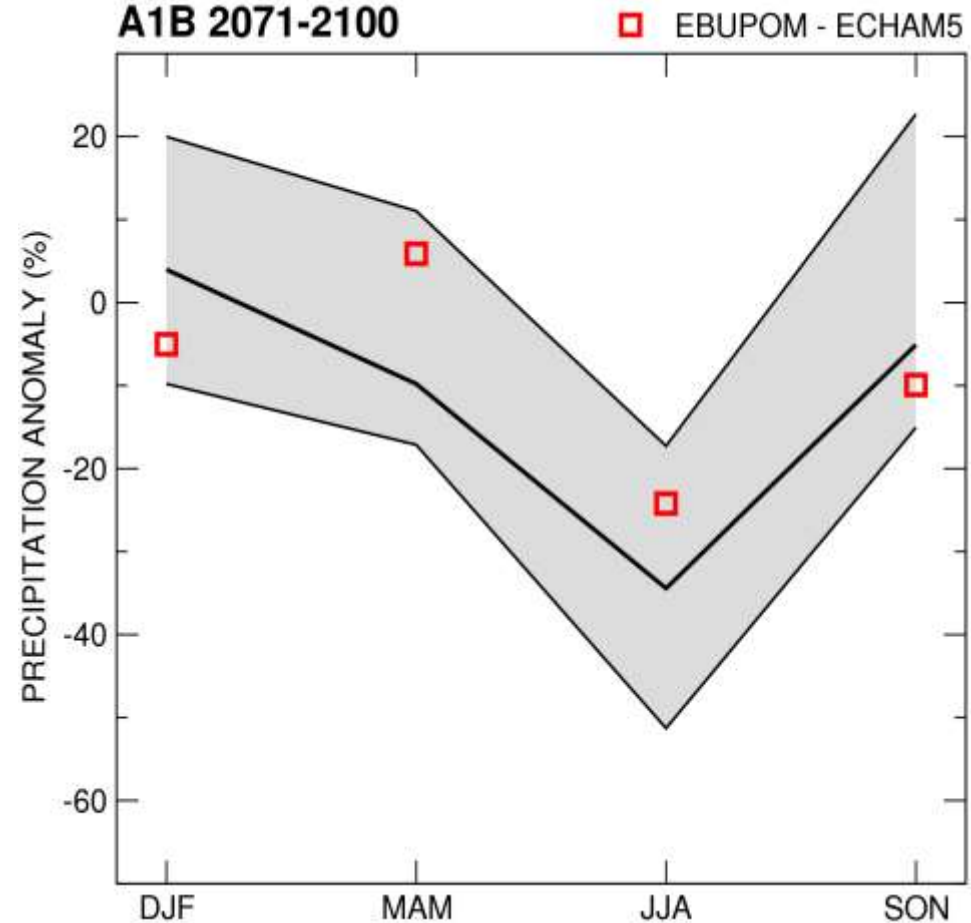
x - number of models with negative anomaly

Sezonske promene

Temperatura

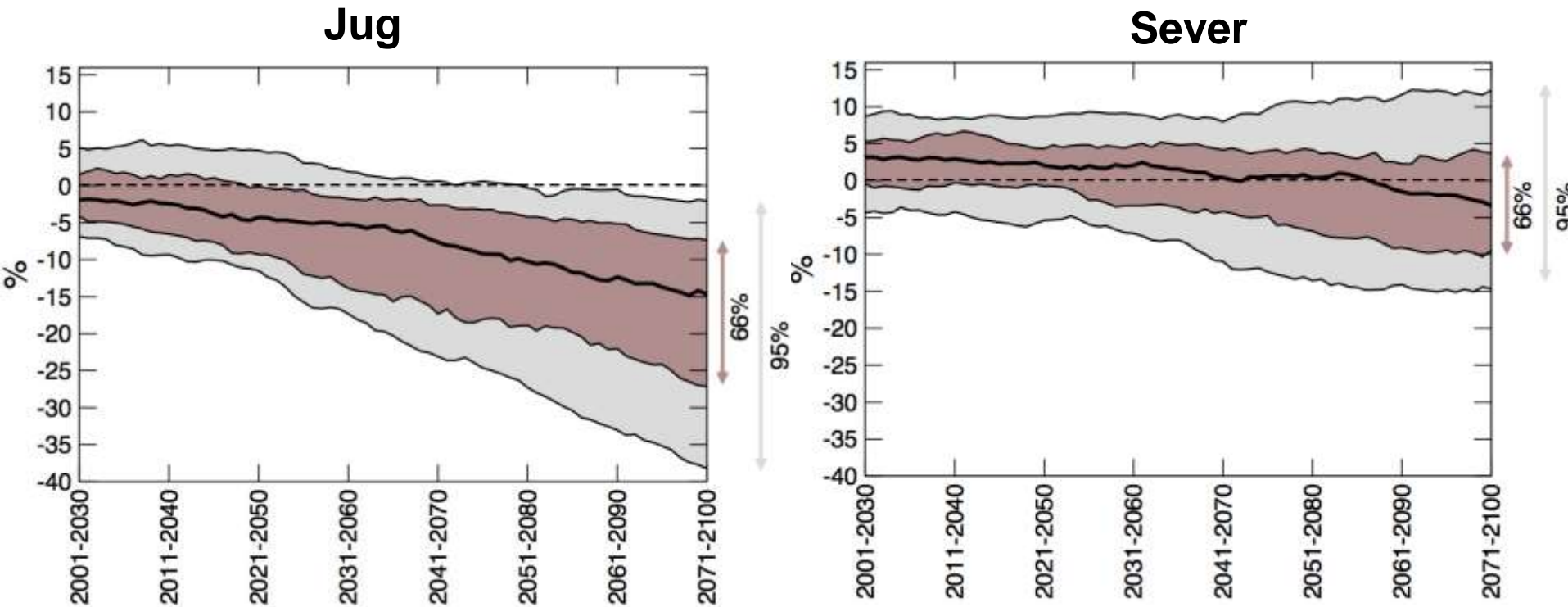


Padavine



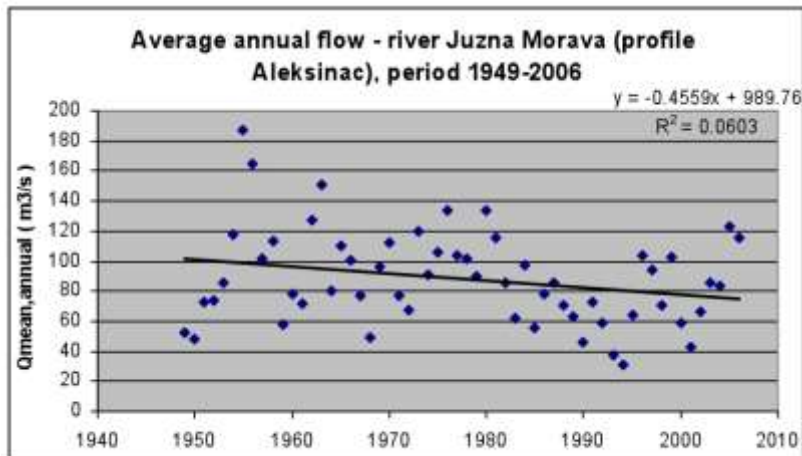
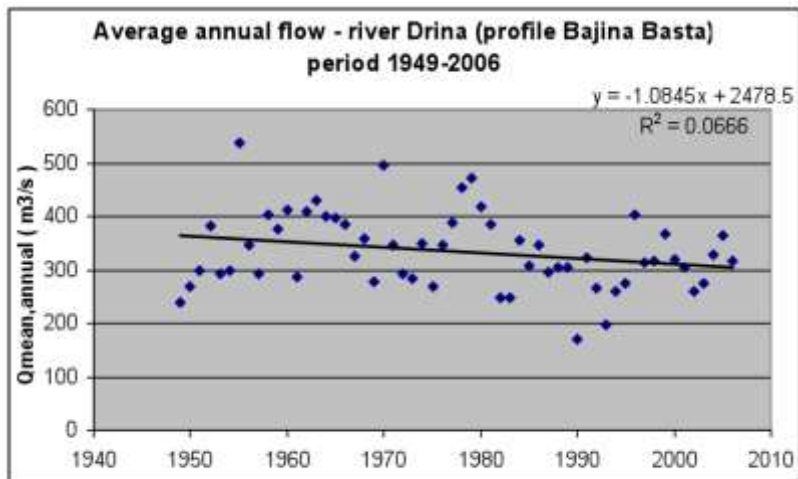
CIMIP5 – Multi-Model ansambl (39 modela) RCP8.5 (IPCC AR5)

30-godišnji pokretni srednjak promena padavina (%) u regionu



Analiza trenda protoka na 18 hidroloških stanica za period 1949-2006

- prosečno smanjenje protoka od -3%/10 godina
- Dunav i Sava prosečno smanjenje \sim -1%/10 godina



Annual hydrological trend, (%/100 years) 1949-2006



Vodni resursi

Projektovane promene

Promene protoka u % u odnosu na 1961-1990

	Jelak (Pek)	Mlaka (Pek)	Stara Pl.	Beljanica	Nišava	Kolubara	Raška	Mlava	Kolubara	Toplica	Drina	Lim	Kolubara	Sava
Do 2050	-13	-13	-13	-6	-0.9	-10	-9	-3	-5	3	2.5	1	-2	-1
Od 2100	-30	-45	-32	-20	-1.5	-5	-8	-4	-34	-25	0.2	0	-13	-5
Projekat	CCWaterS				TR37005				RHMZ/N VE		WATCAP			

Uticaji budućih promena klime na vodne resurse

- Generalno smanjenje vodnih resursa (N)
- Intenziviranje suša (N)
- Proširenje malovodnog perioda (N)
- Smanjenje protoka tokom malovodnog perioda na rekama bez veštačkih akumulacija (S)
- Pogoršanje problema sa kvalitetom vode (N/S)
- Intenziviranje erozije na bujičnim vodotocima (N/S)
- Intenziviranje poplava na srednjim vodotocima (S)

Vodni resursi

Predložene mere adaptacije

- Povećanje efikasnosti sistema vodosnabdevanja
- Smanjenje specifične potrošnje vode u industriji
- Primena najboljih dostupnih tehnika za navodnjavanje
- Prenošenje vode iz regiona sa suficitom u deficitarne regione

- Izgradnje postrojenja za prečišćavanje otpadnih voda za sva naselja sa više od 2000 stanovnika i industrijskih centara (po prioritetu)
- Kontrola difuznih izvora zagađenja koje uglavnom potiču iz poljoprivrede
- Povećanje tarifa za otpadne vode

- Izrada planova zaštite od poplava za međunarodne reke i velike rečne slivove (Dunav, Sava, Tisa, itd)
- Redovno održavanje i unapređenje infrastrukture za zaštitu od poplava

- Ograničavanje izgradnje i razvoja infrastrukture u poplavamnim područjima
- Unapređenje zaštite od polava, posebno u industrijskim centrima, termoelektrane, veliki gradovi
- Integrirani pristup i usaglašavanje aktivnosti institucija i organizacija od lokalnog do nacionalnog nivoa
- Usvajanje strategije i planova o upravljanju vodama
- Jačanje kapaciteta državnih institucija / lokalnih zajednica / istraživačkih i obrazovnih institucija

HVALA

