

Supplementary Information for:
*Screening the Future Security of
Groundwater-Based Water Supply on the Scale
of a Regional Water Supplier*

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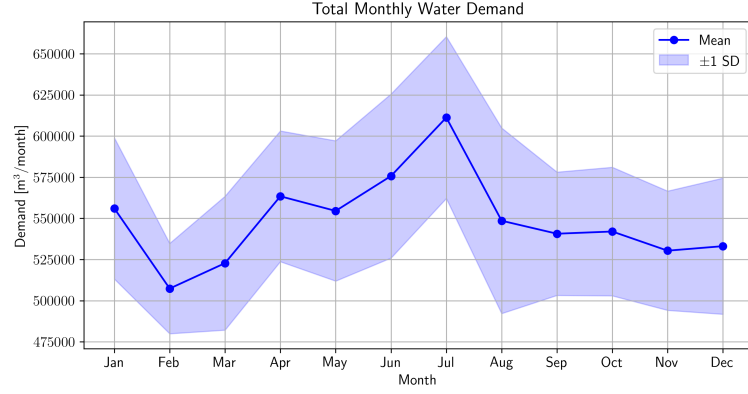


Figure SI1: Average and standard deviation of the monthly aggregated total water demand of the ASG municipalities.

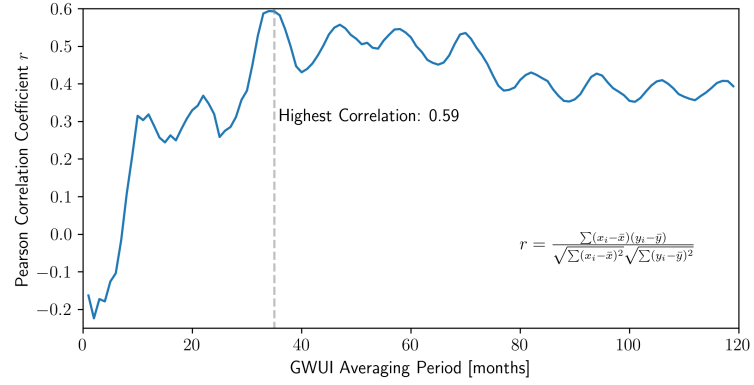


Figure SI2: Pearson correlation coefficient between $GWUI_N$ and the difference to regular extraction for different numbers N of averaging months.

Table SI1: Climate-model ensemble compared to historical data. $\overline{R}_{A-B}$: average groundwater recharge from year A to year B in mm/a, ϕ : criterion for the agreement of climate models to historical data, bold fonts: selected models, ECS: empirical climate scenario. GCM ensemble from the *KLIWA* project. Periods: P1: 1971-2000, P2: 2000-2020, P3: 2015-2022, P4: 2030-2050, P5: 2050-2070

GCM	Down-Scaling	$\overline{R}_{P1}$	$\overline{R}_{P2}$	$\overline{R}_{P3}$	ϕ	$\overline{R}_{P4}$	$\overline{R}_{P5}$
EC-EARTH	CCLM4-8-17	148	139	153	52	171	155
EC-EARTH	KNMI-RACMO2	147	152	159	72	176	188
EC-EARTH	SMHI-RCA4	149	140	143	42	175	154
EC-EARTH	KNMI-RACMO2	139	165	142	60	162	143
MIROC5	CCLM4-8-17	156	138	126	16	130	152
HadGEM2	WRF361H	154	158	157	69	157	139
MPI-ESM	CCLM4-8-17	151	147	174	78	162	150
MPI-ESM	SMHI-RCA4	151	136	132	27	165	164
MPI-ESM	WRF361H	154	147	154	55	135	155
Can-ESM	Episodes2018	142	142	148	56	141	132
EC-EARTH	Episodes2018	135	122	148	73	163	147
HadGEM2	WETTREG2018	158	133	116	7	133	102
MPI-ESM	WETTREG2018	156	149	119	20	132	120
ECS	-	-	-	-	-	131	130 ¹
<i>Historical Data</i>	-	159	137	114	-	-	-

¹ Average over 2050-2060 as ECS cover 2031-2060.