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Future global water scarcity partially moderated by vegetation responses to rising CO_2

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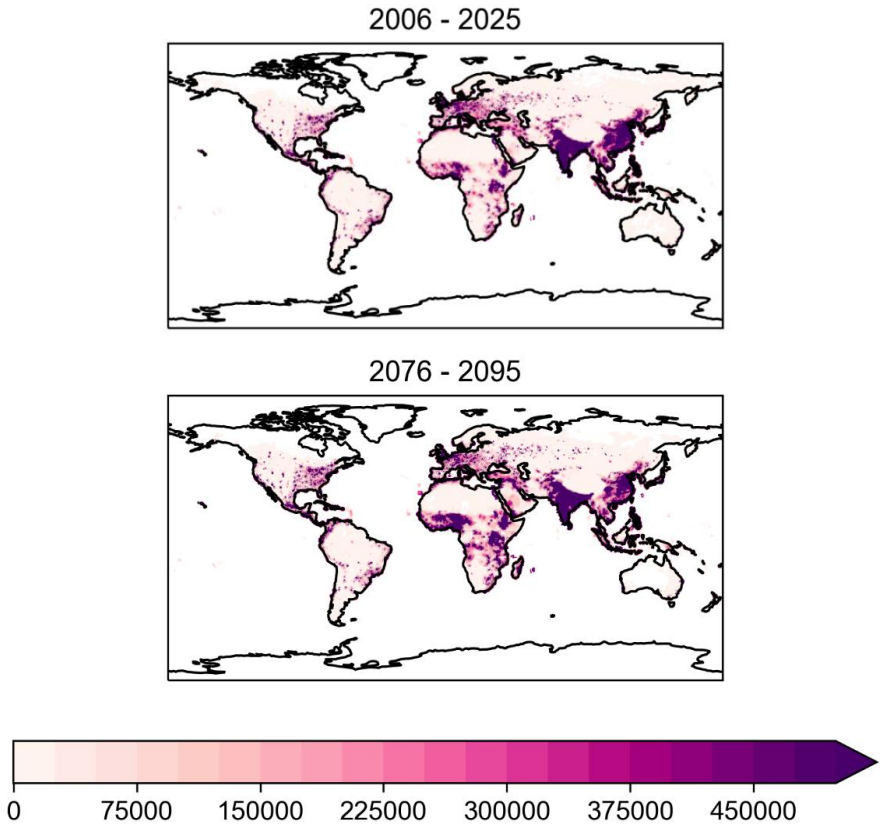
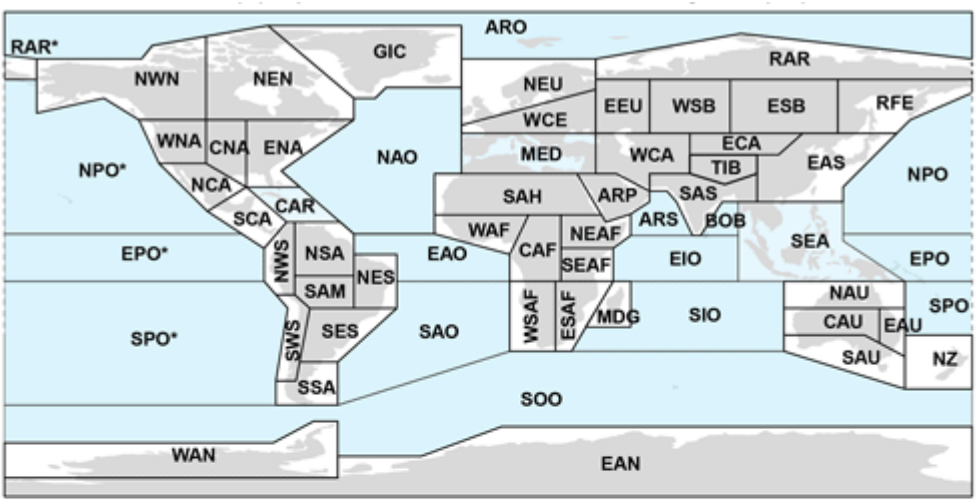


Figure S1: Mean population from 2006 to 2025 (left) and 2076 to 2095 (right). Source: Piontek and Geiger (2017).



1	GIC	Greenland/Iceland	23	SAH	Sahara	43	NAU	N.Australia
2	NWN	N.W.North-America	24	WAF	Western-Africa	44	CAU	C.Australia
3	NEN	N.E.North-America	25	CAF	Central-Africa	45	EAU	E.Australia
4	WNA	W.North-America	26	NEAF	N.Eastern-Africa	46	SAU	S.Australia
5	CNA	C.North-America	27	SEAF	S.Eastern-Africa	47	NZ	New-Zealand
6	ENA	E.North-America	28	WSAF	W.Southern-Africa	48	EAN	E.Antarctica
7	NCA	N.Central-America	29	ESAF	E.Southern-Africa	49	WAN	W.Antarctica
8	SCA	S.Central-America	30	MDG	Madagascar	50	ARO	Arctic-Ocean
9-10	CAR	Caribbean	31	RAR	Russian-Arctic	51	NPO	N.Pacific-Ocean
11	NWS	N.W.South-America	32	WSB	W.Siberia	52	EPO	Equatorial.Pacific-Ocean
12	NSA	N.South-America	33	ESB	E.Siberia	53	SPO	S.Pacific-Ocean
13	NES	N.E.South-America	34	RFE	Russian-Far-East	54	NAO	N.Atlantic-Ocean
14	SAM	South-American-Monsoon	35	WCA	W.C.Asia	55	EAO	Equatorial.Atlantic-Ocean
15	SWS	S.W.South-America	36	ECA	E.C.Asia	56	SAO	S.Atlantic-Ocean
16	SES	S.E.South-America	37	TIB	Tibetan-Plateau	57	ARS	Arabian-Sea
17	SSA	S.South-America	38	EAS	E.Asia	58	BOB	Bay-of-Bengal
18	NEU	N.Europe	39	ARP	Arabian-Peninsula	59	EIO	Equatorial.Indic-Ocean
19	WCE	Western&Central-Europe	40	SAS	S.Asia	60	SIO	S.Indic-Ocean
20	EEU	E.Europe	41-42	SEA	S.E.Asia	61	SOO	Southern-Ocean
21-22	MED	Mediterranean						

Figure S2: IPCC reference land and ocean regions. Source: Iturbide et al. (2020).

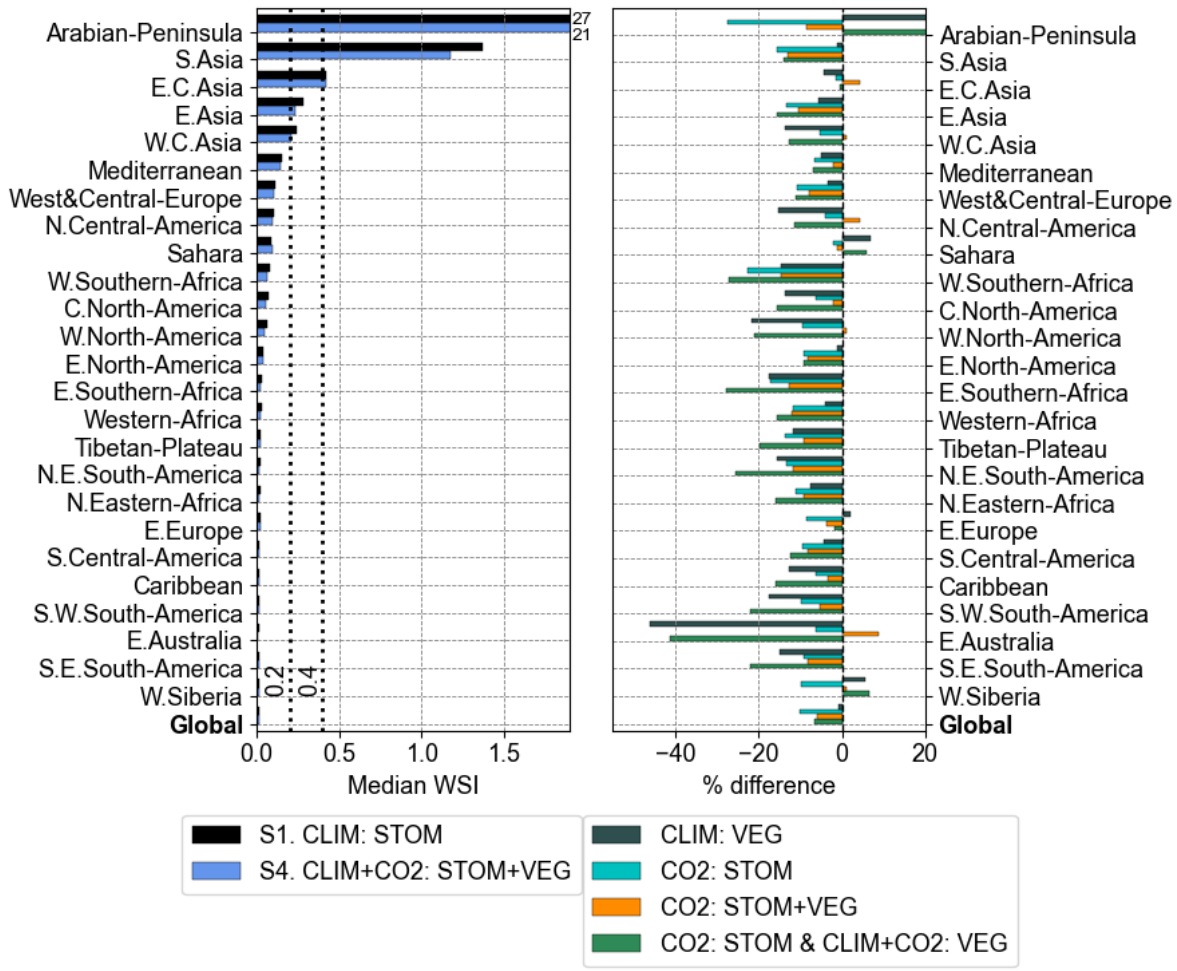


Figure S3: Median monthly WSI in simulations S1 and S4 (left) and % difference of median WSI when including the various isolated factors (right) by IPCC AR6 regions for the period 2006-2025. The grey dashed lines (left) indicate the thresholds for mild water scarcity (WSI ≥ 0.2) and severe water scarcity (WSI ≥ 0.4). Only the 25 regions with the highest median WSI according to the S1. CLIM: STOM simulation are shown, sorted from the most water scarce region (top) to the least (bottom). The global median is also presented at the bottom. The numbers show the values which are out of range for the Arabian-Peninsula.

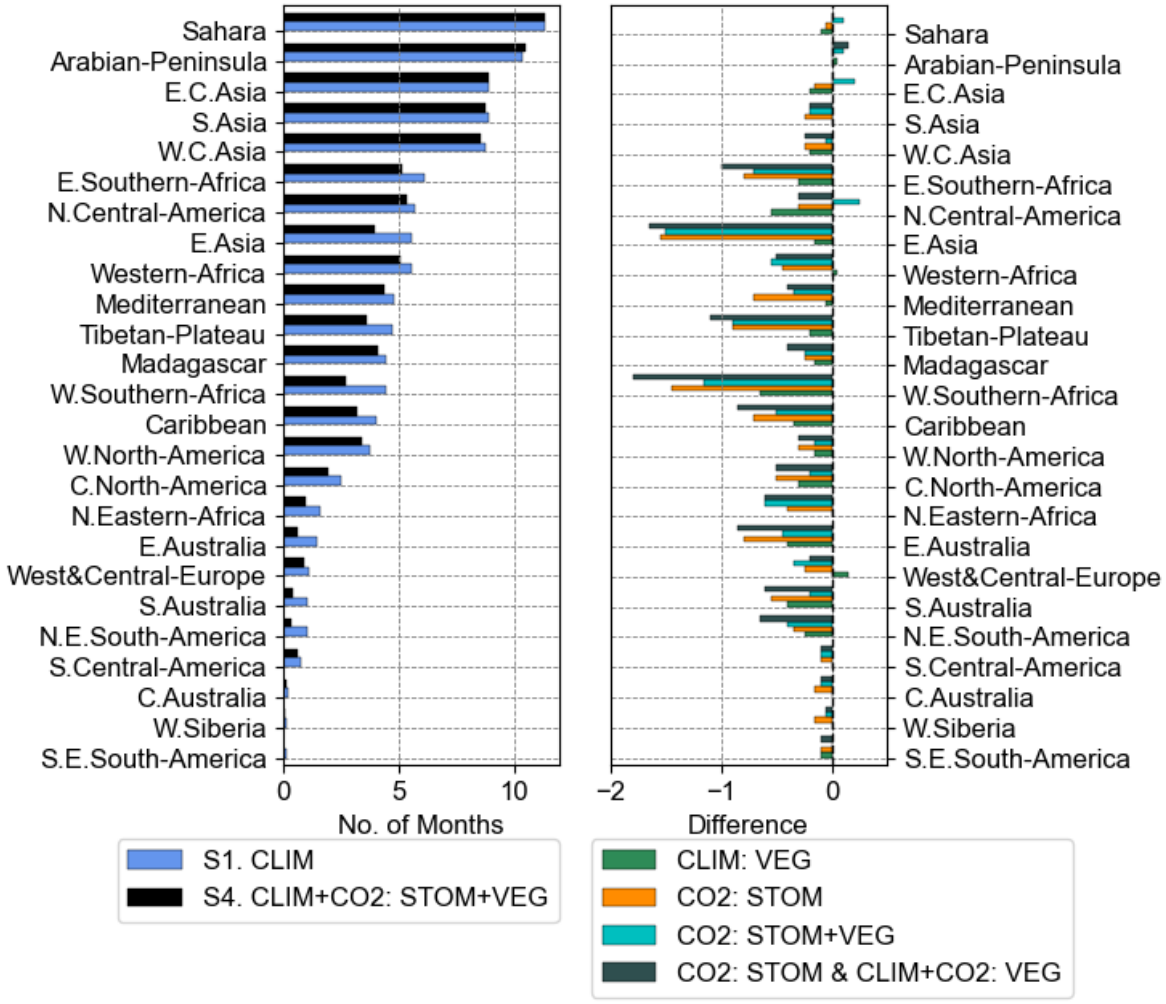


Figure S4: Number of months in severe water scarcity (WSI ≥ 0.4) (left) and the absolute difference when including the various isolated factors (right) by IPCC AR6 regions for the future period 2076-2095. Sorted from the most to the least number of months according to the S1. CLIM simulation.

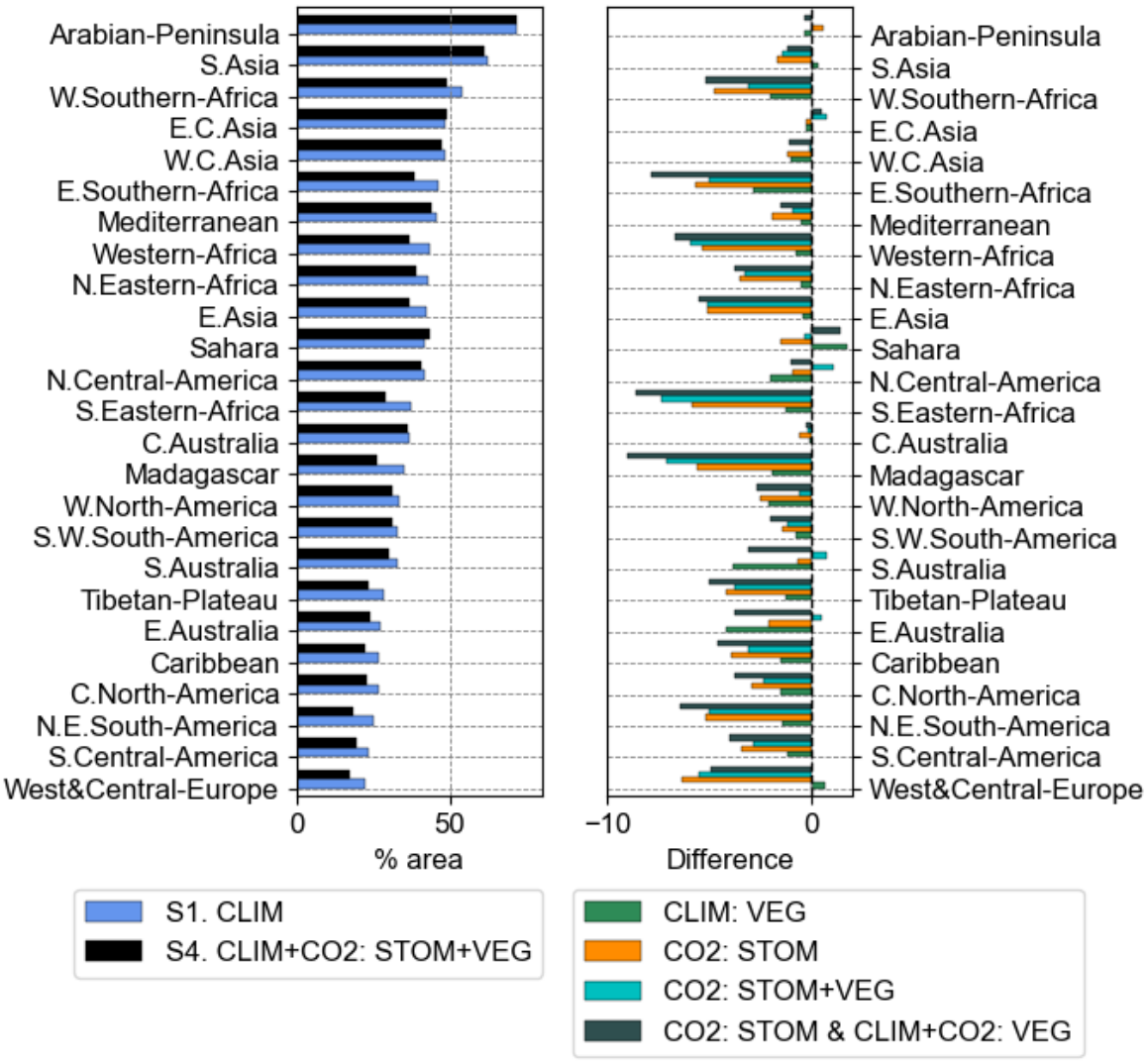


Figure S5: Percentage area in severe water scarcity (WSI ≥ 0.4) (left) and the absolute difference when including the various isolated factors (right) by IPCC AR6 regions for the future period 2076-2095. Sorted from the highest to the lowest percent area according to the S1. CLIM simulation.

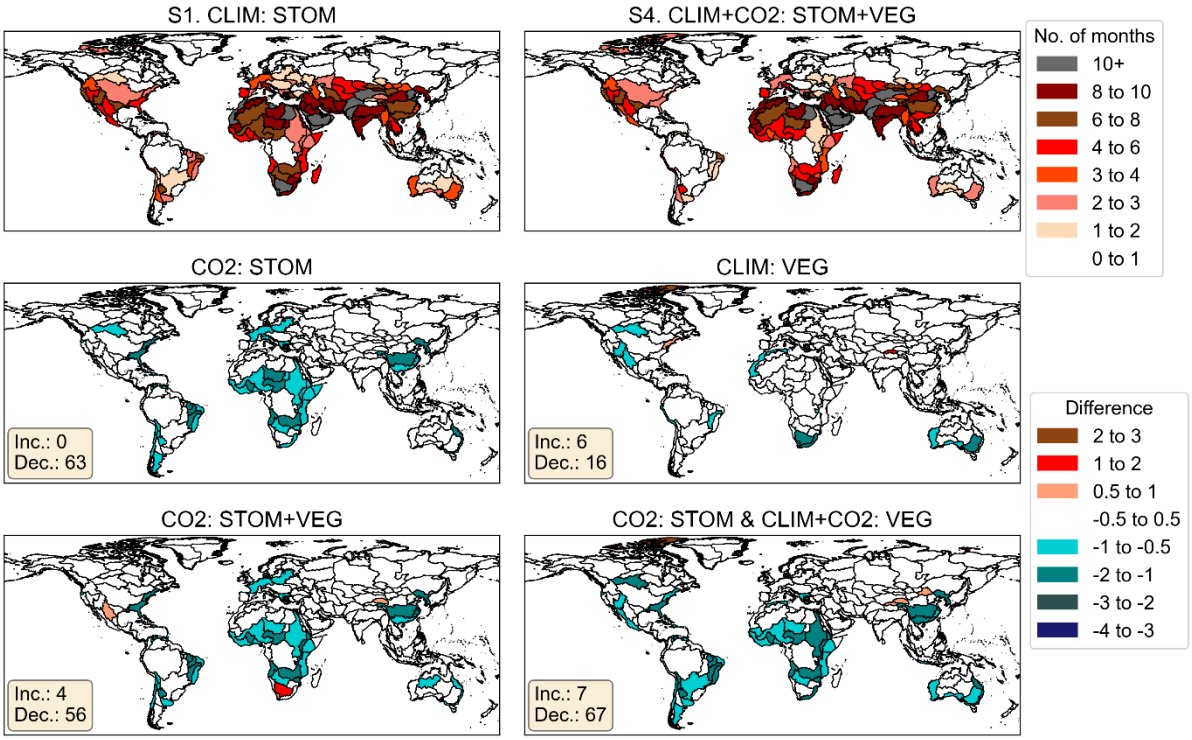


Figure S6: Number of severely water scarce months (WSI ≥ 0.4) in simulations S1 and S4 (top row) and difference in number of months when including the various isolated factors (bottom two rows) by river basin for the future period 2076-2095. The number of basins projected to increase (Inc.) and decrease (Dec.) by more than 0.5 months when each factor is included is noted in the yellow text box.

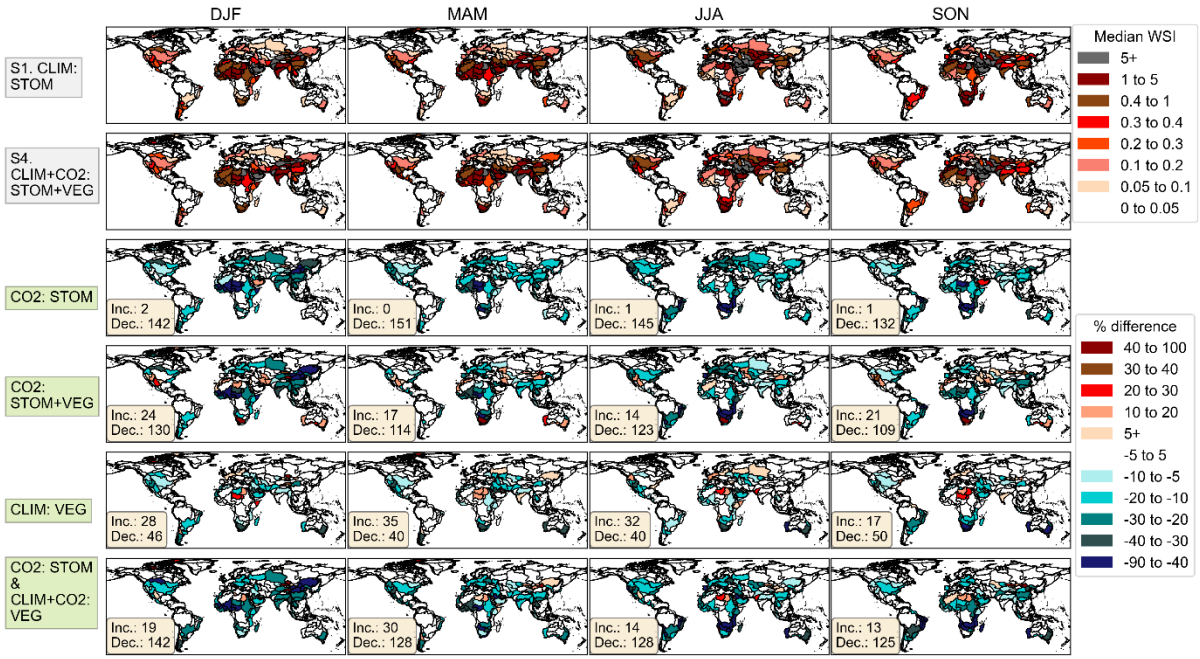


Figure S7: Median seasonal WSI in simulations S1 and S4 (top row) and the relative (%) difference in median WSI when including the various isolated factors by river basin for the future period 2076-2095. The number of basins projected to increase (Inc.) and decrease (Dec.) by more than 10% when each factor is included is noted in the yellow text box.