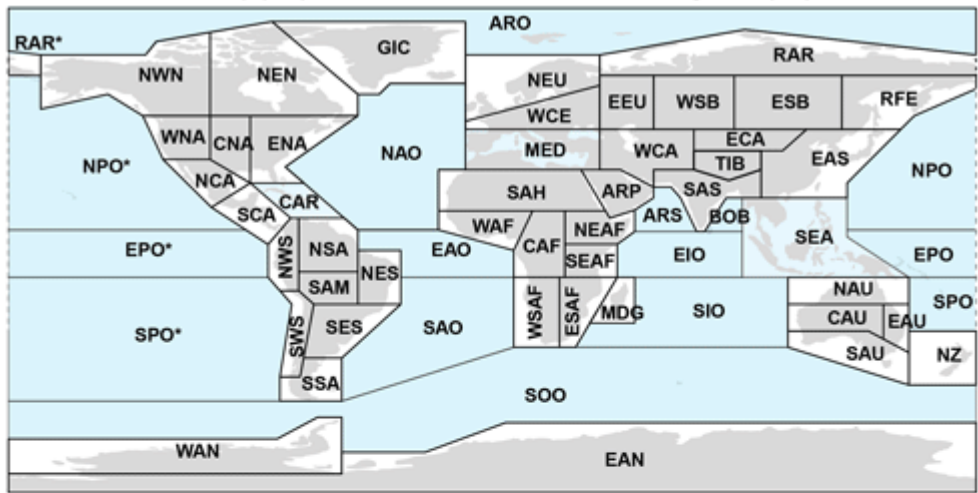


Figure S1: Mean population from 2006 to 2025 (left) and 2076 to 2095 (right). Source: Piontek and Geiger (2017).



| | | | | | | | | |
|-------|-----|------------------------|-------|------|-------------------|----|-----|---------------------------|
| 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).

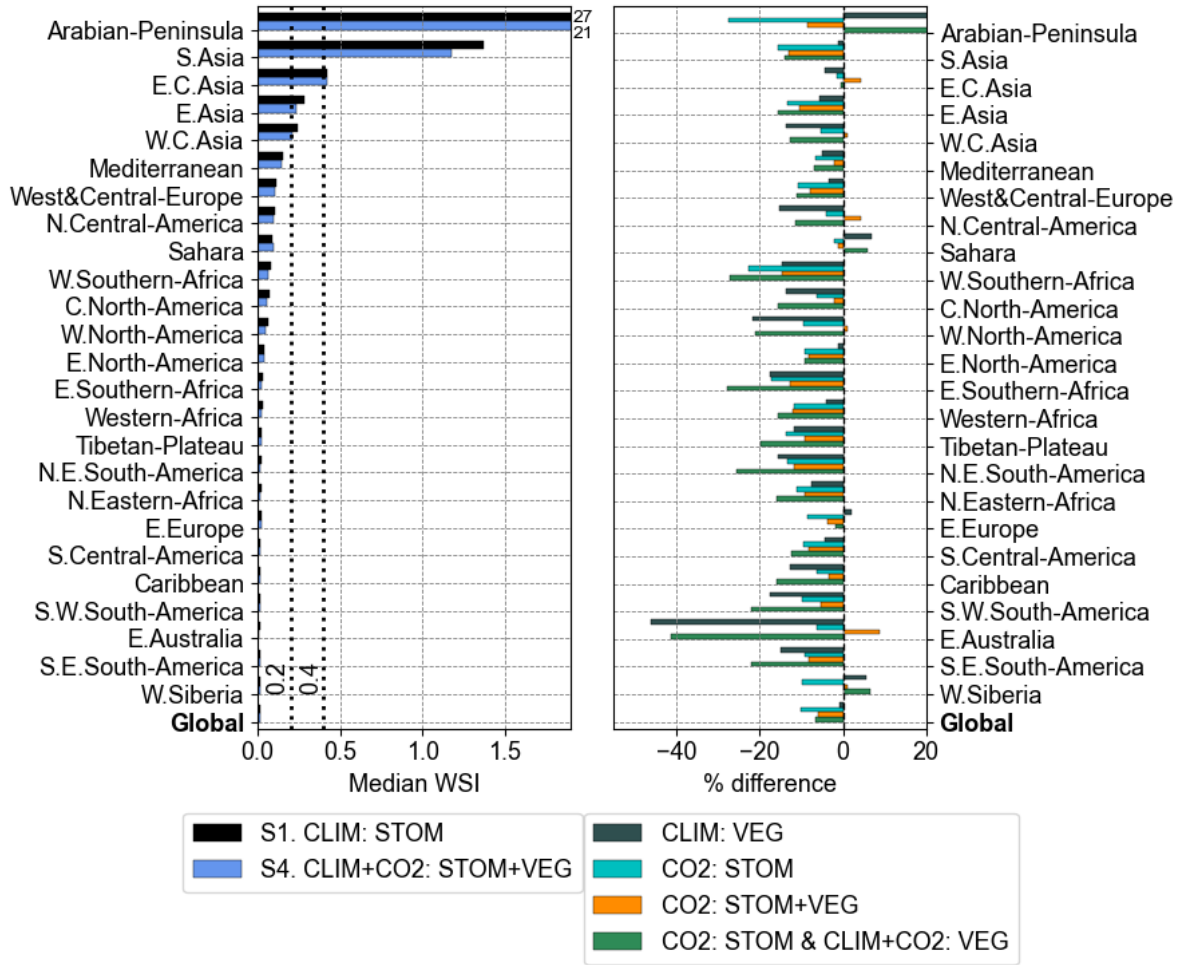


Figure S3: Median monthly WSI in simulations S1 and S4 (left) and % difference of median WSI when including the various isolated factors (right) by IPCC AR6 regions for the period 2006-2025. The grey dashed lines (left) indicate the thresholds for mild water scarcity ($WSI \geq 0.2$) and severe water scarcity ($WSI \geq 0.4$). 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.

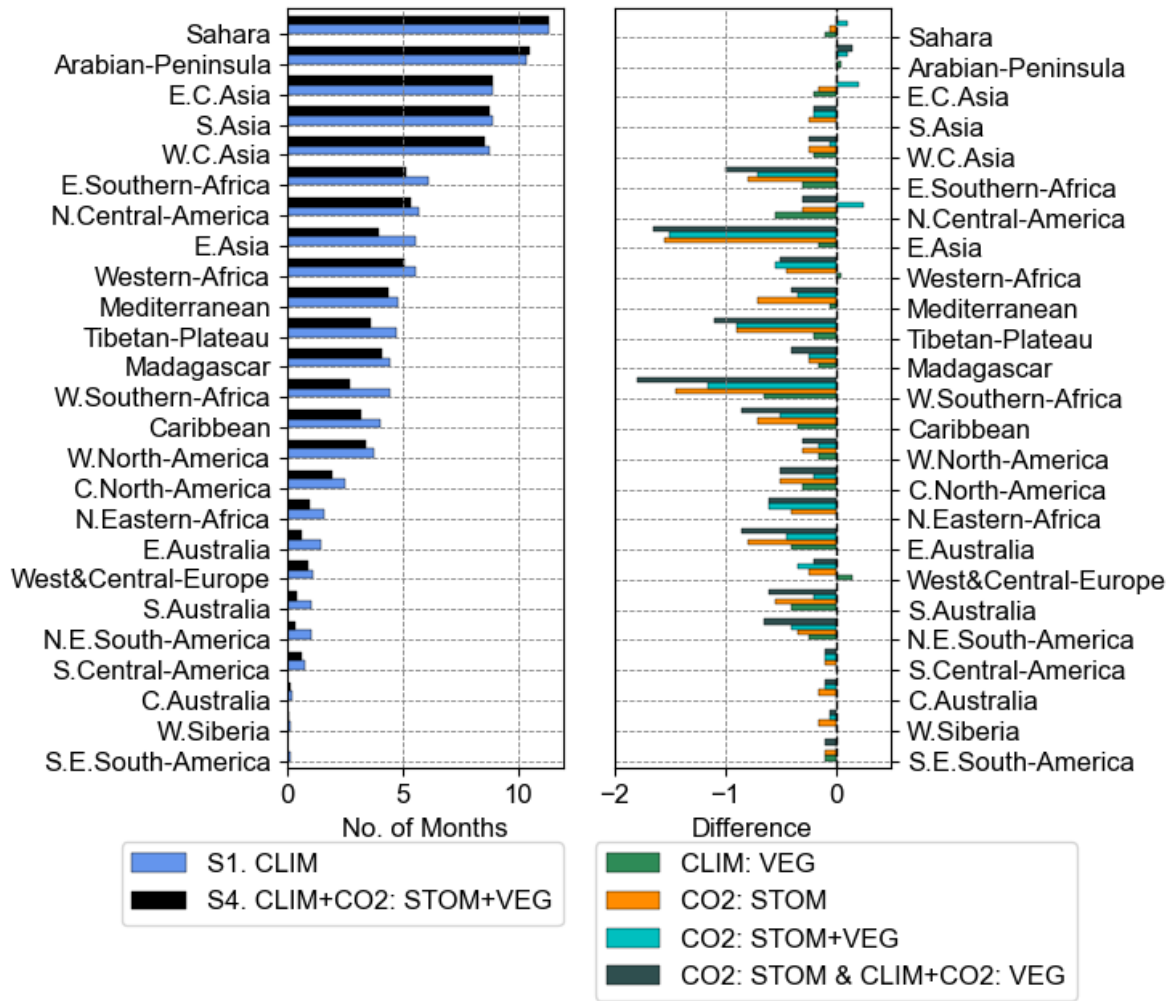


Figure S4a: Number of months in severe water scarcity ($WSI \geq 0.4$) (left) and the absolute difference when including the various isolated factors (right) by IPCC AR6 regions for the future period 2076-2095. Sorted from the most to the least number of months according to the S1. CLIM simulation.

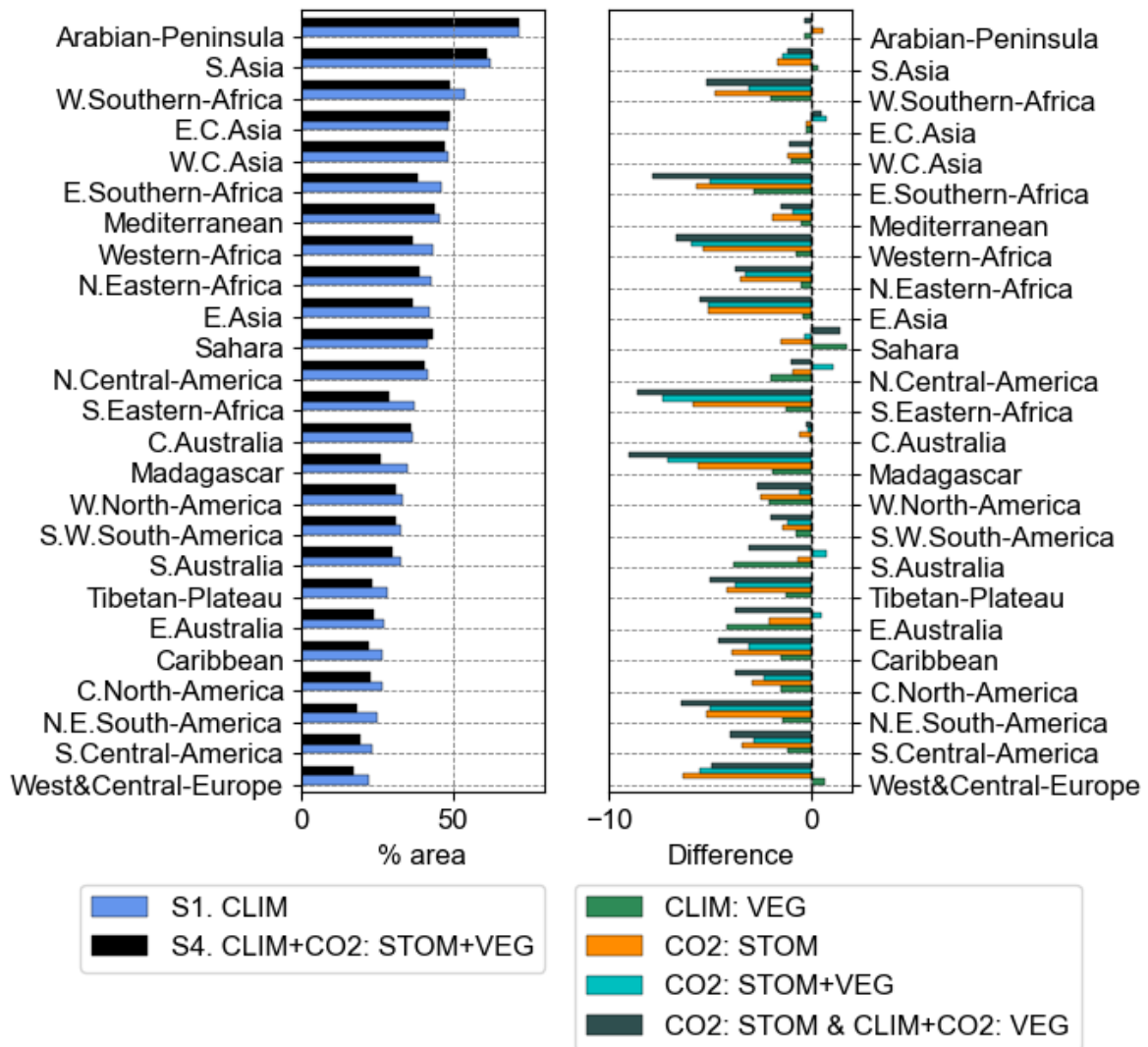


Figure S4b: Percentage area in severe water scarcity ($WSI \geq 0.4$) (left) and the absolute difference when including the various isolated factors (right) by IPCC AR6 regions for the future period 2076-2095. Sorted from the highest to the lowest percent area according to the S1. CLIM simulation.

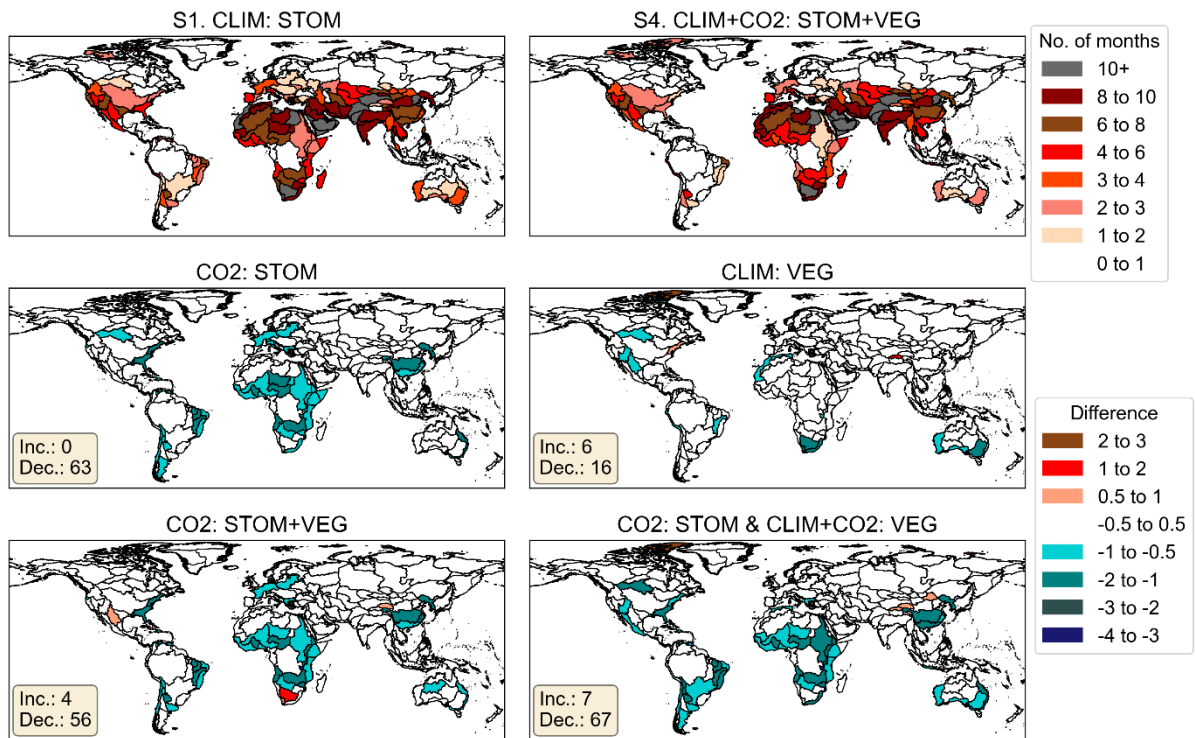


Figure S5: Number of severely water scarce months ($WSI \geq 0.4$) in simulations S1 and S4 (top row) and difference in number of months when including the various isolated factors (bottom two rows) by river basin for the future period 2076-2095. The number of basins projected to increase (Inc.) and decrease (Dec.) by more than 0.5 months when each factor is included is noted in the yellow text box.

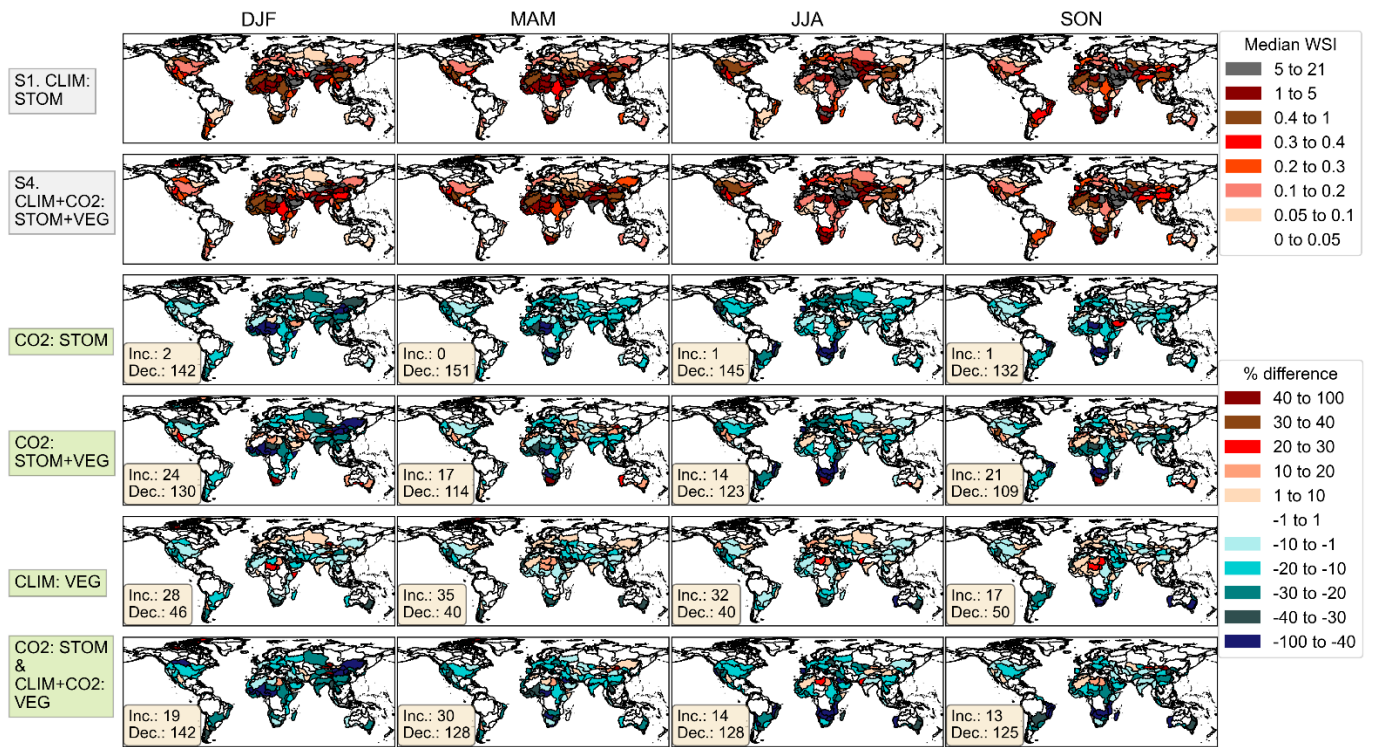


Figure S6: Median seasonal WSI in simulations S1 and S4 (top row) and the relative (%) difference in median WSI when including the various isolated factors by river basin for the future period 2076-2095. The number of basins projected to increase (Inc.) and decrease (Dec.) by more than 10% when each factor is included is noted in the yellow text box.