

Supplementary Material:

Table S1: Simulations used for monthly projections of precipitation for 2091-2100.

pr_own_ReKliEs-DWD_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_MPI-CSC-REMO2009_v1
pr_own_ReKliEs-DWD_MPI-M-MPI-ESM-LR_rcp85_r1i1p1_MPI-CSC-REMO2009_v1
pr_own_ReKliEs-DWD_MPI-M-MPI-ESM-LR_rcp85_r2i1p1_MPI-CSC-REMO2009_v1
pr_own_ReKliEs-DWD_MPI-M-MPI-ESM-LR_rcp26_r2i1p1_MPI-CSC-REMO2009_v1
pr_own_ReKliEs-DWD_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_PIK-STAR3_v1-r9
pr_own_ReKliEs-DWD_ICHEC-EC-EARTH_rcp85_r12i1p1_PIK-STAR3_v1-r2
pr_own_ReKliEs-DWD_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_PIK-STAR3_v1-r5
pr_own_ReKliEs-DWD_MPI-M-MPI-ESM-LR_rcp85_r1i1p1_PIK-STAR3_v1-r6
pr_own_ReKliEs-DWD_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_PIK-STAR3_v1-r10
pr_own_ReKliEs-DWD_CCCma-CanESM2_rcp85_r1i1p1_PIK-STAR3_v1-r2
pr_own_ReKliEs-DWD_ICHEC-EC-EARTH_rcp85_r12i1p1_PIK-STAR3_v1-r1
pr_own_ReKliEs-DWD_CCCma-CanESM2_rcp85_r1i1p1_PIK-STAR3_v1-r3
pr_own_ReKliEs-DWD_MPI-M-MPI-ESM-LR_rcp85_r1i1p1_PIK-STAR3_v1-r4
pr_own_ReKliEs-DWD_MOHC-HadGEM2-ES_rcp85_r1i1p1_PIK-STAR3_v1-r8
pr_own_ReKliEs-DWD_MIROC-MIROC5_rcp85_r1i1p1_PIK-STAR3_v1-r8
pr_own_ReKliEs-DWD_CNRM-CERFACS-CNRM-CM5_rcp85_r1i1p1_PIK-STAR3_v1-r6
pr_own_ReKliEs-DWD_ICHEC-EC-EARTH_rcp85_r12i1p1_PIK-STAR3_v1-r4
pr_own_ReKliEs-DWD_ICHEC-EC-EARTH_rcp26_r12i1p1_PIK-STAR3_v1-r9

pr_own_ReKliEs-DWD_CNRM-CERFACS-CNRM-CM5_rcp85_r1i1p1_PIK-STAR3_v1-r7
pr_own_ReKliEs-DWD_MOHC-HadGEM2-ES_rcp85_r1i1p1_PIK-STAR3_v1-r4
pr_own_ReKliEs-DWD_MOHC-HadGEM2-ES_rcp26_r1i1p1_PIK-STAR3_v1-r6
pr_own_ReKliEs-DWD_CCCma-CanESM2_rcp85_r1i1p1_PIK-STAR3_v1-r5
pr_own_ReKliEs-DWD_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_PIK-STAR3_v1
pr_own_ReKliEs-DWD_MOHC-HadGEM2-ES_rcp26_r1i1p1_PIK-STAR3_v1-r1
pr_own_ReKliEs-DWD_ICHEC-EC-EARTH_rcp26_r12i1p1_PIK-STAR3_v1-r5
pr_own_ReKliEs-DWD_CNRM-CERFACS-CNRM-CM5_rcp85_r1i1p1_PIK-STAR3_v1-r4
pr_own_ReKliEs-DWD_MIROC-MIROC5_rcp85_r1i1p1_PIK-STAR3_v1-r5
pr_own_ReKliEs-DWD_MOHC-HadGEM2-ES_rcp85_r1i1p1_PIK-STAR3_v1-r3
pr_own_ReKliEs-DWD_CCCma-CanESM2_rcp85_r1i1p1_PIK-STAR3_v1-r1
pr_own_ReKliEs-DWD_MOHC-HadGEM2-ES_rcp26_r1i1p1_PIK-STAR3_v1-r10
pr_own_ReKliEs-DWD_MPI-M-MPI-ESM-LR_rcp85_r1i1p1_PIK-STAR3_v1-r1
pr_own_ReKliEs-DWD_ICHEC-EC-EARTH_rcp26_r12i1p1_PIK-STAR3_v1-r4
pr_own_ReKliEs-DWD_MOHC-HadGEM2-ES_rcp26_r1i1p1_PIK-STAR3_v1-r8
pr_own_ReKliEs-DWD_MOHC-HadGEM2-ES_rcp85_r1i1p1_PIK-STAR3_v1-r2
pr_own_ReKliEs-DWD_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_PIK-STAR3_v1-r8
pr_own_ReKliEs-DWD_MOHC-HadGEM2-ES_rcp26_r1i1p1_PIK-STAR3_v1-r5
pr_own_ReKliEs-DWD_MOHC-HadGEM2-ES_rcp26_r1i1p1_PIK-STAR3_v1-r9
pr_own_ReKliEs-DWD_MOHC-HadGEM2-ES_rcp85_r1i1p1_PIK-STAR3_v1-r10
pr_own_ReKliEs-DWD_ICHEC-EC-EARTH_rcp85_r12i1p1_PIK-STAR3_v1-r3

pr_own_ReKliEs-DWD_CCCma-CanESM2_rcp85_r1i1p1_PIK-STAR3_v1-r10
pr_own_ReKliEs-DWD_CNRM-CERFACS-CNRM-CM5_rcp85_r1i1p1_PIK-STAR3_v1-r2
pr_own_ReKliEs-DWD_ICHEC-EC-EARTH_rcp26_r12i1p1_PIK-STAR3_v1
pr_own_ReKliEs-DWD_MOHC-HadGEM2-ES_rcp85_r1i1p1_PIK-STAR3_v1-r1
pr_own_ReKliEs-DWD_MIROC-MIROC5_rcp85_r1i1p1_PIK-STAR3_v1-r3
pr_own_ReKliEs-DWD_CCCma-CanESM2_rcp85_r1i1p1_PIK-STAR3_v1-r6
pr_own_ReKliEs-DWD_ICHEC-EC-EARTH_rcp26_r12i1p1_PIK-STAR3_v1-r7
pr_own_ReKliEs-DWD_MOHC-HadGEM2-ES_rcp85_r1i1p1_PIK-STAR3_v1-r6
pr_own_ReKliEs-DWD_ICHEC-EC-EARTH_rcp26_r12i1p1_PIK-STAR3_v1-r6
pr_own_ReKliEs-DWD_MOHC-HadGEM2-ES_rcp85_r1i1p1_PIK-STAR3_v1-r7
pr_own_ReKliEs-DWD_MIROC-MIROC5_rcp85_r1i1p1_PIK-STAR3_v1-r10
pr_own_ReKliEs-DWD_ICHEC-EC-EARTH_rcp85_r12i1p1_PIK-STAR3_v1-r9
pr_own_ReKliEs-DWD_MOHC-HadGEM2-ES_rcp85_r1i1p1_PIK-STAR3_v1
pr_own_ReKliEs-DWD_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_PIK-STAR3_v1-r7
pr_own_ReKliEs-DWD_MPI-M-MPI-ESM-LR_rcp85_r1i1p1_PIK-STAR3_v1-r3
pr_own_ReKliEs-DWD_MPI-M-MPI-ESM-LR_rcp85_r1i1p1_PIK-STAR3_v1-r9
pr_own_ReKliEs-DWD_MPI-M-MPI-ESM-LR_rcp85_r1i1p1_PIK-STAR3_v1-r2
pr_own_ReKliEs-DWD_CCCma-CanESM2_rcp85_r1i1p1_PIK-STAR3_v1-r4
pr_own_ReKliEs-DWD_ICHEC-EC-EARTH_rcp85_r12i1p1_PIK-STAR3_v1-r6
pr_own_ReKliEs-DWD_MIROC-MIROC5_rcp85_r1i1p1_PIK-STAR3_v1-r7
pr_own_ReKliEs-DWD_MPI-M-MPI-ESM-LR_rcp85_r1i1p1_PIK-STAR3_v1-r5

pr_own_ReKliEs-DWD_CNRM-CERFACS-CNRM-CM5_rcp85_r1i1p1_PIK-STAR3_v1-r3
pr_own_ReKliEs-DWD_ICHEC-EC-EARTH_rcp85_r12i1p1_PIK-STAR3_v1-r10
pr_own_ReKliEs-DWD_ICHEC-EC-EARTH_rcp26_r12i1p1_PIK-STAR3_v1-r1
pr_own_ReKliEs-DWD_MOHC-HadGEM2-ES_rcp26_r1i1p1_PIK-STAR3_v1-r3
pr_own_ReKliEs-DWD_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_PIK-STAR3_v1-r6
pr_own_ReKliEs-DWD_ICHEC-EC-EARTH_rcp26_r12i1p1_PIK-STAR3_v1-r2
pr_own_ReKliEs-DWD_MPI-M-MPI-ESM-LR_rcp85_r1i1p1_PIK-STAR3_v1
pr_own_ReKliEs-DWD_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_PIK-STAR3_v1-r1
pr_own_ReKliEs-DWD_CNRM-CERFACS-CNRM-CM5_rcp85_r1i1p1_PIK-STAR3_v1
pr_own_ReKliEs-DWD_CNRM-CERFACS-CNRM-CM5_rcp85_r1i1p1_PIK-STAR3_v1-r5
pr_own_ReKliEs-DWD_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_PIK-STAR3_v1-r2
pr_own_ReKliEs-DWD_MIROC-MIROC5_rcp85_r1i1p1_PIK-STAR3_v1-r6
pr_own_ReKliEs-DWD_ICHEC-EC-EARTH_rcp26_r12i1p1_PIK-STAR3_v1-r3
pr_own_ReKliEs-DWD_MOHC-HadGEM2-ES_rcp26_r1i1p1_PIK-STAR3_v1-r7
pr_own_ReKliEs-DWD_ICHEC-EC-EARTH_rcp85_r12i1p1_PIK-STAR3_v1-r7
pr_own_ReKliEs-DWD_CCCma-CanESM2_rcp85_r1i1p1_PIK-STAR3_v1-r7
pr_own_ReKliEs-DWD_MIROC-MIROC5_rcp85_r1i1p1_PIK-STAR3_v1-r4
pr_own_ReKliEs-DWD_MIROC-MIROC5_rcp85_r1i1p1_PIK-STAR3_v1-r9
pr_own_ReKliEs-DWD_MOHC-HadGEM2-ES_rcp26_r1i1p1_PIK-STAR3_v1-r4
pr_own_ReKliEs-DWD_MIROC-MIROC5_rcp85_r1i1p1_PIK-STAR3_v1
pr_own_ReKliEs-DWD_ICHEC-EC-EARTH_rcp26_r12i1p1_PIK-STAR3_v1-r8

pr_own_ReKliEs-DWD_MPI-M-MPI-ESM-LR_rcp85_r1i1p1_PIK-STAR3_v1-r8
pr_own_ReKliEs-DWD_ICHEC-EC-EARTH_rcp26_r12i1p1_PIK-STAR3_v1-r10
pr_own_ReKliEs-DWD_MIROC-MIROC5_rcp85_r1i1p1_PIK-STAR3_v1-r2
pr_own_ReKliEs-DWD_CNRM-CERFACS-CNRM-CM5_rcp85_r1i1p1_PIK-STAR3_v1-r8
pr_own_ReKliEs-DWD_CCCma-CanESM2_rcp85_r1i1p1_PIK-STAR3_v1
pr_own_ReKliEs-DWD_CNRM-CERFACS-CNRM-CM5_rcp85_r1i1p1_PIK-STAR3_v1-r9
pr_own_ReKliEs-DWD_CNRM-CERFACS-CNRM-CM5_rcp85_r1i1p1_PIK-STAR3_v1-r1
pr_own_ReKliEs-DWD_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_PIK-STAR3_v1-r3
pr_own_ReKliEs-DWD_MOHC-HadGEM2-ES_rcp85_r1i1p1_PIK-STAR3_v1-r5
pr_own_ReKliEs-DWD_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_PIK-STAR3_v1-r4
pr_own_ReKliEs-DWD_MOHC-HadGEM2-ES_rcp26_r1i1p1_PIK-STAR3_v1
pr_own_ReKliEs-DWD_CNRM-CERFACS-CNRM-CM5_rcp85_r1i1p1_PIK-STAR3_v1-r10
pr_own_ReKliEs-DWD_MOHC-HadGEM2-ES_rcp85_r1i1p1_PIK-STAR3_v1-r9
pr_own_ReKliEs-DWD_MPI-M-MPI-ESM-LR_rcp85_r1i1p1_PIK-STAR3_v1-r10
pr_own_ReKliEs-DWD_CCCma-CanESM2_rcp85_r1i1p1_PIK-STAR3_v1-r8
pr_own_ReKliEs-DWD_MOHC-HadGEM2-ES_rcp26_r1i1p1_PIK-STAR3_v1-r2
pr_own_ReKliEs-DWD_ICHEC-EC-EARTH_rcp85_r12i1p1_PIK-STAR3_v1
pr_own_ReKliEs-DWD_CCCma-CanESM2_rcp85_r1i1p1_PIK-STAR3_v1-r9
pr_own_ReKliEs-DWD_ICHEC-EC-EARTH_rcp85_r12i1p1_PIK-STAR3_v1-r8
pr_own_ReKliEs-DWD_MIROC-MIROC5_rcp85_r1i1p1_PIK-STAR3_v1-r1
pr_own_ReKliEs-DWD_MPI-M-MPI-ESM-LR_rcp85_r1i1p1_PIK-STAR3_v1-r7

pr_own_ReKliEs-DWD_ICHEC-EC-EARTH_rcp85_r1i1p1_UHOH-WRF361H_v1
pr_own_ReKliEs-DWD_MOHC-HadGEM2-ES_rcp85_r1i1p1_UHOH-WRF361H_v1
pr_own_ReKliEs-DWD_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_UHOH-WRF361H_v1
pr_own_ReKliEs-DWD_MPI-M-MPI-ESM-LR_rcp85_r1i1p1_UHOH-WRF361H_v1
pr_own_ReKliEs-DWD_CNRM-CERFACS-CNRM-CM5_rcp85_r1i1p1_CLMcom-CCLM4-8-17_v1
pr_own_ReKliEs-DWD_MIROC-MIROC5_rcp85_r1i1p1_CLMcom-CCLM4-8-17_v1
pr_own_ReKliEs-DWD_CCCma-CanESM2_rcp85_r1i1p1_CLMcom-CCLM4-8-17_v1
pr_own_ReKliEs-DWD_ICHEC-EC-EARTH_rcp26_r12i1p1_CLMcom-CCLM4-8-17_v1
pr_own_ReKliEs-DWD_MPI-M-MPI-ESM-LR_rcp85_r1i1p1_CLMcom-CCLM4-8-17_v1
pr_own_ReKliEs-DWD_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_CLMcom-CCLM4-8-17_v1
pr_own_ReKliEs-DWD_MOHC-HadGEM2-ES_rcp85_r1i1p1_CLMcom-CCLM4-8-17_v1
pr_own_ReKliEs-DWD_ICHEC-EC-EARTH_rcp85_r12i1p1_CLMcom-CCLM4-8-17_v1
pr_own_ReKliEs-DWD_ICHEC-EC-EARTH_rcp85_r3i1p1_DMI-HIRHAM5_v1
pr_own_ReKliEs-DWD_ICHEC-EC-EARTH_rcp26_r3i1p1_DMI-HIRHAM5_v1
pr_own_ReKliEs-DWD_MOHC-HadGEM2-ES_rcp85_r1i1p1_KNMI-RACMO22E_v2
pr_own_ReKliEs-DWD_MOHC-HadGEM2-ES_rcp26_r1i1p1_KNMI-RACMO22E_v2
pr_own_ReKliEs-DWD_ICHEC-EC-EARTH_rcp26_r12i1p1_KNMI-RACMO22E_v1
pr_own_ReKliEs-DWD_ICHEC-EC-EARTH_rcp85_r1i1p1_KNMI-RACMO22E_v1
pr_own_ReKliEs-DWD_MIROC-MIROC5_rcp85_r1i1p1_GERICS-REMO2015_v1
pr_own_ReKliEs-DWD_ICHEC-EC-EARTH_rcp85_r12i1p1_GERICS-REMO2015_v1
pr_own_ReKliEs-DWD_CCCma-CanESM2_rcp85_r1i1p1_GERICS-REMO2015_v1

pr_own_ReKliEs-DWD_MOHC-HadGEM2-ES_rcp85_r1i1p1_GERICS-REMO2015_v1
pr_own_ReKliEs-DWD_CNRM-CERFACS-CNRM-CM5_rcp85_r1i1p1_GERICS-REMO2015_v1
pr_own_ReKliEs-DWD_MOHC-HadGEM2-ES_rcp85_r1i1p1_SMHI-RCA4_v1
pr_own_ReKliEs-DWD_MPI-M-MPI-ESM-LR_rcp85_r1i1p1_SMHI-RCA4_v1a
pr_own_ReKliEs-DWD_ICHEC-EC-EARTH_rcp26_r12i1p1_SMHI-RCA4_v1
pr_own_ReKliEs-DWD_CNRM-CERFACS-CNRM-CM5_rcp85_r1i1p1_SMHI-RCA4_v1
pr_own_ReKliEs-DWD_ICHEC-EC-EARTH_rcp85_r12i1p1_SMHI-RCA4_v1
pr_own_ReKliEs-DWD_IPSL-IPSL-CM5A-MR_rcp85_r1i1p1_SMHI-RCA4_v1
pr_own_ReKliEs-DWD_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_SMHI-RCA4_v1a
pr_own_ReKliEs-DWD_MOHC-HadGEM2-ES_rcp26_r1i1p1_SMHI-RCA4_v1
pr_own_ReKliEs-DWD_IPSL-IPSL-CM5A-MR_rcp85_r1i1p1_IPSL-INERIS-WRF331F_v1

Table S2: Simulations used for monthly projections of minimum and maximum temperatures for 2091-2100.

tasmin_EUR-11_CCCma-CanESM2_rcp85_r1i1p1_CEC-WETTREG2013_v1-r10
tasmax_EUR-11_ICHEC-EC-EARTH_rcp85_r12i1p1_UHOH-WRF361H_v1
tasmin_EUR-11_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_CLMcom-BTU-CCLM4-8-17_v1
tasmin_EUR-11_MPI-M-MPI-ESM-LR_rcp85_r1i1p1_MOHC-HadREM3-GA7-05_v1
tasmin_EUR-11_MPI-M-MPI-ESM-LR_rcp85_r1i1p1_CEC-WETTREG2013_v1-r9
tasmax_EUR-11_MPI-M-MPI-ESM-LR_rcp85_r2i1p1_MPI-CSC-REMO2009_v1
tasmin_EUR-11_ICHEC-EC-EARTH_rcp85_r12i1p1_UHOH-WRF361H_v1
tasmax_EUR-11_MPI-M-MPI-ESM-LR_rcp85_r2i1p1_MPI-CSC-REMO2009_v1

tasmin_EUR-11_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_CLMcom-BTU-CCLM4-8-17_v1
tasmin_EUR-11_CCCma-CanESM2_rcp85_r1i1p1_CEC-WETTREG2013_v1-r10
tasmax_EUR-11_MOHC-HadGEM2-ES_rcp85_r1i1p1_IPSL-WRF381P_v1
tasmax_EUR-11_MOHC-HadGEM2-ES_rcp85_r1i1p1_IPSL-WRF381P_v1
tasmax_EUR-11_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_UHOH-WRF361H_v1
tasmax_EUR-11_MIROC-MIROC5_rcp85_r1i1p1_CLMcom-CCLM4-8-17_v1
tasmax_EUR-11_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_PIK-STAR3_v1-r4
tasmax_EUR-11_MIROC-MIROC5_rcp85_r1i1p1_CLMcom-CCLM4-8-17_v1
tasmin_EUR-11_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_PIK-STAR3_v1-r4
tasmax_EUR-11_MPI-M-MPI-ESM-LR_rcp85_r1i1p1_CEC-WETTREG2013_v1-r9
tasmax_EUR-11_MIROC-MIROC5_rcp85_r1i1p1_CLMcom-CCLM4-8-17_v1
tasmin_EUR-11_MIROC-MIROC5_rcp85_r1i1p1_CLMcom-CCLM4-8-17_v1
tasmax_EUR-11_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_CLMcom-BTU-CCLM4-8-17_v1
tasmin_EUR-11_CCCma-CanESM2_rcp85_r1i1p1_GERICS-REMO2015_v1
tasmax_EUR-11_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_UHOH-WRF361H_v1
tasmin_EUR-11_MPI-M-MPI-ESM-LR_rcp85_r2i1p1_MPI-CSC-REMO2009_v1
tasmin_EUR-11_MPI-M-MPI-ESM-LR_rcp85_r2i1p1_MPI-CSC-REMO2009_v1
tasmax_EUR-11_CCCma-CanESM2_rcp85_r1i1p1_GERICS-REMO2015_v1
tasmin_EUR-11_ICHEC-EC-EARTH_rcp85_r12i1p1_UHOH-WRF361H_v1
tasmin_EUR-11_CCCma-CanESM2_rcp85_r1i1p1_CEC-WETTREG2013_v1-r10
tasmin_EUR-11_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_CLMcom-BTU-CCLM4-8-17_v1

tasmin_EUR-11_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_UHOH-WRF361H_v1
tasmax_EUR-11_MIROC-MIROC5_rcp85_r1i1p1_CLMcom-CCLM4-8-17_v1
tasmax_EUR-11_MPI-M-MPI-ESM-LR_rcp85_r1i1p1_MOHC-HadREM3-GA7-05_v1
tasmax_EUR-11_MPI-M-MPI-ESM-LR_rcp85_r1i1p1_CEC-WETTREG2013_v1-r9
tasmax_EUR-11_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_UHOH-WRF361H_v1
tasmax_EUR-11_MPI-M-MPI-ESM-LR_rcp85_r1i1p1_CEC-WETTREG2013_v1-r9
tasmax_EUR-11_CCCma-CanESM2_rcp85_r1i1p1_CEC-WETTREG2013_v1-r10
tasmin_EUR-11_ICHEC-EC-EARTH_rcp85_r12i1p1_UHOH-WRF361H_v1
tasmax_EUR-11_CCCma-CanESM2_rcp85_r1i1p1_CEC-WETTREG2013_v1-r10
tasmax_EUR-11_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_PIK-STAR3_v1-r4
tasmin_EUR-11_MOHC-HadGEM2-ES_rcp85_r1i1p1_IPSL-WRF381P_v1
tasmin_EUR-11_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_PIK-STAR3_v1-r4
tasmax_EUR-11_CCCma-CanESM2_rcp85_r1i1p1_GERICS-REMO2015_v1
tasmax_EUR-11_MPI-M-MPI-ESM-LR_rcp85_r1i1p1_MOHC-HadREM3-GA7-05_v1
tasmax_EUR-11_MOHC-HadGEM2-ES_rcp85_r1i1p1_IPSL-WRF381P_v1
tasmin_EUR-11_MIROC-MIROC5_rcp85_r1i1p1_CLMcom-CCLM4-8-17_v1
tasmax_EUR-11_MPI-M-MPI-ESM-LR_rcp85_r2i1p1_MPI-CSC-REMO2009_v1
tasmin_EUR-11_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_UHOH-WRF361H_v1
tasmin_EUR-11_CCCma-CanESM2_rcp85_r1i1p1_GERICS-REMO2015_v1
tasmin_EUR-11_MPI-M-MPI-ESM-LR_rcp85_r1i1p1_CEC-WETTREG2013_v1-r9
tasmin_EUR-11_MPI-M-MPI-ESM-LR_rcp85_r1i1p1_MOHC-HadREM3-GA7-05_v1

tasmax_EUR-11_CCCma-CanESM2_rcp85_r1i1p1_CEC-WETTREG2013_v1-r10
tasmin_EUR-11_CCCma-CanESM2_rcp85_r1i1p1_GERICS-REMO2015_v1
tasmin_EUR-11_MIROC-MIROC5_rcp85_r1i1p1_CLMcom-CCLM4-8-17_v1
tasmin_EUR-11_MPI-M-MPI-ESM-LR_rcp85_r1i1p1_MOHC-HadREM3-GA7-05_v1
tasmin_EUR-11_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_PIK-STAR3_v1-r4
tasmax_EUR-11_MPI-M-MPI-ESM-LR_rcp85_r1i1p1_CEC-WETTREG2013_v1-r9
tasmin_EUR-11_MPI-M-MPI-ESM-LR_rcp85_r2i1p1_MPI-CSC-REMO2009_v1
tasmax_EUR-11_MPI-M-MPI-ESM-LR_rcp85_r1i1p1_MOHC-HadREM3-GA7-05_v1
tasmax_EUR-11_CCCma-CanESM2_rcp85_r1i1p1_CEC-WETTREG2013_v1-r10
tasmin_EUR-11_MPI-M-MPI-ESM-LR_rcp85_r2i1p1_MPI-CSC-REMO2009_v1
tasmin_EUR-11_ICHEC-EC-EARTH_rcp85_r12i1p1_UHOH-WRF361H_v1
tasmax_EUR-11_ICHEC-EC-EARTH_rcp85_r12i1p1_UHOH-WRF361H_v1
tasmin_EUR-11_MPI-M-MPI-ESM-LR_rcp85_r1i1p1_CEC-WETTREG2013_v1-r9
tasmax_EUR-11_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_PIK-STAR3_v1-r4
tasmin_EUR-11_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_CLMcom-BTU-CCLM4-8-17_v1
tasmin_EUR-11_CCCma-CanESM2_rcp85_r1i1p1_GERICS-REMO2015_v1
tasmin_EUR-11_MOHC-HadGEM2-ES_rcp85_r1i1p1_IPSL-WRF381P_v1
tasmax_EUR-11_CCCma-CanESM2_rcp85_r1i1p1_GERICS-REMO2015_v1
tasmax_EUR-11_CCCma-CanESM2_rcp85_r1i1p1_GERICS-REMO2015_v1
tasmax_EUR-11_ICHEC-EC-EARTH_rcp85_r12i1p1_UHOH-WRF361H_v1
tasmin_EUR-11_CCCma-CanESM2_rcp85_r1i1p1_CEC-WETTREG2013_v1-r10

tasmin_EUR-11_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_UHOH-WRF361H_v1
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tasmin_EUR-11_MPI-M-MPI-ESM-LR_rcp85_r1i1p1_CEC-WETTREG2013_v1-r9
tasmax_EUR-11_ICHEC-EC-EARTH_rcp85_r12i1p1_UHOH-WRF361H_v1
tasmin_EUR-11_MOHC-HadGEM2-ES_rcp85_r1i1p1_IPSL-WRF381P_v1
tasmax_EUR-11_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_PIK-STAR3_v1-r4
tasmin_EUR-11_MPI-M-MPI-ESM-LR_rcp85_r1i1p1_MOHC-HadREM3-GA7-05_v1
tasmax_EUR-11_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_CLMcom-BTU-CCLM4-8-17_v1
tasmin_EUR-11_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_PIK-STAR3_v1-r4
tasmax_EUR-11_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_UHOH-WRF361H_v1
tasmax_EUR-11_MOHC-HadGEM2-ES_rcp85_r1i1p1_IPSL-WRF381P_v1
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tasmin_EUR-11_MOHC-HadGEM2-ES_rcp85_r1i1p1_IPSL-WRF381P_v1
tasmax_EUR-11_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_CLMcom-BTU-CCLM4-8-17_v1
tasmin_EUR-11_MIROC-MIROC5_rcp85_r1i1p1_CLMcom-CCLM4-8-17_v1
tasmax_EUR-11_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_CLMcom-BTU-CCLM4-8-17_v1
tasmin_EUR-11_MPI-M-MPI-ESM-LR_rcp26_r1i1p1_UHOH-WRF361H_v1

Table S3: Days missing in daily tree sap flow data.

		BB			RO			HE			HE	
		22	23		22	23		22	23		22	23
1	BB01	21	90	RO07	5	0	HE09	21	11	ME07	3	42
2	BB08	22	0	RO04	21	0	HE07	27	54	ME03	42	31
3	BB06	0	0	RO10	31	0	HE01	7	9	ME05	4	42
4	BB02	0	0	RO08	5	0	HE02	7	7	ME06	57	42
5	BB09	42	0	RO01	0	0	HE10	7	19	ME02	40	27
6	BB04	21	0	RO09	0	0	HE05	7	7	ME01	40	42
7	BB03	0	0	RO06	37	0	HE04	171	66	ME08	32	42
8	BB07	0	115	RO03	0	0	HE03	7	9	ME04	44	42
9	BB05	110	0	RO05	0	0	HE06	7	13	ME09	3	150
10	BB10	0	0	RO02	0	0	HE08	48	7	ME10	5	83

Table S4: Mean feature importance, accuracy and R² of RF-Models for each individual tree for both years separately and together. MDS: maximum daily stem shrinkage, REW: relative extractable soil water, VPD: vapor pressure deficit of air. Note the consistently higher feature importance of REW for 2022 and VPD for 2023.

		MDS	REW	VPD	acc	R²
BB	2022 [10]	14±16	60±18	26±14	74±9	88±5
	2023 [10]	12±7	37±9	51±14	69±12	80±11
	both [10]	18±9	39±8	43±13	59±24	76±8
RO	2022 [8]	9±3	66±5	25±5	74±7	89±3
	2023 [9]	8±5	19±10	73±12	79±4	85±4
	both [9]	10±5	41±12	50±15	78±5	87±3
HE	2022 [8]	12±19	58±19	31±7	64±28	83±22
	2023 [8]	10±8	43±14	47±21	67±11	82±17
	both [8]	10±9	54±11	36±12	63±18	83±10
ME	2022 [2]	4±0	54±7	41±6	51±12	88±1
	2023 [9]	11±6	20±8	69±9	75±5	85±2
	both [9]	12±6	23±15	65±16	69±12	84±2

Table S5: Mean feature importance [%], accuracy [%] and R² [%] of RF-Models for each individual tree for both years separately and together. REW: relative extractable soil water,

VPD: vapor pressure deficit of air. Note the consistently higher feature importance of REW for 2022 and VPD for 2023. n =10 for all.

		REW	VPD	Acc.	R ²
BB	2022	69±15	31±15	69±11	84±9
	2023	42±10	58±10	65±14	77±11
	both	46±9	54±9	53±25	69±10
RO	2022	68±6	32±6	71±5	87±4
	2023	22±11	78±11	78±4	82±5
	both	49±9	51±9	75±6	84±5
HE	2022	66±13	34±13	53±26	81±25
	2023	51±18	49±18	62±13	79±17
	both	61±11	39±11	59±15	80±11
ME	2022	60±9	40±9	57±11	86±3
	2023	33±17	67±17	62±33	78±12
	both	53±7	47±7	53±16	75±12

Table S6: Parameters of the fitted power function $y = a * x^b$ for upscaling of tree water use to stand water use. Significance levels: *** = $p < 0.001$, * $p < 0.05$.

Site	a	b	R ²
BB	2034	1.01	0.87***
RO	1164	1.02	0.88***
HE	311	1.02	0.66*
ME	221	1.02	0.54

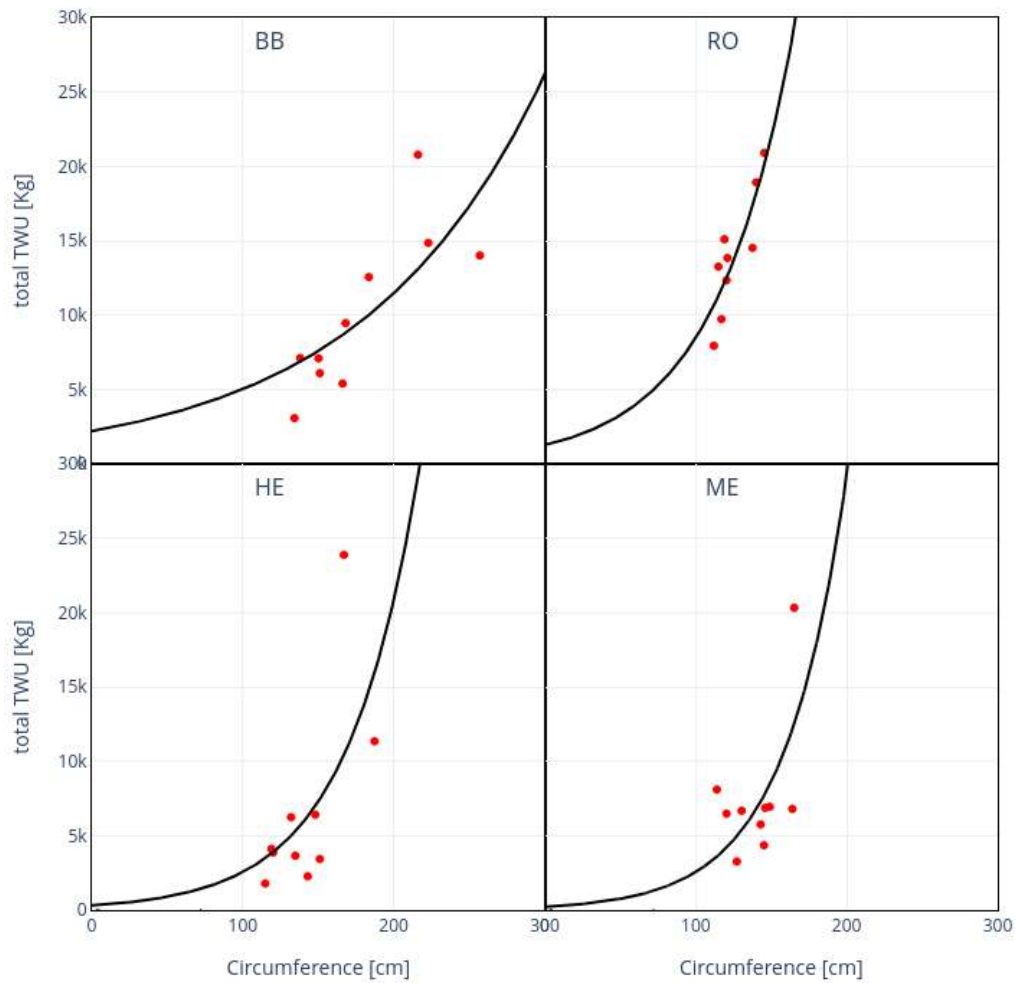


Figure S1: Power function regression between the tree circumference and the total tree water use (TWU) during the growing seasons (Apr-Sep) of 2022 and 2023. Parameters of the fitted power function are given in Tab. S6.