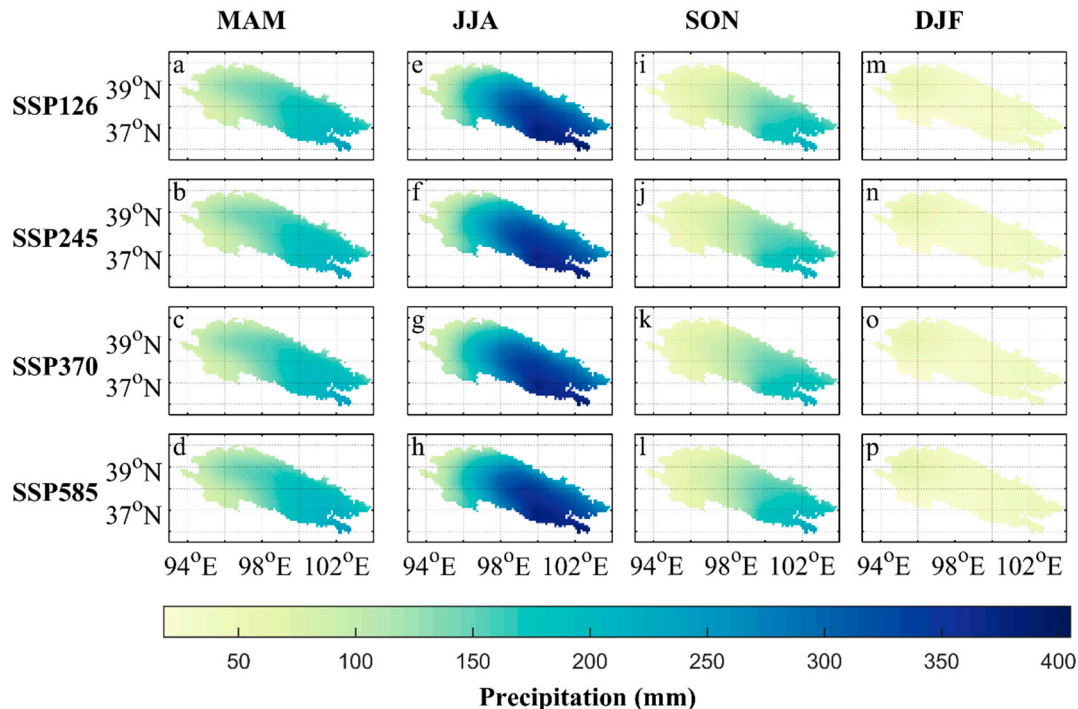




Supporting information for “Evaluation and projection of precipitation in CMIP6 models over the Qilian Mountains, China”

Table S1. Models that fail the significance test.

	Dunhuang	Guazhou	Yumenzhen	Jiuquan	Lenghu	Yongchang	Wuwei	Dachaidan	Delingha
ACCESS-ESM1-5						×	×		
ACCESS-CM2		×	×		×	×	×		
AWI-CM-1-1-MR	×	×			×	×	×		
BCC-CSM2-MR	×	×					×		
CESM2-WACCM							×		
CESM2							×		
CMCC-CM2-SR5									
CMCC-ESM2							×		
CNRM-CM6-1-HR							×		
CNRM-ESM2-1	×		×				×		
EC-Earth3-Veg-LR	×	×					×		
EC-Earth3-Veg	×	×					×		
EC-Earth3	×	×					×		
FGOALS-f3-L	×	×					×		
GFDL-ESM4						×	×		
KACE-1-0-G	×	×	×	×	×		×	×	×
MIROC6						×	×		
MPI-ESM1-2-HR	×	×			×		×		
MRI-ESM2-0	×	×			×	×	×		
NorESM2-MM							×		
TaiESM1							×		

**Figure S1.** Spatial distribution of annual seasonal precipitation during the period 2015-2100 from the MME: MAM (a, b, c, d), JJA (e, f, g, h), SON (i, j, k, l), DJF (m, n, o, p).

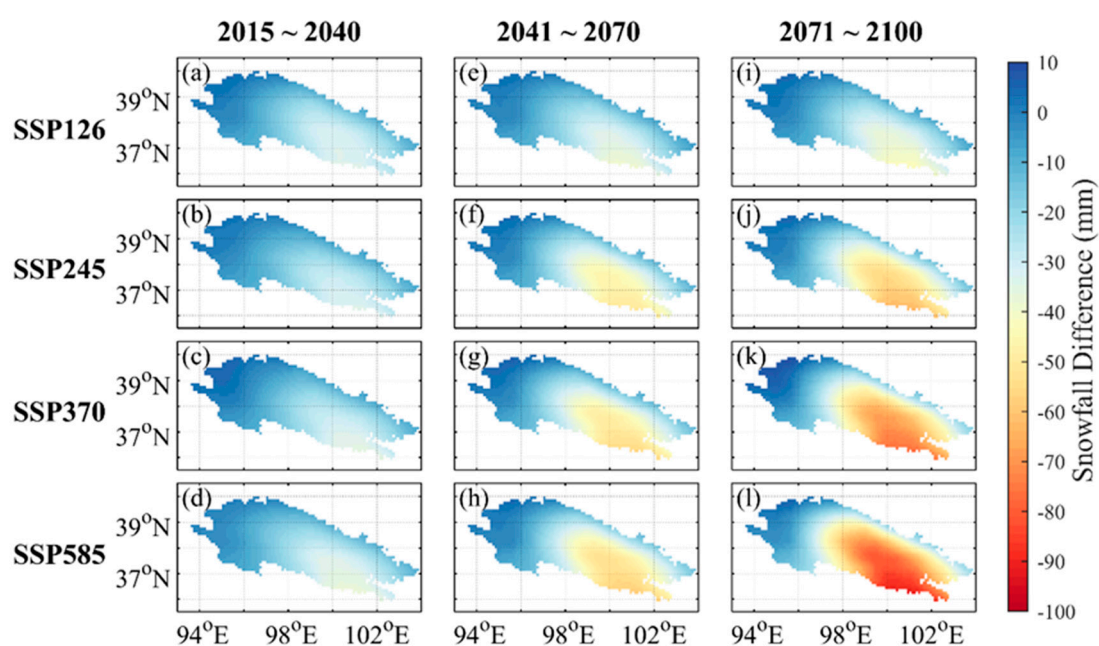


Figure S2. Spatial distribution of differences in annual snowfall over the QMs between four different SSPs (2015-2040, 2041-2070, 2071-2100) and historical period (1959-1988) from MME: SSP126(a, b, c), SSP245(d, e, f), SSP370(g, h, i), and SSP585(j, k, l).

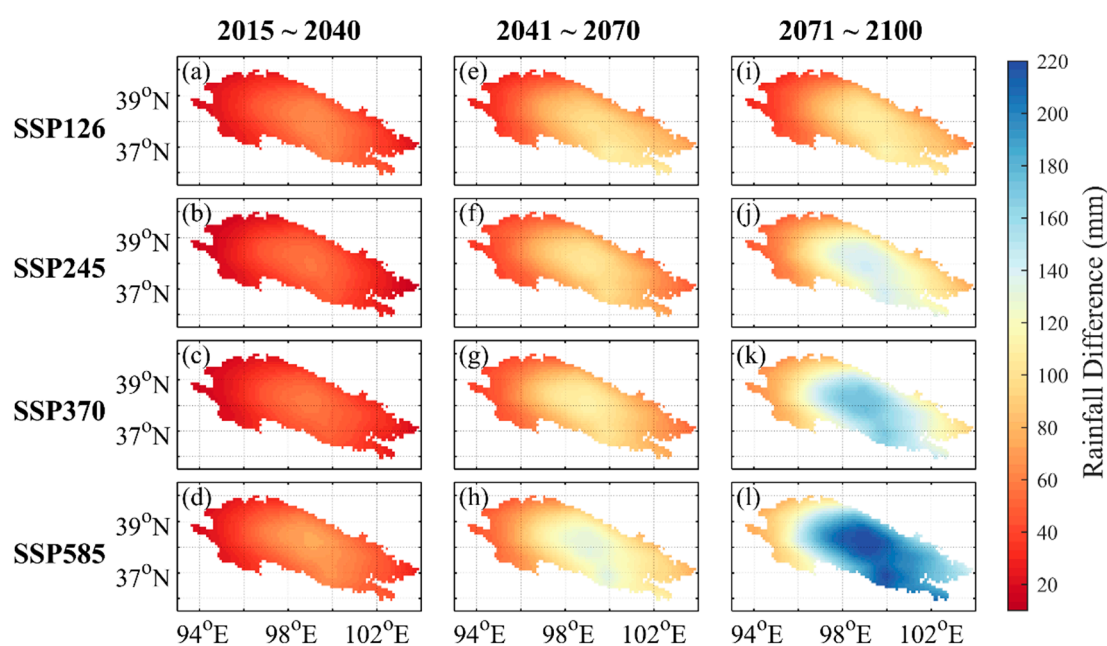


Figure S3. Spatial distribution of annual rainfall differences over the QMs between four different SSPs (2015-2040, 2041-2070, 2071-2100) and the historical period (1959-1988) from MME: SSP126 (a, b, c), SSP245 (d, e, f), SSP370 (g, h, i), and SSP585 (j, k, l).

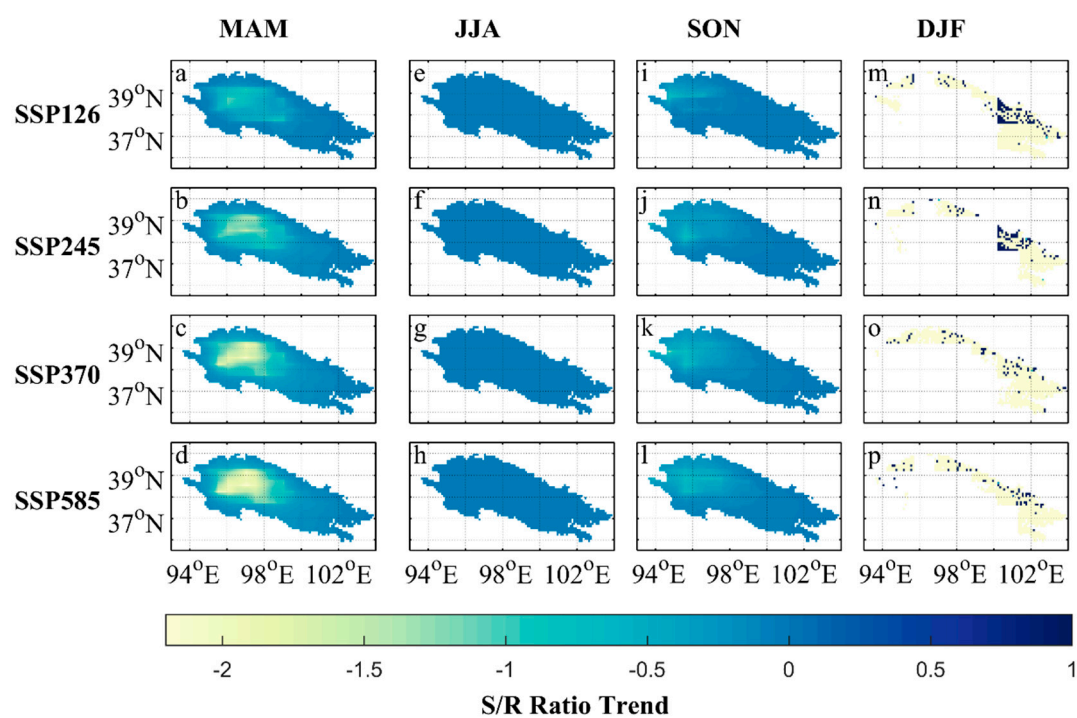


Figure S4. Spatial distribution of the annual seasonal S/R ratio trend during the period 2015-2100 from the MME: MAM (a, b, c, d), JJA (e, f, g, h), SON (i, j, k, l), DJF (m, n, o, p).

CESM2 evaluation and projection:

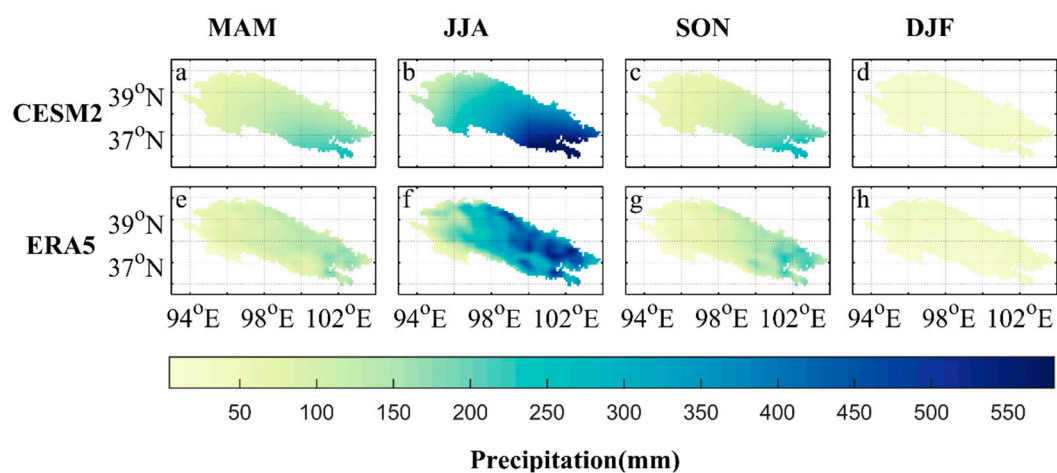


Figure S5. Seasonal average precipitation from 1959 to 1988 from CESM2 (a, b, c, d) and ERA5 (e, f, g, h) for spring (MAM), summer (JJA), autumn (SON) and winter (DJF).

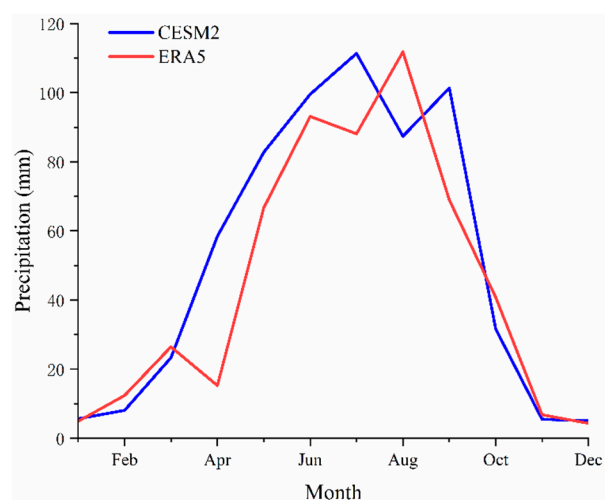


Figure S6. Annual cycles of mean monthly precipitation from CESM2 (blue line) and ERA5 (red line) during the period 1959 - 1988.

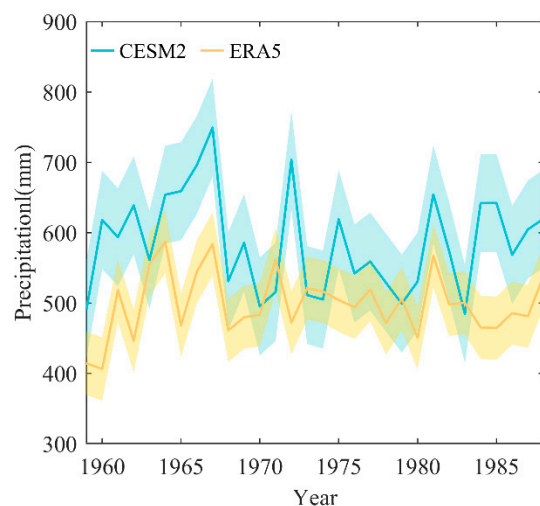


Figure S7. Time series of annual total precipitation from CESM2 (blue line) and ERA5 (yellow line) during the period 1959 - 1988 (the shaded part represents one standard deviation).