Table S1. Allometric growth equations for three tree species.

	Quercus wutaishanica[1]	*Robinia pseudoacacia*[2]	*Pinus tabulaeformis*[3]
WS	0.0974(DBH)2.1176	0.18(DBH)2.1318	$0.0558(DBH)^{2.4225}$
WB	0.014(DBH)3.095	0.03743(DBH)2.2434	$0.0272(DBH)^{2.2892}$
WL	0.017(DBH)2.321	0.008883(DBH)2.3462	$0.0536(DBH)^{1.8126}$
WR	0.0265(DBH)2.3865	0.0178(DBH)2.645	$0.0334(DBH)^{2.2462}$
WT	WS+WB+WL+WR		

Note: WS, WB, WL, and WR are the trunk, branch, leaf, and root biomass (kg), respectively; WT is the total biomass.

Table S2. Ecophysiological parameters of the three tree species for running the LPJ-GUESS model.

Parameter	*Quercus wutaishanica*	*Pinus tabulaeformis*	*Robinia pseudoacacia*
Plant function type	Temperate broadleaved summergreen tree	Temperate needle-leaved evergreen tree	Broadleaved summergreen tree
Shade tolerance	Intermediate	Intermediate	Intolerant
Phenology	Summergreen	Evergreen	Summergreen
Leaf long (a)	—	3	—
Leaf turnover	—	0.33	—
Min.20–year coldest month mean temp for survival(°C)	–18	–22	–14
Min.20–year coldest month mean temp for establishment (°C)	–18	–22	–14
Max. 20–year coldest month mean temp for establishment (°C)	1000	1000	1000
Min. warmest month mean temp for establishment (°C)	–1000	–1000	–1000
Min. GDD on 5 °C base for establishment	1000	1100	1000
Expected longevity under lifetime non–stressed conditions (yr)	220	300	200
Drought tolerance level (0 = very –> 1 = not at all) (unitless)	0.38	0.33	0.3
Fire resistance (0–1)	0.1	0.3	0.1
Specific leaf area ($m^2\,kgC^{-1}$)	23.3	13.1	30
Sapwood and heartwood density ($kgC\,m^{-3}$)	565	518	470

References

1. Zhang, B. Study on biomass and productivity of *Quercus lidotungensis* stands in Ziwuling forest region of Shaanxi province. Journal of Northwest Forestry University 1990,01, 1–7.
2. Zhang, B. Biomass and production of *Robinia pseudoacacia* plantation in hongxing tree farm of Changwu county, Shaanxi province. Shaanxi Forest Science & Technology 1992, 03, 13–17.
3. Liu, Y. C., Wang, Q. F., Yu, G. R., Zhu, X. J., Zhan, X. Y., Guo, Q., et al. Ecosystems carbon storage and carbon sequestration potential of two main tree species for the Grain for Green Project on China's hilly Loess Plateau. Acta Ecologica Sinica 2011, 31(15), 4277–4286.

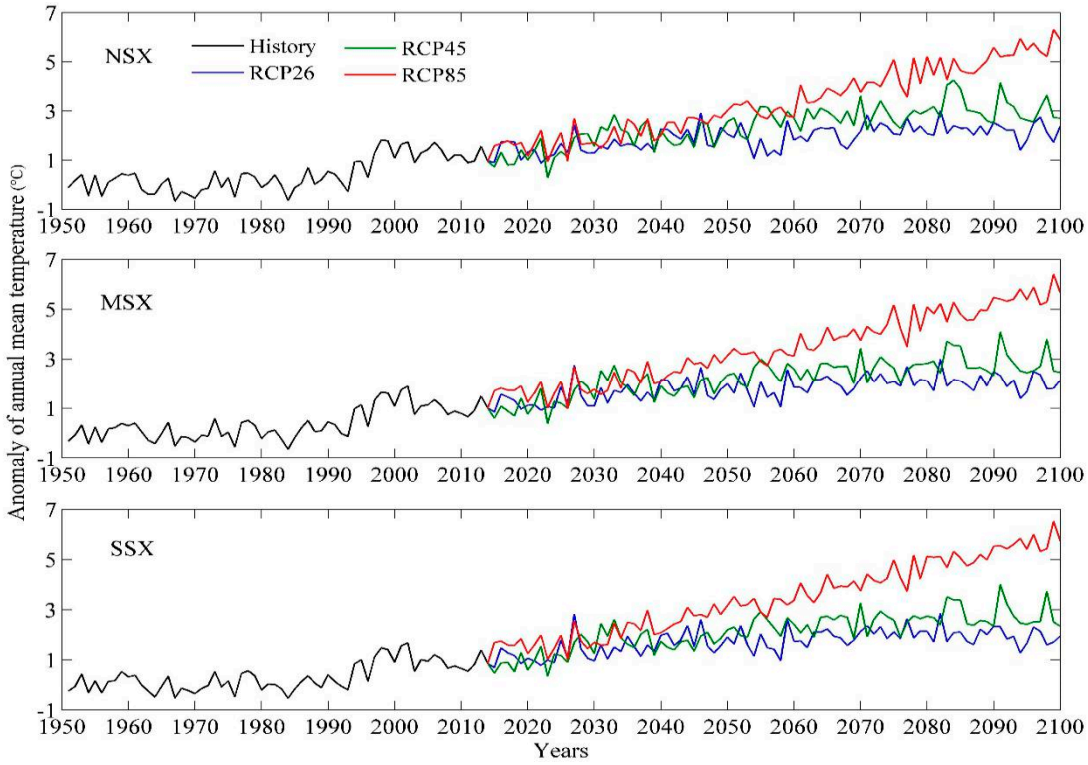

Figure S1. Change in annual mean temperature during historical (1951–2014) and future (2015–2100) periods using 1961–1990 as the base period.

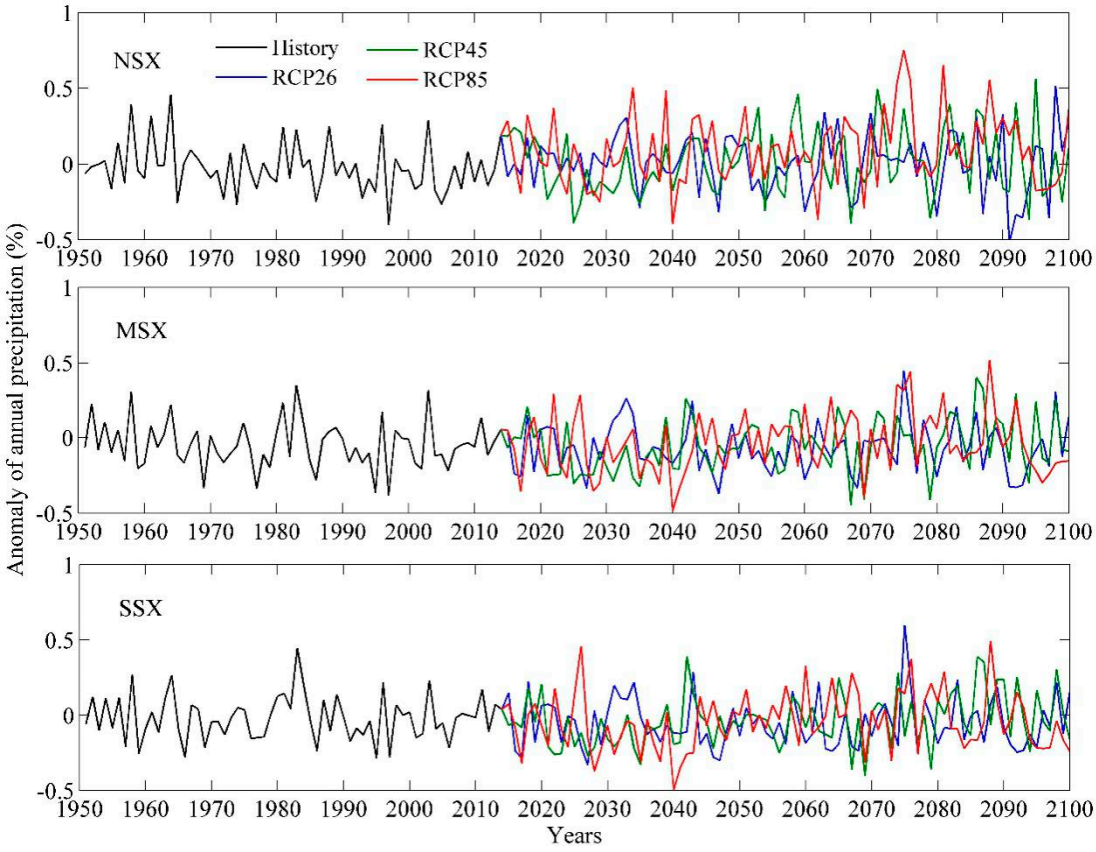

Figure S2. Change in annual precipitation during historical (1951–2014) and future (2015–2100) periods using 1961–1990 as the base period.