

Table S1. Soil texture information for Stunt Ranch based on the soil survey database (<https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>).

Soil depth (m)	Percent Clay (%)	Percent Sand (%)	Percent Organic (%)	Bulk density (g/cm <sup>3</sup> )	Organic density (kg/m <sup>3</sup> )
0.007101	22.5	39.8	3.5	1.15	80.5
0.027925	22.5	39.8	3.5	1.15	80.5
0.062259	22.5	39.8	3.5	1.15	80.5
0.118865	25.3	38.3	2.42	1.15	55.66
0.212193	31	35.4	0.25	1.15	5.75
0.366066	30.7	41.7	0.25	1.13	5.65
0.619758	30	55.5	0.25	1.1	5.5
1.038027	30	55.5	0.25	1.1	5.5
1.727635	30	55.5	0.25	1.1	5.5
2.864607	30	55.5	0.25	1.1	5.5

Table S2. Allometry, leaf and wood traits, and hydraulic traits of 11 chaparral shrub species in Stunt Ranch.

Traits\species	Af	Cc	As	Ag	Cs	MI	Ro	Ri	Cb	Ha	Qb
Fates_allom_d2h1	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Fates_allom_d2h2	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39
Fates_allom_dbh_maxheight	2.26	3.41	4.15	2.07	4.25	3.23	3.25	3.02	4.15	4.15	3.23
Fates_allom_agb1	0.1162	0.1162	0.1162	0.1162	0.1162	0.1162	0.1162	0.1162	0.1162	0.1162	0.1162
Fates_allom_agb2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Fates_allom_agb3	2.126	2.126	2.126	2.126	2.126	2.126	2.126	2.126	2.126	2.126	2.126
Fates_allom_agb4	0.931	0.931	0.931	0.931	0.931	0.931	0.931	0.931	0.931	0.931	0.931
Fates_allom_d2b11	0.2463	0.2463	0.2463	0.2463	0.2463	0.2463	0.2463	0.2463	0.2463	0.2463	0.2463
Fates_allom_d2b12	1.022	1.022	1.022	1.022	1.022	1.022	1.022	1.022	1.022	1.022	1.022
Fates_allom_d2ca_max	3.93	3.16	11.42	0.54	1.81	2.52	9.70	5.29	11.42	11.42	2.52
Specific leaf area (m <sup>2</sup> ·gC <sup>-1</sup> )	0.0059	0.0043	0.0114	0.0052	0.0069	0.0052	0.0044	0.0085	0.0100	0.0041	0.0074
Max carboxylation rate at 25°C (μmol·m <sup>-2</sup> ·s <sup>-1</sup> )	41	57	41	37	57	51	51	57	64	33	52
Wood density (g·cm <sup>-3</sup> )	0.679	0.678	0.620	0.662	0.615	0.497	0.523	0.706	0.667	0.608	0.724
Maximum xylem conductivity per area (kg·MPa <sup>-1</sup> ·m <sup>-1</sup> ·s <sup>-1</sup> )	0.642	0.553	1.550	1.267	1.517	5.710	1.640	0.606	2.032	2.264	3.375
Xylem water potential at 50% loss of conductivity (MPa)	-7.33	-7.19	-4.65	-5.09	-4.14	-0.52	-0.56	-7.20	-7.50	-6.20	-1.51
Leaf water potential at 50% loss of stomatal conductivity (MPa)	-3.61	-5.06	-3.61	-3.36	-2.91	-1.93	-1.78	-2.91	-3.61	-3.61	-3.73
Osmotic potential at turgor loss point (Mpa)	-3.397	-3.658	-2.326	-2.514	-2.797	-2.071	-1.563	-3.126	-2.023	-2.702	-1.968
Osmotic potential at full turgor (Mpa)	-2.693	-3.658	-1.659	-1.800	-2.151	-1.585	-1.225	-2.956	-1.406	-1.900	-1.523

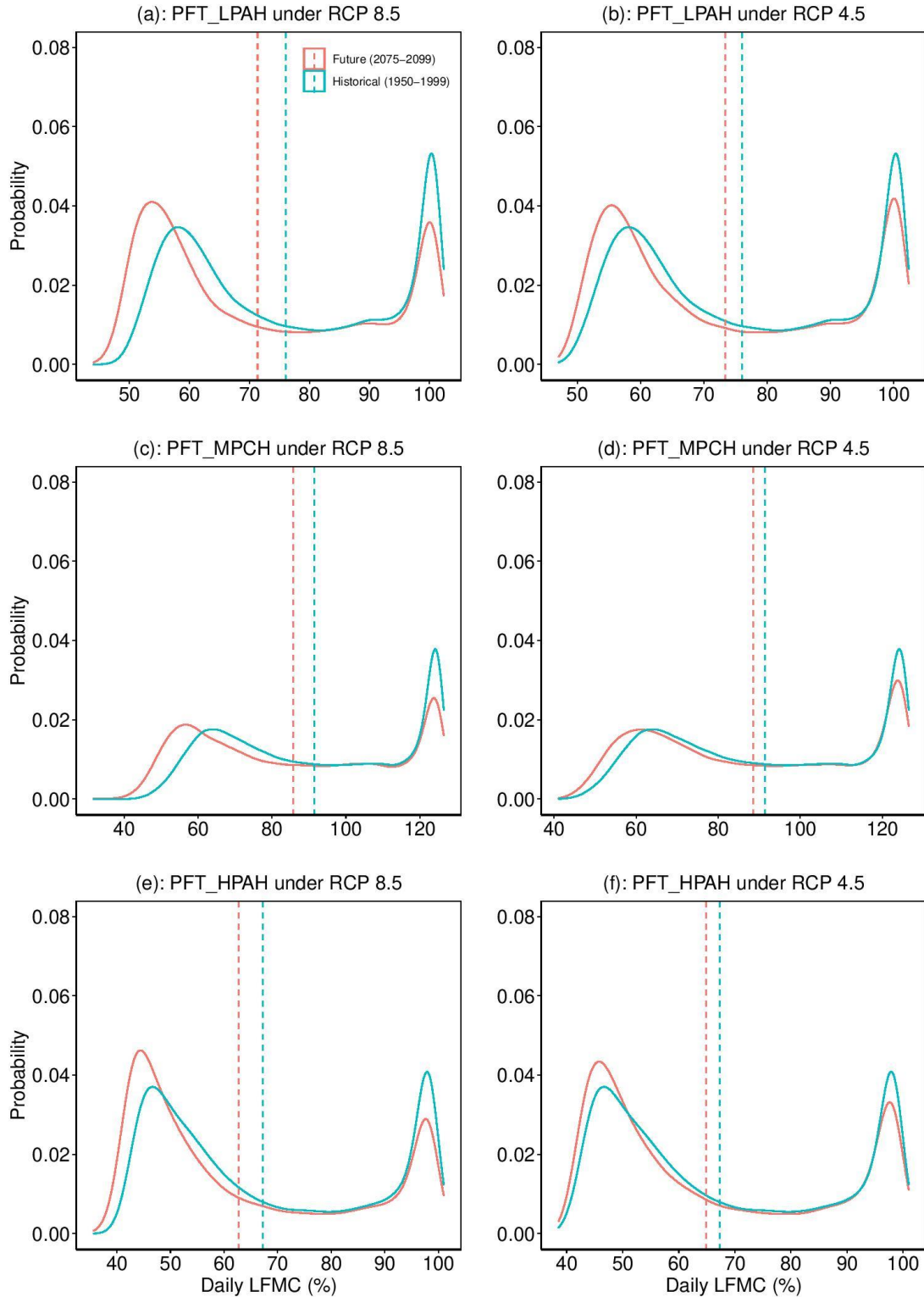
Note: Chamise (*Adenostoma fasciculatum* – Af, PFT\_LPAH), red shank (*Adenostoma sparsifolium* – As, PFT\_LPAH), big berry manzanita (*Arctostaphylos glauca* – Ag, PFT\_LPAH), buck brush (*Ceanothus cuneatus* – Cc, PFT\_HPAH), greenbark ceanothus (*Ceanothus spinosus* – Cs, PFT\_HPAH), mountain mahogany (*Cercocarpus betuloides* – Cb, PFT\_HPAH), toyon (*Heteromeles arbutifolia* – Ha, PFT\_LPAH), laurel sumac (*Malosma laurina* – MI, PFT\_MPCH), scrub oak (*Quercus berberidifolia* – Qb, PFT\_MPCH), hollyleaf redberry (*Rhamnus ilicifolia* – Ri, PFT\_HPAH), and sugar bush (*Rhus ovata* – Ro, PFT\_MPCH).

Table S3. Allometry, leaf and wood traits, and hydraulic traits of three PFTs in Stunt Ranch.

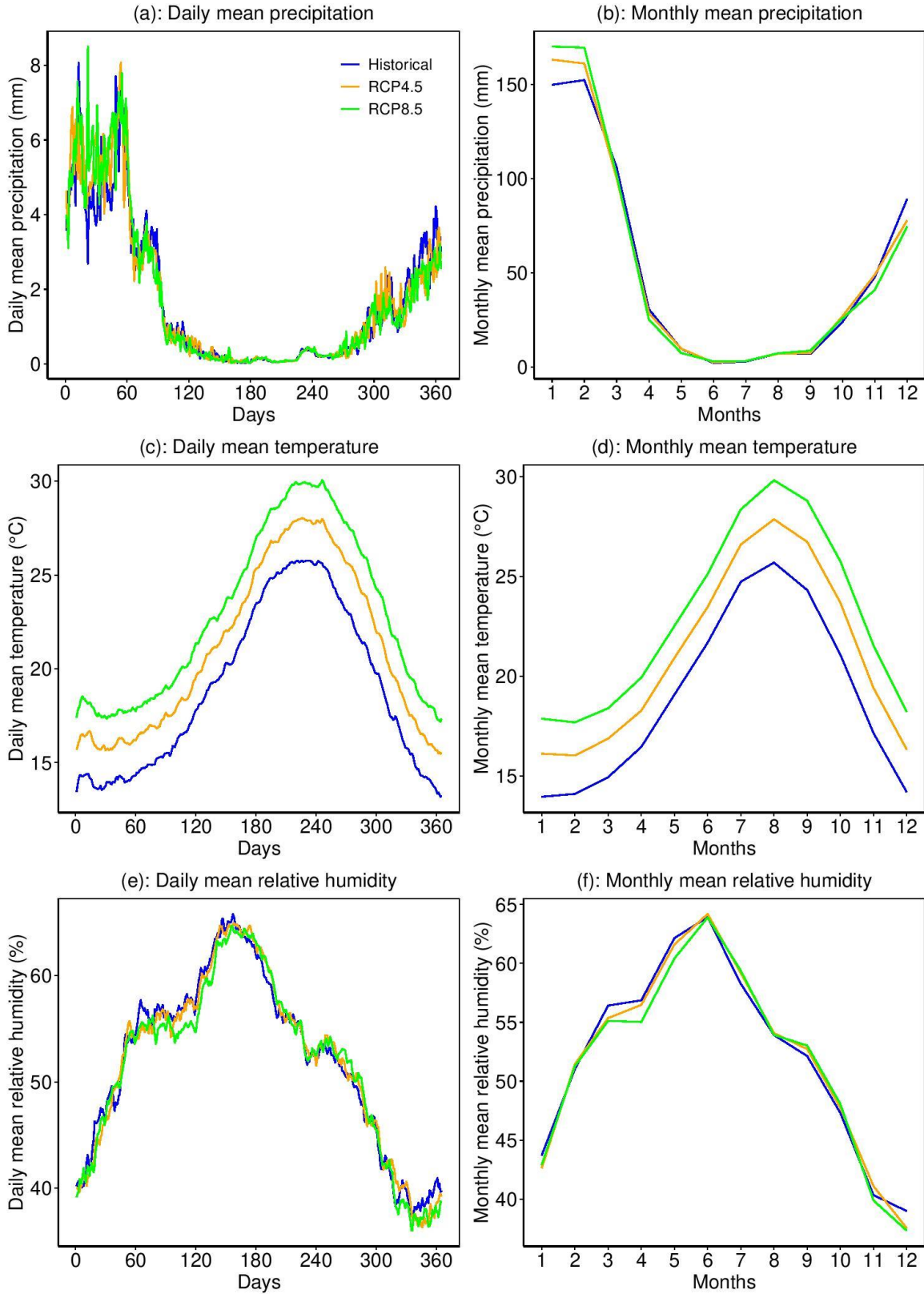
Traits\species	PFT_LPAH	PFT_MPCH	PFT_HPAH
Fates_allom_d2h1	1.24	1.24	1.24
Fates_allom_d2h2	0.39	0.39	0.39
Fates_allom_dbh_maxheight	3.18	3.24	3.73
Fates_allom_agb1	0.12	0.12	0.12
Fates_allom_agb2	0.00	0.00	0.00
Fates_allom_agb3	2.13	2.13	2.13
Fates_allom_agb4	0.93	0.93	0.93
Fates_allom_d2b11	0.25	0.25	0.25
Fates_allom_d2b12	1.02	1.02	1.02
Fates_allom_d2ca_max	4.96	9.15	11.42
Specific leaf area ( $\text{m}^2\cdot\text{gC}^{-1}$ )	0.007	0.005	0.007
Max carboxylation rate at 25°C ( $\mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$ )	38.00	51.33	58.75
Wood density ( $\text{g}\cdot\text{cm}^{-3}$ )	0.64	0.58	0.67
Maximum xylem conductivity per area ( $\text{kg}\cdot\text{MPa}^{-1}\cdot\text{m}^{-1}\cdot\text{s}^{-1}$ )	1.43	3.58	1.18
Xylem water potential at 50% loss of conductivity (MPa)	-5.82	-0.86	-6.51
Leaf water potential at 50% loss of stomatal conductivity (MPa)	-3.55	-2.48	-3.62
Turgor loss point (Mpa)	-2.73	-1.87	-2.90
Osmotic potential at full turgor (Mpa)	-2.00	-1.40	-2.10

Table S4. Number of days per year of live fuel moisture content below 79% of three PFTs under RCP 4.5 and 8.5 from the historical period 1950-1999 to the future period 2075-2099.

Periods	79%					
	RCP4.5			RCP8.5		
	PFT_LPAH	PFT_MPCH	PFT_HPAH	PFT_LPAH	PFT_MPCH	PFT_HPAH
Historical	135	101	156	135	101	156
Future	145	113	165	156	124	176



**Fig.S1** Comparisons on histogram of daily mean live fuel moisture content considering all climatic variables changes during dry season between future period (2075-2099) and historical period (1950-1999) for three PFTs (refer to Figure 1 for explanation of the PFTs) under climate scenario RCP 4.5 and 8.5.



**Fig.S2** Daily and monthly mean precipitation, temperature, relative humidity changes from historical data and future data under RCP 4.5 and 8.5 during 2075-2099.