

Supplementary material

Table S1. Spectral information of the bands for the DJI Phantom 4 Multispectral UAV (P4M).

Banda	Central wavelength (nm)	Wavelength width (nm)
Blue	450	32
Green	560	32
Red	650	32
Red-edge	730	32
Near-infrared	840	52

Table S2. Characteristics of the flight missions conducted along the altitudinal gradient where *Pinus hartwegii* is distributed.

Flight number	Flight date	Time of flight	Duration of flight (min)	Length of the mission (m)	Altitudinal range (masl)
1	07/04/2022	11:20 h	30	1110	4040 - 3700
2	07/04/2022	13:09 h	29	928	3700 - 3560
3	08/04/2022	11:13 h	45	1680	3560 - 3400
4	08/04/2022	12:11 h	23	625	3400 - 3300

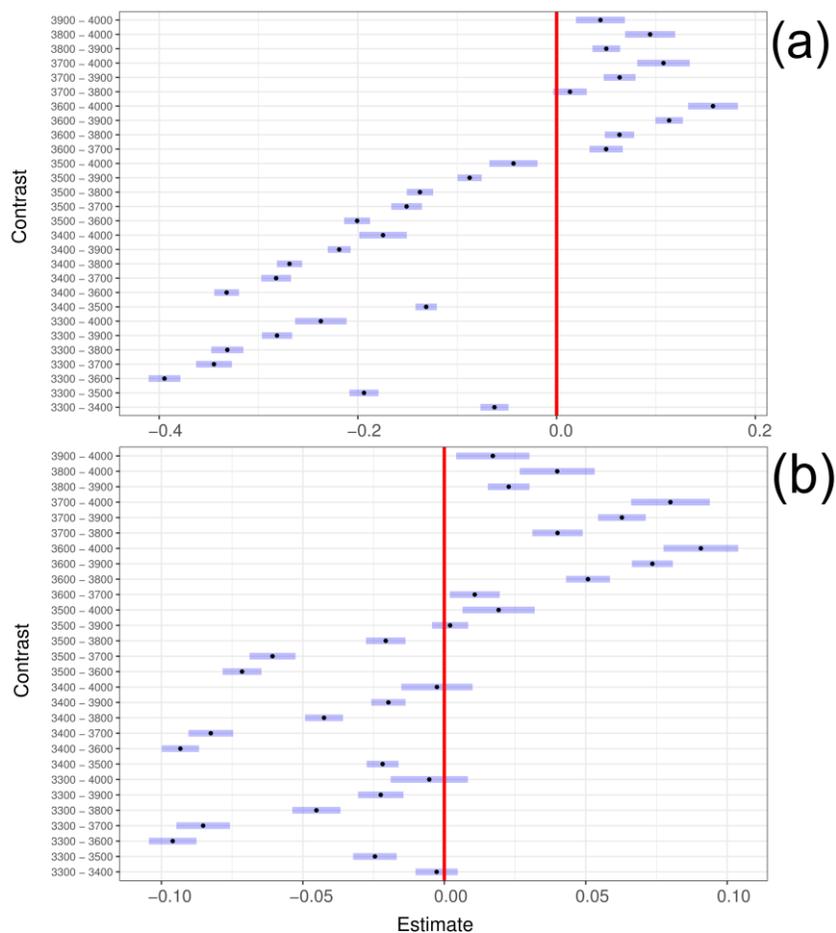


Figure S1. Difference of the vegetation index means. (a) Normalized difference vegetation index (NDVI); (b) Leaf chlorophyll index (LCI).

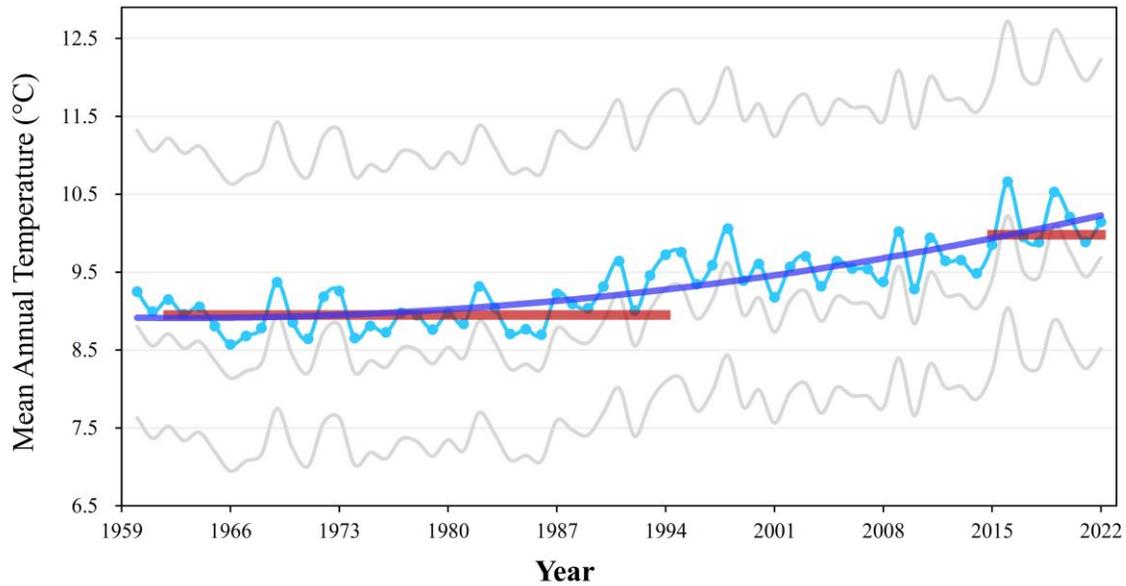


Figure S2. Trend of the Mean Annual Temperatures (MAT) from the study area (gray lines: high, low and medium altitude sites; blue symbols: average among high, medium and low altitude sites; thick dark blue line is the average trend after a regression) for the period 1960-2022. Red horizontal lines indicate the average for the reference period 1961-1990 (left longer line) and for the decade preceding our study (2011-2020; right shorter line).

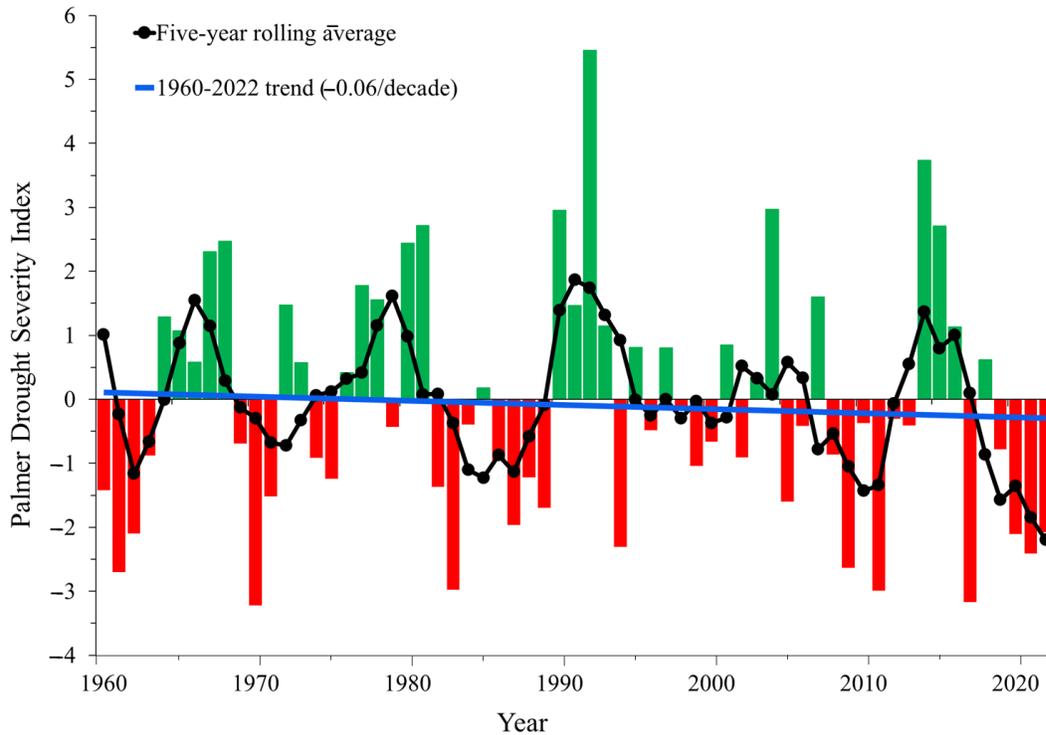


Figure S3. Annual values of the Palmer Drought Severity Index (PDSI) of the xeric limit of the transect (low altitude). Black line is a five-year rolling-average; blue line is a linear regression to indicate the overall trend.