

Figure S1. Variance in the the composition, by basal area, of two hypothetical conifer PFTs explained by 46 trait and model parameters. Parameter descriptions are provided in Table S1.

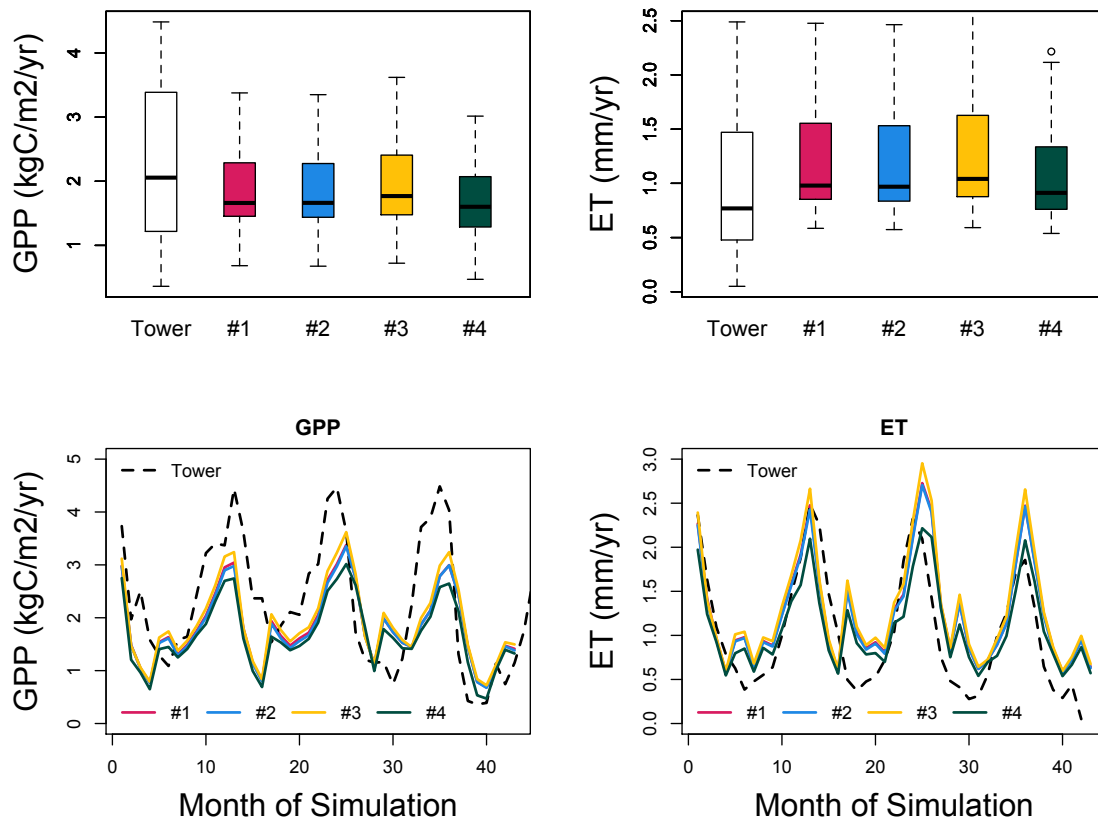


Figure S2. Distributions of monthly average GPP and ET from observations at the Soaproot Saddle flux tower and from FATES simulations with four plausible pine and incense cedar parameterizations (top row). The time series of monthly values are plotted in the bottom row, beginning in July of 2010 and ending in January of 2014.

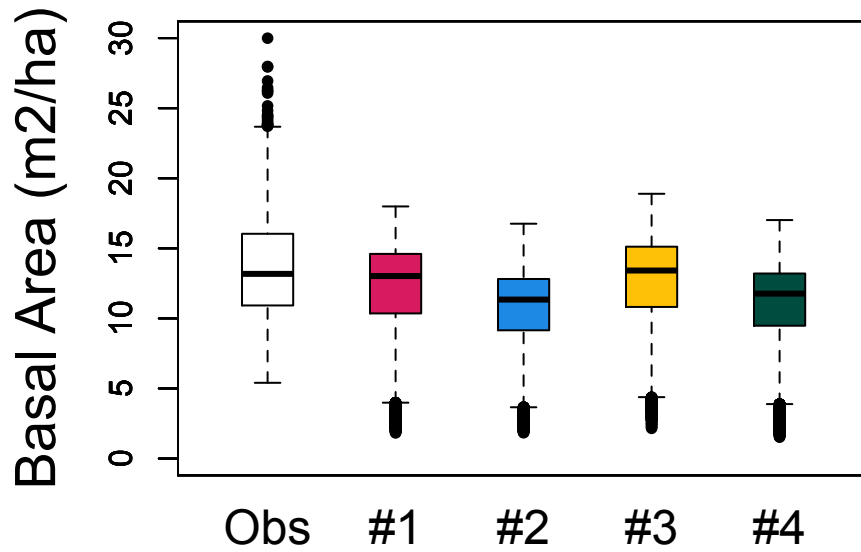


Figure S3. Distributions of total basal area from an observation-based dataset (Ohmann et al., 2011) and FATES simulations with four plausible parameterizations of pine and incense cedar.

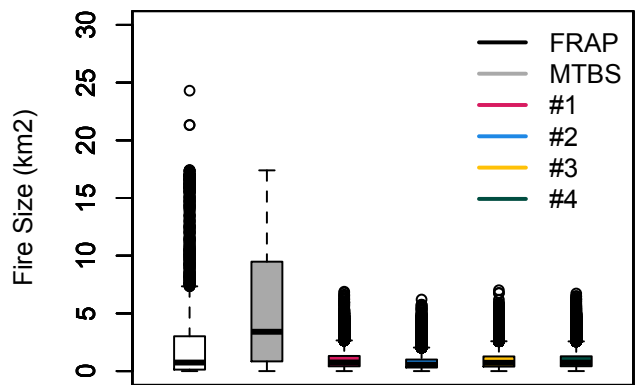
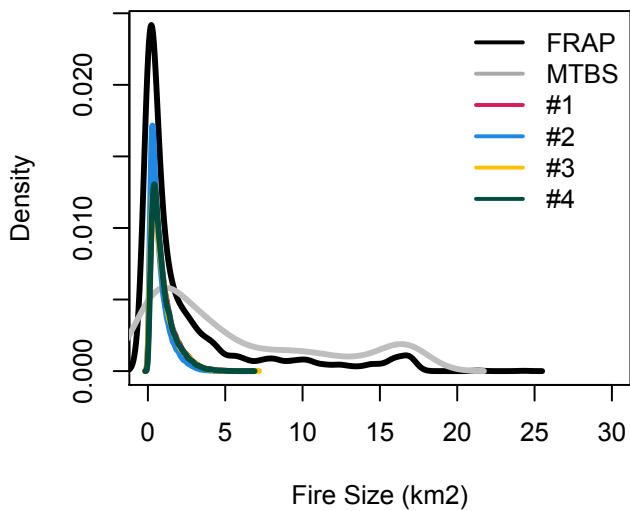
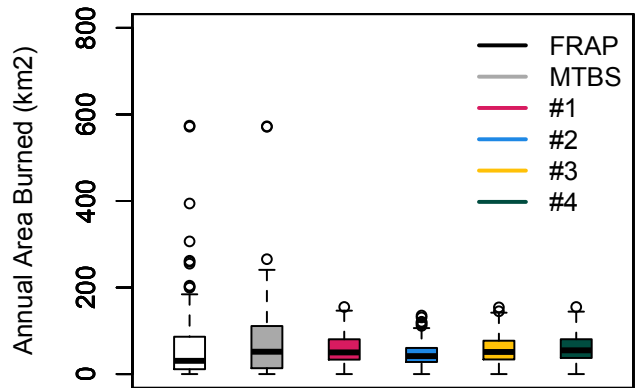
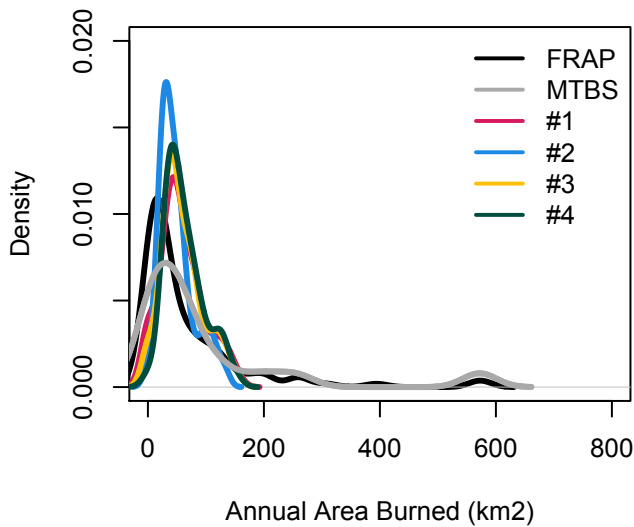


Figure S4. Comparison of average annual area burned across the domain (top row) and individual fire size (bottom row) during 100 year simulations started from bare ground (top row) for four FATES parameterizations, the Monitoring Trends in Burn Severity (MTBS) and the California Department of Forestry and Fire Protection's Fire and Resource Assessment Program (FGRAP) databases of observations.

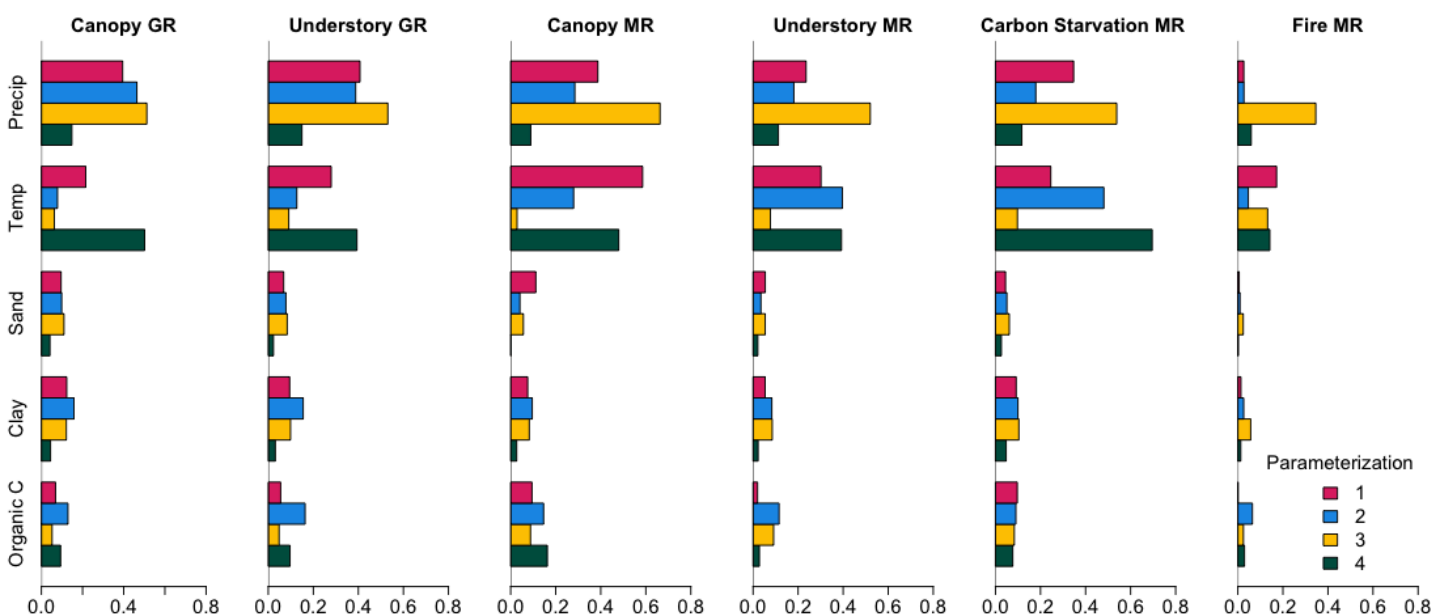


Figure S5. Variance in the difference between pine minus cedar growth and mortality rates that is explained by environmental variables for each of four pine and cedar parameterizations run over a regional domain in the Sierra Nevada mixed conifer forest

Variance in Pine - Cedar Vital Rates Explained

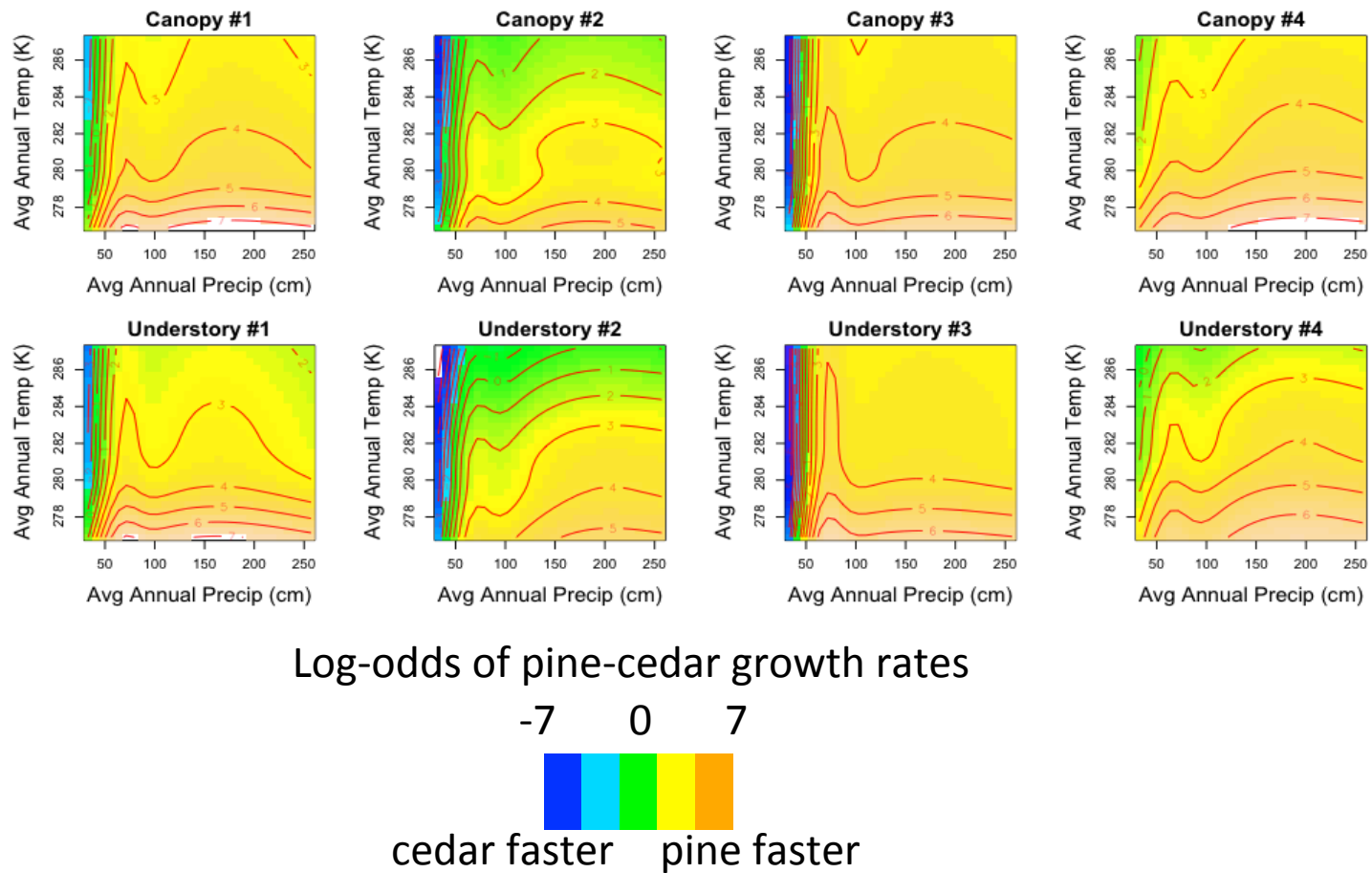


Figure 6. Precipitation and temperature effects on differences in pine and cedar growth rates (pine-cedar, in cm/yr/ha) for canopy (top row) and understory trees (bottom row). Growth rates are averaged over 100 years in simulations that started from bare ground and had fire active.

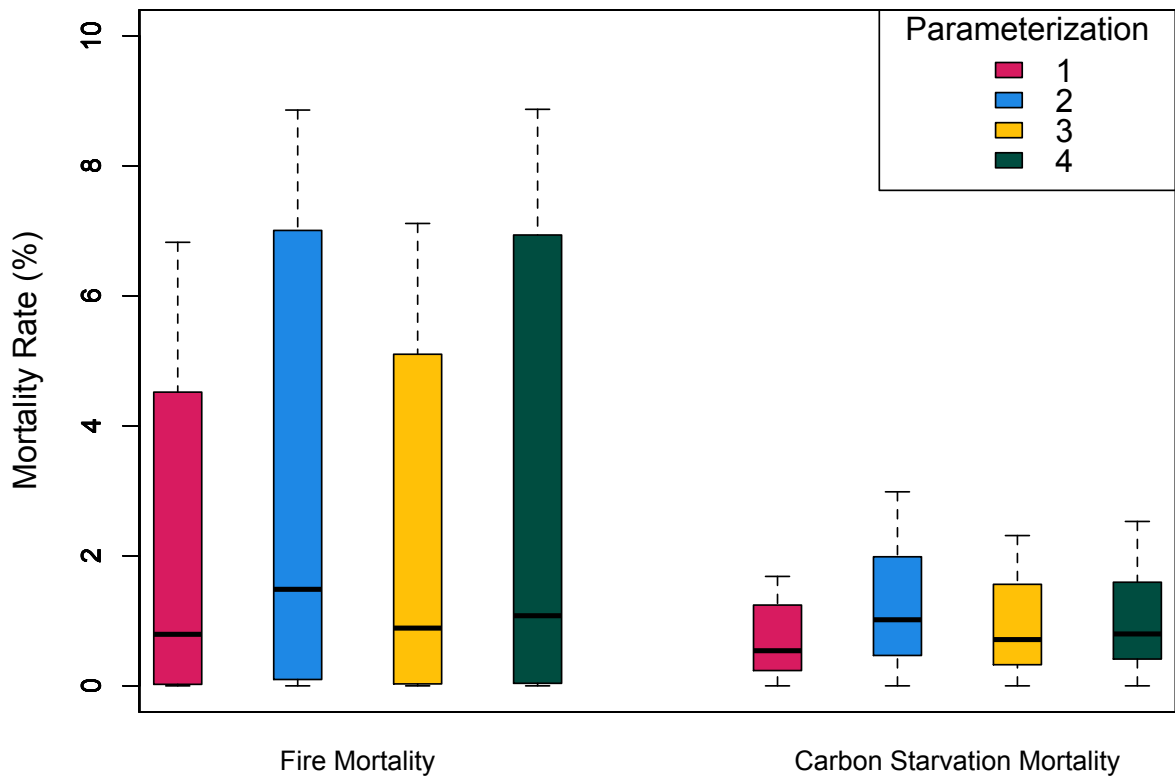


Figure S7. Annual average pine and incense cedar fire mortality and carbon starvation mortality rates in four simulations started from bare ground and run with fire active over a regional domain in the Sierra Nevada mixed conifer forest for 100 years. Regional simulations were run with parameterizations retained from filtering the outcomes of 72 parameterizations run at a single site according to the criteria in Table 1.