

Scenario	Description	Primary result(s)
Scenarios that assume no antecedent effects		
Ctrl (control)	Uses soil texture (sandy clay loam: 60 % sand, 20 % clay) and precipitation (for 2008) data from the PHACE site; CO ₂ production only responds to concurrent environmental conditions.	R_{soil} was very similar under SS and NSS soil CO ₂ assumptions.
Soil texture scenarios		
ST-Sa	Same as Ctrl, but the soil texture is set to sandy loam (80 % sand, 10 % clay).	For ST-Cl, R_{soil} was greater in magnitude and more different under SS vs. NSS conditions, due to NSS conditions producing greater R_{soil} after a major precipitation event. The results are similar, but muted, for the ST-Si scenario.
ST-Si	Same as Ctrl, but the soil texture is set to silt loam (20 % sand, 20 % clay).	
ST-Cl	Same as Ctrl, but the soil texture is set to clay (20 % sand, 60 % clay).	
Precipitation scenarios		
P-E	Same as Ctrl, but daily precipitation was shifted to occur one month earlier.	Varying the timing or magnitude of precipitation pulses had little effect on the magnitude of R_{soil} or on the difference between SS and NSS predictions of R_{soil} .
P-L	Same as Ctrl, but daily precipitation was shifted to occur one month later.	
P-FM	Same as Ctrl, but daily precipitation was based on data from 2009, which is characterized by more frequent, smaller events.	
Scenarios that incorporate antecedent effects on CO ₂ production rates		
Ctrl-ant ST-Sa-ant ST-Si-ant ST-Cl-ant P-E-ant P-L-ant P-FM-ant	All scenarios parallel those described above, except both current and antecedent conditions (past soil water and past soil temperature) are used in the calculation of the source terms (i.e., root and microbial CO ₂ production rates).	R_{soil} was generally greater in magnitude under both SS and NSS conditions, especially for ST-Si-ant and ST-Cl-ant (relative to ST-Si and ST-Cl).