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How does soil moisture interact with temperature to affect phenology?

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Question/goals

1. How does soil moisture affect phenology?
2. Does the effect of soil moisture on phenology differ between experiments and observational data?

Approach

1. Compile phenology data that goes with climate data in MC3E database. (Name this database!)
2. Fit models with soil moisture, temperature, and interaction to phenology data (budburst, leafout, flowering, fruiting, senesence? (See what phenophases have enough data.)
3. Compile Duke and Harvard Forest phenology and climate data.
4. Fit models to observational data with microclimate and compare coefficients.

References

Ettinger, A. & Wolkovich, E. (2018). Microclimate from climate change experiments (MC3E). doi:10.5063/F1QV3JQR.

Figures

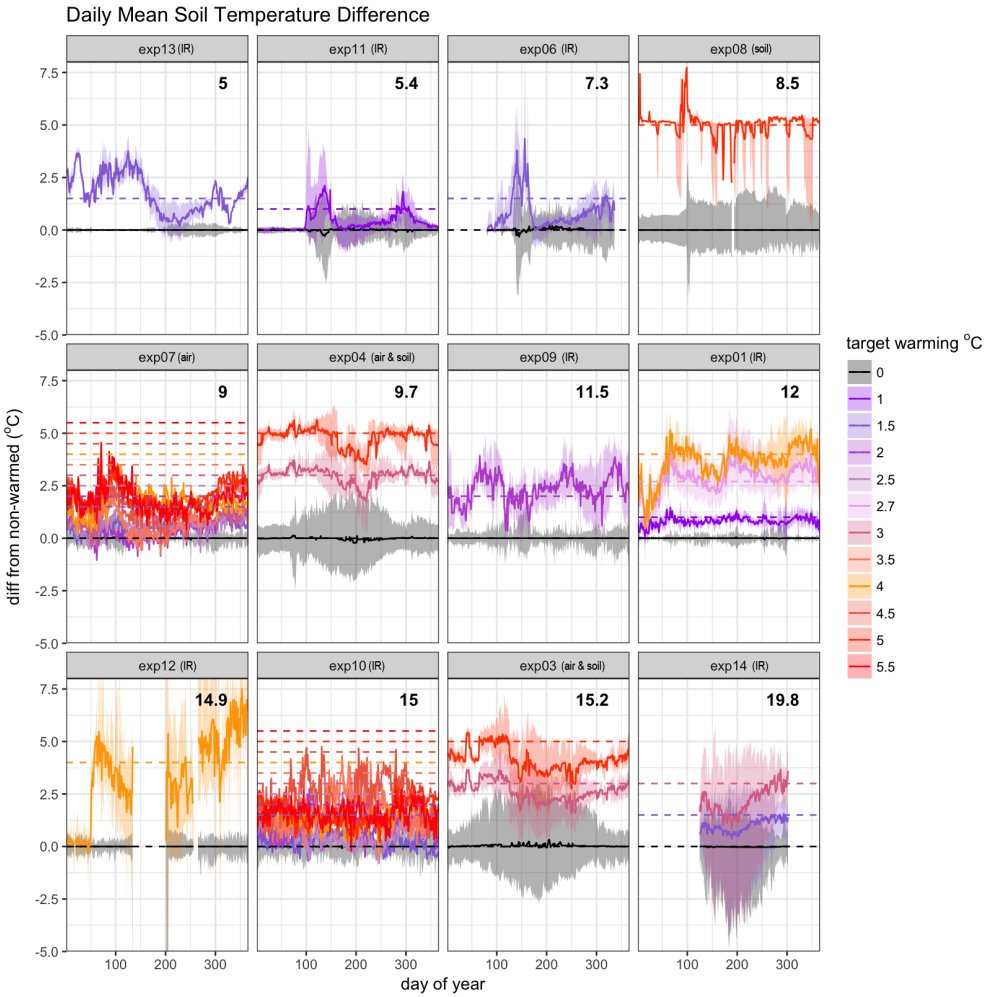

Figure 1: **Deviations in daily observed warming from mean control soil temperature for 12 study sites,** excluding data from plots that manipulated precipitation. We show soil, rather than above-ground, temperature, as this was the most frequently recorded temperature variable in the MC3E database. Solid lines show observed difference between warming treatment (colors) and control (black) plots, averaged across replicates and years; shading shows 95% confidence intervals. Dashed lines represent target warming levels. (Note that the following studies had no explicit target temperature: exp06, exp11, exp12; for these studies, we used their reported level of warming.) Two sites not shown here did not monitor soil temperature. Experimental sites are ordered by low to high mean annual soil temperature (shown in the upper right corner of each panel). The heating type is listed in parentheses next to the site number (IR= infrared, soil= soil cables, air= forced air).