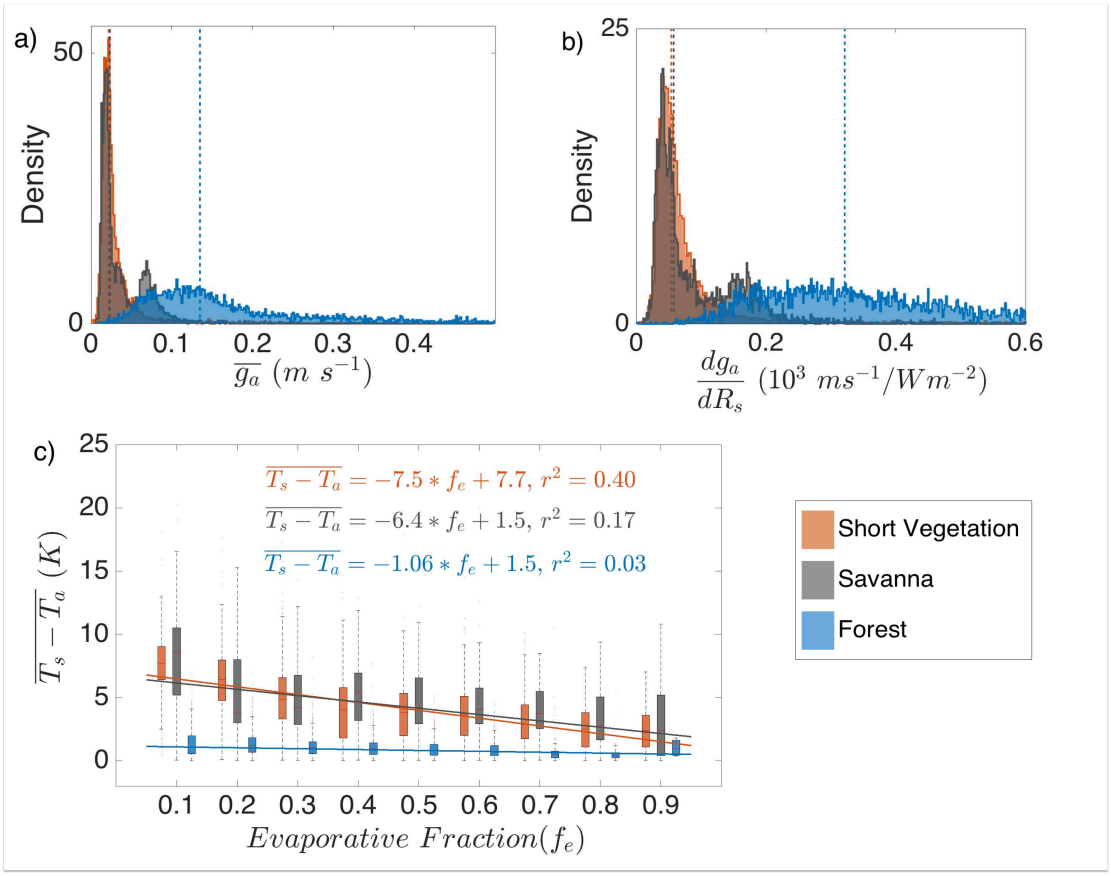
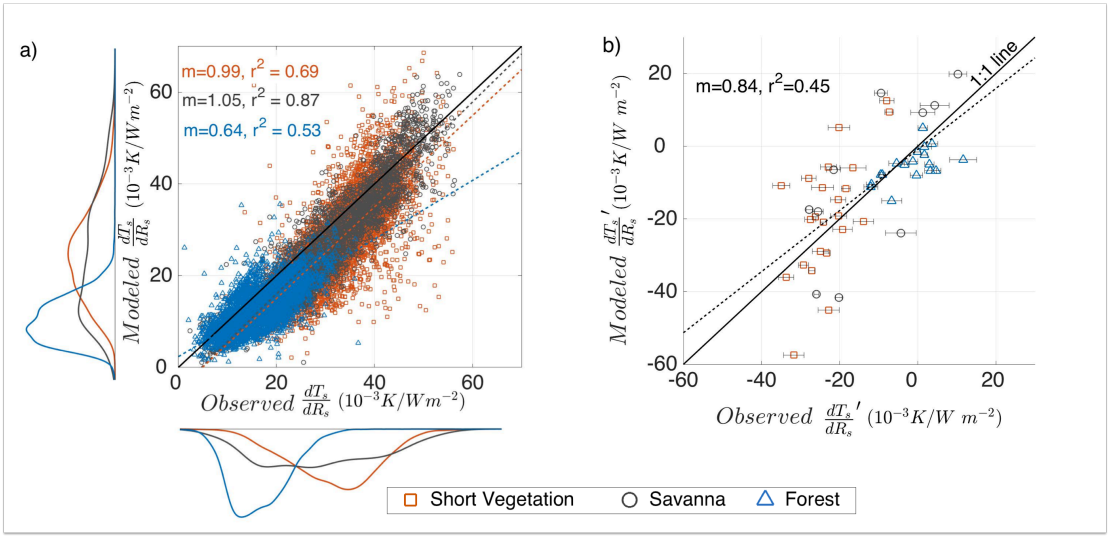
Supplement for the response to #2 reviewer

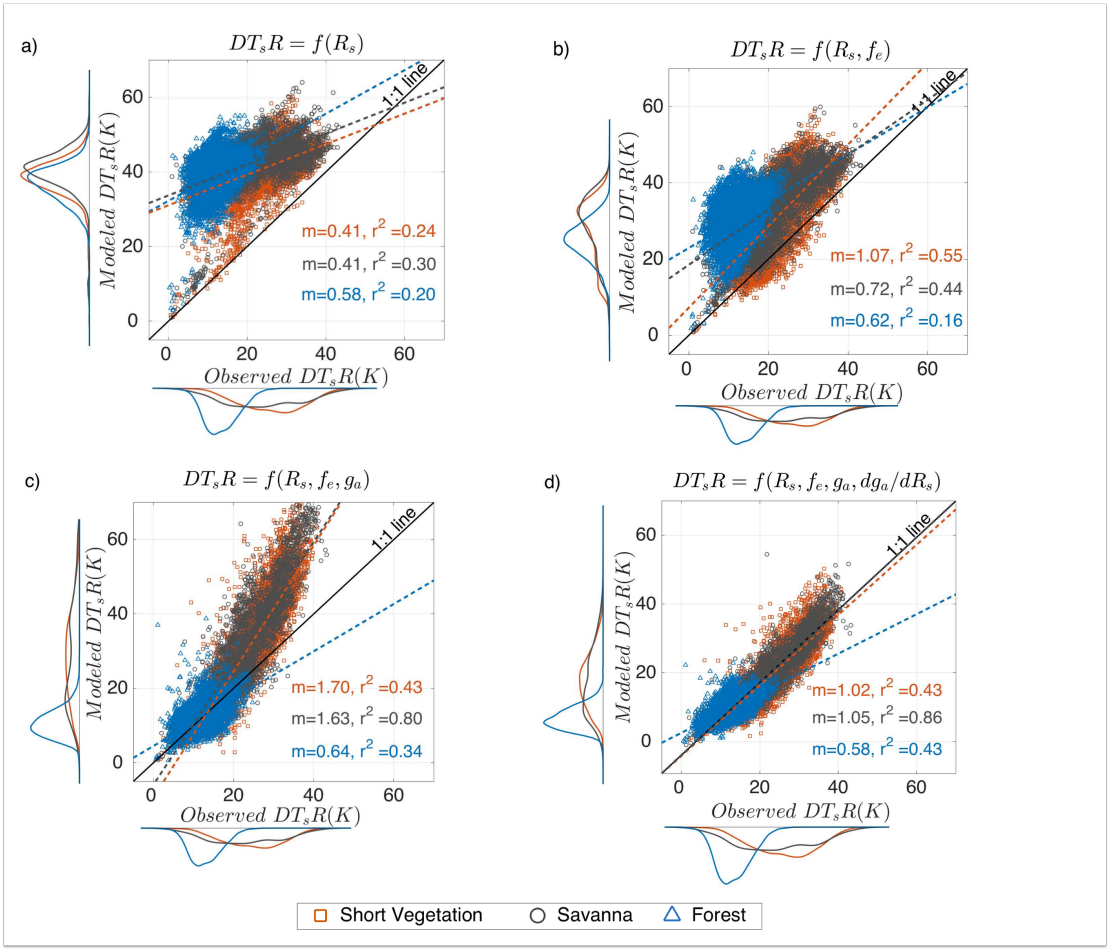
- **Modified figures in the manuscript (new)**



New Figure 5 a) Observed density distribution of daily mean aerodynamic conductance ($\overline{g_a}$) during the time before noon. b) Observed density distribution of the sensitivity of aerodynamic conductance to solar radiation dg_a/dR_s during the time before noon. c) Box plot of the mean surface and air temperature difference ($\overline{T_s - T_a}$) during the time before noon to evaporative fraction. The boxes indicate the 75th and 25th percentiles of the observations, respectively. The lines show the linear best fit for $\overline{T_s - T_a}$ to evaporative fraction for each vegetation type with the equations in the plot.



New Figure 6 a) Modeled versus observed daily warming rates, dT_s/dR_s, for each site for the three vegetation types. The density distributions show the spread. The coefficient of determination (r^2) is depicted for the linear fit (dashed lines). b) Model evaluation of the response of surface temperature warming rates to evaporative conditions (dT_s'/dR_s) with those derived from observations for each site.



New Figure 7 (old Figure 8) Comparison of model estimates of the diurnal surface temperature range (DT_sR) for short vegetation, savanna and forests with observations

for four scenarios: a) DT_sR is only a function of solar radiation (R_s), b) DT_sR is a function of solar radiation (R_s) and evaporative fraction (f_e), c) DT_sR is a function of solar radiation and evaporative fraction, and mean aerodynamic conductance (g_a), and d) DT_sR is a function of solar radiation, evaporative fraction, aerodynamic conductance and diurnal variation of aerodynamic conductance (dg_a/dR_s). Dashed lines show the linear regression between model and observation.

- **Extra figures related to the response letter**

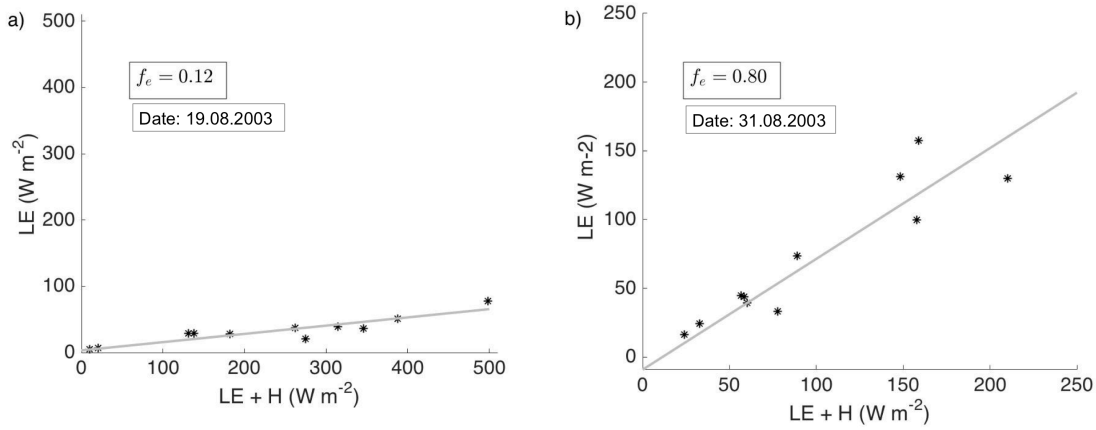


Figure R1 Demonstrating the calculation of evaporative fraction (f_e) for a dry (a), and a wet (b) day of a cropland site in Southern Great Plains (US-ARM, FLUXNET). We use the slope of the linear regression of half hourly morning time observations of latent heat flux (LE) and total turbulent heat flux (LE +H) to obtain daily evaporative fraction.

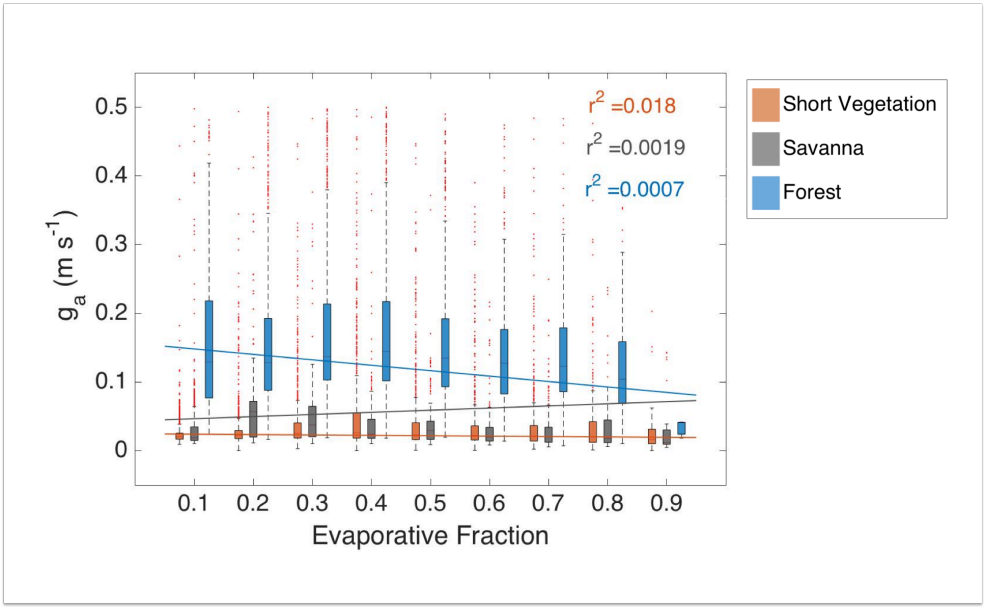


Figure R2 Boxplot of the variation of mean aerodynamic conductance with evaporative fraction for the three vegetation types.

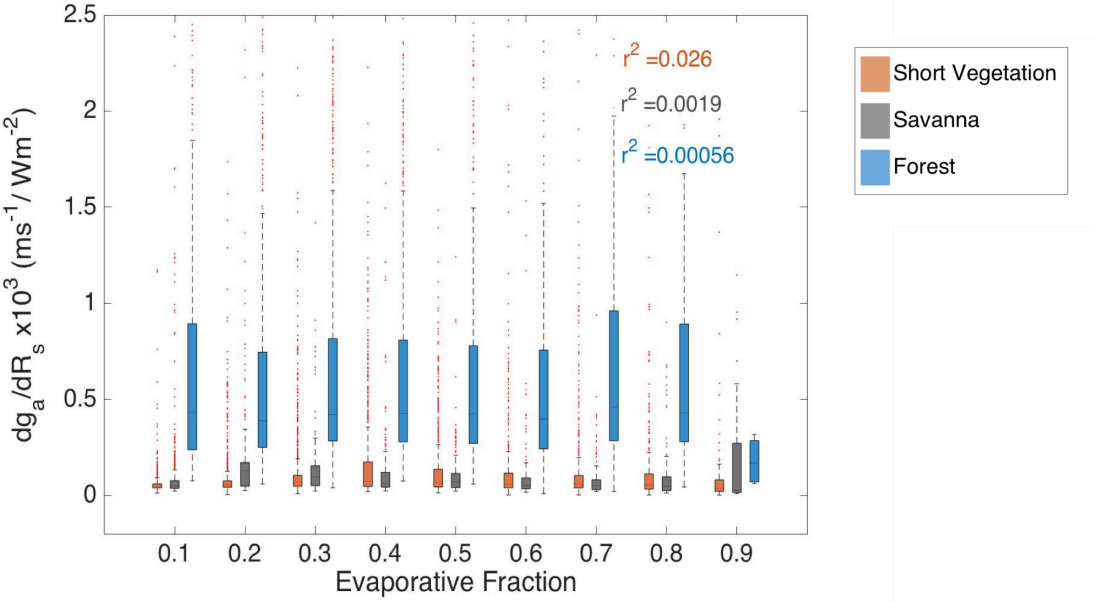


Figure R3 Boxplot showing the relationship between dg_a/dR_s and evaporative fraction for the three vegetation types.