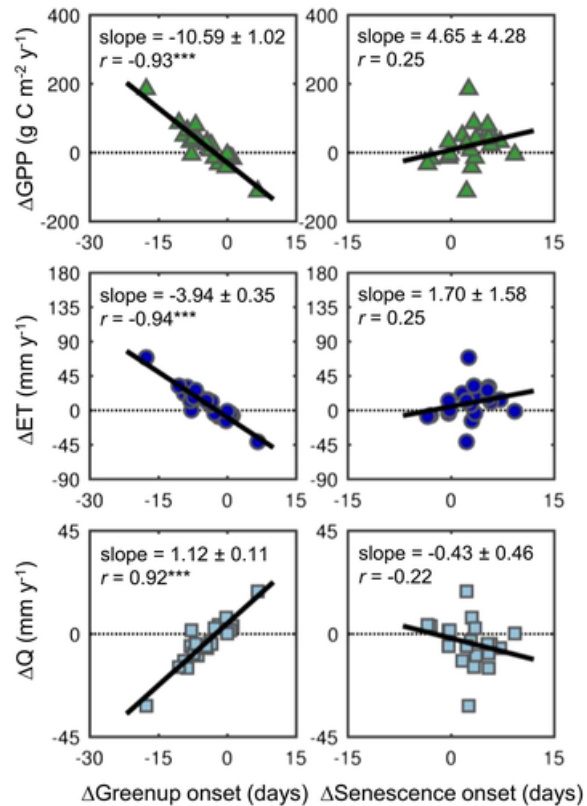
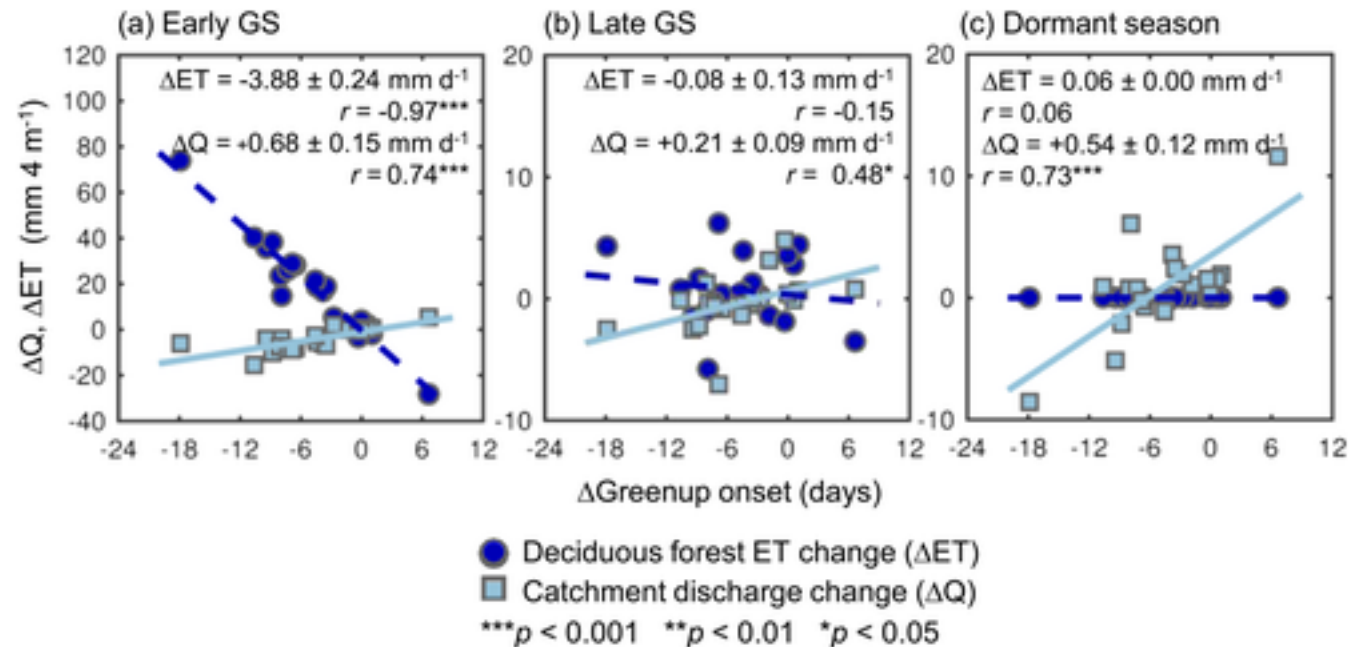


Warming-Induced Earlier Greenup Leads to Reduced Stream Discharge in a Temperate Mixed Forest Catchment



Net effects of greenup and senescence variations on changes in the annual GPP and ET changes of the deciduous forest (Δ GPP and Δ ET) and in the annual catchment discharge (Δ Q). Δ GPP, Δ ET, and Δ Q are the differences between the dynamic (the interannually variable greenup and senescence timings) and static (fixed greenup and senescence timings from 1992) phenology schemes under the same climatic conditions. A linear least squares regression was applied to estimate the best relationship (solid line) with the slope, correlation coefficient (r), and significance shown (*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$).



Net effects of greenup variations on the changes in the deciduous forest ET (ΔET , blue circle) and the catchment discharge (ΔQ , light blue square) during (a) early growing season (GS; April to July), (b) late GS (August to November), and (c) following dormant season (December to March). The ΔET and ΔQ are the differences between the dynamic and static phenology schemes under the same climatic condition