

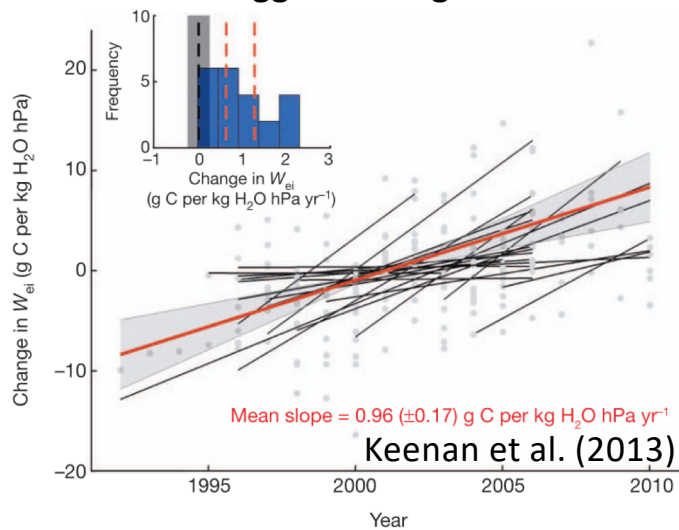


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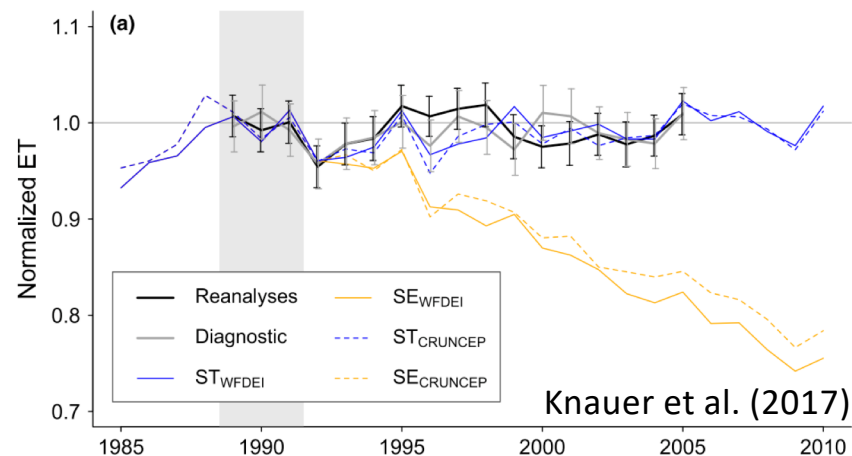
Short-term water-carbon interactions regulate interannual variability in ecosystem responses to changing climates

Kuang-Yu Chang and William J. Riley

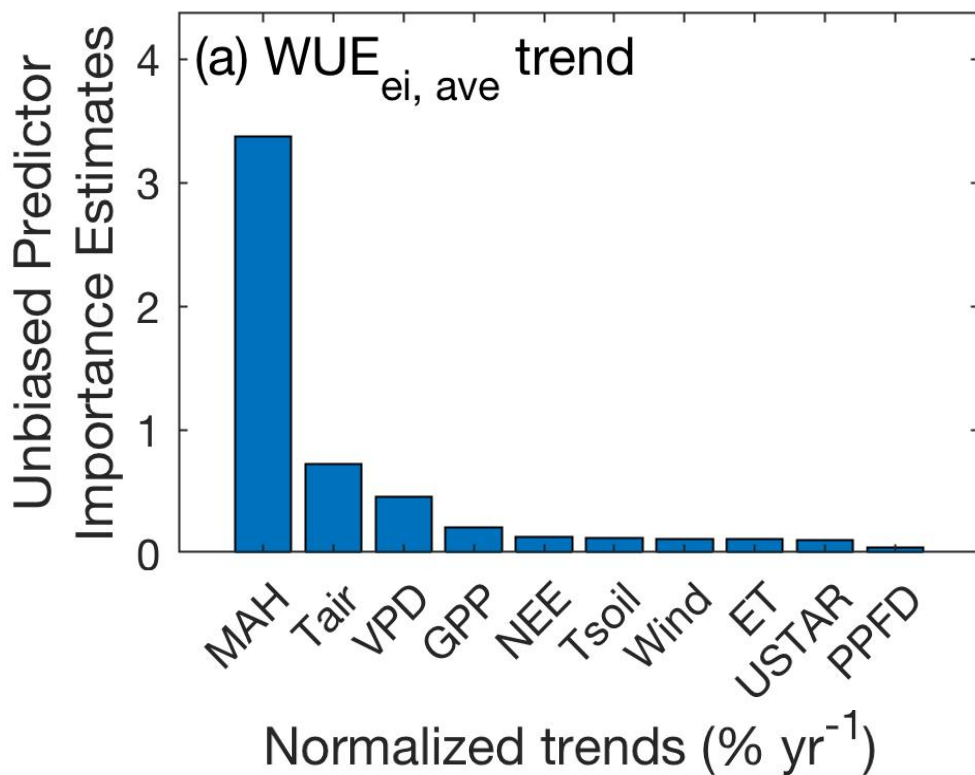
Increases in WUE suggest stronger stomatal control



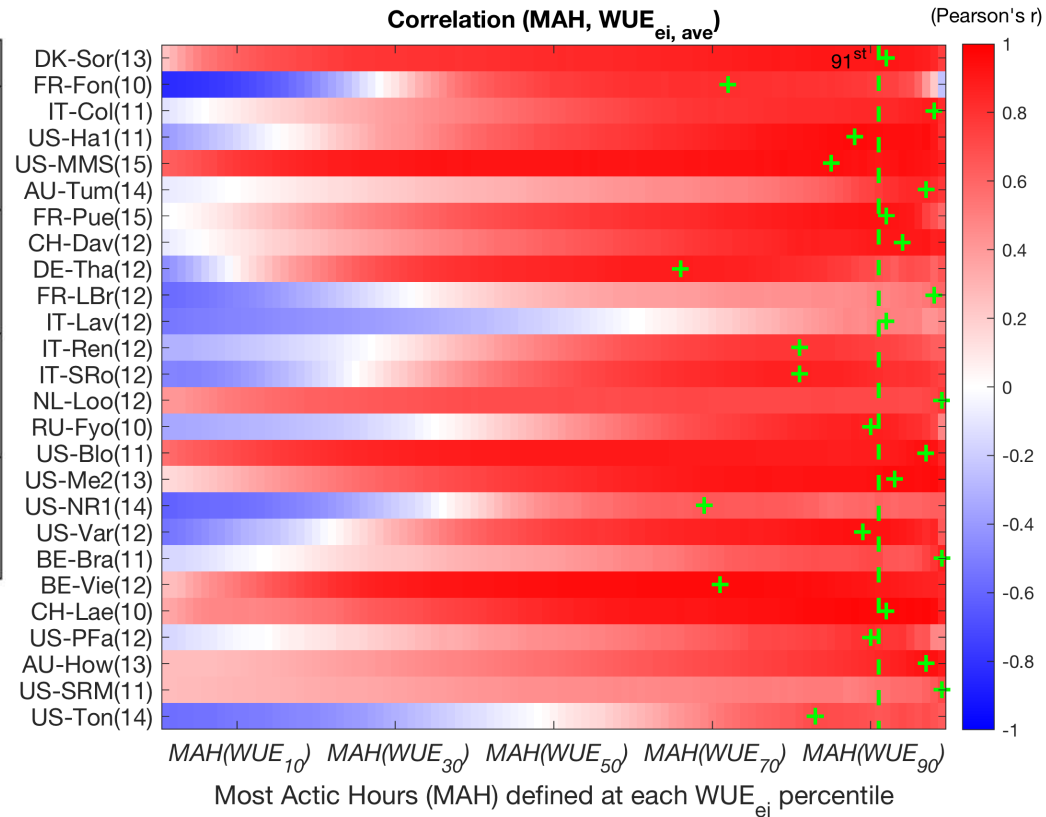
Updated physiology leads to erroneous continental-scale hydrology



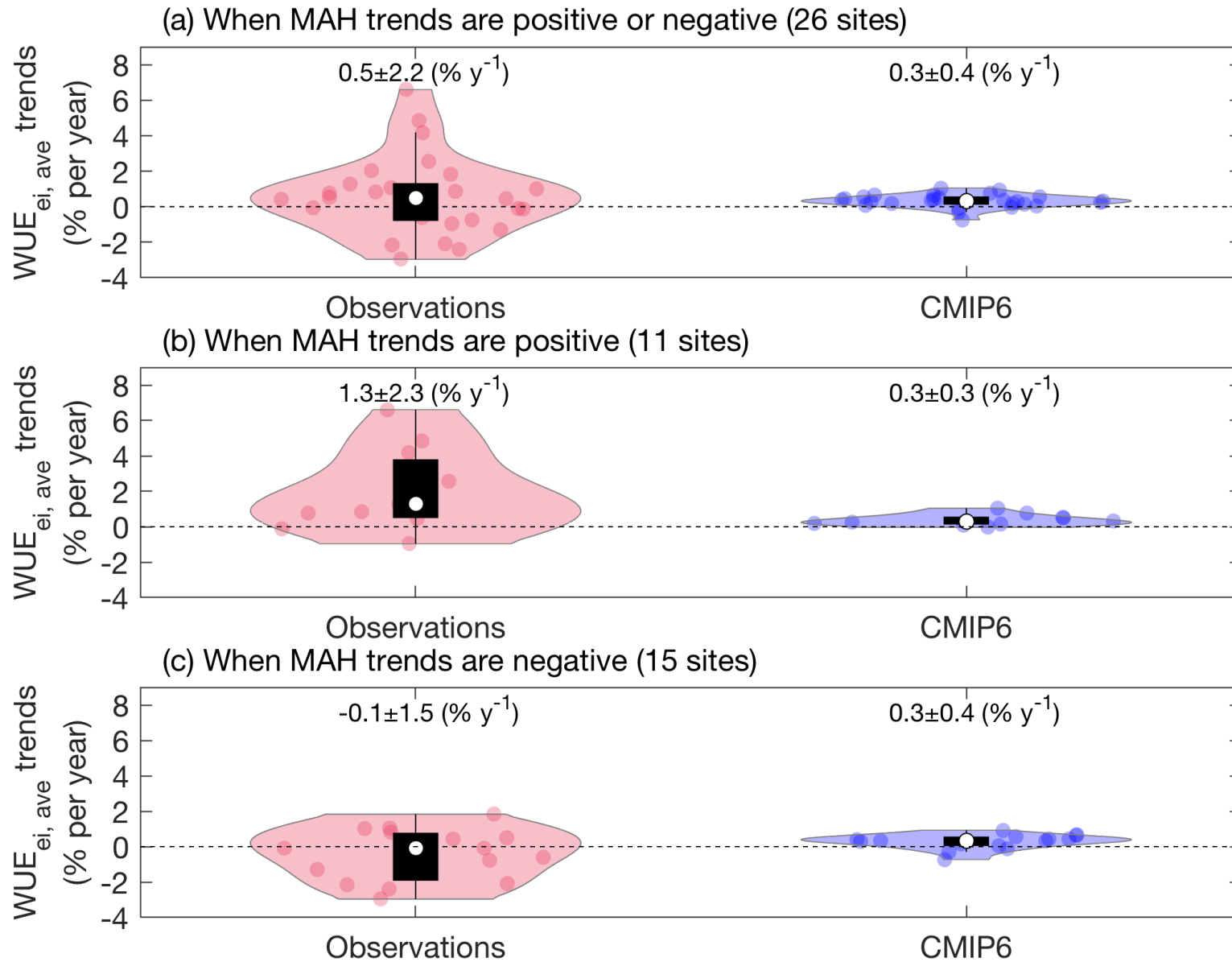
Most Active Hour is the dominant control on WUE trends



MAH is defined as the hours when WUE is above WUE^{91st}



CMIP6 models do not resolve effects of short-term carbon-water interactions



Relationship to white paper

- Our results suggest that **increases in MAH** may amplify the observed increases in WUE trends driven by rising atmospheric CO₂.
- CMIP6 models **do not represent** the relationship between MAH and WUE inferred from ecosystem-scale measurements.
- Future model benchmarking studies should not only evaluate instantaneous flux exchanges, but also **correlations in long-term trends**.