

**Supplementary Information for**  
**An analytical generalization of Budyko framework with**  
**physical accounts of climate seasonality and water storage**  
**capacity**

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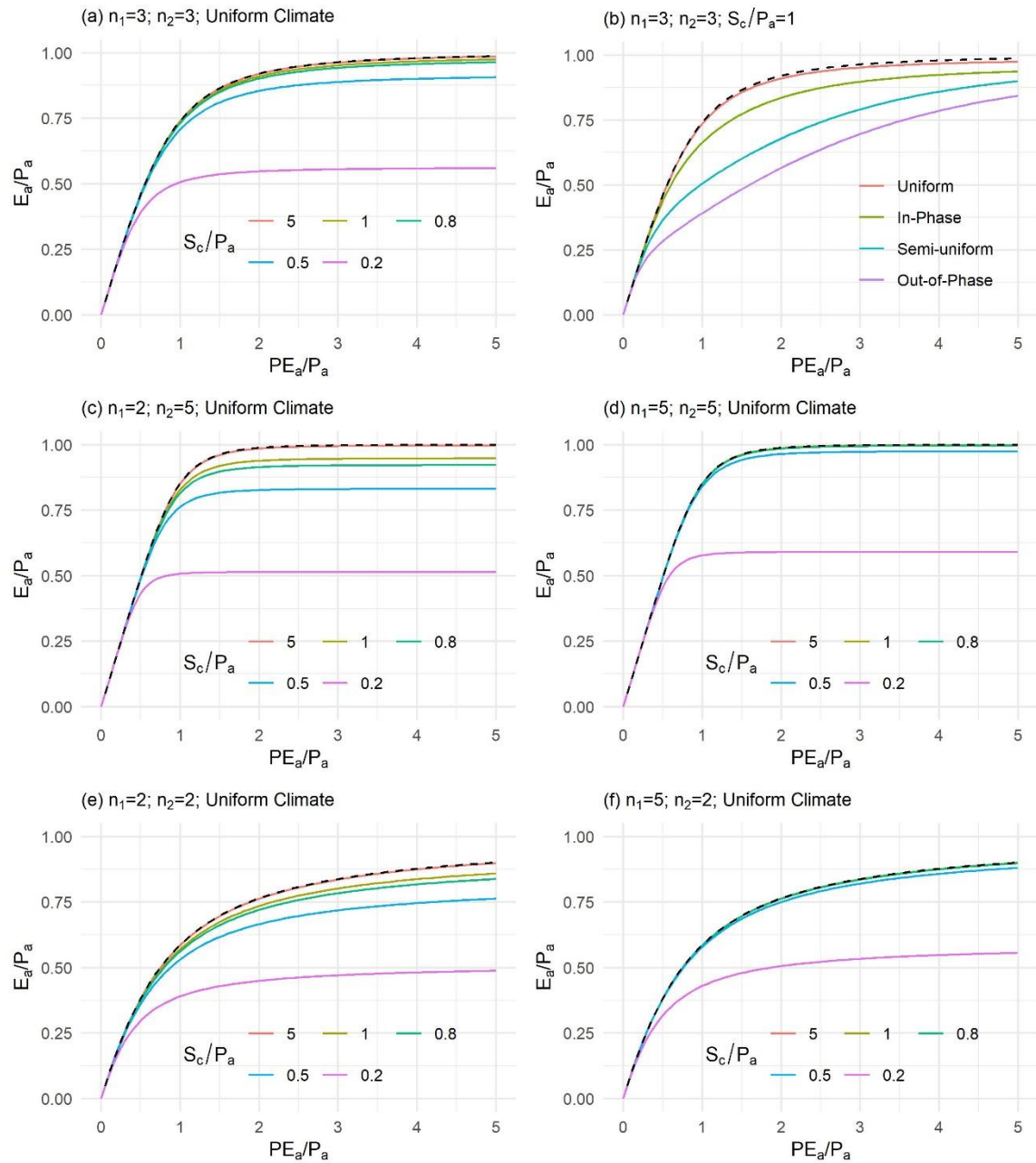


Figure S1 The same as Figure 2 but using Yang-Fu equation. The black dashed line is simulated from Fu equation with its parameter equal to  $n_2$ .

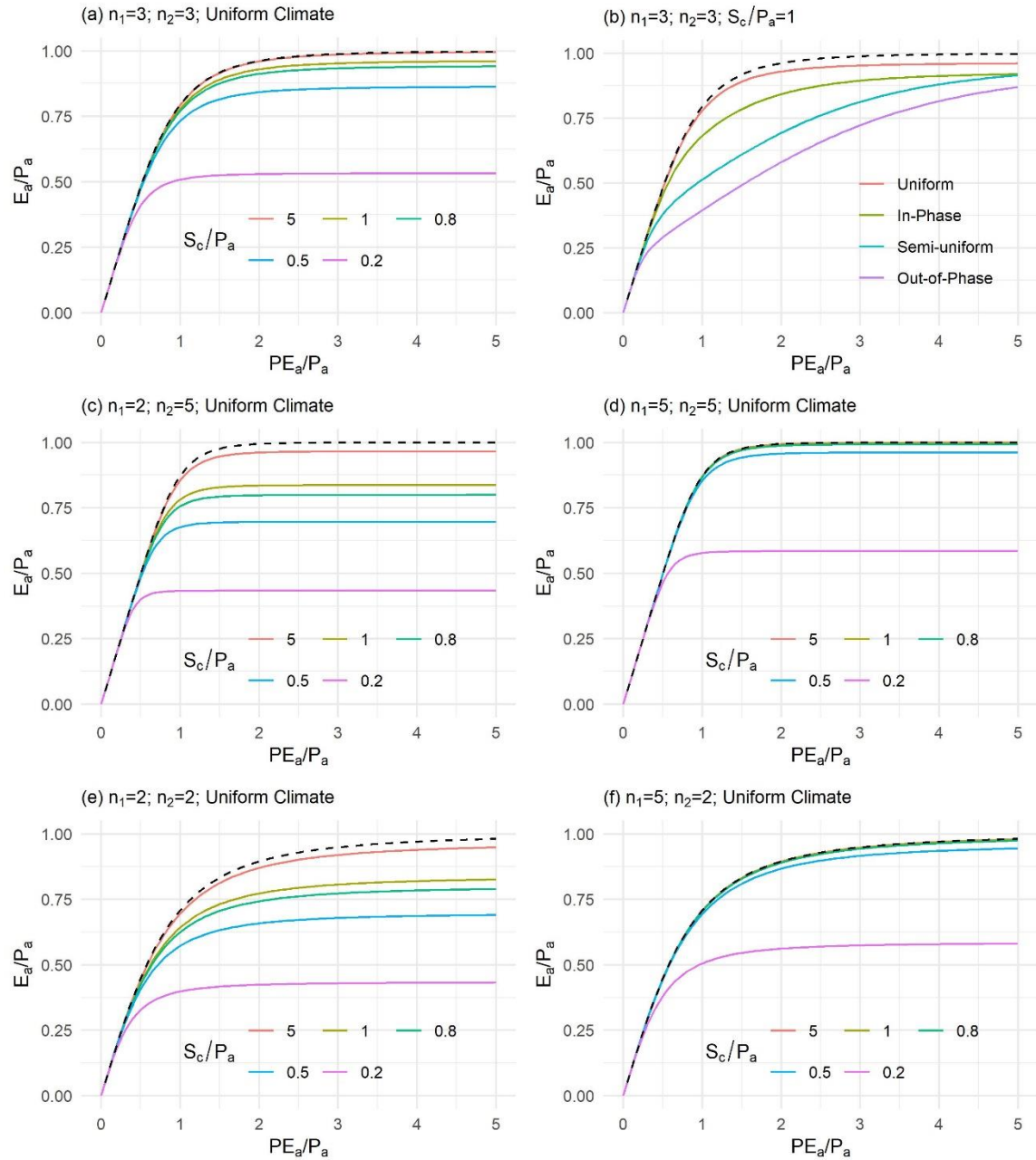


Figure S2 The same as Figure 2 but using Fu - Yang equation. The black dashed line is simulated from Yang equation with its parameter equal to  $n_2$ .

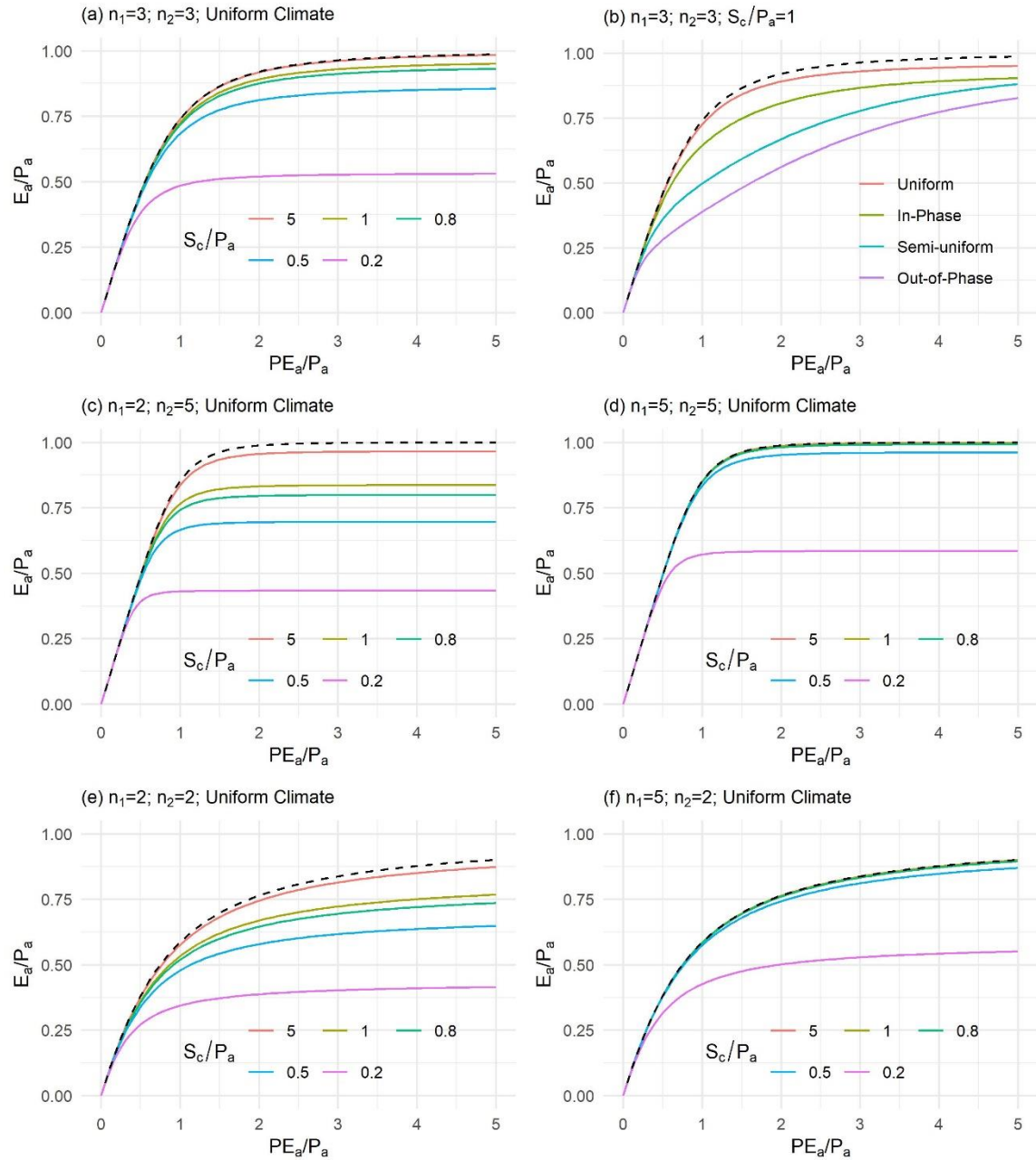


Figure S3 The same as Figure 2 but using Fu-Fu equation. The black dashed line is simulated from Fu equation with its parameter equal to  $n_2$ .

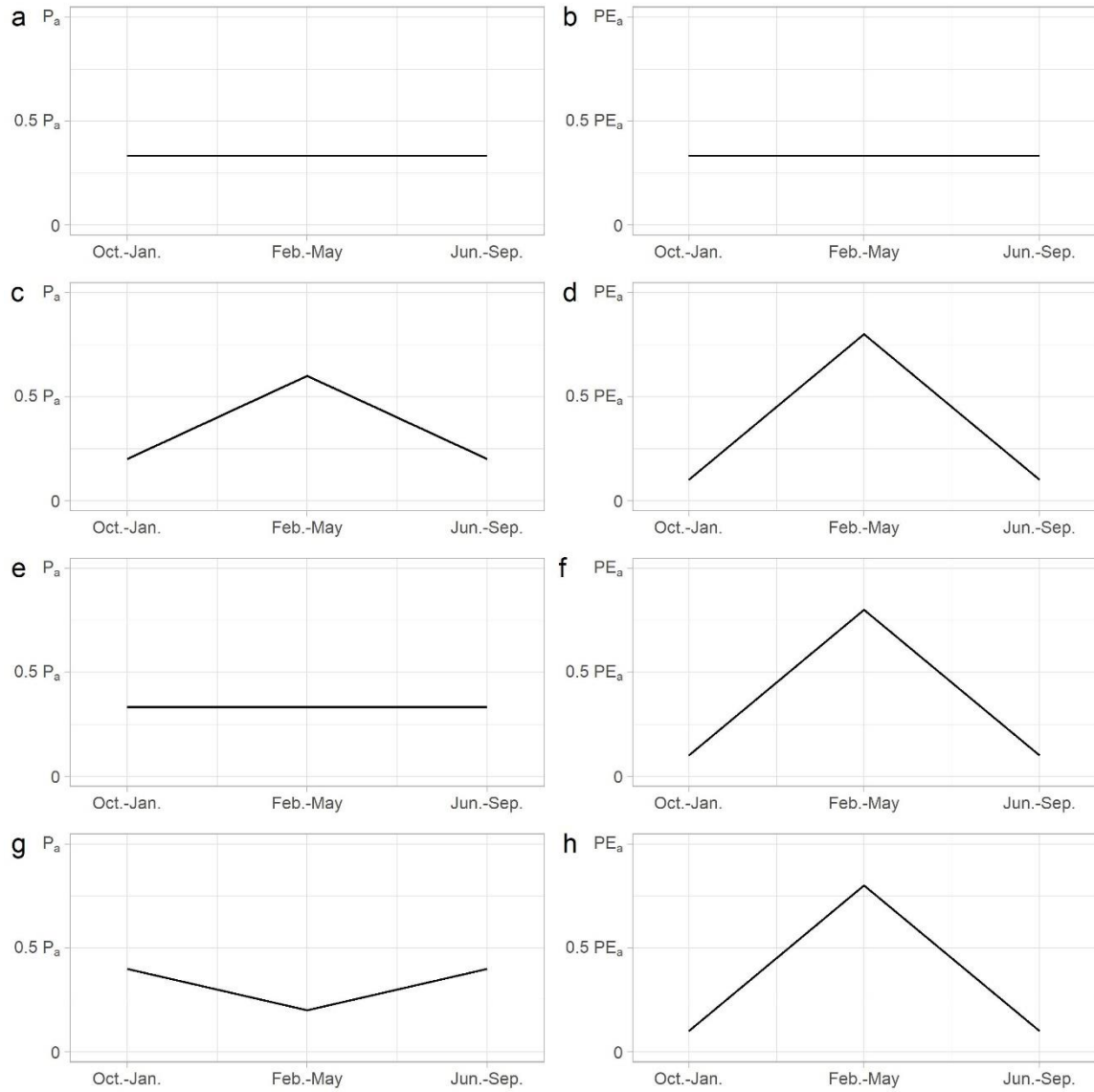


Figure S4 The temporal distributions of precipitation (a, c, e, and g) and potential evaporation (b, d, f, and h) in uniform (a, b), in-phase (c, d), semi-uniform (e, f), and out-of-phase (g, h) climates throughout year.

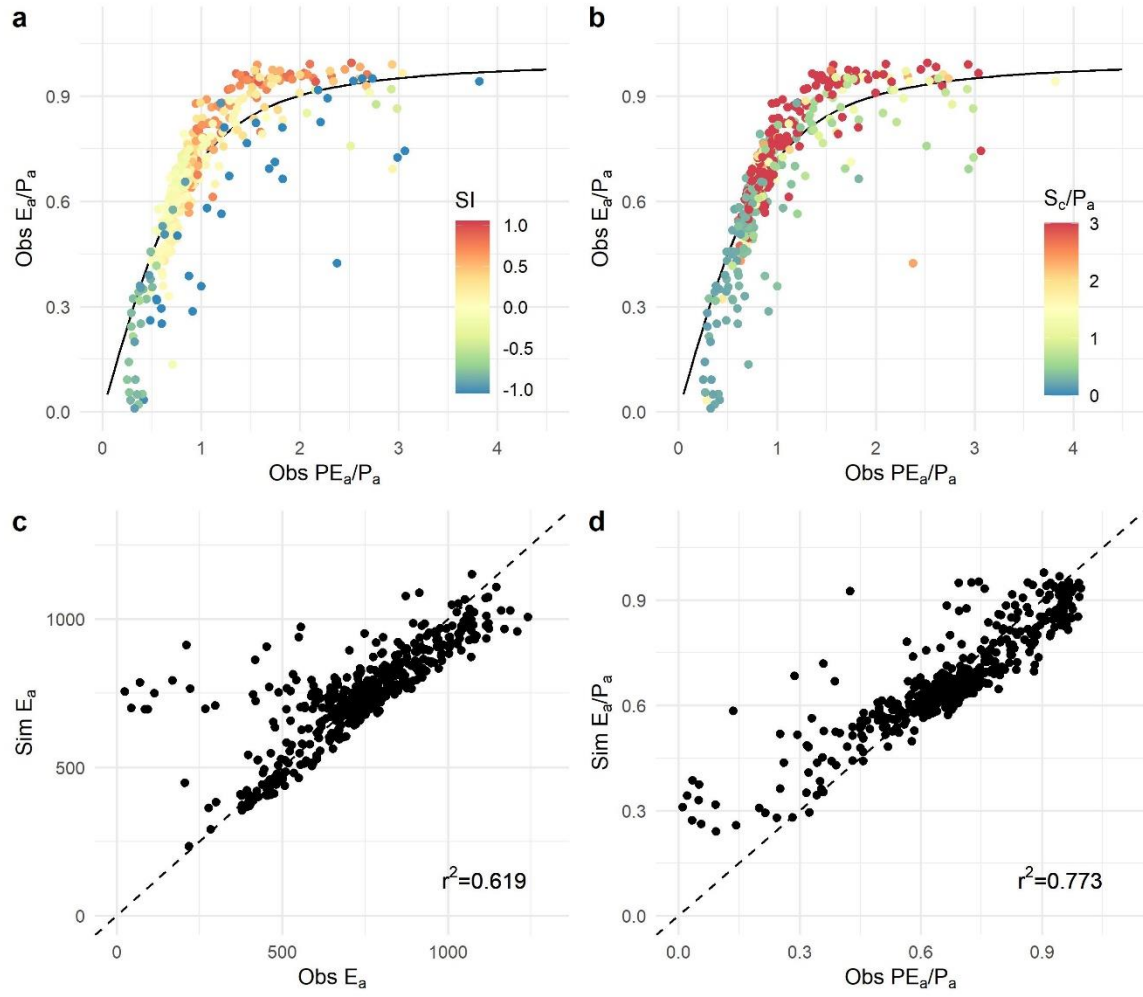


Figure S5 The same as Figure 3 but using Fu equation.