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## Supplemental Material

*Journal of Climate*

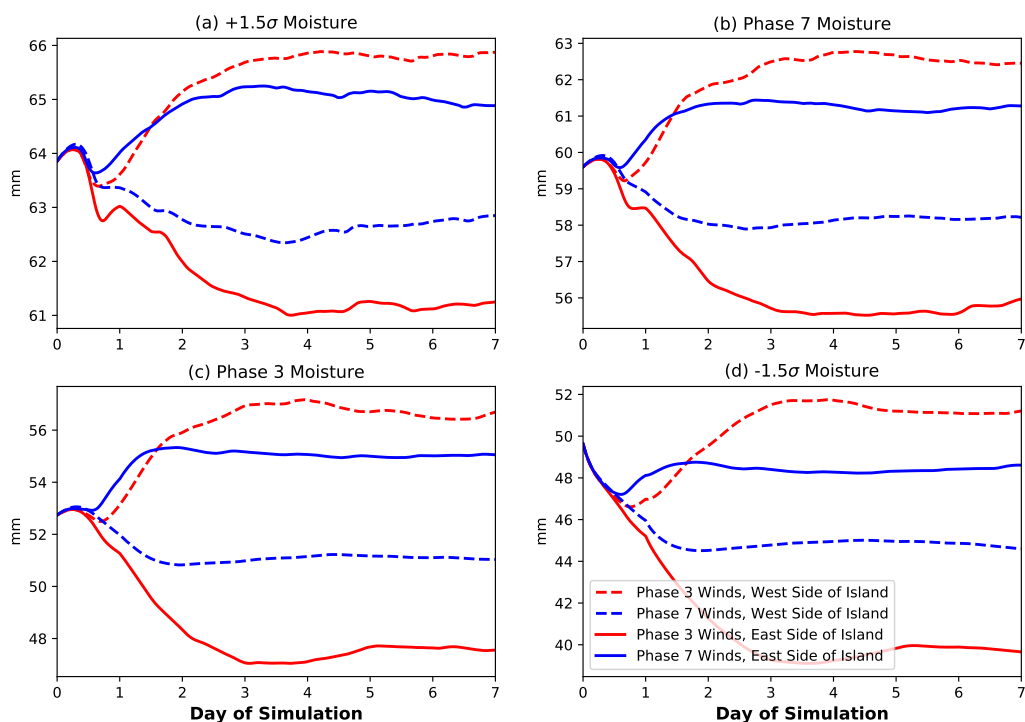
Environmental Controls on the Tropical Island Diurnal Cycle in the Context of Intraseasonal  
Variability

<https://doi.org/10.1175/JCLI-D-22-0824.1>

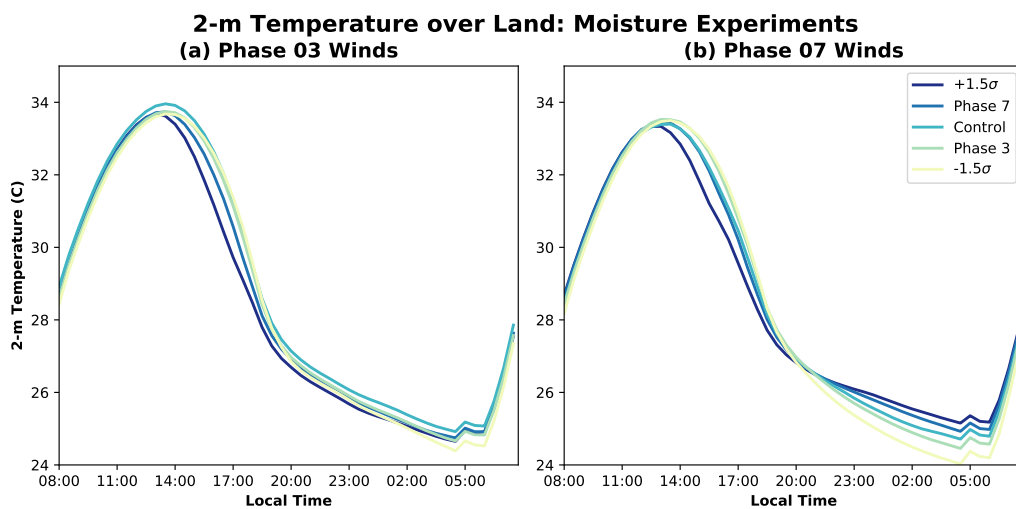
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## Total Column Water Vapor Time Series, Moisture Experiments

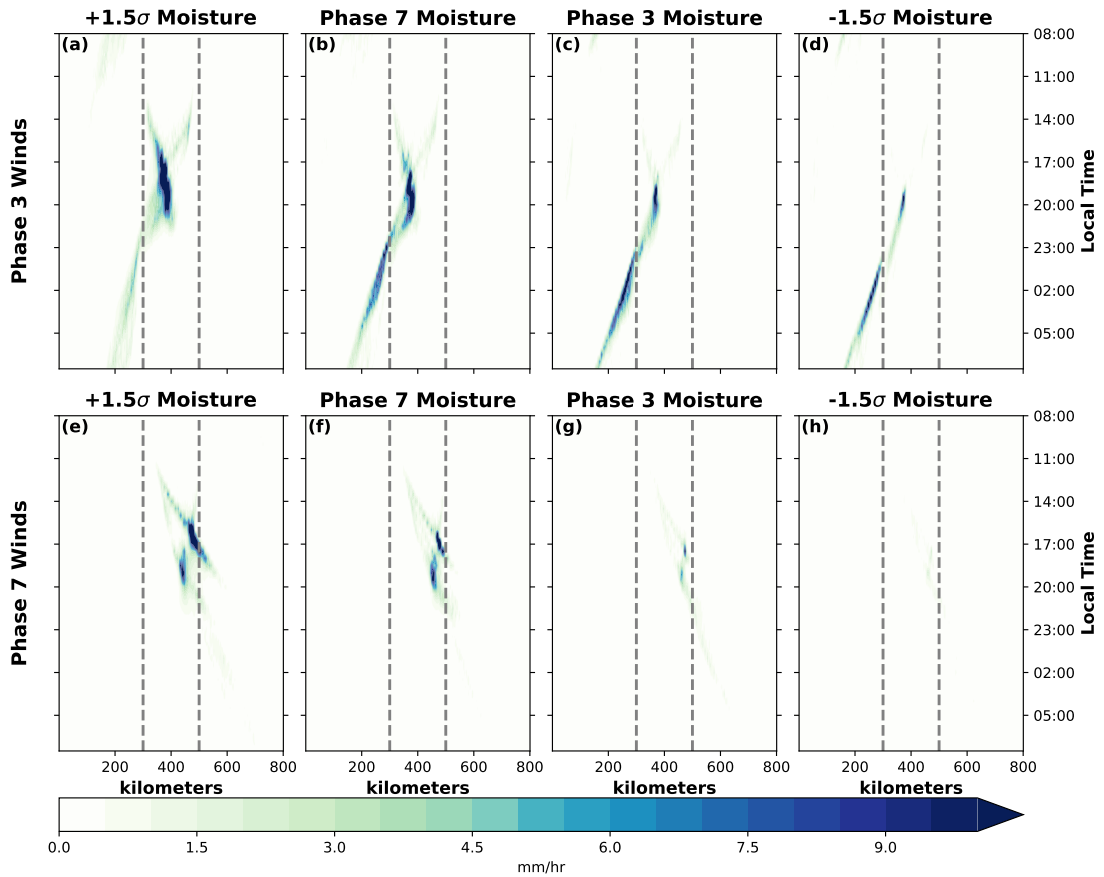


1 FIG. S1. Time series of CM1 total column water vapor (mm) averaged over oceanic points in the model on the  
 2 west side of the island (dotted lines) and east side of the island (solid lines). Red lines are for simulations using  
 3 Phase 3 winds, while blue lines are for simulations using Phase 7 winds. Each panel corresponds to simulations  
 4 with a different base state moisture profile, including  $+1.5\sigma$  (a), BSISO Phase 7 (b), BSISO Phase 3 (c), and  
 5  $-1.5\sigma$  (d).

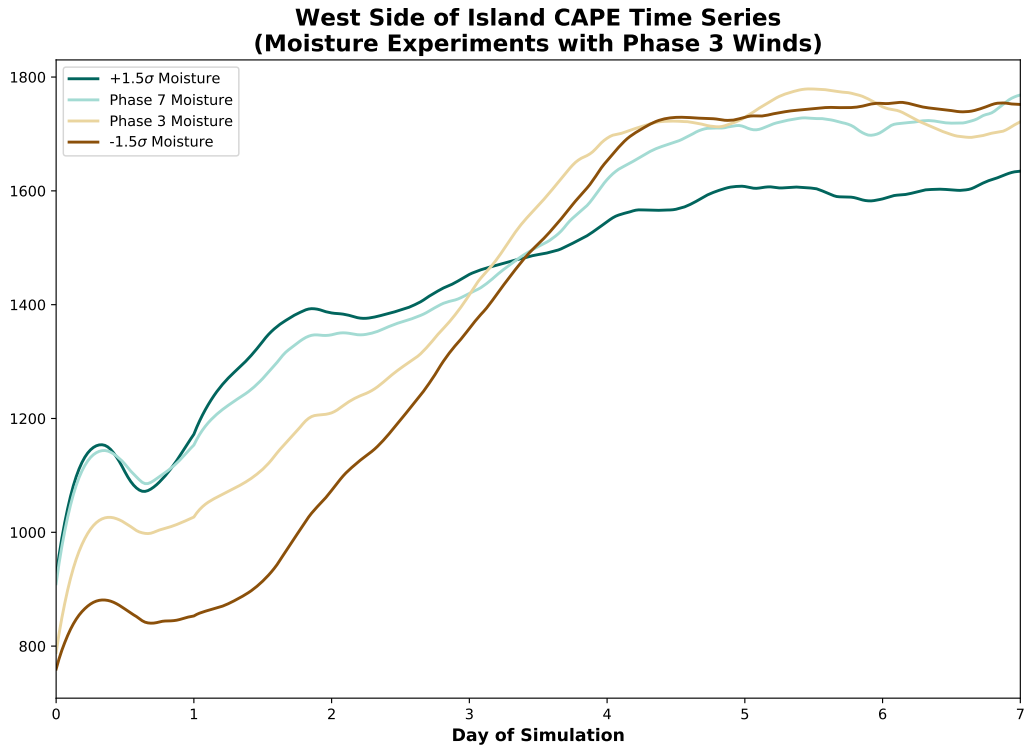


6 FIG. S2. CM1 composite diurnal cycle of 2-m temperature (C) over land points in the model for simulations  
 7 with BSISO Phase 3 base-state winds (a) and BSISO Phase 7 winds (b). Each line is colored based on the  
 8 moisture profile used in the base-state, with moisture decreasing from  $+1.5\sigma$  in dark blue to  $-1.5\sigma$  in pale yellow.

### Precipitation Rate Composite, 3D Moisture Exps



9 FIG. S3. CM1 composite diurnal cycle of precipitation rate (mm/hr) in the eight moisture experiments. The top  
10 row includes simulations with BSISO Phase 3 base-state winds, while the bottom row includes simulations with  
11 BSISO Phase 7 base-state winds. Base-state moisture profiles are noted each panel title, with column moisture  
12 decreasing from +1.5 $\sigma$  in the left column to -1.5 $\sigma$  in the right column.



13 FIG. S4. Time series of CM1 Convective Available Potential Energy (CAPE) on the western half of the  
 14 simulated island in each of the four moisture experiments that use BSISO Phase 3 base-state winds. Column  
 15 moisture decreases from  $+1.5\sigma$  in dark green to  $-1.5\sigma$  in dark brown.