



*Supplement of*

**On the relationship between mesoscale cellular convection and meteorological forcing: comparing the Southern Ocean against the North Pacific**

**Francisco Lang et al.**

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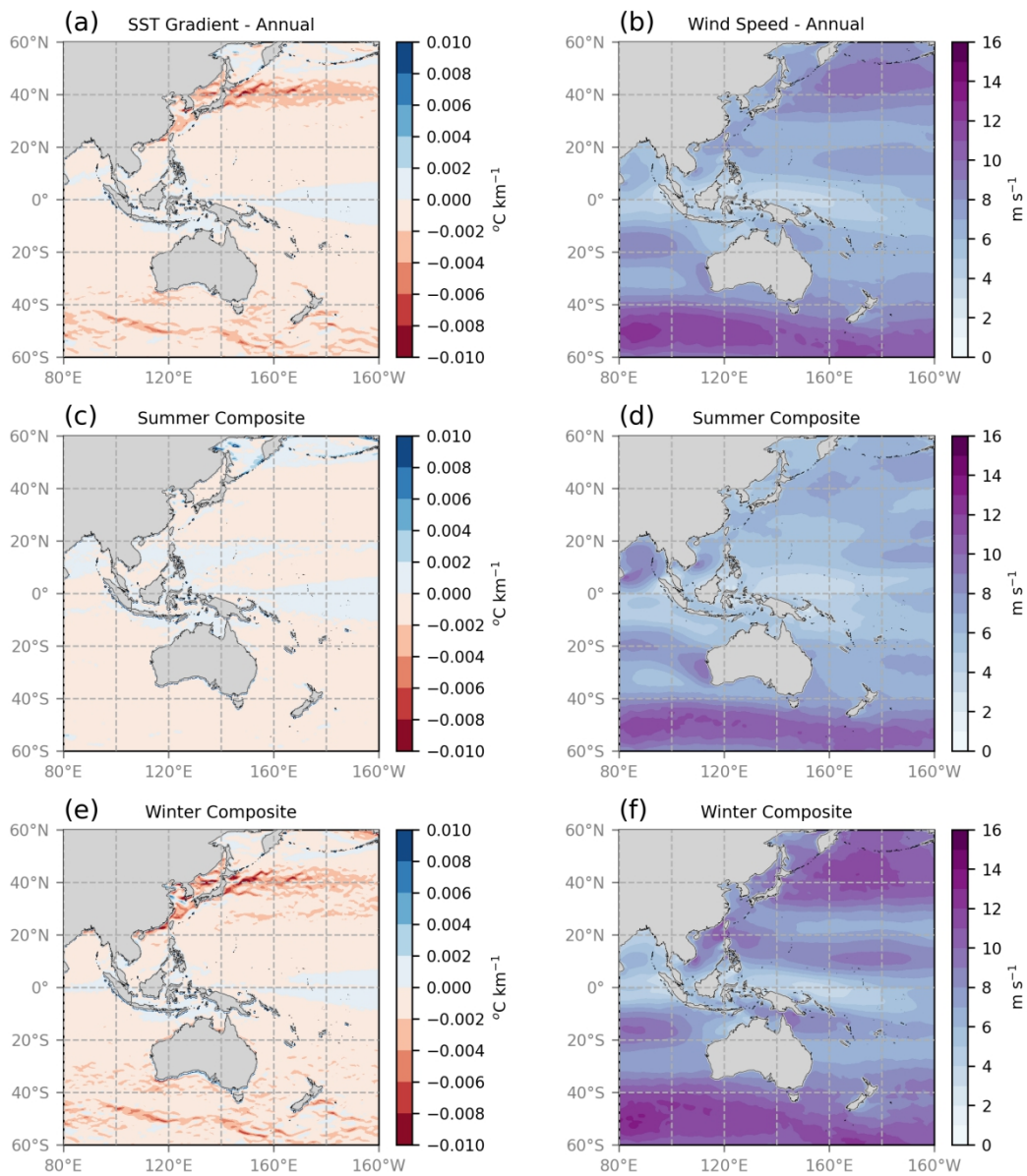


Figure S1. Annual mean (a-b), summer (c-d) and winter (e-f) seasons (2016-2018) for sea surface temperature (SST) gradients and near-surface wind speed from ERA5 reanalysis products. Austral (boreal) summer is defined by December-February (June-August), while austral (boreal) winter is defined by June-August (December-February).

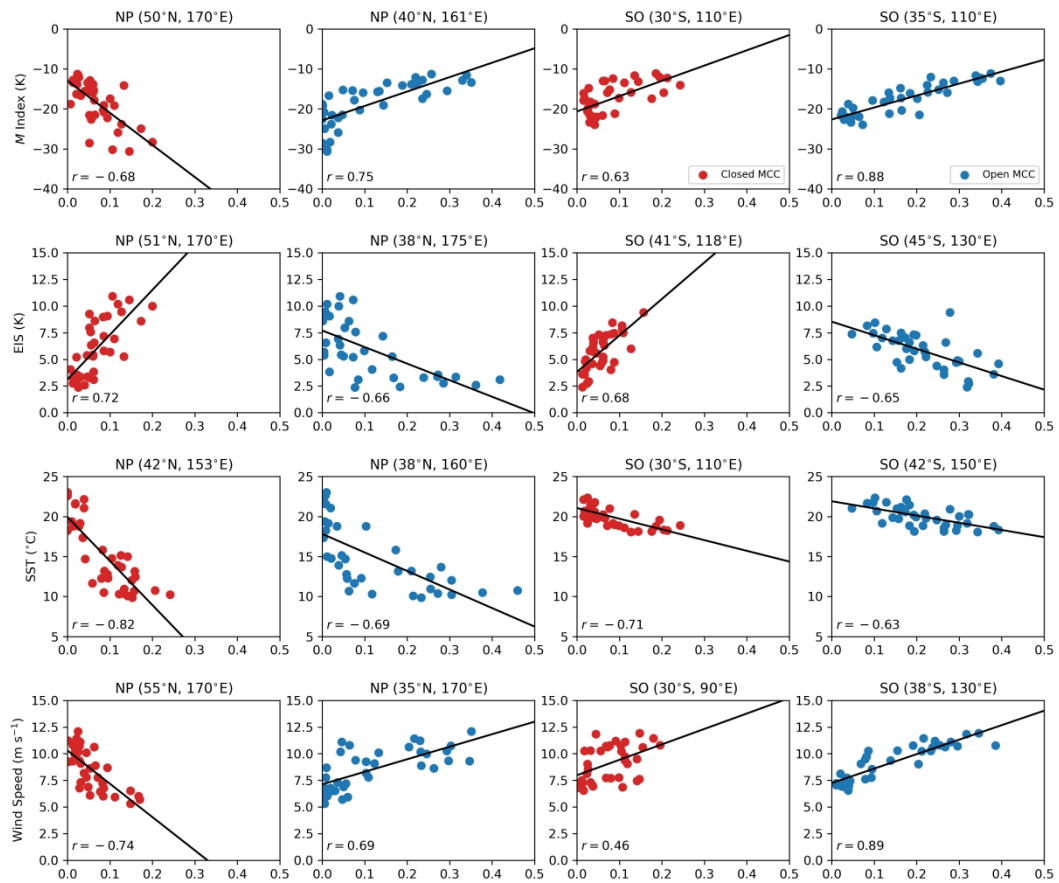


Figure S2. Scatter plots for selected grid points between both open and closed MCC cloud monthly occurrence frequencies and  $M$  index, EIS, SST and near-surface wind speed from ERA5 reanalysis products.

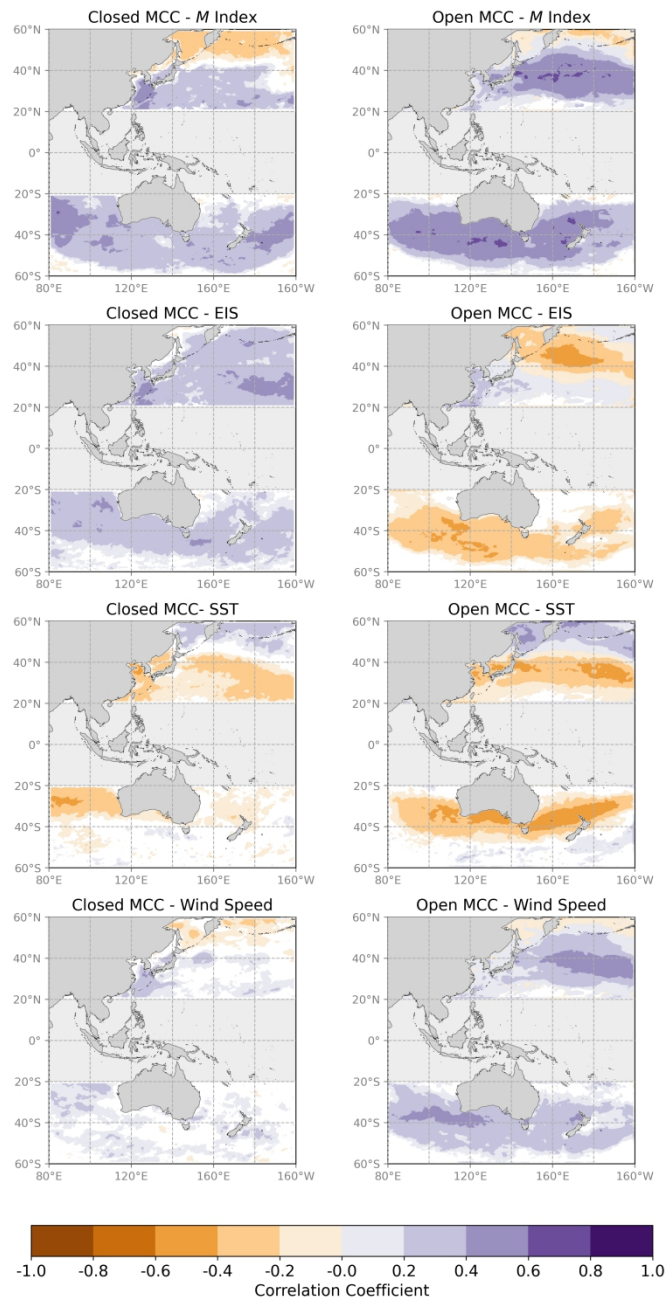


Figure S3. Correlation coefficients between both open and closed MCC cloud daily occurrence frequencies and *M* index, EIS, SST and near-surface wind speed from ERA5 reanalysis products. White areas indicates where results are not significant at a 95% confidence level.

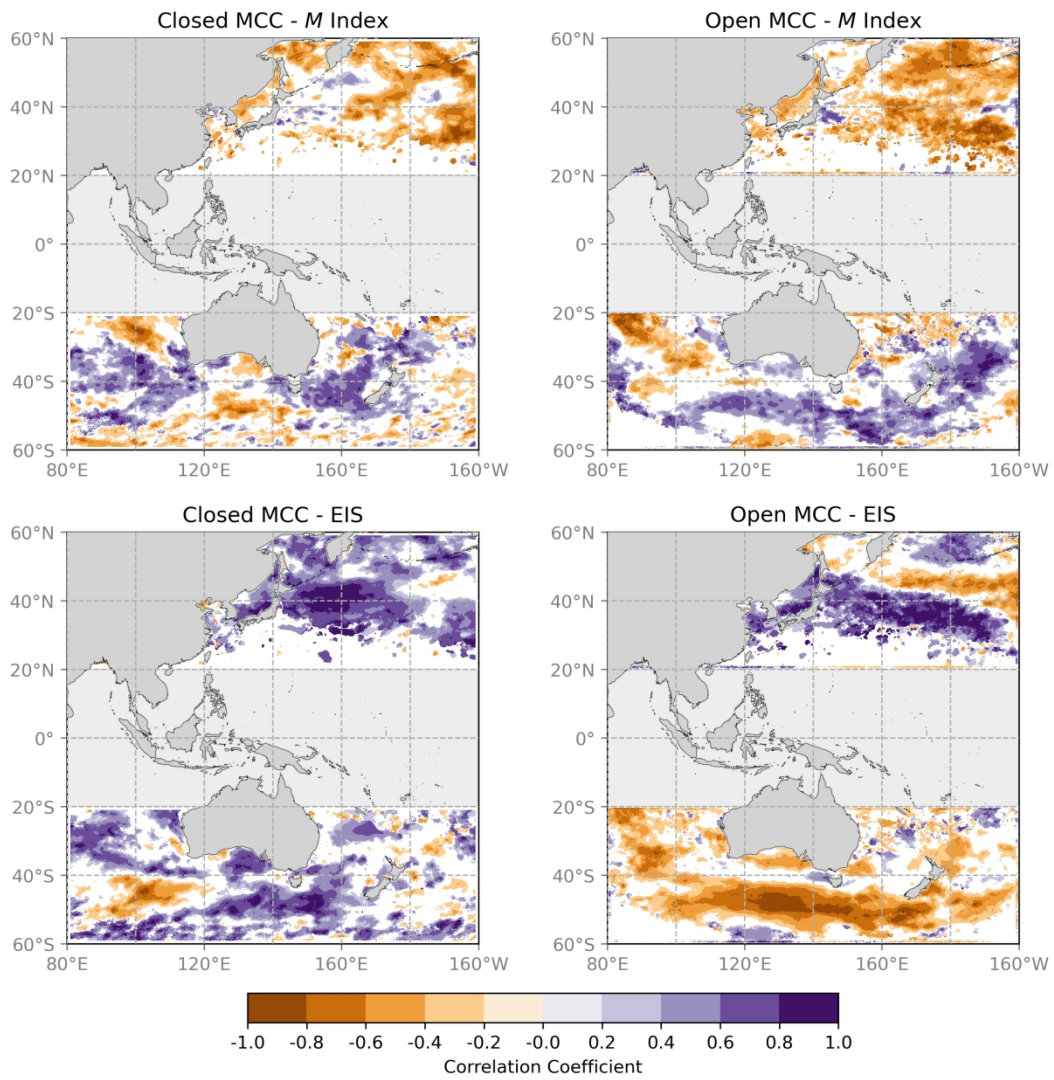


Figure S4. Correlation coefficients for summer months between both closed and open MCC cloud monthly occurrence frequencies and,  $M$  index and EIS from ERA5 reanalysis products. White areas indicates where results are not significant at a 95% confidence level.

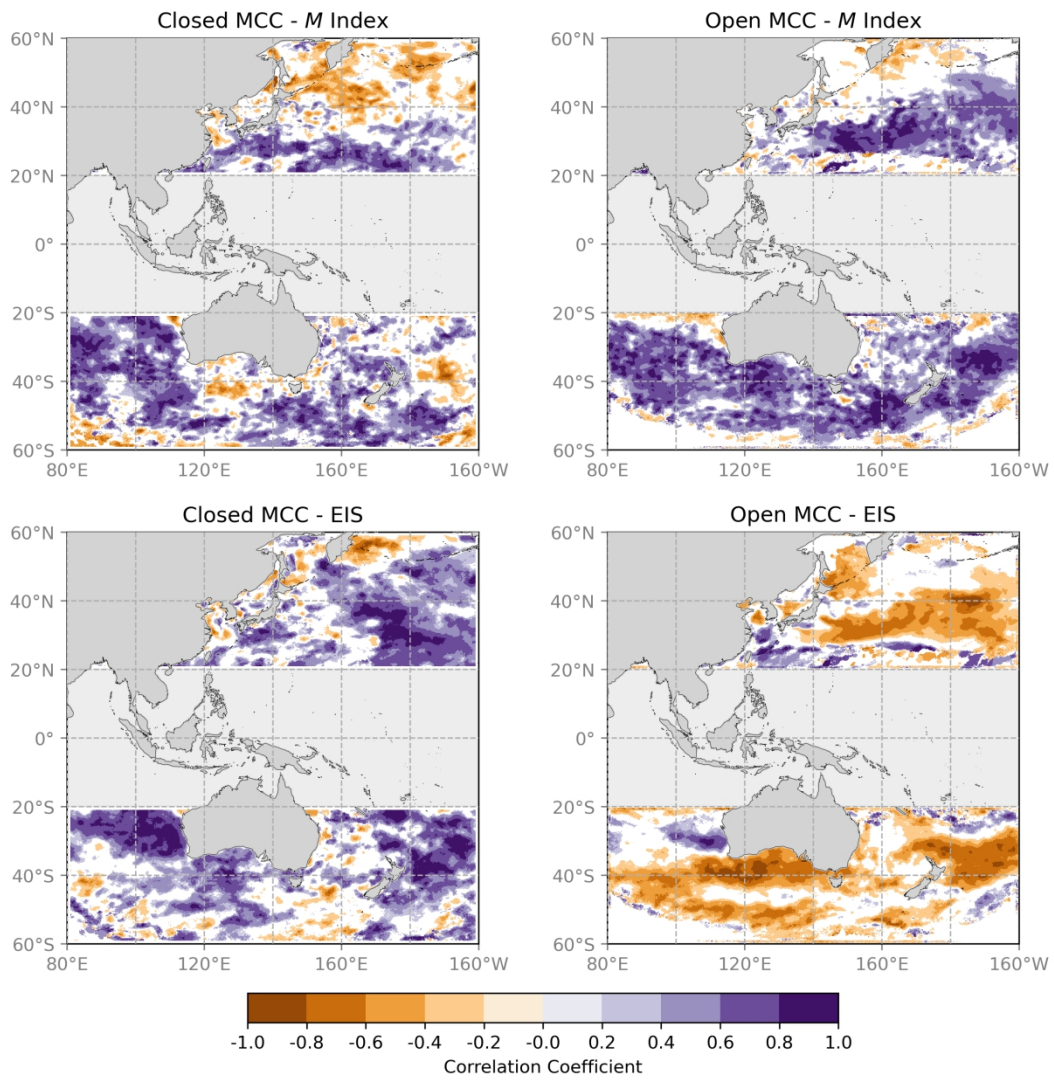


Figure S5. Correlation coefficients for winter months between both closed and open MCC cloud monthly occurrence frequencies and,  $M$  index and EIS from ERA5 reanalysis products. White areas indicates where results are not significant at a 95% confidence level.

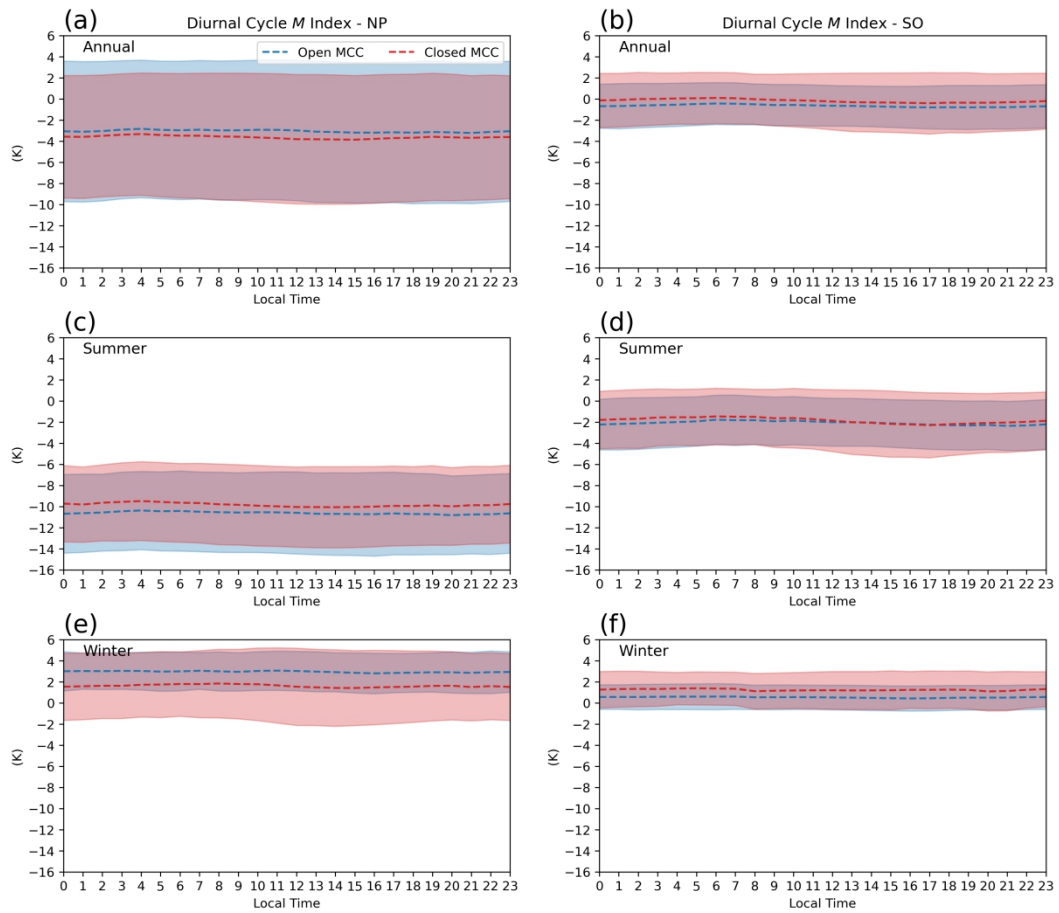


Figure S6. Diurnal cycle for  $M$  index derived from ERA5 reanalysis products calculated using a filter derived from the composite of MCC clouds identified for each region. Shown are open MCC (blue) and closed MCC (red). The diurnal cycle is calculated over boxes of  $10 \times 10^\circ$ , center at  $40^\circ\text{N}$ ,  $170^\circ\text{W}$  and  $45^\circ\text{S}$ ,  $130^\circ\text{W}$ . Seasonal means are shown for summer and winter. Shadings represent 1 standard deviation.

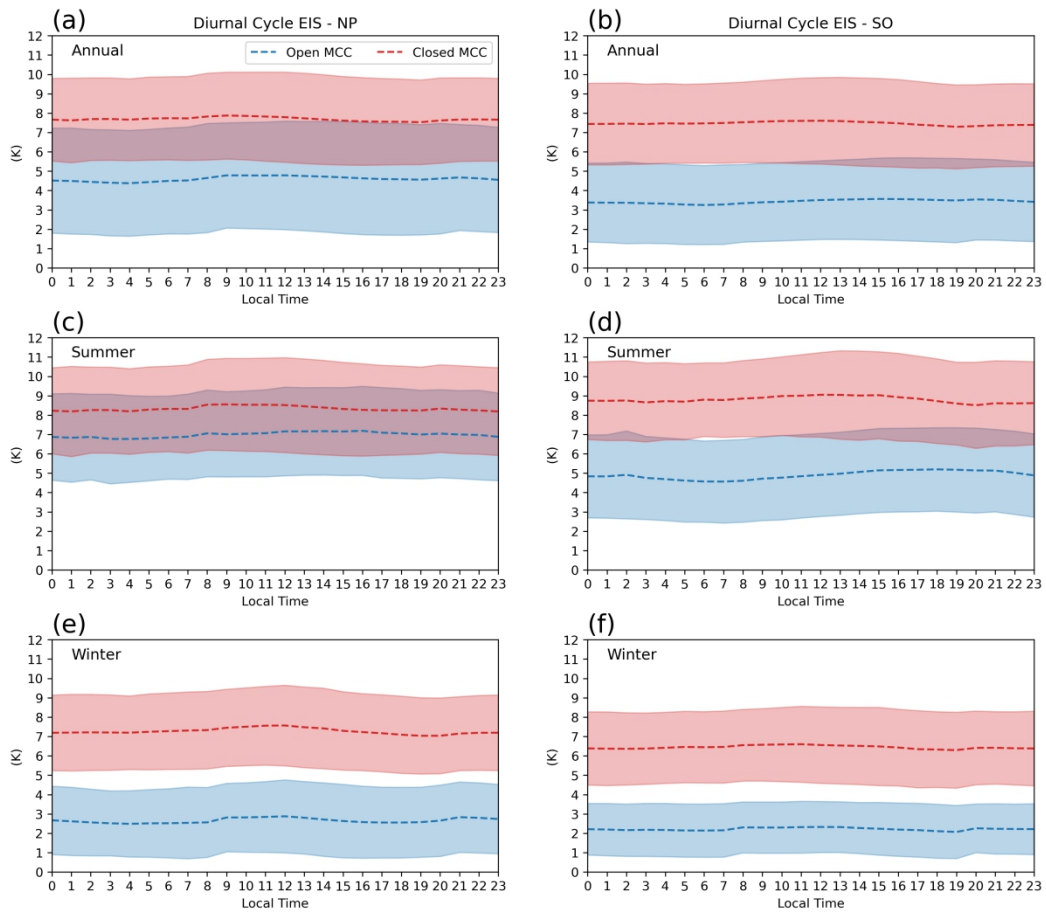


Figure S7. Same as Figure S6 but for EIS.



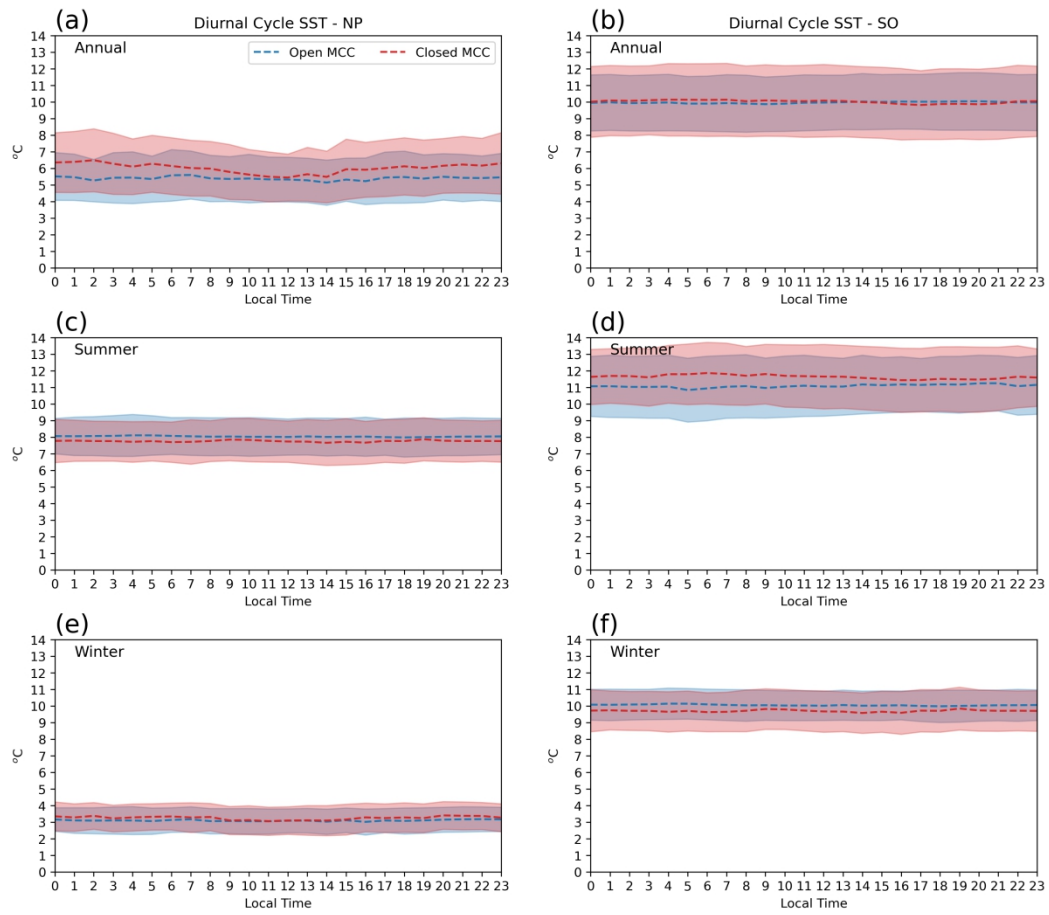


Figure S8. Same as Figure S6 but for SST.

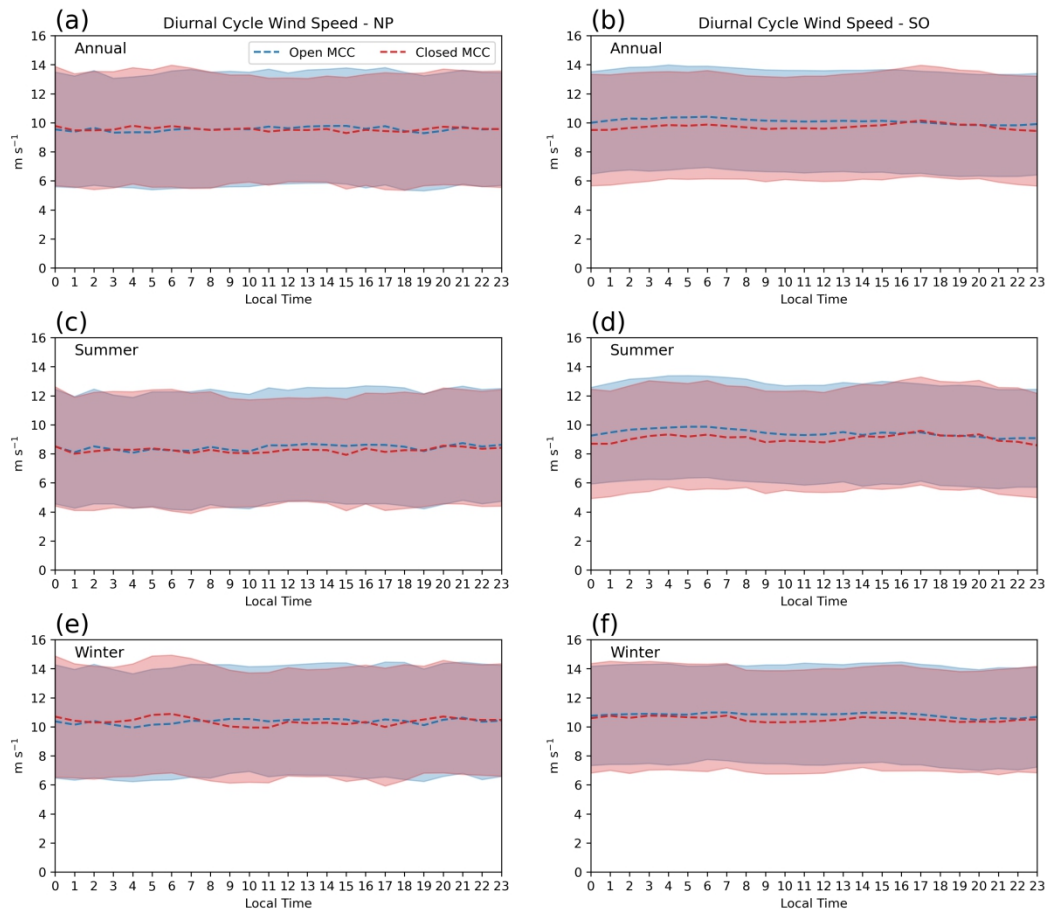


Figure S9. Same as Figure S6 but for near-surface wind speed.