Supplemental Material

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Global Evaluation of Seasonal Precipitation and Temperature Forecasts from NMME
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Supplementary Materials for:

Global evaluation of seasonal precipitation and temperature forecasts from NMME

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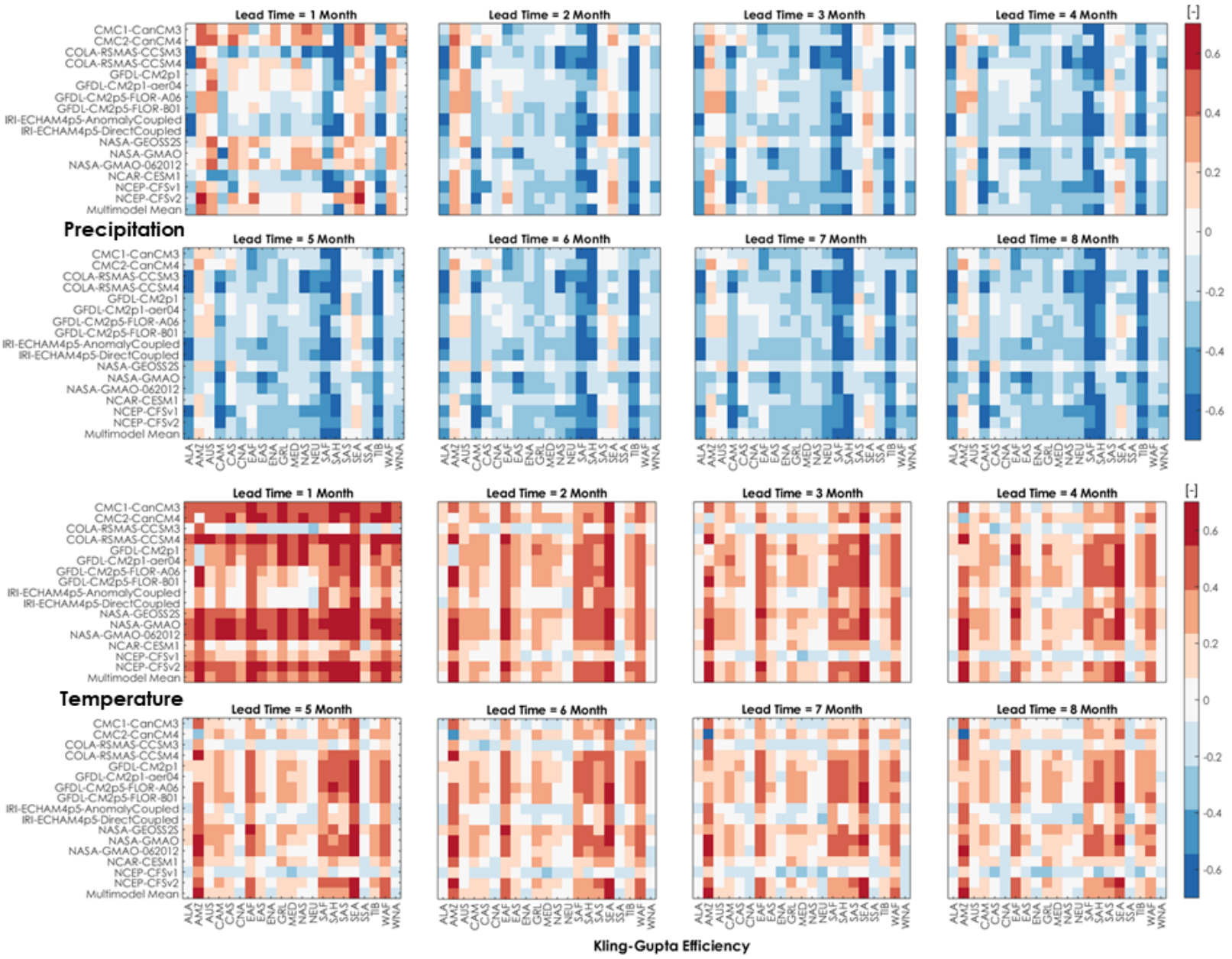


Figure S1: KGE statistics of precipitation and temperature forecasts for different models (y-axis) across different regions (x-axis).

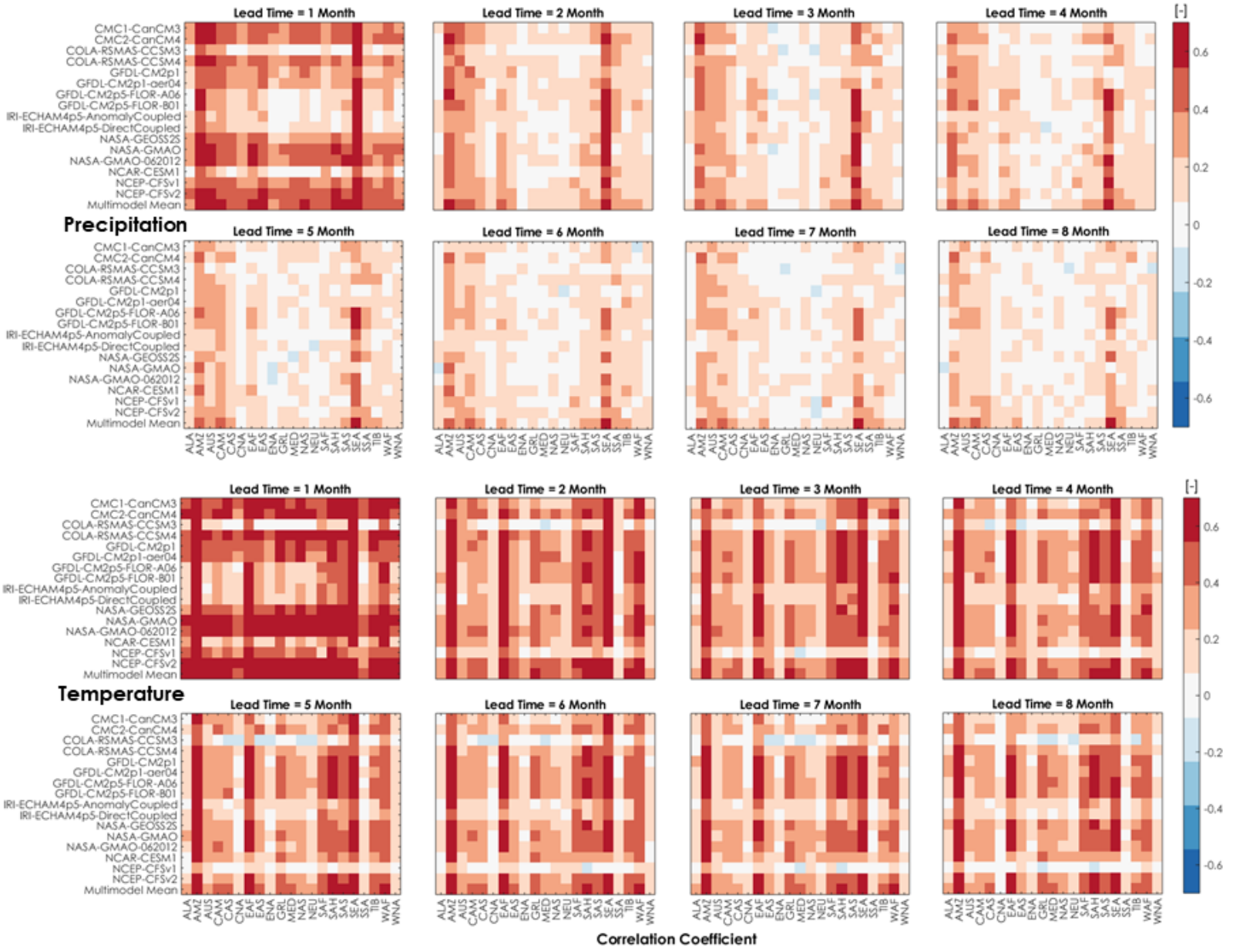


Figure S2: Correlation coefficient of precipitation and temperature forecasts for different lead times.

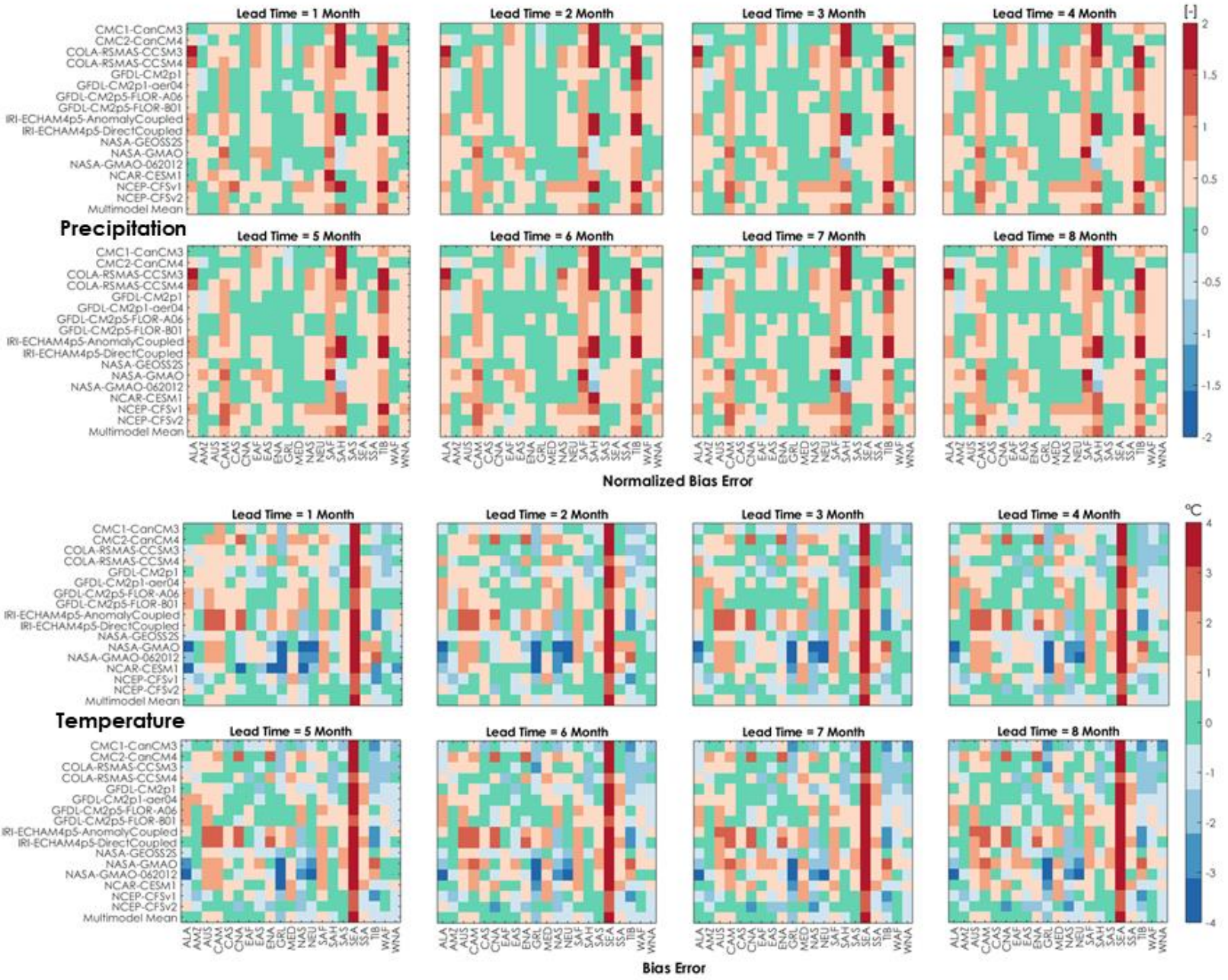


Figure S3: Bias error of precipitation and temperature forecasts for different lead times.

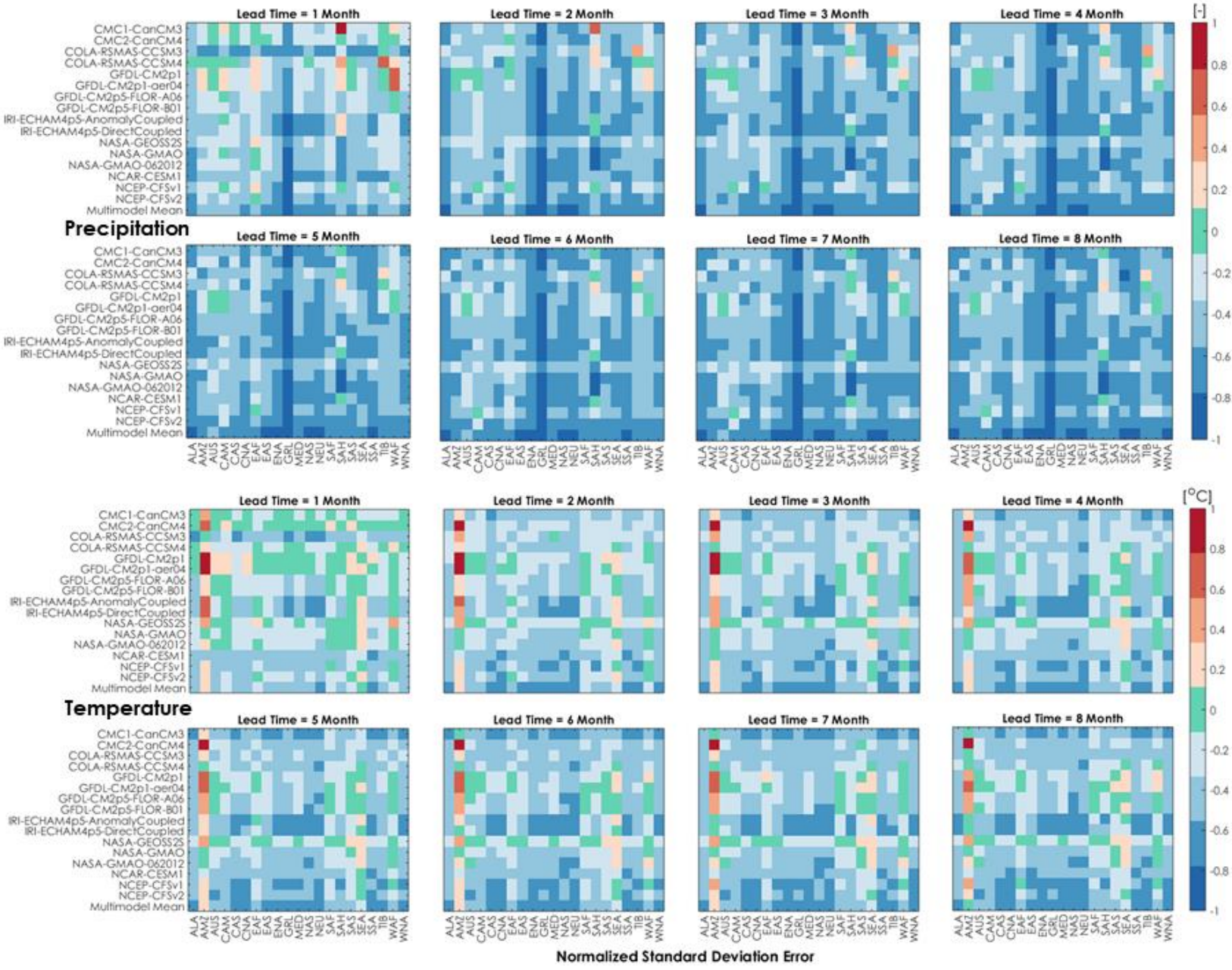
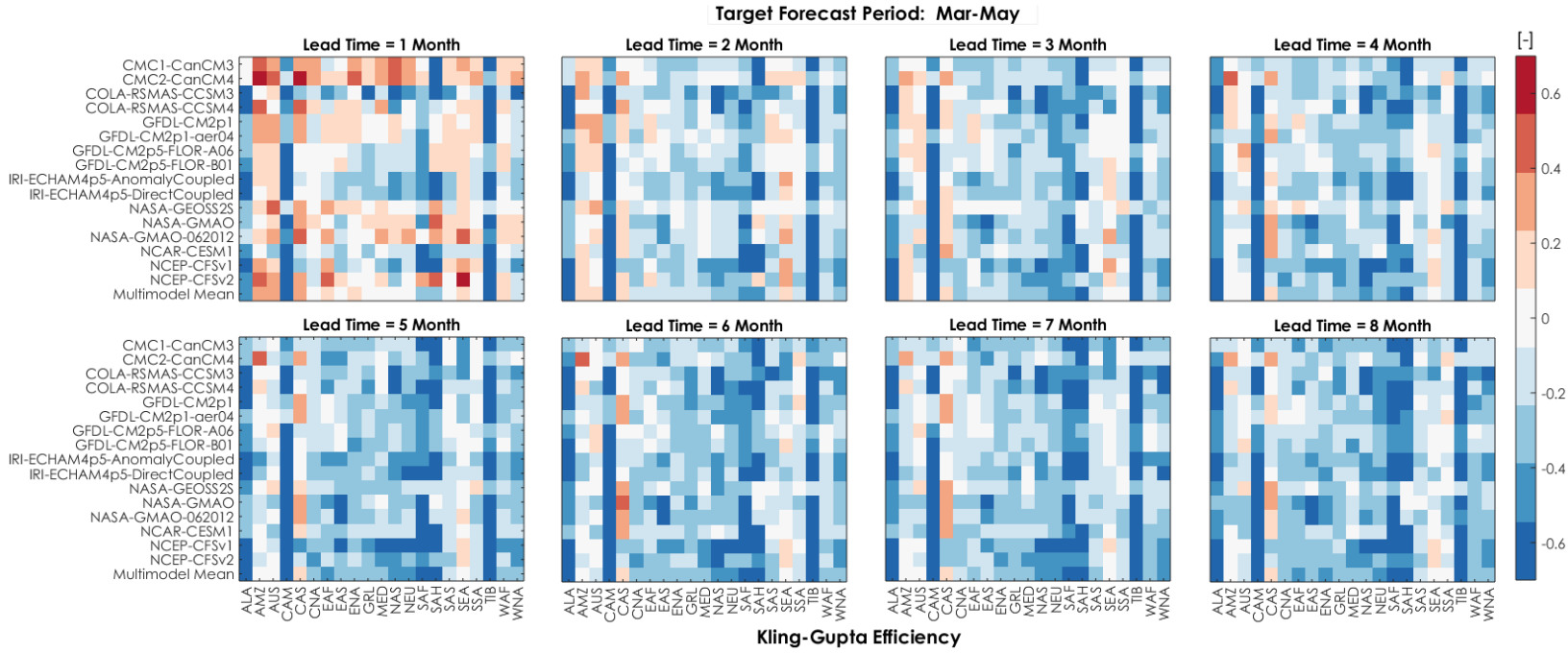
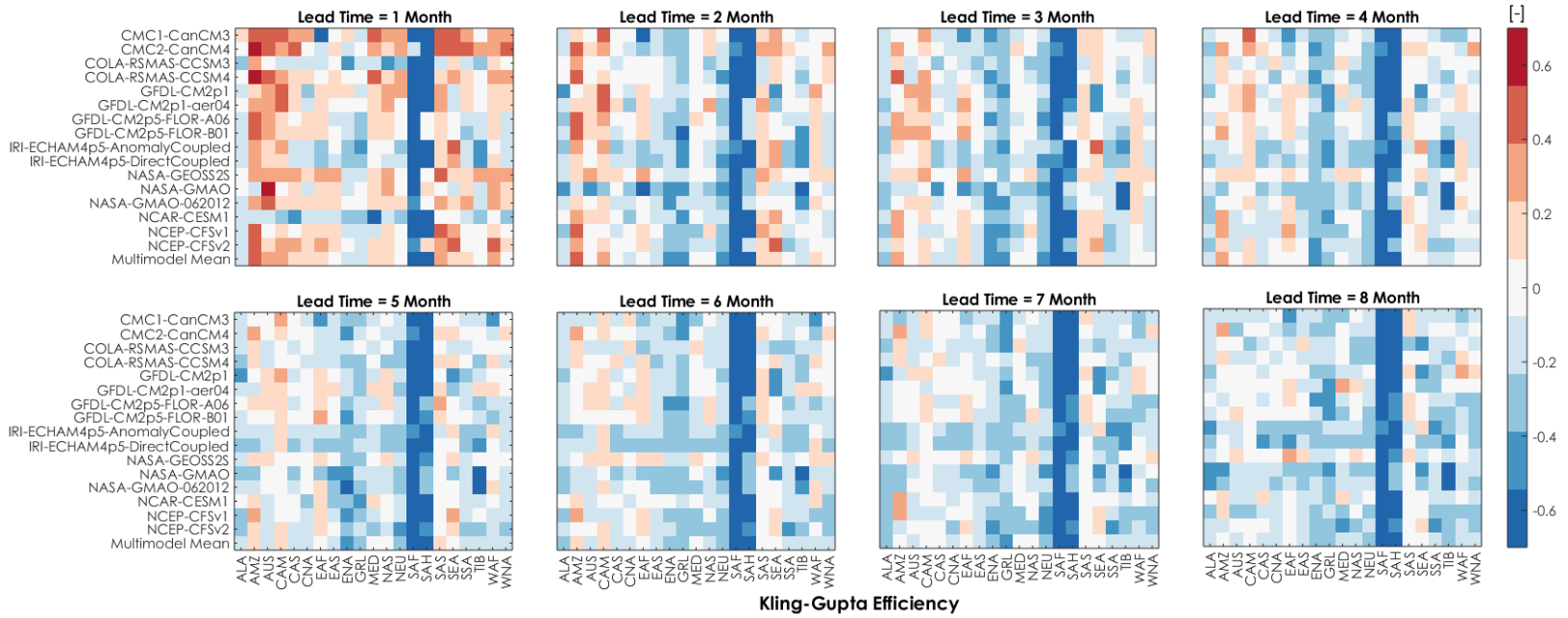


Figure S4: Variability error of precipitation and temperature forecasts for different lead times.


Target Forecast Period: Mar-May
Lead Time = 1 Month
Lead Time = 2 Month
Lead Time = 3 Month
Lead Time = 4 Month
Lead Time = 5 Month
Lead Time = 6 Month
Lead Time = 7 Month
Lead Time = 8 Month
CMC1-CanCM3
CMC2-CanCM4
COLA-RSMAS-CCSM3
COLA-RSMAS-CCSM4
GFDL-CM2p1
GFDL-CM2p1-aer04
GFDL-CM2p5-FLOR-A06
GFDL-CM2p5-FLOR-B01
IRI-ECHAM4p5-AnomalyCoupled
IRI-ECHAM4p5-DirectCoupled
NASA-GEOSS2S
NASA-GMAO
NASA-GMAO-062012
NCAR-CESM1
NCEP-CFSv1
NCEP-CFSv2
Multimodel Mean
ALA AMZ AUS CAM CAS CNA EAF EAS ENA GRL MED NAS NEU SAF SAH SAS SEA SSA TIB WAF WNA
[-]
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
Kling-Gupta Efficiency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Lead Time = 2 Month
Lead Time = 3 Month
Lead Time = 4 Month
Lead Time = 5 Month
Lead Time = 6 Month
Lead Time = 7 Month
Lead Time = 8 Month
CMC1-CanCM3
CMC2-CanCM4
COLA-RSMAS-CCSM3
COLA-RSMAS-CCSM4
GFDL-CM2p1
GFDL-CM2p1-aer04
GFDL-CM2p5-FLOR-A06
GFDL-CM2p5-FLOR-B01
IRI-ECHAM4p5-AnomalyCoupled
IRI-ECHAM4p5-DirectCoupled
NASA-GEOSS2S
NASA-GMAO
NASA-GMAO-062012
NCAR-CESM1
NCEP-CFSv1
NCEP-CFSv2
Multimodel Mean
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[-]
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
Kling-Gupta Efficiency

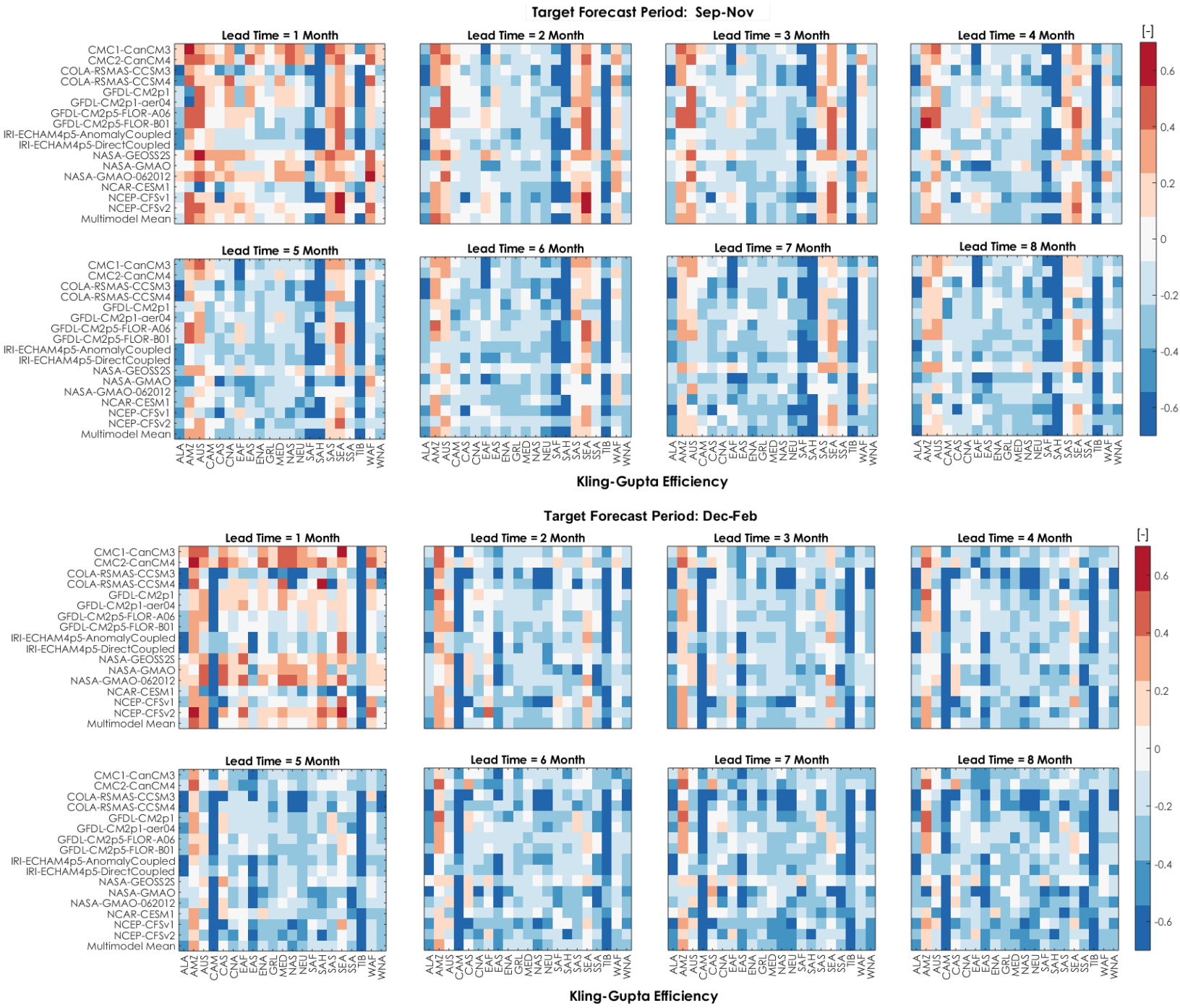
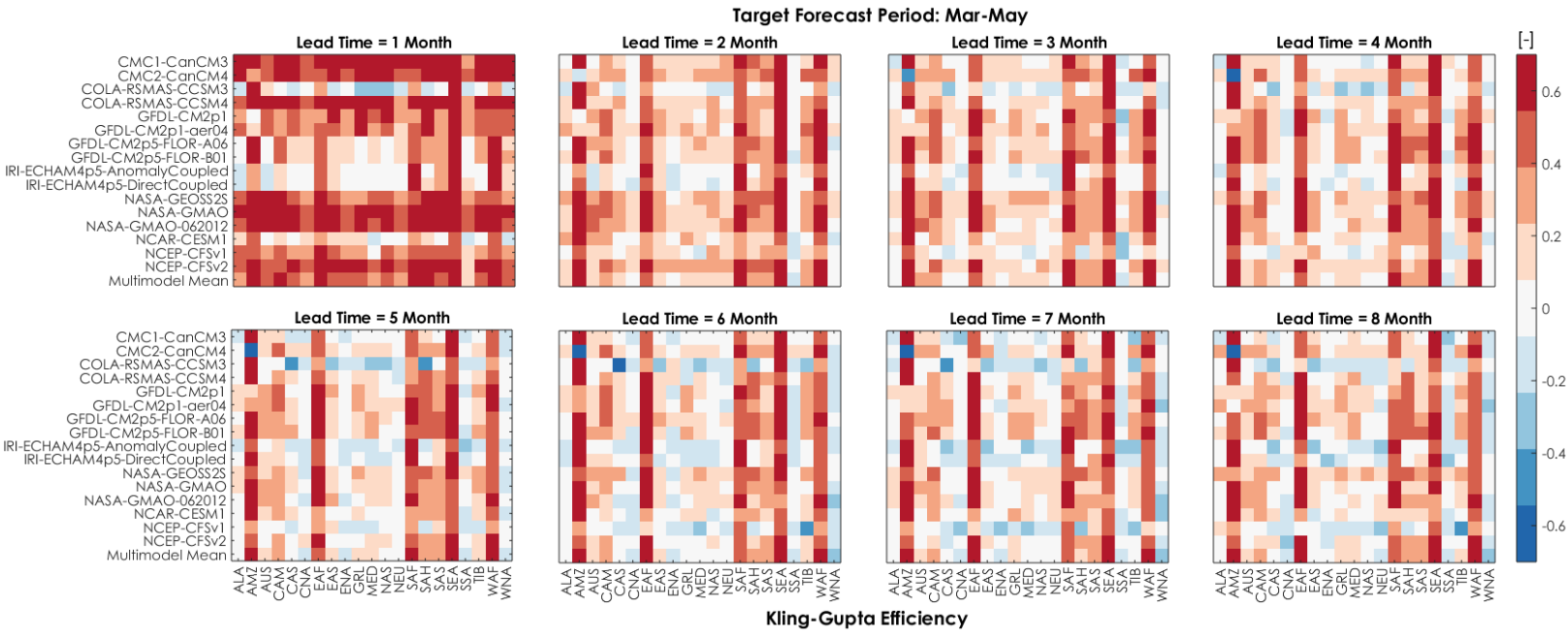


Figure S5: Seasonal breakdown of the KGE score for precipitation.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Lead Time = 4 Month
Lead Time = 5 Month
Lead Time = 6 Month
Lead Time = 7 Month
Lead Time = 8 Month
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CMC2-CanCM4
COLA-RSMAS-CCSM3
COLA-RSMAS-CCSM4
GFDL-CM2p1
GFDL-CM2p1-aer04
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IRI-ECHAM4p5-AnomalyCoupled
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NASA-GEOSS2S
NASA-GMAO
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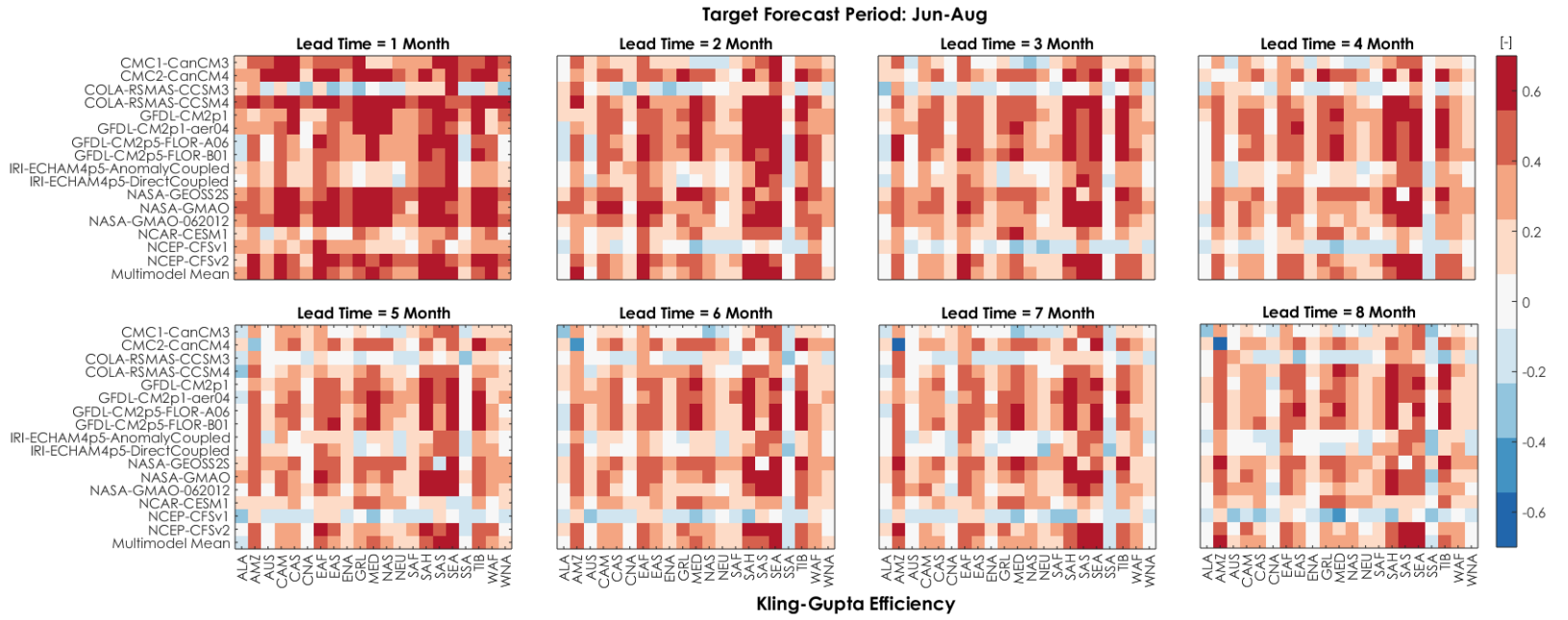
NCEP-CFSv1
NCEP-CFSv2
Multimodel Mean
ALA AMZ AUS CAM CAS CNA EAF EAS ENA GRL MED NAS NEU SAF SAH SAS SEA SSA TIB WAF WNA
[-]
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
Kling-Gupta Efficiency


Target Forecast Period: Jun-Aug
Lead Time = 1 Month
Lead Time = 2 Month
Lead Time = 3 Month
Lead Time = 4 Month
Lead Time = 5 Month
Lead Time = 6 Month
Lead Time = 7 Month
Lead Time = 8 Month
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CMC2-CanCM4
COLA-RSMAS-CCSM3
COLA-RSMAS-CCSM4
GFDL-CM2p1
GFDL-CM2p1-aer04
GFDL-CM2p5-FLOR-A06
GFDL-CM2p5-FLOR-B01
IRI-ECHAM4p5-AnomalyCoupled
IRI-ECHAM4p5-DirectCoupled
NASA-GEOSS2S
NASA-GMAO
NASA-GMAO-062012
NCAR-CESM1
NCEP-CFSv1
NCEP-CFSv2
Multimodel Mean
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[-]
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
Kling-Gupta Efficiency

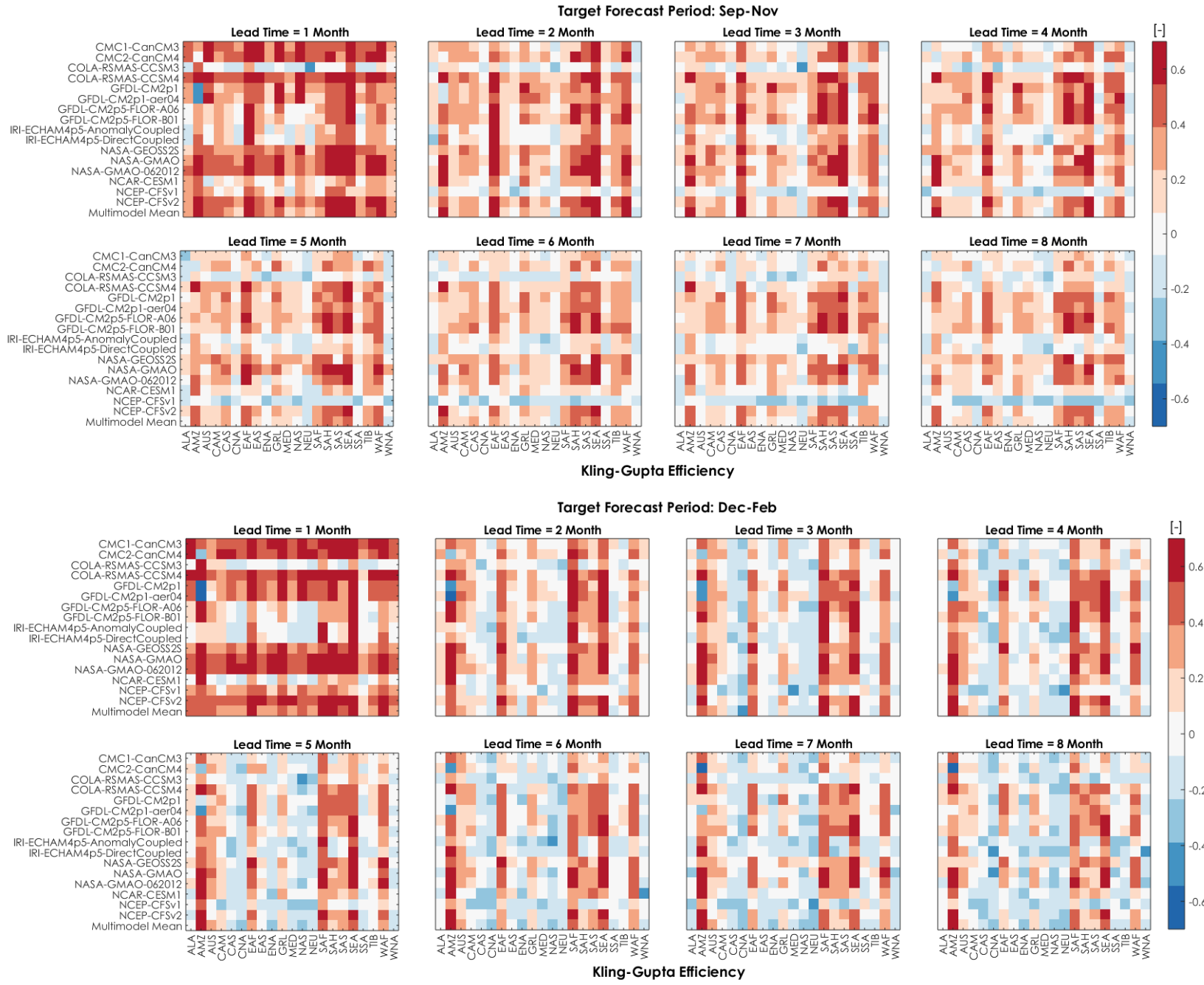

Figure S6: Seasonal breakdown of the KGE score for temperature.

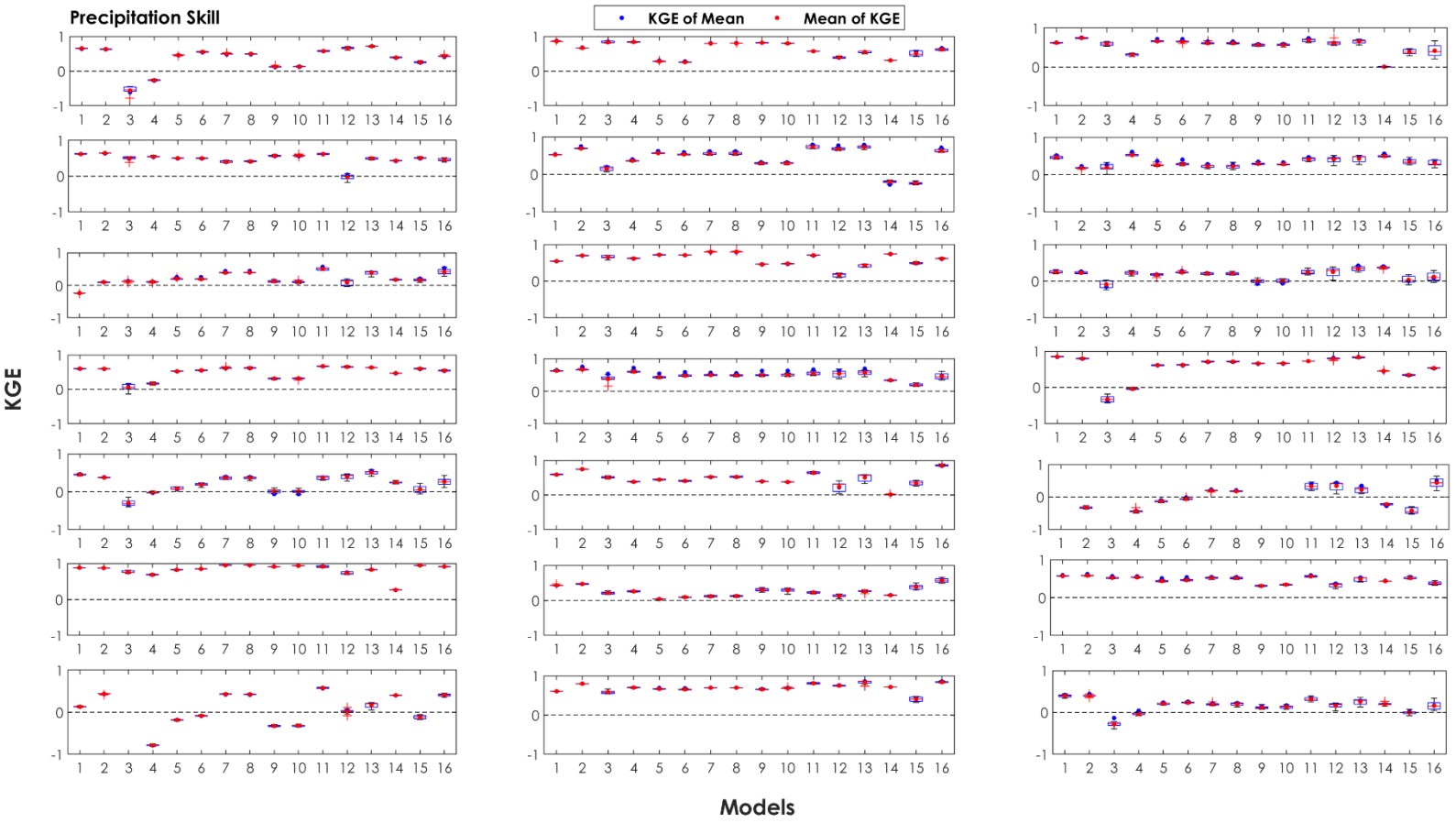

Figure S7: Comparison of the KGE statistic calculated in different ways. This figure shows the results for precipitation. Similar results were found in case of temperature as well (not included here). The models are numbered in the following way: CMC1-CanCM3 [1], CMC2-CanCM4 [2],COLA-RSMAS-CCSM3 [3], COLA-RSMAS-CCSM4 [4], GFDL-CM2p1 [5], GFDL-CM2p1-aer04 [6], GFDL-CM2p5-FLOR-A06 [7], GFDL-CM2p5-FLOR-B01 [8], IRI-ECHAM4p5-AnomalyCoupled [9], IRI-ECHAM4p5-DirectCoupled [10], NASA-GEOSS2S [11], NASA-GMAO [12], NASA-GMAO-062012 [13], NCAR-CESM1 [14], NCEP-CFSv1 [15], NCEP-CFSv2 [16].

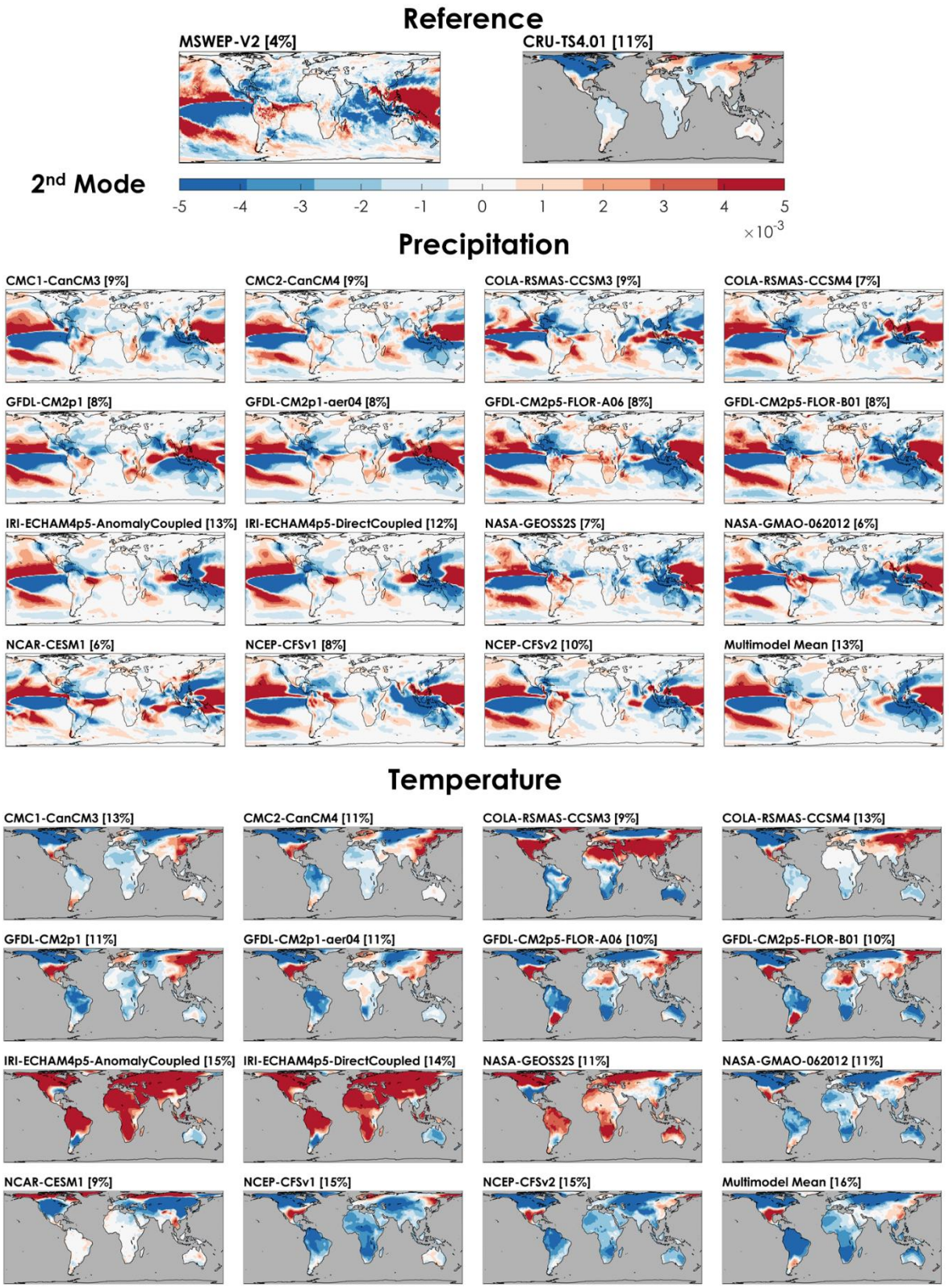

Figure S8: Comparison of the second EOF mode of variability from different models and the reference for both precipitation and temperature.

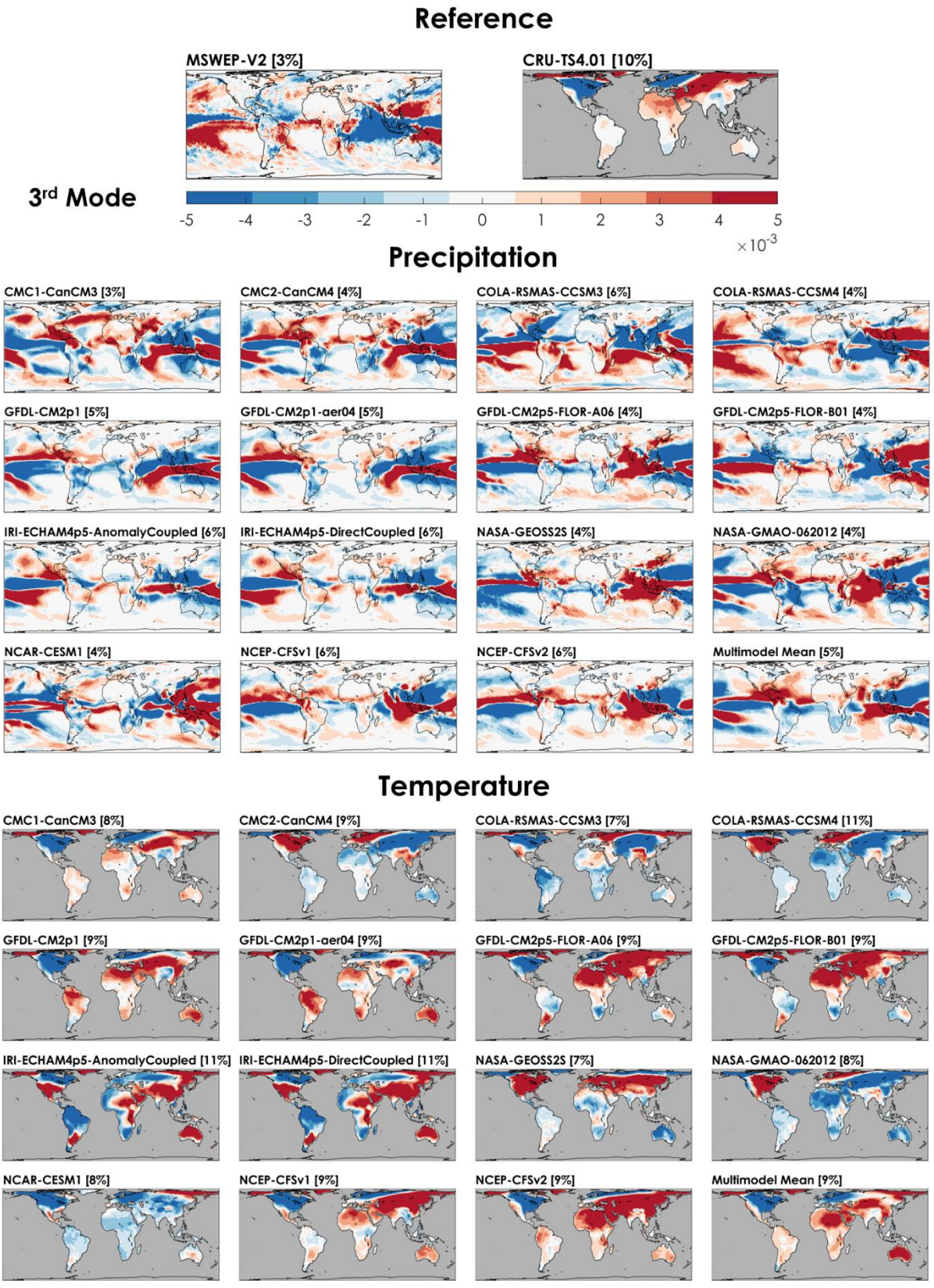

Figure S9: Comparison of the third EOF mode of variability from different models and the reference for both precipitation and temperature.