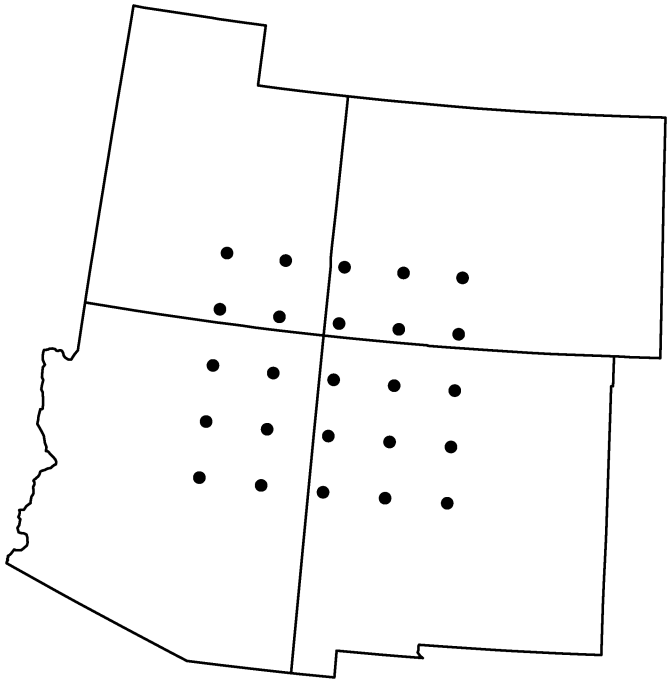
SPQR spacetime model fit metrics

Locations

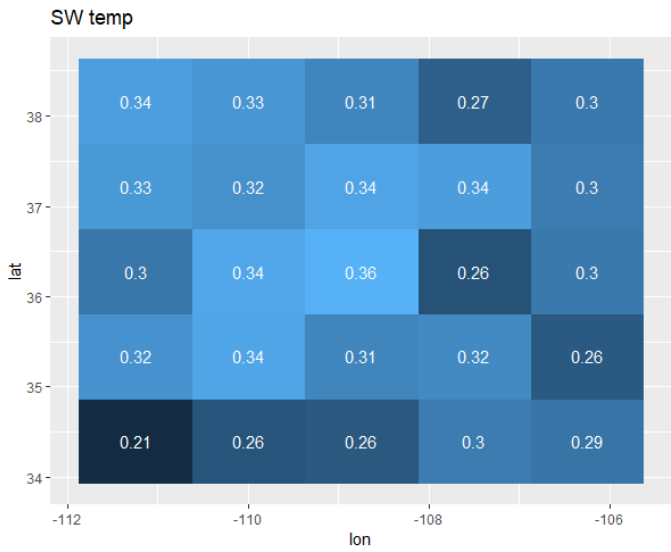


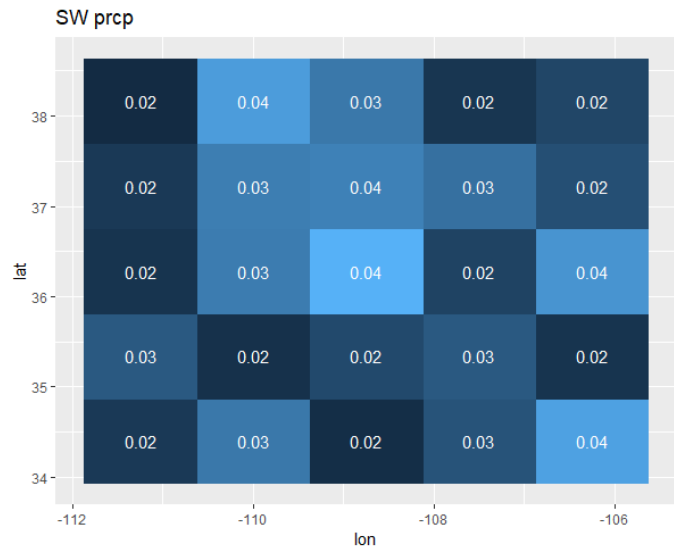
- I’m calling them SW and SE, though that is not entirely correct.
- Distances between grid points are somewhere in the range of 1-6 degrees

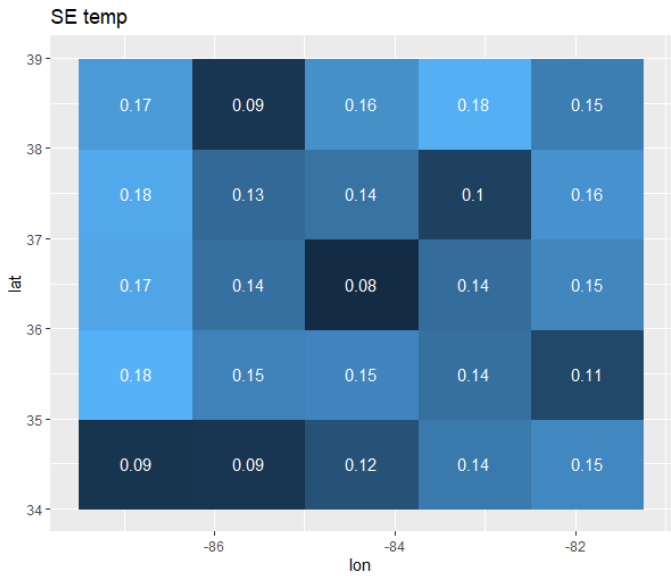
Wasserstein distance

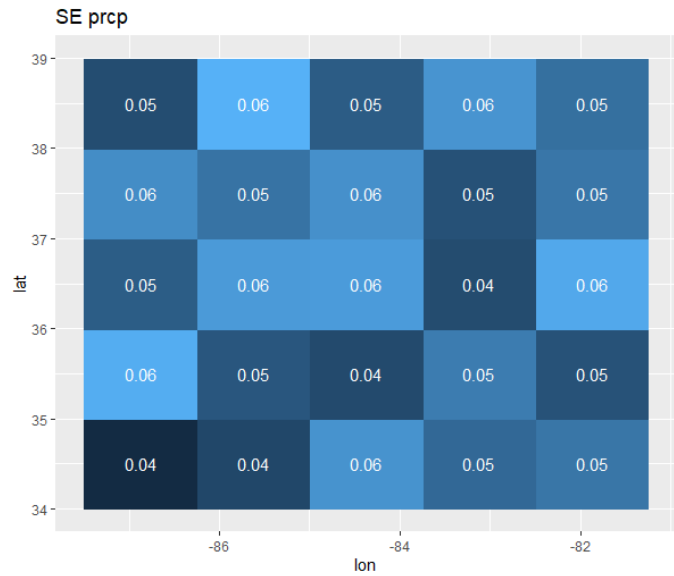
	Southwest	Southeast
Temp	0.304 (0.035)	0.139 (0.03)
Prcp	0.027 (0.009)	0.052 (0.007)

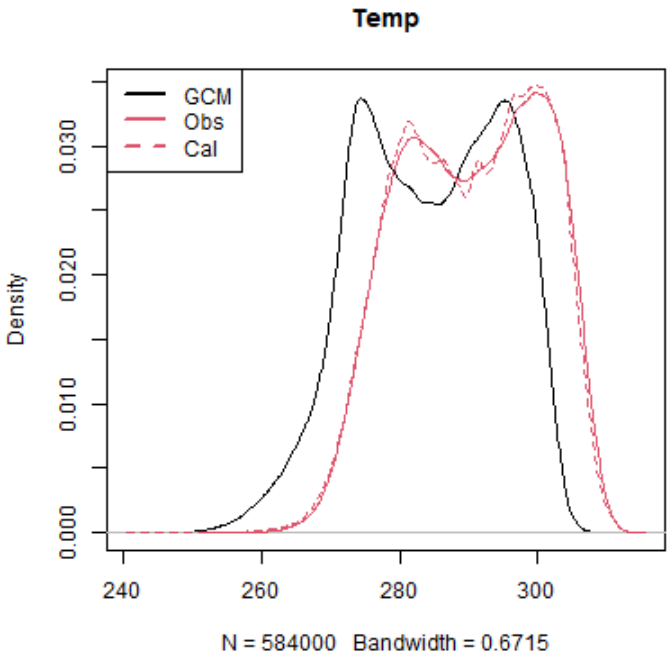
- Mean (SD) of Wasserstein distance across the 25 locations in each region
- Each value is computed based on all 12 months of data
- Values at individual grid cells on next slide
- Additional measure – RMSE of cross-correlations:
  - SW: 0.0002
  - SE: 0.0001

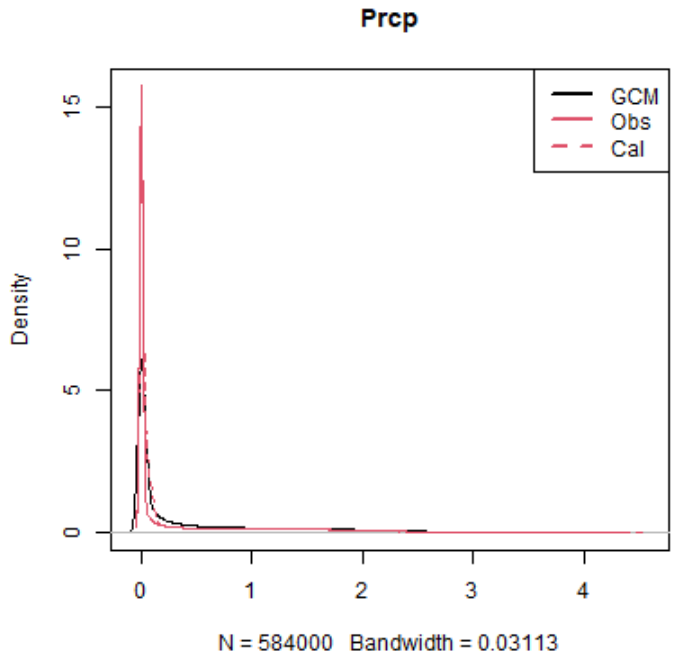

SW temp
0.34 0.33 0.31 0.27 0.3
0.33 0.32 0.34 0.34 0.3
0.3 0.34 0.36 0.26 0.3
0.32 0.34 0.31 0.32 0.26
0.21 0.26 0.26 0.3 0.29
38
37
36
35
34
lat
-112
-110
-108
-106
lon

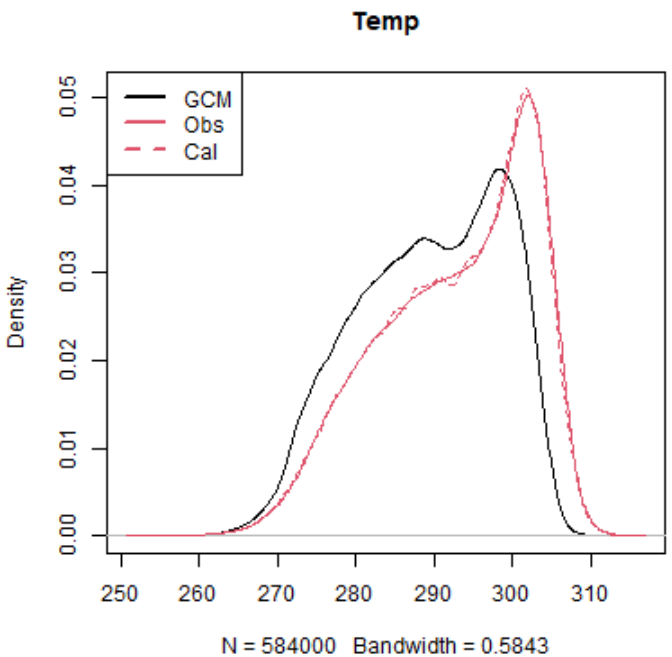

SW prcp
0.02 0.04 0.03 0.02 0.02
0.02 0.03 0.04 0.03 0.02
0.02 0.03 0.04 0.02 0.04
0.03 0.02 0.02 0.03 0.02
0.02 0.03 0.02 0.03 0.04
38
37
36
35
34
lat
-112
-110
-108
-106
lon

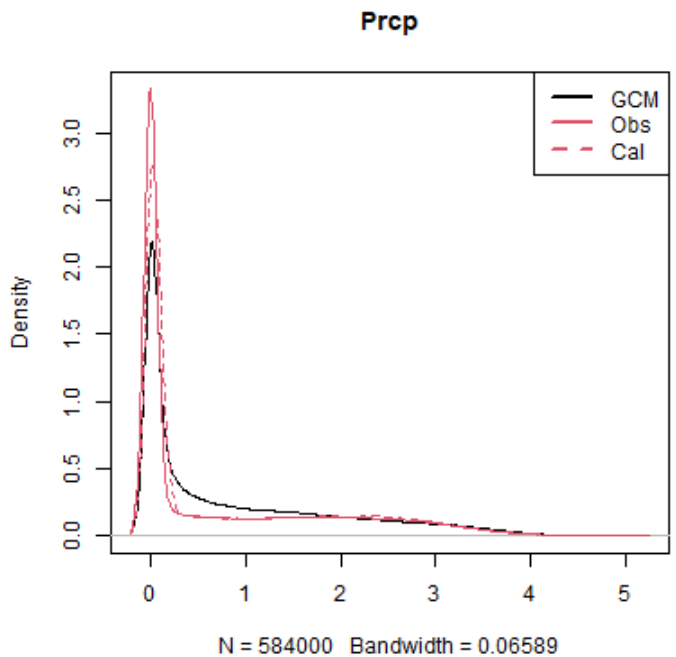

SE temp
0.17 0.09 0.16 0.18 0.15
0.18 0.13 0.14 0.1 0.16
0.17 0.14 0.08 0.14 0.15
0.18 0.15 0.15 0.14 0.11
0.09 0.09 0.12 0.14 0.15
39
38
37
36
35
34
lat
-86
-84
-82
lon


SE prcp
0.05 0.06 0.05 0.06 0.05
0.06 0.05 0.06 0.05 0.05
0.05 0.06 0.06 0.04 0.06
0.06 0.05 0.04 0.05 0.05
0.04 0.04 0.06 0.05 0.05
39
38
37
36
35
34
lat
-86
-84
-82
lon

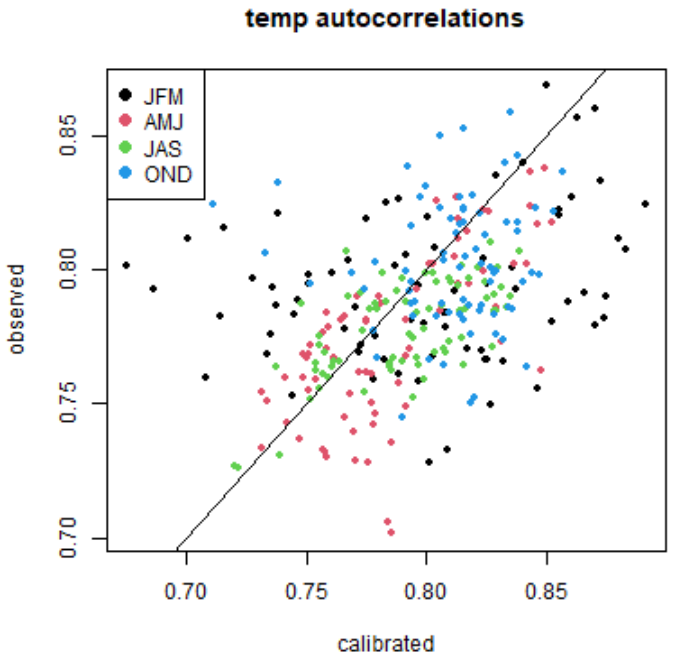


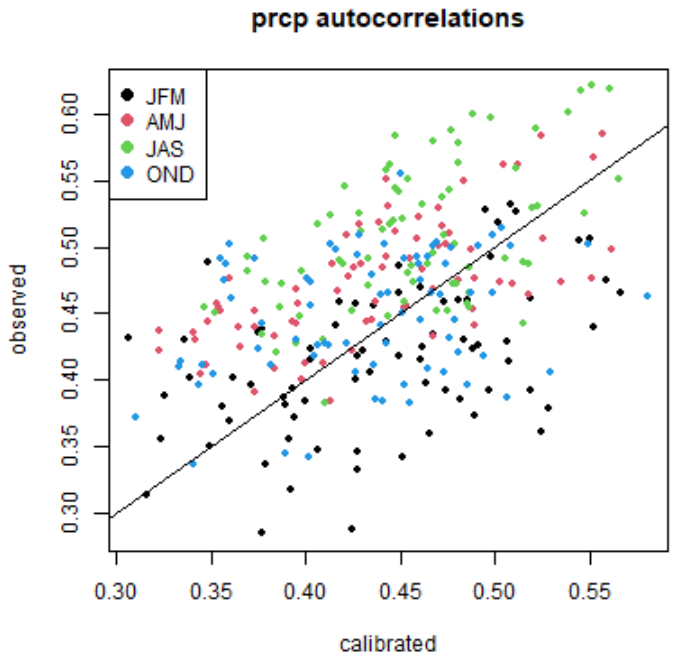


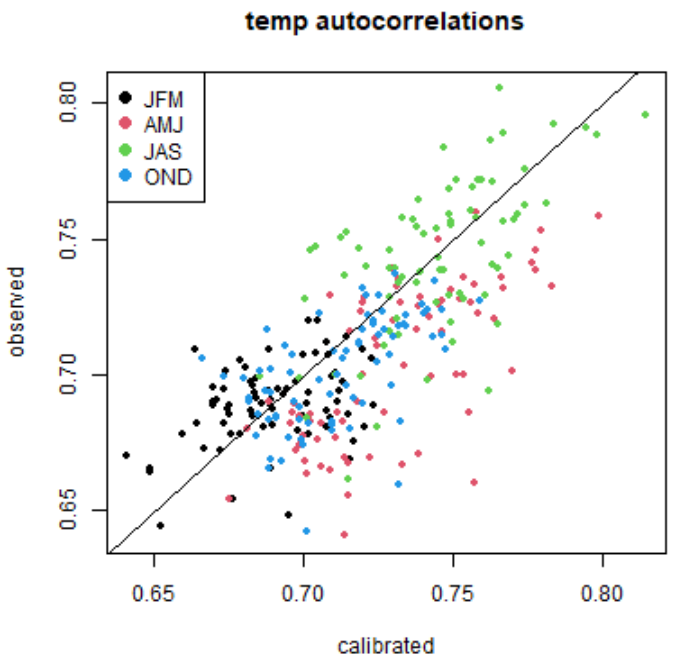


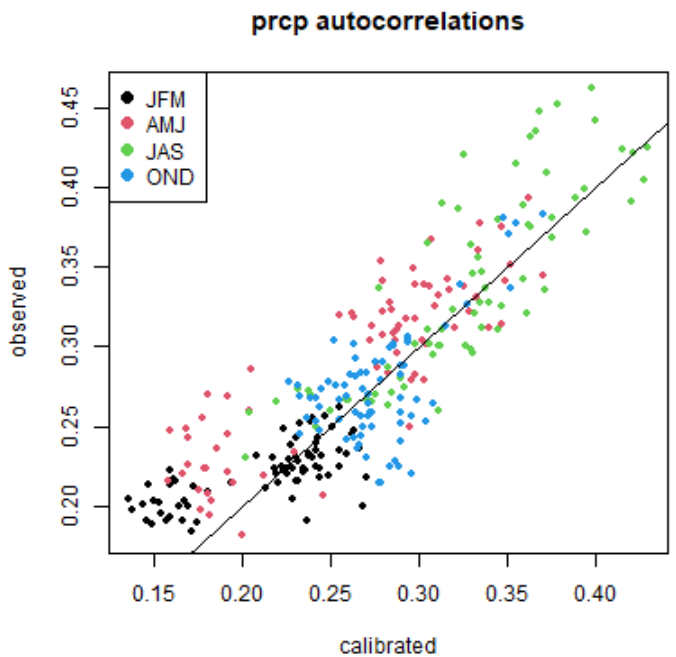


SW on top, SE at the bottom
All months, all locations

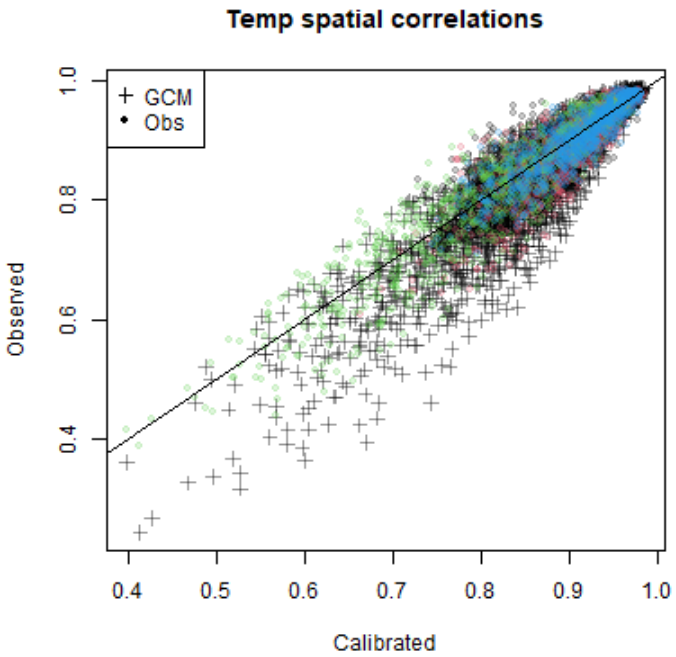


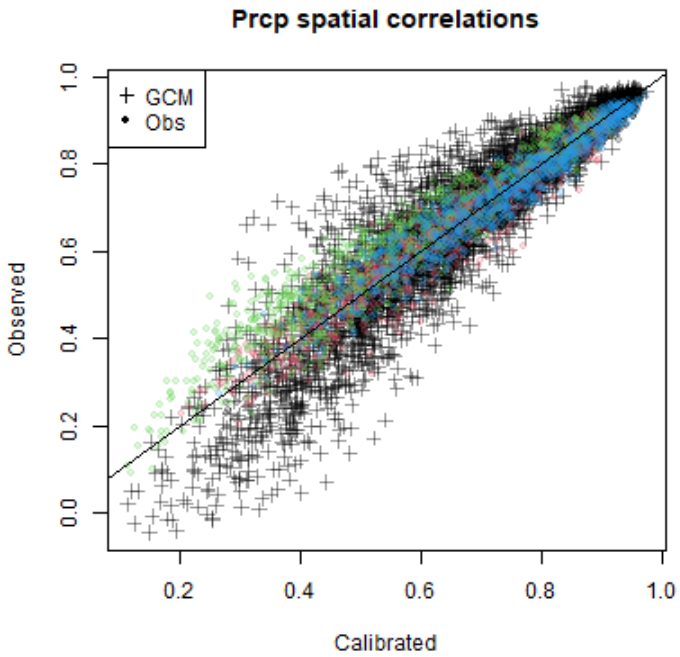


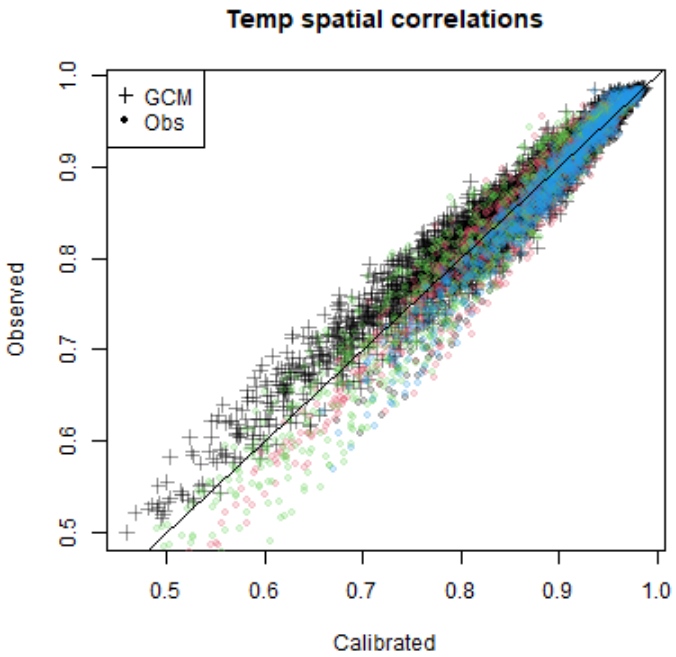


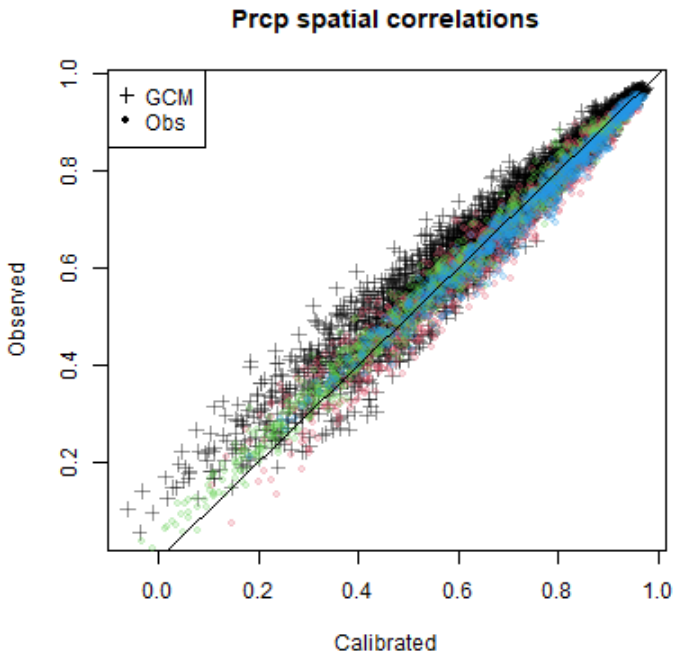


- Autocorrelations at each grid cell and each month (25 x 12 values)
- SW on top, SE in the bottom
- SE has less variability, but low prcp has more bias
- I don’t have the autocorrelations for the GCM data saved, but I can overlay those

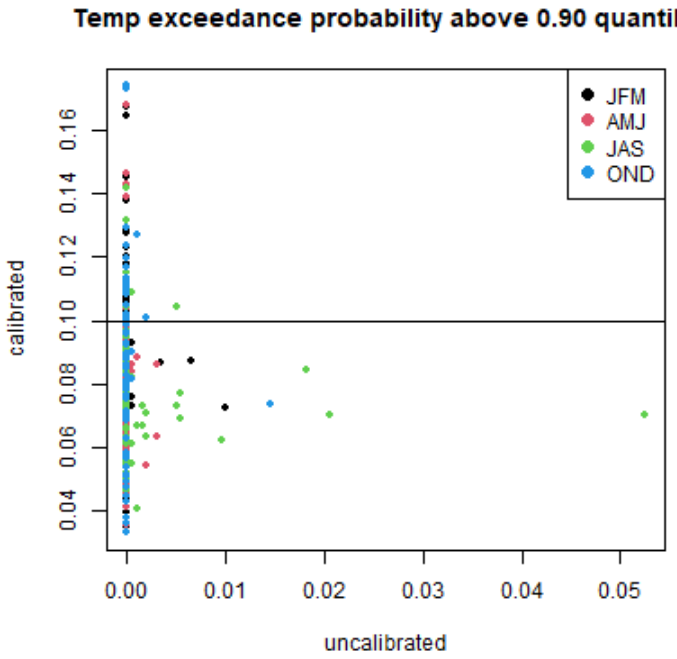


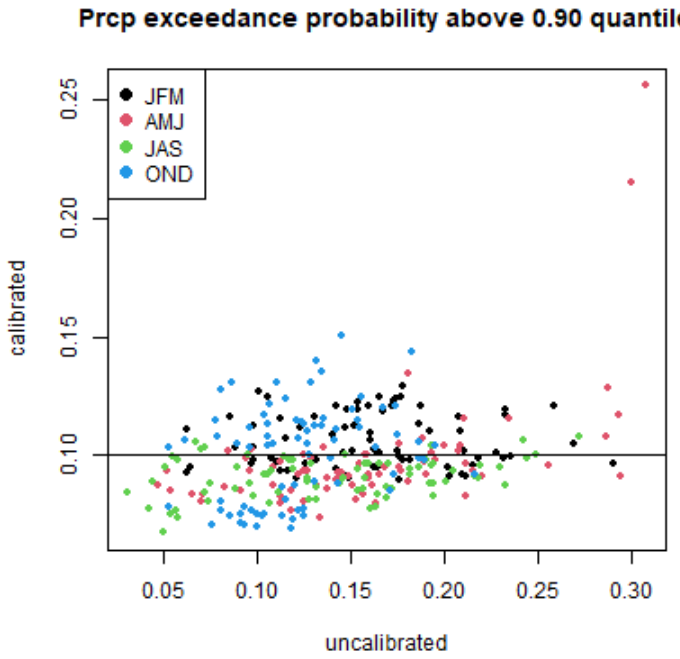


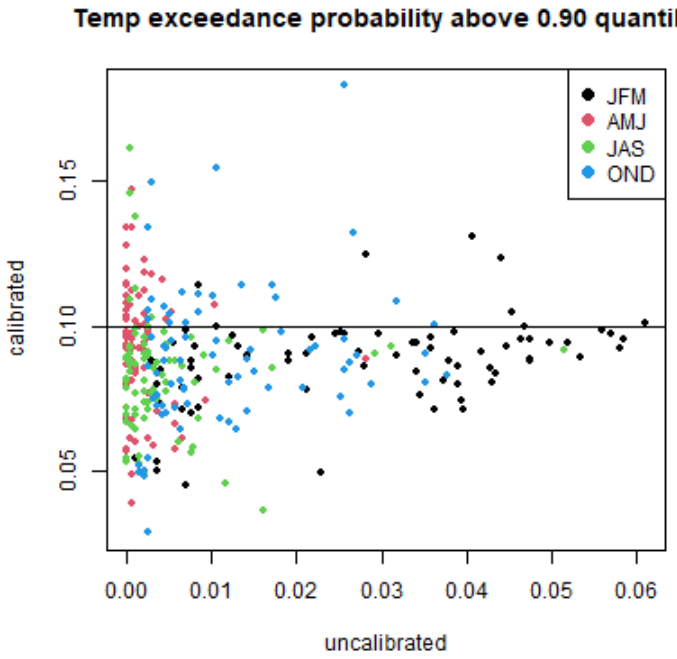


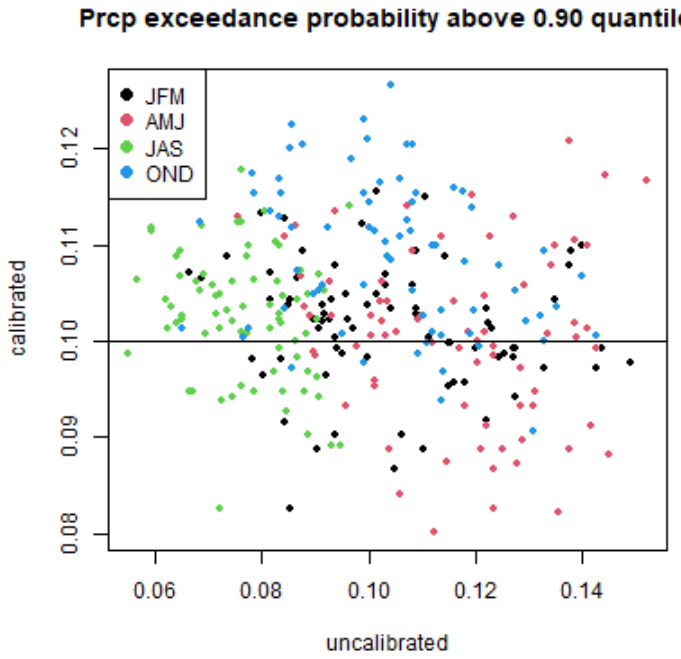


- Spatial correlations at each grid cell pair and each month (300 x 12 values)
- SW on top, SE in the bottom
- GCM spatial correlations overlaid
- SE has less variability
- Low values have more variability in all plots

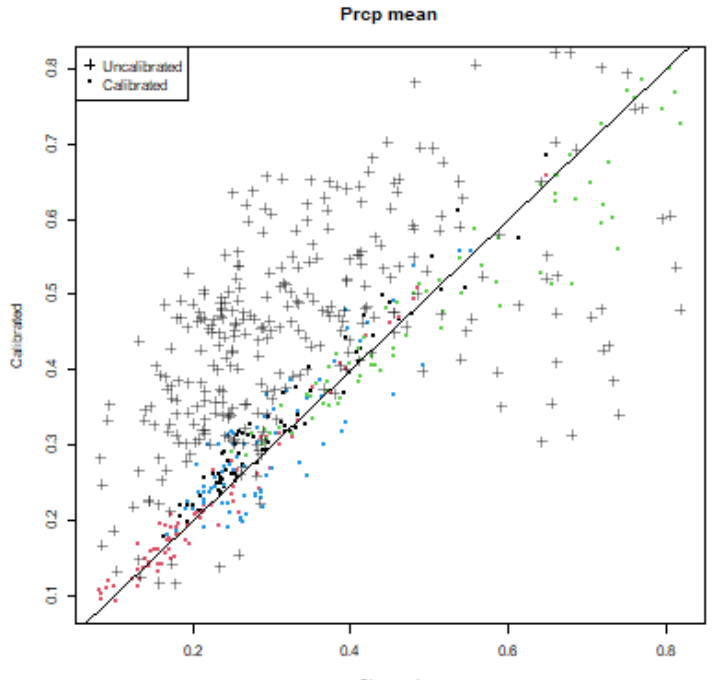


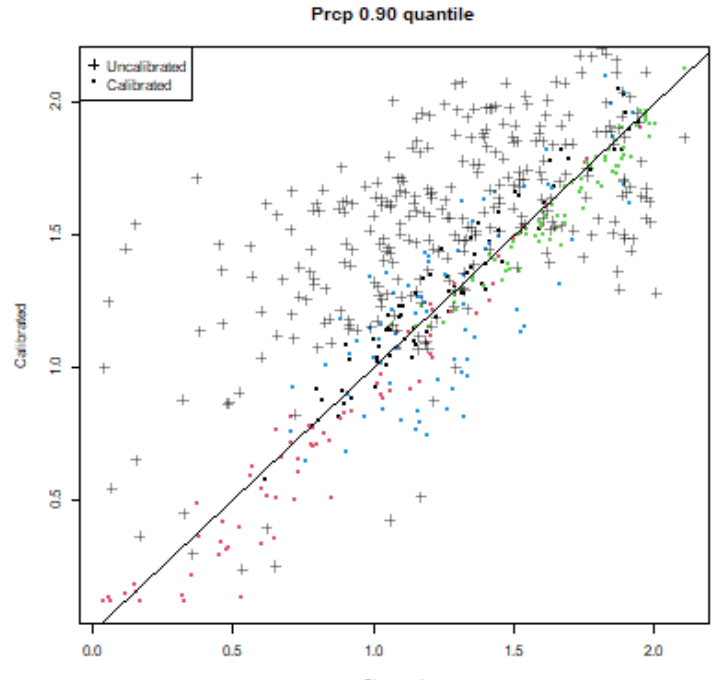


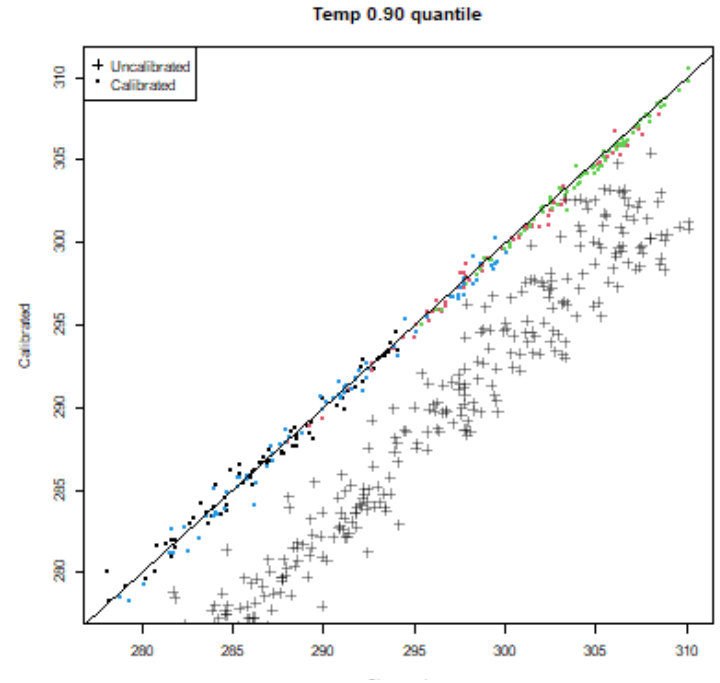


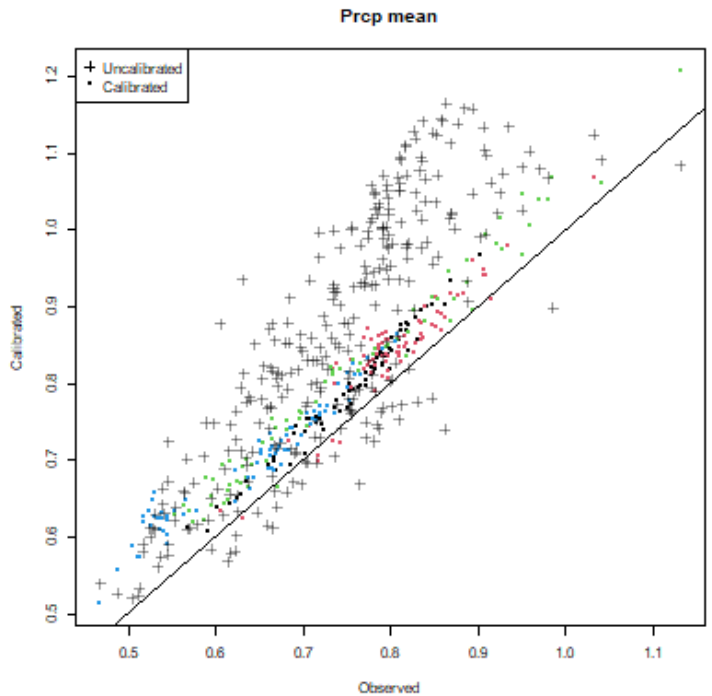


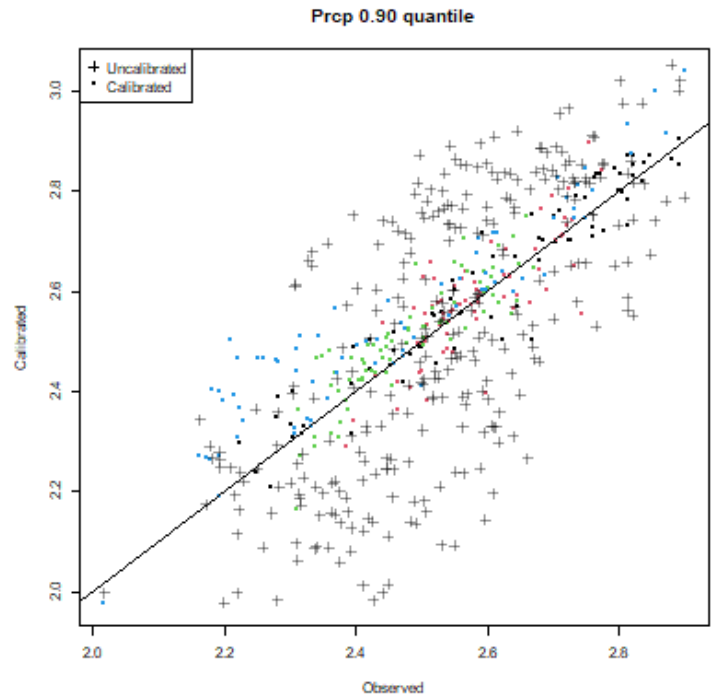
- Exceedance probabilities at each grid cell and each month (25 x 12 values)
- SW on top, SE in the bottom
- True value always 0.10 in this case
- Temp interpretation:
  - GCM data for SW has very thin upper tails (x-axis)
  - SE also, but better than SW
  - Ranges seem roughly the same after calibration (y-axis)
- Prcp interpretation:
  - SW had a LOT more variability in its upper tail mass than SE (values ~0.30)
  - For SE, GCM actually lines up decently
  - After calibration, both SE and SW have similar ranges (except some SW outliers)

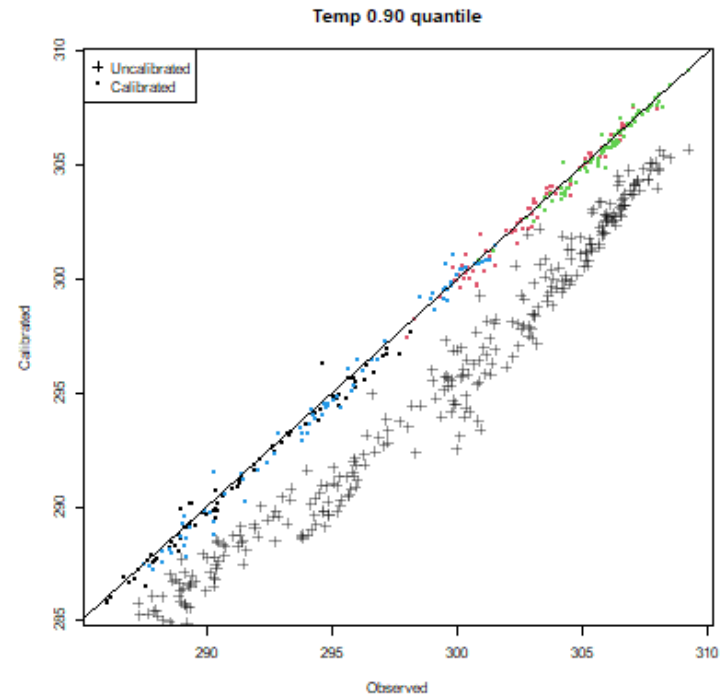

Prcp mean
Uncalibrated
Calibrated
Calibrated
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.2
0.4
0.6
0.8


Prcp 0.90 quantile
Uncalibrated
Calibrated
Calibrated
0.5
1.0
1.5
2.0
0.0
0.5
1.0
1.5
2.0


Temp 0.90 quantile
Uncalibrated
Calibrated
Calibrated
290
285
290
295
300
305
310
280
285
290
295
300
305
310


Prcp mean
Uncalibrated
Calibrated
Calibrated
0.5
0.6
0.7
0.8
0.9
1.0
1.1
1.2
0.5
0.6
0.7
0.8
0.9
1.0
1.1
Observed


Prcp 0.90 quantile
Uncalibrated
Calibrated
Calibrated
2.0
2.2
2.4
2.6
2.8
3.0
2.0
2.2
2.4
2.6
2.8
Observed


Temp 0.90 quantile
Uncalibrated
Calibrated
Calibrated
285
290
295
300
305
310
290
295
300
305
310
Observed