



Table S1. Average between-model **coefficient of variation** for projected daily minimum temperature and excess emergency department visits (ED) between May and September for two projection periods. Statistics were first calculated on each day across 10 model simulations from NA-CORDEX and then averaged across days.

	Future Minimum Temperature		Annual Excess ED Visits	
	2050-2059	2090-2099	2050-2059	2090-2099
Raw	0.07	0.08	1.97	0.63
Linear QM	0.03	0.04	0.39	0.25
Empirical QM	0.03	0.04	0.41	0.23
Robust QM	0.03	0.04	0.41	0.23
Normal Mapping	0.03	0.04	0.39	0.25
QDM	0.02	0.03	0.28	0.23

Table S2. Sensitivity Analysis by varying the df for temperature and time. Projected excess temperature-related ED visits per year and 95% projection intervals (PI) in the 2050s and 2090s after applying bias-correction with quantile delta mapping. Model for the primary analysis is indicated in bold.

DF _{temp}	DF _{time}	Annual Excess ED Visits (Pooled)	
		2050-2059	2090-2099
2	4	3000 (900-5500)	7200 (3000-12300)
2	5	2900 (900-5200)	7000 (3000-11900)
2	6	3000 (1100-5300)	7300 (3200-12300)
2	7	3100 (1100-5500)	7600 (3400-12600)
3	4	2800 (700-5500)	6500 (1600-12500)
3	5	2800 (800-5400)	6800 (1900-12800)
3	6	2600 (700-5000)	5900 (1000-11700)
3	7	3000 (1000-5600)	7100 (2100-13200)
4	4	3000 (800-6000)	7400 (1800-14300)
4	5	2700 (700-5300)	6100 (700-12800)
4	6	2500 (600-5100)	5500 (100-12000)
4	7	2300 (900-5700)	7000(1300-13700)

Example R Code

```
#### Implementing quantile-mapping bias correction methods
```

```
# Obs = observations during historical period
```

```
# Mod.Hist = climate model output during historical period
```

```
# Mod.Proj = climate model output during projection period.
```

```
library('qmap')
```

```
### QM1: Linear transform function
```

```
qml.fit <- fitQmap(Obs, Mod.Hist, method = "PTF", transfun = "linear", wet.day =  
FALSE, cost = "RSS")
```

```

qm1.proj <- doQmapPTF(Mod.Hist, qm1.fit)
qm1.hist <- doQmapPTF(Mod.Proj, qm1.fit)

### QM2: Empirical quantile mapping
qm2.fit <- fitQmapQUANT(Obs, Mod.Hist, qstep = 0.01, wet.day = FALSE)
qm2.proj <- doQmapQUANT(Mod.Proj[check.na], qm2.fit)
qm2.hist <- doQmapQUANT(Mod.Hist, qm2.fit, qstep = 0.01, wet.day = FALSE)

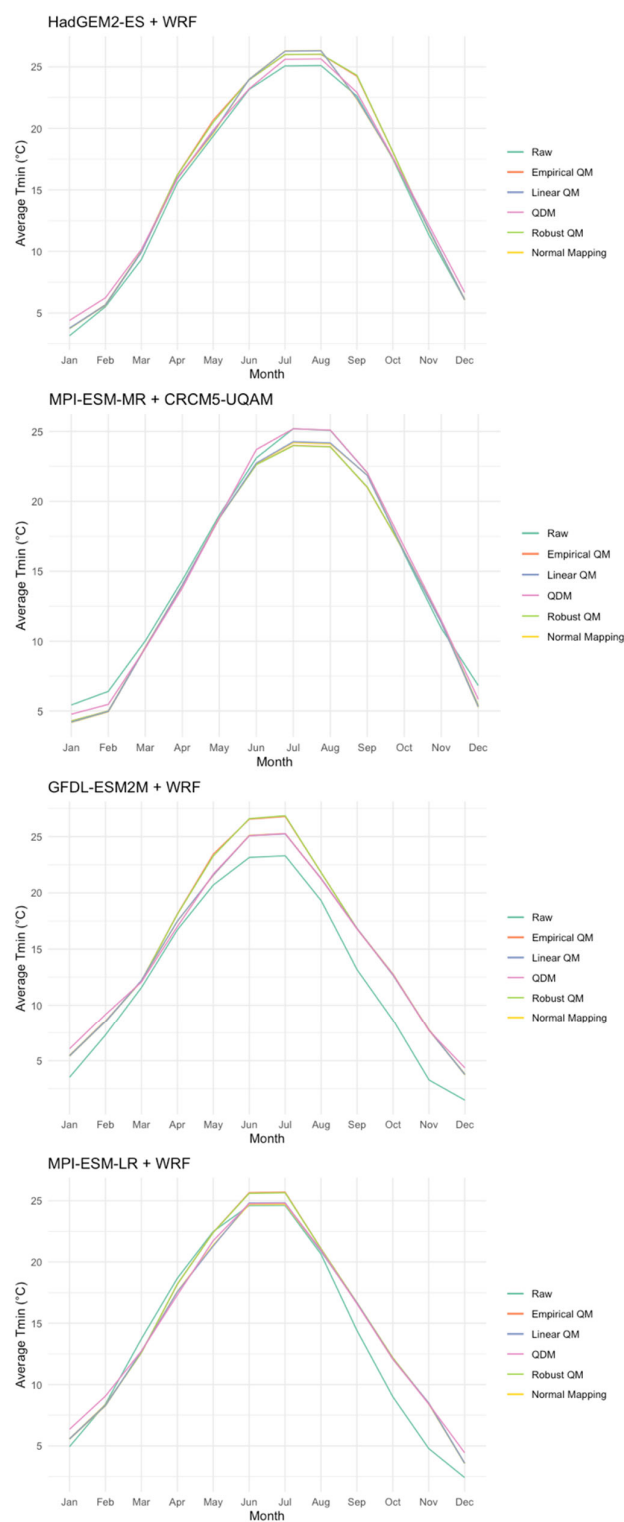
### QM3: Empirical robust quantile mapping (non-parametric)
qm3.fit <- fitQmap(Obs, Mod.Hist, qstep = 0.01, method = "RQUANT", wet.day = FALSE)
qm3.proj <- doQmap(Mod.Proj, qm3.fit, type = "linear")
qm3.hist <- doQmap(Mod.Hist, qm3.fit, type = "linear")

### QM4: Normal distributional mapping
qm4.fit <- fitQmap(Obs, Mod.Hist, qstep = 0.01, method = "DIST", dist = "norm",
wet.day = FALSE, optim.method = "CG")
qm4.proj <- doQmap(Mod.Proj, qm4.fit)
qm4.hist <- doQmap(Mod.Hist, qm4.fit)

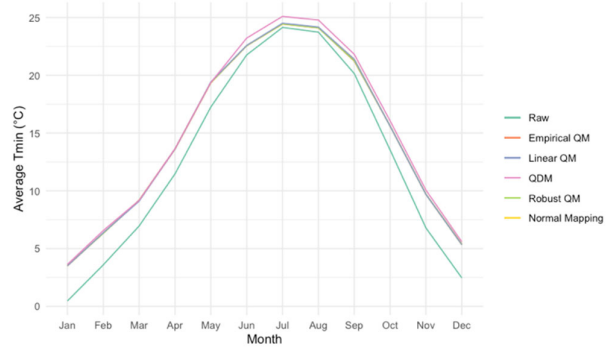
### QM5: Quantile delta mapping
library(MBC)
qm5.proj <- QDM(o.c = Obs, m.c = Mod.Hist, m.p = Mod.Proj, jitter.factor =
0.01)$mhat.p
qm5.hist <- QDM(o.c = Obs, m.c = Mod.Hist, m.p = Mod.Proj, jitter.factor =
0.01)$mhat.c

```

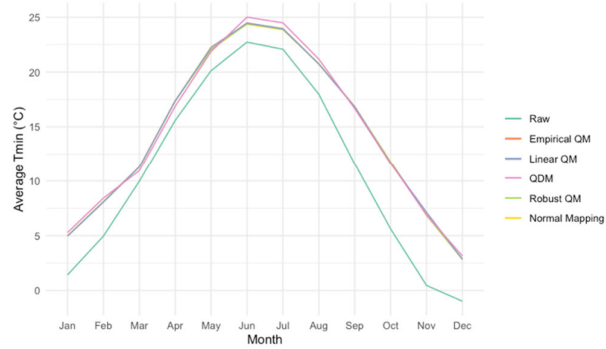
Figure S1. Monthly average minimum temperature in Atlanta (2050-2099) by climate model and quantile-mapping methods.



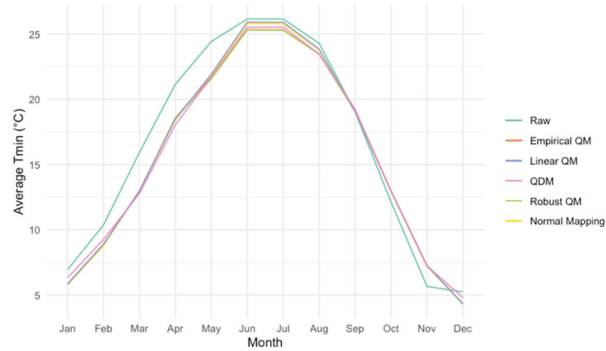
MPI-ESM-LR + RegCM4



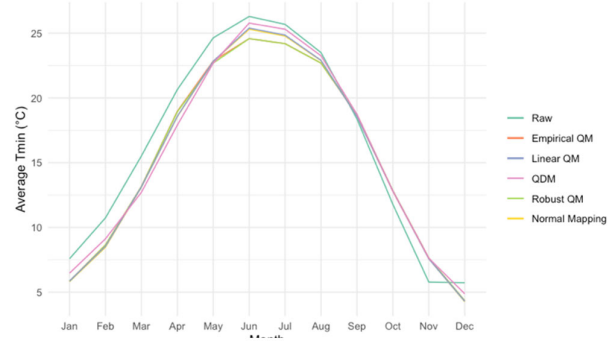
GFDL-ESM2M + RegCM4



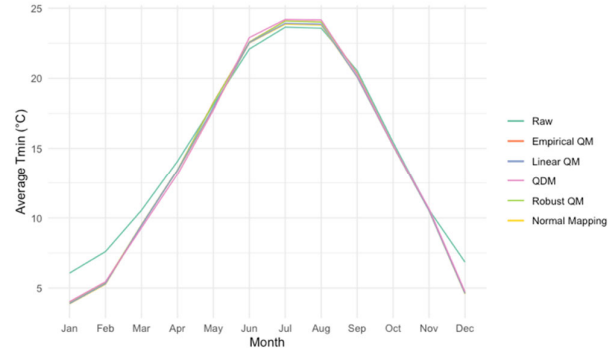
CanESM2 + CRCM5-UQAM



CanESM2 + CanRCM4



EC-EARTH + HIRHAM5



EC-EARTH + RCA4

