

Supplementary data

K-S test for the month of July illustrated in Figures and K-S test statistic D is illustrated in tables for CMIP5 models used in the analysis.

For precipitation: **(a)** simulated data without correction, **(b)** LS corrected, **(c)** LOCI corrected, **(d)** PT corrected and **(e)** DM corrected precipitation data

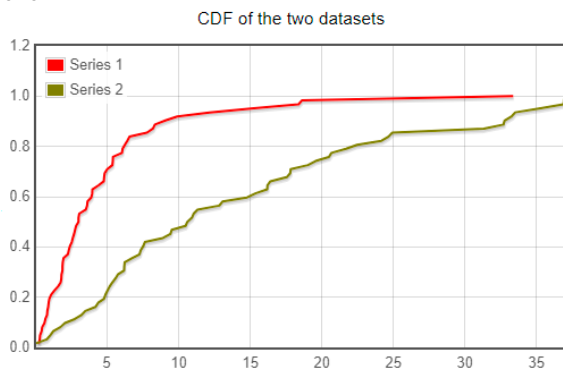
For maximum and minimum temperature: **(a)** simulated data without correction, **(b)** LS corrected, **(c)** VS corrected and **(d)** DM corrected temperature data.

Series 1 represents observed data and **Series 2** represents model simulated and bias corrected data

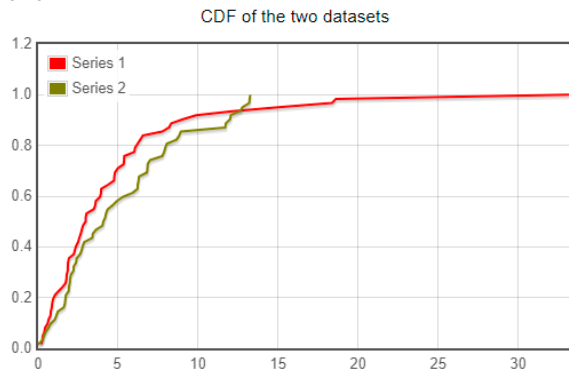
1. CMCC-CESM

Precipitation

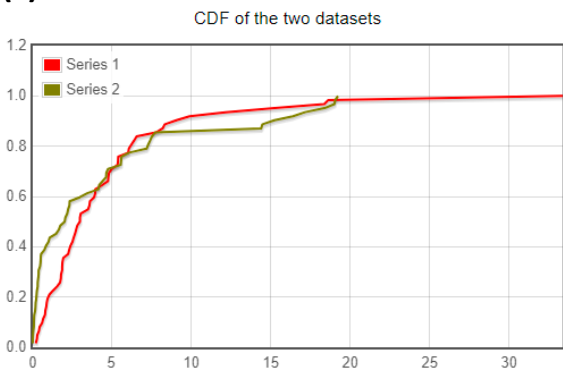
(a)



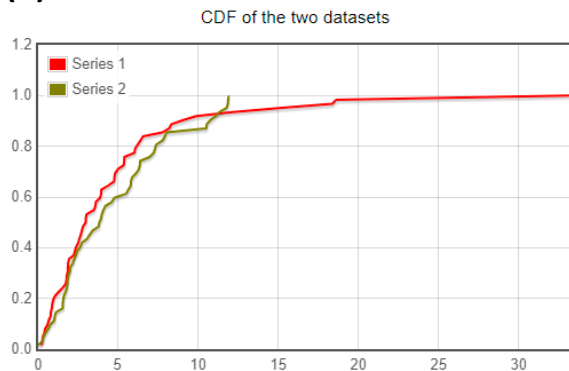
(b)



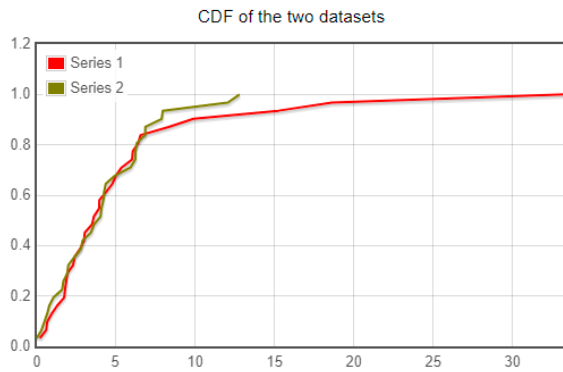
(c)



(d)



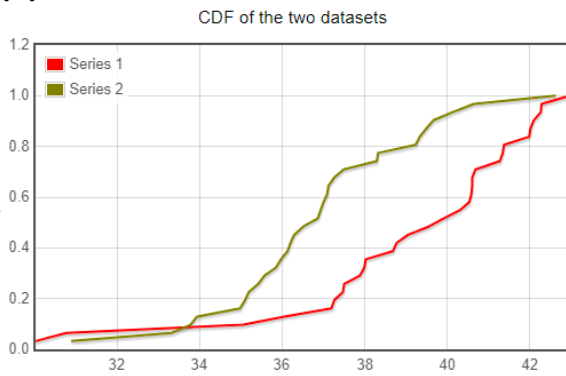
(e)



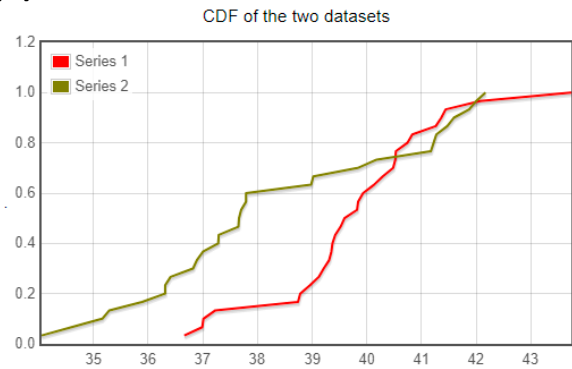
No Correction	Linear Scaling	Local Intensity Scaling	Power Transformation	Distribution Mapping
D	D	D	D	D
0.50	0.18	0.29	0.16	0.09

Maximum Temperature

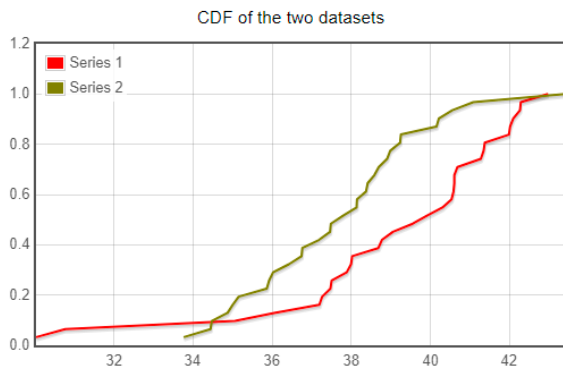
(a)



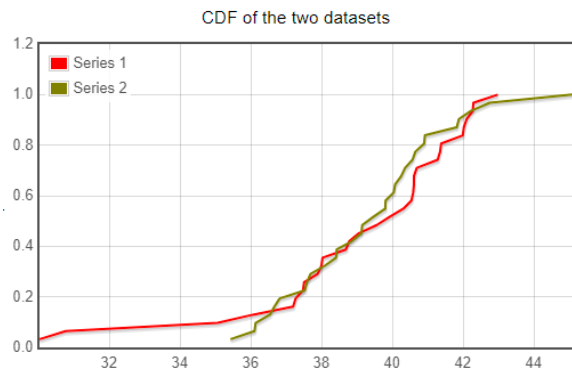
(b)



(c)



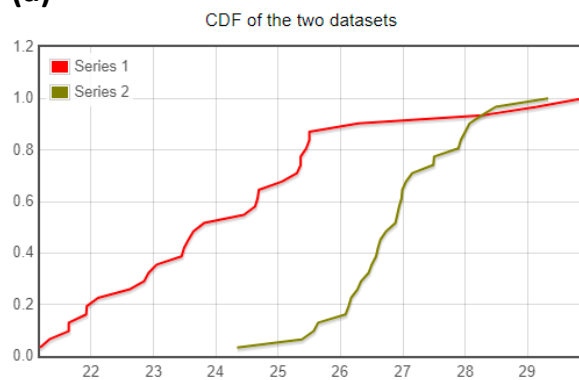
(d)



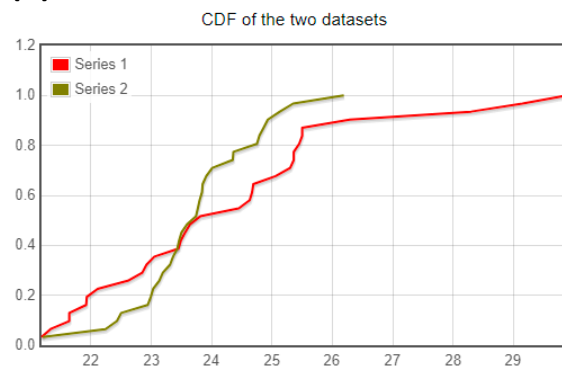
No Correction	Linear Scaling	Variance scaling	Distribution Mapping
D	D	D	D
0.52	0.39	0.47	0.16

Minimum Temperature

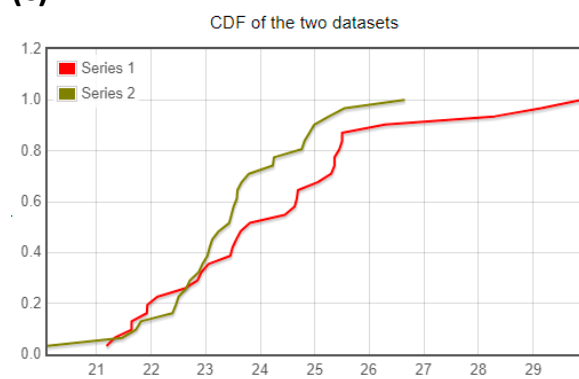
(a)



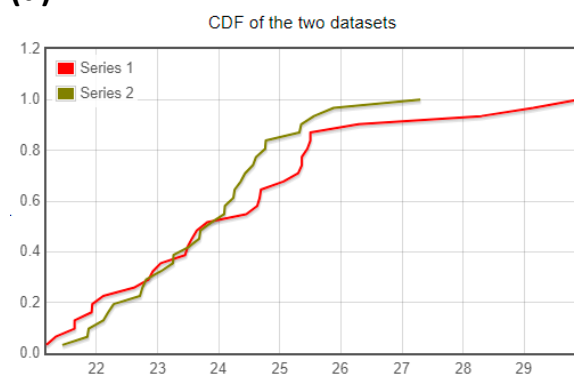
(b)



(c)



(d)

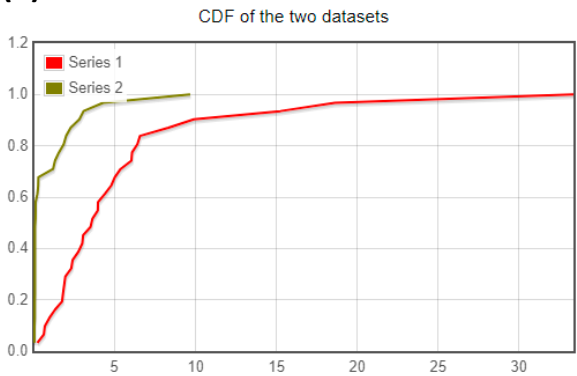


No Correction	Linear Scaling	Variance scaling	Distribution Mapping
D	D	D	D
0.81	0.26	0.26	0.23

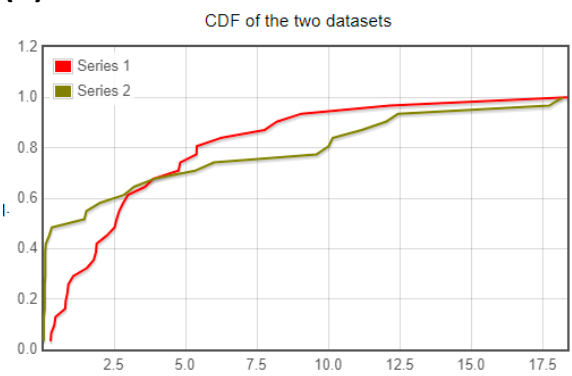
2. CNRM-CM5

Precipitation

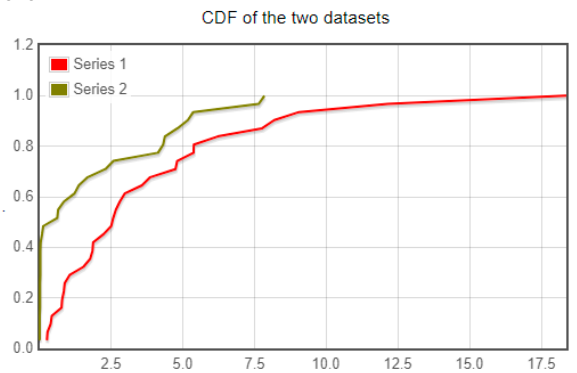
(a)



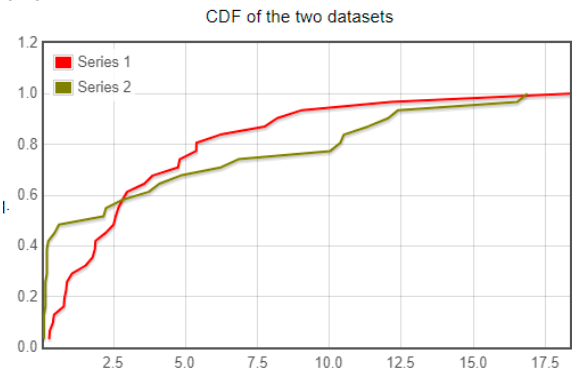
(b)



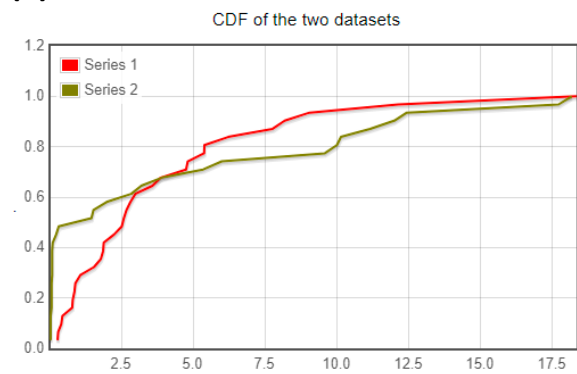
(c)



(d)



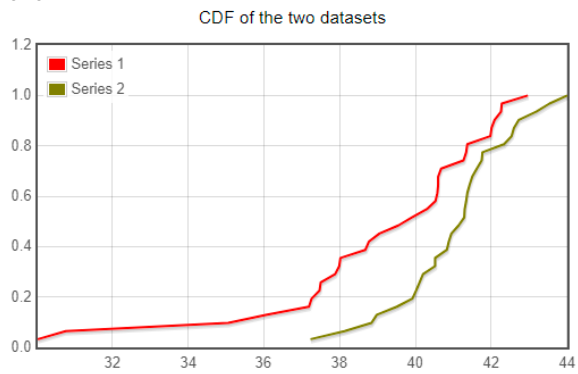
(e)



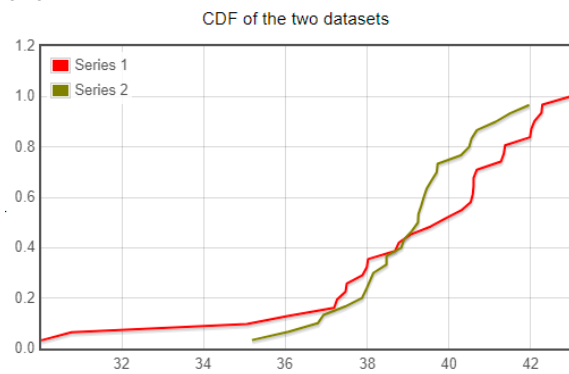
No Correction	Linear Scaling	Local Intensity Scaling	Power Transformation	Distribution Mapping
D	D	D	D	D
0.65	0.45	0.48	0.42	0.29

Maximum Temperature

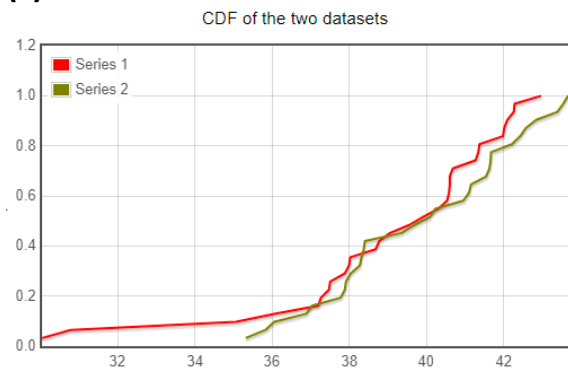
(a)



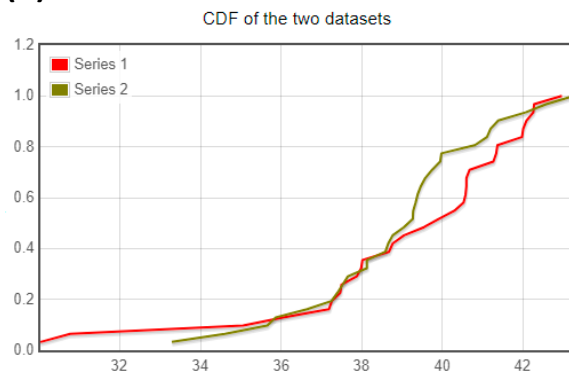
(b)



(c)



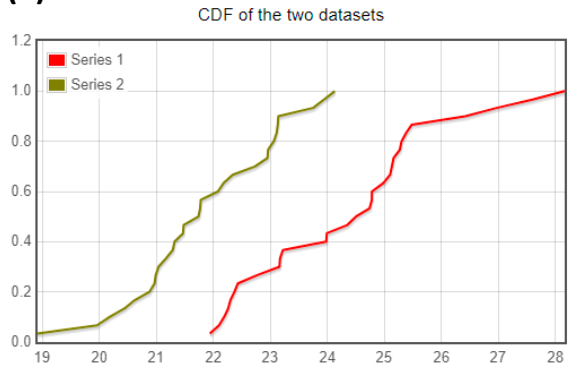
(d)



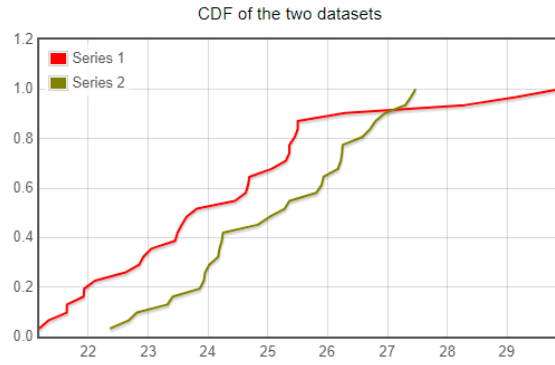
No Correction	Linear Scaling	Variance scaling	Distribution Mapping
D	D	D	D
0.35	0.25	0.16	0.22

Minimum Temperature

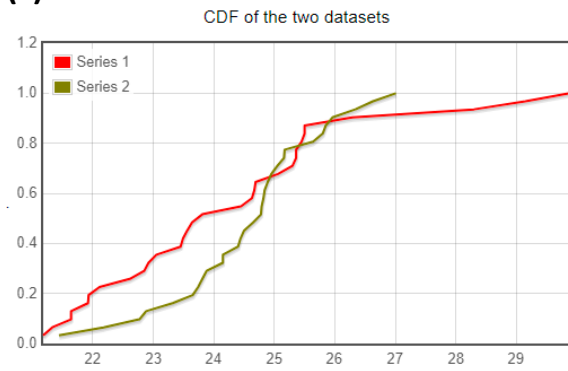
(a)



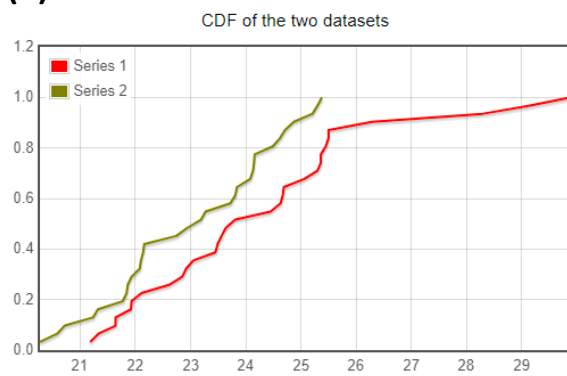
(b)



(c)



(d)

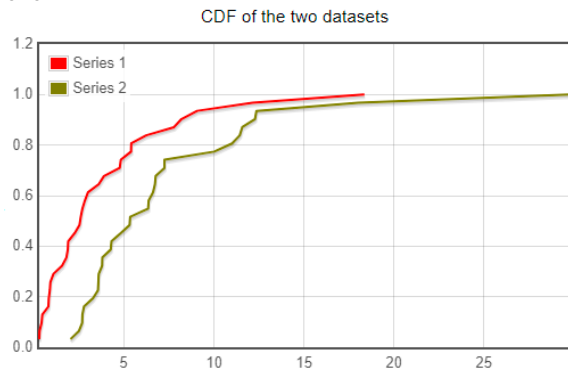


No Correction	Linear Scaling	Variance scaling	Distribution Mapping
D	D	D	D
0.63	0.35	0.32	0.29

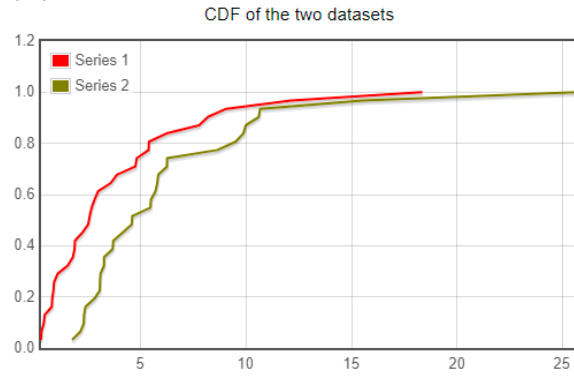
3. GFDL-CM3

Precipitation

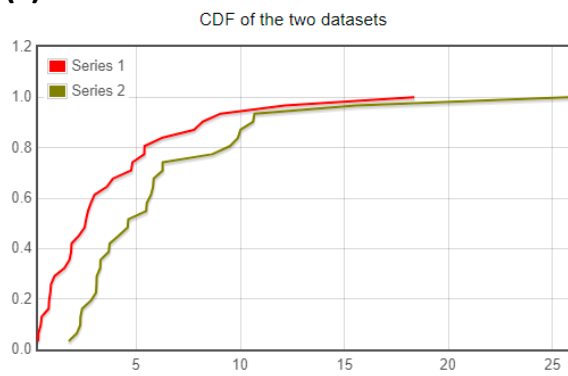
(a)



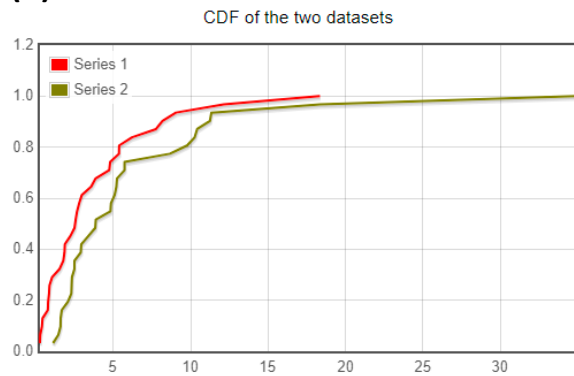
(b)



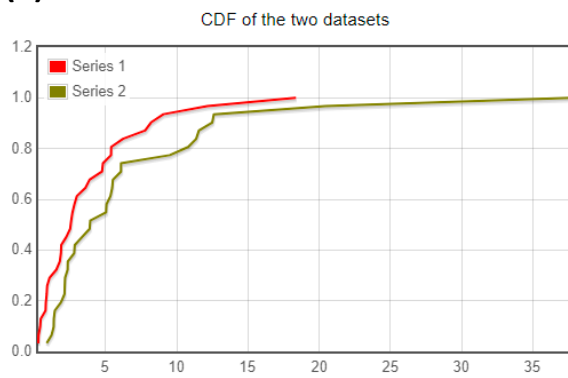
(c)



(d)



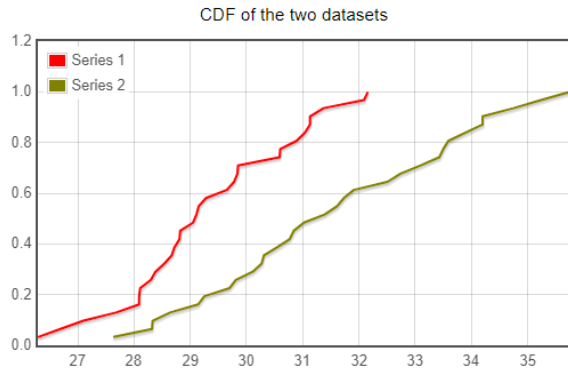
(e)



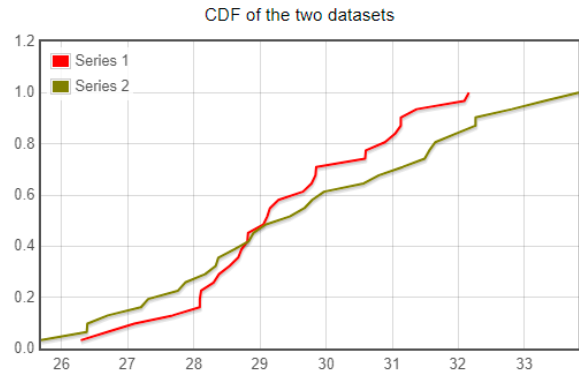
No Correction	Linear Scaling	Local Intensity Scaling	Power Transformation	Distribution Mapping
D	D	D	D	D
0.45	0.40	0.44	0.29	0.25

Maximum Temperature

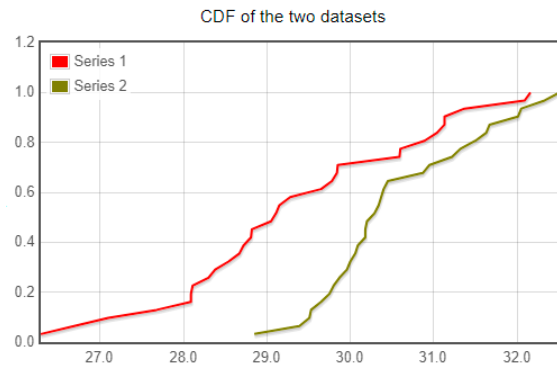
(a)



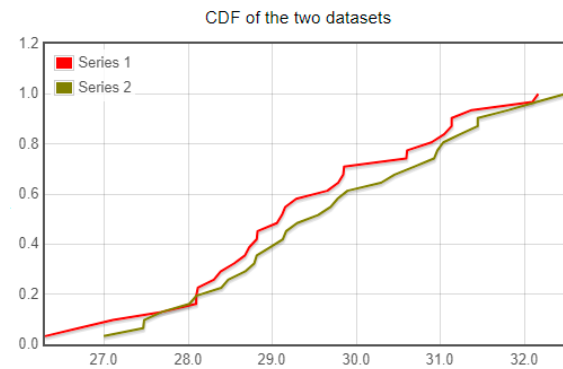
(b)



(c)



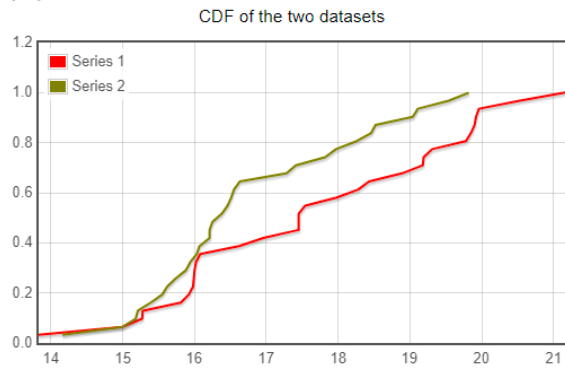
(d)



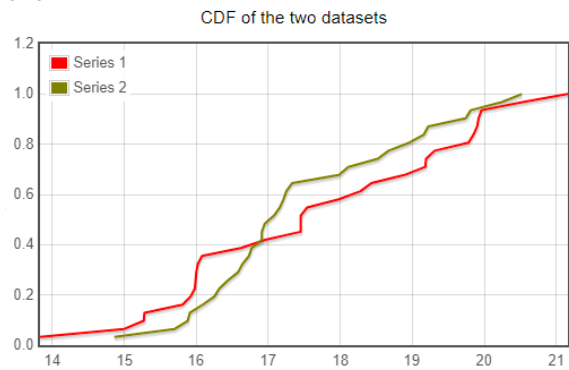
No Correction	Linear Scaling	Variance scaling	Distribution Mapping
D	D	D	D
0.45	0.22	0.54	0.12

Minimum Temperature

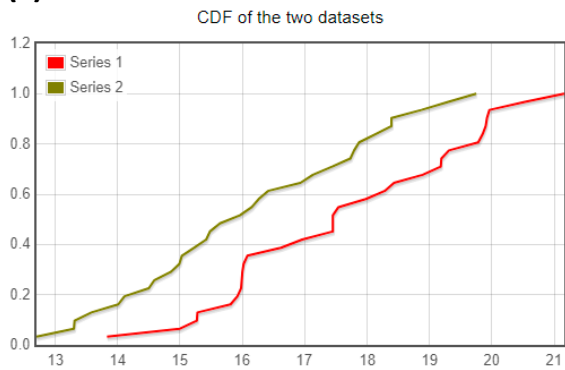
(a)



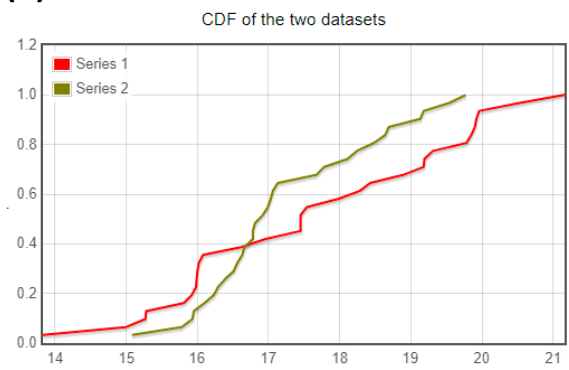
(b)



(c)



(d)

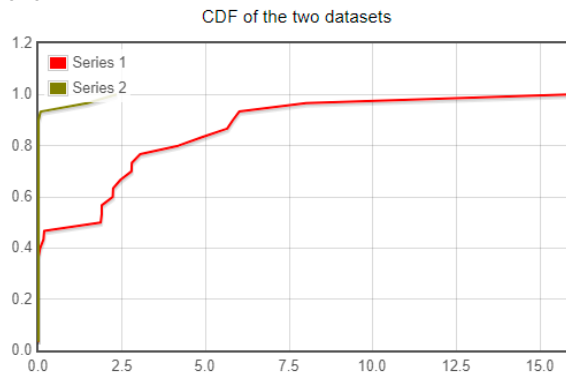


No Correction	Linear Scaling	Variance scaling	Distribution Mapping
D	D	D	D
0.29	0.20	0.35	0.23

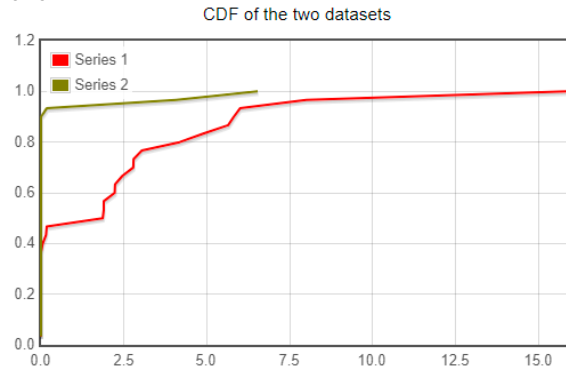
4. HadCM3

Precipitation

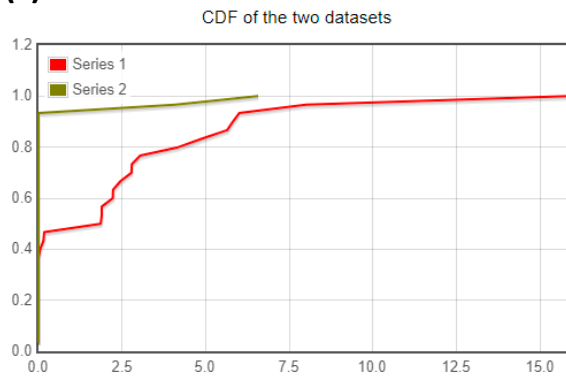
(a)



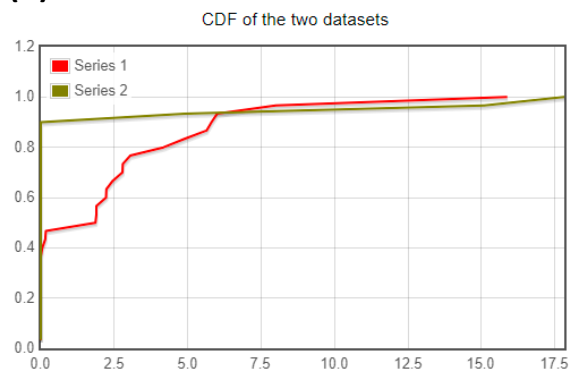
(b)



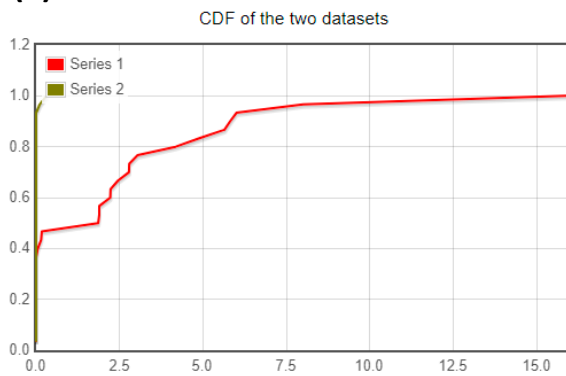
(c)



(d)



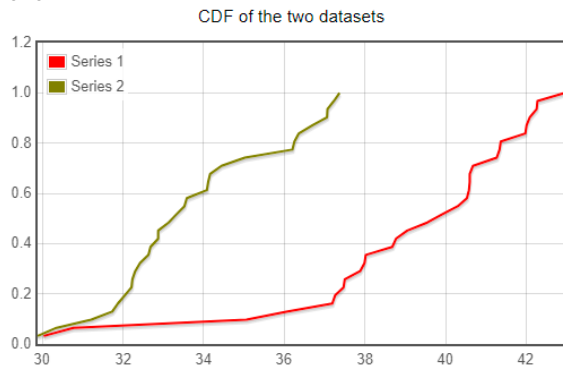
(e)



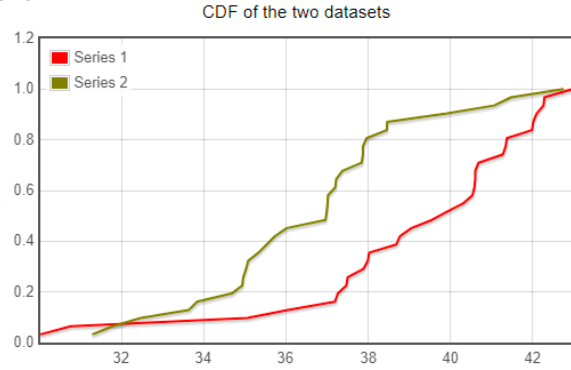
No Correction	Linear Scaling	Local Intensity Scaling	Power Transformation	Distribution Mapping
D	D	D	D	D
0.56	0.52	0.54	0.50	0.54

Maximum Temperature

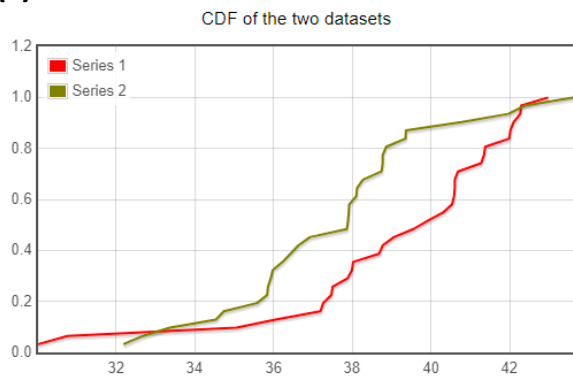
(a)



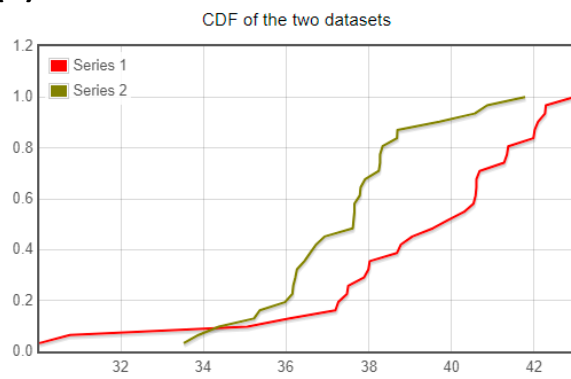
(b)



(c)



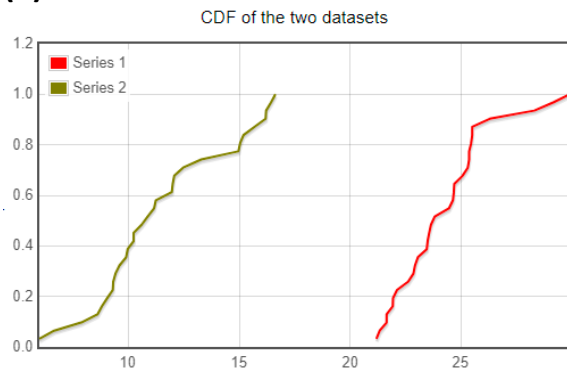
(d)



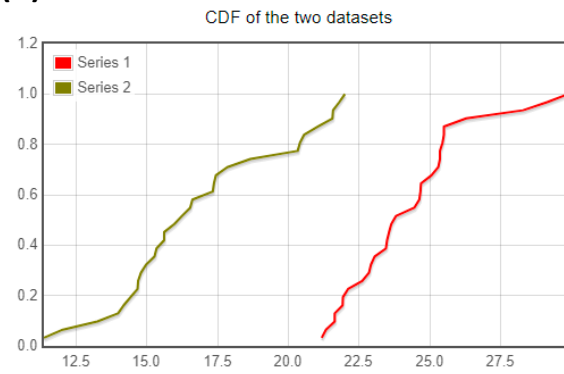
No Correction	Linear Scaling	Variance scaling	Distribution Mapping
D	D	D	D
0.81	0.51	0.41	0.48

Minimum Temperature

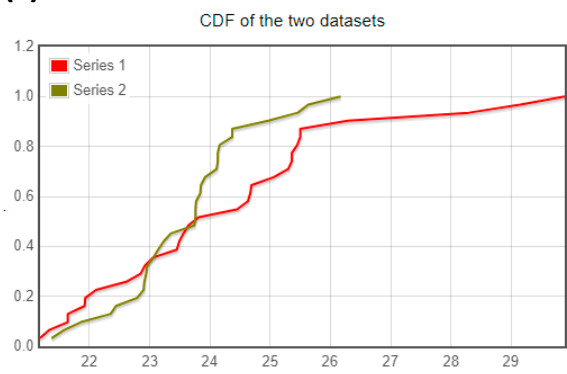
(a)



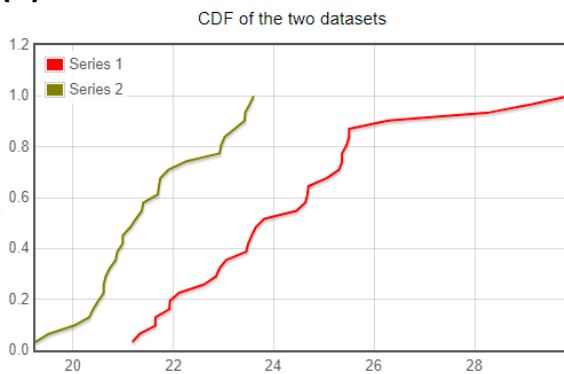
(b)



(c)



(d)

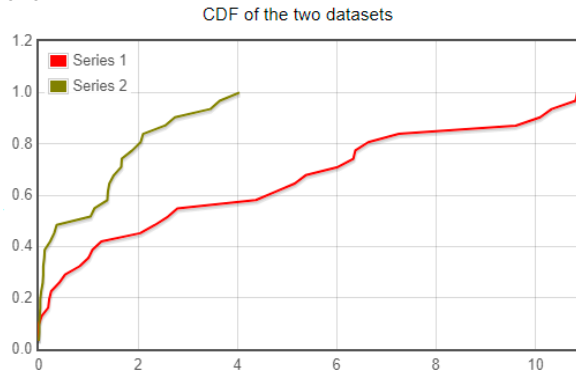


No Correction	Linear Scaling	Variance scaling	Distribution Mapping
D	D	D	D
1.00	0.87	0.35	0.58

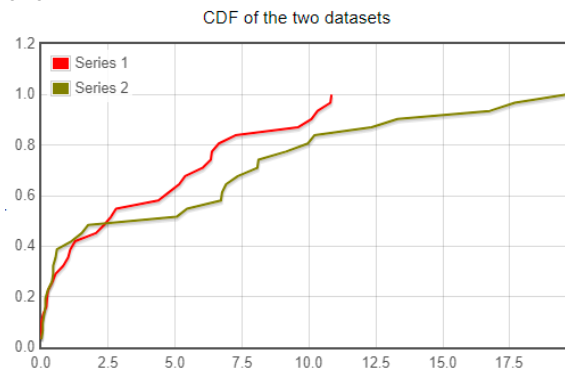
5. HADGEM2-ES

Precipitation

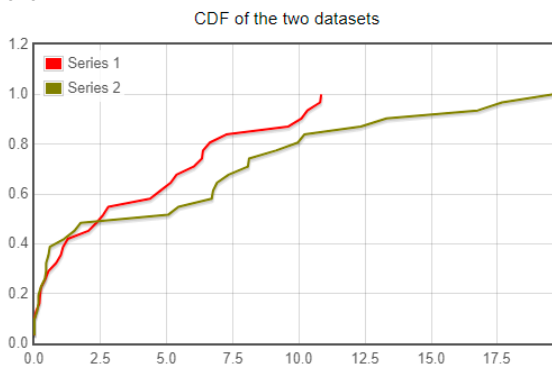
(a)



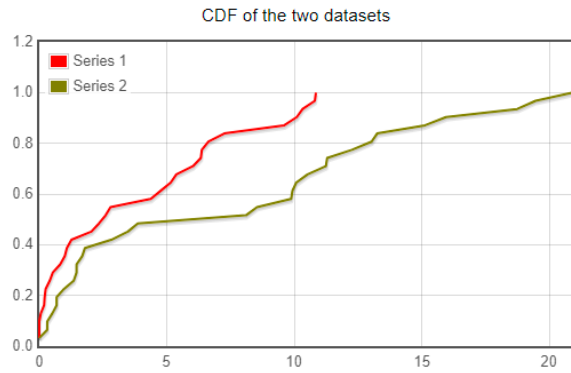
(b)



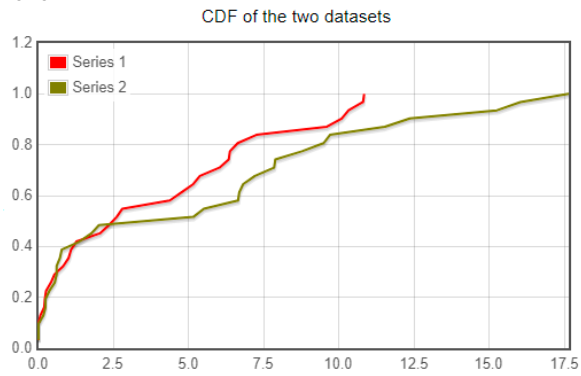
(c)



(d)



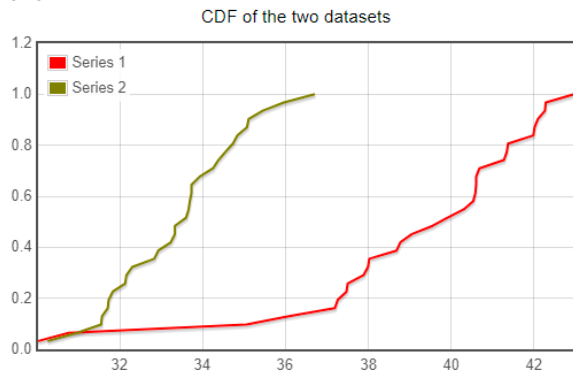
(e)



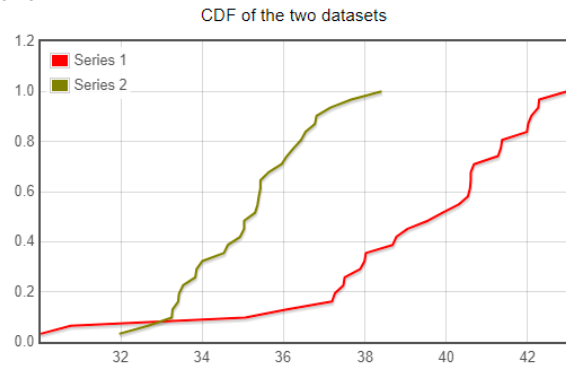
No Correction	Linear Scaling	Local Intensity Scaling	Power Transformation	Distribution Mapping
D	D	D	D	D
0.45	0.25	0.25	0.35	0.24

Maximum Temperature

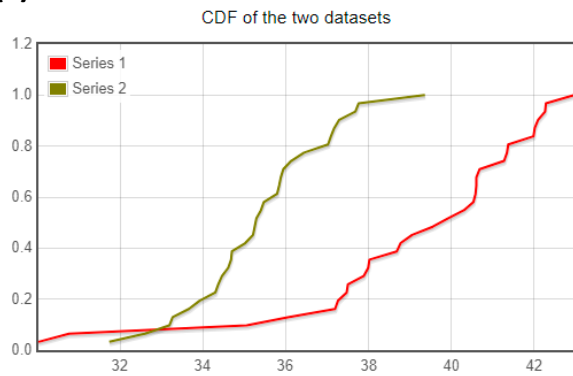
(a)



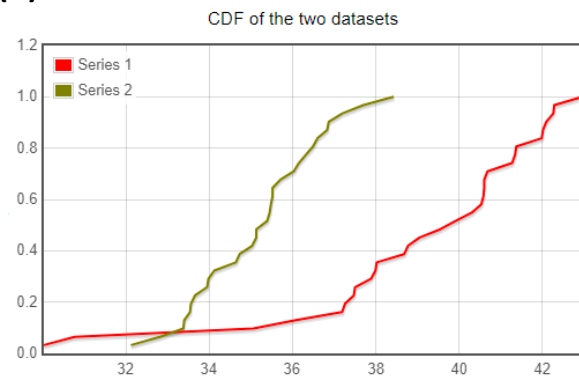
(b)



(c)



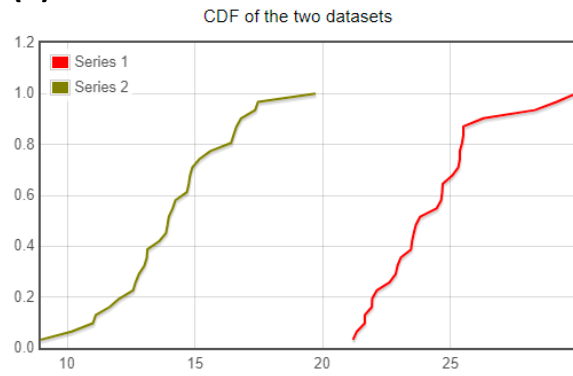
(d)



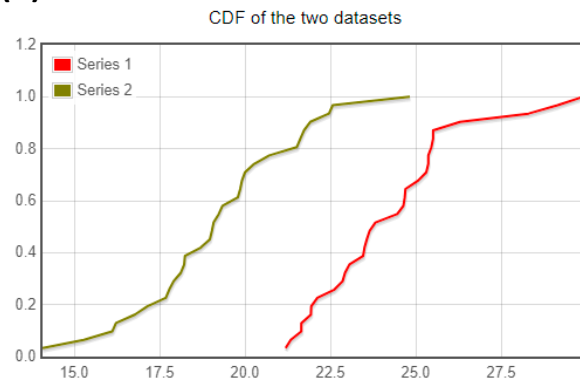
No Correction	Linear Scaling	Variance scaling	Distribution Mapping
D	D	D	D
0.87	0.81	0.74	0.77

Minimum Temperature

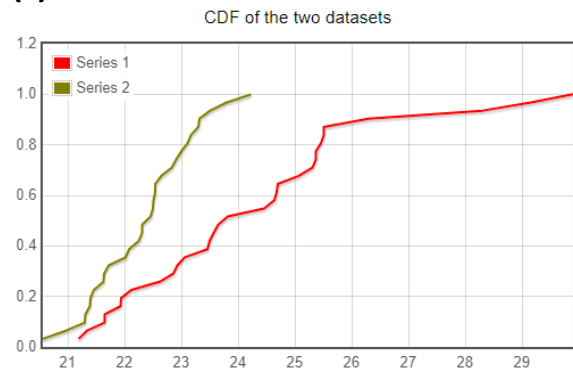
(a)



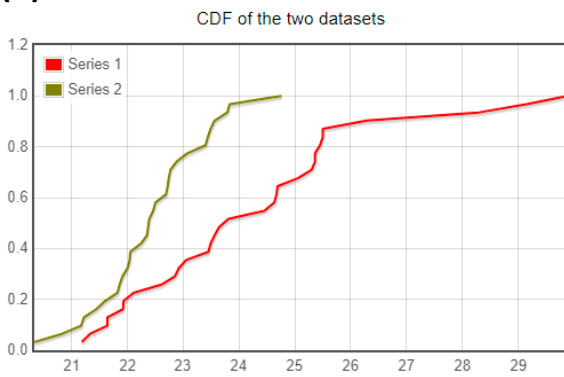
(b)



(c)



(d)

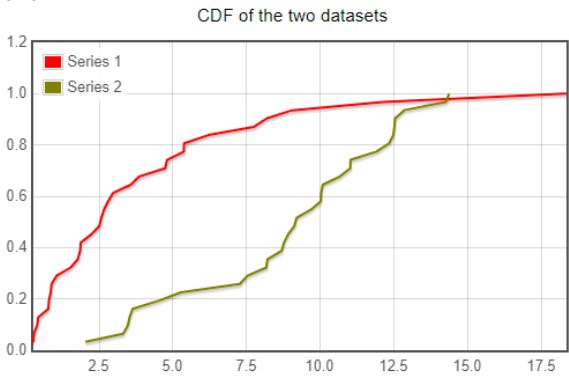


No Correction	Linear Scaling	Variance scaling	Distribution Mapping
D	D	D	D
1.00	0.77	0.54	0.48

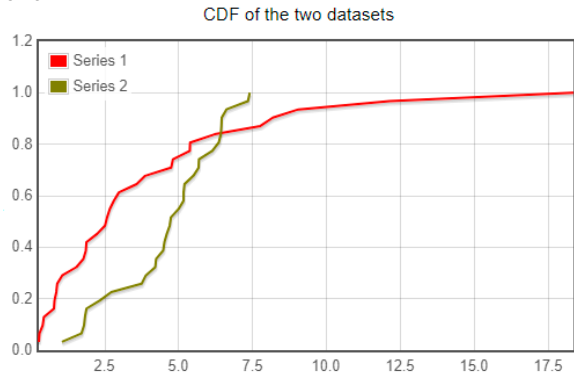
6. INM-CM4

Precipitation

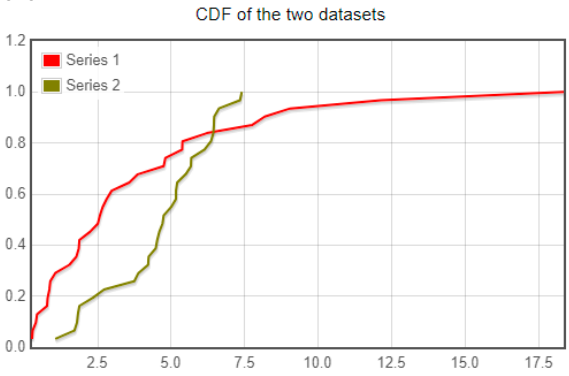
(a)



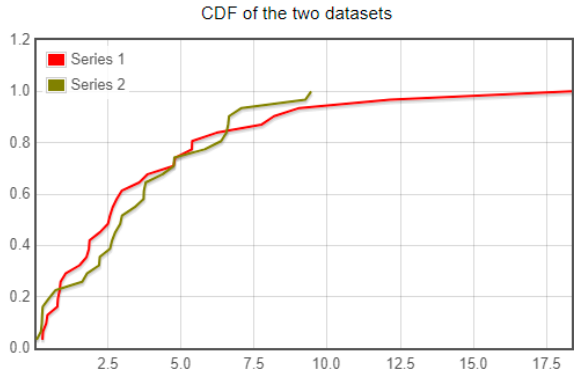
(b)



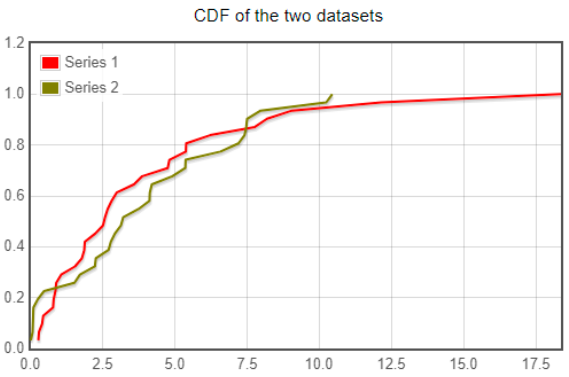
(c)



(d)



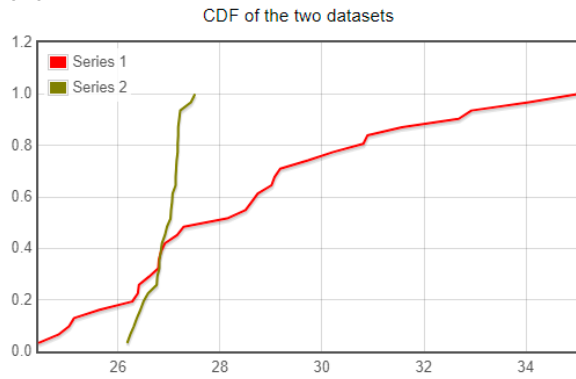
(e)



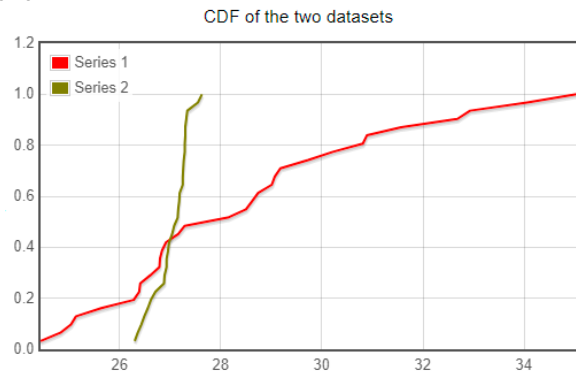
No Correction	Linear Scaling	Local Intensity Scaling	Power Transformation	Distribution Mapping
D	D	D	D	D
0.61	0.41	0.41	0.12	0.19

Maximum Temperature

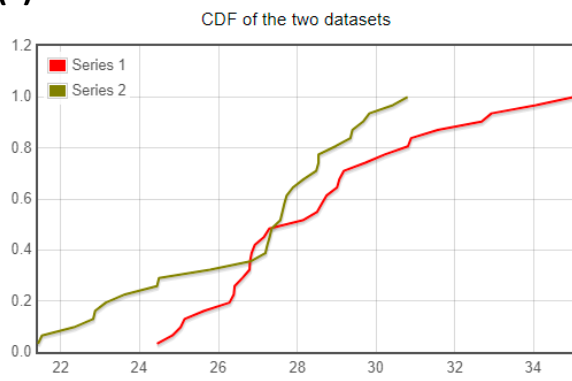
(a)



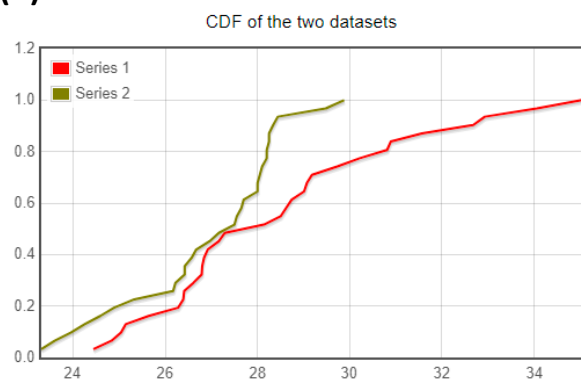
(b)



(c)



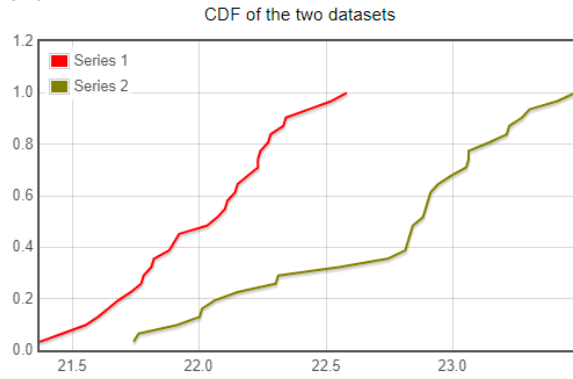
(d)



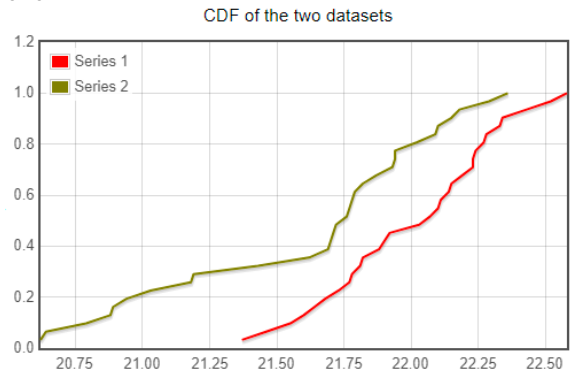
No Correction	Linear Scaling	Variance scaling	Distribution Mapping
D	D	D	D
0.51	0.51	0.25	0.41

Minimum Temperature

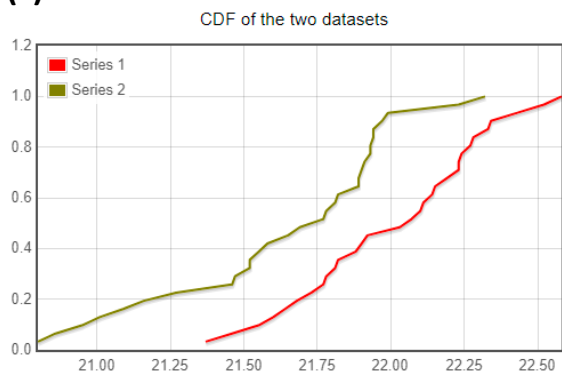
(a)



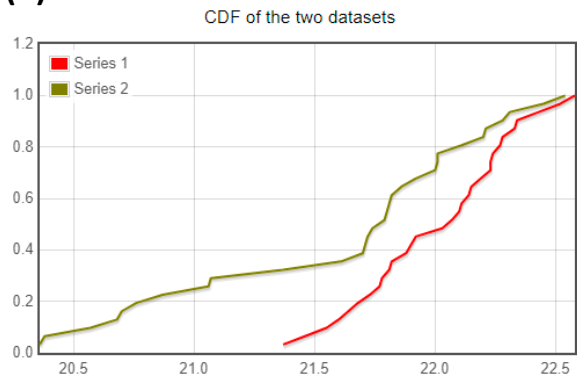
(b)



(c)



(d)

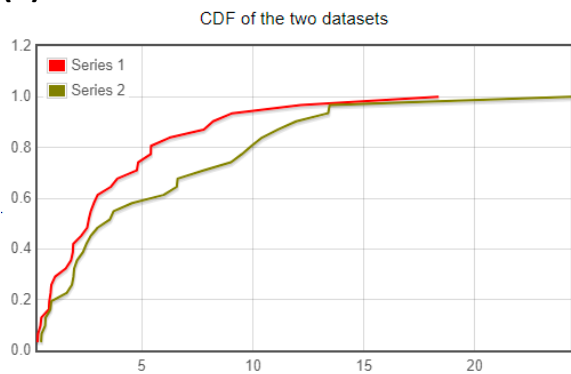


No Correction	Linear Scaling	Variance scaling	Distribution Mapping
D	D	D	D
0.67	0.35	0.48	0.32

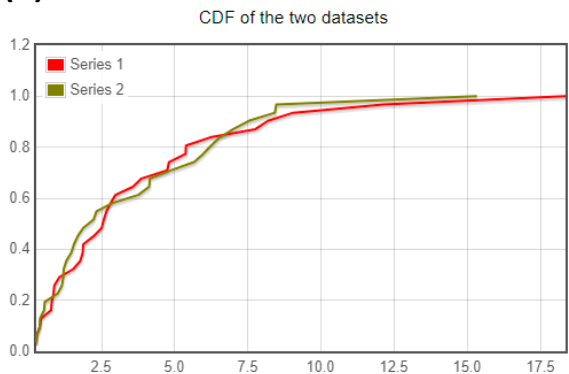
7. MIROC-5

Precipitation

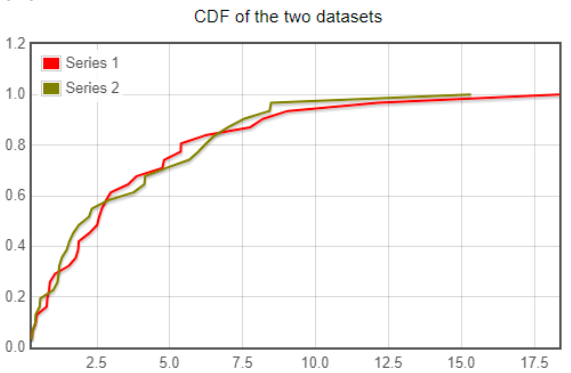
(a)



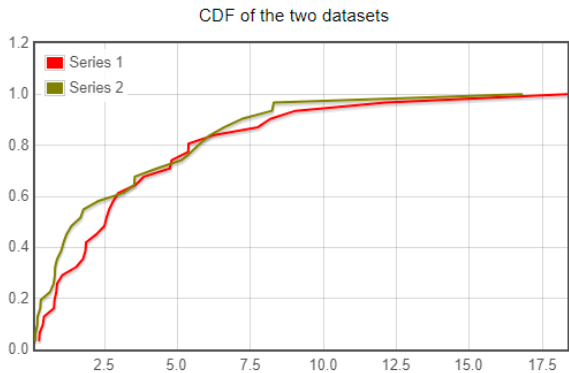
(b)



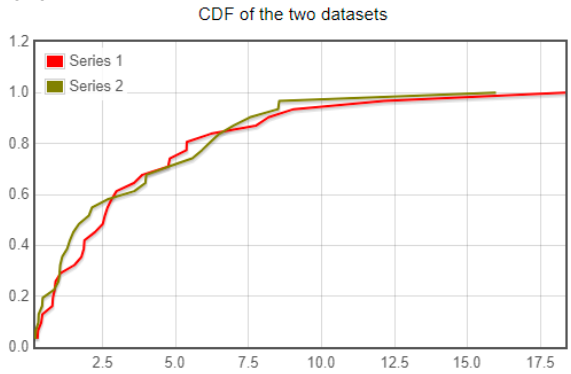
(c)



(d)



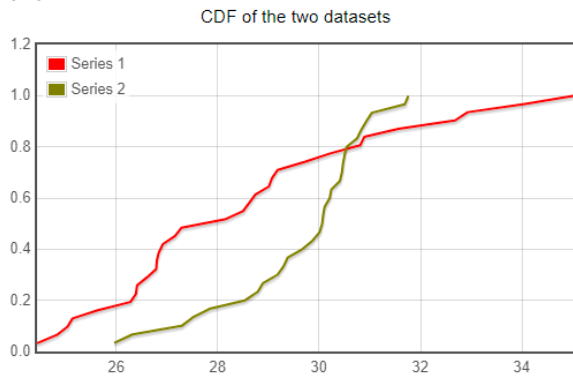
(e)



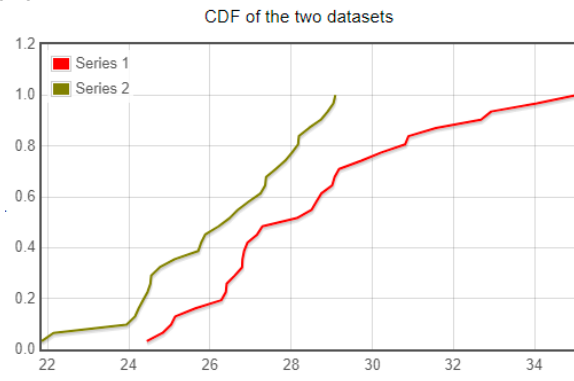
No Correction	Linear Scaling	Local Intensity Scaling	Power Transformation	Distribution Mapping
D	D	D	D	D
0.22	0.12	0.12	0.19	0.16

Maximum Temperature

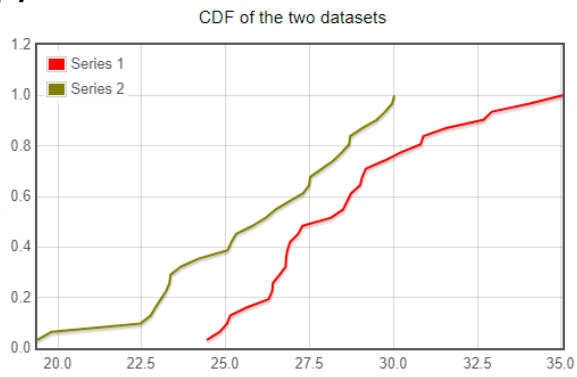
(a)



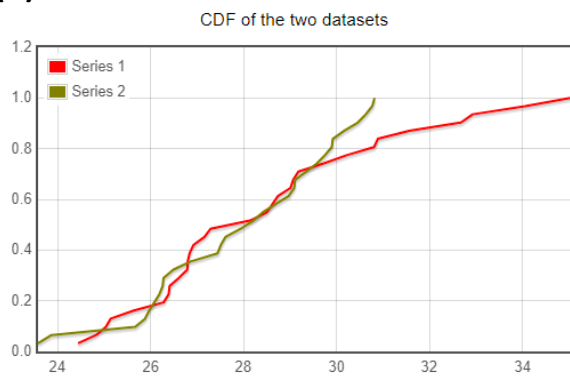
(b)



(c)



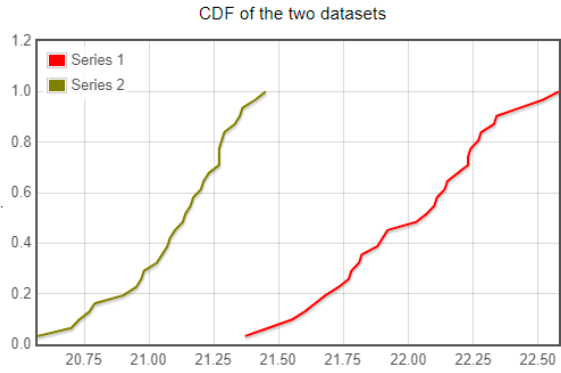
(d)



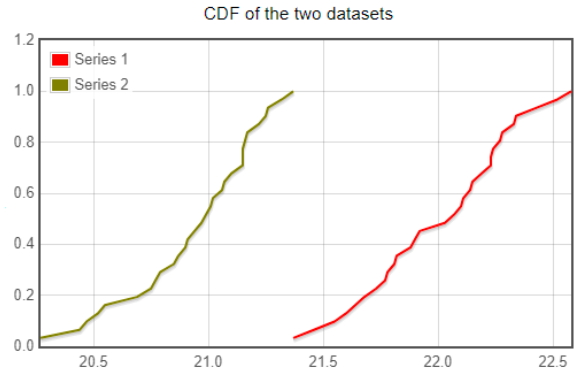
No Correction	Linear Scaling	Variance scaling	Distribution Mapping
D	D	D	D
0.41	0.35	0.35	0.19

Minimum Temperature

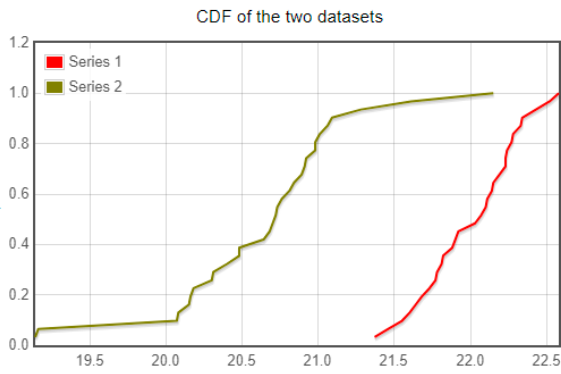
(a)



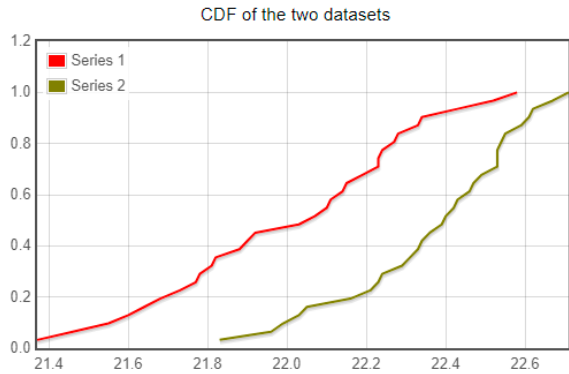
(b)



(c)



(d)

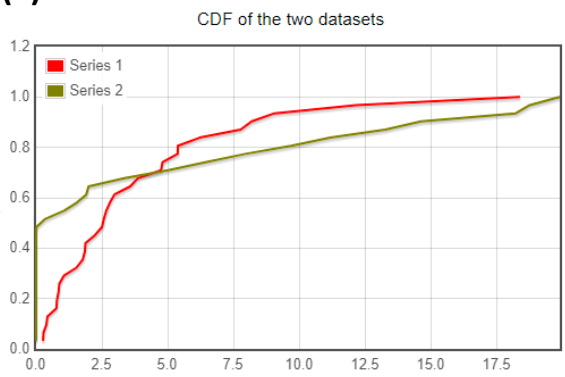


No Correction	Linear Scaling	Variance scaling	Distribution Mapping
D	D	D	D
0.96	0.96	0.93	0.54

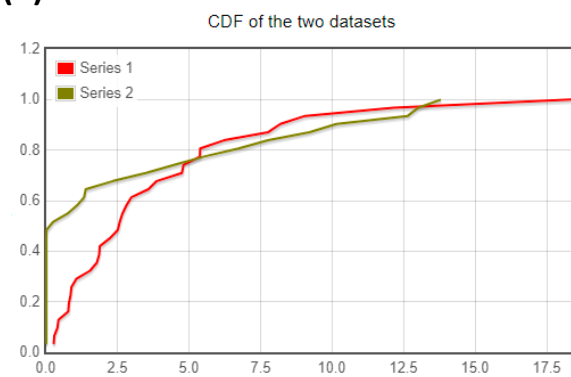
8. MPI-ESM-P

Precipitation

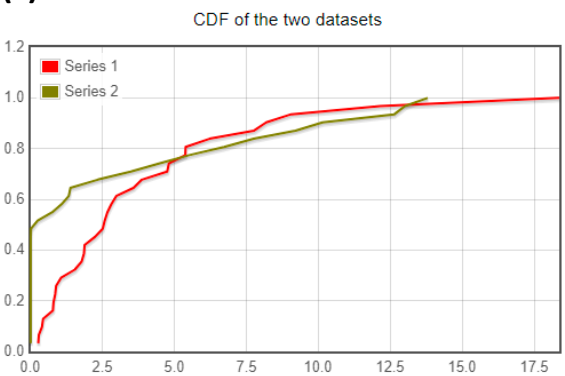
(a)



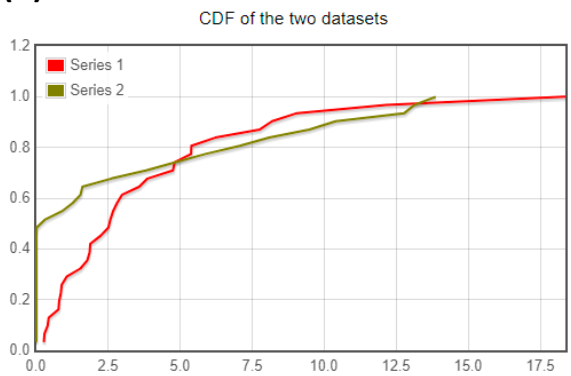
(b)



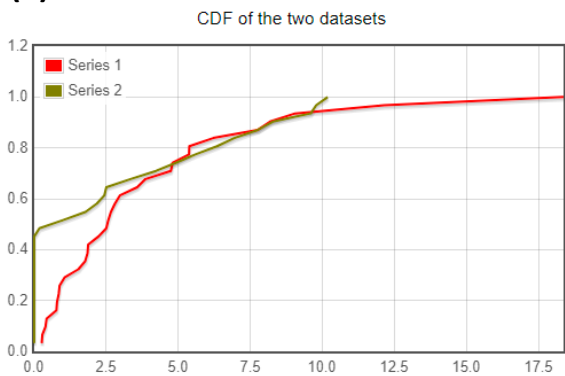
(c)



(d)



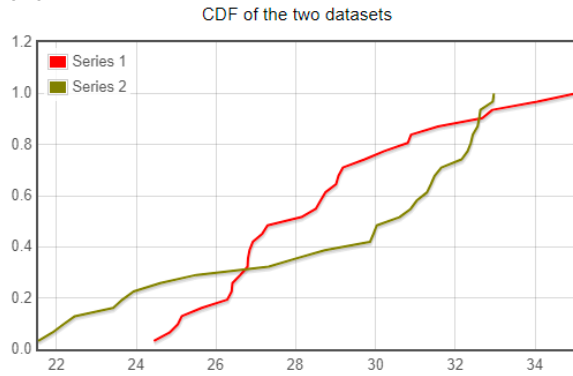
(e)



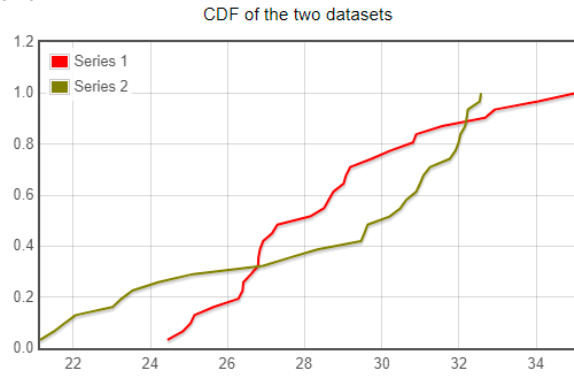
No Correction	Linear Scaling	Local Intensity Scaling	Power Transformation	Distribution Mapping
D	D	D	D	D
0.48	0.51	0.51	0.48	0.48

Maximum Temperature

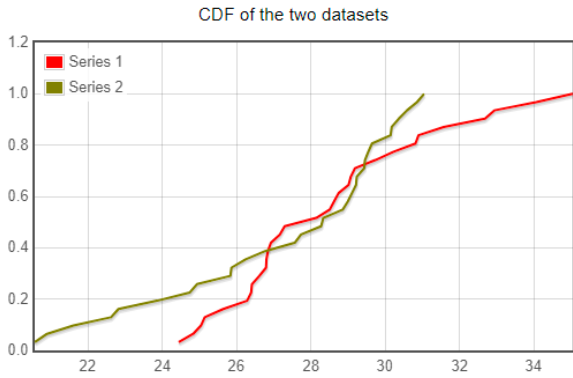
(a)



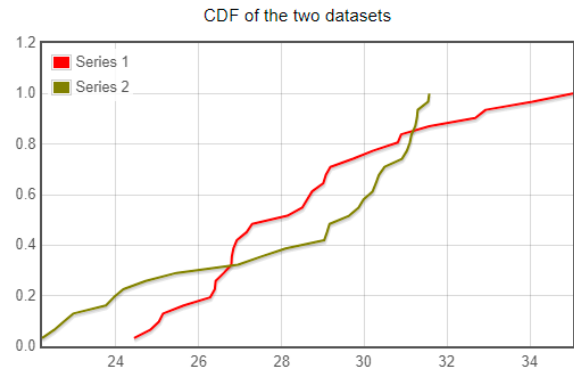
(b)



(c)



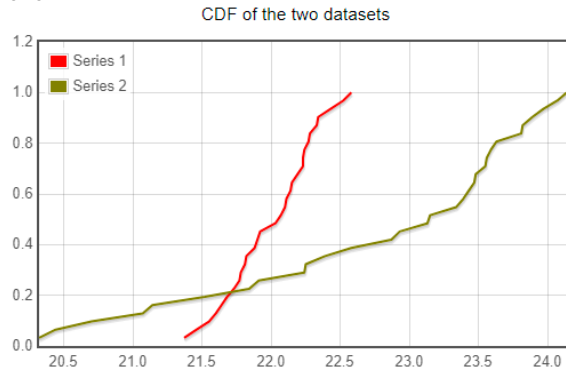
(d)



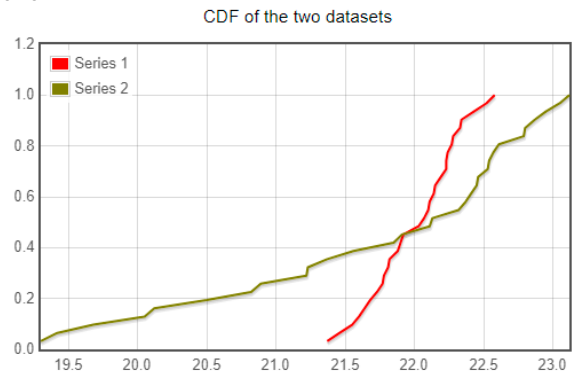
No Correction	Linear Scaling	Variance scaling	Distribution Mapping
D	D	D	D
0.35	0.32	0.19	0.25

Minimum Temperature

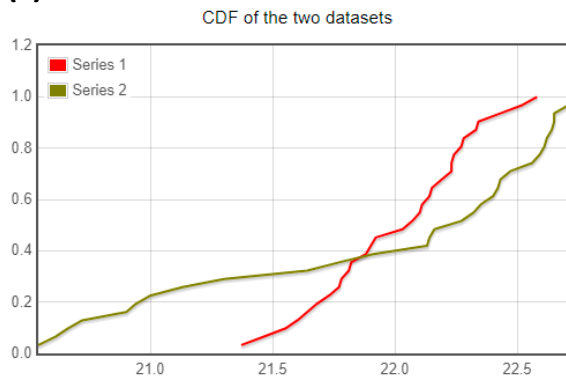
(a)



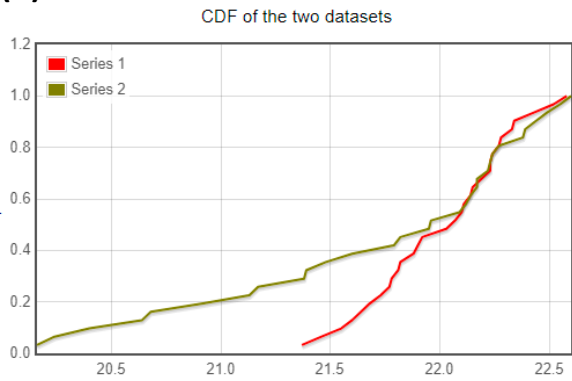
(b)



(c)



(d)

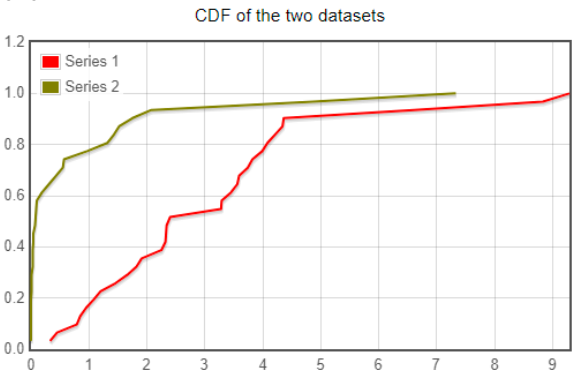


No Correction	Linear Scaling	Variance scaling	Distribution Mapping
D	D	D	D
0.61	0.35	0.35	0.29

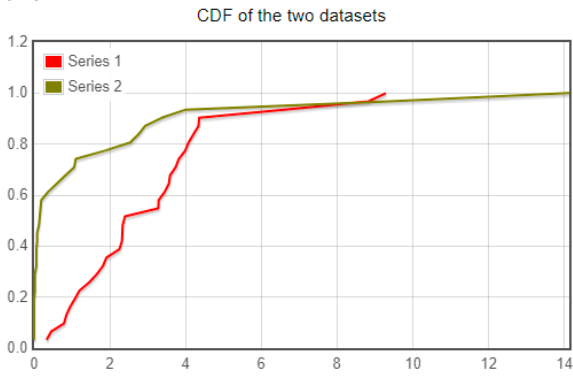
9. MRI-CGCM3

Precipitation

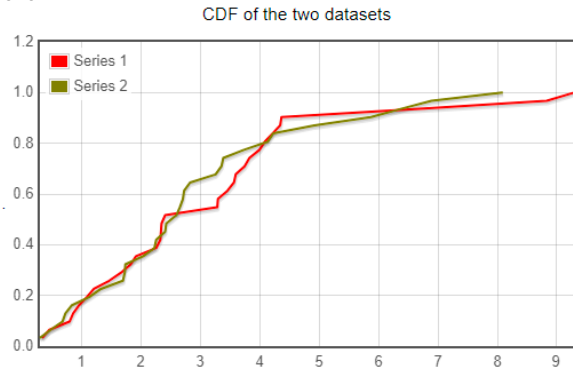
(a)



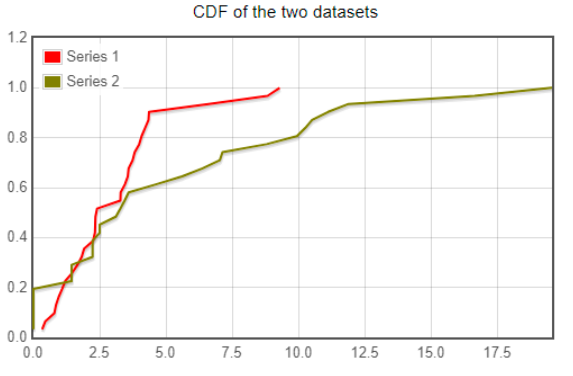
(b)



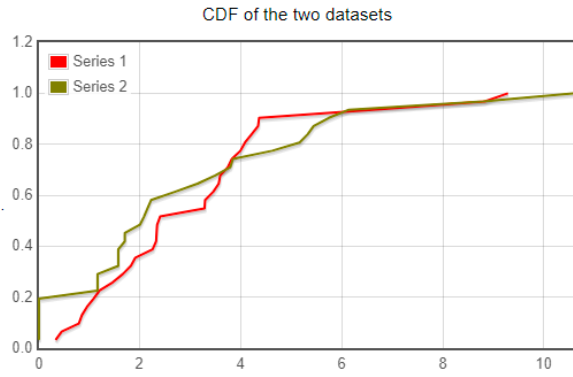
(c)



(d)



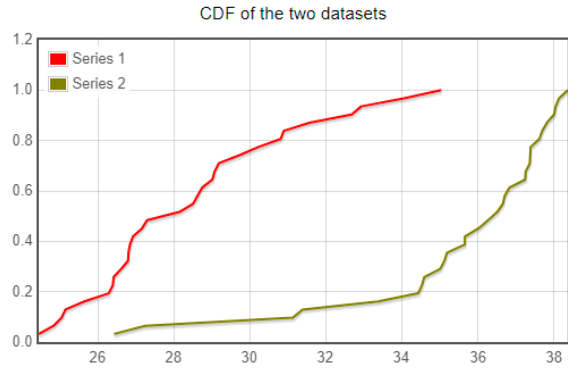
(e)



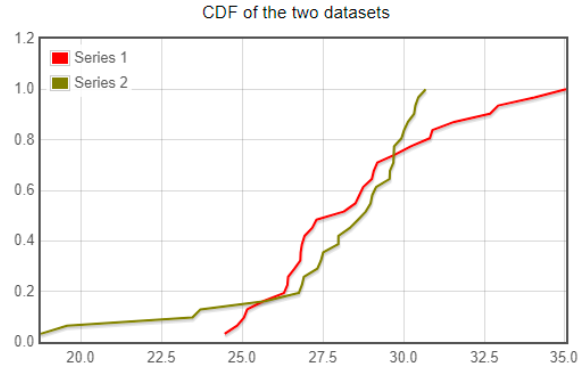
No Correction	Linear Scaling	Local Intensity Scaling	Power Transformation	Distribution Mapping
D	D	D	D	D
0.67	0.58	0.16	0.32	0.22

Maximum Temperature

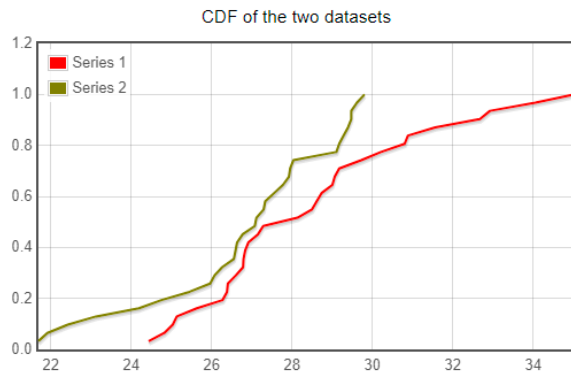
(a)



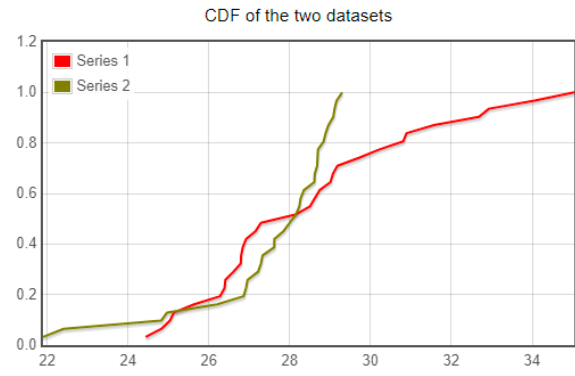
(b)



(c)



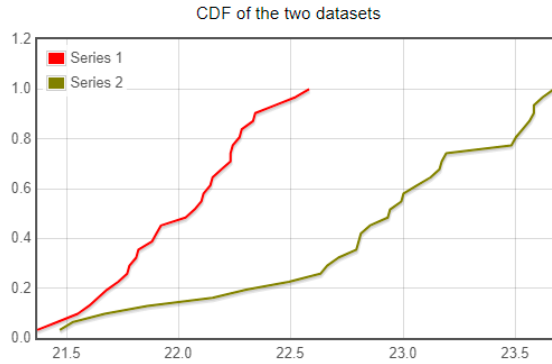
(d)



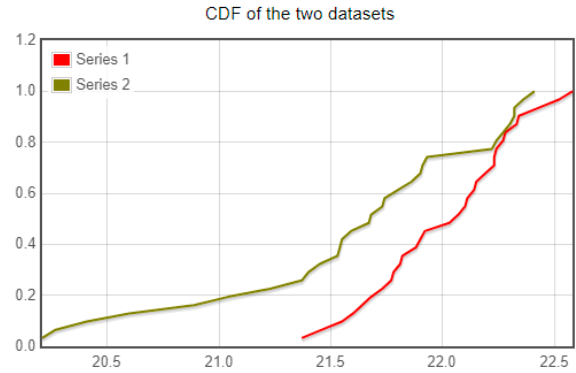
No Correction	Linear Scaling	Variance scaling	Distribution Mapping
D	D	D	D
0.80	0.22	0.25	0.29

Minimum Temperature

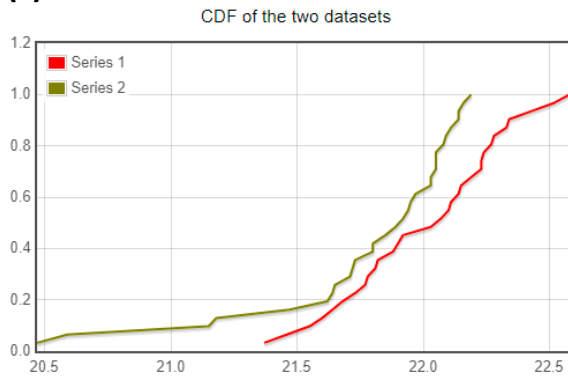
(a)



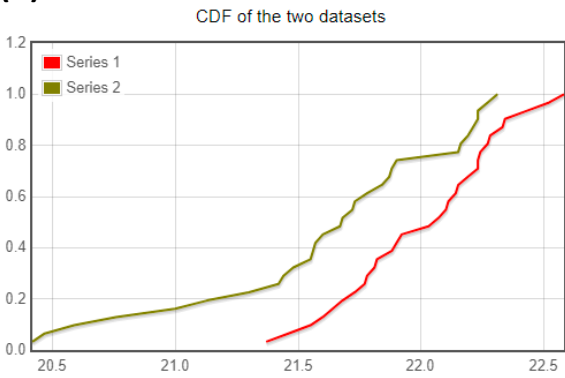
(b)



(c)



(d)

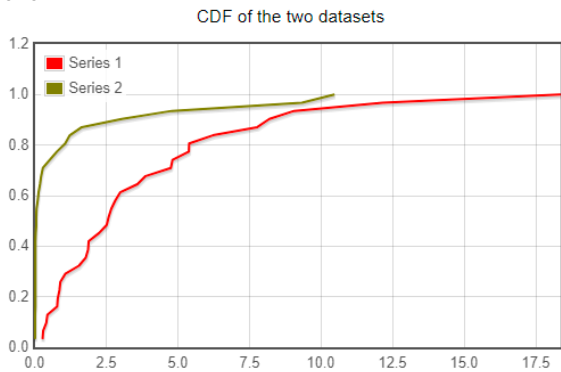


No Correction	Linear Scaling	Variance scaling	Distribution Mapping
D	D	D	D
0.77	0.35	0.32	0.35

10. MRI-ESM1

Precipitation

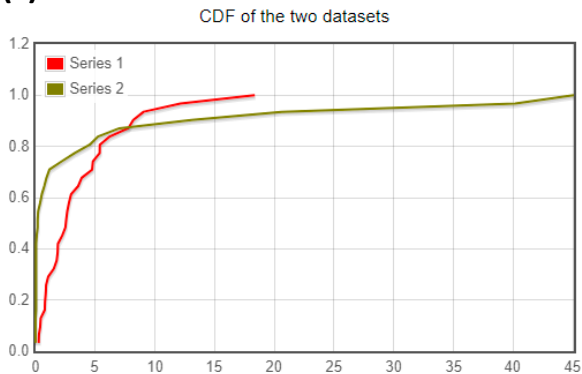
(a)



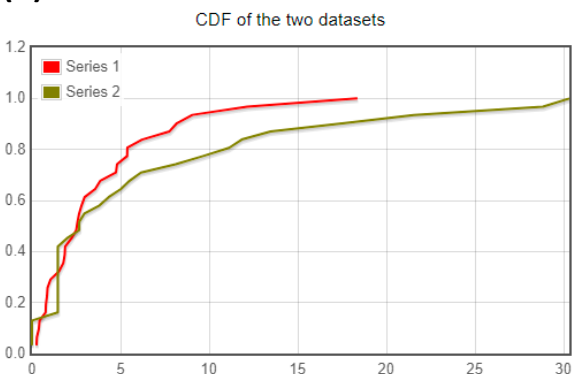
(b)



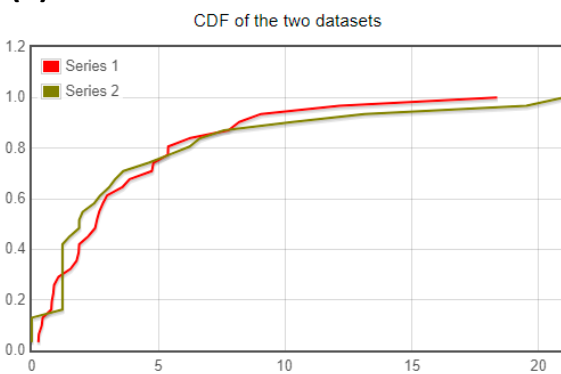
(c)



(d)



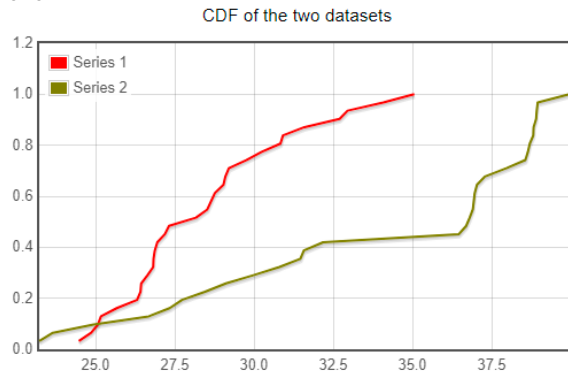
(e)



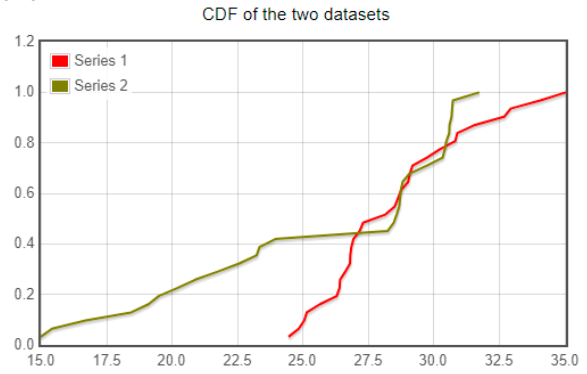
No Correction	Linear Scaling	Local Intensity Scaling	Power Transformation	Distribution Mapping
D	D	D	D	D
0.67	0.54	0.54	0.19	0.16

Maximum Temperature

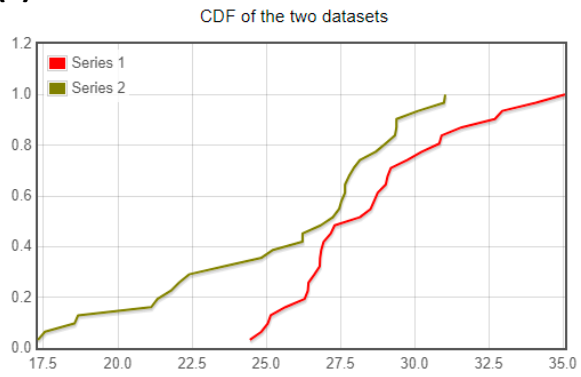
(a)



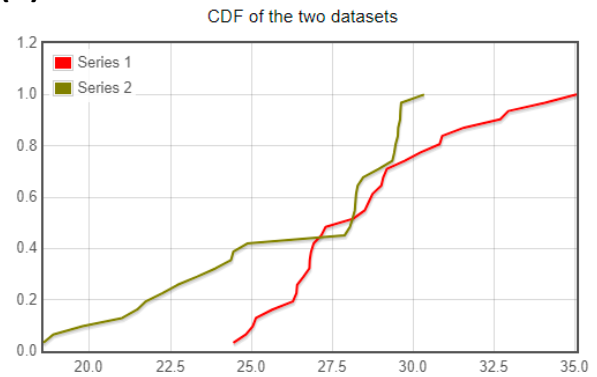
(b)



(c)



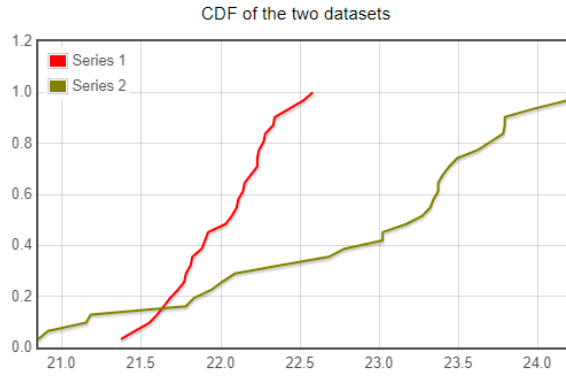
(d)



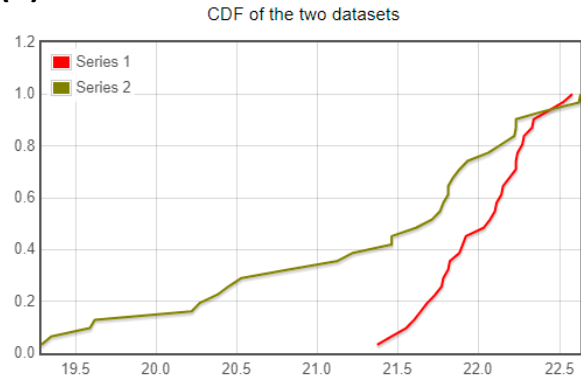
No Correction	Linear Scaling	Variance scaling	Distribution Mapping
D	D	D	D
0.58	0.41	0.32	0.35

Minimum Temperature

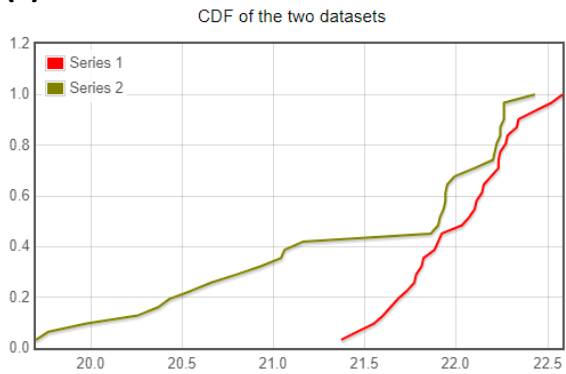
(a)



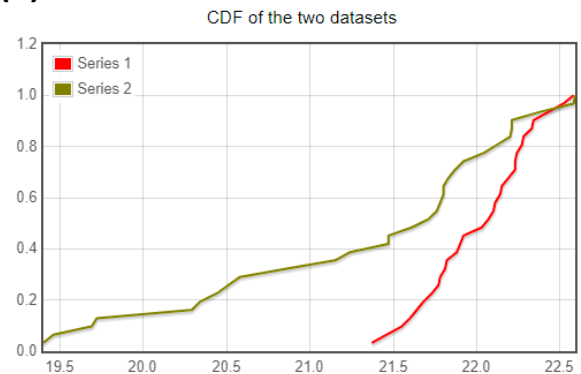
(b)



(c)



(d)

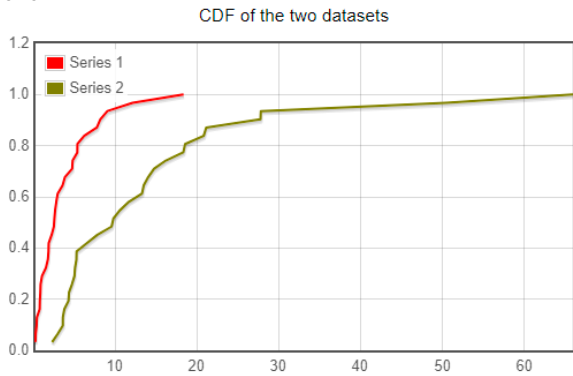


No Correction	Linear Scaling	Variance scaling	Distribution Mapping
D	D	D	D
0.67	0.38	0.41	0.38

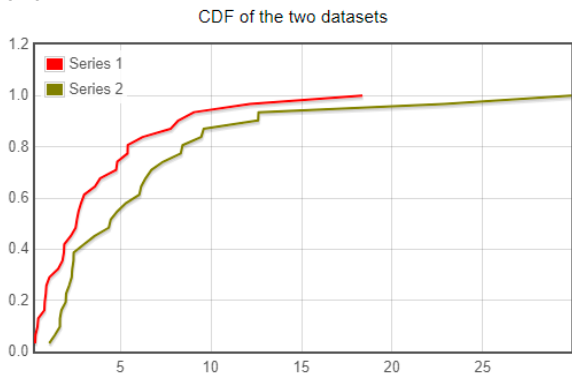
11. NorESM1_M

Precipitation

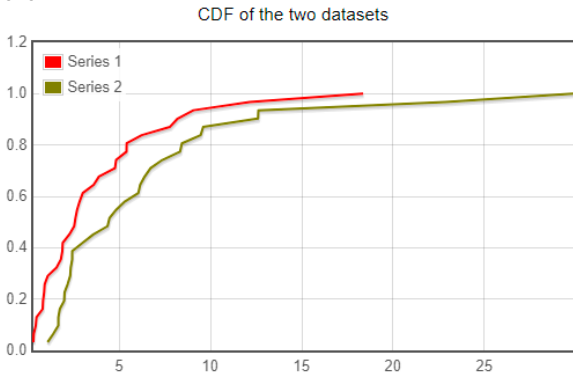
(a)



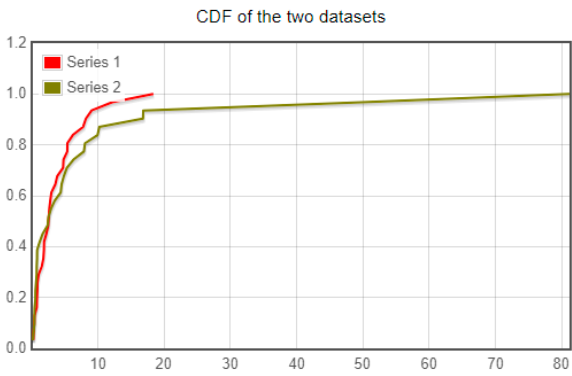
(b)



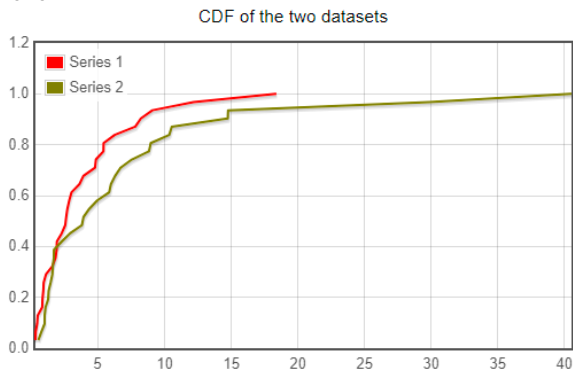
(c)



(d)



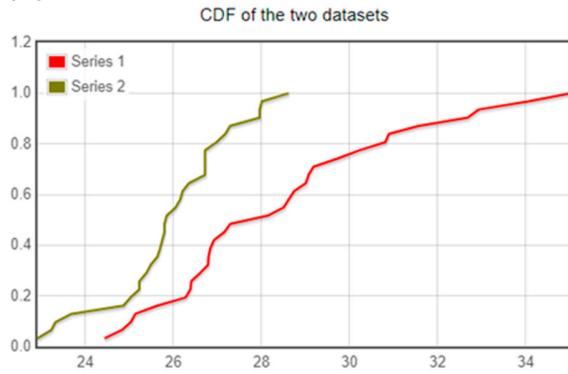
(e)



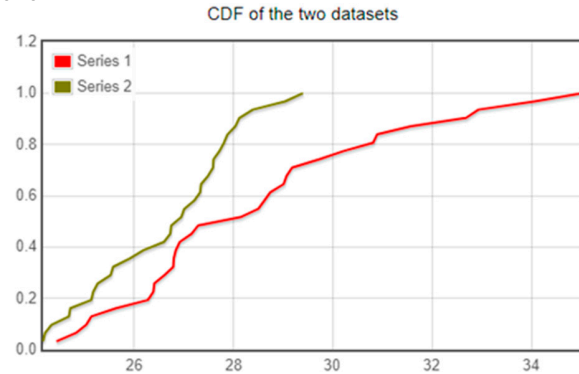
No Correction	Linear Scaling	Local Intensity Scaling	Power Transformation	Distribution Mapping
D	D	D	D	D
0.58	0.25	0.25	0.19	0.22

Maximum Temperature

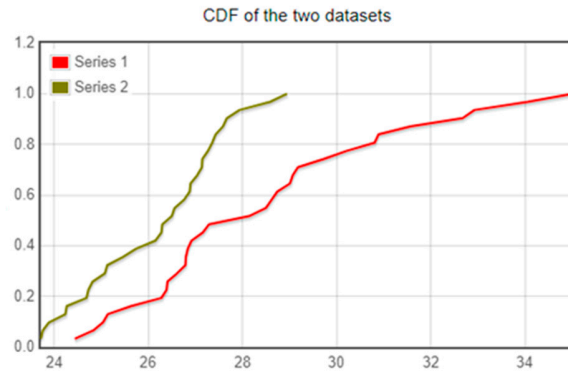
(a)



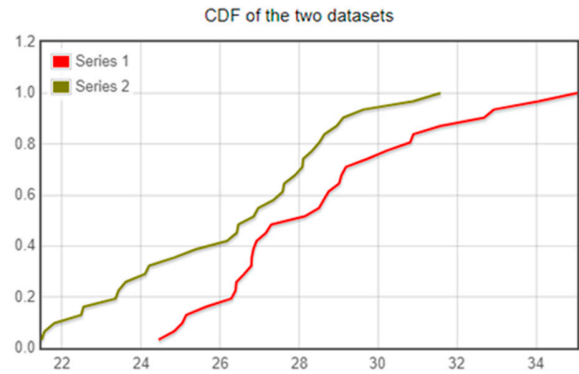
(b)



(c)



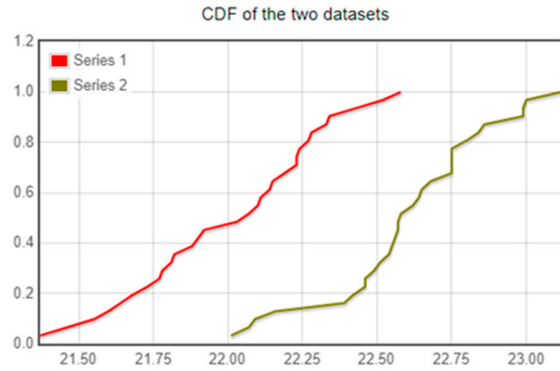
(d)



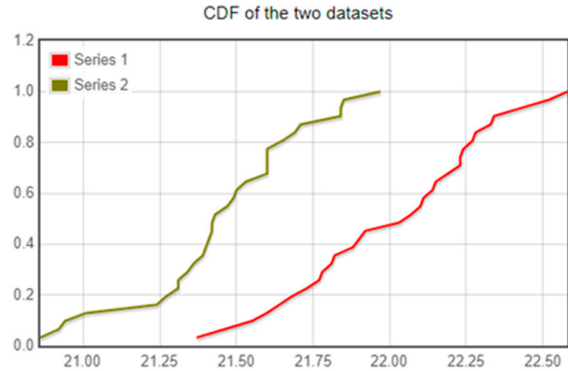
No Correction	Linear Scaling	Variance scaling	Distribution Mapping
D	D	D	D
0.48	0.41	0.45	0.32

Minimum Temperature

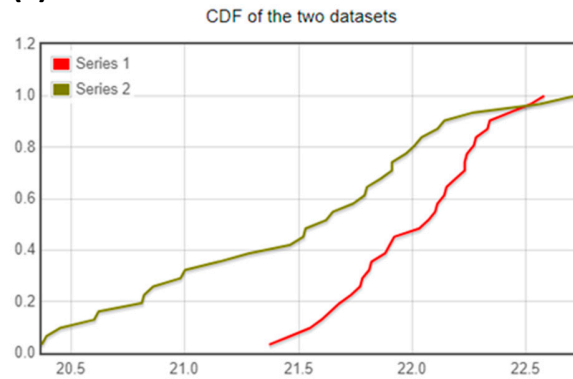
(a)



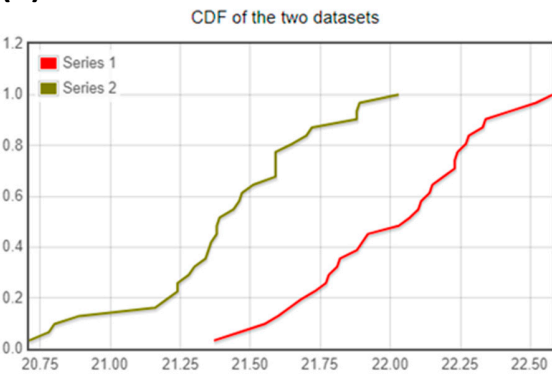
(b)



(c)



(d)



No Correction	Linear Scaling	Variance scaling	Distribution Mapping
D	D	D	D
0.77	0.67	0.41	0.67