Supplemental Material

Table S1. Literature Reported Statistical Downscaling Efforts.

Reference	Region	Variable	Method	Predictor Selection	Performance indicator	GCM
[94]	Pakistan	T	MLR	Backward stepwise regression	R2; RMSE	CMIP5
[95]	Chile	P; T	Analogue Method	correlation	R, bias	CMIP5
[96]	Vietnam	P; T	SDSM	Partial correlation	MAE; MBE	CANESM2
[97]	Iraq	P; T	SDSM	Partial correlation	R2; RMSE; NSE	CANESM2
[98]	Victoria Australia	P	GP, ANN, RVM, SVR	correlation	RMSE	
[99]	Limbang Malaysia	P	SDSM	Partial correlation	RMSE, R2	CANESM2
[84]	Tanzania	P; T	SDSM	partial correlation	R2	HadCM3
[4]	Narmada India	P	SDSM	partial correlation; correlation	RMSE; NMSE; N-S	HadCM3
[100]	Onkaparinga	P	Generalized linear model	correlation; Kendall's τ ; partial correlation; Two-tailed test	R2; Spearman correlation	CMIP5
[101]	Australia		GLIMCLIM			
[102]	Florida USA	P	MLR; PCR; SR; SVM	PCA; FCM	R; MAE; LEPS ; N-S; RMSE	CGCM3
[40]	Jhelum Pakistan	T	SDSM	partial correlation; correlation matrix explained variance; histograms; scatterplots	R2 RS; RMSE	HadCM3
[103]	Tawa India	P	SDSM	partial correlation; correlation; scatter plots	R	HadCM3
[104]	Ganges–Brahmaputra	P	SDSM	partial correlation	R2; RMSE; N-S; MB	CGCM3.1
[85]	Victoria Australia	Q	MLR; LS-SVM	Pearson Correlation	R2; SANS; N-S	
[88]	Karkheh Iran	P; T	SDSM	correlation analysis; partial correlation	R2; RMSE; N-S; EV	HadCM3
[88]*	Karkheh Iran	P; T	ANN	sensitivity analysis	R2; RMSE; N-S; EV	HadCM3
[80]	Quebec Canada	P	SR; DA+ weather typing	partial correlation	Explained variance	CRCM
[105]	Quebec Canada	P	MLR	backward stepwise regression	R2	CGCM3
[106]	Tunga–Bhadra River India	P; T	SDSM	partial correlation; correlation; scatter plots	R2; N-S; D	HadCM3

Reference	Region	Variable	Method	Predictor Selection	Performance indicator	GCM
[87]	Thailand	P; T	MLR; SVM-POL; SVM-RBF	-	RMSE; R; MAE; RAE; RRSE	GFDL-CM2
[107]	NW Iberian Peninsula	T	Analogue Method	-	SE	MMMICE
[108]	Tahatli Turkey	P	ANN	PCA; Singular value decomposition; CC	R2; Mallow's Cp; RMS	
[109]	Punjab India	P	SVM; KNN; CRF	correlation analysis	CDF; Box-plot	CGCM3
[110]	Taiwan	P	SVM; SVC+SVR; MA DA+SR	two-sample; KS test; Spearman's rank correlation	Q-Q plot	HadCM3
[86]	Upper-Elqui Chile	P; T	SDSM	partial correlation	R2; SE	HadCM3
[111]	Quebec Canada	P; T	ASD	backward stepwise regression	RMSE	CGCM1
[112]	Mahanadi India	Q	RVM	PCA; FCM	R; N-S	CCSR/NIES
[28]	Quebec Canada	P	SR; Principal Component Regression	PCA; stepwise regression	Q-Q plot; MAE; RMSE	CGCM1
[38]	Quebec Canada	P; T	SDSM	partial correlation	t-test; f-test	CGCM1
[113]	England	P	RBF; ANN; MLP; SDSM	SR; compositing; GA	RMSE; R	

T=Temperature; P=Precipitation; Q=Stream flow; SDSM=Statistical Downscaling Model; MLR=Multiple linear regression; PCR=Positive coefficient regression; SR= Stepwise regression; SVM= Support vector machine; LS-SVM= Least square support vector machine; ANN=Artificial Neural Network; DA= Discriminant analysis; SVM-POL= Support vector machine with polynomial kernel; SVM-RBF= Support vector machine with Radial Basis Function kernel; KNN= K-nearest neighbor; CRF= Conditional random field; SVC= Support Vector Classification; SVR= Support Vector Regression; MA= Multivariate analysis; GP= Genetic Programming, ASD= Automated statistical downscaling; RVM= Relevance Vector Machine; RBF= Radial Basis Function; MLP= Multi-Layer Perceptron; PCA= Principal Component Analysis; CC = Canonical Correlation; FCM= Fuzzy c-means clustering method; GA= Genetic Algorithm; R2= Coefficient of determination; RMSE=Root-mean squared error; NMSE=Normalized Mean Square Error; N-S=Nash-Sutcliffe efficiency; R=Correlation Coefficient; MAE= Mean Absolute error; LEPS= Linear error in probability space; RS=Ratio of simulated to observed standard deviations; MB=mean bias; SANS= Seasonally adjusted Nash-Sutcliffe efficiency; EV=Error in runoff Volume; D=Deviation; SE= Standard Error; RAE= Relative absolute error; RRSE=Root relative squared error; CDF= Cumulative density function; RRMSE= Relative Root-mean squared error; RMS=Residual Mean Squared; HadCM3= Hadley Centre Coupled Model version 3; CMIP5= Coupled Model Inter-comparison Project Phase 5; CGCM3= Canadian Global Climate Model version 3; CRCM= Coupled Regional Climate Model; GFDL-CM2= Geophysical Fluid Dynamics Laboratory Coupled Model version 3

*Same paper as the one preceding it but presenting two downscaling methods that yield different results

Table S2 Literature Reported Predictors in Statistical Downscaling of Climate Change.

	Predictors (see legend)																											
Reference*	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
[1]		T	T				T		T										T										T	T
[2]		PT	PT															PT			PT									PT
[3]		PT	PT	PT	PT	PT	PT		PT										PT	PT										PT
[4]		PT	PT	PT	PT	PT	PT		PT										PT	PT										PT
[5]									P									P	P										P	P
[6]							P					P																		
[7]		PT	PT	PT	PT	PT	PT		PT										PT	PT										PT
[8]	P	P	P	P	P	P			P			P	P	P	P	P	P		P	P			P	P	P	P	P	P		P
[9]													P							P					P					
[10]																														
[11]		P	P															P												P
[12]		T		T					T						T															
[13]	P	P	P	P	P	P			P			P	P	P	P	P	P		P	P			P	P	P	P	P	P		P
[14]	P		P	P	P	P	P					P	P	P	P	P	P		P				P	P	P	P	P	P	P	P
[15]							Q	Q	Q	Q								Q	Q	Q	Q								Q	Q
[16]		P		T					Q									Q	Q	Q	Q							P		T
[16]**						PT			PT							PT				PT										PT
[17]	P	P	P	P	P	P	P					P	P	P	P	P	P	P	P				P	P	P	P	P	P	P	P
[18]	P	P	P	P	P	P	P					P	P	P	P	P	P	P	P				P	P	P	P	P	P	P	P
[19]		PT	PT	PT		PT	PT		PT		PT		PT	PT	PT		PT	PT	PT	PT		PT		PT	PT	PT		PT	PT	PT
[20]																														
[21]																					T									
[22]									P	P									P	P	P									P
[23]		P	P															P												
[24]		P	P	P	P	P	P		P		P		P	P	P	P	P		P	P		P		P	P	P	P	P		P
[25]		T	T	T									PT		T				PT	PT		P				T		T		T
[26]		PT	PT	PT	PT	PT	PT		PT		PT		PT	PT	PT	PT	PT	PT	PT			PT		PT	PT	PT	PT	PT	PT	PT
[27]																														Q
[28]		P	P	P	P	P	P	P	P		P		P	P	P		P	P	P			P		P	P	P		P	P	P
[28]				O																									O	O
[29]		PT	PT	PT	PT	PT	PT		PT		PT		PT	PT	PT	PT	PT	PT	PT			PT		PT	PT	PT	PT	PT	PT	PT
[30]		P	P	P		P	P		P		P		P	P	P		P	P	P	P		P		P	P	P		P	P	P

1 1000 hPa Wind Speed
2 1000 hPa Zonal (Eastward) Velocity (U-component)
3 1000 hPa Meridional (Northward) velocity (V-component)
11 1000 hPa airflow strength
12 850hPa Wind Speed
13 850 hPa Zonal (Eastward) Velocity (U-component)
21 850 hPa air temperature
22 850 hPa airflow strength
23 500 hPa Wind Speed

4	1000 hPa vorticity	14	850 hPa Meridional (Northward) velocity (V-component)	24	500 hPa Zonal (Eastward) Velocity (U-component)
5	1000 hPa wind direction	15	850 hPa vorticity	25	500 hPa Meridional (Northward) velocity (V-component)
6	1000 hPa divergence	16	850 hPa wind direction	26	500 hPa vorticity
7	1000 hPa specific humidity	17	850 hPa divergence	27	500 hPa wind direction
8	1000 hPa geopotential height	18	850 hPa specific humidity	28	500 hPa divergence
9	1000 hPa relative humidity	19	850 hPa geopotential height	29	500 hPa specific humidity
10	1000 hPa air temperature	20	850 hPa relative humidity	30	500 hPa geopotential height

*P represents predictors that predict precipitation, T represents predictors for temperature and O represents predictors for occurrence of rainfall

**Same paper as the one precedes it but presenting two downscaling methods which yields different set of predictors

Table S2 Literature Reported Predictors in Statistical Downscaling of Climate Change (continued).

	Predictors (see legend)																													
Reference*	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**	**51**	**52**	**53**	**54**	**55**	**56**	**57**	**58**	**59**	**60**
[1]	T							T						T																
[2]					PT						PT																			
[3]	PT							PT						PT	PT	PT	PT													
[4]	PT							PT						PT	PT	PT	PT													
[5]	P							P			P			P																
[6]															P															
[7]	PT							PT						PT	PT	PT	PT													
[8]	P							P		P				P																
[9]	P					P	P																			P	P	P	P	P
[10]																														
[11]											P			P																
[12]	T							T																						
[13]	P							P		P				P																
[14]								P						P	P															
[15]	Q	Q		Q		Q	Q	Q		Q	Q	Q	Q	Q							Q	Q								
[16]														PT																
[16]**	PT		PT								PT																			
[17]								P						P																
[18]								P						P																
[19]	PT		PT					PT	PT					PT																
[20]								PT					PT		PT								PT	PT						
[21]														T																
[22]	P	P		P	P								P	P	P															
[23]								P		P				P																
[24]	P		P					P						P																
[25]	PT							T						T																
[26]			PT					PT						PT																
[27]								Q		Q				Q																
[28]			P								P			P																
[28]																									O					
[29]			PT					PT						PT																
[30]	P		P						P					P																

h	500 hPa relative humidity	41	Surface air temperature	51	Volumetric soil moisture content 0–10 cm
32	500 hPa air temperature	42	Surface skin temperature	52	Volumetric soil moisture content 10–200 cm
33	500 hPa airflow strength	43	Surface pressure	53	evaporator
34	200 hPa geopotential height	44	Mean sea-level pressure	54	net short wave
35	200 hPa air temperature	45	precipitation	55	700 hPa vorticity
36	700 hPa geopotential height	46	Maximum Temperature	56	700 hPa air temperature
37	700 hPa relative humidity	47	Minimum Temperature	57	700 hPa Zonal (Eastward) Velocity (U-component)
38	2 m air temperature	48	Preceding days rainfall	58	700 hPa Meridional (Northward) velocity (V-component)
39	2 m air temperature lagged 1 day	49	altitude	59	Temporal dependence
40	2 m specific humidity	50	distance from coast	60	Spatial variation

*P represents predictors that predict precipitation, T represents predictors for temperature and O represents predictors for occurrence of rainfall

**Same paper as the one precedes it but presenting two downscaling methods which yields different set of predictors

Table-S3 Rainfall Occurrence Equations for All Stations.

Station	Equation
AMMAN HUSSEIN COLLEGE	RO = 0.72 – 4.67HGT.500 + 1.28HGT.850
BAL'AMA	RO = -1.34 + 2.18SHUM.500 – 3.50HGT.500 + 1.67HGT.850
BAQURA MET.STATION	RO = 0.49 – 5.33HGT.500 + 2.50HGT.850
DEIR ALLA AGR. STATION	RO = 0.40 – 5.37HGT.500 + 2.64HGT.850
EN NUEIYIME	RO = 0.51 - 6.00HGT.500 + 2.21HGT.850
HAR KENAAN, IS	RO = 2.14 – 4.97HGT.500 + 2.08HGT.850
HOSHA	RO = -0.77 – 5.07HGT.500 + 1.90HGT.850
HUSN	RO = 0.42 – 5.42HGT.500 + 1.78HGT.850
IRBID SCHOOL	RO = 0.01 – 6.89HGT.500 + 3.05HGT.850
JABER MUGHAYYIR	RO = -0.75 – 3.95HGT.500 + 1.76HGT.850
JARASH	RO = 1.19 – 7.35HGT.500 + 5.23HGT.850
JERUSALEM CENTRAL, IS	RO = 2.74 – 4.22T2 +3.28P + 0.41RHUM.1000
JUBEIHA	RO = -0.02 – 2.75HGT.500 + 1.76HGT.850
K.H.NURSERY	RO = 0.13 – 4.52HGT.500 + 2.33HGT.850
EVAP.ST(BAQ'A)	
KHANASIRA	RO = -0.11 – 4.87HGT.500 +1.89HGT.850
KHARJA	RO = 0.45 – 5.30HGT.500 + 1.40HGT.850
KITTA	RO = 1.01 – 6.85HGT.500 + 4.14HGT.850
KUFR SAUM	RO = 0.57 – 5.58HGT.500 + 1.86HGT.850
MAFRAQ AIR PORT	RO = 0.04 – 1.92UWND.500 - 5.15HGT.500 + 1.13HGT.850
MIDWAR	RO = 0.40 – 5.10HGT.500 + 1.13HGT.850
NAWASIF	RO = -1.58 + 2.02VWND.500 + 3.01SHUM.500 – 4.60HGT.500 + 2.56HGT.850
PRINCE FEISAL NURSERY	RO = 0.25 – 5.11HGT.500 + 2.56HGT.850
QAFQAFA	RO = 0.08 + 10.15SHUM.500 – 11.70RHUM.500 -14.31HGT.500 + 6.90HGT.850
RAMTHA BOYS SCHOOL	RO = 0.61 – 5.79HGT.500 + 2.84HGT.850
RUMEIMIN	RO = 0.25 – 5.55HGT.500 + 2.74HGT.850
RUSEIFA	RO = -0.66 – 9.21HGT.500 + 2.30HGT.850
SIHAN	RO = -0.17 – 3.97HGT.500 + 1.41HGT.850
SUBEIHI	RO = 0.40 + 2.17RHUM.1000 – 5.69HGT.500 + 2.41HGT.850
SUKHNA	RO = 0.25 – 4.73HGT.500
TURRA	RO = -0.36 – 2.92HGT.500 + 1.96HGT.850
UM EL-JUMAL EVAP .ST	RO = -0.93 + 2.40VWND.1000 + 2.67SHUM.500 – 3.05HGT.500 + 2.27HGT.850
UM JAUZA	RO = 0.50 – 4.93HGT.500 + 2.58HGT.850
UM QEIS	RO = 0.51 – 6.96HGT.500 + 3.14HGT.850
WADI DHULEIL NURSERY	RO = -0.18 – 4.30HGT.500 + 1.41HGT.850

RO: Rain Occurrence; T2: Temperature at 2m; P: Pressure
RHUM.500: Relative Humidity at 500 pressure level; RHUM.1000: Relative Humidity at 1000 pressure level;
SHUM.500: Specific Humidity at 500 pressure level
UWND.500: U wind component (East/West) at 500 pressure level; VWND.500: V wind component (North/South) at 500 pressure level;
VWND.1000: V wind component (North/South) at 1000 pressure level;
HGT.500: Geopotential Height at 500 mb pressure level; HGT.850: Geopotential Height at 850 mb pressure level

Table S4 Rainfall Equations for All Stations.

Station	Equation
AMMAN HUSSEIN COLLEGE	log(R) = 2.46 -1.48T2 + 0.67SHUM.500 + 1.13RHUM.1000
BAL'AMA	log (R) = 2.26 – 0.87T2 + 0.51VWND.1000 + 0.88RHUM.1000
BAQURA MET.STATION	log (R) = 2.45 – 0.52VWND.500 + 0.92 VWND.1000 – 1.12HGT.500 + 0.30 HGT.850
DEIR ALLA AGR. STATION	log (R) = 2.50 – 1.05T2 + 0.98SHUM.500 + 1.27RHUM.1000
EN NUEIYIME	log (R) = 2.21 – 0.60VWND.500 + 0.91VWND.1000 – 0.94 HGT.500
HAR KENAAN, IS	log (R) = 2.89 + 1.27VWND.1000 – 1.23HGT.500 + 0.52HGT.850
HOSHA	log (R) = 2.08 – 0.73VWND.500 + 0.62 VWND.1000 + 0.77SHUM.1000 – 0.44HGT.500
HUSN	log (R) = 2.77 + 0.84RHUM.1000 – 1.17HGT.500
IRBID SCHOOL	log (R) = 2.55 + 0.46VWND.1000 + 0.44RHUM.1000 – 1.32HGT.500 + 0.37HGT.850
JABER MUGHAYYIR	log (R) = 2.23 – 0.71VWND.500 + 1.02VWND.1000 + 0.99RHUM.1000
JARASH	log (R) = 2.30 + 0.69VWND.1000 – 1.41HGT.500
JERUSALEM CENTRAL, IS	log (R) = 2.75 – 1.22T2 + 0.67VWND.1000
JUBEIHA	log (R) = 2.94 – 1.22T2 + 0.99RHUM.1000
K.H.NURSERY EVAP.ST(BAQ'A)	log (R) = 2.47 – 1.45HGT.500
KHANASIRA	log (R) = 1.90 – 0.73VWND.500 + 0.91VWND.1000 – 0.82HGT.500
KHARJA	log (R) = 2.50 + 0.47VWND.1000 + 0.46RHUM.1000 – 1.47HGT.500 + 0.37HGT.850
KITTA	log (R) = 2.91 + 0.57VWND.1000 +0.93RHUM.1000 – 1.26HGT.500
KUFR SAUM	log (R) = 2.77 – 0.49VWND.500 + 0.79VWND.1000 – 1.12HGT.500 + 0.29HGT.850
MAFRAQ AIR PORT	log (R) = 1.50 + 0.42VWND.1000 + 0.80RHUM.500 – 1.20HGT.500 + 0.74HGT.850
MIDWAR	log (R) = 1.95 + 1.08VWND.1000 – 1.51HGT.500 + 0.77HGT.850
NAWASIF	log (R) = 1.86 – 0.60VWND.500 + 0.71VWND.1000 + 0.84RHUM.1000 – 0.83HGT.500 – 0.53HGT.500
PRINCE FEISAL NURSERY	log (R) = 2.48 + 0.85RHUM.1000 – 1.33HGT.500
QAFQAFA	log (R) = 2.20 + 0.62VWND.1000 + 0.74SHUM.500 + 1.03RHUM.1000 – 1.62HGT.500 + 0.68HGT.850
RAMTHA BOYS SCHOOL	log (R) = 2.22 + 0.53VWND.1000 - 1.17HGT.500 + 0.30HGT.850
RUMEIMIN	log (R) = 2.24 + 0.55VWND.1000 + 0.82RHUM.1000 – 1.62HGT.500 + 0.60HGT.850
RUSEIFA	log (R) = 2.13 – 1.35T2 – 0.53P
SIHAN	log (R) = 2.77 + 0.77RHUM.1000 – 1.45HGT.500 + 0.46HGT.850
SUBEIHI	log (R) = 2.43 + 0.82SHUM.500 – 1.98HGT.500 + 0.65HGT.850
SUKHNA	log (R) = 1.52 + 0.97VWND.1000 – 1.08HGT.500 + 0.54HGT.850
TURRA	log (R) = 2.48 – 0.50VWND.500 + 0.68VWND.1000 + 0.57RHUM.1000 – 0.82HGT.500
UM EL-JUMAL EVAP .ST	log (R) = 2.23 + 1.06RHUM.1000 – 0.73HGT.500
UM JAUZA	log (R) = 2.62 + 0.70VWND.1000 – 1.26HGT.500
UM QEIS	log (R) = 2.89 – 0.43VWND.500 + 0.70VWND.1000 + 0.82RHUM.1000 – 0.79HGT.500
WADI DHULEIL NURSERY	log (R) = 2.00 + 0.88RHUM.1000 – 0.86HGT.500 + 0.43HGT.850

R: Rain Amount; T2: Temperature at 2m; P: Pressure
VWND.500: V wind component (North/South) at 500 pressure level; VWND.1000:V wind component (North/South) at 1000 pressure level
RHUM.500: Relative Humidity at 500 pressure level; RHUM.1000: Relative Humidity at 1000 pressure level
SHUM.500: Specific Humidity at 500 pressure level
HGT.500: Geopotential Height at 500 mb pressure level; HGT.850: Geopotential Height at 850 mb pressure level

Table S5 Temperature Equations for All Stations.

Station	Season	Equation
Beirut Airport	Winter	T = 19.39 + 1.66T2 – 0.93P
	Spring	T = 19.38 + 4.66T2
	Summer	T = 21.53 + 1.68T2 -1.36P + 1.72HGT.500
	Fall	T = 21.54 + 4.86T2
	One Model	T = 20.58 + 5.20T2
Damascus	Winter	T = 13.16 + 2.16T2 – 1.41P + 0.56UWND.1000 + 1.80HGT.500
	Spring	T = 17.27 + 7.41T2 + 1.11UWND.1000
	Summer	T = 18.60 +3.36T2 – 1.89P + 2.02HGT.500
	Fall	T = 15.67 + 7.47T2
	One Model	T = 16.87 + 7.65T2
H4 Airbase	Winter	T= 17.09 + 3.71T2 – 1.35P + 2.05HGT.500
	Spring	T = 19.68 + 8.07T2
	Summer	T = 20.38 + 5.10T2 – 1.09P + 1.78HGT.500
	Fall	T = 19.78 + 8.07T2
	One Model	T = 19.62 + 8.25T2
MA AN	Winter	T = 16.28 + 3.16T2 – 1.45P + 2.22HGT.500
	Spring	T = 17.25 + 7.57T2
	Summer	T = 16.41 + 7.51T2 + 0.73UWND.1000 + 1.25HGT.500
	Fall	T = 18.00 +7.35T2
	One Model	T = 17.80 + 7.39T2
Prince Hassan	Winter	T = 16.64 + 4.86T2 + 1.32HGT.500
	Spring	T = 19.12 + 8.02T2
	Summer	T = 19.21 + 8.54T2
	Fall	T = 20.15 + 7.98T2
	One Model	T = 19.56 + 8.14T2
Ghor Safi	Winter	T = 21.67 + 3.94T2 + 0.20UWND.1000 + 0.35RHUM.1000
	Spring	T = 25.59 + 5.83T2 + 0.90UWND.1000
	Summer	T = 28.02 + 4.23T2 – 0.82P + 0.58UWND.1000
	Fall	T = 25.51 + 6.38T2 +0.79RHUM.1000
	One Model	T = 25.80 + 6.60T2
King Hussein	Winter	T = 15.51 + 3.75T2 – 0.79P + 0.32UWND.1000 + 1.58HGT.500
	Spring	T = 17.32 + 7.02T2
	Summer	T = 18.00 + 6.60T2
	Fall	T = 17.15 + 6.76T2
	One Model	T = 17.29 + 6.70T2
Jerusalem	Winter	T = 20.67 + 2.55T2 -1.40P – 0.89RHUM.1000 + 3.54HGT.500
	Spring	T = 21.40 + 8.31T2
	Summer	T = 20.36 + 7.98T2
	Fall	T = 21.63 + 6.98T2
	One Model	T= 21.37 + 7.26T2
Har Kenaan	Winter	T = 16.86 + 1.04T2 – 1.50P – 0.78RHUM.1000 + 3.62HGT.500
	Spring	T = 21.07 + 8.78T2
	Summer	T= 23.00 + 2.00T2 – 1.58P – 1.77RHUM.1000 + 3.21HGT.500
	Fall	T= 20.46 + 7.86T2
	One Model	T = 20.62 + 8.08T2

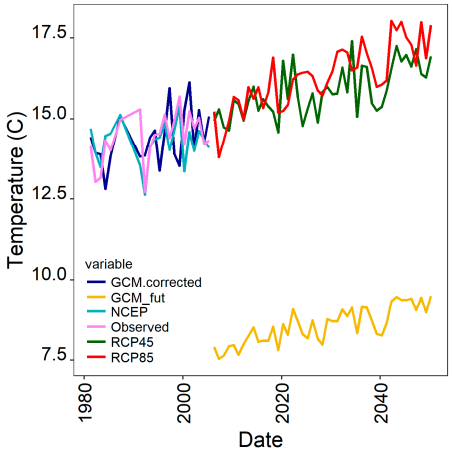
T2: Temperature at 2m; P: Pressure;
UWND.1000: U wind component (East/West) at 1000 pressure level;
RHUM.1000: Relative Humidity at 1000 pressure level;
HGT.500: Geopotential Height at 500 mb pressure level

Table S6: Temperature and Precipitation at Each Station.
Past observed data, historical corrected GCM,
NCEP and future forecast for RCP 4.5 and RCP 8.5, and
raw GCM averaged between RCP 4.5 and RCP 8.5
GCM_fut is the average, over both RCP scenarios, of the uncorrected GCM projections

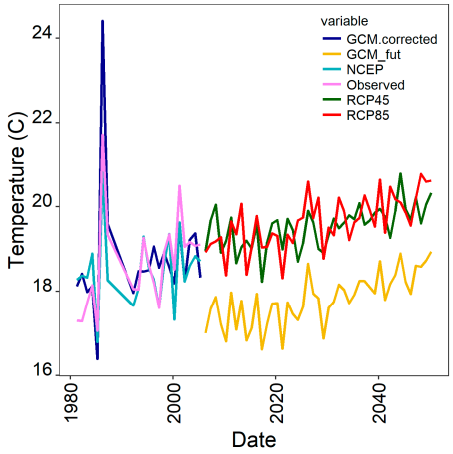
Temperature

Beirut Airport

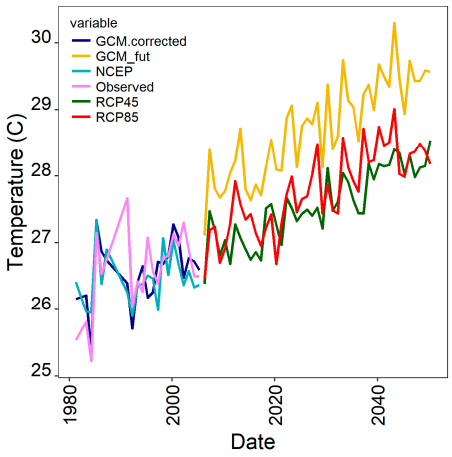
Winter



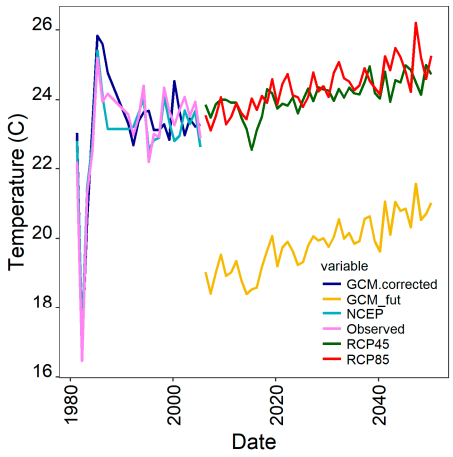
Spring



Summer



Fall



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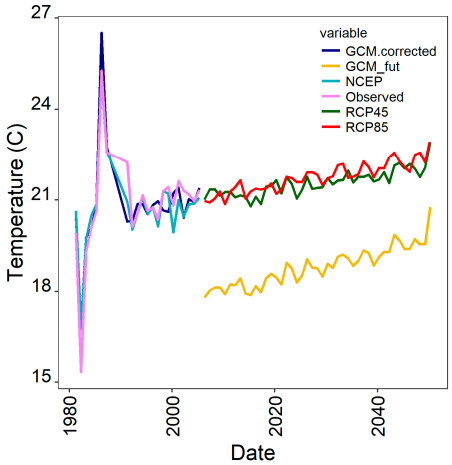
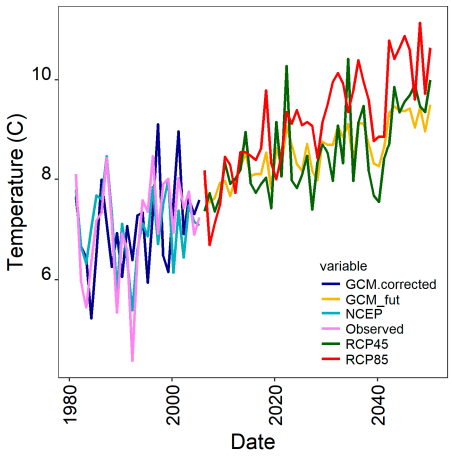


Damascus

Winter



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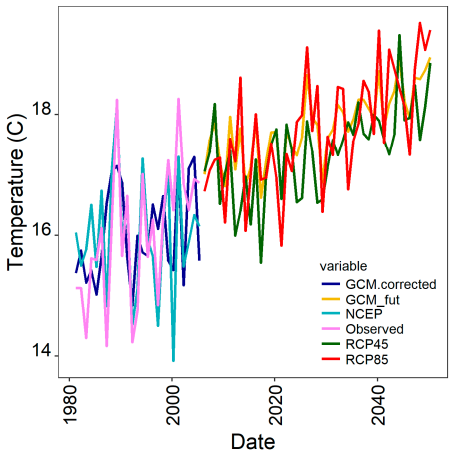

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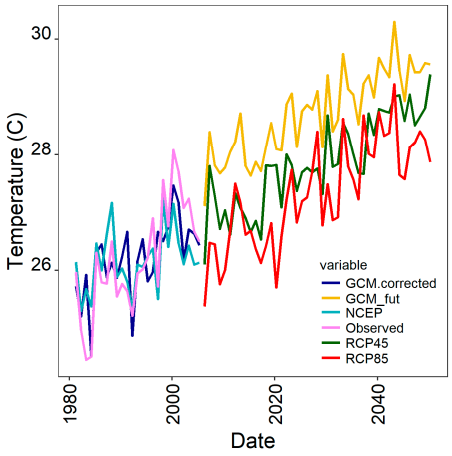

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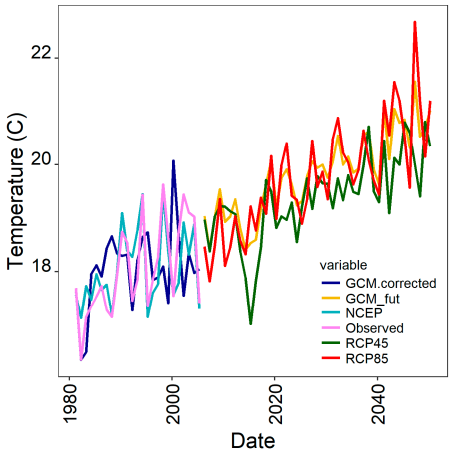

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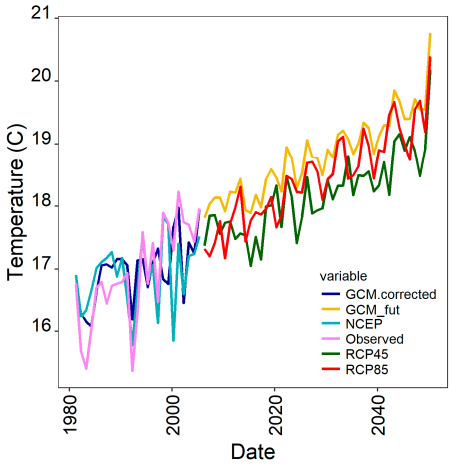
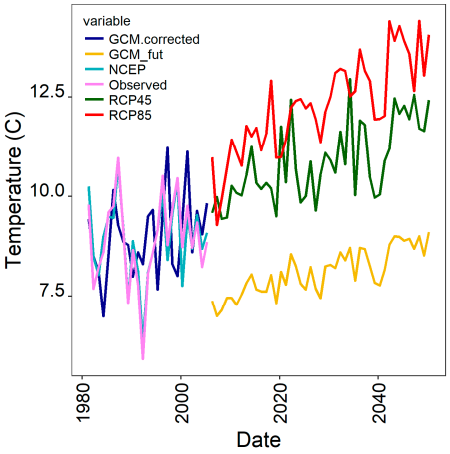


H4 Airbase

Winter



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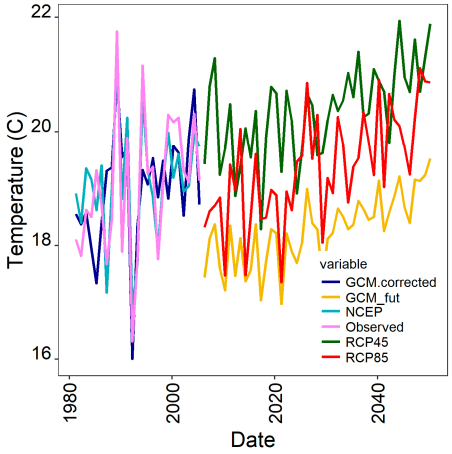

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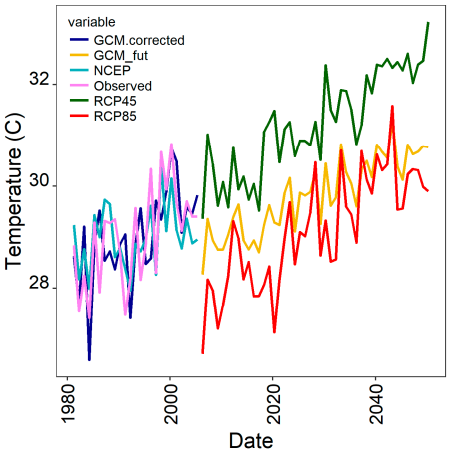

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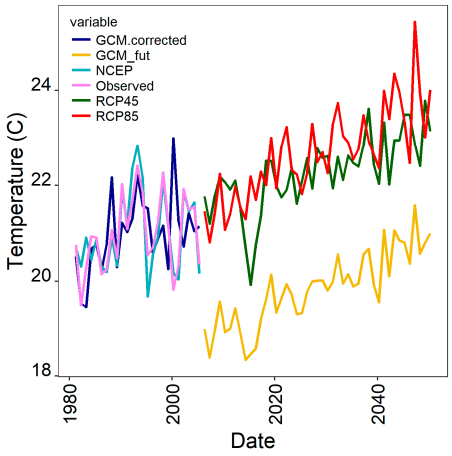

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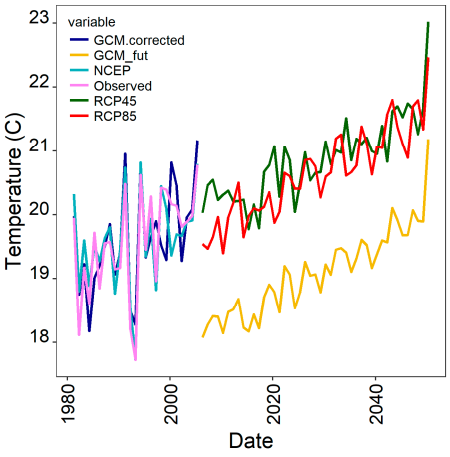
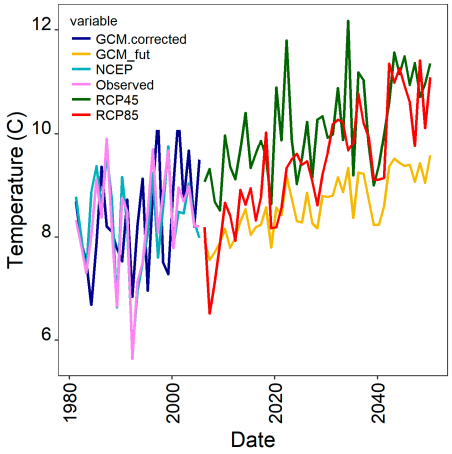


Ma'an

Winter



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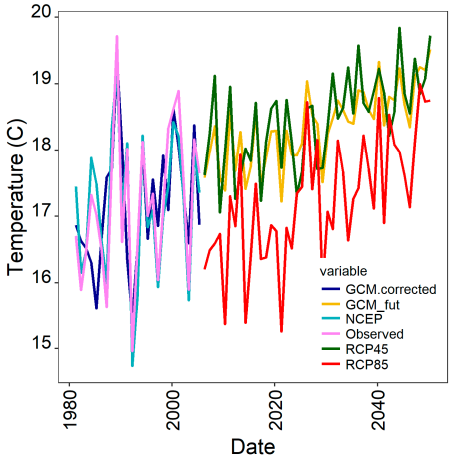

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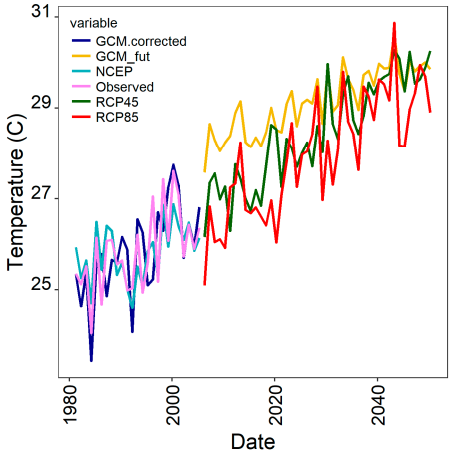

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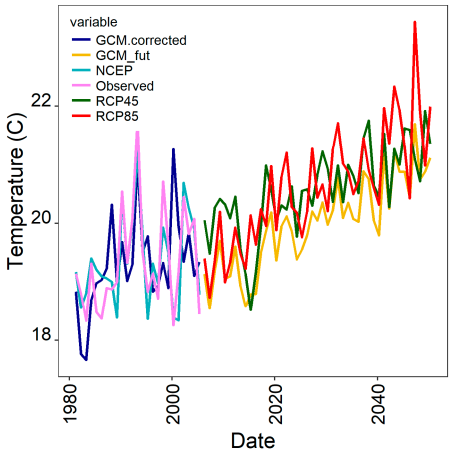

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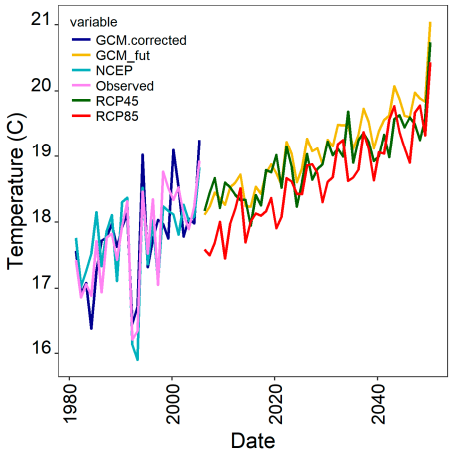
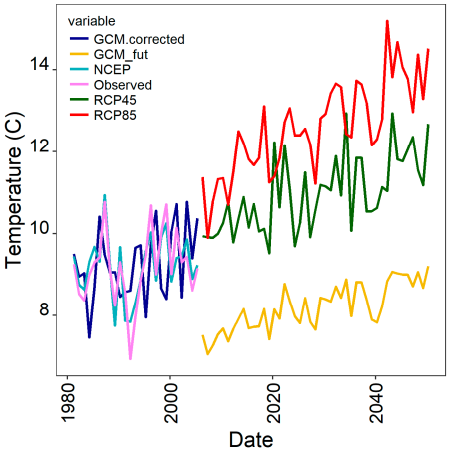


Prince Hassan

Winter



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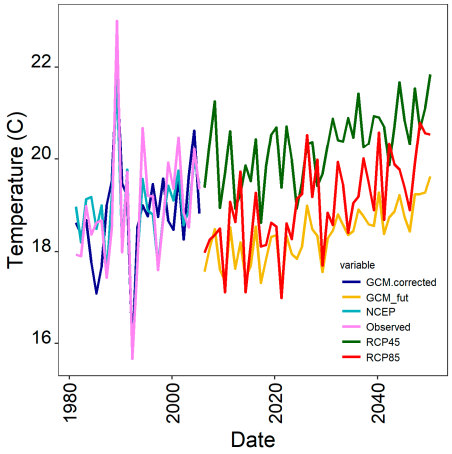

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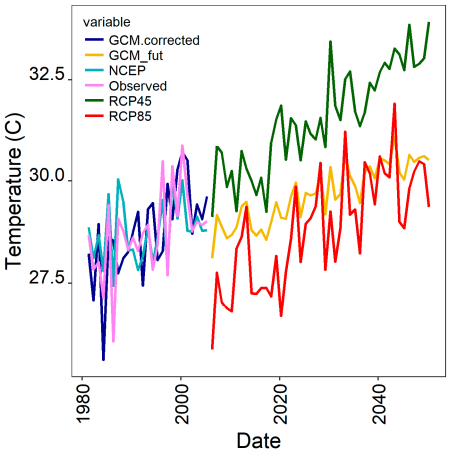

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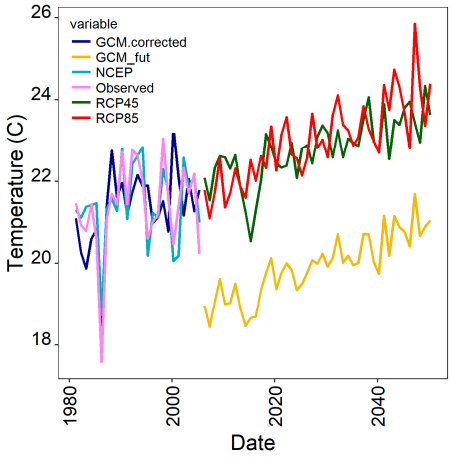

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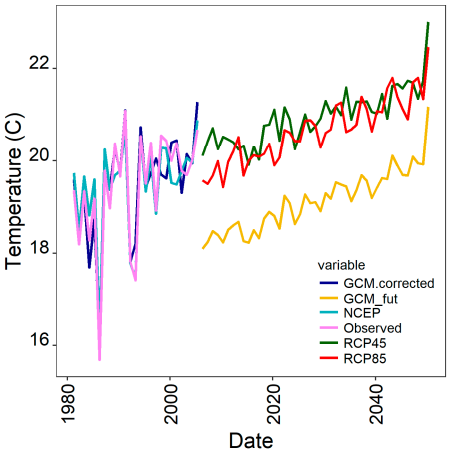
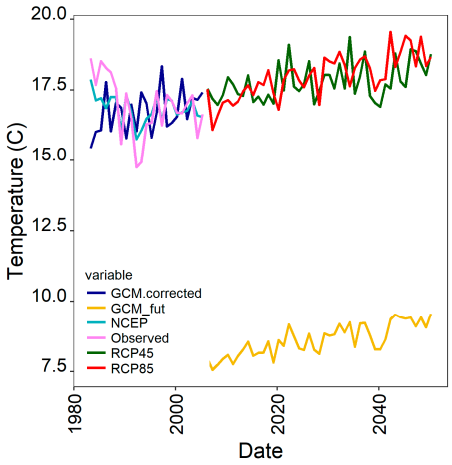


Ghor Safi

Winter



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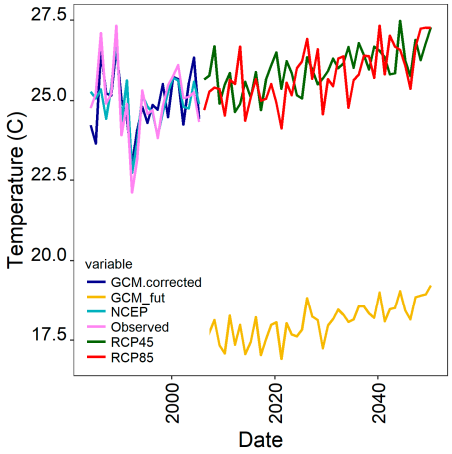
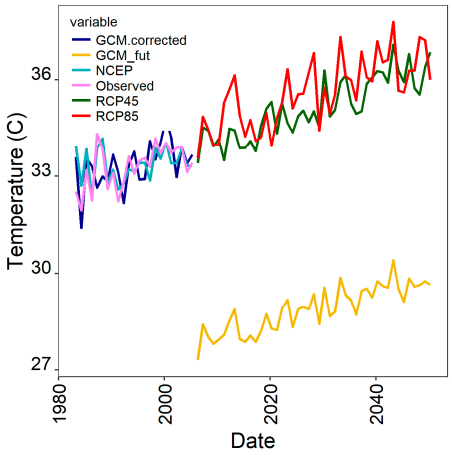


Summer



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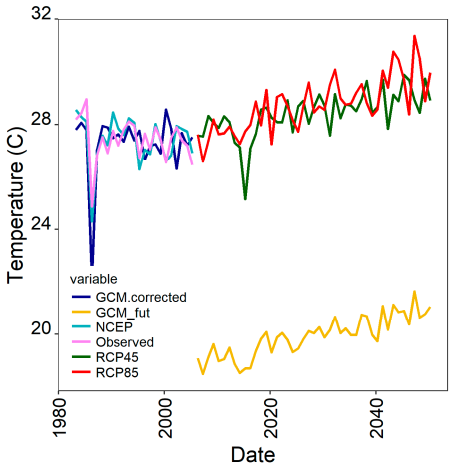

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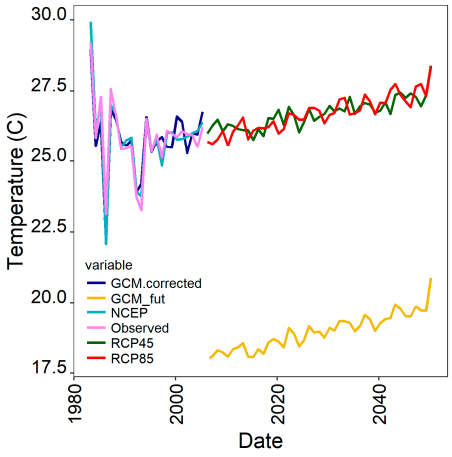
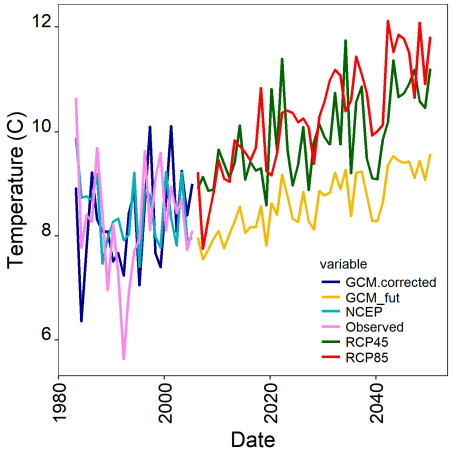


King Hussein

Winter



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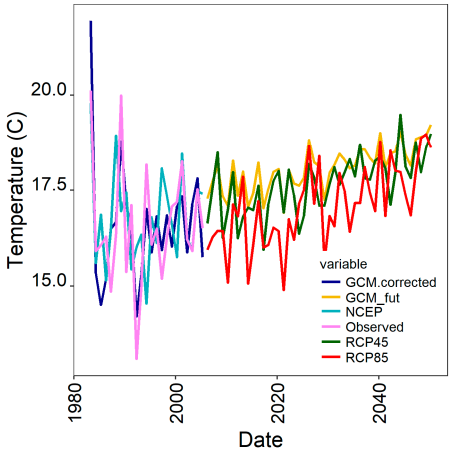

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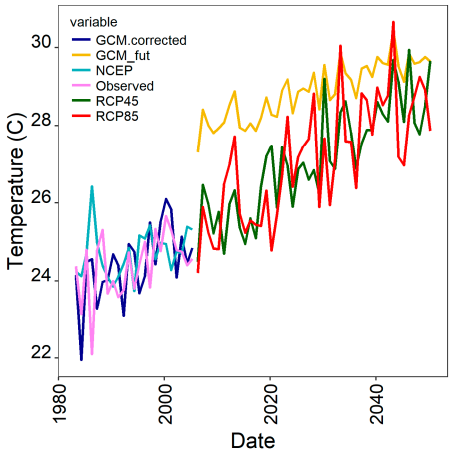

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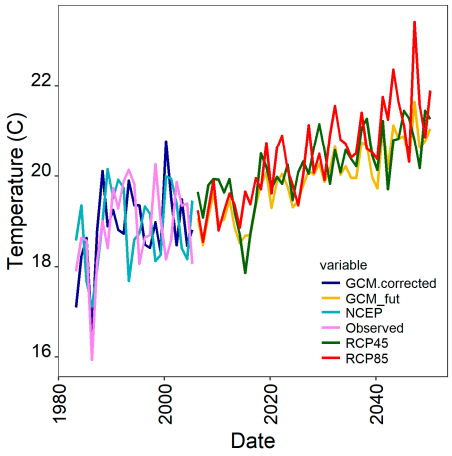

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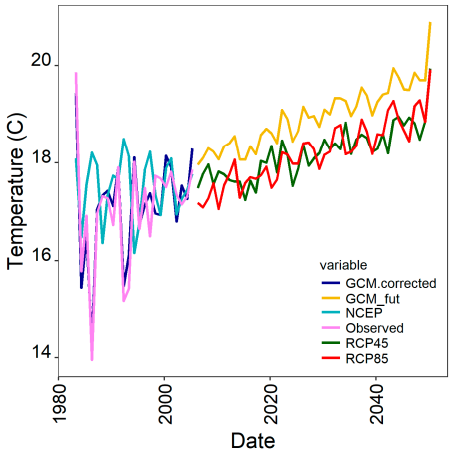
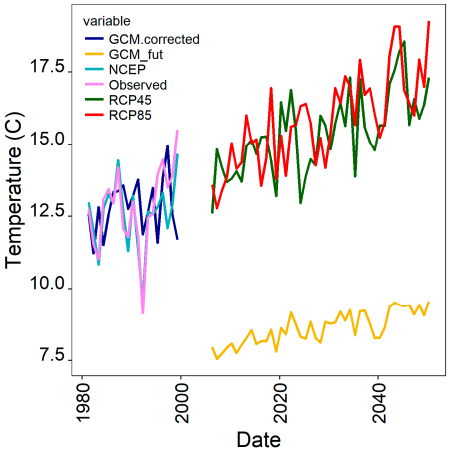


Jerusalem

Winter



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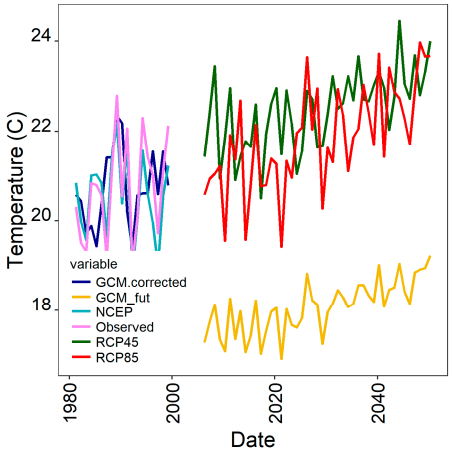
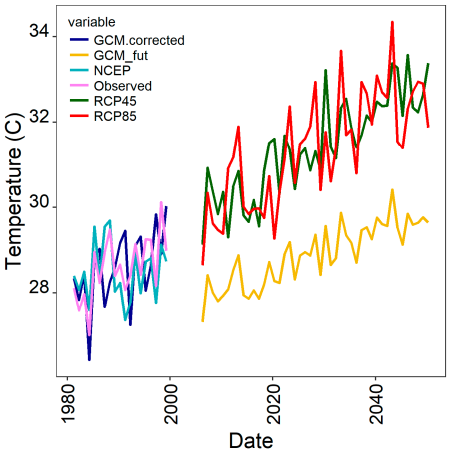


Summer



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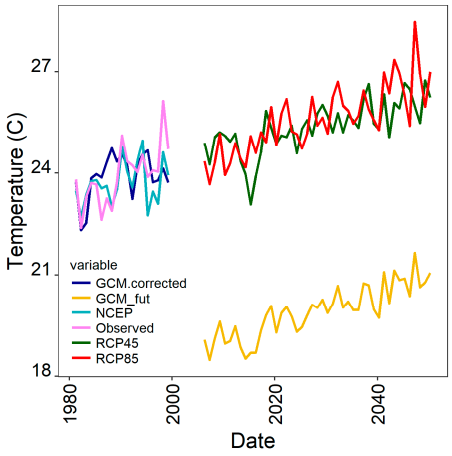

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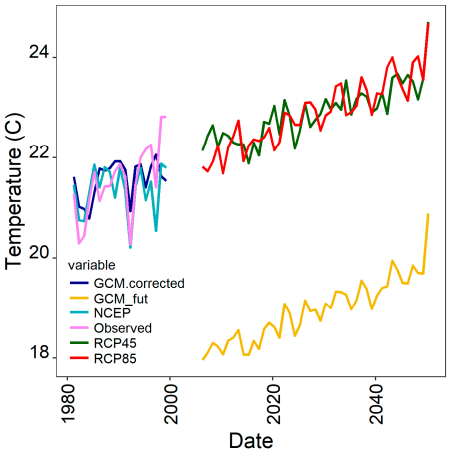
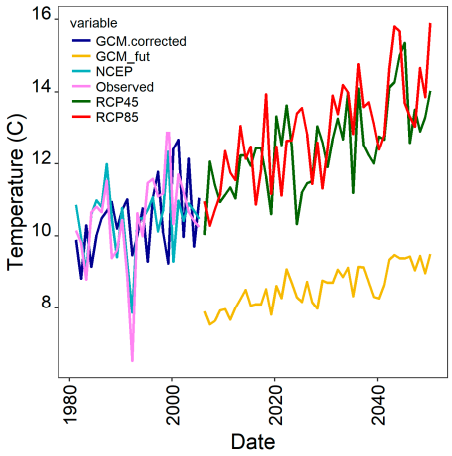


Har Kenaan

Winter



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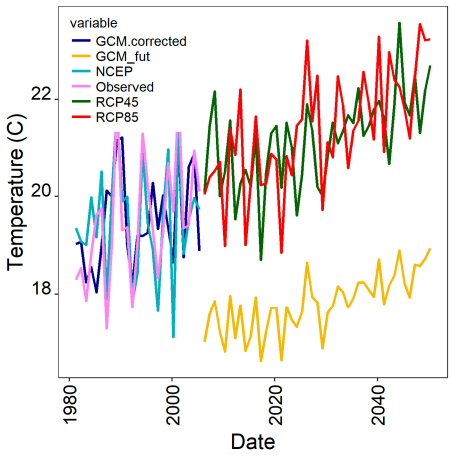

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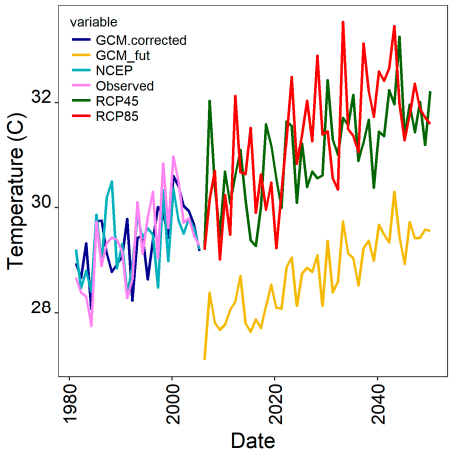

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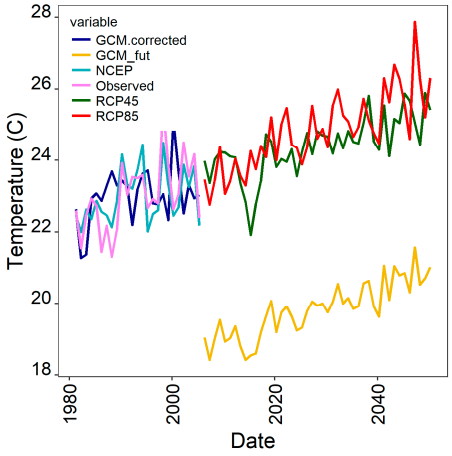

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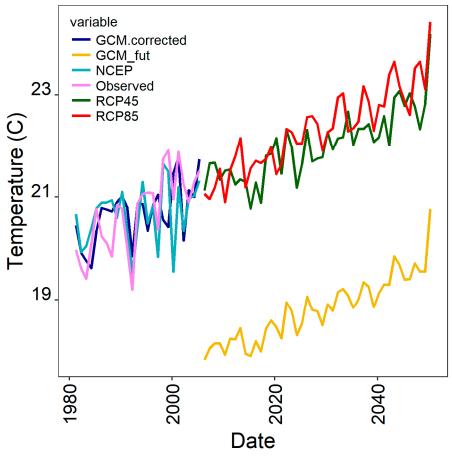
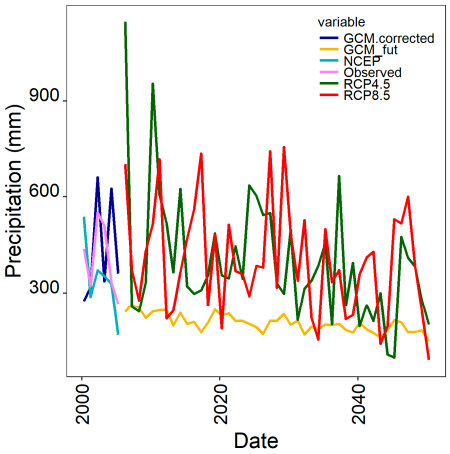
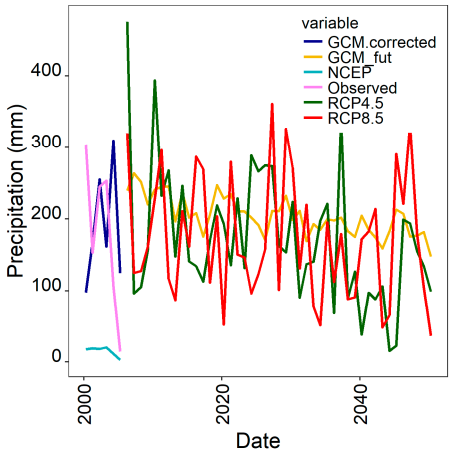


Precipitation

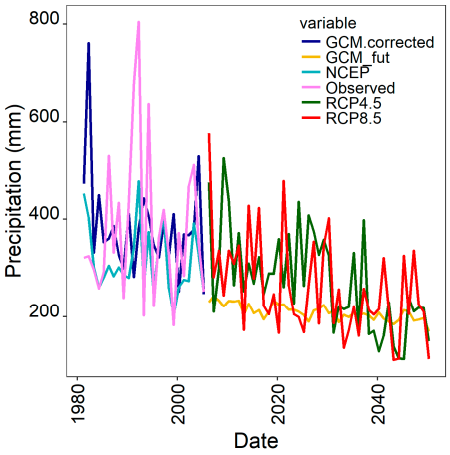
AMMAN HUSSEIN COLLEGE



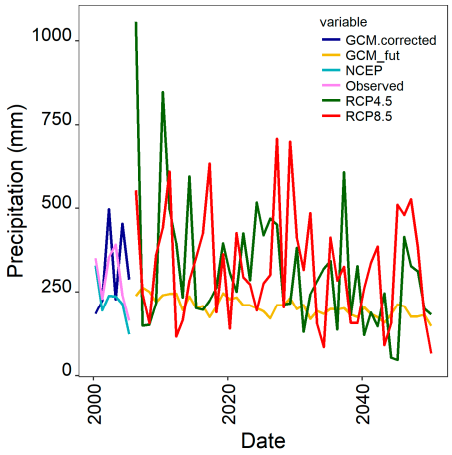
BAL'AMA



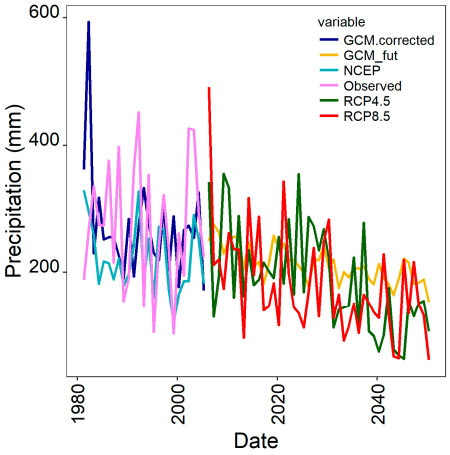
BAQURA MET.STATION



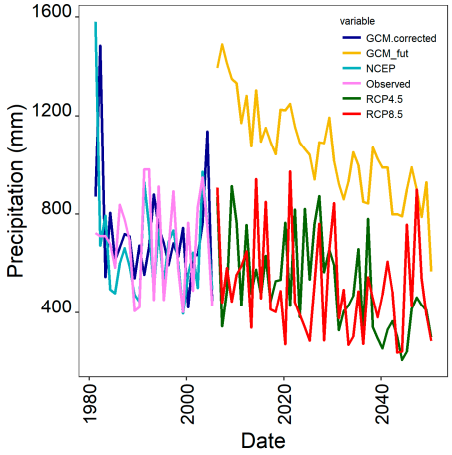
DEIR ALLA AGR. STATION



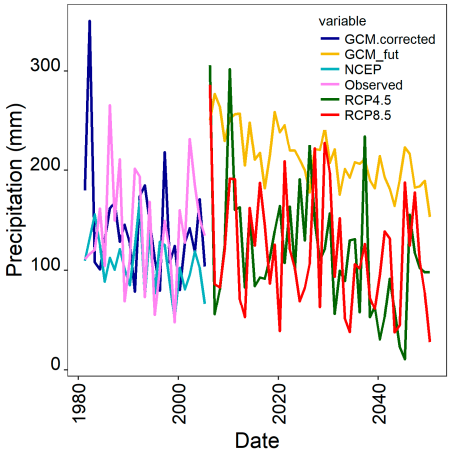
EN NUEIYIME



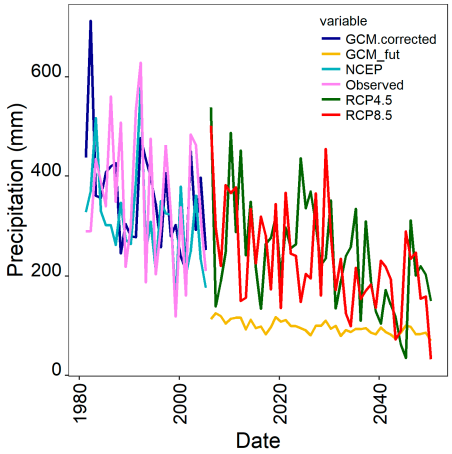
HAR KENAAN, IS



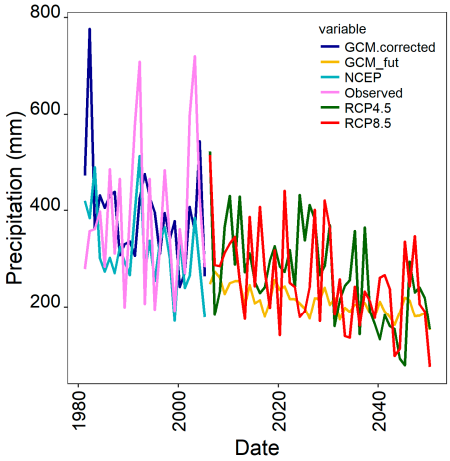
HOSHA



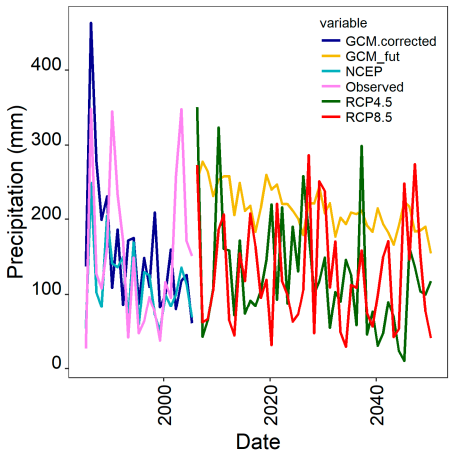
HUSN



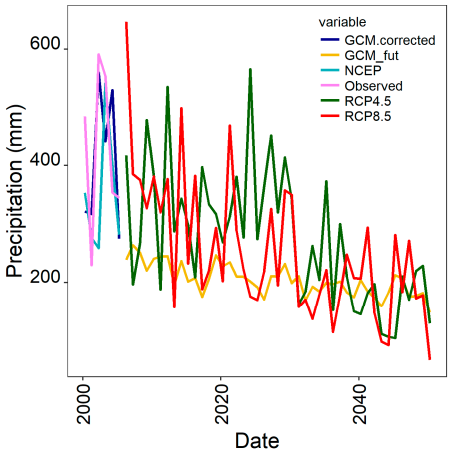
IRBID SCHOOL



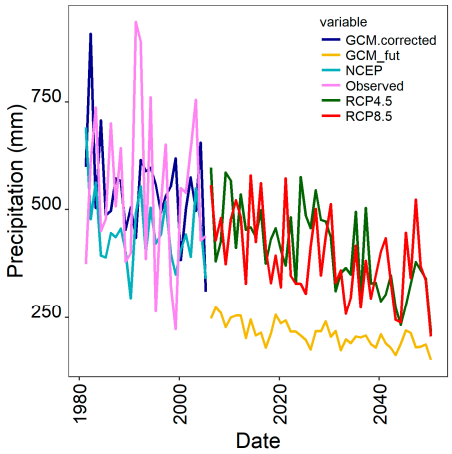
JABER MUGHAYYIR



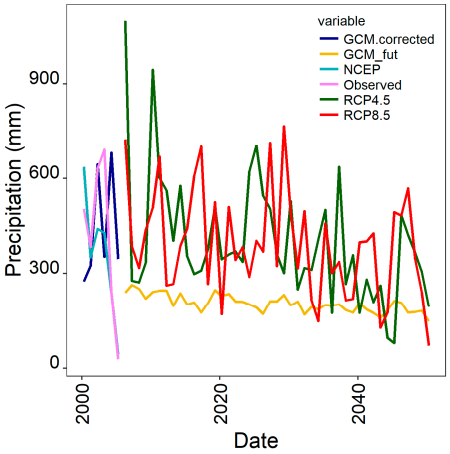
JARASH



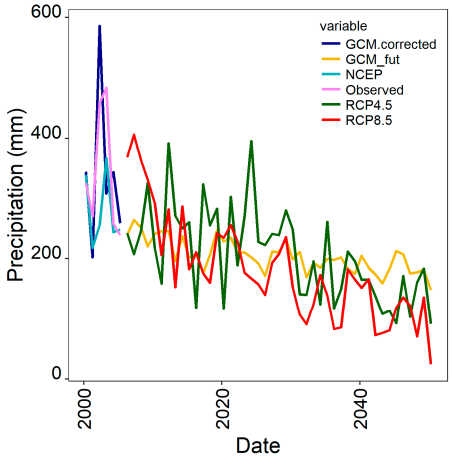
JERUSALEM CENTRAL, IS



JUBEIHA



K.H.NURSERY EVAP.ST(BAQ'A)



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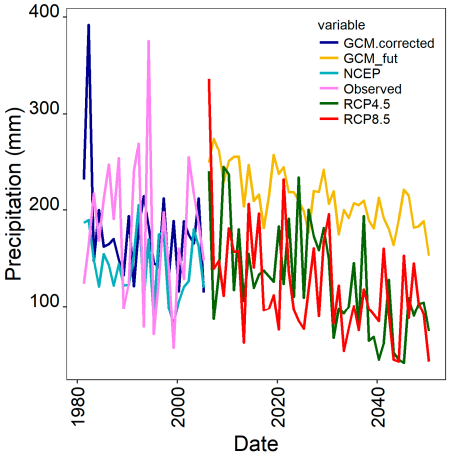

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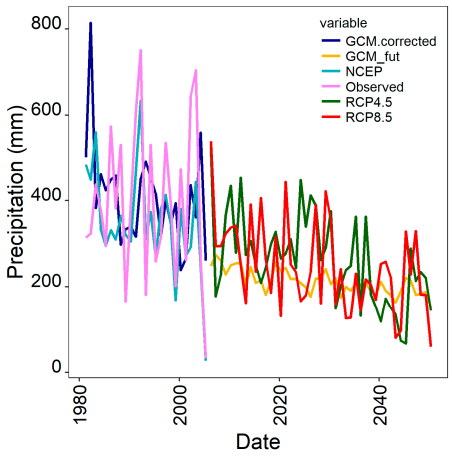

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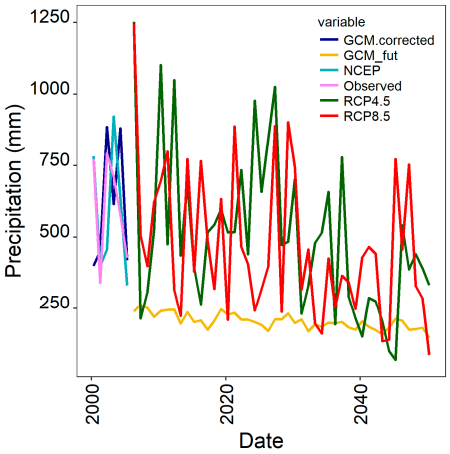

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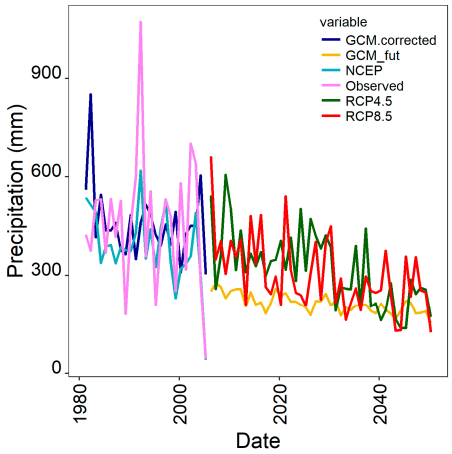

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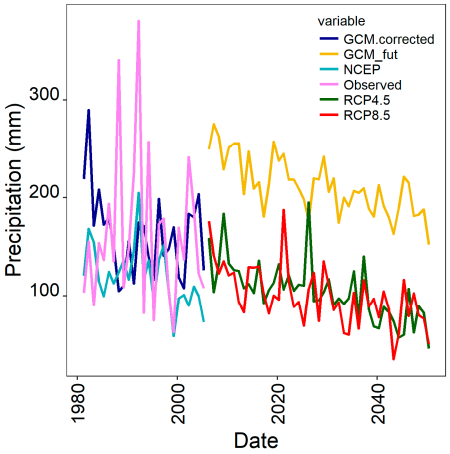

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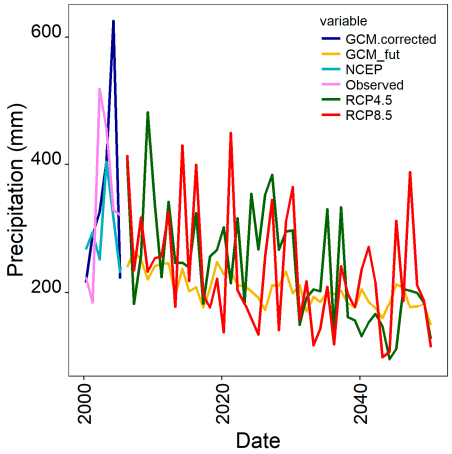

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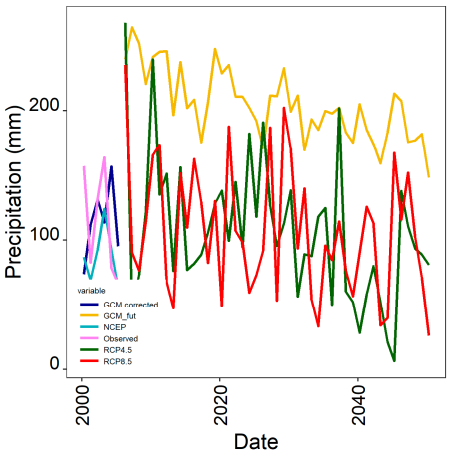

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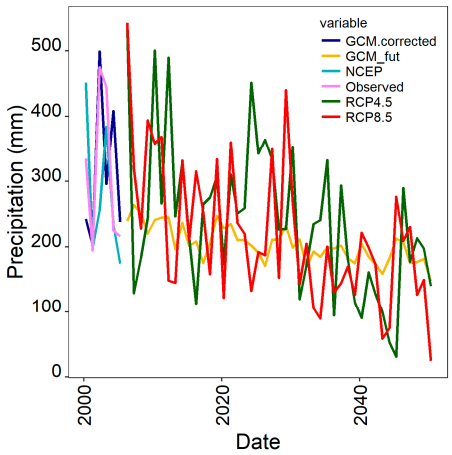

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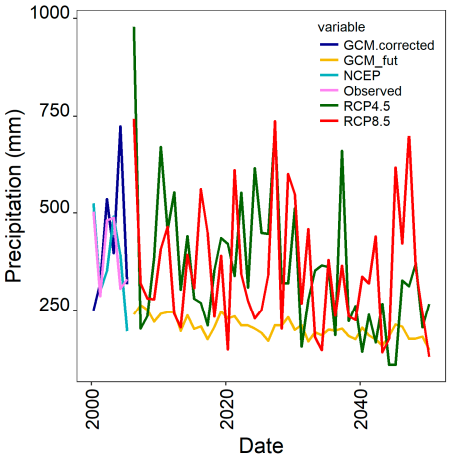

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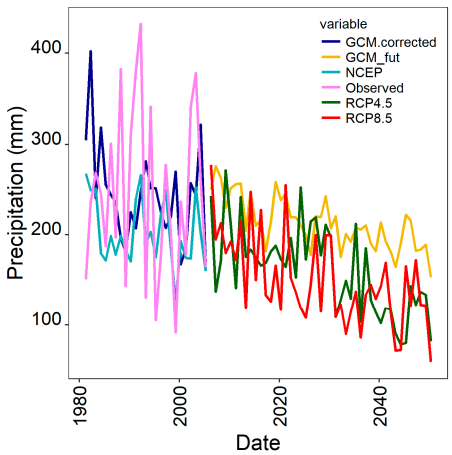

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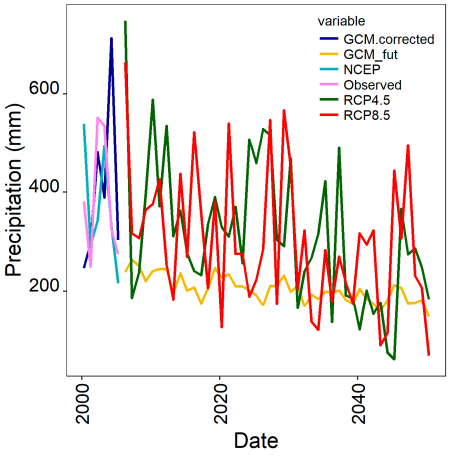

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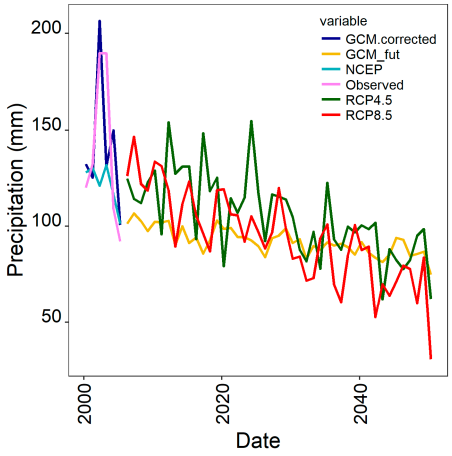

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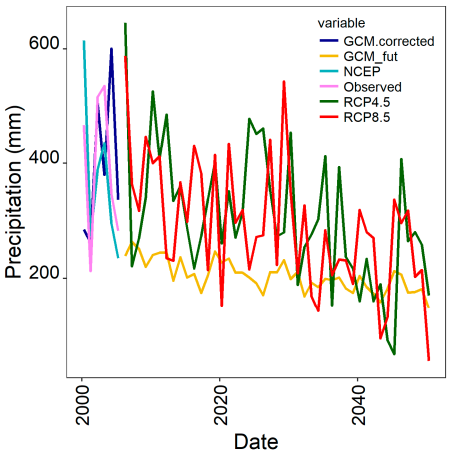

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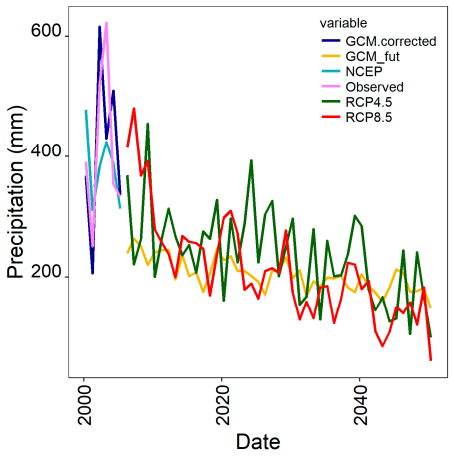

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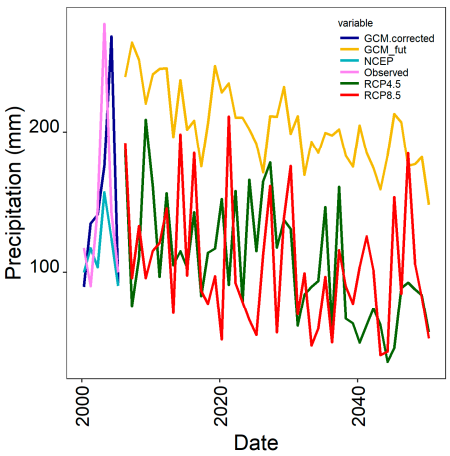

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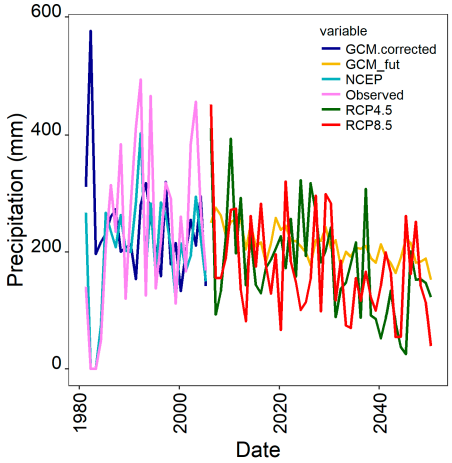

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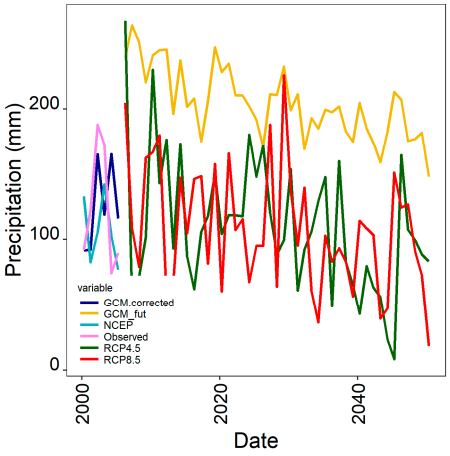

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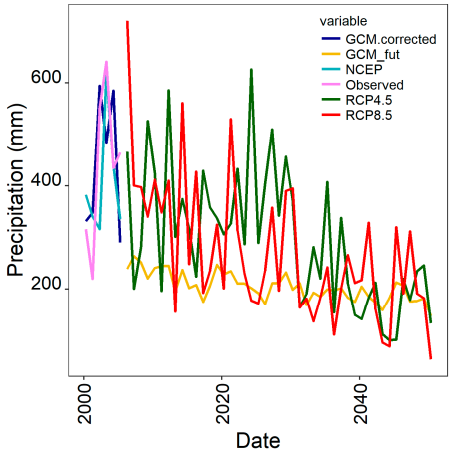

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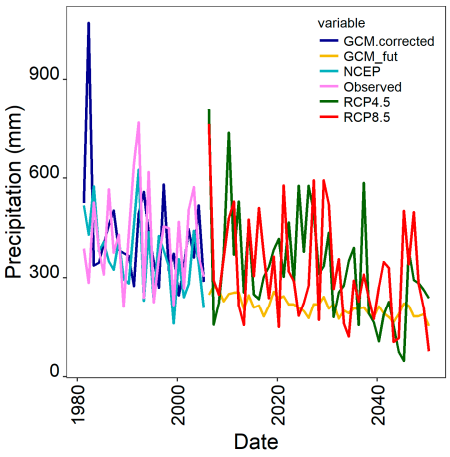

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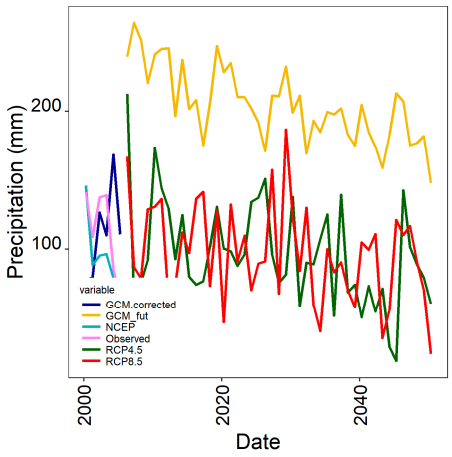

Table S7 Temperature Parametric Test and the p-Values.

Station	Season	D	p-value
Beirut Airport	Winter	0.05283	0.09846
	Spring	0.09302	0.0557
	Summer	0.22266	3.37E-05
	Fall	0.10227	2.47E-05
	One Model	0.0733	1.42E-10
Damascus	Winter	0.06411	0.02386
	Spring	0.06187	0.03105
	Summer	0.0877	0.0004154
	Fall	0.06663	0.0167
	One Model	0.05283	1.08E-05
H4 Airbase	Winter	0.03746	0.4711
	Spring	0.07258	0.008228
	Summer	0.13062	2.91E-08
	Fall	0.08964	0.0005194
	One Model	0.05053	5.02E-05
MA AN	Winter	0.09643	0.0001325
	Spring	0.05963	0.05087
	Summer	0.0932	0.000222
	Fall	0.07711	0.004304
	One Model	0.04477	0.0004893
Prince Hassan	Winter	0.09245	0.000227
	Spring	0.045	0.2321
	Summer	0.10165	2.65E-05
	Fall	0.07725	0.00337
	One Model	0.04632	0.0002045
Ghor Safi	Winter	0.09017	0.0009339
	Spring	0.05182	0.1531
	Summer	0.0441	0.2979
	Fall	0.06627	0.0317
	One Model	0.03632	0.01292
King Hussein	Winter	0.0821	0.002022
	Spring	0.0764	0.005282
	Summer	0.07279	0.007855
	Fall	0.0774	0.004275
	One Model	0.04101	0.001984
Jerusalem	Winter		
	Spring		
	Summer		
	Fall		
	One Model		
Har Kenaan	Winter	0.07262	0.006998
	Spring	0.05218	0.09943
	Summer	0.03844	0.3929
	Fall	0.09318	0.000165
	One Model	0.07501	4.59E-11

D = Kolmogorov-Smirnov test statistic that takes the absolute largest difference between two distributions across all x values

Table S8 Precipitation Parametric Test and the p-Values.

Station	D	p-value
AMMAN HUSSEIN COLLEGE	0.47222	5.16E-08
BAL'AMA	0.64583	1.73E-06
BAQURA MET.STATION	0.46528	2.56E-11
DEIR ALLA AGR. STATION	0.44444	1.54E-06
EN NUEIYIME	0.57639	4.17E-06
HAR KENAAN, IS	0.39583	8.28E-10
HOSHA	0.45591	2.10E-06
HUSN	0.51389	1.32E-07
IRBID SCHOOL	0.57639	6.41E-09
JABER MUGHAYYIR	0.5	2.35E-07
JARASH	0.47718	7.41E-07
JERUSALEM CENTRAL, IS	0.52083	8.42E-08
JUBEIHA	0.52083	2.32E-07
K.H.NURSERY EVAP.ST(BAQ'A)	0.55994	1.30E-08
KHANASIRA	0.58013	2.14E-09
KHARJA	0.40972	1.58E-06
KITTA	0.52083	1.91E-05
KUFR SAUM	0.48611	0.000718
MAFRAQ AIR PORT	0.54861	3.24E-05
MIDWAR	0.52778	2.11E-05
NAWASIF	0.54167	6.69E-05
PRINCE FEISAL NURSERY	0.50694	0.000162
QAFQAFA	0.54167	0.000106
RAMTHA BOYS SCHOOL	0.54861	5.13E-05
RUMEIMIN	0.5625	0.000133
RUSEIFA	0.57639	0.000416
SIHAN	0.61806	5.39E-06
SUBEIHI	0.49306	0.000571
SUKHNA	0.49306	0.00027
TURRA	0.56944	3.05E-09
UM EL-JUMAL EVAP .ST	0.53472	2.03E-07
UM JAUZA	0.47917	6.55E-07
UM QEIS	0.54167	4.35E-08
WADI DHULEIL NURSERY	0.52778	5.34E-08

D = Kolmogorov-Smirnov test statistic that takes the absolute largest difference between two distributions across all x values

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