

# On the credibility of climate predictions: Additional information

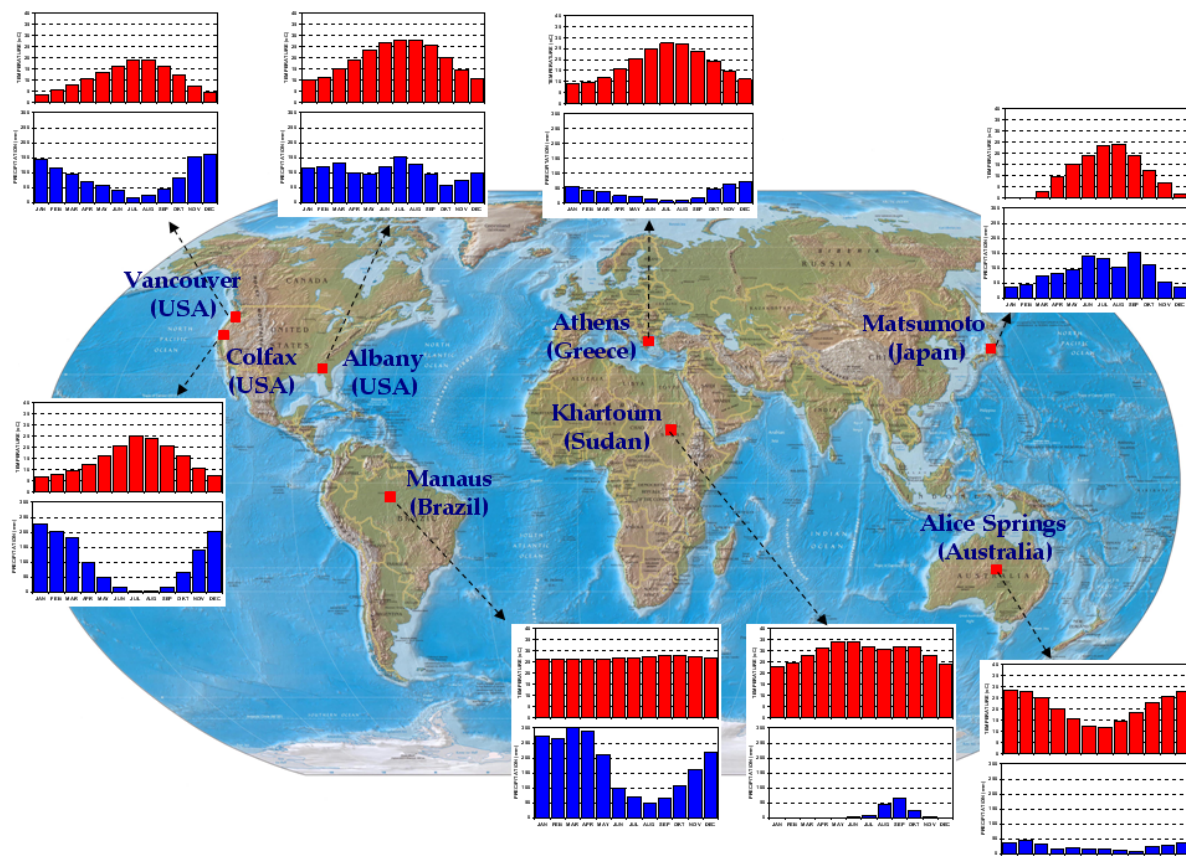
## Supplementary report

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**Abstract:** This report contains additional information for the paper *On the credibility of climate predictions*. The report is organized in four sections as follows: (1) study locations and sample statistics; (2) plots of observed and modelled time series, in annual and 30-year moving average time scales; (3) detailed statistics of observed and modelled time series on monthly, annual and 30-year moving average time scales; (4) comparison of characteristic statistical indices.

## 1. Study locations and sample statistics



**Fig. 1:** Study locations and characteristic diagrams of average monthly temperature (red charts) and precipitation data (blue charts); temperature scale: 0-40°C, precipitation scale: 0-300 mm.

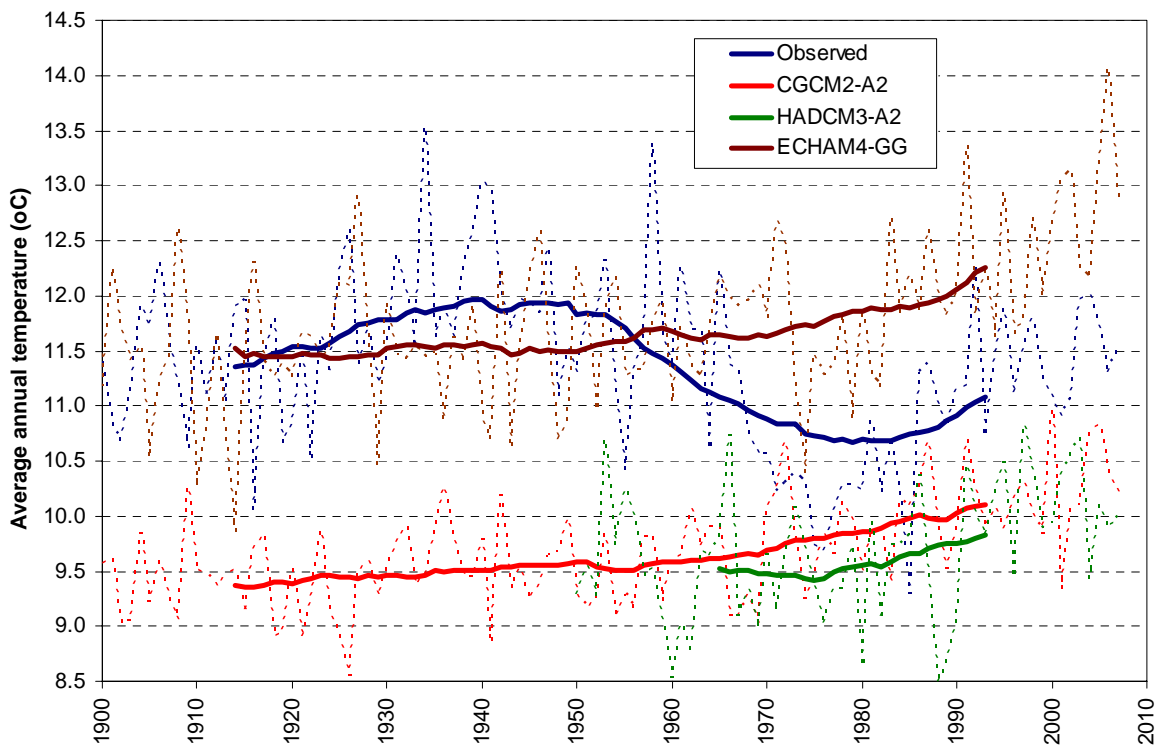
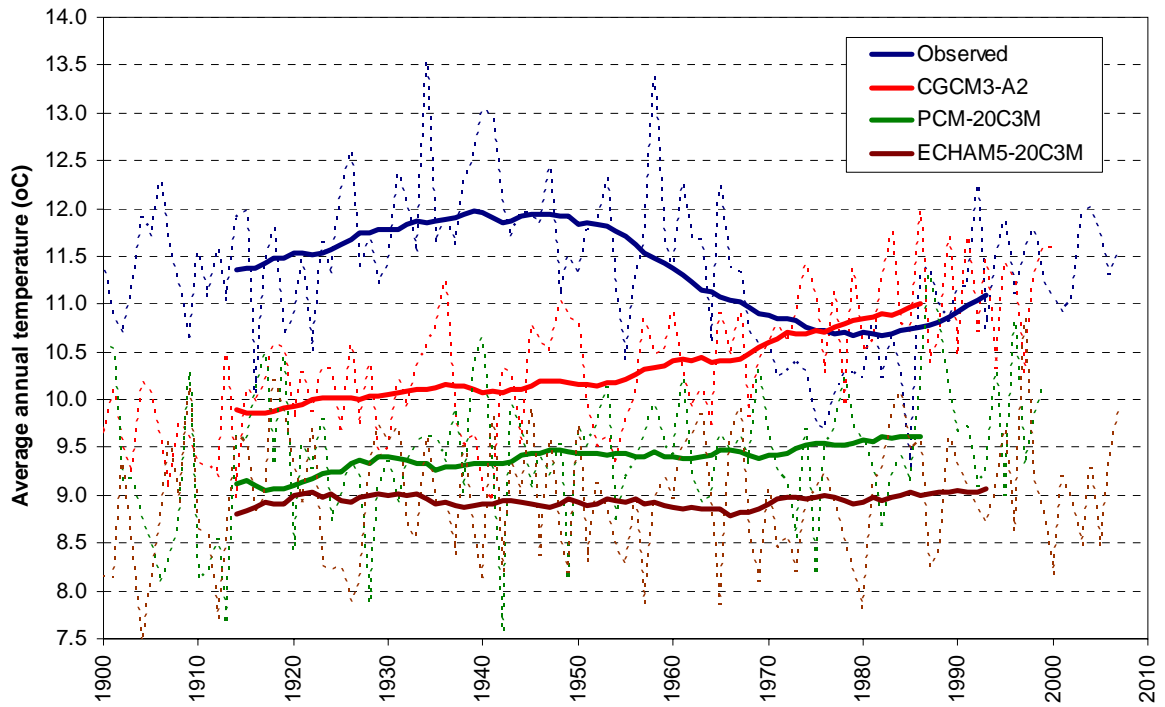
**Table 1: Average temperature values (°C)**

	Vancouver	Colfax	Albany	Manaus	Athens	Matsumoto	Khartoum	Alice Springs
Jan.	3.7	6.7	10.0	26.1	9.2	-1.3	22.7	28.7
Feb.	5.6	7.9	11.3	26.0	9.7	-0.9	24.3	27.8
Mar.	8.0	9.5	15.1	26.0	11.8	3.0	27.7	24.9
Apr.	10.6	12.3	19.0	26.1	15.5	9.8	31.5	20.2
May	13.6	16.1	23.3	26.3	20.3	14.9	33.9	15.5
Jun.	16.4	20.9	26.7	26.4	24.8	19.1	34.1	12.4
Jul.	19.1	24.8	27.7	26.6	27.6	23.1	31.6	11.7
Aug.	19.1	24.1	27.5	27.3	27.4	23.8	30.6	14.4
Sep.	16.4	20.9	25.4	27.6	23.8	19.2	31.8	18.5
Oct.	12.0	16.0	19.9	27.7	19.2	12.4	31.9	22.8
Nov.	7.4	10.7	14.4	27.3	14.6	6.6	27.9	25.9
Dec.	4.5	7.5	10.6	26.7	11.0	1.5	24.0	27.8
<b>Year</b>	<b>11.4</b>	<b>14.8</b>	<b>19.3</b>	<b>26.6</b>	<b>17.9</b>	<b>10.9</b>	<b>29.3</b>	<b>20.8</b>

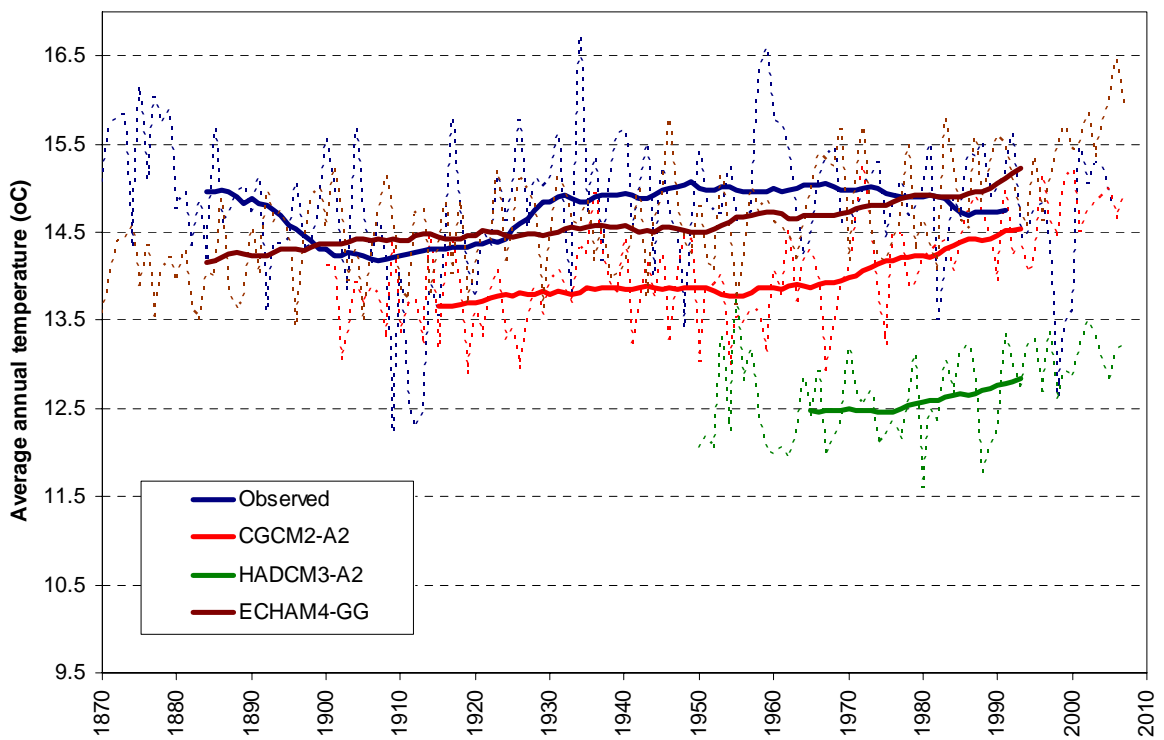
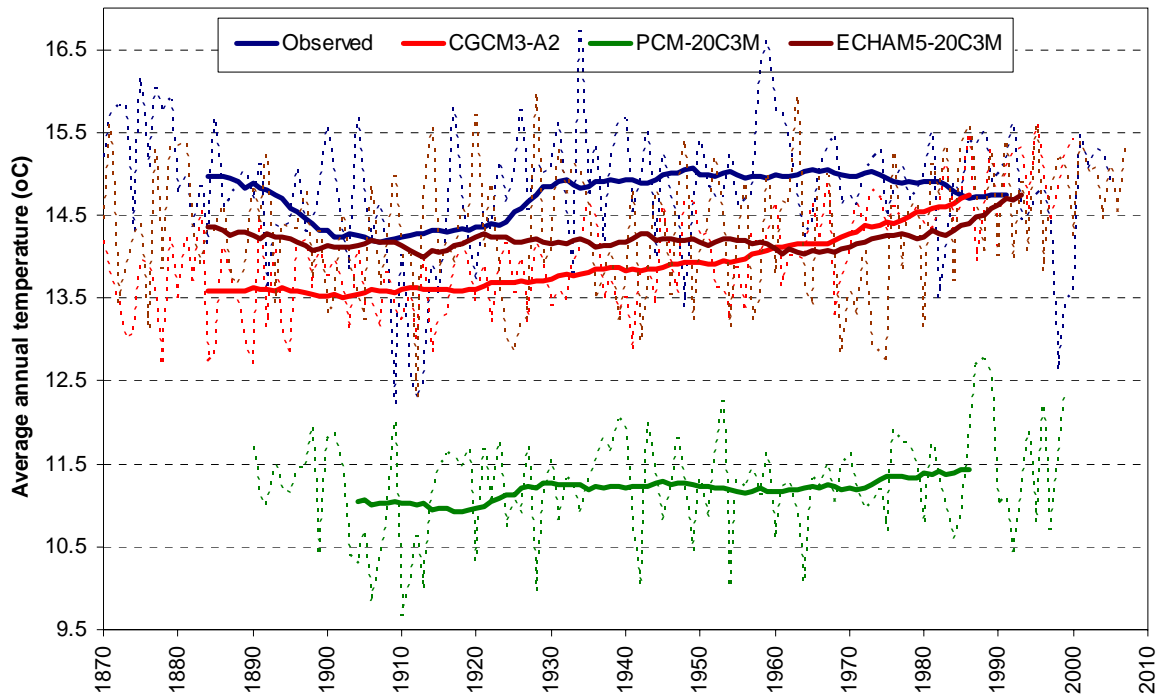
**Table 2: Average precipitation values (mm)**

	Vancouver	Colfax	Albany	Manaus	Athens	Matsumoto	Khartoum	Alice Springs
Jan.	146.3	227.9	114.1	271.8	54.4	37.3	0.0	37.1
Feb.	113.3	200.5	118.5	265.0	40.9	45.4	0.0	43.0
Mar.	96.4	181.7	131.3	299.9	38.1	70.7	0.2	32.6
Apr.	68.0	97.5	99.0	287.9	23.5	84.3	0.5	13.4
May	56.4	50.3	95.9	212.1	21.0	93.3	4.0	19.0
Jun.	42.2	17.3	118.7	100.4	12.0	143.1	7.1	14.2
Jul.	15.3	1.9	152.3	67.8	6.7	132.1	45.9	14.9
Aug.	21.8	2.6	127.0	49.5	7.7	103.4	66.0	9.7
Sep.	46.0	17.8	93.8	65.1	15.4	151.3	22.7	8.3
Oct.	80.5	65.2	58.4	109.0	45.5	108.7	4.3	22.3
Nov.	152.9	139.1	70.5	162.0	64.7	54.2	0.2	26.5
Dec.	160.6	203.3	97.1	218.3	69.1	34.8	0.0	38.3
<b>Year</b>	<b>994.4</b>	<b>1228.7</b>	<b>1278.2</b>	<b>2056.5</b>	<b>398.9</b>	<b>1061.1</b>	<b>151.7</b>	<b>282.5</b>

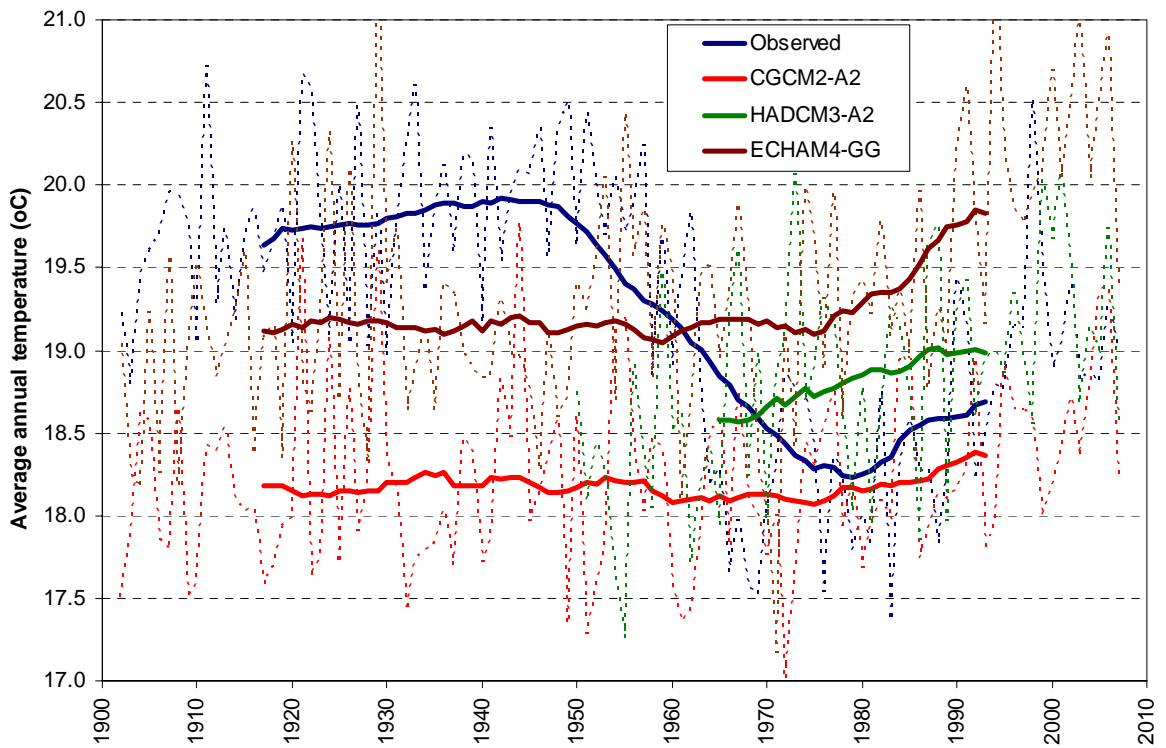
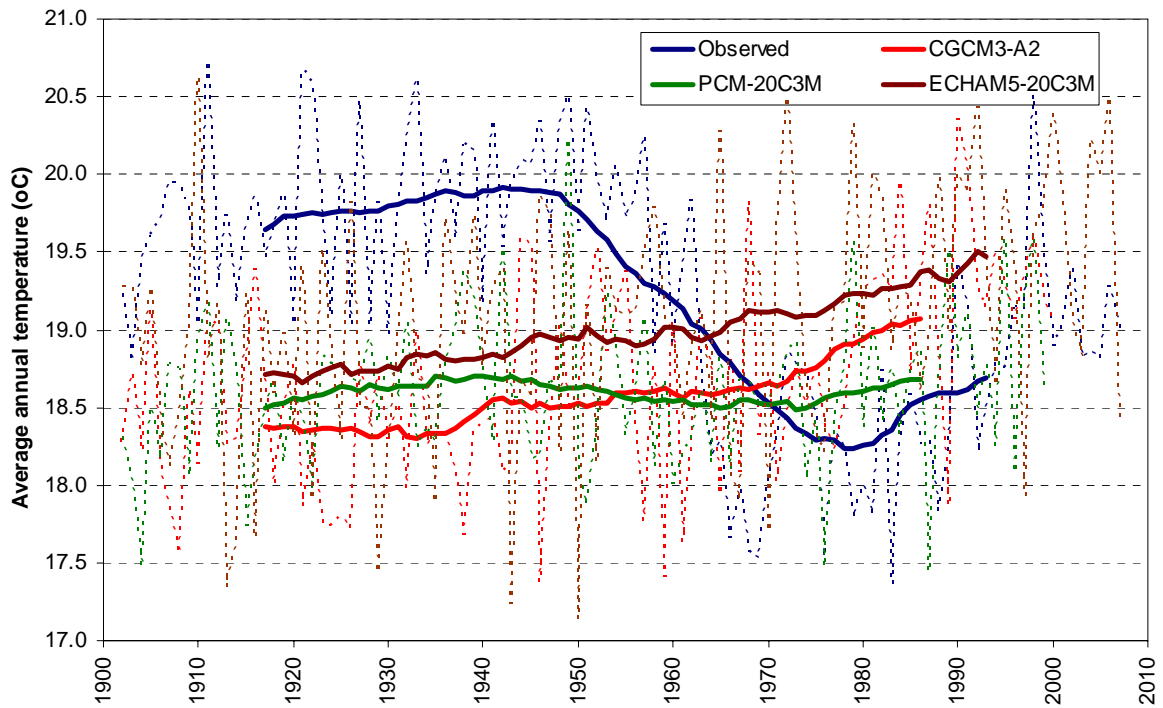
## 2. Plots of observed and modelled time series



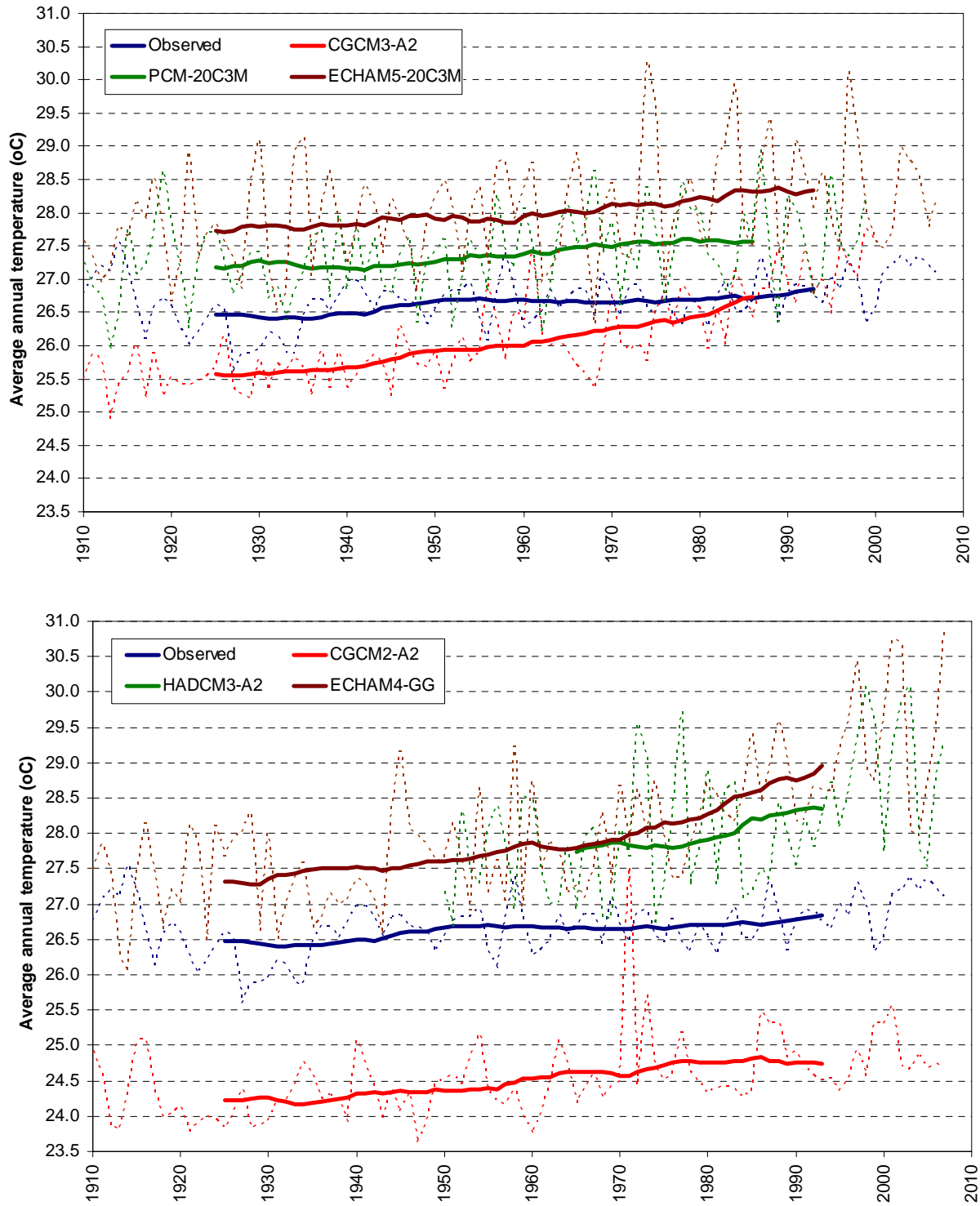
**Fig. 2:** Plots of observed and modelled annual (dotted lines) and 30-year moving average (continuous lines) temperature time series at Vancouver.



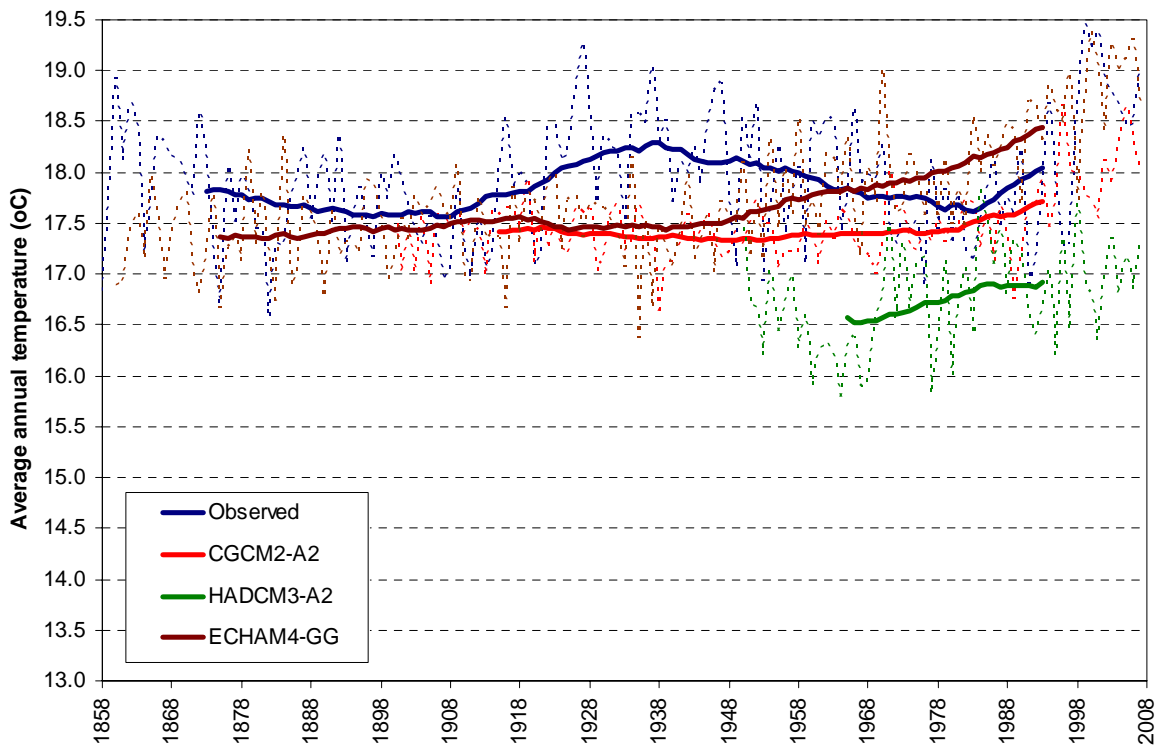
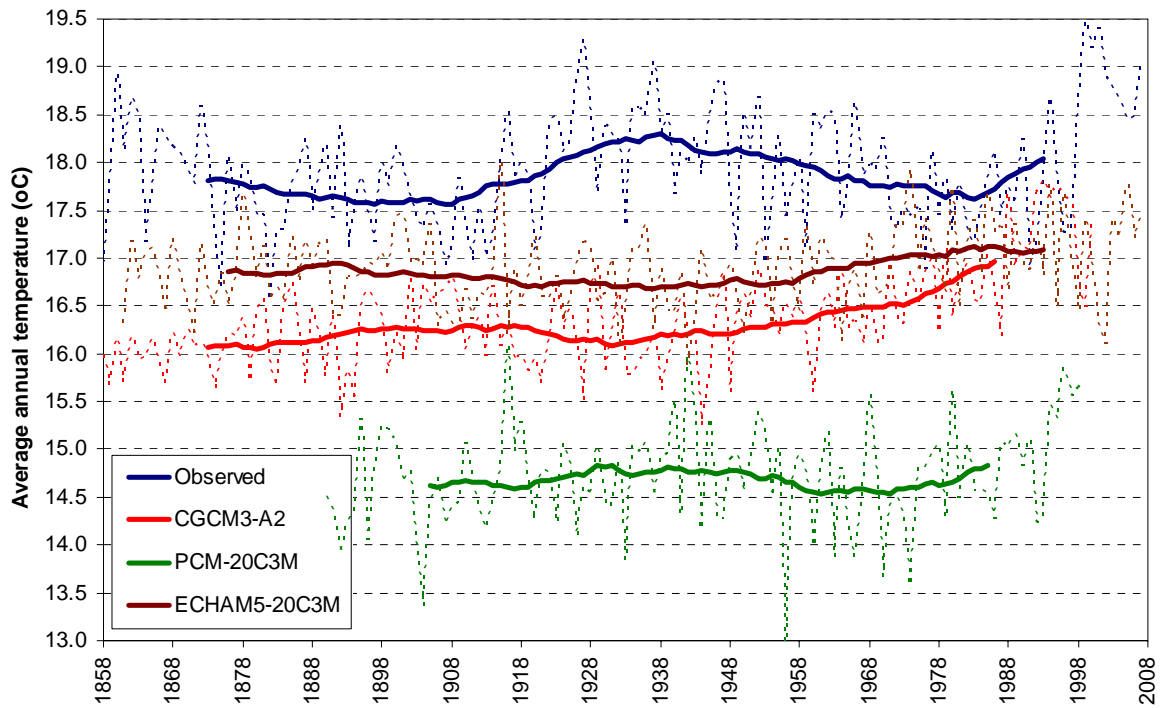
**Fig. 3:** Plots of observed and modelled annual (dotted lines) and 30-year moving average (continuous lines) temperature time series at Colfax.



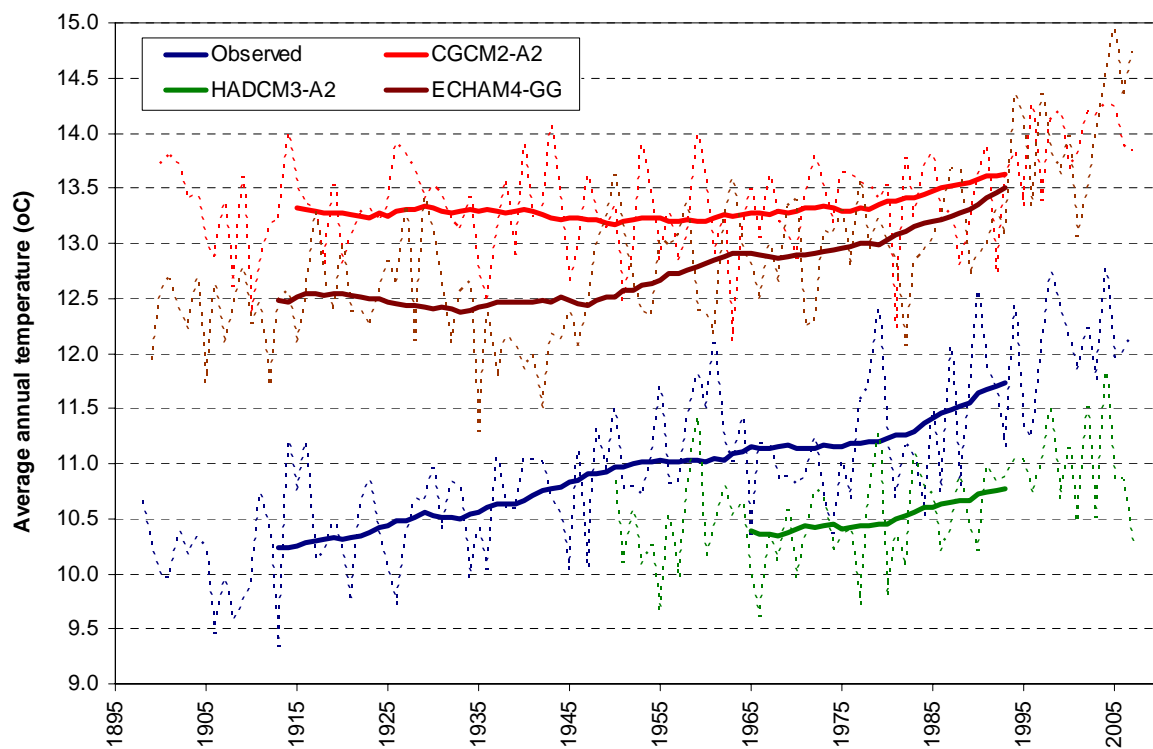
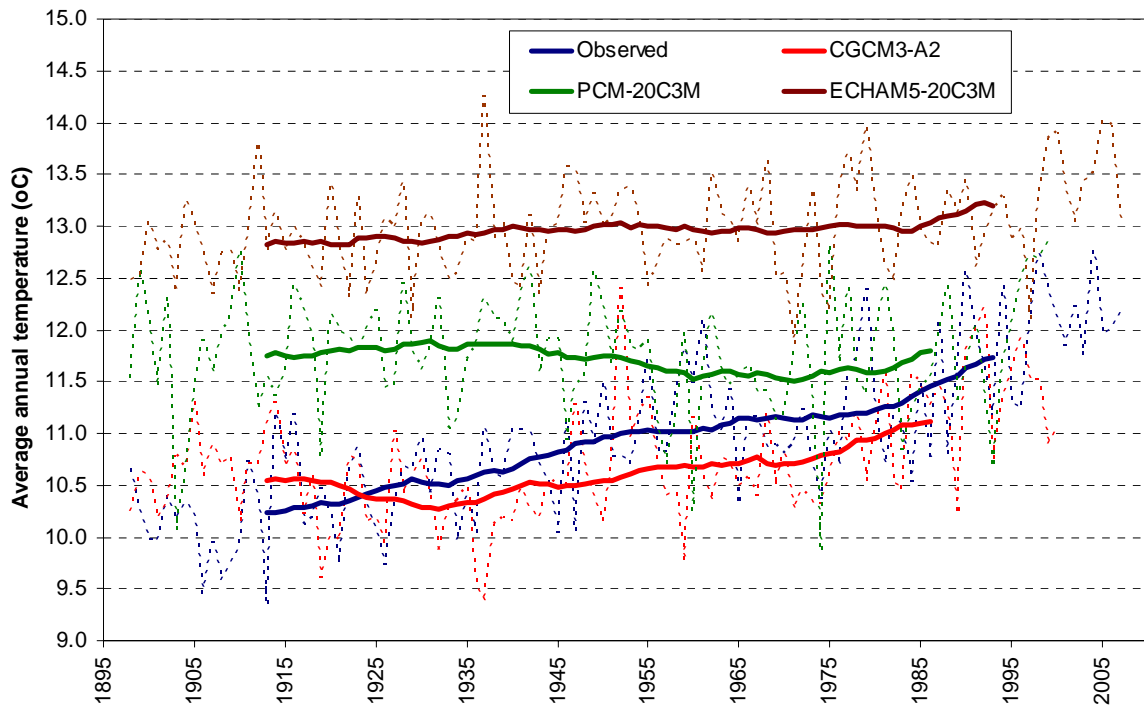
**Fig. 4:** Plots of observed and modelled annual (dotted lines) and 30-year moving average (continuous lines) temperature time series at Albany.



**Fig. 5:** Plots of observed and modelled annual (dotted lines) and 30-year moving average (continuous lines) temperature time series at Manaus.

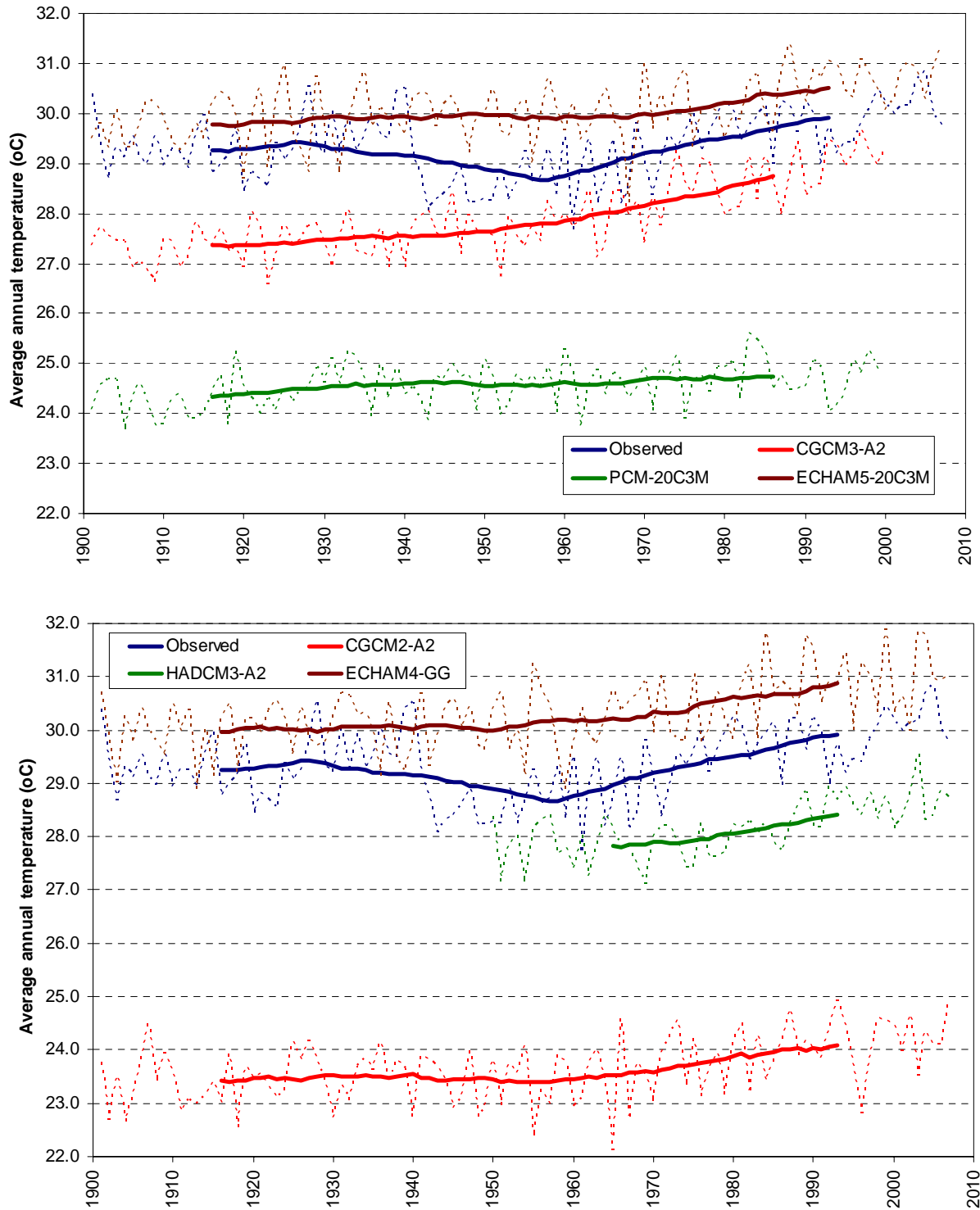


**Fig. 6:** Plots of observed and modelled annual (dotted lines) and 30-year moving average (continuous lines) temperature time series at Athens.

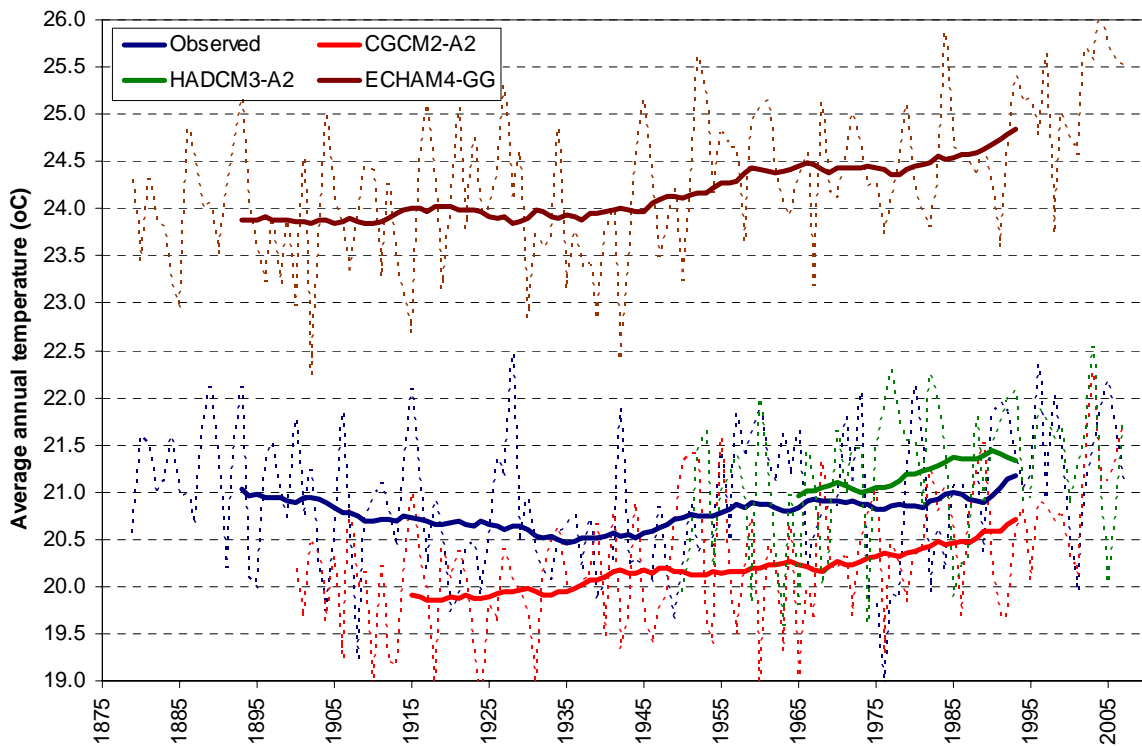
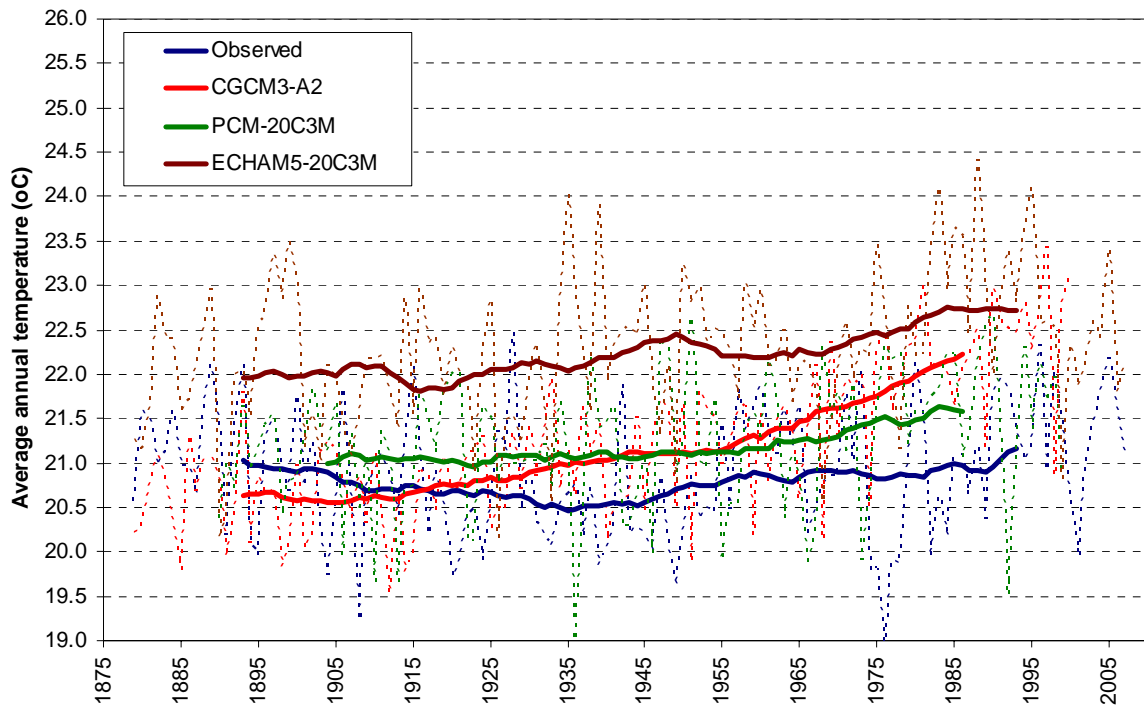


**Fig. 7:** Plots of observed and modelled annual (dotted lines) and 30-year moving average (continuous lines) temperature time series at Matsumoto.

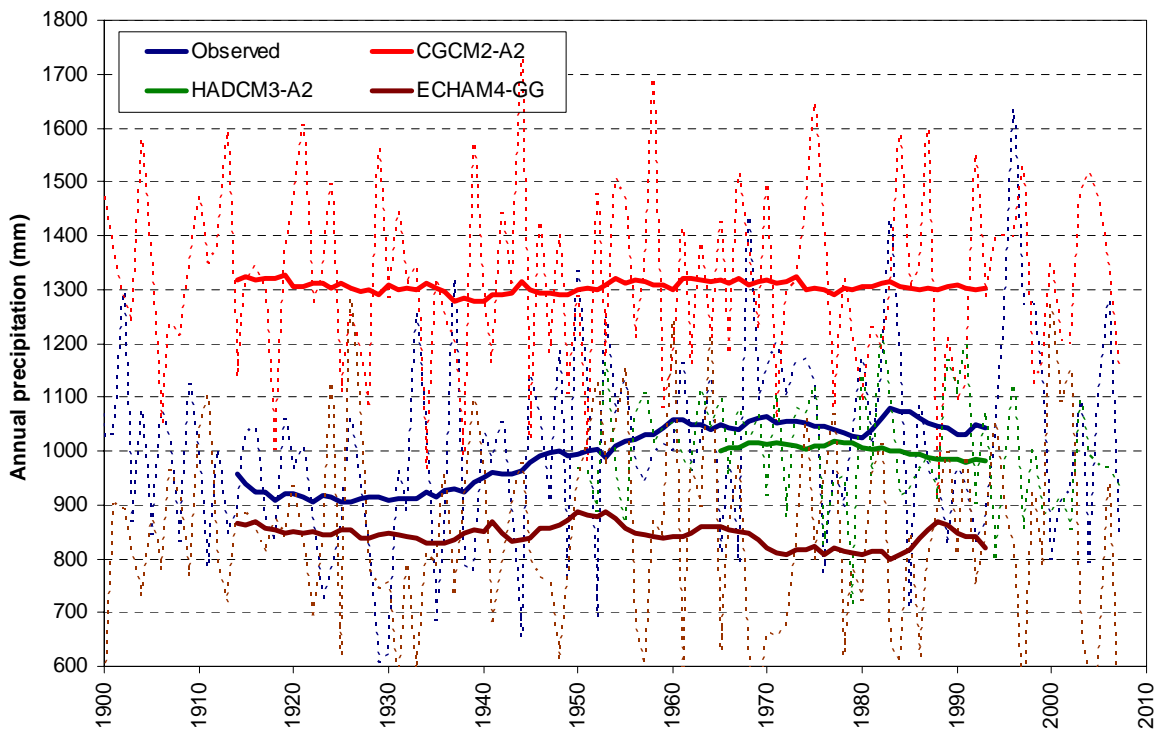
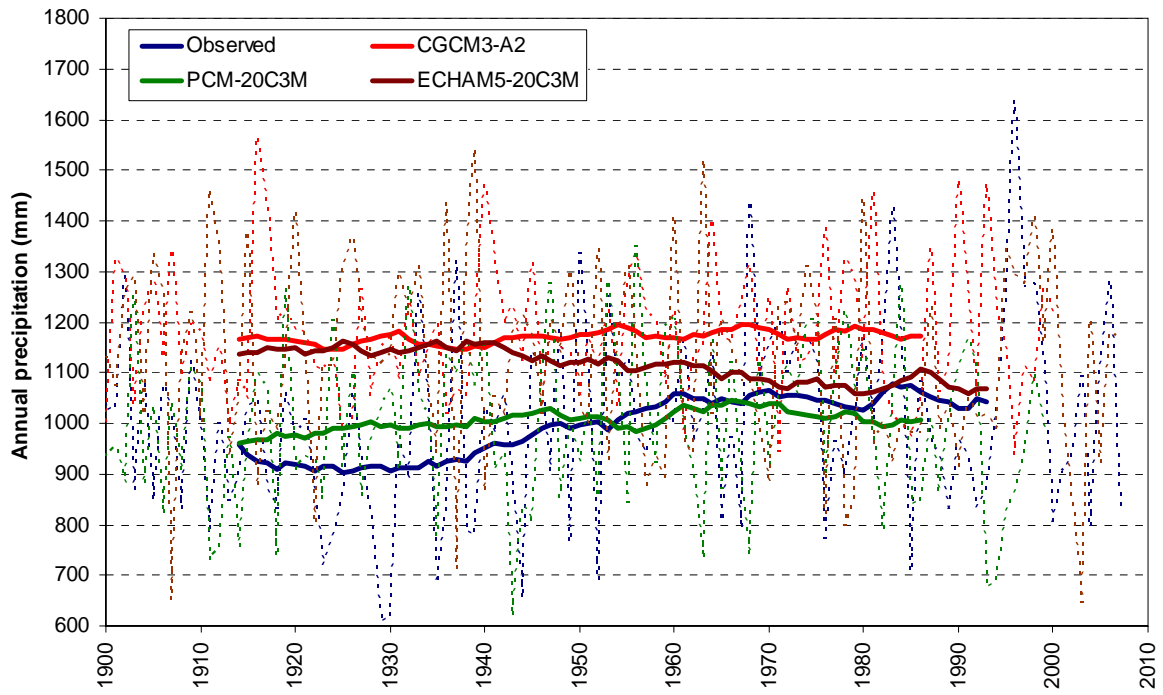




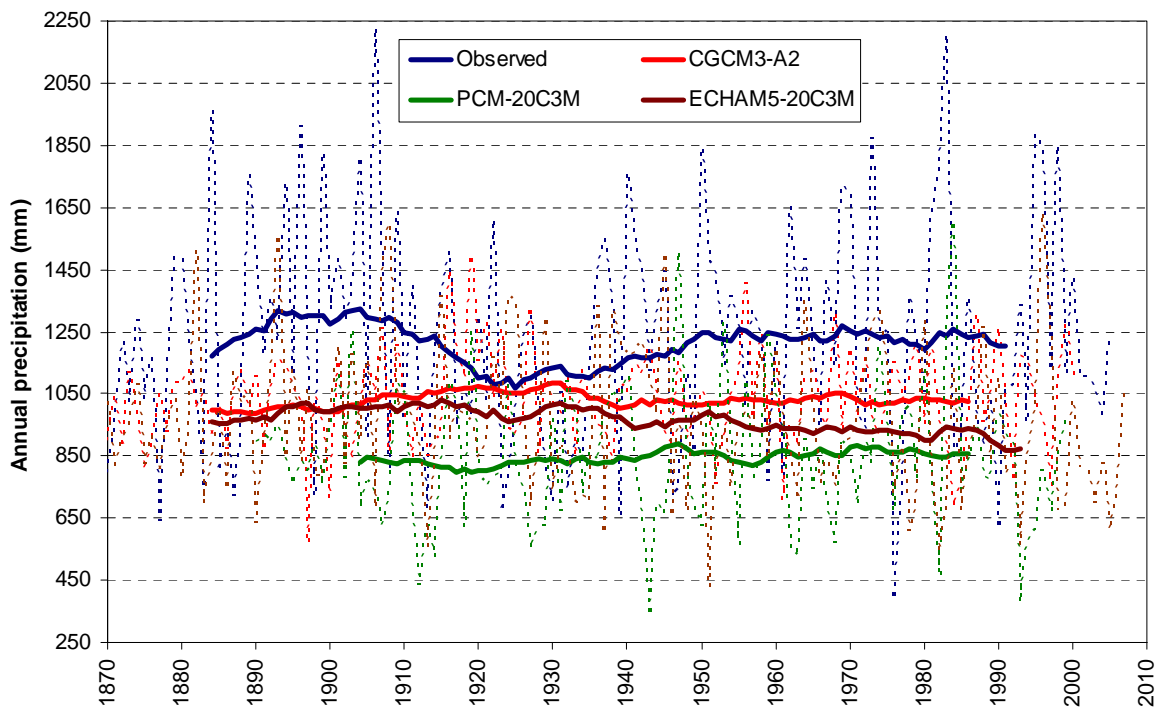
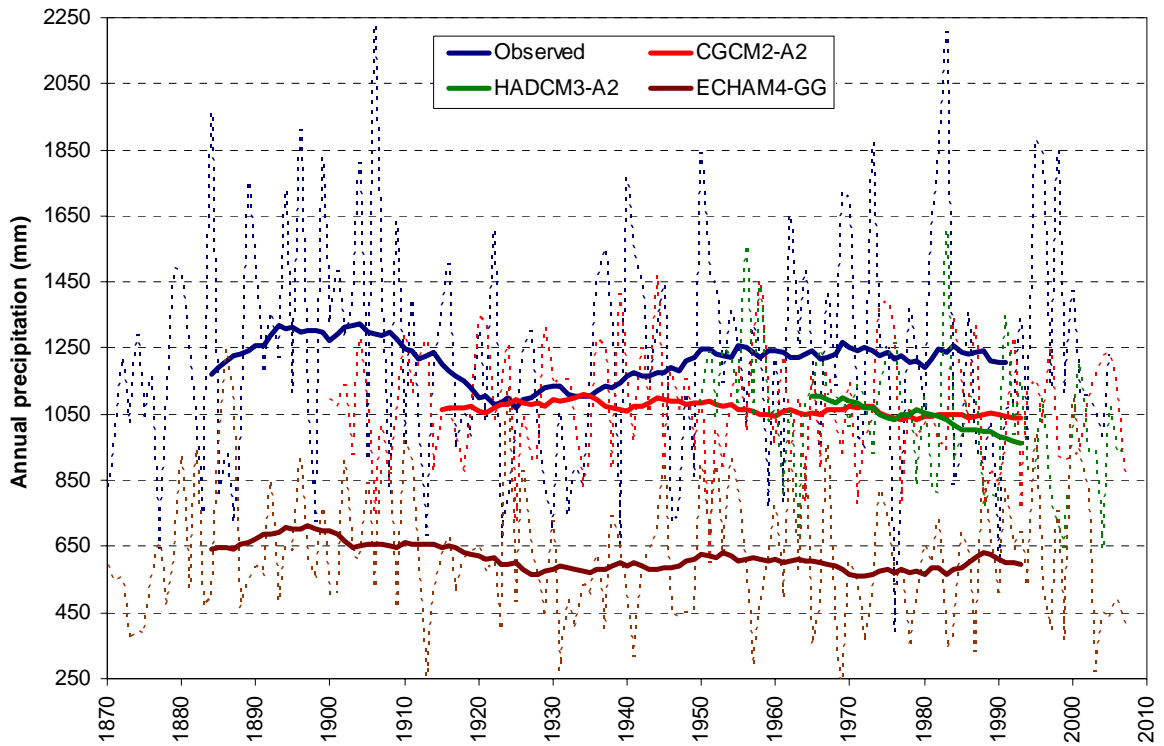
**Fig. 8:** Plots of observed and modelled annual (dotted lines) and 30-year moving average (continuous lines) temperature time series at Khartoum.



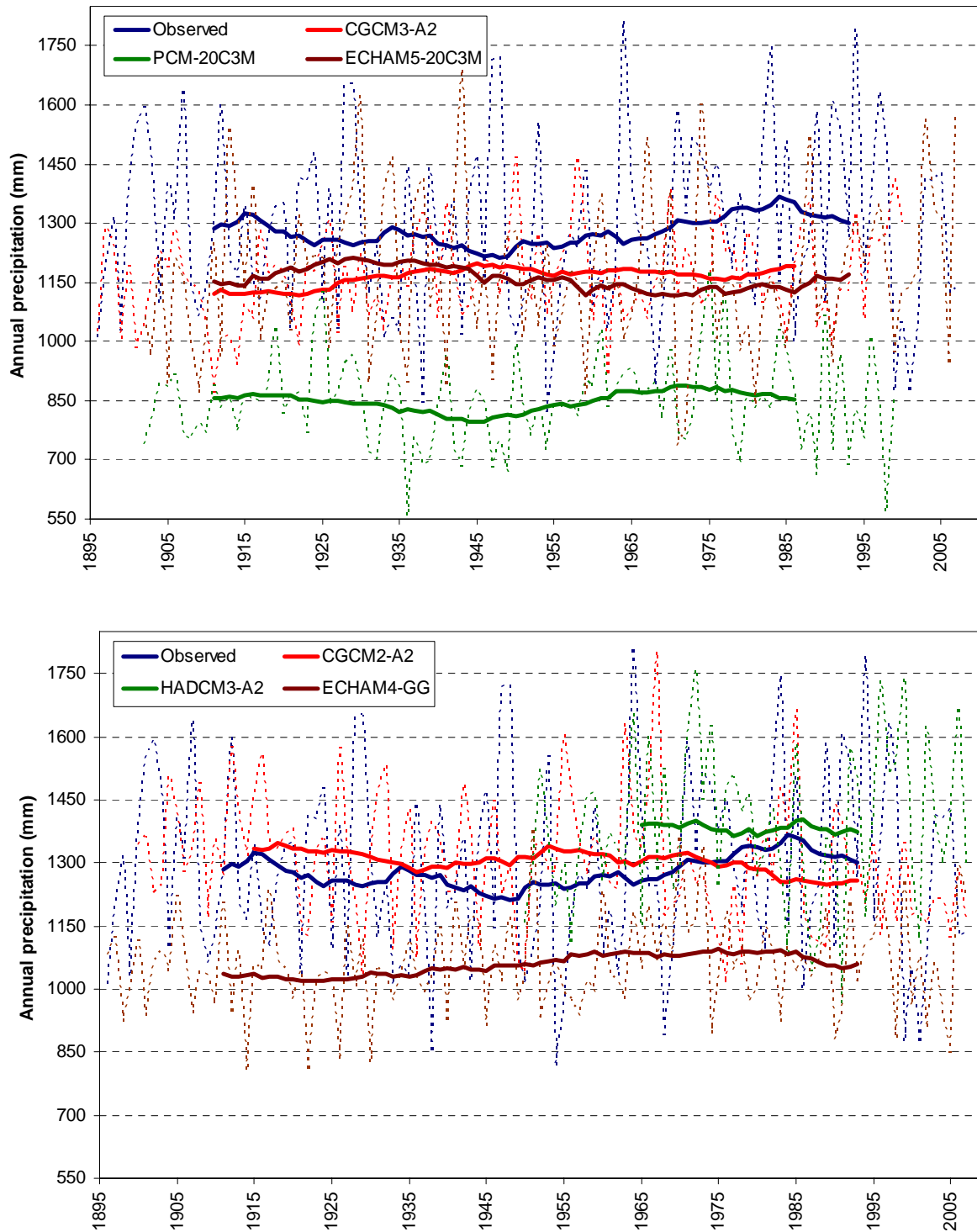
**Fig. 9:** Plots of observed and modelled annual (dotted lines) and 30-year moving average (continuous lines) temperature time series at Alice Springs.



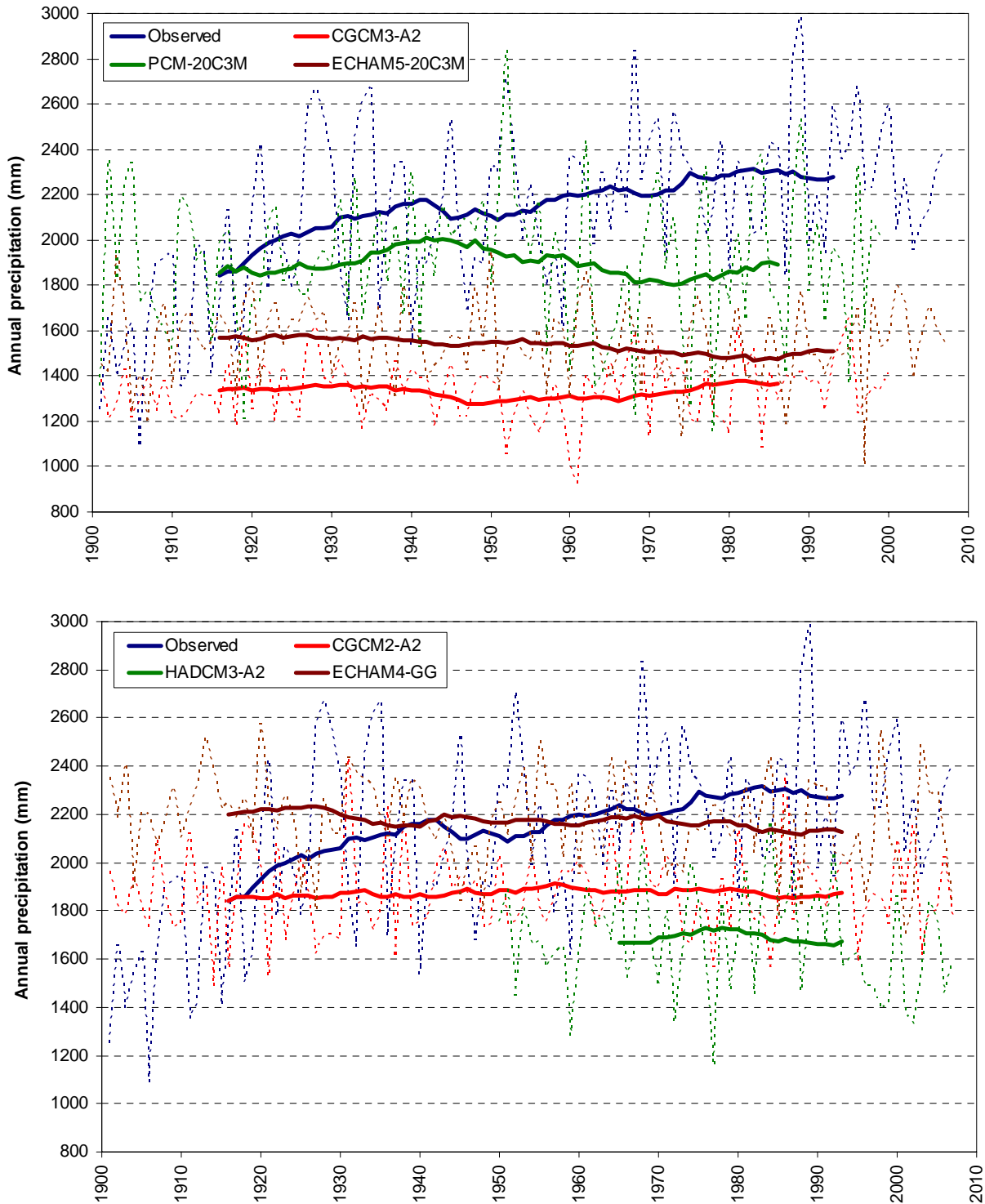
**Fig. 10:** Plots of observed and modelled annual (dotted lines) and 30-year moving average (continuous lines) precipitation time series at Vancouver.



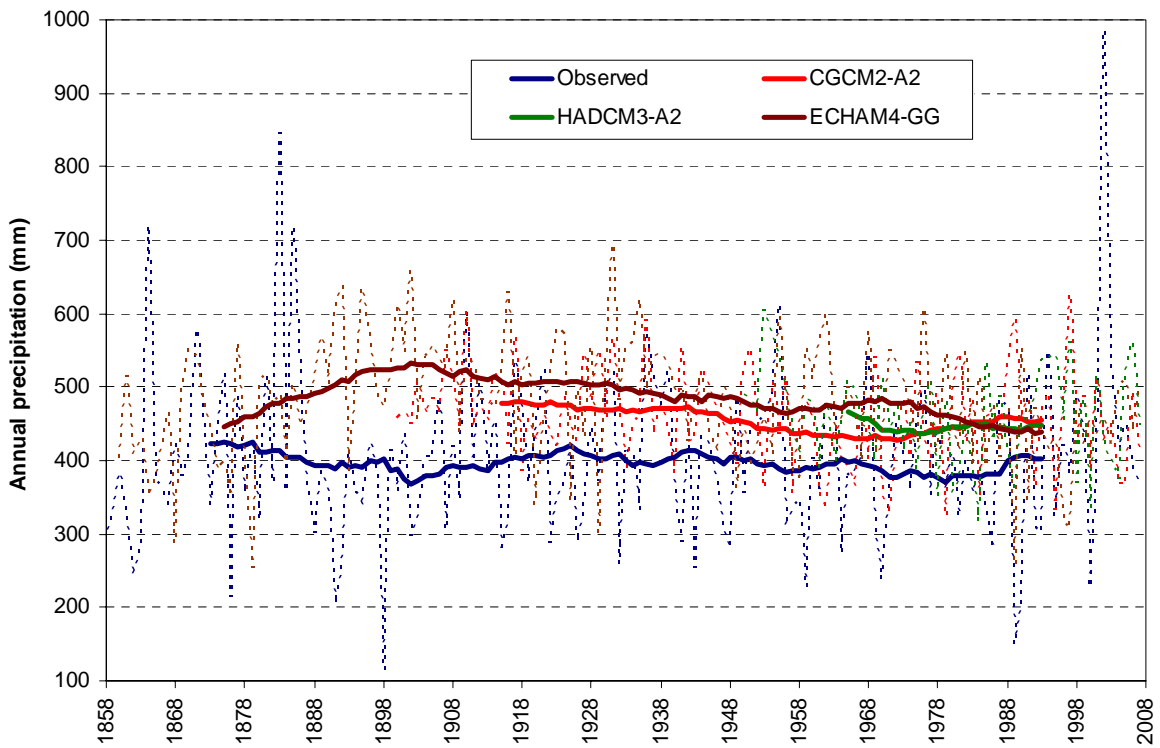
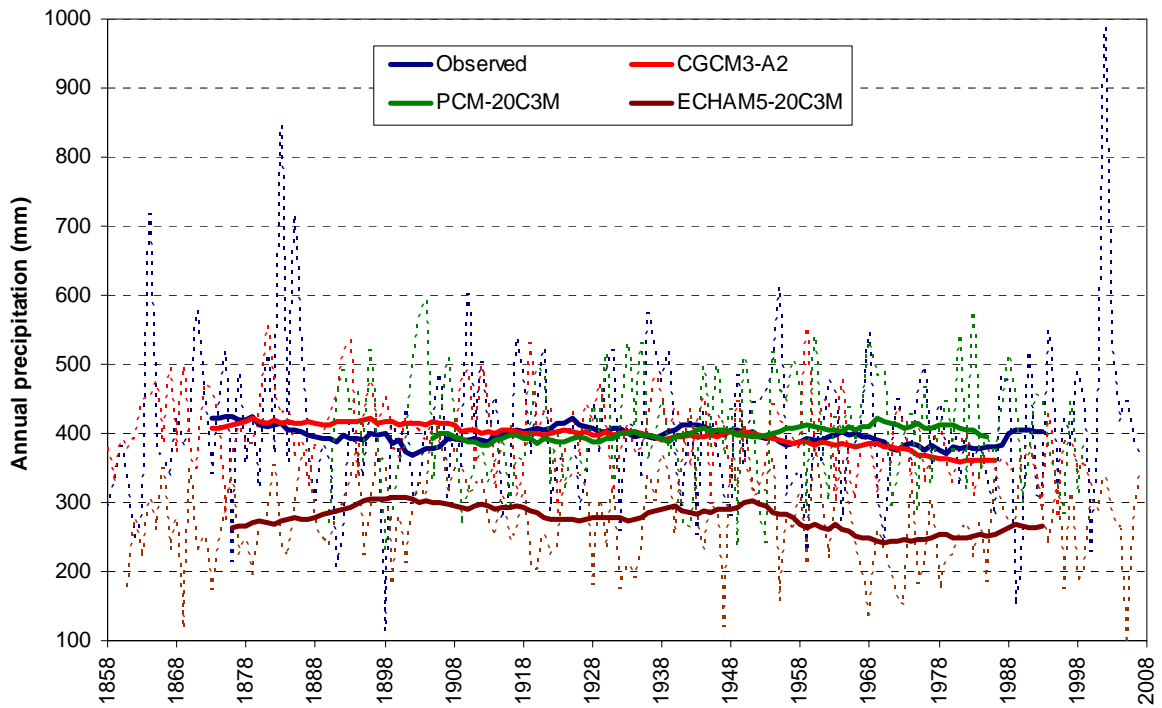
**Fig. 11:** Plots of observed and modelled annual (dotted lines) and 30-year moving average (continuous lines) precipitation time series at Colfax.



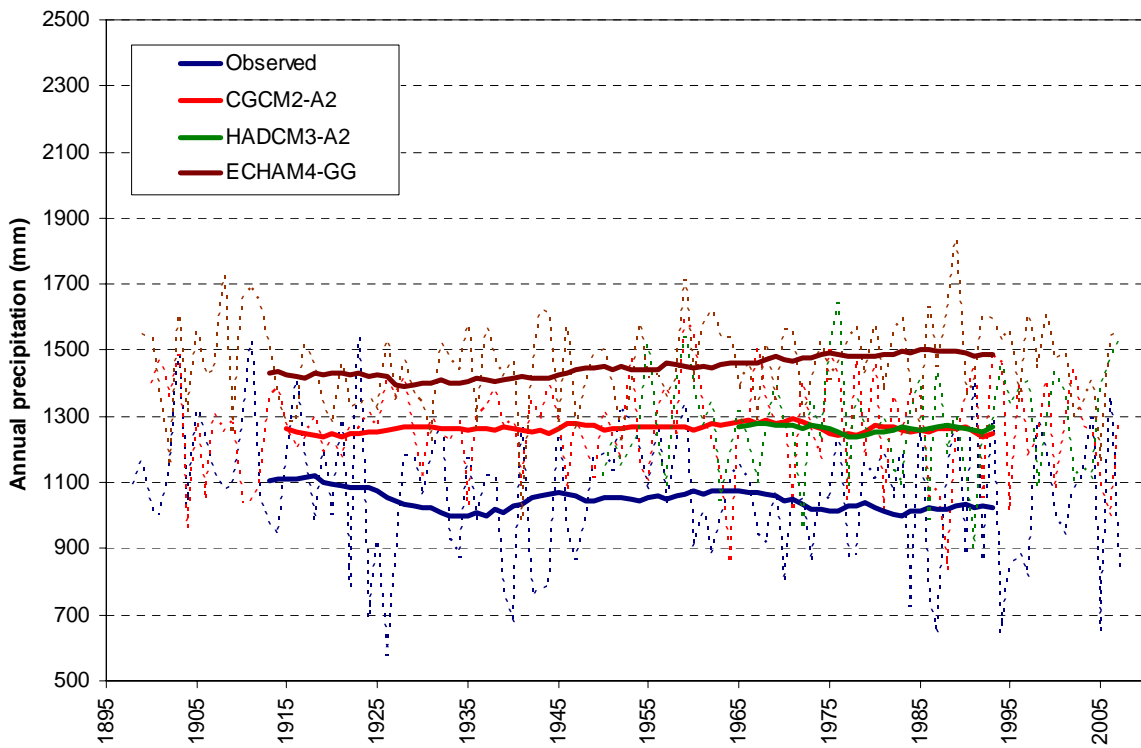
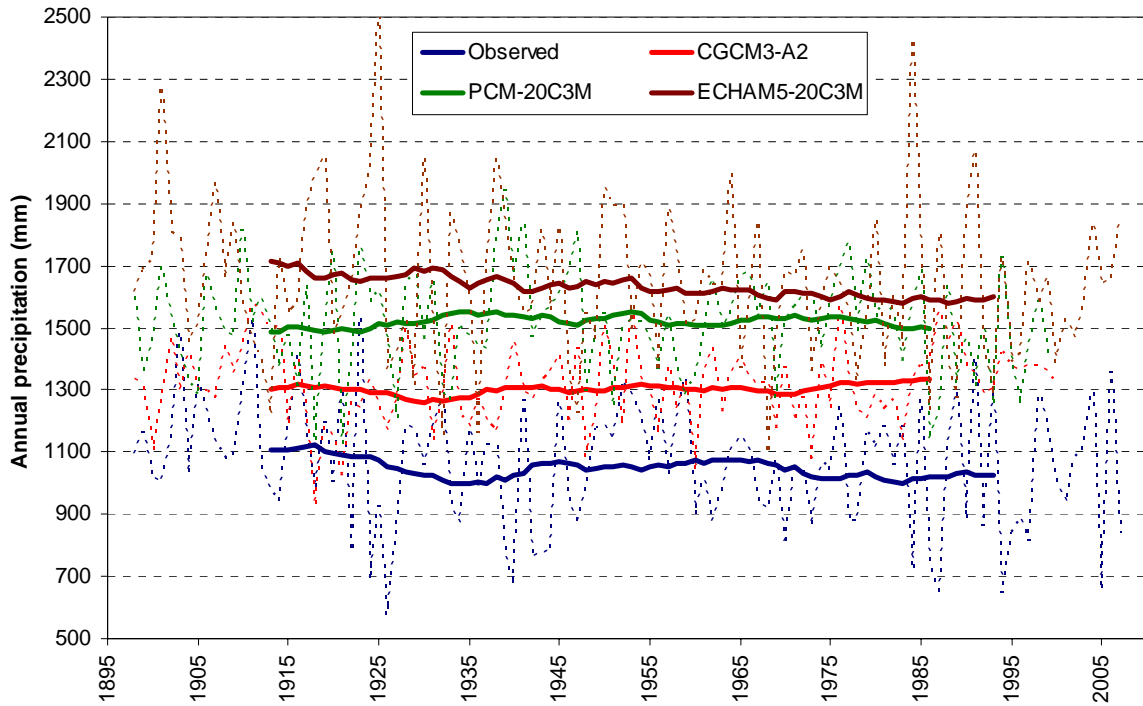
**Fig. 12:** Plots of observed and modelled annual (dotted lines) and 30-year moving average (continuous lines) precipitation time series at Albany.



**Fig. 13:** Plots of observed and modelled annual (dotted lines) and 30-year moving average (continuous lines) precipitation time series at Manaus.

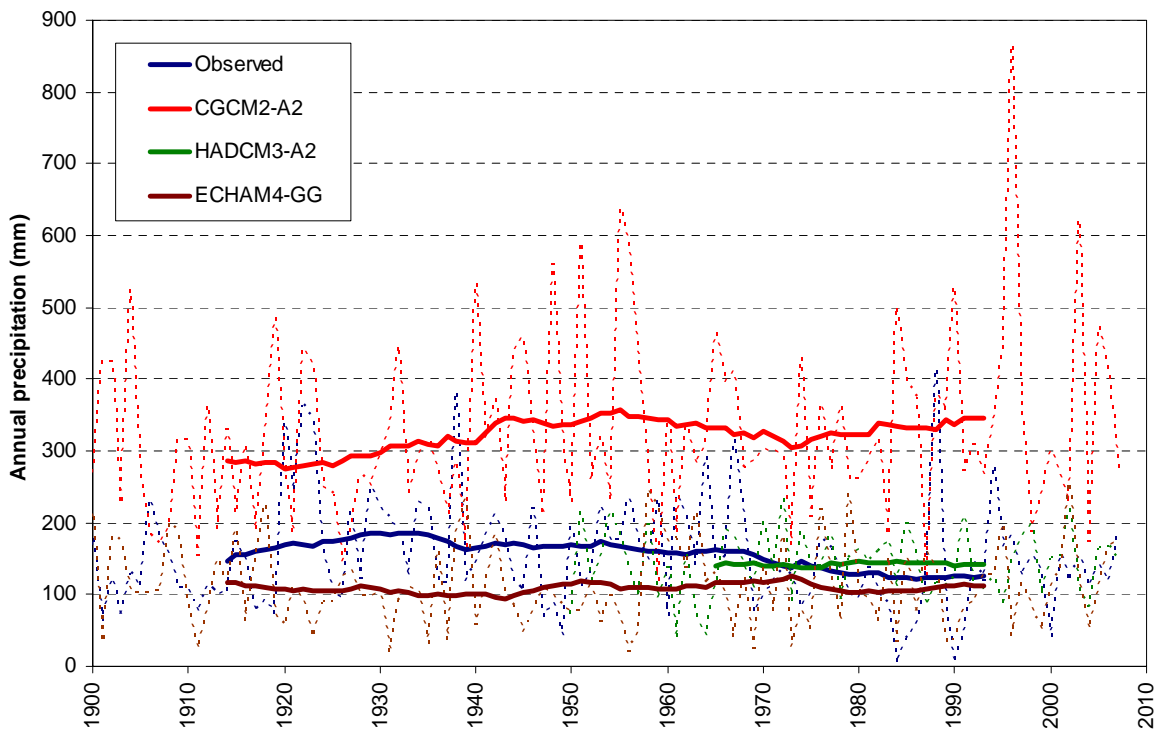
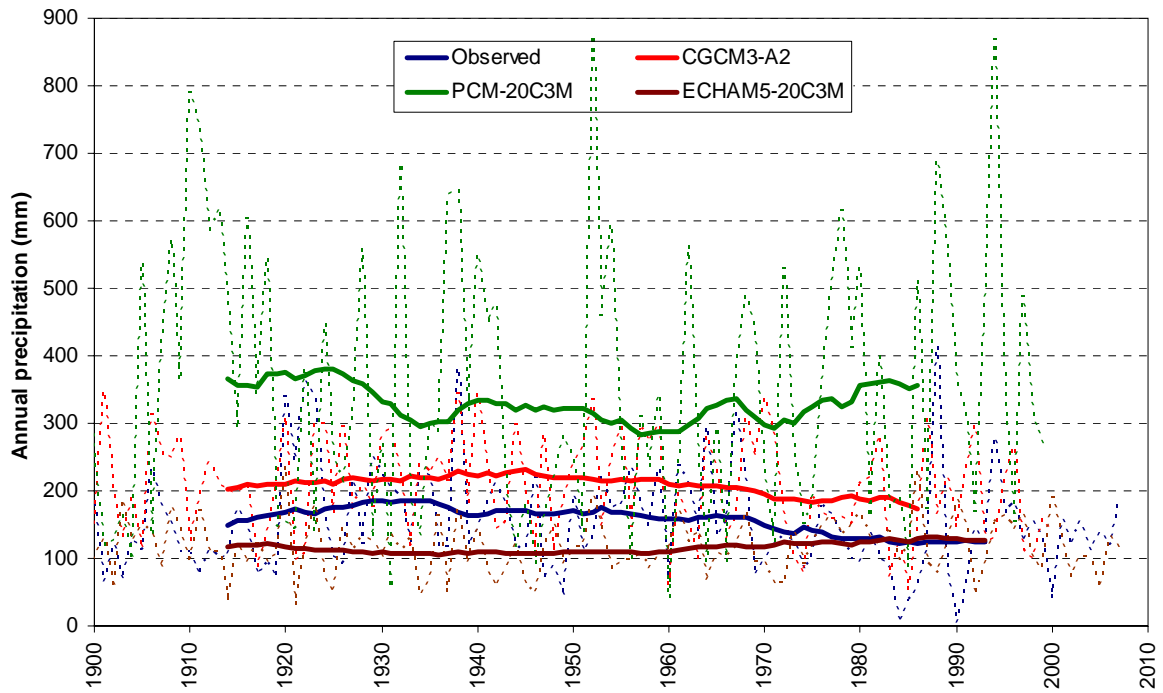


**Fig. 14:** Plots of observed and modelled annual (dotted lines) and 30-year moving average (continuous lines) precipitation time series at Athens.

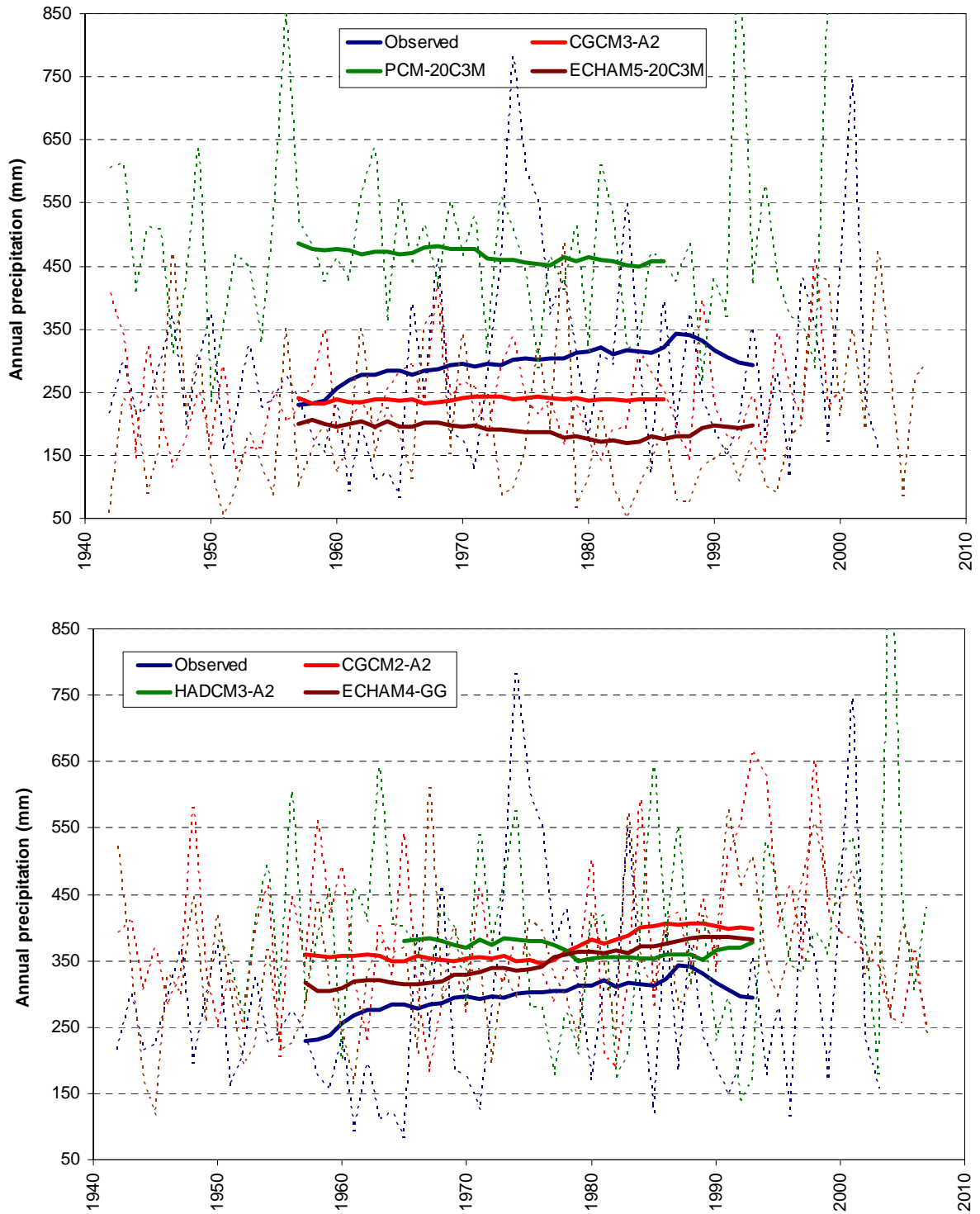


**Fig. 15:** Plots of observed and modelled annual (dotted lines) and 30-year moving average (continuous lines) precipitation time series at Matsumoto.





**Fig. 16:** Plots of observed and modelled annual (dotted lines) and 30-year moving average (continuous lines) precipitation time series at Khartoum.



**Fig. 17:** Plots of observed and modelled annual (dotted lines) and 30-year moving average (continuous lines) precipitation time series at Alice Springs.

### 3. Detailed statistics of observed and modelled time series at various time scales

**Table 3:** Statistics for temperature at Vancouver, USA.

<b>Monthly data</b>	<b>Period</b>	<b>Average (°C)</b>	<b>St. dev. (°C)</b>	<b>Corre- lation</b>	<b>Efficiency</b>		
Observed	1899-2007	11.36	5.55				
CGCM3-A2	1899-2000	10.35	6.19	0.916	0.757		
PCM-20C3M	1899-1999	9.40	6.06	0.882	0.610		
ECHAM5-20C3M	1899-2007	8.93	5.00	0.906	0.633		
CGCM2-A2	1900-2007	9.67	4.15	0.881	0.670		
HADCM3-A2	1950-2007	9.67	6.12	0.925	0.748		
ECHAM4-GG	1899-2007	11.74	5.94	0.916	0.813		
<b>Annual data</b>	<b>Period</b>	<b>Average (°C)</b>	<b>St. dev. (°C)</b>	<b>Auto- correl.</b>	<b>Corre- lation</b>	<b>Efficiency</b>	<b>Hurst coeff.</b>
Observed	1899-2007	11.36	0.77	0.522			0.908
CGCM3-A2	1899-2000	10.34	0.70	0.474	-0.265	-2.894	0.881
PCM-20C3M	1899-1999	9.40	0.71	0.206	0.031	-6.861	0.629
ECHAM5-20C3M	1899-2007	8.94	0.65	0.168	0.019	-10.611	0.609
CGCM2-A2	1900-2007	9.67	0.48	0.416	-0.108	-5.356	0.828
	1900-1989	9.57	0.41	0.290	-0.194	-5.166	
	1989-2007	10.17	0.43	-0.069	0.243	-9.386	
HADCM3-A2	1950-2007	9.67	0.59	0.333	0.087	-3.836	0.706
	1950-1989	9.49	0.54	0.200	0.086	-3.481	
	1989-2007	10.02	0.56	0.114	0.197	-11.522	
ECHAM4-GG	1899-2007	11.74	0.70	0.373	0.166	-1.241	0.730
	1899-1989	11.58	0.59	0.171	-0.137	-0.798	
	1989-2007	12.50	0.69	0.136	-0.162	-10.180	
<b>30-year moving average data</b>	<b>Period</b>	<b>St. dev. (°C)</b>	<b>Corre- lation</b>	<b>Efficiency</b>	<b>DT (1987- 1914) (°C)</b>	<b>DT (all data) (°C)</b>	<b>max DT (°C)</b>
Observed	1899-2007	0.46			-0.60	-0.27	-1.30
CGCM3-A2	1899-2000	0.32	-0.836	-7.710	1.10	1.10	1.14
PCM-20C3M	1899-1999	0.14	-0.486	-20.406	0.48	0.48	0.56
ECHAM5-20C3M	1899-2007	0.06	-0.178	-28.464	0.20	0.27	0.27
CGCM2-A2	1900-2007	0.20	-0.766	-15.537	0.65	0.74	0.74
HADCM3-A2	1950-2007	0.12	0.297	-88.820		0.30	0.40
ECHAM4-GG	1899-2007	0.19	-0.722	-1.130	0.41	0.74	0.83

**Table 4:** Statistics for temperature at Colfax, USA.

<b>Monthly data</b>	<b>Period</b>	<b>Average (°C)</b>	<b>St. dev. (°C)</b>	<b>Correlation</b>	<b>Efficiency</b>		
Observed	1870-2005	14.77	6.60				
CGCM3-A2	1870-2000	13.96	7.94	0.939	0.795		
PCM-20C3M	1890-1999	11.22	6.95	0.921	0.546		
ECHAM5-20C3M	1870-2007	14.29	6.41	0.913	0.826		
CGCM2-A2	1900-2007	14.03	6.14	0.937	0.895		
HADCM3-A2	1950-2007	12.65	5.31	0.926	0.726		
ECHAM4-GG	1870-2007	14.62	6.89	0.932	0.855		
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<b>Annual data</b>	<b>Period</b>	<b>Average (°C)</b>	<b>St. dev. (°C)</b>	<b>Auto-correl.</b>	<b>Correlation</b>	<b>Efficiency</b>	<b>Hurst coeff.</b>
Observed	1870-2005	14.78	0.79	0.424			0.808
CGCM3-A2	1870-2000	13.96	0.65	0.467	0.080	-1.561	0.864
PCM-20C3M	1890-1999	11.22	0.62	0.162	0.149	-19.517	0.645
ECHAM5-20C3M	1870-2007	14.29	0.79	0.080	-0.073	-1.561	0.579
CGCM2-A2	1900-2007	14.03	0.57	0.460	0.061	-1.170	0.871
	1900-1989	13.90	0.51	0.299	0.126	-1.299	
	1989-2007	14.64	0.39	0.148	-0.145	-0.411	
HADCM3-A2	1950-2007	12.65	0.51	0.303	-0.252	-12.934	0.753
	1950-1989	12.49	0.49	0.123	-0.365	-21.133	
	1989-2007	12.97	0.39	0.153	0.332	-4.314	
ECHAM4-GG	1870-2007	14.62	0.62	0.500	-0.039	-0.689	0.820
	1870-1989	14.49	0.54	0.290	-0.011	-0.641	
	1989-2007	15.43	0.49	0.612	-0.009	-1.104	
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<b>30-year moving average data</b>	<b>Period</b>	<b>St. dev. (°C)</b>	<b>Correlation</b>	<b>Efficiency</b>	<b>DT (1987-1914) (°C)</b>	<b>DT (all data) (°C)</b>	<b>max DT (°C)</b>
Observed	1870-2005	0.28			0.42	-0.22	0.90
CGCM3-A2	1870-2000	0.33	0.578	-8.679	1.15	1.17	1.23
PCM-20C3M	1890-1999	0.12	0.758	-151.762	0.41	0.39	0.51
ECHAM5-20C3M	1870-2007	0.13	0.153	-3.641	0.41	0.38	0.74
CGCM2-A2	1900-2007	0.24	0.200	-17.761	0.77	0.87	0.88
HADCM3-A2	1950-2007	0.12	-0.909	-435.793		0.36	0.39
ECHAM4-GG	1870-2007	0.23	0.382	-0.378	0.46	1.07	1.07

**Table 5:** Statistics for temperature at Albany, USA.

<b>Monthly data</b>	<b>Period</b>	<b>Average (°C)</b>	<b>St. dev. (°C)</b>	<b>Corre- lation</b>	<b>Efficiency</b>		
Observed	1899-2007	19.24	6.78				
CGCM3-A2	1899-2000	18.65	6.31	0.921	0.840		
PCM-20C3M	1899-1999	18.60	6.40	0.922	0.840		
ECHAM5-20C3M	1899-2007	19.03	6.31	0.913	0.829		
CGCM2-A2	1900-2007	18.21	5.41	0.912	0.795		
HADCM3-A2	1950-2007	18.80	7.15	0.930	0.853		
ECHAM4-GG	1899-2007	19.31	6.50	0.931	0.866		
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<b>Annual data</b>	<b>Period</b>	<b>Average (°C)</b>	<b>St. dev. (°C)</b>	<b>Auto- correl.</b>	<b>Corre- lation</b>	<b>Efficiency</b>	<b>Hurst coeff.</b>
Observed	1899-2007	19.24	0.83	0.660			0.930
CGCM3-A2	1899-2000	18.65	0.63	0.306	-0.215	-1.368	0.802
PCM-20C3M	1899-1999	18.60	0.48	0.005	0.076	-0.828	0.511
ECHAM5-20C3M	1899-2007	19.03	0.77	0.078	-0.154	-1.214	0.577
CGCM2-A2	1900-2007	18.21	0.54	0.167	-0.012	-1.999	0.562
	1900-1989	18.15	0.54	0.091	0.016	-2.013	
	1989-2007	18.52	0.45	0.213	-0.016	-3.115	
HADCM3-A2	1950-2007	18.80	0.65	0.232	0.053	-0.905	0.713
	1950-1989	18.62	0.64	0.121	-0.319	-1.631	
	1989-2007	19.18	0.48	0.045	0.142	-1.238	
ECHAM4-GG	1899-2007	19.31	0.74	0.279	0.151	-1.001	0.803
	1899-1989	19.12	0.63	-0.023	-0.072	-0.642	
	1989-2007	20.23	0.57	-0.222	0.031	-9.561	
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<b>30-year moving average data</b>	<b>Period</b>	<b>St. dev. (°C)</b>	<b>Corre- lation</b>	<b>Efficiency</b>	<b>DT (1987- 1914) (°C)</b>	<b>DT (all data) (°C)</b>	<b>max DT (°C)</b>
Observed	1899-2007	0.62			-1.09	-0.95	-1.68
CGCM3-A2	1899-2000	0.21	-0.856	-2.018	0.69	0.69	0.76
PCM-20C3M	1899-1999	0.06	0.455	-1.149	0.19	0.19	0.22
ECHAM5-20C3M	1899-2007	0.21	-0.832	-0.833	0.66	0.76	0.84
CGCM2-A2	1900-2007	0.07	0.110	-2.844	0.03	0.18	0.31
HADCM3-A2	1950-2007	0.15	-0.107	-4.443		0.41	0.45
ECHAM4-GG	1899-2007	0.19	-0.452	-0.359	0.40	0.71	0.80

**Table 6:** Statistics for temperature at Manaus, Brazil.

<b>Monthly data</b>	<b>Period</b>	<b>Average (°C)</b>	<b>St. dev. (°C)</b>	<b>Corre- lation</b>	<b>Efficiency</b>		
Observed	1910-2003	26.67	0.86				
CGCM3-A2	1910-2000	26.08	1.92	0.408	-3.628		
PCM-20C3M	1910-1999	27.36	2.02	-0.015	-6.364		
ECHAM5-20C3M	1910-2007	27.99	2.17	0.532	-5.813		
CGCM2-A2	1910-2007	24.51	1.03	0.326	-6.842		
HADCM3-A2	1950-2007	28.06	1.88	0.445	-4.755		
ECHAM4-GG	1910-2007	28.00	2.25	0.398	-6.670		
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<b>Annual data</b>	<b>Period</b>	<b>Average (°C)</b>	<b>St. dev. (°C)</b>	<b>Auto- correl.</b>	<b>Corre- lation</b>	<b>Efficiency</b>	<b>Hurst coeff.</b>
Observed	1910-2003	26.67	0.38	0.620			0.885
CGCM3-A2	1910-2000	26.08	0.66	0.682	0.120	-5.139	0.924
PCM-20C3M	1910-1999	27.36	0.61	0.154	0.129	-6.496	0.579
ECHAM5-20C3M	1910-2007	27.99	0.79	0.201	0.150	-15.783	0.595
CGCM2-A2	1910-2007	24.51	0.54	0.372	0.240	-33.618	0.790
	1910-1989	24.45	0.56	0.320	0.201	-36.320	
	1989-2007	24.79	0.32	0.447	-0.215	-58.979	
HADCM3-A2	1950-2007	28.06	0.91	0.338	0.237	-24.231	0.787
	1950-1989	27.78	0.78	0.060	-0.032	-24.007	
	1989-2007	28.69	0.88	0.338	0.176	-43.109	
ECHAM4-GG	1910-2007	28.00	0.98	0.568	0.259	-17.389	0.888
	1910-1989	27.73	0.76	0.337	0.023	-13.624	
	1989-2007	29.18	0.97	0.435	0.204	-68.135	
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<b>30-year moving average data</b>	<b>Period</b>	<b>St. dev. (°C)</b>	<b>Corre- lation</b>	<b>Efficiency</b>	<b>DT (1987- 1914) (°C)</b>	<b>DT (all data) (°C)</b>	<b>max DT (°C)</b>
Observed	1910-2003	0.12			0.24	0.38	0.44
CGCM3-A2	1910-2000	0.34	0.843	-35.864	1.17	1.17	1.19
PCM-20C3M	1910-1999	0.15	0.755	-49.448	0.37	0.37	0.46
ECHAM5-20C3M	1910-2007	0.19	0.812	-140.985	0.59	0.60	0.65
CGCM2-A2	1910-2007	0.21	0.841	-334.583	0.61	0.52	0.67
HADCM3-A2	1950-2007	0.22	0.895	-585.821		0.56	0.62
ECHAM4-GG	1910-2007	0.46	0.814	-125.605	1.30	1.65	1.69

**Table 7:** Statistics for temperature at Athens, Greece.

<b>Monthly data</b>	<b>Period</b>	<b>Average (°C)</b>	<b>St. dev. (°C)</b>	<b>Corre- lation</b>	<b>Efficiency</b>		
Observed	1858-2003	17.90	6.71				
CGCM3-A2	1858-2000	16.35	5.17	0.940	0.805		
PCM-20C3M	1890-1999	14.71	6.44	0.961	0.696		
ECHAM5-20C3M	1861-2007	16.87	5.80	0.959	0.888		
CGCM2-A2	1900-2007	17.48	4.06	0.809	0.717		
HADCM3-A2	1950-2007	16.75	5.08	0.932	0.806		
ECHAM4-GG	1860-2007	17.71	6.08	0.959	0.915		
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<b>Annual data</b>	<b>Period</b>	<b>Average (°C)</b>	<b>St. dev. (°C)</b>	<b>Auto- correl.</b>	<b>Corre- lation</b>	<b>Efficiency</b>	<b>Hurst coeff.</b>
Observed	1858-2003	17.90	0.61	0.446			0.808
CGCM3-A2	1858-2000	16.35	0.51	0.508	-0.099	-7.738	0.886
PCM-20C3M	1890-1999	14.71	0.55	0.173	0.133	-31.051	0.615
ECHAM5-20C3M	1861-2007	16.87	0.42	0.075	0.001	-3.484	0.588
CGCM2-A2	1900-2007	17.48	0.34	0.451	0.103	-0.765	0.803
	1900-1989	17.39	0.25	0.048	-0.059	-1.012	
	1989-2007	17.92	0.39	0.326	-0.114	-1.663	
HADCM3-A2	1950-2007	16.75	0.51	0.210	0.054	-4.067	0.745
	1950-1989	16.68	0.54	0.285	-0.209	-6.927	
	1989-2007	16.90	0.41	-0.332	0.295	-6.146	
ECHAM4-GG	1860-2007	17.71	0.60	0.454	0.154	-0.787	0.886
	1860-1989	17.57	0.46	0.093	-0.063	-1.083	
	1989-2007	18.72	0.48	0.020	0.198	-1.172	
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<b>30-year moving average data</b>	<b>Period</b>	<b>St. dev. (°C)</b>	<b>Corre- lation</b>	<b>Efficiency</b>	<b>DT (1987- 1914) (°C)</b>	<b>DT (all data) (°C)</b>	<b>max DT (°C)</b>
Observed	1858-2003	0.21			-0.08	0.23	-0.74
CGCM3-A2	1858-2000	0.21	-0.311	-52.023	0.62	0.90	0.90
PCM-20C3M	1890-1999	0.09	0.607	-228.569	0.21	0.21	-0.30
ECHAM5-20C3M	1861-2007	0.13	-0.542	-22.618	0.32	0.21	0.45
CGCM2-A2	1900-2007	0.08	-0.402	-8.304	0.14	0.29	0.39
HADCM3-A2	1950-2007	0.14	-0.182	-120.960		0.36	0.41
ECHAM4-GG	1860-2007	0.28	-0.058	-2.847	0.63	1.09	1.11

**Table 8:** Statistics for temperature at Matsumoto, Japan.

<b>Monthly data</b>	<b>Period</b>	<b>Average (°C)</b>	<b>St. dev. (°C)</b>	<b>Corre- lation</b>	<b>Efficiency</b>		
Observed	1899-2007	10.87	8.89				
CGCM3-A2	1899-2000	10.71	8.48	0.981	0.961		
PCM-20C3M	1899-1999	11.74	7.58	0.965	0.908		
ECHAM5-20C3M	1899-2007	12.98	7.61	0.974	0.882		
CGCM2-A2	1900-2007	13.37	6.92	0.953	0.808		
HADCM3-A2	1950-2007	10.57	8.11	0.983	0.953		
ECHAM4-GG	1899-2007	12.83	7.11	0.976	0.876		
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<b>Annual data</b>	<b>Period</b>	<b>Average (°C)</b>	<b>St. dev. (°C)</b>	<b>Auto- correl.</b>	<b>Corre- lation</b>	<b>Efficiency</b>	<b>Hurst coeff.</b>
Observed	1899-2007	10.94	0.75	0.649			0.926
CGCM3-A2	1899-2000	10.71	0.56	0.493	0.368	-0.097	0.870
PCM-20C3M	1899-1999	11.74	0.58	0.199	0.104	-2.142	0.514
ECHAM5-20C3M	1899-2007	12.98	0.46	0.240	0.337	-7.351	0.628
CGCM2-A2	1900-2007	13.37	0.45	0.265	0.396	-10.216	0.724
	1900-1989	13.28	0.41	0.080	0.129	-17.811	
	1989-2007	13.80	0.42	0.104	0.332	-15.510	
HADCM3-A2	1950-2007	10.57	0.48	0.148	0.503	-1.705	0.739
	1950-1989	10.41	0.42	-0.055	0.272	-2.695	
	1989-2007	10.88	0.43	-0.295	0.306	-5.970	
ECHAM4-GG	1899-2007	12.84	0.70	0.663	0.552	-6.141	0.708
	1899-1989	12.64	0.52	0.424	0.249	-10.310	
	1989-2007	13.77	0.67	0.568	0.273	-16.345	
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<b>30-year moving average data</b>	<b>Period</b>	<b>St. dev. (°C)</b>	<b>Corre- lation</b>	<b>Efficiency</b>	<b>DT (1987- 1914) (°C)</b>	<b>DT (all data) (°C)</b>	<b>max DT (°C)</b>
Observed	1899-2007	0.40			1.22	1.50	1.50
CGCM3-A2	1899-2000	0.21	0.806	0.175	0.56	0.56	0.84
PCM-20C3M	1899-1999	0.12	-0.702	-7.132	0.05	0.05	-0.39
ECHAM5-20C3M	1899-2007	0.09	0.874	-26.858	0.22	0.39	0.41
CGCM2-A2	1900-2007	0.10	0.592	-38.371	0.19	0.31	0.45
HADCM3-A2	1950-2007	0.13	0.978	-15.963		0.38	0.42
ECHAM4-GG	1899-2007	0.31	0.895	-20.840	0.73	1.02	1.13



**Table 9:** Statistics for temperature at Khartoum, Sudan.

<b>Monthly data</b>	<b>Period</b>	<b>Average (°C)</b>	<b>St. dev. (°C)</b>	<b>Corre- lation</b>	<b>Efficiency</b>		
Observed	1901-2003	29.34	3.97				
CGCM3-A2	1901-2000	27.90	3.92	0.882	0.638		
PCM-20C3M	1901-1999	24.56	3.19	0.763	-0.812		
ECHAM5-20C3M	1901-2007	30.06	4.18	0.901	0.108		
CGCM2-A2	1901-2007	23.65	4.67	0.814	-0.337		
HADCM3-A2	1950-2007	28.14	3.12	0.858	0.027		
ECHAM4-GG	1901-2007	30.30	4.07	0.878	0.085		
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<b>Annual data</b>	<b>Period</b>	<b>Average (°C)</b>	<b>St. dev. (°C)</b>	<b>Auto- correl.</b>	<b>Corre- lation</b>	<b>Efficiency</b>	<b>Hurst coeff.</b>
Observed	1901-2003	29.34	0.68	0.531			0.904
CGCM3-A2	1901-2000	27.90	0.73	0.649	0.261	-5.166	0.927
PCM-20C3M	1901-1999	24.56	0.43	0.138	0.207	-53.353	0.663
ECHAM5-20C3M	1901-2007	30.06	0.61	0.323	0.212	-1.554	0.693
CGCM2-A2	1901-2007	23.65	0.59	0.169	0.395	-70.967	0.677
	1901-1989	23.54	0.54	-0.028	0.292	-78.330	
	1989-2007	24.19	0.53	0.188	0.140	-175.055	
HADCM3-A2	1950-2007	28.14	0.51	0.497	0.327	-3.261	0.886
	1950-1989	27.92	0.42	0.207	0.106	-4.209	
	1989-2007	28.62	0.36	-0.086	-0.295	-10.676	
ECHAM4-GG	1901-2007	30.30	0.66	0.235	0.224	-2.523	0.770
	1901-1989	30.16	0.59	0.067	0.027	-2.970	
	1989-2007	30.96	0.60	-0.323	0.193	-6.693	
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<b>30-year moving average data</b>	<b>Period</b>	<b>St. dev. (°C)</b>	<b>Corre- lation</b>	<b>Efficiency</b>	<b>DT (1987- 1914) (°C)</b>	<b>DT (all data) (°C)</b>	<b>max DT (°C)</b>
Observed	1901-2003	0.31			0.43	0.65	1.25
CGCM3-A2	1901-2000	0.41	0.338	-29.159	1.38	1.38	1.40
PCM-20C3M	1901-1999	0.10	0.149	-317.014	0.42	0.42	0.43
ECHAM5-20C3M	1901-2007	0.19	0.682	-5.656	0.59	0.75	0.78
CGCM2-A2	1901-2007	0.21	0.825	-324.861	0.59	0.68	0.70
HADCM3-A2	1950-2007	0.19	0.975	-25.219		0.56	0.61
ECHAM4-GG	1901-2007	0.26	0.690	-9.892	0.71	0.90	0.90

**Table 10:** Statistics for temperature at Alice Springs, Australia.

<b>Monthly data</b>	<b>Period</b>	<b>Average (°C)</b>	<b>St. dev. (°C)</b>	<b>Corre- lation</b>	<b>Efficiency</b>		
Observed	1879-2007	20.85	6.20				
CGCM3-A2	1879-2000	21.21	7.12	0.947	0.854		
PCM-20C3M	1890-1999	21.21	7.08	0.895	0.734		
ECHAM5-20C3M	1879-2007	22.24	6.73	0.939	0.815		
CGCM2-A2	1900-2007	20.24	6.70	0.932	0.865		
HADCM3-A2	1950-2007	21.13	6.60	0.936	0.858		
ECHAM4-GG	1879-2007	24.23	6.93	0.934	0.552		
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<b>Annual data</b>	<b>Period</b>	<b>Average (°C)</b>	<b>St. dev. (°C)</b>	<b>Auto- correl.</b>	<b>Corre- lation</b>	<b>Efficiency</b>	<b>Hurst coeff.</b>
Observed	1879-2007	20.87	0.72	0.363			0.724
CGCM3-A2	1879-2000	21.21	0.84	0.490	0.093	-1.419	0.909
PCM-20C3M	1890-1999	21.21	0.74	0.228	-0.089	-1.542	0.619
ECHAM5-20C3M	1879-2007	22.24	0.82	0.328	0.098	-4.748	0.728
CGCM2-A2	1900-2007	20.24	0.71	0.252	0.089	-1.419	0.710
	1900-1989	20.13	0.67	0.099	-0.046	-1.691	
	1989-2007	20.79	0.69	0.465	0.043	-2.420	
HADCM3-A2	1950-2007	21.13	0.74	0.225	-0.024	-1.083	0.673
	1950-1989	20.99	0.77	0.156	-0.197	-1.569	
	1989-2007	21.41	0.59	0.218	0.066	-0.811	
ECHAM4-GG	1879-2007	24.23	0.77	0.385	0.087	-23.021	0.755
	1879-1989	24.10	0.70	0.235	-0.034	-23.904	
	1989-2007	25.02	0.69	0.383	-0.166	-39.093	
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<b>30-year moving average data</b>	<b>Period</b>	<b>St. dev. (°C)</b>	<b>Corre- lation</b>	<b>Efficiency</b>	<b>DT (1987- 1914) (°C)</b>	<b>DT (all data) (°C)</b>	<b>max DT (°C)</b>
Observed	1879-2007	0.16			0.29	0.14	0.70
CGCM3-A2	1879-2000	0.47	0.338	-13.513	1.63	1.58	1.66
PCM-20C3M	1890-1999	0.18	0.689	-10.029	0.56	0.60	0.68
ECHAM5-20C3M	1879-2007	0.26	0.413	-86.575	0.79	0.76	0.96
CGCM2-A2	1900-2007	0.21	0.779	-12.569	0.57	0.80	0.85
HADCM3-A2	1950-2007	0.16	0.603	-12.316		0.39	0.49
ECHAM4-GG	1879-2007	0.27	0.598	-462.875	0.62	0.96	0.99

**Table 11:** Statistics for precipitation at Vancouver, USA.

<b>Monthly data</b>	<b>Period</b>	<b>Average (mm)</b>	<b>St. dev. (mm)</b>	<b>Correlation</b>	<b>Efficiency</b>		
Observed	1899-2007	83.3	67.1				
CGCM3-A2	1899-2000	97.6	63.5	0.558	0.110		
PCM-20C3M	1899-1999	82.7	73.1	0.520	-0.053		
ECHAM5-20C3M	1899-2007	92.7	77.6	0.521	-0.142		
CGCM2-A2	1900-2007	109.2	67.5	0.509	-0.116		
HADCM3-A2	1950-2007	83.1	57.6	0.645	0.376		
ECHAM4-GG	1899-2007	70.1	70.0	0.483	-0.104		
<b>Annual data</b>	<b>Period</b>	<b>Average (mm)</b>	<b>St. dev. (mm)</b>	<b>Auto-correl.</b>	<b>Correlation</b>	<b>Efficiency</b>	<b>Hurst coeff.</b>
Observed	1899-2007	1000.1	184.7	0.163			0.633
CGCM3-A2	1899-2000	1171.8	129.6	0.028	-0.077	-1.446	0.513
PCM-20C3M	1899-1999	993.4	157.8	0.008	0.069	-0.606	0.499
ECHAM5-20C3M	1899-2007	1113.9	187.6	-0.065	-0.048	-1.512	0.430
CGCM2-A2	1900-2007	1310.4	172.2	-0.156	-0.038	-3.829	0.307
	1900-1989	1308.4	175.9	-0.209	-0.080	-4.580	
	1989-2007	1314.7	154.1	0.191	0.128	-1.808	
HADCM3-A2	1950-2007	996.8	106.4	-0.128	-0.107	-0.170	0.485
	1950-1989	1007.0	105.0	-0.209	0.215	-0.169	
	1989-2007	984.4	115.1	-0.011	0.195	-0.172	
ECHAM4-GG	1899-2007	841.2	179.5	0.087	-0.004	-2.012	0.494
	1899-1989	841.4	170.5	0.070	-0.183	-2.028	
	1989-2007	848.4	222.2	0.146	-0.110	-2.160	
<b>30-year moving average data</b>	<b>Period</b>	<b>St. dev. (mm)</b>	<b>Correlation</b>	<b>Efficiency</b>	<b>DP (1987-1914) (mm)</b>	<b>DP (all data) (mm)</b>	<b>max DT (mm)</b>
Observed	1899-2007	58.8			103.5	85.2	174.3
CGCM3-A2	1899-2000	12.4	0.605	-9.262	5.2	5.2	49.9
PCM-20C3M	1899-1999	19.9	0.648	0.245	43.4	43.4	82.4
ECHAM5-20C3M	1899-2007	31.7	-0.849	-5.548	-30.2	-69.2	-105.3
CGCM2-A2	1900-2007	11.0	0.207	-28.456	-17.7	-14.0	-48.9
HADCM3-A2	1950-2007	12.0	0.088	-13.394		-16.6	-39.1
ECHAM4-GG	1899-2007	20.0	-0.315	-6.956	-28.7	-46.4	-89.4

**Table 12:** Statistics for precipitation at Colfax, USA.

<b>Monthly data</b>	<b>Period</b>	<b>Average (mm)</b>	<b>St. dev. (mm)</b>	<b>Correlation</b>	<b>Efficiency</b>		
Observed	1870-2005	100.80	127.00				
CGCM3-A2	1870-2000	85.53	70.04	0.477	0.197		
PCM-20C3M	1890-1999	70.30	80.77	0.469	0.117		
ECHAM5-20C3M	1870-2007	79.57	87.73	0.482	0.152		
CGCM2-A2	1900-2007	88.65	66.11	0.410	0.327		
HADCM3-A2	1950-2007	86.44	94.11	0.567	0.267		
ECHAM4-GG	1870-2007	51.24	66.73	0.384	-0.033		
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<b>Annual data</b>	<b>Period</b>	<b>Average (mm)</b>	<b>St. dev. (mm)</b>	<b>Auto-correl.</b>	<b>Correlation</b>	<b>Efficiency</b>	<b>Hurst coeff.</b>
Observed	1870-2005	1205.51	356.86	0.055			0.555
CGCM3-A2	1870-2000	1026.31	155.59	0.026	-0.012	-0.452	0.528
PCM-20C3M	1890-1999	843.63	217.06	0.140	-0.124	-1.612	0.527
ECHAM5-20C3M	1870-2007	954.88	235.73	0.082	-0.018	-0.957	0.524
CGCM2-A2	1900-2007	1063.79	176.00	-0.020	-0.142	-0.556	0.468
	1900-1989	1068.28	179.38	-0.036	-0.154	-0.557	
	1989-2007	1032.69	160.87	0.055	-0.053	-0.566	
HADCM3-A2	1950-2007	1037.23	202.32	0.077	0.087	-0.557	0.616
	1950-1989	1080.58	194.73	-0.059	0.089	-0.406	
	1989-2007	934.34	186.60	-0.002	0.080	-0.982	
ECHAM4-GG	1870-2007	614.91	204.28	0.064	0.100	-2.952	0.546
	1870-1989	614.28	199.90	0.075	0.054	-2.953	
	1989-2007	621.32	231.34	0.009	0.398	-2.980	
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<b>30-year moving average data</b>	<b>Period</b>	<b>St. dev. (mm)</b>	<b>Correlation</b>	<b>Efficiency</b>	<b>DP (1987-1914) (mm)</b>	<b>DP (all data) (mm)</b>	<b>max DT (mm)</b>
Observed	1870-2005	62.65			3.72	34.17	-254.52
CGCM3-A2	1870-2000	23.17	-0.570	-8.727	-33.17	28.56	96.66
PCM-20C3M	1890-1999	21.51	0.390	-34.867	33.75	29.36	-92.87
ECHAM5-20C3M	1870-2007	37.60	-0.023	-15.812	-71.90	-84.99	160.74
CGCM2-A2	1900-2007	18.85	-0.541	-5.494	-25.36	-24.65	-75.83
HADCM3-A2	1950-2007	42.20	0.297	-106.499		-143.59	-144.27
ECHAM4-GG	1870-2007	39.54	0.568	-90.796	-54.23	-48.66	-154.42

**Table 13:** Statistics for precipitation at Albany, USA.

<b>Monthly data</b>	<b>Period</b>	<b>Average (mm)</b>	<b>St. dev. (mm)</b>	<b>Correlation</b>	<b>Efficiency</b>		
Observed	1896-2007	107.10	67.29				
CGCM3-A2	1896-2000	96.95	33.96	0.104	-0.168		
PCM-20C3M	1896-1999	70.34	39.50	0.235	-0.355		
ECHAM5-20C3M	1896-2007	97.01	60.01	0.213	-0.483		
CGCM2-A2	1900-2007	108.37	45.24	-0.093	-0.491		
HADCM3-A2	1950-2007	114.90	54.14	0.142	-0.481		
ECHAM4-GG	1896-2007	88.21	52.92	0.181	-0.449		
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<b>Annual data</b>	<b>Period</b>	<b>Average (mm)</b>	<b>St. dev. (mm)</b>	<b>Auto-correl.</b>	<b>Correlation</b>	<b>Efficiency</b>	<b>Hurst coeff.</b>
Observed	1896-2007	1281.91	225.12	0.096			0.486
CGCM3-A2	1896-2000	1165.72	114.67	0.241	-0.076	-0.629	0.640
PCM-20C3M	1896-1999	845.03	114.51	0.089	-0.038	-4.233	0.599
ECHAM5-20C3M	1896-2007	1163.22	189.93	0.065	-0.125	-1.223	0.463
CGCM2-A2	1900-2007	1299.43	148.28	0.155	-0.037	-0.473	0.615
	1900-1989	1312.28	153.15	0.151	-0.021	-0.493	
	1990-2007	1241.24	94.42	-0.064	-0.084	-0.227	
HADCM3-A2	1950-2007	1378.75	186.02	0.005	0.008	-0.521	0.568
	1950-1989	1360.93	171.17	0.009	0.422	-0.097	
	1990-2007	1418.34	215.41	-0.063	-0.207	-1.226	
ECHAM4-GG	1896-2007	1058.56	116.32	-0.158	0.085	-1.344	0.480
	1896-1989	1057.03	109.17	-0.153	-0.049	-1.357	
	1990-2007	1057.58	145.01	-0.125	-0.158	-1.305	
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<b>30-year moving average data</b>	<b>Period</b>	<b>St. dev. (mm)</b>	<b>Correlation</b>	<b>Efficiency</b>	<b>DP (1987-1914) (mm)</b>	<b>DP (all data) (mm)</b>	<b>max DT (mm)</b>
Observed	1896-2007	36.67			69.4	16.2	157.2
CGCM3-A2	1896-2000	23.11	-0.196	-10.114	69.3	69.3	79.8
PCM-20C3M	1896-1999	24.99	0.651	-139.042	-1.8	-1.8	93.6
ECHAM5-20C3M	1896-2007	28.46	-0.462	-12.066	-29.7	17.3	-97.6
CGCM2-A2	1900-2007	25.52	-0.541	-1.642	-74.3	-76.2	-97.0
HADCM3-A2	1950-2007	10.72	-0.187	-6.086		-16.8	39.4
ECHAM4-GG	1896-2007	24.43	0.320	-36.780	37.4	22.7	77.8

**Table 14:** Statistics for precipitation at Manaus, Brazil.

<b>Monthly data</b>	<b>Period</b>	<b>Average (mm)</b>	<b>St. dev. (mm)</b>	<b>Correlation</b>	<b>Efficiency</b>		
Observed	1901-2003	175.57	118.15				
CGCM3-A2	1901-2000	111.16	72.39	0.586	0.042		
PCM-20C3M	1901-1999	157.78	136.25	0.208	-0.853		
ECHAM5-20C3M	1901-2007	128.09	87.07	0.574	0.142		
CGCM2-A2	1901-2007	155.92	68.70	0.501	0.216		
HADCM3-A2	1950-2007	139.19	71.75	0.558	0.142		
ECHAM4-GG	1901-2007	180.96	80.64	0.333	-0.006		
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<b>Annual data</b>	<b>Period</b>	<b>Average (mm)</b>	<b>St. dev. (mm)</b>	<b>Auto-correl.</b>	<b>Correlation</b>	<b>Efficiency</b>	<b>Hurst coeff.</b>
Observed	1901-2003	2106.84	370.38	0.438			0.863
CGCM3-A2	1901-2000	1333.87	133.67	0.092	0.172	-4.118	0.581
PCM-20C3M	1901-1999	1893.30	316.12	-0.016	0.102	-0.817	0.494
ECHAM5-20C3M	1901-2007	1537.09	172.65	-0.075	0.015	-2.592	0.425
CGCM2-A2	1901-2007	1871.04	176.17	-0.150	-0.095	-0.725	0.422
	1901-1989	1872.24	181.74	-0.134	-0.122	-0.614	
	1989-2007	1865.06	149.96	-0.289	0.210	-4.757	
HADCM3-A2	1950-2007	1670.25	214.32	0.002	0.035	-5.244	0.533
	1950-1989	1698.74	216.72	-0.115	0.142	-4.308	
	1989-2007	1606.93	200.28	0.123	-0.282	-13.390	
ECHAM4-GG	1901-2007	2171.47	184.06	0.091	-0.190	-0.466	0.617
	1901-1989	2185.20	170.50	0.024	-0.132	-0.396	
	1989-2007	2103.59	234.26	0.173	-0.406	-3.420	
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<b>30-year moving average data</b>	<b>Period</b>	<b>St. dev. (mm)</b>	<b>Correlation</b>	<b>Efficiency</b>	<b>DP (1987-1914) (mm)</b>	<b>DP (all data) (mm)</b>	<b>max DT (mm)</b>
Observed	1901-2003	114.74			464.66	438.48	473.42
CGCM3-A2	1901-2000	27.81	0.059	-52.467	30.58	30.58	103.21
PCM-20C3M	1901-1999	55.97	-0.113	-5.137	36.36	36.36	-205.16
ECHAM5-20C3M	1901-2007	31.95	-0.841	-30.122	-92.59	-57.54	-115.38
CGCM2-A2	1901-2007	15.42	0.344	-5.995	18.13	33.39	70.43
HADCM3-A2	1950-2007	23.65	0.250	-243.003		-37.69	-74.19
ECHAM4-GG	1901-2007	28.85	-0.768	-0.479	-73.97	-76.79	-121.49

**Table 15:** Statistics for precipitation at Athens, Greece.

<b>Monthly data</b>	<b>Period</b>	<b>Average (mm)</b>	<b>St. dev. (mm)</b>	<b>Correlation</b>	<b>Efficiency</b>		
Observed	1858-2003	33.25	36.89				
CGCM3-A2	1858-2000	32.86	23.84	0.423	0.123		
PCM-20C3M	1890-1999	33.28	27.80	0.398	0.006		
ECHAM5-20C3M	1861-2007	22.87	27.48	0.401	-0.034		
CGCM2-A2	1900-2007	38.10	27.80	0.443	0.344		
HADCM3-A2	1950-2007	38.13	32.77	0.442	0.001		
ECHAM4-GG	1860-2007	39.73	28.88	0.363	-0.071		
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<b>Annual data</b>	<b>Period</b>	<b>Average (mm)</b>	<b>St. dev. (mm)</b>	<b>Auto-correl.</b>	<b>Correlation</b>	<b>Efficiency</b>	<b>Hurst coeff.</b>
Observed	1858-2003	398.95	114.80	0.018			0.514
CGCM3-A2	1858-2000	394.30	57.56	0.094	0.038	-0.255	0.616
PCM-20C3M	1890-1999	399.30	83.64	0.040	-0.001	-0.827	0.500
ECHAM5-20C3M	1861-2007	274.41	67.34	0.171	-0.034	-1.575	0.637
CGCM2-A2	1900-2007	457.19	63.66	-0.068	0.064	-0.576	0.545
	1900-1989	459.41	62.59	-0.035	0.081	-0.930	
	1989-2007	446.09	69.56	-0.241	0.065	-0.343	
HADCM3-A2	1950-2007	457.58	64.39	0.084	0.069	-0.445	0.666
	1950-1989	451.73	61.87	0.141	0.232	-0.677	
	1989-2007	470.58	69.73	-0.061	-0.142	-0.612	
ECHAM4-GG	1860-2007	476.81	81.03	0.110	0.014	-0.923	0.693
	1860-1989	482.09	81.91	0.100	0.062	-1.167	
	1989-2007	438.65	64.08	0.020	-0.159	-0.509	
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<b>30-year moving average data</b>	<b>Period</b>	<b>St. dev. (mm)</b>	<b>Correlation</b>	<b>Efficiency</b>	<b>DP (1987-1914) (mm)</b>	<b>DP (all data) (mm)</b>	<b>max DT (mm)</b>
Observed	1858-2003	12.71			-15.51	-19.19	-56.59
CGCM3-A2	1858-2000	16.47	0.475	-0.420	-42.67	-47.82	-62.61
PCM-20C3M	1890-1999	8.59	-0.494	-1.527	2.21	3.89	39.57
ECHAM5-20C3M	1861-2007	18.06	0.150	-98.417	-41.80	3.42	-66.09
CGCM2-A2	1900-2007	16.44	0.648	-26.671	-25.19	-22.84	-53.00
HADCM3-A2	1950-2007	7.14	-0.444	-32.798		-18.48	-29.83
ECHAM4-GG	1860-2007	24.73	-0.075	-57.969	-60.00	-7.33	-95.16

**Table 16:** Statistics for precipitation at Matsumoto, Japan.

<b>Monthly data</b>	<b>Period</b>	<b>Average (mm)</b>	<b>St. dev. (mm)</b>	<b>Correlation</b>	<b>Efficiency</b>		
Observed	1898-2007	88.32	63.87				
CGCM3-A2	1898-2000	109.50	50.55	0.326	-0.221		
PCM-20C3M	1898-1999	125.73	51.60	-0.079	-1.119		
ECHAM5-20C3M	1898-2007	136.56	82.88	0.329	-1.412		
CGCM2-A2	1900-2007	104.92	44.24	0.193	-0.250		
HADCM3-A2	1950-2007	105.71	53.08	0.146	-0.529		
ECHAM4-GG	1898-2007	120.98	47.32	0.267	-0.421		
<hr/>							
<b>Annual data</b>	<b>Period</b>	<b>Average (mm)</b>	<b>St. dev. (mm)</b>	<b>Auto-correl.</b>	<b>Correlation</b>	<b>Efficiency</b>	<b>Hurst coeff.</b>
Observed	1898-2007	1058.60	204.30	-0.054			0.562
CGCM3-A2	1898-2000	1314.06	126.04	0.190	0.018	-1.962	0.690
PCM-20C3M	1898-1999	1508.81	166.42	0.071	-0.036	-5.650	0.623
ECHAM5-20C3M	1898-2007	1638.76	253.61	0.069	-0.022	-9.733	0.485
CGCM2-A2	1900-2007	1258.99	149.46	-0.001	-0.049	-1.568	0.431
	1900-1989	1258.17	147.61	0.053	-0.107	-1.655	
	1989-2007	1260.88	158.53	-0.234	0.182	-1.290	
HADCM3-A2	1950-2007	1268.49	155.56	0.089	-0.159	-2.163	0.508
	1950-1989	1263.31	150.30	-0.065	0.117	-1.916	
	1989-2007	1281.16	165.90	0.379	-0.554	-2.528	
ECHAM4-GG	1898-2007	1451.90	138.96	-0.022	0.006	-4.163	0.533
	1898-1989	1449.63	141.61	-0.021	-0.009	-4.309	
	1989-2007	1483.13	151.29	-0.051	0.095	-3.784	
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<b>30-year moving average data</b>	<b>Period</b>	<b>St. dev. (mm)</b>	<b>Correlation</b>	<b>Efficiency</b>	<b>DP (1987-1914) (mm)</b>	<b>DP (all data) (mm)</b>	<b>max DT (mm)</b>
Observed	1898-2007	31.35			-83.62	-80.42	-120.96
CGCM3-A2	1898-2000	16.70	0.078	-63.378	31.65	31.65	74.54
PCM-20C3M	1898-1999	18.18	-0.572	-219.895	12.04	12.04	64.55
ECHAM5-20C3M	1898-2007	34.41	0.458	-351.606	-120.38	-110.55	-134.31
CGCM2-A2	1900-2007	12.37	-0.091	-52.173	-10.96	-17.37	-58.08
HADCM3-A2	1950-2007	11.13	0.400	-136.988		-1.89	41.17
ECHAM4-GG	1898-2007	31.89	-0.247	-166.431	66.70	53.81	113.39



**Table 17:** Statistics for precipitation at Khartoum, Sudan.

<b>Monthly data</b>	<b>Period</b>	<b>Average (mm)</b>	<b>St. dev. (mm)</b>	<b>Correlation</b>	<b>Efficiency</b>		
Observed	1899-2007	12.6	30.4				
CGCM3-A2	1899-2000	16.8	31.4	0.572	0.093		
PCM-20C3M	1899-1999	28.4	67.4	0.497	-2.820		
ECHAM5-20C3M	1899-2007	9.7	17.9	0.480	0.220		
CGCM2-A2	1900-2007	26.9	36.8	-0.057	-1.726		
HADCM3-A2	1950-2007	11.8	18.3	0.132	-0.204		
ECHAM4-GG	1899-2007	9.4	16.5	0.368	0.096		
<b>Annual data</b>	<b>Period</b>	<b>Average (mm)</b>	<b>St. dev. (mm)</b>	<b>Auto-correl.</b>	<b>Correlation</b>	<b>Efficiency</b>	<b>Hurst coeff.</b>
Observed	1899-2007	150.5	77.3	0.206			0.668
CGCM3-A2	1899-2000	202.2	75.5	0.055	0.204	-0.929	0.514
PCM-20C3M	1899-1999	340.3	197.6	0.175	0.054	-11.634	0.646
ECHAM5-20C3M	1899-2007	116.6	41.1	-0.063	-0.024	-0.500	0.448
CGCM2-A2	1900-2007	322.4	124.8	0.001	0.004	-7.622	0.470
	1900-1989	313.9	112.0	-0.018	0.004	-6.028	
	1989-2007	364.2	168.7	-0.038	0.098	-22.624	
HADCM3-A2	1950-2007	141.5	45.9	-0.127	-0.144	-0.656	0.418
	1950-1989	140.8	48.3	-0.153	-0.225	-0.661	
	1989-2007	141.4	41.0	-0.049	-0.181	-0.736	
ECHAM4-GG	1899-2007	112.2	57.3	0.021	0.055	-0.747	0.450
	1899-1989	111.5	57.5	-0.020	0.003	-0.798	
	1989-2007	111.7	59.1	0.240	0.266	-0.467	
<b>30-year moving average data</b>	<b>Period</b>	<b>St. dev. (mm)</b>	<b>Correlation</b>	<b>Efficiency</b>	<b>DP (1987-1914) (mm)</b>	<b>DP (all data) (mm)</b>	<b>max DT (mm)</b>
Observed	1899-2007	19.3			-25.2	-22.3	-63.1
CGCM3-A2	1899-2000	14.2	0.864	-7.262	-30.7	-30.7	-60.3
PCM-20C3M	1899-1999	27.4	-0.132	-100.693	-9.6	-9.6	-98.5
ECHAM5-20C3M	1899-2007	7.6	-0.900	-5.492	11.0	8.1	27.3
CGCM2-A2	1900-2007	22.7	-0.308	-74.981	47.3	60.5	81.3
HADCM3-A2	1950-2007	2.3	-0.433	-0.416		0.8	8.5
ECHAM4-GG	1899-2007	6.5	-0.250	-6.584	-12.4	-4.0	31.8

**Table 18:** Statistics for precipitation at Alice Springs, Australia.

<b>Monthly data</b>	<b>Period</b>	<b>Average (mm)</b>	<b>St. dev. (mm)</b>	<b>Correlation</b>	<b>Efficiency</b>		
Observed	1942-2007	23.22	37.99				
CGCM3-A2	1942-2000	19.89	21.84	0.138	-0.176		
PCM-20C3M	1942-1999	39.26	46.94	0.127	-1.492		
ECHAM5-20C3M	1942-2007	16.41	27.64	0.089	-0.423		
CGCM2-A2	1942-2007	31.24	31.26	0.113	-0.533		
HADCM3-A2	1950-2007	32.02	40.08	0.065	-0.977		
ECHAM4-GG	1942-2007	28.85	32.30	0.140	-0.501		
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<b>Annual data</b>	<b>Period</b>	<b>Average (mm)</b>	<b>St. dev. (mm)</b>	<b>Auto-correl.</b>	<b>Correlation</b>	<b>Efficiency</b>	<b>Hurst coeff.</b>
Observed	1942-2007	283.18	147.50	0.337			0.830
CGCM3-A2	1942-2000	238.72	75.53	-0.026	0.100	-0.277	0.511
PCM-20C3M	1942-1999	471.08	138.23	-0.132	-0.190	-3.477	0.359
ECHAM5-20C3M	1942-2007	196.88	113.89	0.126	0.112	-0.801	0.613
CGCM2-A2	1942-2007	374.92	112.29	0.168	-0.154	-1.263	0.661
	1942-1989	357.87	100.17	-0.112	-0.185	-1.039	
	1989-2007	420.38	132.14	0.463	-0.123	-2.211	
HADCM3-A2	1950-2007	384.20	146.04	-0.035	0.191	-1.002	0.545
	1950-1989	382.60	122.02	-0.006	-0.234	-1.478	
	1989-2007	387.77	193.23	-0.057	0.462	-0.165	
ECHAM4-GG	1942-2007	346.19	105.58	0.139	-0.084	-0.533	0.626
	1942-1989	324.73	101.69	-0.080	0.100	-0.455	
	1989-2007	403.41	96.28	0.261	0.315	-0.962	
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<b>30-year moving average data</b>	<b>Period</b>	<b>St. dev. (mm)</b>	<b>Correlation</b>	<b>Efficiency</b>	<b>DP (1987-1914) (mm)</b>	<b>DP (all data) (mm)</b>	<b>max DT (mm)</b>
Observed	1942-2007	26.54			92.01	63.92	112.72
CGCM3-A2	1942-2000	3.02	0.435	-4.295	-3.05	-3.05	12.39
PCM-20C3M	1942-1999	10.57	-0.732	-51.958	-28.27	-28.27	-38.09
ECHAM5-20C3M	1942-2007	10.32	-0.697	-16.882	-23.43	-1.90	-36.11
CGCM2-A2	1942-2007	21.85	0.612	-7.961	47.14	38.27	61.66
HADCM3-A2	1950-2007	11.63	-0.779	-17.213		-4.88	-33.62
ECHAM4-GG	1942-2007	27.44	0.819	-3.114	59.42	64.97	81.74

#### 4. Comparison of characteristic statistical indices

**Table 19:** Modelled vs. observed standard deviations for temperature time series (°C).

	Observed	CGCM3-A2	PCM-20C3M	ECHAM5-20C3M	CGCM2-A2	HADCM3-A2	ECHAM4-GG
Vancouver	0.771	0.697	0.710	0.653	0.476	0.586	0.702
Colfax	0.787	0.653	0.621	0.790	0.566	0.511	0.621
Albany	0.828	0.627	0.478	0.770	0.543	0.650	0.744
Manaus	0.382	0.658	0.615	0.793	0.536	0.909	0.978
Athens	0.606	0.506	0.546	0.417	0.339	0.506	0.596
Matsumoto	0.752	0.560	0.580	0.459	0.454	0.479	0.695
Khartoum	0.679	0.728	0.431	0.609	0.592	0.511	0.664
Alice Springs	0.718	0.839	0.744	0.818	0.709	0.743	0.766

**Table 20:** Modelled vs. observed coefficients of variation for precipitation time series.

	Observed	CGCM3-A2	PCM-20C3M	ECHAM5-20C3M	CGCM2-A2	HADCM3-A2	ECHAM4-GG
Vancouver	0.185	0.111	0.159	0.168	0.131	0.107	0.213
Colfax	0.296	0.152	0.257	0.247	0.165	0.195	0.332
Albany	0.176	0.098	0.136	0.163	0.114	0.135	0.110
Manaus	0.176	0.100	0.167	0.112	0.094	0.128	0.085
Athens	0.288	0.146	0.209	0.245	0.139	0.141	0.170
Matsumoto	0.193	0.096	0.110	0.155	0.119	0.123	0.096
Khartoum	0.514	0.373	0.581	0.352	0.387	0.325	0.511
Alice Springs	0.521	0.316	0.293	0.578	0.300	0.380	0.305

**Table 21:** Modelled vs. observed Hurst coefficients for temperature time series.

	Observed	CGCM3-A2	PCM-20C3M	ECHAM5-20C3M	CGCM2-A2	HADCM3-A2	ECHAM4-GG
Vancouver	0.908	0.881	0.629	0.609	0.828	0.706	0.730
Colfax	0.808	0.864	0.645	0.579	0.871	0.753	0.820
Albany	0.930	0.802	0.511	0.577	0.562	0.713	0.803
Manaus	0.885	0.924	0.579	0.595	0.790	0.787	0.888
Athens	0.808	0.886	0.615	0.588	0.803	0.745	0.886
Matsumoto	0.926	0.870	0.514	0.628	0.724	0.739	0.708
Khartoum	0.904	0.927	0.663	0.693	0.677	0.886	0.770
Alice Springs	0.724	0.909	0.619	0.728	0.710	0.673	0.755

**Table 22:** Modelled vs. observed Hurst coefficients for precipitation time series.

	Observed	CGCM3-A2	PCM-20C3M	ECHAM5-20C3M	CGCM2-A2	HADCM3-A2	ECHAM4-GG
Vancouver	0.633	0.513	0.499	0.430	0.307	0.485	0.494
Colfax	0.555	0.528	0.527	0.524	0.468	0.616	0.546
Albany	0.486	0.640	0.599	0.463	0.615	0.568	0.480
Manaus	0.863	0.581	0.494	0.425	0.422	0.533	0.617
Athens	0.514	0.616	0.500	0.637	0.545	0.666	0.693
Matsumoto	0.562	0.690	0.623	0.485	0.431	0.508	0.533
Khartoum	0.668	0.514	0.646	0.448	0.470	0.418	0.450
Alice Springs	0.830	0.511	0.359	0.613	0.661	0.545	0.626

**Table 23:** Change of 30-year moving average temperature between years 1990-2000 (°C).

	Observed	CGCM3-A2	PCM-20C3M	ECHAM5-20C3M	CGCM2-A2	ECHAM4-GG
Vancouver	0.416	1.149	0.410	0.414	0.765	0.465
Colfax	-0.596	1.103	0.483	0.198	0.645	0.407
Albany	-1.091	0.690	0.185	0.660	0.029	0.403
Manaus	0.243	1.167	0.373	0.588	0.615	1.299
Athens	-0.083	0.623	0.205	0.323	0.141	0.635
Matsumoto	0.434	1.381	0.422	0.593	0.590	0.708
Khartoum	1.223	0.560	0.054	0.223	0.189	0.733
Alice Springs	0.286	1.629	0.558	0.791	0.570	0.616

**Table 24:** Change of 30-year moving average precipitation between years 1990-2000 (mm).

	Observed	CGCM3-A2	PCM-20C3M	ECHAM5-20C3M	CGCM2-A2	ECHAM4-GG
Vancouver	3.7	-33.2	33.7	-71.9	-25.4	-54.2
Colfax	103.5	5.2	43.4	-30.2	-17.7	-28.7
Albany	69.4	69.3	-1.8	-29.7	-74.3	37.4
Manaus	464.7	30.6	36.4	-92.6	18.1	-74.0
Athens	-15.5	-42.7	2.2	-41.8	-25.2	-60.0
Matsumoto	-25.2	-30.7	-9.6	11.0	47.3	-12.4
Khartoum	-83.6	31.6	12.0	-120.4	-11.0	66.7
Alice Springs	92.0	-3.0	-28.3	-23.4	47.1	59.4

**Table 25:** Maximum fluctuation of 30-year moving average temperature within the entire observation period (°C).

	Observed	CGCM3-A2	PCM-20C3M	ECHAM5-20C3M	CGCM2-A2	HADCM3-A2	ECHAM4-GG
Vancouver	-1.298	1.139	0.560	0.274	0.742	0.401	0.833
Colfax	0.898	1.233	0.510	0.745	0.883	0.388	1.067
Albany	-1.683	0.763	0.224	0.842	0.313	0.449	0.801
Manaus	0.438	1.186	0.457	0.654	0.666	0.622	1.691
Athens	-0.737	0.900	-0.303	0.451	0.386	0.406	1.106
Matsumoto	1.499	0.835	-0.394	0.411	0.449	0.422	1.127
Khartoum	1.246	1.403	0.430	0.782	0.702	0.611	0.901
Alice Springs	0.702	1.664	0.680	0.955	0.853	0.489	0.988

**Table 26:** Maximum fluctuation of 30-year moving average precipitation within the entire observation period (mm).

	Observed	CGCM3-A2	PCM-20C3M	ECHAM5-20C3M	CGCM2-A2	HADCM3-A2	ECHAM4-GG
Vancouver	174.3	49.9	82.4	-105.3	-48.9	-39.1	-89.4
Colfax	-254.5	96.7	-92.9	160.7	-75.8	-144.3	-154.4
Albany	157.2	79.8	93.6	-97.6	-97.0	39.4	77.8
Manaus	473.4	103.2	-205.2	-115.4	70.4	-74.2	-121.5
Athens	-56.6	-62.6	39.6	-66.1	-53.0	-29.8	-95.2
Matsumoto	-121.0	74.5	64.6	-134.3	-58.1	41.2	113.4
Khartoum	-63.1	-60.3	-98.5	27.3	81.3	8.5	31.8
Alice Springs	112.7	12.4	-38.1	-36.1	61.7	-33.6	81.7