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Supplement of

Estimates of late Cenozoic climate change relevant to Earth surface processes in tectonically active orogens

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This file contains four tables listing the mean values for different climate variables of a specific climate cluster and simulation. Furthermore, the file contains a figure showing the ice cover reconstructions used for pre-industrial (PI), Mid-Holocene (MH), Last Glacial Maximum (LGM) and Pliocene (PLIO) climate simulations.

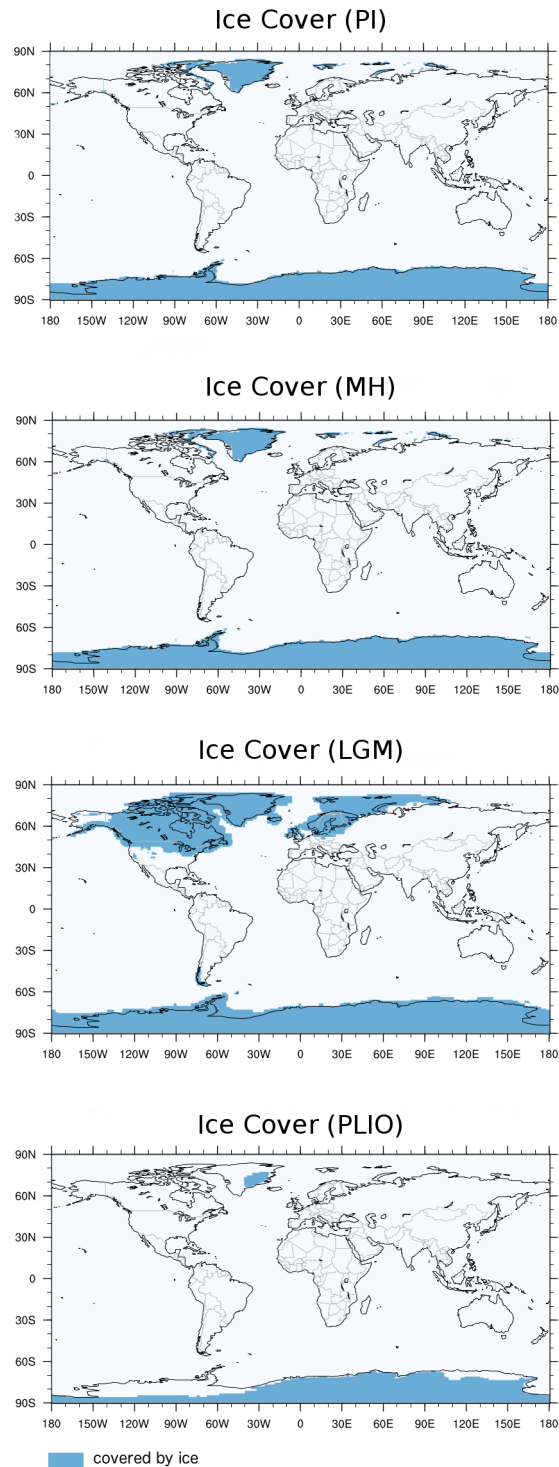


Figure S1: ice cover reconstructions used for PI, MH, LGM and PLIO simulations.

Region	Simulation	Cluster No.	Value Count	Prec. (mm/a)	Prec. Amp. (mm)	T2m (°C)	T2m Amp (°C)	u10 Jan (m/s)	u10 Jul (m/s)	v10 Jan (m/s)	v10 Jul (m/s)
Himalaya-Tibet	PI	1	100	4122.23	11701.66	18.28	9.87	-2.36	3.36	-2.14	1.13
		2	600	1701.74	4016.79	20.36	9.34	-1.07	1.8	-1.13	0.78
		3	1392	776.98	1781.33	16.42	19.72	-0.21	0.21	-0.7	0.61
		4	2693	522.82	924.25	-4.41	33.98	1.39	0.36	0.87	0.07
		5	223	302.99	869.49	23.77	6.67	-2.85	4.01	-1.8	5.99
		6	1549	235.03	468.58	8.63	28.04	0.01	-0.54	0.21	-1.46
		entire region	6557	664.08	1444.04	6.66	26	0.29	0.42	0.06	0.11
	MH	1	73	4717.1	14001.63	9.46	16.41	-1.07	0.89	-1.89	0.23
		2	829	1473.3	3442.89	19.43	11.46	-0.88	1.15	-1	0.7
		3	216	1095.98	2583.73	24.18	5.23	-3.37	4.27	-3	4.62
		4	1204	773.69	1752.51	13.17	25.47	0.04	-0.25	-0.6	-0.09
		5	3789	443.07	780.01	-0.45	34.14	0.88	0	0.74	-0.36
		6	446	288.17	913.34	21.63	16.08	-0.8	2.35	-0.94	2.95
		entire region	6557	692.59	1510.93	6.99	27.3	0.23	0.41	0.01	0.22
	LGM	1	14	6922.26	21694.21	4.82	17.3	-0.17	-0.09	-1.9	0.21
		2	44	3365.56	9494.76	3.3	19.44	-0.24	-0.05	-1.41	0.24
		3	1040	911.88	2436.24	17.69	12.55	-0.86	1.05	-0.74	0.79
		4	402	381.77	1001.95	20.84	11.46	-1.35	3.73	-2.04	3.91
		5	1482	307.5	784.28	10.74	24.64	0.07	0.18	-0.68	-0.84
		6	3575	305.99	585.44	-5.44	34.94	0.93	0.13	0.66	-0.26
		entire region	6557	441.74	1054.33	3.58	27.48	0.3	0.51	-0.05	0.04
	PLIO	1	354	2582.5	5051.84	17.5	10.29	0	0.26	-1.04	0.5
		2	132	2294.38	4607.95	25.22	5	-4.21	3.94	-3.07	1.45
		3	914	1026.89	2455.52	20.84	12.29	-1.3	1.84	-1.1	1.42
4		1173	884.13	2041.39	13.88	23.19	0.06	0.08	-0.5	0.38	
5		120	497.76	1300.27	26.01	5.43	-4.68	5.6	-2.17	6.9	
6		3864	480.29	742.84	1.88	31.43	0.7	0.01	0.51	-0.2	
entire region		6557	779.06	1534.52	8.42	25.14	0.07	0.47	-0.1	0.33	

Table 1. Mean values of the 8 climatic variables used in the cluster analysis for different regions (or clusters) in the Himalaya-Tibet area for different time slice experiments (PI, MH, LGM and PLIO). The variables included are precipitation (prec.), seasonal precipitation amplitude (prec. amp.), near-surface temperature (T2m), seasonal near-surface temperature amplitude (T2m amp.), u-wind speeds in January (u10 Jan) and July (u10 Jul) and v-wind speeds in January (v10 Jan) and July (v10 Jul) at the 10m level.

Region	Simulation	Cluster No.	Value Count	Prec. (mm/a)	Prec. Amp. (mm)	T2m (°C)	T2m Amp (°C)	u10 Jan (m/s)	u10 Jul (m/s)	v10 Jan (m/s)	v10 Jul (m/s)
S. America	PI	1	58	3976.5	3437.28	6.25	7.6	2.39	0.74	-0.76	-1.88
		2	363	2379.04	3598.04	22.4	3.98	-0.15	-0.39	-0.44	0.27
		3	135	1093.49	2833.74	8.15	7.01	0.53	0.33	0.66	-0.45
		4	265	844.38	1229.95	18.48	13.6	-1.49	-0.77	-0.24	-0.27
		5	220	499.88	623.37	7.95	14.19	2.43	1.84	0.08	-1.38
		6	46	317.19	946.83	17.24	4.29	0.64	-0.72	2.57	1.63
		entire region	1087	1462.91	2202.98	15.67	8.97	0.3	0.1	-0.04	-0.34
	MH	1	62	4031.94	3604.58	6.47	8.69	2.43	1.11	-0.74	-1.86
		2	344	2334.99	3572.15	22.71	5.55	-0.14	-0.47	-0.38	0.11
		3	149	1024.5	2470.25	8.34	7.29	0.38	0.34	0.6	-0.49
		4	263	732.19	1196.44	19.9	13	-1.33	-0.73	-0.21	-0.18
		5	228	502.9	643.49	8.39	14.71	1.88	2.12	-0.09	-1.46
		6	41	265.31	869.26	17.81	3.92	0.44	-0.81	2.51	1.87
		entire region	1087	1402	2131.91	15.95	9.63	0.24	0.2	-0.06	-0.42
	LGM	1	45	4034.24	2858.74	-1.08	6.12	1.92	2.74	-2.13	-3.22
		2	95	3451.79	4708.19	10.32	6.71	0.47	0.02	-0.07	-0.95
		3	313	1755.47	2670.71	22.53	3.83	-0.29	-0.52	-0.32	0.65
		4	250	945.38	1130.22	17.93	14.03	-1.75	-0.92	-1.08	-0.95
		5	189	742.38	1463.71	7.44	7.61	0.42	0.15	0.55	-0.22
		6	195	463.04	539.63	7.11	18.05	2.01	2.4	0.06	-1.33
		entire region	1087	1403.74	1910.1	14.04	9.73	0.07	0.21	-0.33	-0.53
	PLIO	1	69	2697.5	2562.31	9.18	8.83	2.57	1.01	-0.21	-1.36
		2	314	2256.95	3678.91	23.38	4.7	-0.1	-0.7	-0.42	0.44
		3	265	1199.2	2666.04	17.43	6.34	-0.17	-0.35	0.1	-0.15
4		34	943.79	2058.04	15.82	7.07	2.9	1.08	3.72	-0.76	
5		183	699.51	899.56	18.11	14.03	-1.42	-0.4	-0.14	-0.55	
6		222	558.38	760.44	10.67	13.66	1.39	1.48	-0.04	-1.01	
entire region		1087	1376.87	2246.45	17.31	8.84	0.23	0.05	-0.03	-0.32	

Table 2. Mean values of the 8 climatic variables used in the cluster analysis for different regions (or clusters) in western South America for different time slice experiments (PI, MH, LGM and PLIO). The variables included are precipitation (prec.), seasonal precipitation amplitude (prec. amp.), near-surface temperature (T2m), seasonal near-surface temperature amplitude (T2m amp.), u-wind speeds in January (u10 Jan) and July (u10 Jul) and v-wind speeds in January (v10 Jan) and July (v10 Jul) at the 10m level.

Region	Simulation	Cluster No.	Value Count	Prec. (mm/a)	Prec. Amp. (mm)	T2m (°C)	T2m Amp (°C)	u10 Jan (m/s)	u10 Jul (m/s)	v10 Jan (m/s)	v10 Jul (m/s)
Alaska	PI	1	78	2880.46	2789.59	1.67	15.97	-	-	-	-
		2	141	1420.14	1027.77	0.02	21.22	-	-	-	-
		3	212	799.12	797.69	-2.97	30.44	-	-	-	-
		4	376	512.21	569.6	-5.34	39.19	-	-	-	-
		entire region	807	975.12	924.14	-3.1	31.51	-	-	-	-
	MH	1	30	3247.58	4077.15	3.31	18.83	-	-	-	-
		2	54	2636.91	2837.84	0.85	18.07	-	-	-	-
		3	248	1179.93	1066.33	-0.75	24.63	-	-	-	-
		4	475	608.54	821.11	-4.78	36.74	-	-	-	-
		entire region	807	1017.97	1152.46	-2.86	31.1	-	-	-	-
	LGM	1	17	4884.93	5494.86	-3.02	9.22	-	-	-	-
		2	65	3282.43	3401.86	-4.71	10.99	-	-	-	-
		3	244	964.88	1010.36	-9.23	16.69	-	-	-	-
		4	481	346.52	561.38	-8.67	28.01	-	-	-	-
		entire region	807	865.56	1029.84	-8.4	22.82	-	-	-	-
	PLIO	1	70	2748.21	2760.84	4.3	18.49	-	-	-	-
		2	195	1418.28	936.08	1.51	18.19	-	-	-	-
		3	244	896.64	808.9	-0.53	28.33	-	-	-	-
		4	298	615.39	656.84	-2.45	35.07	-	-	-	-
		entire region	807	1079.44	952.79	-0.33	27.52	-	-	-	-

Table 3. Mean values of the 4 climatic variables used in the cluster analysis for different regions (or clusters) in South Alaska for different time slice experiments (PI, MH, LGM and PLIO). The variables included are precipitation (prec.), seasonal precipitation amplitude (prec. amp.), near-surface temperature (T2m) and seasonal near-surface temperature amplitude (T2m amp).

Region	Simulation	Cluster No.	Value Count	Prec. (mm/a)	Prec. Amp. (mm)	T2m (°C)	T2m Amp (°C)	u10 Jan (m/s)	u10 Jul (m/s)	v10 Jan (m/s)	v10 Jul (m/s)
Cascades	PI	1	4	2504.53	3374.14	0.9	6.93	-	-	-	-
		2	41	2282.57	3492.09	9.31	17.94	-	-	-	-
		3	18	1868.96	2096.67	4.91	21.47	-	-	-	-
		4	29	720.41	682.31	6.28	23.45	-	-	-	-
		entire region	92	1718.88	2328.25	7.13	19.89	-	-	-	-
	MH	1	24	2733.68	4539.25	7.09	20.87	-	-	-	-
		2	2	2009.13	3838.17	0.44	3.71	-	-	-	-
		3	34	1805.62	3213.77	9.65	23.87	-	-	-	-
		4	32	771.29	938.45	6.58	27.4	-	-	-	-
		entire region	92	1692.38	2781.7	7.71	23.88	-	-	-	-
	LGM	1	1	4573.17	6726.93	-1.39	7.24	-	-	-	-
		2	37	2895.44	3707.11	-0.68	9.15	-	-	-	-
		3	34	1717.84	1892.08	-4.26	13.5	-	-	-	-
		4	20	628.35	548.6	-11.87	19.01	-	-	-	-
		entire region	92	1985.63	2382.53	-4.44	12.88	-	-	-	-
	PLIO	1	5	2520.15	3662.63	1.42	9.1	-	-	-	-
		2	36	2201.2	3554.73	11.5	19.39	-	-	-	-
		3	21	1699.61	2322.06	8.73	23.23	-	-	-	-
		4	30	1044.79	1068.29	7.53	25.13	-	-	-	-
		entire region	92	1726.95	2468.43	9.02	21.58	-	-	-	-

Table 4. Mean values of the 4 climatic variables used in the cluster analysis for different regions (or clusters) in the US Pacific Northwest for different time slice experiments (PI, MH, LGM and PLIO). The variables included are precipitation (prec.), seasonal precipitation amplitude (prec. amp.), near-surface temperature (T2m) and seasonal near-surface temperature amplitude (T2m amp).