

APPENDIX

Table A1. Spatial location of the studied weather stations where gauged precipitation data is available, the stations that also present temperature maximum and minimum data indicate T on the column of temperature.

N ^o	Station name	Region	Latitude	Longitude	Altitude	Temperature
[1]	Achiri	La Paz	-17.21	-69.00	3880	T
[2]	Ancoraimes	La Paz	-15.90	-68.90	3882	
[3]	Ayo Ayo	La Paz	-17.09	-68.01	3888	T
[4]	Berenguela	La Paz	-17.29	-69.21	4145	
[5]	Calacoto	La Paz	-17.28	-68.64	3830	T
[6]	Colcha K	Potosí	-20.74	-67.66	3780	
[7]	Collana	La Paz	-16.90	-68.28	3911	T
[8]	Conchamarca	La Paz	-17.38	-67.46	3965	
[9]	Copacabana	La Paz	-16.17	-69.09	3870	
[10]	El Alto Aeropuerto	La Paz	-16.51	-68.20	4034	T
[11]	El Belen	La Paz	-16.02	-68.70	3833	
[12]	Hichucota	La Paz	-16.18	-68.38	4460	
[13]	Oruro Aeropuerto	Oruro	-17.95	-67.08	3701	T
[14]	Patacamaya	La Paz	-17.24	-67.92	3793	T
[15]	Salla	La Paz	-17.19	-67.62	3500	
[16]	San Jose Alto	La Paz	-17.70	-67.78	3746	T
[17]	San Juan Huancollo	La Paz	-16.58	-68.96	3829	
[18]	San Pablo de Lipez	Potosí	-21.68	-66.61	4256	
[19]	Santiago de Huata	La Paz	-16.05	-68.81	3845	
[20]	Santiago de Machaca	La Paz	-17.07	-69.20	3883	
[21]	Tiahuanacu	La Paz	-16.57	-68.68	3863	T
[22]	Uyuni	Potosí	-20.47	-66.83	3680	T
[23]	Viacha	La Paz	-16.66	-68.28	3850	T

Table A2. The classification of strong El Niño (≥ 1.5 deg C), strong La Niña (≤ -1.5 dec C) and neutral/moderate (-1.4 to 1.4 dec C) years for the period 1981 to 2015.

Strong El Niño	Neutral and moderate	Strong La Niña
1982-83	1981	1988-89
1986-87	1984-1985	1998-99
1987-88	1989-1990	2007-08
1991-92	1992-1996	2010-11
1997-98	2000-2006	
	2008-2009	
	2011-2014	

Table A3. T-test and Wilcoxon rank sum test for quinoa and potato yield during El Niño years and neutral/moderate years. If the hypothesis is equal to 1 it means that we rejected the null hypothesis at a confidence level of 95%.

		T test 2 sample			Wilcoxon rank sum test		
		Hypothesis	P value	t-stat	Hypothesis	P value	z-stat
Quinoa	La Paz	1	~0	4.2	1	0.01	3.0
	Oruro	0	0.13	1.6	1	0.05	2.0
	Potosi	1	~0	3.4	1	0.04	2.5
Potato	La Paz	0	0.10	1.7	0	0.54	0.61
	Oruro	1	~0	3.4	1	0.02	2.4
	Potosi	1	0.02	2.6	1	0.05	2.0

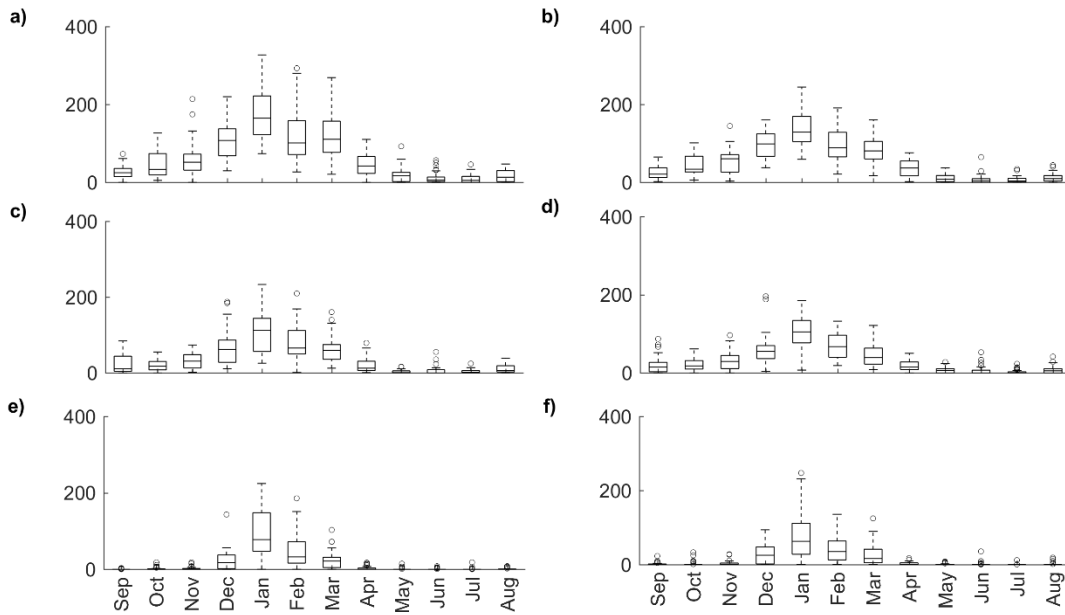


Figure A1. Boxplot of the total monthly precipitation in the Bolivian Altiplano at the northern Altiplano: (a) Copacabana [9], (b) El Alto Aeropuerto [10], central Altiplano: (c) Oruro Aeropuerto [13], (d) Patacamaya [14], and southern Altiplano (e) Colcha K [6], and (f) Uyuni [22].