Supplementary material: Methane Emissions from a Grassland-Wetland Complex in the Southern Peruvian Andes

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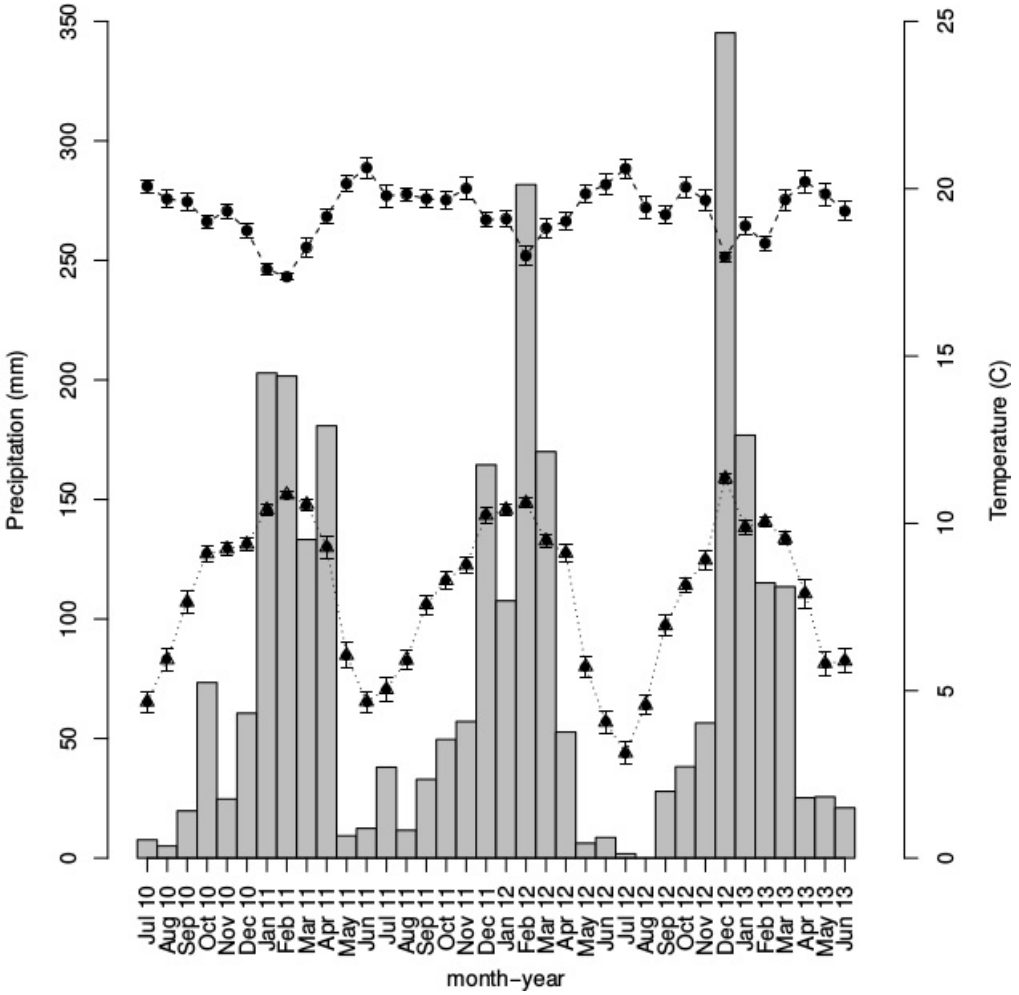

Figure S1: Total monthly precipitation and monthly mean maximum (●) and minimum (▲) diurnal air temperatures between July 2010 and June 2013 at 2808 m asl (Challabamba weather station: 13°13’03" S, 71°38’50" W). Temperature error bars are standard error.

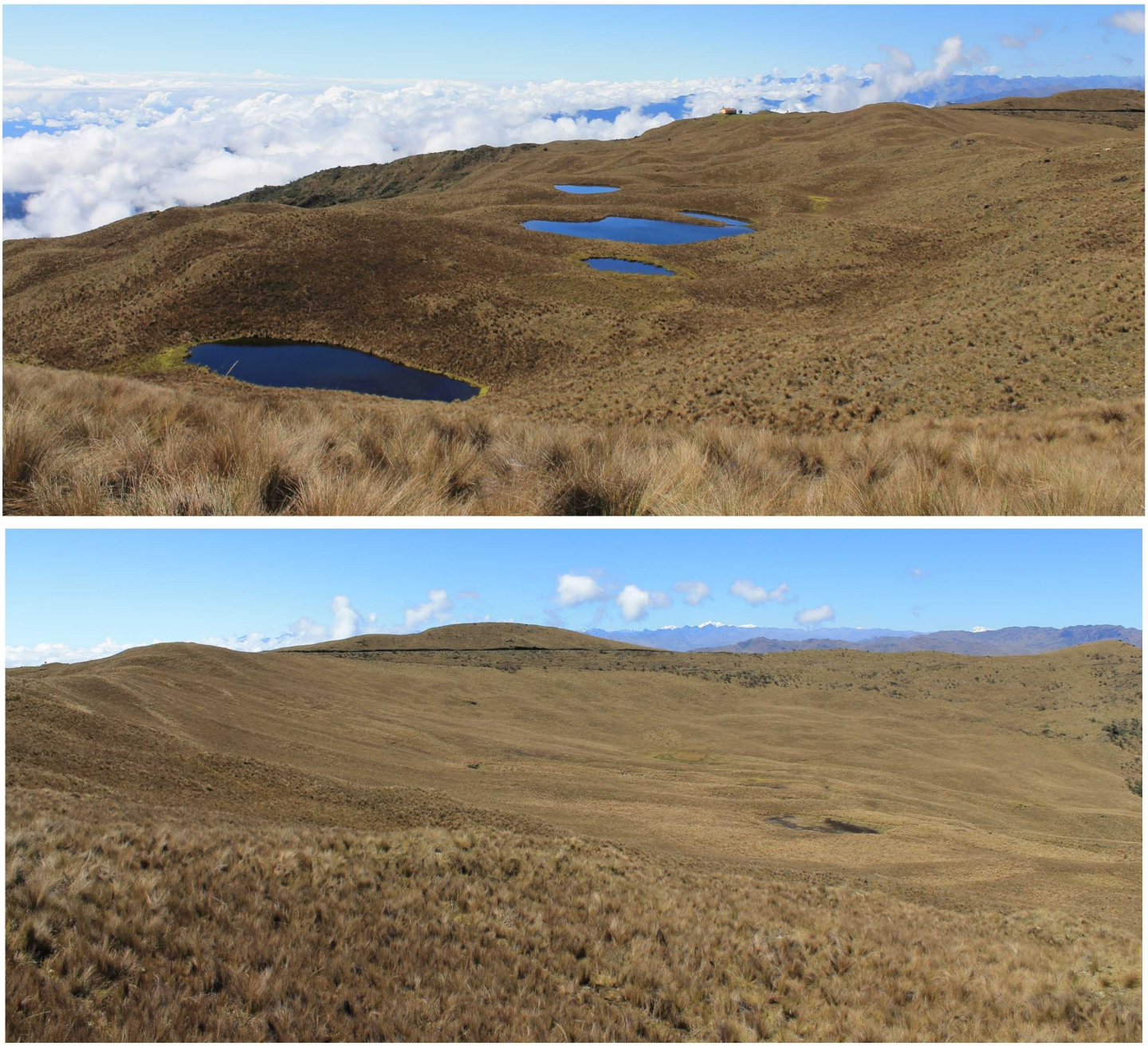

Figure S2: Typical landscapes at Tres Cruces: ridges and slopes covered by tussock grasses and basins containing topographically constrained wetland features. Facing east, the lower image depicts the ridge to basin transition referred to in this study.

Figure S3: A variety of wetland features are identified within the study area: A) lakes of varying degrees of permanency, B) depressions containing well humidified peat soils and pool complexes, C) Hollows dominated by significant accumulations of mosses and their litter.

Table S1: Number of observations associated with seasonal plot means reported in Table 1.

Plot	Season	CH4 flux	CO2 flux	O2 concentraiton	VWC	Soil temperature
summit	dry	13	13	11	12	13
summit	wet	14	14	12	13	14
backslope	dry	13	13	11	12	13
backslope	wet	14	14	12	14	14
wet footslope	dry	10	10	6	9	10
wet footslope	wet	10	10	4	10	10
dry footslope	dry	13	13	11	12	13
dry footslope	wet	14	14	12	14	13

Table S2: Mean sampling station averaged gas fluxes and environmental conditions for wet and dry season intensive campaigns by morphological group. Following means, values in parenthesis indicate the associated standard deviation.

season	morphology	CH4 flux	CO2 flux	Air temperature	Soil temperature	Soil temperature	O2 concentration	Water-table depth	WFPS
		mg CH4-C m-2 d-1	g CO2-C m-2 d-1	deg C	deg C, 5 cm	deg C, 10 cm	%	cm	%
dry	upper slope (n = 8)	-0.1 (0.09)	1.2 (0.34)	13.4 (0.35)	7.3 (0.41)	6.9 (0.42)	20.0 (0.45)	18.7 (1.79)	83.1 (7.60)
wet	upper slope (n = 8)	0.2 (0.46)	1.7 (0.32)	14.6 (1.14)	10.7 (1.00)	9.9 (0.93)	16.8 (1.43)	16.5 (3.32)	80.3 (6.01)
dry	lower slope (n = 9)	0.7 (1.50)	1.3 (0.27)	13.5 (0.66)	7.3 (0.36)	7.0 (0.29)	18.7 (1.01)	17.4 (2.76)	83.3 (6.23)
wet	lower slope (n = 9)	6.4 (9.99)	2.0 (0.49)	15.5 (1.15)	9.2 (0.68)	8.6 (0.64)	12.5 (5.76)	15.1 (4.99)	77.2 (4.58)
dry	depression (n = 3)	-0.5 (0.22)	2.0 (1.09)	12.5 (1.56)	8.3 (0.19)	7.8 (0.27)	20.1 (0.15)	20.0 (0.00)	75.4 (3.61)
wet	depression (n = 3)	-0.2 (0.20)	3.4 (0.47)	14.0 (0.90)	10.5 (0.68)	9.8 (0.77)	16.9 (2.14)	17.0 (0.25)	79.9 (5.95)
dry	hollow (n = 4)	14.4 (6.57)	1.6 (0.46)	11.6 (0.82)	8.9 (0.73)	8.4 (0.55)	16.6 (5.0)	12.7 (3.51)	95.8 (1.32)
wet	hollow (n = 4)	104.4 (74.81)	2.2 (0.64)	13.4 (0.23)	10.5 (0.37)	9.8 (0.34)	0.2 (0.44)	3.7 (5.42)	91.4 (0.99)