

Supplement of Biogeosciences, 15, 263–278, 2018  
<https://doi.org/10.5194/bg-15-263-2018-supplement>  
© Author(s) 2018. This work is distributed under  
the Creative Commons Attribution 3.0 License.



*Supplement of*

## **Can land degradation drive differences in the C exchange of two similar semiarid ecosystems?**

**Ana López-Ballesteros et al.**

*Correspondence to:* Ana López-Ballesteros (alpzballesteros@gmail.com)

The copyright of individual parts of the supplement might differ from the CC BY 3.0 License.

## Supplementary Material

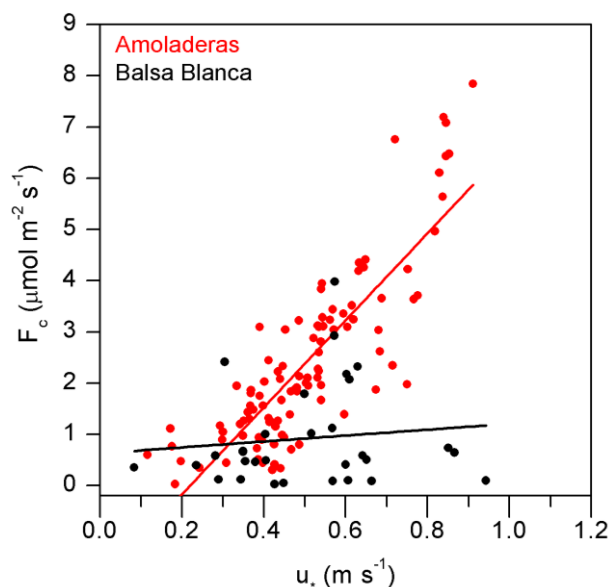


Figure S1: Half-hourly net CO<sub>2</sub> fluxes of maximum quality (QC flag=0) versus friction velocity ( $u_*$ ) corresponding to daytime hours during the extremely dry periods when subterranean ventilation dominates the net CO<sub>2</sub> flux. Red and black dots represent Amoladeras and Balsa Blanca, respectively.

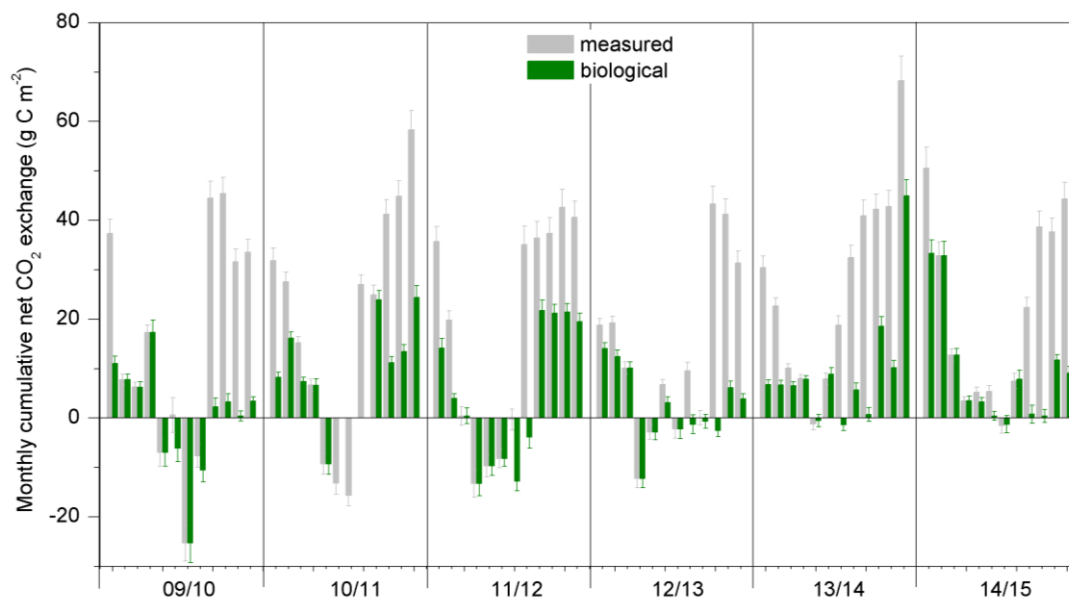


Figure S2: Cumulative measured and biological (after applying the ventilation model) net CO<sub>2</sub> exchange for every month of the study period (5 hydrological years; 2009-2015) in Amoladeras.

5 **Table S1: Results of the two-sided Wilcoxon summed rank test used to assess differences between meteorological variables measured at each experimental site over the all periods. Medians of the absolute (Diff) and standardized differences (Diff and Diff<sub>st</sub>) between the samples (Amoladeras minus Balsa Blanca), p-values and number of observations (n) are detailed.**

Variables	All periods			
	Diff	Diff <sub>st</sub>	p-value	n
PPFD ( $\mu\text{mol m}^{-2} \text{s}^{-1}$ )	0.4701	0.0009	0	205751
Net radiation ( $\text{W m}^{-2}$ )	-8.8620	-0.0457	0	197924
T <sub>air</sub> (°C)	0.1928	0.0310	6.42E-10	182240
VPD (hPa)	0.5358	0.0783	4.38E-104	166918
RH (%)	-3.1947	-0.1636	6.39E-244	197649
u* ( $\text{m s}^{-1}$ )	-0.0016	-0.0054	0.1214	166346
WS ( $\text{m s}^{-1}$ )	0.3621	0.1628	0	166359
WS <sub>max</sub> ( $\text{m s}^{-1}$ )	0.4327	0.1001	5.53E-132	165458
Pressure (hPa)	2.3226	0.3737	0	166336
Precipitation (mm)	-0.0001	-1.95E-05	0.0003	204892
CO <sub>2, 0.05m</sub> (ppm)	-93.8644	-0.4027	0	46340
CO <sub>2, 1.50m</sub> (ppm)	888.9239	1.1196	0	50133
T <sub>0.05m</sub> (°C)	0.9215	0.0927	5.51E-21	46337
T <sub>1.50m</sub> (°C)	0.5780	0.1476	1.43E-51	50137
VWC <sub>0.05m</sub> ( $\text{m}^3 \text{m}^{-3}$ )	0.0372	0.8265	0	52353
VWC <sub>1.50m</sub> ( $\text{m}^3 \text{m}^{-3}$ )	-0.0123	-0.8385	0	53865

**Table S2: Results of the two-sided Wilcoxon summed rank test used to assess differences between meteorological variables measured at each experimental site from May to September. Medians of the absolute (Diff) and standardized differences (Diff<sub>st</sub>) between the samples (Amoladeras minus Balsa Blanca), p-values and number of observations (n) are detailed.**

5

Variables	May - September			
	Diff	Diff <sub>st</sub>	p-value	n
PPFD ( $\mu\text{mol m}^{-2} \text{s}^{-1}$ )	0.5230	0.0009	8.11E-147	84491
Net radiation ( $\text{W m}^{-2}$ )	-10.9546	-0.0476	4.78E-167	81019
T <sub>air</sub> (°C)	0.8378	0.1935	1.53E-145	77866
VPD (hPa)	1.1136	0.1370	4.50E-90	71474
RH (%)	-2.0229	-0.1031	1.21E-38	80950
u* ( $\text{m s}^{-1}$ )	-0.0186	-0.0563	8.47E-31	71194
WS ( $\text{m s}^{-1}$ )	0.1720	0.0793	1.84E-31	71195
WS <sub>max</sub> ( $\text{m s}^{-1}$ )	0.0498	0.0124	0.0749	70635
Pressure (hPa)	2.2120	0.5828	0	71188
Precipitation (mm)	0.0000	-4.84E-05	4.29E-05	83860
CO <sub>2, 0.05m</sub> (ppm)	-89.2404	-0.6578	9.99E-207	21413
CO <sub>2, 1.50m</sub> (ppm)	1109.1440	1.3517	0	24347
T <sub>0.05m</sub> (°C)	-0.8057	-0.1160	3.04E-16	21410
T <sub>1.50m</sub> (°C)	-0.1570	-0.0591	3.13E-07	24350
VWC <sub>0.05m</sub> ( $\text{m}^3 \text{m}^{-3}$ )	0.0286	1.2724	0	25231
VWC <sub>1.50m</sub> ( $\text{m}^3 \text{m}^{-3}$ )	0.0011	0.0674	3.51E-18	24570

**Table S3: Results of the two-sided Wilcoxon summed rank test used to assess differences between meteorological variables measured at each experimental site from May to September during daytime. Medians of the absolute (Diff) and standardized differences (Diff<sub>st</sub>) between the samples (Amoladeras minus Balsa Blanca), p-values and number of observations (n) are detailed.**

5

Variables	May – September Daytime			
	Diff	Diff <sub>st</sub>	p-value	n
PPFD ( $\mu\text{mol m}^{-2} \text{s}^{-1}$ )	64.3400	0.1378	5.62E-42	38963
Net radiation ( $\text{W m}^{-2}$ )	-21.9460	-0.1205	4.80E-34	38963
T <sub>air</sub> (°C)	0.1939	0.0502	1.39E-06	37480
VPD (hPa)	-0.7579	-0.0938	3.87E-20	34430
RH (%)	2.9921	0.1784	1.45E-65	38935
u* ( $\text{m s}^{-1}$ )	-0.0430	-0.1340	3.76E-87	34284
WS ( $\text{m s}^{-1}$ )	0.0356	0.0165	0.1341	34285
WS <sub>max</sub> ( $\text{m s}^{-1}$ )	-0.2920	-0.0796	5.83E-14	33994
Pressure (hPa)	2.1101	0.5602	0	34280
Precipitation (mm)	0.0000	5.32E-05	0.9875	38963
CO <sub>2, 0.05m</sub> (ppm)	-149.513	-1.1396	0	9816
CO <sub>2, 1.50m</sub> (ppm)	1046.358	1.3062	0	11385
T <sub>0.05m</sub> (°C)	-1.473	-0.2119	2.70E-21	9813
T <sub>1.50m</sub> (°C)	-0.220	-0.0834	4.75E-07	11385
VWC <sub>0.05m</sub> ( $\text{m}^3 \text{m}^{-3}$ )	0.028	1.2839	0	11303
VWC <sub>1.50m</sub> ( $\text{m}^3 \text{m}^{-3}$ )	0.001	0.0547	1.05E-09	11462