

Resilience of ecosystem service delivery in grasslands in response to single and compound extreme weather events

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Supplementary material (3 tables and 3 figures)

Table S1. Method and frequency of indicator measurement during the flood, drought and recovery phases of the trial.

Measurement	Method	Period		
		Flood	Drought	Recovery
Soil moisture/temperature	Acclima® sensors 5 cm below soil surface	Continuous data collection	Continuous data collection	Continuous data collection until February 2017 (6 months post drought)
GHG measurements	Static chamber measurements	Regular measurement	Regular measurement	Regular measurement until April 2017 (1 year post drought)
Soil redox	Redox probe inserted in top 2 cm of soil	Weekly	Weekly	Weekly for first month post drought, then monthly for 3 months
Plant biomass yield	Biomass cut (40 x 40 cm quadrat)	1 month post flood	1 week post drought	3 cuts at 6, 12 and 24 months post drought
Forage quality	Crude protein, non-digestible fibre, sugar and ash content, metabolizable energy, digestibility (NDGC, OAH, ADF)	1 month post flood	1 week post drought	3 cuts at 6, 12 and 24 months post drought
Plant biodiversity surveys	Species count and cover	1 month post flood	2 months post drought	3 surveys at 6, 12 and 24 months post drought
Mineral N (NH ₄ ⁺ & NO ₃ ⁻)	K ₂ SO ₄ extraction (1:5 w/v soil:extractant) followed by colorimetric analysis	Immediately post flood	Immediately post drought	6, 12 and 24 months post drought
pH/EC	Laboratory probes (1:2.5 w/v ratio of soil-to-distilled water)	Immediately post flood	Immediately post drought	6, 12 and 24 months post drought
Elemental analysis (P, Al, Fe, K, Mg, Mn, Na, Ca)	Extracted with 0.5 M acetic acid (1:5 w/v soil:extractant) analysed by ICP	Immediately post flood	Immediately post drought	6, 12 and 24 months post drought
Soil Total C/Total N	TOC/TN analyser	Immediately post flood	Immediately post drought	6, 12, 24 months post drought
Porosity	Gravimetric dry weight (100 cm ³ soil core)	Immediately post flood	Immediately post drought	6, 12 and 24 months post drought
Bulk density	Gravimetric dry weight (100 cm ³ soil core)	Immediately post flood	Immediately post drought	6, 12 and 24 months post drought

Soil moisture	Gravimetric (105°C oven drying overnight)	Immediately post flood	Immediately post drought	6, 12 and 24 months post drought
Microbial community structure and biomass	PLFA analysis	Immediately post flood	Immediately post drought	6, 12 and 24 months post drought
Earthworms	Earthworm biomass, count and ID from 20 x 20 x 20 cm pits and mustard extraction. 3 pits per plot	Immediately post flood	Immediately post drought	6, 12 and 24 months post drought
Soil organic matter (OM) decomposition	Tea-bag index	During flood	During drought	During recovery – 90 days post drought
Soil solution	Rhizon-based soil water collection	Weekly	During flood phase (flood plots only)	Recovery phase 1 (flood plots only)
Dissolved nutrient (NH ₄ ⁺ , NO ₃ ⁻ , DRP, DOP, DOC) ¹	Colorimetric analysis, TOC analyser	Weekly	During flood phase (flood plots only)	Recovery phase 1 (flood plots only)
Soil solution pH/EC	Laboratory probes	Weekly	During flood phase (flood plots only)	Recovery phase 1 (flood plots only)

¹ NH₄⁺ = ammonium, NO₃⁻ = nitrate DRP = dissolved reactive phosphorus, DOP = dissolved organic phosphorus, DOC = dissolved organic carbon.

Table S2a: Mean percent cover and standard error (SEM) of each plant species, the percent cover of bare ground and the total number of species recorded from four replicate plots of each treatment during the plant surveys undertaken 1 month post flood and post drought.

Species	Survey 1 (1 month post flood)				Survey 2 (1 month post drought)							
	Control		Flood		Control		Flood		Flood+drought		Drought	
	% cover	SEM	% cover	SEM	% cover	SEM	% cover	SEM	% cover	SEM	% cover	SEM
<i>Agrostis capillaris</i>	59.78	7.36	2.40	0.87	20.08	10.74	0.48	0.56	4.76	4.97	17.48	6.18
<i>Agrostis stolonifera</i>	0.15	0.15	3.01	1.35	2.70	5.38	4.00	2.09	4.00	4.63	0.30	0.51
<i>Alopecurus pratensis</i>	0.00	0.00	0.00	0.00	0.30	0.53	5.30	6.85	4.90	6.66	0.30	0.51
<i>Brassica napus</i>	0.00	0.00	0.12	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Brachythecium rutabulum</i>	0.00	0.00	0.00	0.00	2.20	2.15	3.90	4.57	3.00	4.77	5.50	5.13
<i>Bromus hordeaceus</i>	4.57	1.92	14.26	1.72	3.00	2.89	14.72	5.19	16.15	7.35	8.77	2.49
<i>Cerastium fontanum</i>	0.00	0.00	1.07	0.20	0.00	0.00	0.50	0.55	2.90	4.57	0.50	0.58
<i>Chenopodium (sp)</i>	0.00	0.00	0.39	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Cirsium arvense</i>	0.00	0.00	0.29	0.19	0.00	0.00	0.00	0.00	0.30	0.51	0.00	0.00
<i>Coronopus squamatus</i>	0.00	0.00	1.22	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Cynosurus cristatus</i>	0.15	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00
<i>Epilobium</i>	0.00	0.00	0.27	0.18	0.00	0.00	0.00	0.00	0.00	0.42	0.00	0.00
<i>Fraxinus excelsior</i>	0.00	0.00	0.53	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Gnaphalium uliginosum</i>	0.00	0.00	0.67	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Holcus lanatus</i>	4.66	1.49	0.00	0.00	4.36	5.04	0.00	0.00	0.00	0.00	6.76	7.02
<i>Juncus bufonius sens. lat.</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.46	0.20	0.42	0.00	0.00
<i>Leontodon autumnalis</i>	0.00	0.00	0.12	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Lolium multiflorum</i>	5.94	3.50	0.88	0.61	12.25	7.14	8.69	6.34	4.83	7.16	1.28	2.55
<i>Lolium perenne</i>	14.59	2.85	2.72	0.82	25.63	9.20	1.40	2.18	3.60	3.85	36.44	14.70
<i>Lotus pedunculatus</i>	0.00	0.00	0.15	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Montia fontana</i>	0.00	0.00	0.26	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Persicaria maculosa</i>	0.00	0.00	0.67	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Phleum pratense</i>	0.40	0.19	0.43	0.21	0.30	0.54	0.00	0.00	0.00	0.00	0.30	0.51
<i>Plantago major</i>	0.00	0.00	0.16	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Poa annua</i>	0.14	0.14	0.13	0.13	2.80	0.56	1.75	2.25	2.98	2.40	0.24	0.49

<i>Poa trivialis</i>	5.73	1.17	5.59	1.86	14.66	11.54	6.32	4.13	1.71	2.27	12.57	6.59
<i>Ranunculus repens</i>	0.14	0.14	0.83	0.18	0.30	0.54	0.00	0.00	0.20	0.49	0.00	0.00
<i>Rumex acetosa</i>	0.15	0.15	0.00	0.00	0.30	0.53	0.30	0.52	0.20	0.49	0.30	0.51
<i>Rumex obtusifolius</i>	0.43	0.20	0.53	0.20	0.00	0.00	0.30	0.51	0.30	0.51	0.30	0.51
<i>Scrophularia auriculata</i>	0.00	0.00	0.13	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Senecio jacobaea</i>	0.00	0.00	0.12	0.12	0.00	0.00	0.00	0.00	0.30	0.51	0.00	0.00
<i>Sonchus oleraceus</i>	0.00	0.00	0.67	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Stellaria media</i>	0.00	0.00	0.81	0.18	0.00	0.00	0.20	0.46	0.50	0.57	0.30	0.51
<i>Taraxacum agg.</i>	0.00	0.00	0.49	0.19	0.30	0.56	0.50	0.57	0.00	0.00	0.50	0.57
Total bryophyte	0.00	0.00	1.56	0.67	0.00	0.00	3.90	4.56	3.90	4.62	0.00	0.00
<i>Trifolium repens</i>	2.09	0.72	0.69	0.21	1.08	0.02	0.23	0.46	0.00	0.00	1.00	0.00
<i>Urtica dioica</i>	0.28	0.18	0.79	0.17	0.00	0.00	0.99	0.05	0.70	0.48	0.00	0.00
<i>Veronica serpyllifolia</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.50	0.20	0.42	0.00	0.00
% bare ground	0.81	0.65	57.27	4.35	12.20	5.34	46.03	11.67	44.20	14.71	7.49	2.79
Number of species	8.71	0.17	16.63	0.80	16.00	0.65	19.00	1.31	21.00	1.65	17.00	1.00

Table S2b: Mean percent cover and standard error of each plant species, the percent cover of bare ground and the total number of species recorded from four replicate plots of each treatment during the plant surveys undertaken 6 months, 1 year and 2 years during recovery phase 2.

Species	Survey 3 (6 months post drought)								Survey 4 (1 year post drought)								Survey 5 (2 years post drought)							
	Control		Flood		Flood+drought		Drought		Control		Flood		Flood+drought		Drought		Control		Flood		Flood+drought		Drought	
	% cover	SEM	% cover	SEM	% cover	SEM	% cover	SEM	% cover	SEM	% cover	SEM	% cover	SEM	% cover	SEM	% cover	SEM	% cover	SEM	% cover	SEM	% cover	SEM
<i>Agrostis capillaris</i>	5.42	5.07	0.00	2.47	3.85	0.98	11.23	4.01	51.41	10.31	29.62	9.10	40.38	6.00	57.45	4.75	53.91	10.74	48.63	10.39	53.75	7.12	53.09	6.06
<i>Agrostis stolonifera</i>	0.00	0.00	2.82	3.87	1.20	1.20	1.39	4.01	2.88	1.38	26.69	5.68	13.44	6.64	1.88	1.21	2.53	1.46	21.59	6.01	7.83	5.99	5.05	3.54
<i>Alopecurus pratensis</i>	6.72	3.77	9.65	0.00	10.95	3.35	13.33	6.22	0.00	0.00	0.00	0.00	0.26	0.26	0.00	0.00	0.25	0.25	0.00	0.00	0.49	0.28	0.00	0.00
<i>Anthoxanthum odoratum</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Brachythecium rutabulum</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.76	1.11	8.58	2.97	6.98	4.03	0.26	0.26
<i>Bromus arvensis</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.26	0.00	0.00	0.00	0.23	0.00	1.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Bromus hordeaceus</i>	0.52	0.30	18.17	3.49	16.55	3.85	6.80	6.15	0.51	0.29	0.26	0.26	0.23	3.11	2.16	0.27	4.20	1.08	8.91	2.58	8.51	1.32	1.83	1.15
<i>Cerastium fontanum</i>	0.26	0.26	1.67	1.00	6.38	3.30	0.74	0.25	0.00	0.00	0.50	0.29	6.18	0.00	0.27	0.00	0.53	0.31	0.25	0.25	0.00	0.00	0.53	0.30
<i>Cirsium arvense</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.23	0.00	1.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Crepis capillaris</i>	0.24	0.24	0.00	0.00	0.26	0.26	0.00	0.00	0.00	0.00	0.00	0.00	1.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Epilobium</i>	0.00	0.00	0.21	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.75	0.26	0.73	0.29	0.00	0.00	0.00	0.00	0.48	0.28	0.00	0.00	0.00	0.00
<i>Festuca pratensis</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.23	0.26	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Fraxinus excelsior</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.29	0.47	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Glyceria fluitans</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Gnaphalium uliginosum</i>	0.00	0.00	0.50	0.29	0.50	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Holcus lanatus</i>	16.59	3.33	0.21	0.21	0.26	0.26	13.25	5.40	11.60	3.29	1.57	1.24	0.73	0.25	10.67	3.06	13.22	5.50	3.26	2.63	2.71	2.38	18.21	3.42
<i>Juncus bufonius sens. lat.</i>	0.00	0.00	0.00	0.00	0.47	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.25	0.25	0.26	0.26	0.00	0.00
<i>Lolium multiflorum</i>	13.91	3.71	15.71	2.36	8.28	3.95	10.58	4.11	1.56	1.24	2.89	2.56	0.23	0.23	0.55	0.32	0.00	4.57	0.00	0.00	0.26	0.26	0.00	0.00

<i>Lolium perenne</i>	27.90	3.82	17.88	3.82	14.07	4.85	21.56	2.46	22.00	5.01	26.66	2.08	17.41	4.97	21.49	3.95	14.45	0.25	2.91	1.08	11.03	4.90	11.88	4.17
<i>Lotus pedunculatus</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.23	0.22	0.22	0.00	0.26	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00
<i>Montia fontana</i>	0.00	0.00	0.00	0.00	0.23	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.28	0.00	0.00	0.00	0.00
<i>Phleum pratense</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.28	0.52	0.30	0.23	0.23	0.23	0.23	0.79	0.31	0.25	0.00	0.00	0.00	0.00	0.00	0.26	0.00
<i>Poa annua</i>	0.26	0.26	0.26	0.26	2.89	2.25	0.53	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Poa trivialis</i>	25.36	4.91	14.05	4.91	7.27	4.21	17.53	1.69	1.03	0.01	0.00	0.00	0.22	0.22	0.53	0.00	2.02	0.00	0.28	0.28	1.52	1.22	0.00	0.26
<i>Ranunculus ficaria</i>	0.50	0.29	0.00	0.00	0.24	0.24	0.74	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Ranunculus repens</i>	0.00	0.00	0.00	0.00	0.47	0.27	0.00	0.00	0.26	0.26	0.00	0.00	0.26	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.26	0.00	0.00
<i>Rumex acetosa</i>	0.50	0.29	0.47	0.27	0.00	0.00	0.28	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Rumex obtusifolius</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.29	0.52	0.30	0.00	0.00	0.00	0.00	0.79	0.27	0.48	0.28	0.00	0.00	0.53	0.00
<i>Sagina procumbens</i>	0.00	0.00	0.48	0.28	0.24	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Senecio jacobaea</i>	0.00	0.00	0.00	0.00	0.47	0.26	0.00	0.00	0.25	0.25	0.00	0.00	0.72	0.24	0.00	0.00	0.79	0.27	0.28	0.28	0.00	0.00	0.00	0.30
<i>Senecio vulgaris</i>	0.00	0.00	0.00	0.00	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Stellaria media</i>	0.00	0.00	0.23	0.23	1.15	1.15	0.28	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.26	0.00	0.25	0.00	0.00	0.00	0.00
<i>Taraxacum agg.</i>	0.00	0.00	0.00	0.00	0.48	0.28	0.00	0.00	0.52	0.30	0.23	0.23	0.49	0.28	0.52	0.30	0.25	0.25	0.25	0.28	0.23	0.23	0.00	0.00
Total bryophyte	0.52	0.30	3.07	0.46	4.95	1.48	0.26	0.26	0.52	0.30	4.01	2.35	6.08	1.48	0.27	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Trifolium repens</i>	0.00	0.00	0.48	0.28	0.48	0.28	0.00	0.00	0.25	0.25	0.49	0.28	0.95	0.03	0.27	0.27	0.51	0.29	0.28	1.15	0.23	0.23	0.00	0.00
<i>Urtica dioica</i>	0.00	0.00	0.76	0.25	0.72	0.24	0.00	0.00	0.00	0.00	1.68	1.00	1.39	1.11	0.00	0.00	0.25	0.25	2.11	0.00	1.52	1.22	0.27	0.00
<i>Veronica serpyllifolia</i>	0.00	0.00	0.00	0.00	0.50	0.29	0.00	0.00	0.00	0.00	0.23	0.23	0.72	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.28	0.00	0.27
% bare ground	1.30	0.66	13.37	1.59	16.64	4.56	0.99	0.37	5.41	1.92	2.71	1.29	7.05	1.21	3.15	1.18	3.80	2.40	0.72	0.24	2.42	1.40	5.24	2.13
Number of species	8.00	0.71	10.50	0.96	14.25	1.60	9.75	0.48	10.25	0.96	18.00	1.31	19.00	0.85	8.75	0.65	17.00	0.85	18.00	1.35	18.00	2.16	11.00	1.44

Table S3. Mean cumulative GHG fluxes, global warming potential (GWP in equivalent kg of CO₂) along with the standard error as a function of the period of the experiment (flood phase, flood and recovery phase, drought phase and drought and recovery phase). The letters denote significant differences using according to the Tukey's HSD test at the $p < 0.05$ level of significance.

	Flood Day 0 to 58		Flood + recovery Day 0 to 85		Drought Day 93-142		Drought + recovery Day 93-235
Treatment	CH₄ (kg C ha⁻¹)						
Control	-0.22 ± 0.05	b	-0.27 ± 0.03		-0.17 ± 0.10		0.05 ± 0.16
Spring flood	-0.12 ± 0.05	b	0.83 ± 0.87		-0.10 ± 0.06		0.25 ± 0.34
Summer drought	0.08 ± 0.12	ab	0.05 ± 0.10		-0.13 ± 0.13		-0.11 ± 0.08
Spring flood & Summer drought	0.44 ± 0.17	a	1.77 ± 1.15		-0.05 ± 0.08		-0.23 ± 0.01
<i>p</i> -value	0.006		0.245		0.856		0.366
Treatment	CO₂ (kg C ha⁻¹)						
Control	2228.0 ± 208.9	a	3449.2 ± 178.2	a	2927.0 ± 239.5	a	1735.1 ± 187.0
Spring flood	-7.0 ± 18.8	c	642.1 ± 332.2	c	2346.2 ± 571.5	ab	1662.6 ± 344.0
Summer drought	1279.2 ± 354.9	b	1910.6 ± 628.5	ab	1542.3 ± 197.8	ab	1273.4 ± 282.2
Spring flood & Summer drought	93.3 ± 31.5	c	546.4 ± 96.0	c	1340.3 ± 241.1	b	1055.6 ± 283.9
<i>p</i> -value	<0.001		<0.001		0.025		0.312
Treatment	N₂O (kg N ha⁻¹)						
Control	0.05 ± 0.03	ab	0.10 ± 0.09	b	0.64 ± 0.12	ab	0.27 ± 0.06
Spring flood	-0.13 ± 0.07	b	1.78 ± 0.87	ab	1.32 ± 0.12	a	0.24 ± 0.10
Summer drought	0.11 ± 0.04	a	0.11 ± 0.03	b	0.12 ± 0.06	b	0.18 ± 0.04
Spring flood & Summer drought	0.06 ± 0.07	ab	3.27 ± 1.03	a	0.49 ± 0.37	ab	0.40 ± 0.10
<i>p</i> -value	0.046*		0.017		0.010		0.302
Treatment	GWP (kg C_{eq} ha⁻¹)						
Control	2234.5 ± 215.0	a	3468.1 ± 201.0	a	2639.9 ± 251.8	a	4446.8 ± 313.9
Spring flood	-45.1 ± 32.7	c	1137.3 ± 585.9	b	2367.0 ± 451.4	ab	4101.0 ± 790.2
Summer drought	1309.1 ± 347.0	B	1939.8 ± 624.5	ab	1343.3 ± 205.6	b	2661.9 ± 487.8
Spring flood & Summer drought	121.0 ± 42.0	C	1462.2 ± 392.9	ab	1197.3 ± 231.4	b	2351.1 ± 533.5
<i>p</i> -value	<0.001		0.023		0.011		0.051

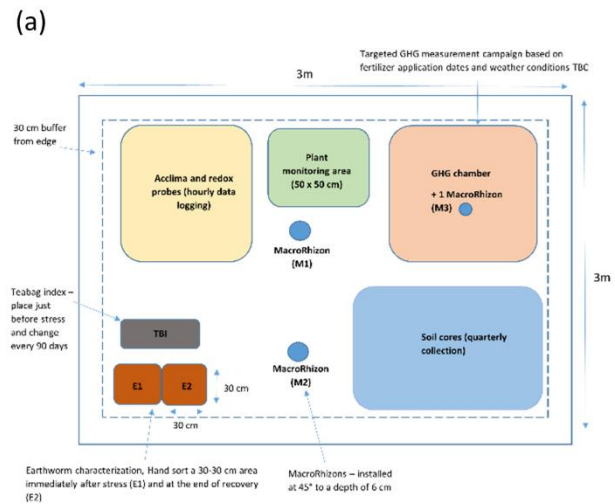


Figure S1. (a) Instrumentation and layout of the experimental plots; (b) Aerial image of the field trial layout; (c) Image of flood phase of the trial at the plot scale; (d) Image of drought phase of the trial at the plot scale.

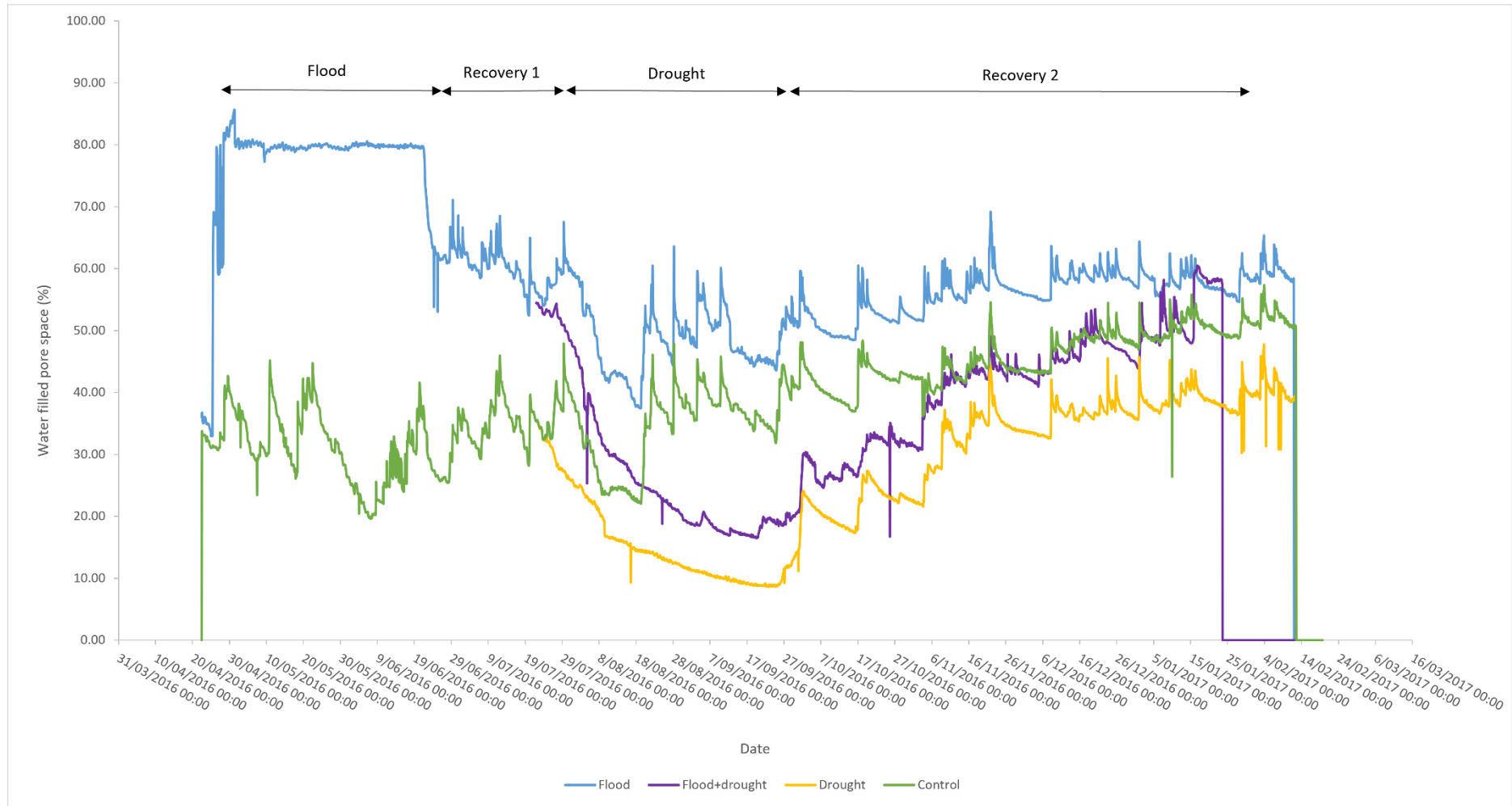


Figure S2. Soil moisture (5cm depth) as measured by Acclima® sensors during the flood and drought phase and the first year of recovery. The traces are representative of the plot replicates.

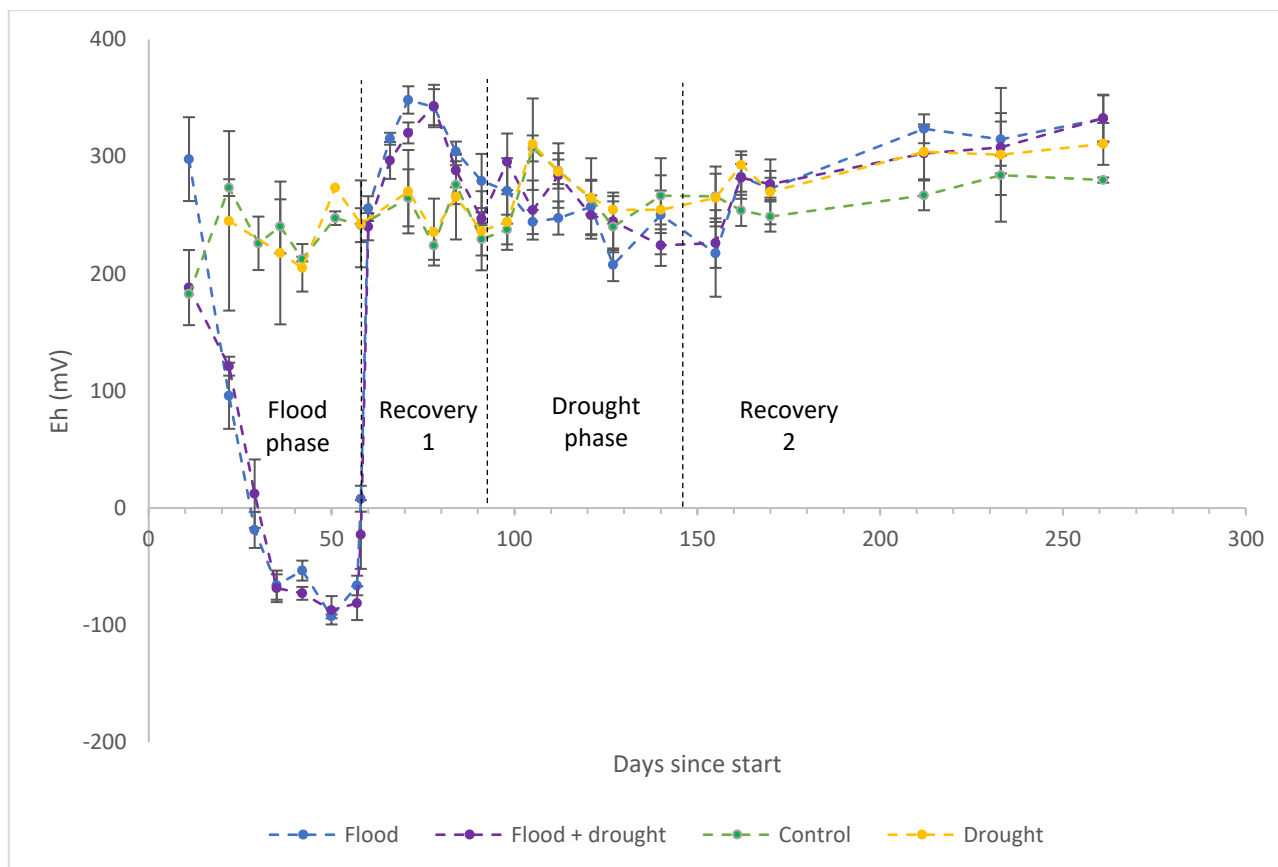


Figure S3. Soil (2cm depth) redox potential (mV) during the flood phase, drought phase and the first 3 months of recovery. The traces are representative of the four replicates and error bars represent the standard error of the mean

