Table S1: R^2 and *P*-value for correlations between measured emissions of isoprene and C_l*C_t performed tree by tree according to the season and treatment, with ND = natural drought and AD = amplified drought and *** : $P < 0.001$. Data were obtained without forcing data to pass through the origin.

		Spring		Summer		Autumn	
Tree	**Treatment**	**R²**	***P*-value**	**R²**	***P*-value**	**R²**	***P*-value**
1	**ND**	/	/	0.81	***	0.69	***
2	**ND**	0.81	***	0.97	***	0.88	***
3	**ND**	0.88	***	0.73	***	0.83	***
4	**ND**	0.77	***	0.73	***	0.79	***
5	**ND**	0.84	***	0.77	***	0.94	***
6	**AD**	0.76	***	0.86	***	0.88	***
7	**AD**	0.36	***	0.73	***	0.81	***
8	**AD**	0.89	***	0.75	***	0.78	***
9	**AD**	0.67	***	0.82	***	0.70	***
10	**AD**	0.93	***	0.76	***	0.73	***

Table S2: R^2 and *P*-value for correlations between measured emissions of MACR+MVK+ISOPOOH and C_l*C_t or C_T performed tree by tree according to the season and treatment, with ND = natural drought and AD = amplified drought and *** : $P < 0.001$. Data were obtained without forcing data to pass through the origin.

		Spring				**Summer**				**Autumn**			
		L+T		**T**		**L+T**		**T**		**L+T**		**T**	
Tree	**Treatment**	**R^2**	***P*-value**	**R^2**	***P*-value**	**R^2**	***P*-value**	**R^2**	***P*-value**	**R^2**	***P*-value**	**R^2**	***P*-value**
1	**ND**	/	/	/	/	0.70	***	0.89	***	0.78	***	0.52	***
2	**ND**	0.88	***	0.72	***	0.80	***	0.69	***	0.91	***	0.81	***
3	**ND**	0.87	***	0.84	***	0.70	***	0.48	***	0.85	***	0.77	***
4	**ND**	0.88	***	0.93	***	0.64	***	0.73	***	0.83	***	0.79	***
5	**ND**	0.89	***	0.84	***	0.78	***	0.61	***	0.88	***	0.67	***
6	**AD**	0.89	***	0.91	***	0.82	***	0.87	***	0.89	***	0.86	***
7	**AD**	0.42	***	0.89	***	0.60	***	0.69	***	0.88	***	0.37	***
8	**AD**	0.92	***	0.87	***	0.76	***	0.57	***	0.80	***	0.84	***
9	**AD**	0.76	***	0.67	***	0.59	***	0.71	***	0.76	***	0.93	***
10	**AD**	0.93	***	0.94	***	0.82	***	0.82	***	0.76	***	0.83	***

Table S3: R^2 and P-value for correlations between measured emissions of methanol and C_l*C_t or C_T performed tree by tree according to the season and treatment, with ND = natural drought and AD = amplified drought and * : $P < 0.05$; ** : $P < 0.01$; *** : $P < 0.001$. Data were obtained without forcing data to pass through the origin.

		Spring				**Summer**				**Autumn**			
		L+T		**T**		**L+T**		**T**		**L+T**		**T**	
Tree	**Treatment**	**R²**	***P*-value**	**R²**	***P*-value**	**R²**	***P*-value**	**R²**	***P*-value**	**R²**	***P*-value**	**R²**	***P*-value**
1	**ND**	/	/	/	/	0.91	***	0.77	***	0.67	***	0.57	***
2	**ND**	0.66	***	0.52	***	0.50	***	0.42	***	0.76	***	0.72	***
3	**ND**	0.40	***	0.29	**	0.58	***	0.41	***	/	ns	/	ns
4	**ND**	0.87	***	0.74	***	0.84	***	0.82	***	0.93	***	0.74	***
5	**ND**	0.80	***	0.63	***	0.85	***	0.80	***	/	ns	/	ns
6	**AD**	0.63	***	0.71	***	0.91	***	0.87	***	0.95	***	0.90	***
7	**AD**	0.34	**	0.52	***	0.34	**	0.26	*	0.86	***	0.57	***
8	**AD**	0.66	***	0.53	***	0.87	***	0.96	***	0.85	***	0.74	***
9	**AD**	0.82	***	0.65	***	0.83	***	0.71	***	0.81	***	0.91	***
10	**AD**	0.83	***	0.83	***	0.78	***	0.79	***	0.55	***	0.35	**

Table S4: R^2 and *P*-value for correlations between measured emissions of acetone and C_l*C_t or C_T performed tree by tree according to the season and treatment, with ND = natural drought and AD = amplified drought and ** : $P < 0.01$; *** : $P < 0.001$. Data were obtained without forcing data to pass through the origin.

		Spring				**Summer**				**Autumn**			
		L+T		**T**		**L+T**		**T**		**L+T**		**T**	
Tree	**Treatment**	**R^2**	***P*-value**	**R^2**	***P*-value**	**R^2**	***P*-value**	**R^2**	***P*-value**	**R^2**	***P*-value**	**R^2**	***P*-value**
1	**ND**	/	/	/	/	0.85	***	0.70	***	0.73	***	0.61	***
2	**ND**	0.94	***	0.82	***	0.66	***	0.57	***	0.89	***	0.83	***
3	**ND**	0.91	***	0.81	***	0.75	***	0.55	***	0.75	***	0.67	***
4	**ND**	0.92	***	0.90	***	0.84	***	0.84	***	0.61	***	0.51	***
5	**ND**	0.92	***	0.84	***	0.91	***	0.77	***	/	ns	/	ns
6	**AD**	0.90	***	0.91	***	0.75	***	0.73	***	0.97	***	0.88	***
7	**AD**	0.62	***	0.68	***	0.48	***	/	ns	0.90	***	0.58	***
8	**AD**	0.96	***	0.83	***	0.60	**	0.72	***	0.86	***	0.89	***
9	**AD**	0.89	***	0.83	***	0.40	**	0.49	***	0.67	***	0.71	***
10	**AD**	0.89	***	0.88	***	0.74	***	0.61	***	0.45	***	0.32	**

Table S5: R^2 and *P*-value for correlations between measured emissions of formaldehyde and C_l*C_t or C_T performed tree by tree according to the season and treatment, with ND = natural drought and AD = amplified drought and ** : $P < 0.01$; *** : $P < 0.001$. Data were obtained without forcing data to pass through the origin.

		Spring				**Summer**				**Autumn**			
		L+T		**T**		**L+T**		**T**		**L+T**		**T**	
Tree	**Treatement**	**R²**	***P*-value**	**R²**	***P*-value**	**R²**	***P*-value**	**R²**	***P*-value**	**R²**	***P*-value**	**R²**	***P*-value**
1	**ND**	/	/	/	/	0.90	***	0.86	***	0.90	***	0.79	***
2	**ND**	0.88	***	0.74	***	0.85	***	0.82	***	0.95	***	0.90	***
3	**ND**	0.88	***	0.78	***	0.87	***	0.62	***	0.42	***	0.46	***
4	**ND**	0.92	***	0.90	***	0.80	***	0.77	***	0.86	***	0.78	***
5	**ND**	0.93	***	0.82	***	0.83	***	0.77	***	0.54	***	0.53	***
6	**AD**	0.88	***	0.90	***	0.87	***	0.81	***	0.91	***	0.83	***
7	**AD**	0.70	***	0.68	***	0.44	***	0.55	***	0.67	***	0.45	***
8	**AD**	0.94	***	0.84	***	0.81	***	0.70	**	0.86	***	0.82	***
9	**AD**	0.71	***	0.50	***	0.73	***	/	ns	0.84	***	0.93	***
10	**AD**	0.88	***	0.89	***	0.63	***	/	ns	0.72	***	0.74	***

Table S6: R^2 and *P*-value for correlations between measured emissions of acetaldehyde and C_l*C_t or C_T performed tree by tree according to the season and treatment, with ND = natural drought and AD = amplified drought and * : $P < 0.05$; ** : $P < 0.01$; *** : $P < 0.001$. Data were obtained without forcing data to pass through the origin.

		Spring				**Summer**				**Autumn**			
		L+T		**T**		**L+T**		**T**		**L+T**		**T**	
Tree	**Treatment**	**R²**	***P*-value**	**R²**	***P*-value**	**R²**	***P*-value**	**R²**	***P*-value**	**R²**	***P*-value**	**R²**	***P*-value**
1	**ND**	/	/	/	/	0.90	***	0.69	***	0.72	***	0.42	***
2	**ND**	0.92	***	0.77	***	0.34	**	/	ns	0.89	***	0.65	***
3	**ND**	0.67	***	0.50	***	0.66	***	0.37	**	0.89	***	0.79	***
4	**ND**	0.82	***	0.54	***	0.54	***	0.45	***	0.84	***	0.54	***
5	**ND**	0.84	***	0.61	***	0.80	***	0.50	***	0.74	***	0.35	**
6	**AD**	0.82	***	0.77	***	0.70	***	0.37	***	0.99	***	0.68	***
7	**AD**	0.76	***	0.16	*	0.22	*	/	ns	0.85	***	0.26	*
8	**AD**	0.73	***	0.45	***	0.37	*	/	ns	0.97	***	0.60	***
9	**AD**	0.84	***	0.75	***	0.81	***	0.52	***	0.93	***	0.73	***
10	**AD**	0.82	***	0.79	***	0.83	***	0.60	***	0.88	***	0.46	***

Table S7: Values of paramaters used to calculate the modelled emissions with *L+T* algorithm including the emissions factors for *L+T* algorithm (EF_{L+T}) which corresponds to the mean of slopes of correlations between *ER* (experimental emissions rates) and C_l*C_t algorithm values and B which corresponds to the mean of intercepts of correlations between *ER* and C_l*C_t algorithm values with ND = natural drought and AD = amplified drought. Asterisks represent if B is different from 0 ($P < 0.05$). Values are mean ± SE, n = 5.

		Spring		Summer		Autumn	
Compounds	**Treatment**	**EF_{L+T} (slope)**	**B (intercept)**	**EF_{L+T}**	**B (intercept)**	**EF_{L+T}**	**B (intercept)**
Isoprene	**ND**	28.5 ± 4.6	-0.8 ± 0.25*	118.0 ± 8.4	-2.5 ± 1.5	6.4 ± 1.1	-0.02 ± 0.04
	AD	17.8 ± 2.4	0.1 ± 0.40	84.8± 9.0	-6.4 ± 5.3	12.0 ± 2.8	-0.12 ± 0.03*
MACR+MVK+ISOPOOH	**ND**	0.2 ± 0.03	0.001 ±0.002	0.3 ± 0.02	0.01 ± 0.01	0.1 ± 0.01	0.002±0.001*
	AD	0.1 ± 0.01	0.004 ±0.002	0.2 ± 0.03	-0.02 ± 0.03	0.1 ± 0.02	-0.0 ± 0.0
Methanol	**ND**	1.0 ± 0.2	0.13 ± 0.05*	0.7 ± 0.04	0.18 ± 0.07	0.3 ± 0.1	0.04 ± 0.01
	AD	0.8 ± 0.1	0.12 ± 0.05	0.5 ± 0.1	0.1 ± 0.05	0.4 ± 0.1	0.05 ± 0.01*
Acetone	**ND**	0.6 ± 0.2	0.14 ± 0.11	0.9 ± 0.1	0.1 ± 0.1	0.6 ± 0.2	0.15 ± 0.04*
	AD	0.5 ± 0.1	0.02 ± 0.01*	0.4 ± 0.03	0.1 ± 0.01*	0.8 ± 0.3	0.06 ± 0.01*
Formaldehyde	**ND**	0.3 ± 0.1	0.01 ± 0.01*	0.3 ± 0.03	0.03 ± 0.01	0.4 ± 0.1	0.05 ± 0.01
	AD	0.2 ± 0.02	0.01 ±0.01	0.2 ± 0.03	-0.1 ± 0.01*	0.6 ± 0.1	0.02 ± 0.03
Acetaldehyde	**ND**	2.4 ± 0.7	0.06 ± 0.02*	1.7 ± 0.4	0.32 ± 0.19	2.5 ± 0.6	0.1 ± 0.02*
	AD	2.1 ± 0.9	0.07 ± 0.02*	0.9 ± 0.1	0.18 ± 0.06*	2.5 ± 0.7	0.1 ± 0.02*

Table S8 : Values of paramaters used to calculate the modelled emissions with *T* algorithm including the experimental coefficient β which correspond to the mean of slopes of correlations between lnER and experimental temperatures, emissions factors for *T* algorithm (EF_T) which corresponds to the mean of slopes of correlations between *ER* and C_T algorithm values and B which corresponds to the mean of intercepts of correlations between *ER* and C_T algorithm values with ND = natural drought and AD = amplified drought. Asterisks represent if B is different from 0 at $P < 0.05$. Values are mean ± SE, n = 5.

		Spring			Summer			Autumn		
Compounds	**Treatment**	**β**	**EF_T (slope)**	**B (intercept)**	**β**	**EF_T (slope)**	**B (intercept)**	**β**	**EF_T (slope)**	**B (intercept)**
MACR+MVK+ISOPOOH	**ND**	0.5 ± 0.01	0.7 ± 0.15	0.01± 0.001*	0.5 ± 0.1	0.4 ± 0.1	0.04 ± 0.02	0.7 ± 0.1	1.6 ± 0.3	0.002 ±0.001
	AD	0.6 ± 0.04	0.9 ± 0.28	0.003±0.001*	0.6 ± 0.1	0.2 ± 0.04	0.02 ± 0.01	0.9 ± 0.03	5.0 ± 1.6	0.01± 0.002*
Methanol	**ND**	0.3 ± 0.1	2.6 ± 0.8	0.1 ± 0.01*	0.3 ± 0.04	0.9 ± 0.04	0.1 ± 0.04	0.4 ± 0.1	1.1 ± 0.3	0.01 ±0.001*
	AD	0.3 ± 0.04	2.2 ± 0.2	0.03 ± 0.01*	0.3 ± 0.1	0.6 ± 0.04	0.03 ± 0.02	0.4 ± 0.04	1.4 ± 0.4	0.02 ± 0.01*
Acetone	**ND**	0.4 ± 0.01	1.8 ± 0.5	0.02 ± 0.01*	0.4 ± 0.1	1.1 ± 0.2	0.12 ± 0.04*	0.4 ± 0.03	2.4 ± 0.6	0.14 ± 0.01
	AD	0.5 ± 0.02	2.1 ± 0.4	0.01 ± 0.002*	0.3 ± 0.1	0.5 ± 0.1	0.02 ± 0.02	0.5 ± 0.1	4.3 ± 1.8	0.03 ± 0.01
Formaldehyde	**ND**	0.4 ± 0.02	0.8 ± 0.2	0.01± 0.002*	0.4 ± 0.1	0.4 ± 0.1	0.03 ± 0.01*	0.4 ± 0.04	1.6 ± 0.4	-0.02 ± 0.02
	AD	0.5 ± 0.03	1.3 ± 0.2	0.01 ± 0.003*	0.4 ± 0.2	0.2 ± 0.1	-0.04 ± 0.03	0.5 ± 0.02	2.7 ± 0.7	-0.002 ± 0.03
Acetaldehyde	**ND**	0.5 ± 0.03	9.4 ± 2.7	0.21 ± 0.1*	0.4 ± 0.1	1.6 ± 0.3	0.26 ± 0.07*	0.7 ± 0.02	34.0 ± 3.1	0.1 ± 0.03*
	AD	0.5 ± 0.1	7.9 ± 4.2	0.21 ± 0.13	0.5 ± 0.1	0.9 ± 0.1	0.23 ± 0.05*	0.7 ± 0.1	37.8 ± 4.3	0.18 ± 0.07

Figure S1: Diurnal pattern of photosynthetic active radiations (PAR) and temperatures in spring, summer and autumn. Values are mean ± SE, n=5.

Figure S2: Diurnal pattern of MACR+MVK+ISOPOOH emissions rates, where points represent measured emissions, the yellow line corresponds to modelled emissions rates according to the *L+T* algorithm (ER_{L+T}) and the dotted line corresponds to modelled emissions rates according to the *T* algorithm (ER_T). R^2 and slope (sl) of correlations between measured (x axis) and modelled emissions (y axis) are presented in the yellow frame for *L+T* and in the white frame for *T*. Correlations were obtained without forcing data to pass through the origin. Values are mean ± SE, n=5.

Figure S3: Diurnal pattern of acetone emissions rates where points represent measured emissions, the yellow line corresponds to modelled emissions rates according to the *L+T* algorithm (ER_{L+T}) and the dotted line corresponds to modelled emissions rates according to the *T* algorithm (ER_T). R^2 and slope (sl) of correlations between measured (x axis) and modelled (y axis) emissions are presented in the yellow frame for *L+T* and in the white frame for *T*. Correlations were obtained without forcing data to pass through the origin. Values are mean ± SE, n=5.

Figure S4: Diurnal pattern of formaldehyde emissions rates where points represent measured emissions, the yellow line corresponds to modelled emissions rates according to the *L+T* algorithm (ER_{L+T}) and the dotted line corresponds to modelled emissions rates according to the *T* algorithm (ER_T). R^2 and slope (sl) of correlations between measured (x axis) and modelled emissions (y axis) are presented in yellow frame for *L+T* and in white frame for *T*. Correlations were obtained without forcing data to pass through the origin. Values are mean ± SE, n=5.

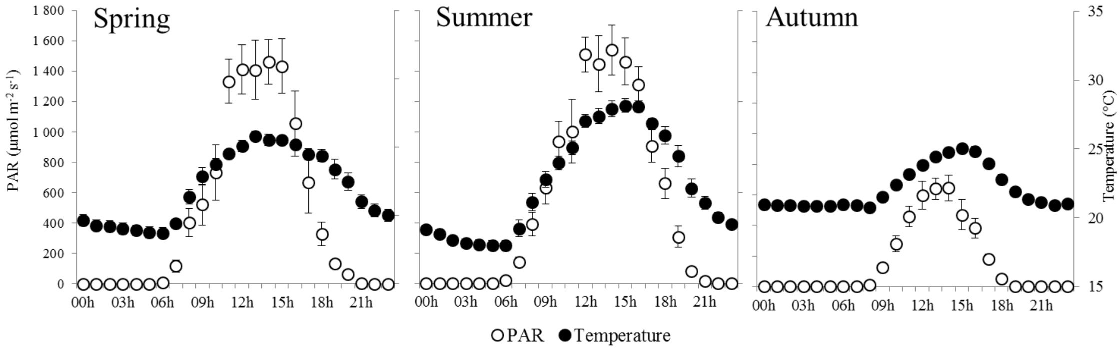

Spring
Summer
Autumn
PAR (µmol m-2 s-1)
Temperature (°C)
1 800
1 600
1 400
1 200
1 000
800
600
400
200
0
35
30
25
20
15
00h
03h
06h
09h
12h
15h
18h
21h
PAR
Temperature

Figure S1:

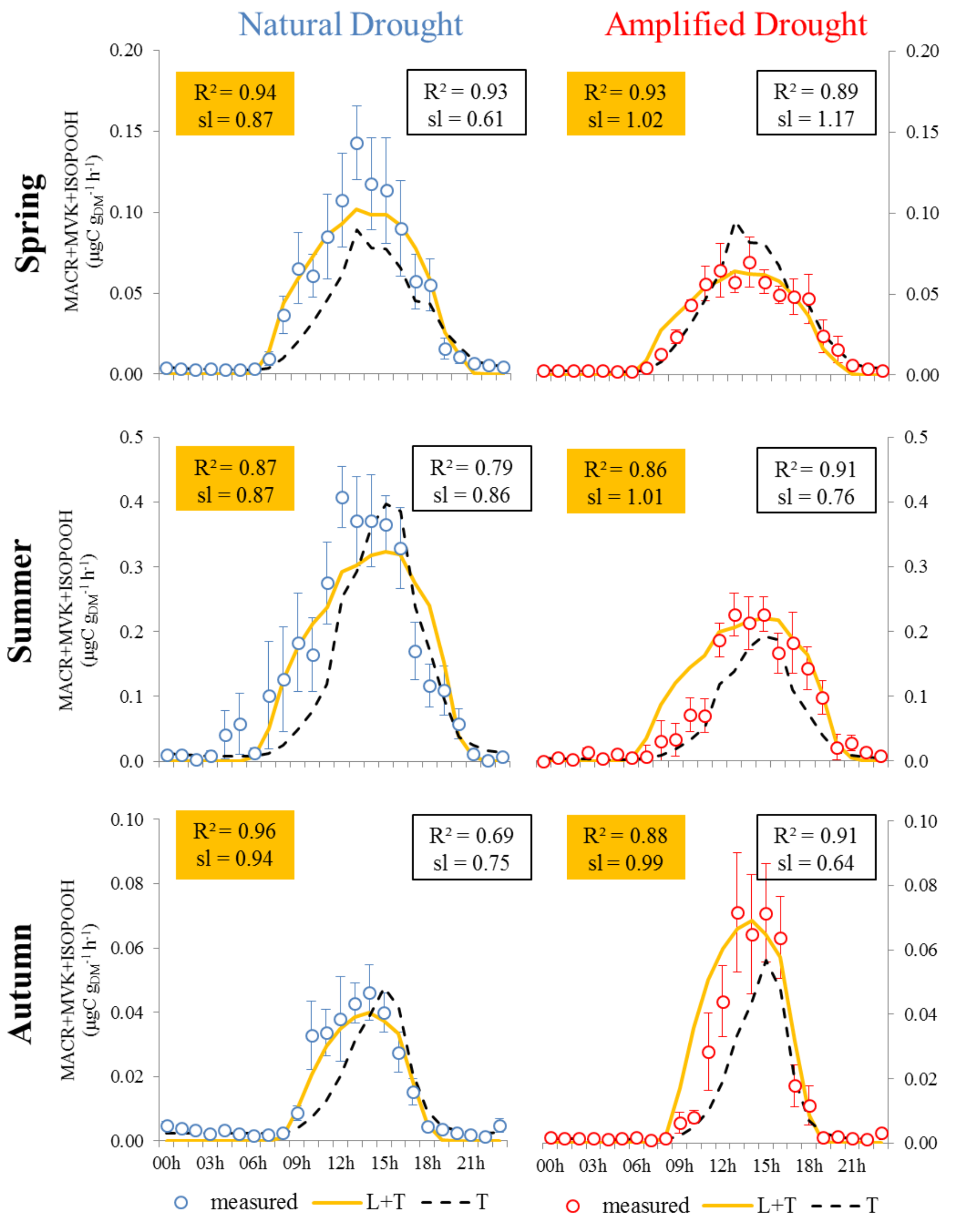
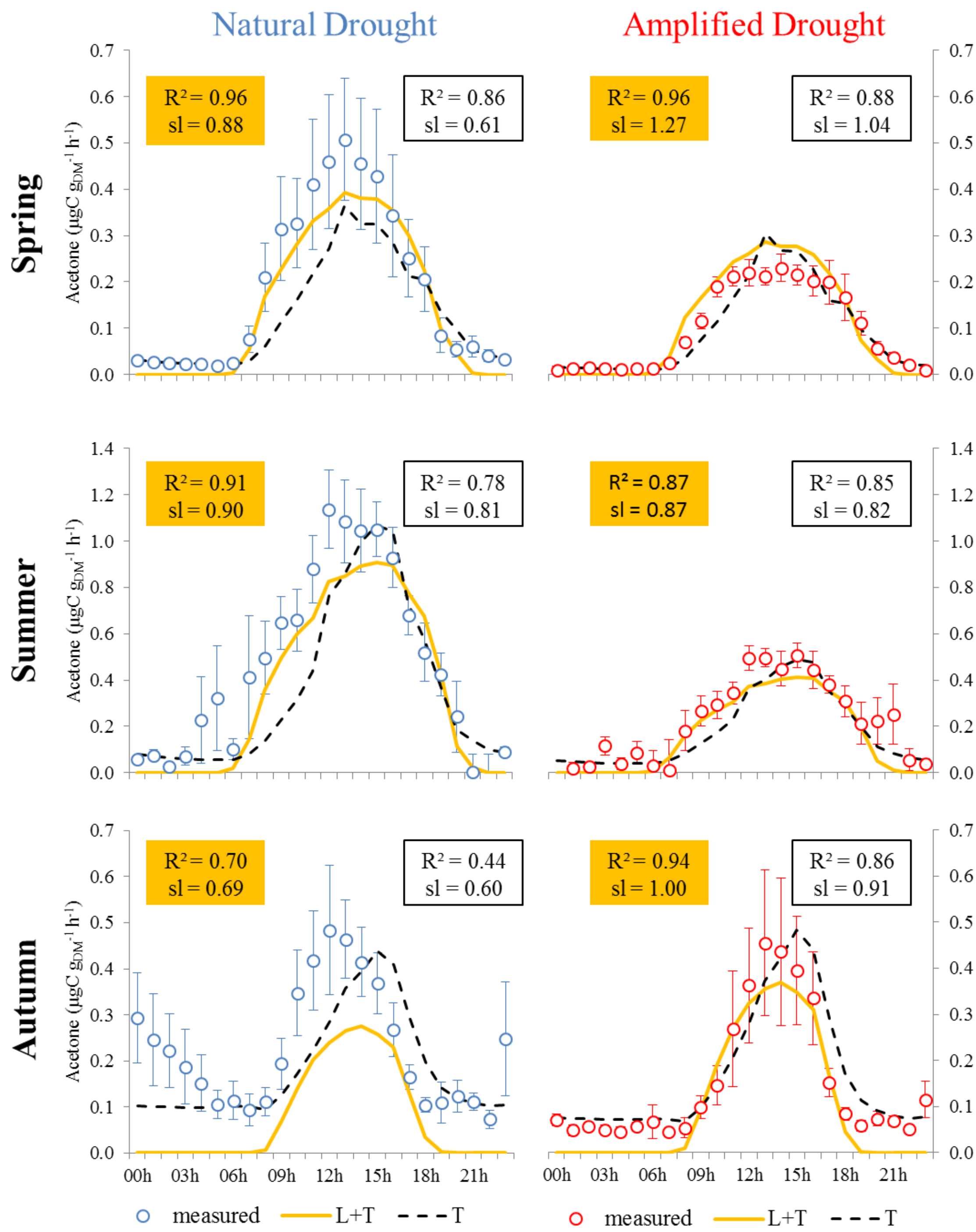
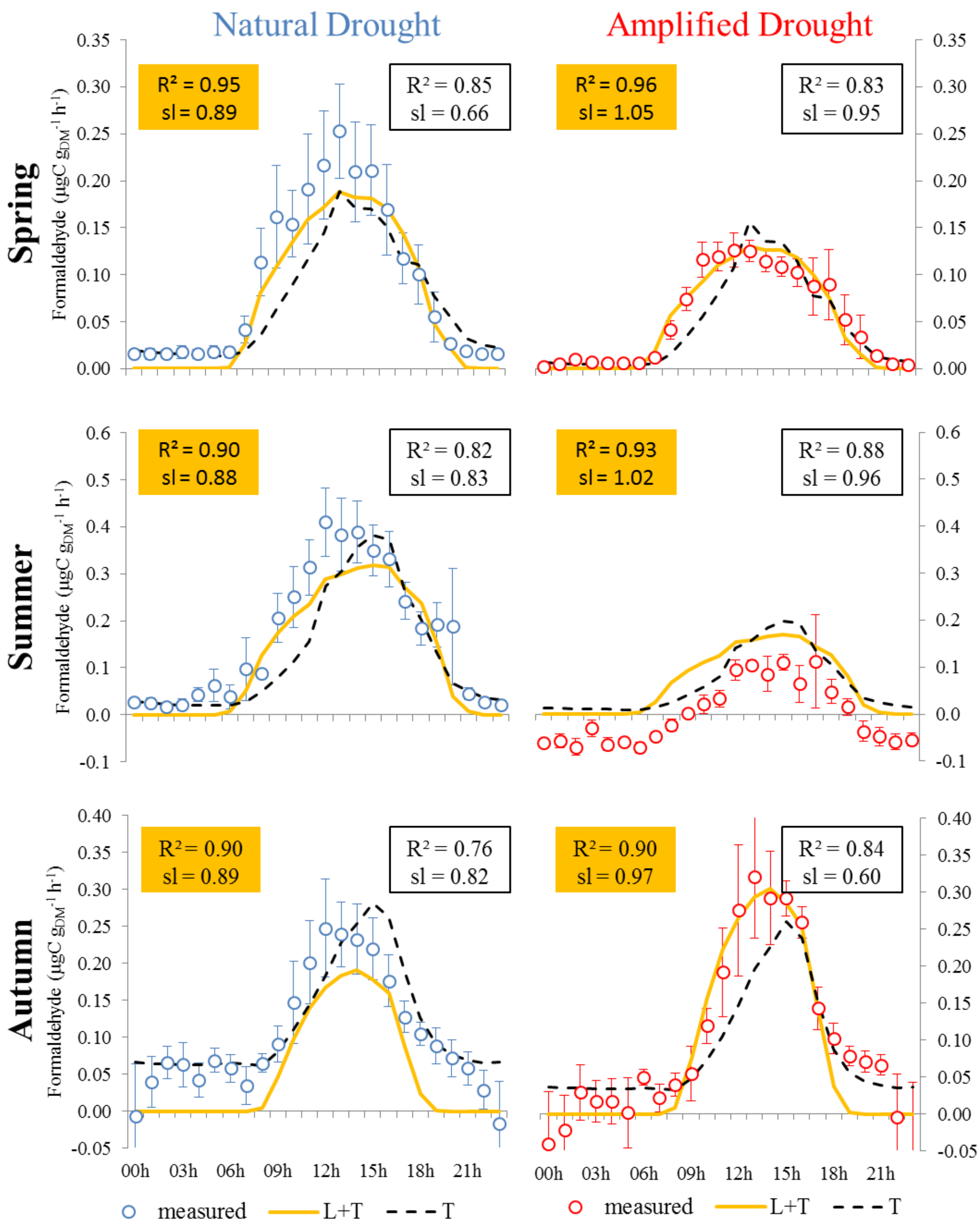

Natural Drought
Amplified Drought
Spring
Summer
Autumn
MACR+MVK+ISOPOOH (µgC gDM-1 h-1)
R² = 0.94 sl = 0.87
R² = 0.93 sl = 0.61
R² = 0.93 sl = 1.02
R² = 0.89 sl = 1.17
R² = 0.87 sl = 0.87
R² = 0.79 sl = 0.86
R² = 0.86 sl = 1.01
R² = 0.91 sl = 0.76
R² = 0.96 sl = 0.94
R² = 0.69 sl = 0.75
R² = 0.88 sl = 0.99
R² = 0.91 sl = 0.64
00h 03h 06h 09h 12h 15h 18h 21h
measured
L+T
T

Figure S2:



Natural Drought
Amplified Drought
Spring
Summer
Autumn
Acetone (µgC gDM-1 h-1)
R² = 0.96
sl = 0.88
R² = 0.86
sl = 0.61
R² = 0.96
sl = 1.27
R² = 0.88
sl = 1.04
R² = 0.91
sl = 0.90
R² = 0.78
sl = 0.81
R² = 0.87
sl = 0.87
R² = 0.85
sl = 0.82
R² = 0.70
sl = 0.69
R² = 0.44
sl = 0.60
R² = 0.94
sl = 1.00
R² = 0.86
sl = 0.91
00h 03h 06h 09h 12h 15h 18h 21h
measured
L+T
T

Figure S3:



Natural Drought
Amplified Drought
Spring
Summer
Autumn
Formaldehyde (µgC gDM-1 h-1)
R² = 0.95
sl = 0.89
R² = 0.85
sl = 0.66
R² = 0.96
sl = 1.05
R² = 0.83
sl = 0.95
R² = 0.90
sl = 0.88
R² = 0.82
sl = 0.83
R² = 0.93
sl = 1.02
R² = 0.88
sl = 0.96
R²= 0.90
sl = 0.89
R² = 0.76
sl = 0.82
R²= 0.90
sl = 0.97
R² = 0.84
sl = 0.60
00h 03h 06h 09h 12h 15h 18h 21h
measured
L+T
T

Figure S4: