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Mediterranean seagrasses as carbon sinks: methodological and regional differences

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Table S1. Coordinates of sampling sites and related Meteorological stations. Data for the stations in Mallorca provided by the Agencia Estatal de Meteorología (AEMET), and from the Cyprus Department of Meteorology for Cyprus sampling sites and from the Hellenic National Meteorological Service for the sampling sites in Crete.

Sampling station	Latitude (°)	Longitude (°)	Meteorological station	Latitude (°)	Longitude (°)
Cap Enderrocat (Mallorca)	39.473	2.721	Palma Son San Juan (Mallorca)	39.561	2.737
Son Veri (Mallorca)	39.495	2.73			
Cala Blava (Mallorca)	39.489	2.724			
Pt. Negra (Mallorca)	39.552	2.61			
Magalluf (Mallorca)	39.537	2.674	Palma CTM (Mallorca)	39.553	2.625
St. Elm (Mallorca)	39.726	2.603			
Sta. Maria (Mallorca)	39.15	2.96	Pollença (Mallorca)	39.909	3.1
Pollença (Mallorca)	39.826	3.088			
Marathi (Crete)	35.504	24.174	Chania (Crete)	35.553	24.068
Kalami (Crete)	35.47	24.136			
Maridati (Crete)	35.222	26.273	Sitia (Crete)	35.205	26.095
Limmassol (Cyprus)	34.707	33.123	1389-7615 Tepak (Cyprus)	34.677	3.038

Table S2. Summary of the available metabolic data per species, region and season.

		NCP	CR	GPP
	benthic chambers	**99**	**67**	**67**
Cymodocea nodosa				
WEST		*19*	*19*	*19*
	Fall	1	1	1
	Spring	4	4	4
	Summer	14	14	14
Posidonia oceanica				
EAST		*6*	*6*	*6*
	Fall	1	1	1
	Spring	1	1	1
	Summer	2	2	2
	Winter	2	2	2
WEST		*74*	*42*	*42*
	Annual	1	1	1
	Fall	10	8	8
	Spring	16	9	9
	Summer	39	19	19
	Winter	8	5	5
	sensors	**69**	**66**	**74**
Cymodocea nodosa		30	30	30
EAST		8	8	8
	Summer	8	8	8
WEST		22	22	22
	Fall	1	1	1
	Spring	2	2	2
	Summer	18	18	18
	Winter	1	1	1
Posidonia oceanica		39	36	44
EAST		6	6	6
	Summer	6	6	6
WEST		33	30	38
	Annual			9
	Fall	4	4	4
	Spring	11	11	11
	Summer	15	14	13
	Winter	3	1	1
Total		**168**	**133**	**141**

Table S3. Summary of statistical analyses, performance of mixed models with random factor "publication", summary of fixed effects through additional ANOVA analysis.

		Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)	
Method comparison sensors - chambers: lmer(Metabolic rate ~ Methodology + (1 | Publication))								
Methodology	logCR	9.23	9.23	1	84.858	91.664	3.78E-15	***
	logGPP	8.2166	8.2166	1	101.05	124.03	2.20E-16	***
	NCP	29503	29503	1	136.31	7.7155	0.006247	**
Comparison species for sensor data: lmer(Metabolic rate ~ Species + Region + Depth + Season + (1 | Site))								
logCR	Species	0.0688	0.068802	1	32.457	0.8227	0.37108	
	Region	0.15732	0.157325	1	3.776	1.8812	0.24605	
	Depth	0.00204	0.002041	1	9.153	0.0244	0.87926	
	Season	0.74443	0.248143	3	23.402	2.9671	0.05269	.
logGPP	Species	0.00024	0.000238	1	39.846	0.0064	0.93668	
	Region	0.02361	0.023607	1	3.14	0.6339	0.48172	
	Depth	0.13807	0.138071	1	7.036	3.7078	0.09533	.
	Season	0.07683	0.019208	4	5.302	0.5158	0.72909	
NCP	Species	49	49	1	35.371	0.0076	0.931224	
	Region	70848	70848	1	4.477	11.0257	0.024787	*
	Depth	3148	3148	1	10.8	0.4899	0.498754	
	Season	199564	66521	3	26.281	10.3524	0.000113	***
Simplified model sensor data: lmer(Metabolic rate ~ Region + Depth + Season + (1 | Site))								
logCR	Region	0.17188	0.171877	1	3.689	2.0276	0.23327	
	Depth	0.0002	0.000196	1	8.2072	0.0023	0.96276	
	Season	0.75787	0.252623	3	24.225	2.9801	0.05125	.
logGPP	Region	0.02277	0.022774	1	3.4121	0.6282	0.47944	
	Depth	0.15289	0.152894	1	7.9882	4.2176	0.07414	.
	Season	0.07527	0.018817	4	5.7877	0.5191	0.7265	
NCP	Region	72422	72422	1	4.9735	11.565	0.0194	*
	Depth	3260	3260	1	12.3658	0.5206	0.484	
	Season	199609	66536	3	28.8527	10.6252	7.12E-05	***
Comparison benthic chambers: lmer(Metabolic rate ~ Species + Depth + Season + (1 | Site))								
logCR	Species	0.9011	0.9011	1	56.945	13.8833	0.000449	***
	Depth	0.03079	0.03079	1	18.541	0.4744	0.499481	
	Season	0.61595	0.15399	4	48.996	2.3725	0.06503	.
logGPP	Species	1.18722	1.18722	1	54.133	25.8746	4.69E-06	***
	Depth	0.02548	0.02548	1	19.117	0.5553	0.46524	
	Season	0.93225	0.23306	4	48.048	5.0795	0.001702	**
NCP	Species	1768.88	1768.88	1	67.201	1.829	0.1808	
	Depth	862.82	862.82	1	68.82	0.8921	0.3482	
	Season	2388.78	597.19	4	76.421	0.6175	0.6514	

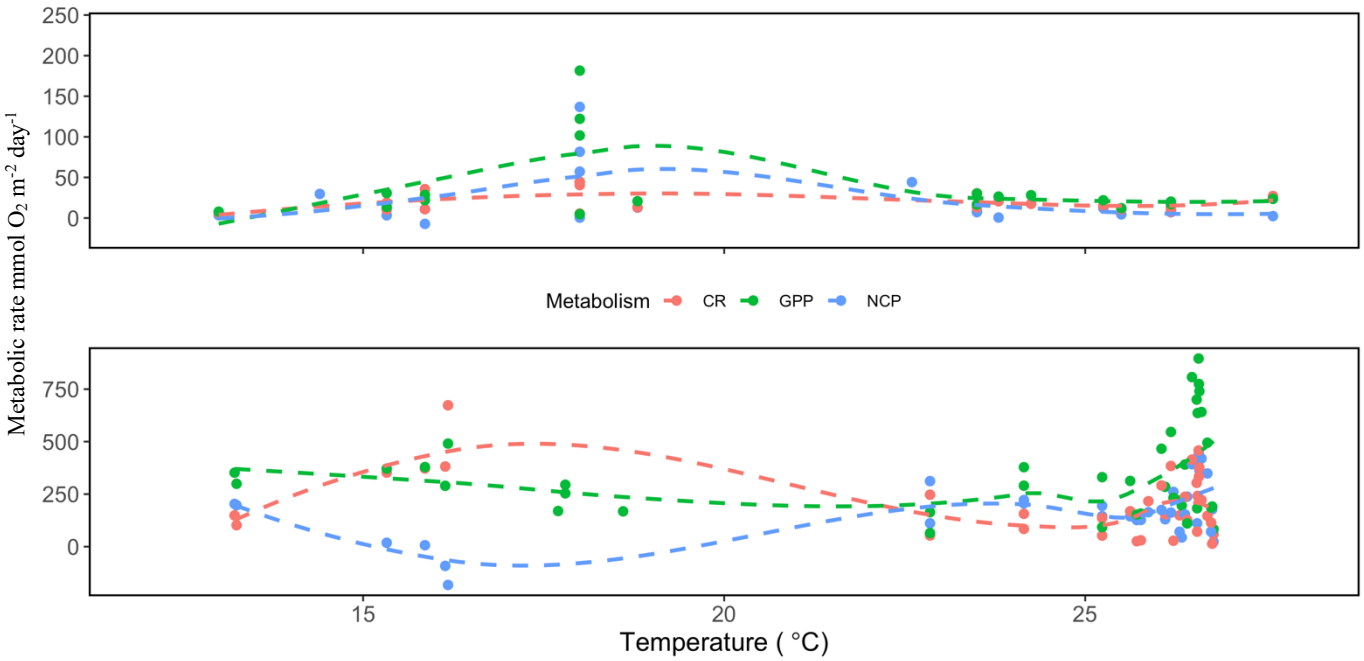

Figure S1. Metabolic rates (CR, NCP and GPP in mmol O_2 m^{-2} day^{-1}) in relationship with the *in situ* temperature in the *Posidonia oceanica* benthic chambers data (top plot) and for all sensor data (bottom plot) in the Western basin. A positive linear correlation was found for NCP with temperature, while negative for CR based on sensor data. No significant regressions were found with temperature for benthic chambers. The dashed line shows the least square fit of the metabolic rates.

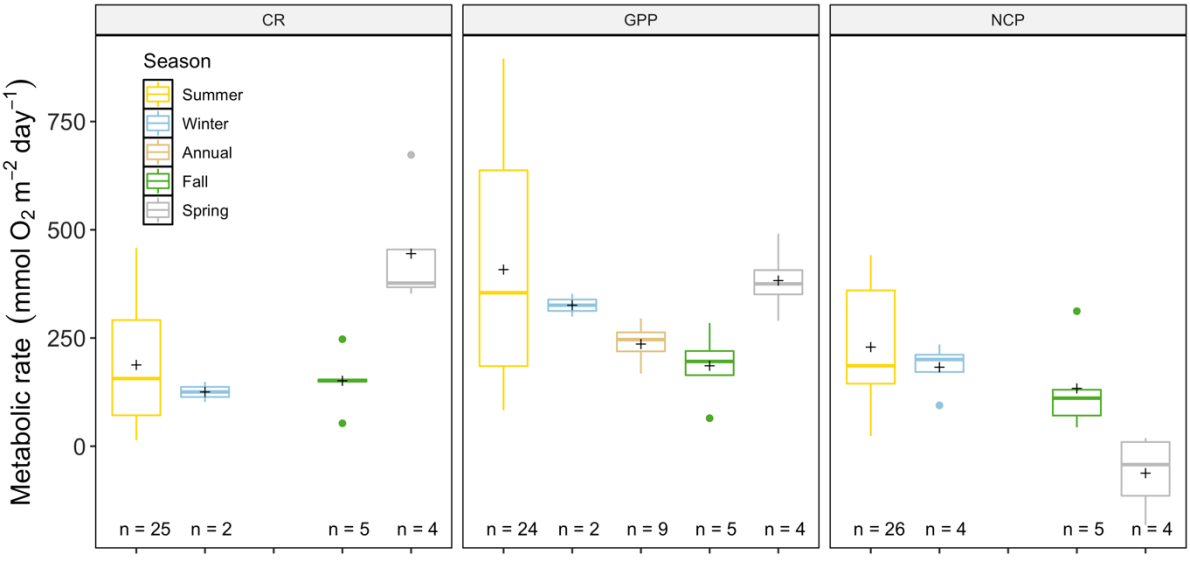

Figure S2 A. Seasonal metabolic rates (GPP, NCP and CR in mmol O_2 m^{-2} day^{-1}) in the Western Mediterranean basin calculated with sensor data. Upper and lower hinges correspond to the upper and lower quartiles. the line inside the boxes correspond to the median, while the mean is shown with cross hairs and the error bars are based on minimum and maximum standard deviation for each parameter.

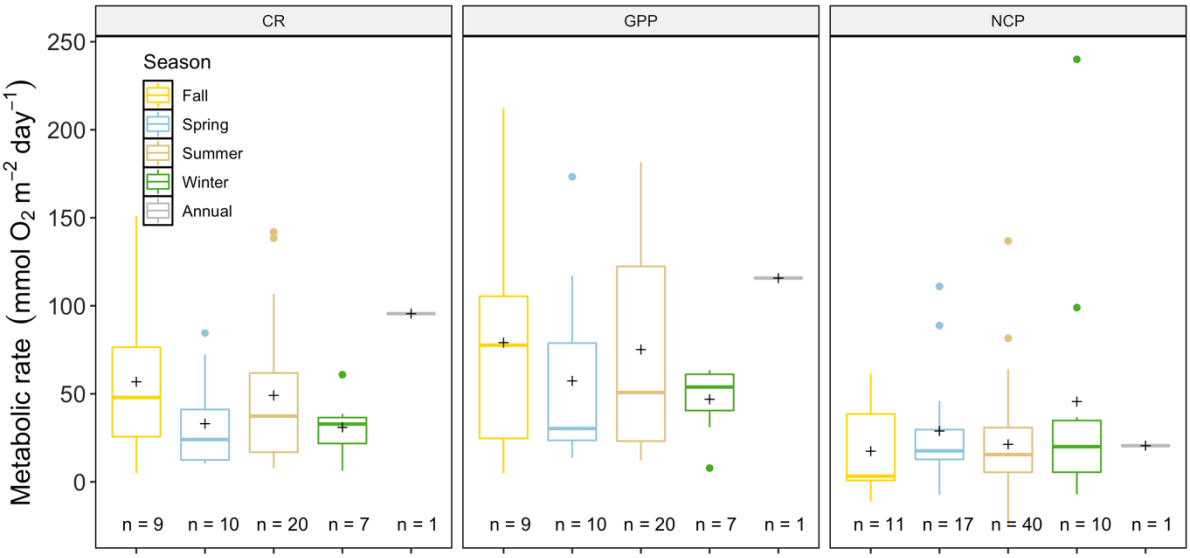

Figure S2 B. Seasonal metabolic rates (GPP, NCP and CR in mmol O_2 m^{-2} day^{-1}) calculated with benthic chamber data for *Posidonia oceanica*. Upper and lower hinges correspond to the upper and lower quartiles. the line inside the boxes correspond to the median, while the mean is shown with cross hairs and the error bars are based on minimum and maximum standard deviation for each parameter.

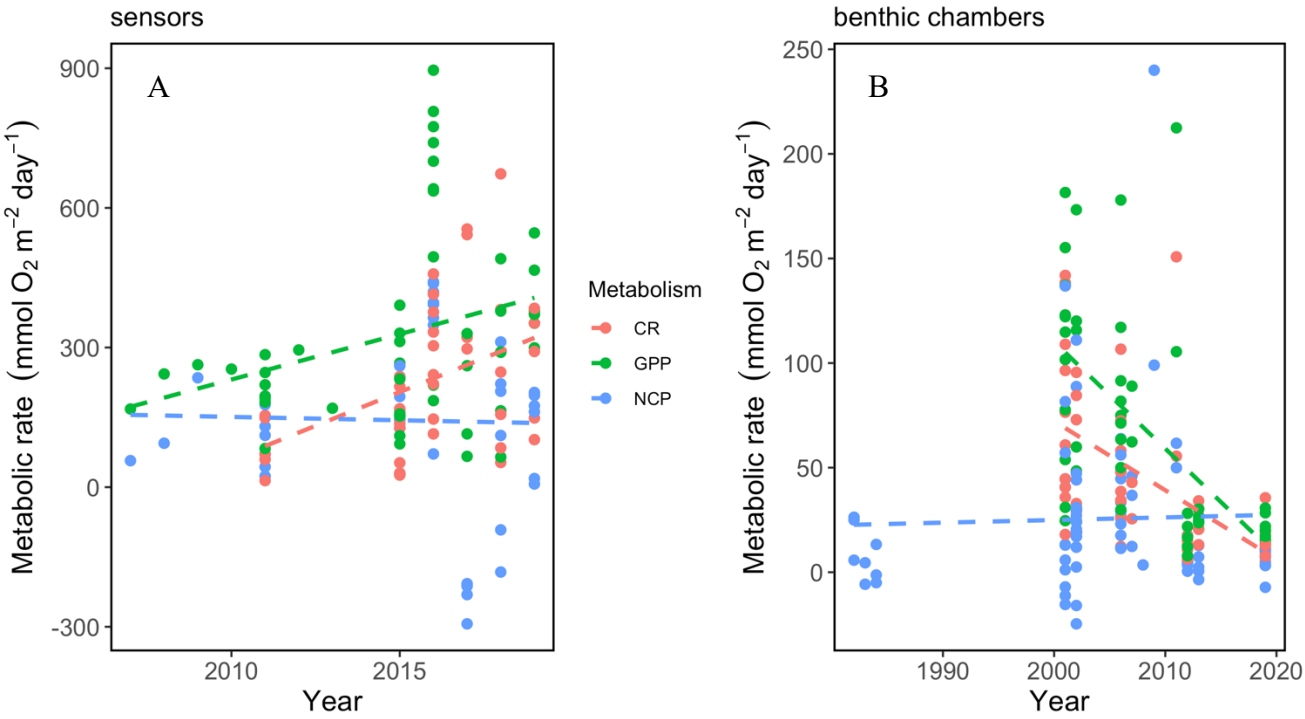

Figure S3. Changes over time (Year) in metabolic rates (GPP, NCP and CR in mmol O_2 m^{-2} day^{-1}) for A) rates calculated with sensor data (both basins) and B) incubations of *Posidonia oceanica*. Dashed lines correspond to linear regressions, with only the positive relationship with CR over time for sensor data significative.