

Supplementary Material

Re-analysis of plant CO₂ responses during the exponential growth phase: interactions with light, temperature, nutrients and water availability

Miko U. F. Kirschbaum^{A,C} and Suzanne M. Lambie^B

^ALandcare Research, Private Bag 11 052, Palmerston North 4442, New Zealand.

^BLandcare Research, Private Bag 3127, Hamilton 3240, New Zealand.

^CCorresponding author. Email: kirschbaumm@landcareresearch.co.nz

GENERAL INFORMATION

On the following pages, a summary of the key data are given in four different tables.

Each data set gives the publication, species name, both the scientific name, and where appropriate, a common name.

The low and high CO₂ concentrations used were mostly explicitly given by the authors.

But on some occasions, the CO₂ concentration had to be estimated from graphs, and on a few occasions, 'ambient' was estimated from the atmospheric concentration at the time when experiments were conducted.

The next column gives the temperature used in different experiments. For growth chamber-studies, that was taken as the average temperature over the daytime period.

For experiments conducted without controls of 'ambient' temperature, it was estimated as the mean temperature.

The temperature was often explicitly stated by the authors or read from supplied graphs or obtained from companion papers.

In a few instances, the mean temperature of the city where the experiments were conducted was used.

Where that was required, data were not used for assessing temperature or CO₂ dependencies of RERC.

The next four columns list the four key parameters obtained through the parameter fitting as outlined in the accompanying scientific paper. Model efficiency is the Nash-Sutcliffe model efficiency, calculated from the log transformed data. It explains the fraction of variability in the data explained through the employed model.

Where appropriate, some extra explanations have been added for some data sets in the "comments" column.

For the data sets used to compare PAR, nutrient and water-stress effects, all data sets consisted of one data set obtained under non-limiting conditions and one or more data set(s) under limiting conditions.

DATA FOR INTERACTION WITH TEMPERATURE

Author	Form	Species full name	Coloq name	CO ₂ low μmol mol ⁻¹	CO ₂ high	Temp °C	RGR ₃₅₀	C _{enh}	B ₀	k ₂	Model Efficiency	Comments			
Baker <i>et al.</i> (1989)	Herbaceous	Glycine max L.	Soy bean	330	660	26	0.1042	0.2858	0.0311	0.1322	0.9514				
				330	660	31	0.1133	0.3224	0.0311	0.1322	0.9803				
				330	660	36	0.1170	0.1661	0.0311	0.1322	0.9715				
Baker <i>et al.</i> (1992)	Herbaceous	Oryza sativa L.	Rice	330	660	28	0.1143	-0.0278	0.0150	0.4251	0.9851				
				330	660	34	0.1083	0.1003	0.0296	0.3430	0.9882				
				330	660	40	0.1539	0.1155	0.0124	0.8867	0.9877				
Bannayan <i>et al.</i> (2009)	Herbaceous	Arachis hypogaea L. Pronto	Peanut	400	700	33	0.0800	0.1000	10.0000	0.0000	0.9806				
				400	700	35.5	0.0829	0.0340	30.0732	0.0000	0.9811				
				400	700	38	0.0785	0.1666	33.9399	0.0000	0.9603				
	Herbaceous	Arachis hypogaea L. Georgia Green	Peanut	400	700	33	0.0803	0.0221	30.0092	0.0000	0.9494				
				400	700	35.5	0.0706	0.0668	57.8958	0.0000	0.9644				
				400	700	38	0.0773	0.1796	31.7707	0.0000	0.9730				
Bruhn <i>et al.</i> (2000)	Woody	Fagus sylvatica		400	740	14.9	0.0516	0.1621	0.1315	0.3362	0.9789	Temperature given as 2.9° below ambient temperature The ambient temperature was calculated as the average of the 5 data points graphed in the paper over the time of the incubation. temperature given as 2.3° above ambient temperature Temperature given as 4.8° above ambient temperature			
				400	740	17.8	0.0594	0.1300	0.1333	0.3985	0.9778				
				400	740	20.1	0.0593	0.2717	0.1320	0.3145	0.9844				
				400	740	22.6	0.0596	0.4291	0.1323	0.3964	0.9563				
Coleman & Bazazz (1992)	Herbaceous	Abutilon theophrasti Medic.		400	700	28	0.1610	0.1855	0.0304	0.1592	0.9753				
				400	700	38	0.1668	0.0762	0.0304	0.1528	0.9781				
Cowling & Sage (1998)	Herbaceous	Phaseolus vulgaris cv Black Turtle	Navy bean	200	380	36	0.2288	0.3409	0.0056	0.2278	0.9767				
				200	380	25	0.2983	0.1066	0.0056	0.2278	0.9696				
Demmer-Derks <i>et al.</i> (1998)	Herbaceous	Beta vulgaris L.	Sugar beet	372	592	14	0.0567	0.0278	30.0638	0.0004	0.9994				
				372	592	17	0.0557	0.0590	30.0642	0.0004	0.9993				
				377	709	16	0.0434	0.0339	36.0130	0.0000	0.9963				
				377	709	19	0.0419	0.0613	42.1612	0.0000	0.9855				
				400	640	22.5	0.0100	-0.0111	16.5383	0.0013	0.9759				
Duan <i>et al.</i> (2013)	Woody	Eucalyptus globulus Labill	Tasmanian blue gum	400	640	26.5	0.0205	-0.0946	16.5383	0.0202	0.9397				
				400	640	26.5	0.0205	-0.0946	16.5383	0.0202	0.9397				
Idso & Kimball (1989)	Herbaceous	Raphanus sativa L. cv. Cherry Belle	Radish	340	640	15	0.1417	0.0932	0.0030	0.2549	0.9489				
				340	640	16	0.1585	0.0225	0.0030	0.8044	0.9874				
				340	640	17	0.1604	0.0679	0.0030	0.6878	0.9733				
				340	640	20	0.2491	0.1367	0.0030	5.6683	0.9289				
				340	640	21	0.1728	0.0862	0.0030	0.9929	0.8567				
				340	640	24	0.2224	0.1249	0.0030	0.9929	0.9816				
				340	640	25	0.3153	0.0938	0.0030	1.9144	0.9092				
				340	640	26	0.2491	0.1810	0.0030	0.9929	0.9703				
				340	640	30	0.2479	0.2186	0.0030	1.0723	0.9880				
				340	640	31	0.2493	0.2560	0.0030	1.9574	0.9634				
	340	640	34	0.2228	0.1733	0.0030	3.0713	0.9952							
	Herbaceous	Daucu carota. L. var sativa cv. Red Cc Carrot		340	640	14	0.0669	0.1731	0.0050	1.1840	0.8464				
				340	640	15	0.0767	0.0934	0.0050	1.1840	0.9139				
				340	640	16	0.0823	0.0635	0.0050	1.1840	0.9315				
				340	640	23	0.0971	0.2376	0.0050	1.0394	0.9273				
				340	640	25	0.1209	0.4567	0.0050	3.8355	0.9917				
				340	640	30	0.1318	0.3749	0.0050	1.0394	0.9691				
				340	640	33	0.0843	0.3172	0.0050	1.0394	0.9831				
				Herbaceous	Oryza sativa L. cv Kinmaze	Rice (low light)	300	1000	23	0.0971	0.3718	56.0	0.0000	1.0000	
							300	1000	28	0.1081	0.6618	41.0	0.0000	1.0000	
Herbaceous				Oryza sativa L. cv Kinmaze	Rice (high light)	300	1000	23	0.1269	0.3844	56.0	0.0000	1.0000		
	300	1000	28			0.1572	0.4466	41.0	0.0000	1.0000					
Herbaceous	Glycine max Merr cv Bonminor	Soy bean (low light)	300	1000	23	0.1244	0.3293	255.0	0.0000	1.0000					
			300	1000	28	0.1670	0.4075	162.5	0.0000	1.0000					
Herbaceous	Glycine max Merr cv Bonminor	Soy bean (high light)	300	1000	23	0.1426	0.3646	255.0	0.0000	1.0000					
			300	1000	28	0.1834	0.4534	162.5	0.0000	1.0000					
Jifon & Wolfe (2005)	Herbaceous	Phaseolus vulgaris	Red kidney bean	350	700	26	0.1872	0.1399	0.2207	0.5722	0.9990	Used only the first three data points as deviations from exponential growth became too marked during later growth stages.			
				350	700	35	0.2061	0.1517	0.1959	0.5722	0.9938				
Kellomaki & Wang (2001)	Woody	Betula pendula Roth	Birch	350	700	18	0.2208	0.1391	0.3130	0.1057	0.9966	Ambient temperature was estimated from their Figure 1; ambient CO2 was not explicitly given, but assumed to be 350 ppm.			
				350	700	21	0.2114	0.0942	0.3130	0.1012	0.9955				
Ojala <i>et al.</i> (2002)	Herbaceous	Equisetum fluviatile	Water horsetail	420	600	16	0.1129	0.1060	3.0000	0.0110	0.9410	Estimated from their Figure 1.			
				420	600	13	0.0845	-0.0055	3.0000	0.0260	0.9659				
Otera <i>et al.</i> (2011)	Herbaceous	Glycine max L. En 1282	Soy bean	389	583	22.9	0.1054	0.0442	0.1845	0.0140	1.0000				
				389	583	25.2	0.1406	0.0716	0.1845	0.0271	0.9997				
				390	586	23.1	0.1134	0.0338	0.2500	0.0173	0.9998				
				390	586	25.2	0.1256	0.0573	0.2500	0.0210	0.9691				
	Herbaceous	Glycine max L. Enrei	Soy bean	389	583	22.9	0.0758	0.0636	0.4714	0.0000	0.9997				
				389	583	25.2	0.1085	0.0767	0.4714	0.0207	0.9989				
				390	586	23.1	0.1085	0.0685	0.2500	0.0079	1.0000				
				390	586	25.2	0.1249	0.0187	0.2500	0.0120	0.9998				
	Herbaceous	Glycine max L. En-b0-1	Soy bean	389	583	22.9	0.1124	0.0796	0.1121	0.0088	0.9999				
				389	583	25.2	0.1461	0.0747	0.1121	0.0143	0.9991				

			390	586	23.1	0.1052	0.0832	0.2500	0.0080	0.9997	
			390	586	25.2	0.1268	0.0551	0.2500	0.0143	0.9901	
Rowland-Bamford <i>et al.</i> (1996)	Herbaceous	Oryza sativa L. cv. IR-30	Rice	330	660	28	0.0363	0.0628	0.2297	0.0000	0.9994
				330	660	34	0.0483	0.2565	0.2297	0.1331	0.9984
				330	660	40	0.0522	0.3271	0.2297	0.4724	0.9948
Sionit <i>et al.</i> (1987)	Herbaceous	Glycine max L.	Soy bean	350	675	18	0.0964	0.1450	0.0310	0.0153	0.9993
				350	1000	18	0.0964	0.2439	0.0310	0.0153	0.9995
				350	675	22	0.1176	0.0876	0.0374	0.0204	0.9960
				350	1000	22	0.1176	0.1310	0.0374	0.0204	0.9952
				350	675	26	0.1330	0.1887	0.0618	0.0425	0.9932
				350	1000	26	0.1330	0.2802	0.0618	0.0425	0.9808
Stirling <i>et al.</i> (1998)	Herbaceous	Poa annua L.		340	680	20	0.1464	0.0280	0.0034	0.2750	0.9970
				340	680	23	0.1502	0.0398	0.0034	0.1491	0.9938
	Herbaceous	Chenopodium album L.		340	680	20	0.1877	0.1181	0.0011	0.4594	0.9961
				340	680	23	0.2080	0.0621	0.0011	0.4616	0.9984
	Herbaceous	Bellis perennis L.		340	680	20	0.1106	0.1336	0.0080	0.2056	0.9939
				340	680	23	0.1342	-0.0296	0.0080	0.2034	0.9976
	Herbaceous	Bromus sterilis L.		340	680	20	0.1260	0.0295	0.0115	0.1070	0.9990
				340	680	23	0.1431	0.0941	0.0115	0.2017	0.9995
	Herbaceous	Senecio vulgaris L.		340	680	20	0.1703	0.1367	0.0030	0.2579	0.9987
				340	680	23	0.1974	0.0355	0.0030	0.3566	0.9904
Tjoelker <i>et al.</i> (1998)	Woody	Populus tremuloides		370	580	18	0.2191	-0.0475	0.0011	0.4234	0.9881
				370	580	21	0.2285	0.2562	0.0004	0.1773	0.9711
				370	580	24	0.2721	0.2079	0.0006	0.3147	0.9489
				370	580	27	0.2490	0.0660	0.0016	0.1375	0.9937
				370	580	30	0.2342	0.0923	0.0018	0.1314	0.9886
	Woody	Picea mariana		370	580	18	0.0593	0.1656	0.0043	0.5969	0.9844
				370	580	21	0.0611	0.2922	0.0043	0.3249	0.9920
				370	580	24	0.0601	0.1724	0.0061	0.2111	0.9818
				370	580	27	0.0646	0.1865	0.0046	0.6720	0.9919
				370	580	30	0.0569	-0.0860	0.0063	2.6833	0.9573
	Woody	Larix laricina		370	580	18	0.0746	0.1073	0.0059	0.5384	0.9934
				370	580	21	0.0718	0.2336	0.0078	0.1539	0.9884
				370	580	24	0.0848	0.1559	0.0051	0.2858	0.9810
				370	580	27	0.0732	0.1818	0.0094	0.2222	0.9933
				370	580	30	0.0853	-0.0311	0.0056	0.7329	0.9668
	Woody	Pinus banksiana		370	580	18	0.0444	-0.0611	0.0185	0.2891	0.9720
				370	580	21	0.0556	0.2046	0.0134	1.2246	0.8375
				370	580	24	0.0610	0.0019	0.0137	0.7349	0.9507
				370	580	27	0.0544	0.2437	0.0191	0.1610	0.9630
				370	580	30	0.0425	0.2744	0.0130	0.0000	0.9669
	Woody	Betula papyrifera		370	580	18	0.1616	-0.0725	0.0016	0.5800	0.9677
				370	580	21	0.1915	-0.0788	0.0009	0.1968	0.9945
				370	580	24	0.1522	0.2162	0.0026	0.4040	0.9546
				370	580	27	0.1925	0.1363	0.0011	0.2338	0.9918
				370	580	30	0.1959	0.0155	0.0014	0.3810	0.9612
Tremmel & Patterson (1993)	Herbaceous	Cassia obtusifolia L.	Sicklepod	350	700	26	0.1580	0.0893	0.0163	0.1219	0.9992
				350	700	30	0.2139	0.0961	0.0163	0.0863	0.9919
	Herbaceous	Glycine max L.	Soy bean	350	700	26	0.2864	0.1415	0.0002	0.2669	0.9980
				350	700	30	0.3645	0.0903	0.0002	0.0966	0.9829
	Herbaceous	Abutilon theophrasti Medic.	Velvetleaf	350	700	26	0.2849	0.1418	0.0002	0.2669	0.9973
				350	700	30	0.3625	0.0918	0.0002	0.0944	0.9861
	Herbaceous	Elytrigia repens L. Nevski	Quack grass	350	700	26	0.2770	0.0945	0.0004	0.2741	0.9834
				350	700	30	0.2852	0.0603	0.0004	0.6359	0.9937
Wayne <i>et al.</i> (1998)	Woody	Betula alleghaniensis	Yellow birch	400	800	26	0.1426	0.0589	0.0006	0.0000	0.9962
				400	800	31	0.1234	0.1606	0.0005	0.0000	0.9999
Yoon <i>et al.</i> (2009)	Herbaceous	Gossypium hirsutum L.	Cotton	400	600	25	0.0727	0.0378	0.7050	0.0010	0.9688
				400	600	35	0.0825	0.0146	2.4999	0.0005	0.9707
				400	800	25	0.0727	0.2499	0.7050	0.0010	0.9505
				400	800	35	0.0825	0.0853	2.4999	0.0005	0.9609
Zhang <i>et al.</i> (2013)	Herbaceous	Phalaris arundinacea L.	Reed canary grass	395	700	13.5	0.0112	0.2461	415.9	0.0000	0.9883
				395	700	16.5	0.0178	0.0182	415.9	0.0005	0.9742
				395	700	13.5	0.0195	0.2010	1122.3	0.0006	0.9875
				395	700	16.5	0.0385	0.0390	1122.3	0.0009	0.9832
Ziska <i>et al.</i> (1997)	Herbaceous	Oryza sativa L. cv Kinmaze	Rice (wet season)	369	571	25.6	0.1145	0.0338	1.0000	0.0022	0.9676
				369	665	25.6	0.1144	0.0983	1.0000	0.0022	0.9234
				369	571	29.5	0.1112	0.0836	1.0000	0.0019	0.9838
				369	665	29.5	0.1112	0.0513	1.0000	0.0019	0.9709
	Herbaceous	Oryza sativa L. cv Kinmaze	Rice (dry season)	364	566	25.6	0.1012	-0.0143	1.0000	0.0014	0.9831
				364	661	25.6	0.1012	0.1082	1.0000	0.0014	0.9863
				364	566	29.5	0.1021	0.0777	1.0000	0.0013	0.9854
				364	661	29.5	0.1021	0.0738	1.0000	0.0013	0.9820

CO2 concentration not explicitly mentioned in the paper
- assumed to be 340 ppm.

Ambient temperature read from their Figure 1a.
Temperature difference read from their Figure 1b.

DATA FOR INTERACTION WITH PHOTOSYNTHETICALLY ACTIVE RADIATION (PAR)

Authors	Scientific name	Coloquial name	CO ₂ low μmol mol ⁻¹	CO ₂ high	Temp. °C	PAR	RGR ₃₅₀	C _{enh}	B ₀	k ₂	Model Efficiency	
Cavender-Bares <i>et al.</i> (2000)	Quercus rubra	Red oak	380	700	9	low	0.0418	0.1604	0.1250	0.0066	0.9916	
			380	700	9	high	0.0565	0.1214	0.1250	0.0066	0.9970	
Frantz & Ling (2011)	Petunia x hybrida Vilm.	Petunia	400	800	23	low	0.1341	0.0015	0.4078	0.0361	0.9990	
			400	800	23	high	0.1362	-0.0058	0.4078	0.0289	0.9996	
			400	800	23	low	0.1341	0.0155	0.4078	0.0630	0.9993	
			400	800	23	high	0.1341	0.0151	0.4078	0.0557	0.9988	
Imai & Murata (1979)	Oryza sativa L. cv Kinmaze	Rice	300	1000	23	low	0.0971	0.3718	56.0	0.0000	1.0000	
			300	1000	23	high	0.1269	0.3844	56.0	0.0000	1.0000	
	Glycine max Merr cv Bonminor	Soy bean	300	1000	23	low	0.1244	0.3293	255.0	0.0000	1.0000	
			300	1000	23	high	0.1426	0.3646	255.0	0.0000	1.0000	
	Oryza sativa L. cv Kinmaze	Rice	300	1000	28	low	0.1081	0.6618	41.0	0.0000	1.0000	
			300	1000	28	high	0.1572	0.4466	41.0	0.0000	1.0000	
	Glycine max Merr cv Bonminor	Soy bean	300	1000	28	low	0.1670	0.4075	162.5	0.0000	1.0000	
			300	1000	28	high	0.1834	0.4534	162.5	0.0000	1.0000	
Leishman <i>et al.</i> (1999)	Cardamine hirsuta	Hairy bittercress	375	575	16	low	0.1307	0.0768	0.0001	0.0000	1.0000	CO2 concentration not explicitly stated in the paper, but other authors who used the same facility at about the same time reported ambient concentration fluctuated between 350 and 400 ppm - therefore 375 ppm chosen (see Jones et al 1998 - Science 280: 441-443 - Temperature taken as the average of day and night time temps 20/12
			375	575	16	high	0.2045	-0.0481	0.0001	0.0000	1.0000	
	Spergula arvensis	Corn Spurrey	375	575	16	low	0.0181	0.0852	0.3991	0.0000	1.0000	
			375	575	16	high	0.0287	-0.1214	0.5056	0.0000	1.0000	
	Poa annua	Poa	375	575	16	low	0.1206	0.2110	0.0001	0.0000	1.0000	
			375	575	16	high	0.2045	0.0960	0.0001	0.0000	1.0000	
	Senecio vulgaris	Common groundsel	375	575	16	low	0.1487	0.0284	0.0001	0.0000	1.0000	
			375	575	16	high	0.2166	0.1019	0.0000	0.0000	0.9999	
Louche-Tessandier <i>et al.</i> (1999)	Solanum tuberosum L. cv. Lp.	Potato	350	10000	23	low	0.0474	0.5391	11.39	0.0000	1.0000	Only the first observation together with the initial weight were used for fitting parameters because by the second measurements, plant growth in the high-PAR treatment had already fallen far below exponential growth; and only the non-mycorrhizal treatment was used.
			350	10000	23	high	0.1171	0.2640	11.39	0.0000	1.0000	
Ruffy <i>et al.</i> (1994)	Gossypium hirsutum L. cv. Coker 115	Cotton	350	700	28	low	0.1656	0.2451	0.1040	0.0190	0.9835	8-hour light period
			350	700	28	low	0.1295	0.2875	0.1040	0.0209	0.9953	
			350	700	28	high	0.1640	0.2784	0.1040	0.0105	0.9902	
			350	700	28	low	0.2249	0.2221	0.0773	0.0144	0.9912	16-hour light period
			350	700	28	low	0.2117	0.2019	0.0773	0.0155	0.9864	
			350	700	28	high	0.2614	0.2044	0.0773	0.0181	0.9872	
Sionit <i>et al.</i> (1982)	Glycine max L.	Soybean	350	675	26	low	0.0756	0.2786	0.9159	0.0155	0.9842	
			350	675	26	high	0.0791	0.2779	0.9159	0.0124	0.9970	
	Raphanus sativus L.	Radish	350	675	26	low	0.2537	0.1832	0.6056	0.0208	0.9928	
			350	675	26	high	0.2648	0.2250	0.6056	0.0146	0.9923	
	Beta vulgaris L.	Sugarbeet	350	675	26	low						Data could not be reliably read from the paper. Data set was not used.
			350	675	26	high						
Tolley & Strain (1984)	Liquidambar styraciflua L.	Sweetgum	350	675	26	low	0.0722	0.1654	0.0071	0.4545	0.9971	
			350	675	26	high	0.0777	0.2005	0.0067	0.4490	0.9969	
			350	1000	26	low	0.0722	0.1466	0.0071	0.4545	0.9976	
			350	1000	26	high	0.0777	0.1860	0.0067	0.4490	0.9976	
	Pinus taeda L.	Loblolly pine	350	675	26	low	0.0563	0.0834	0.0142	1.6666	0.9920	
			350	1000	26	high	0.0742	-0.0140	0.0125	1.6999	0.9917	
			350	1000	26	low	0.0563	0.1342	0.0142	1.6666	0.9970	
			350	1000	26	high	0.0742	0.0757	0.0125	1.6999	0.9928	
Usuda (2006)	Raphanus sativus L.	Radish	400	750	25	medium	0.3392	0.1457	0.0025	0.1949	0.9986	Temperature was not recorded in this experiment - used 25 degrees as a default temperature.
			400	750	25	high	0.4233	0.0613	0.0025	0.1842	0.9943	

DATA FOR INTERACTION WITH NUTRITION

Authors	Scientific name	Coloquial name	CO ₂ low μmol mol ⁻¹	CO ₂ high μmol mol ⁻¹	Temp. °C	Nutrients	RGR ₃₅₀	C _{enh}	B ₀	k ₂	Model Efficiency		
Arnone & Gordon (1990)	Alnus rubra Bong.	Red Alder	350	650	26	low	0.0943	0.0530	20.3375	0.0000	0.9296		
			350	650	26	high	0.1194	0.0885	20.3375	0.0000	0.9967		
Atwell <i>et al.</i> (2009)	Eucalyptus pauciflora Sieb. Ex. Spreng.	Snow gum	370	700	24	low	0.0242	0.2056	0.4592	0.0283	0.9993		
			370	700	24	high	0.0265	0.2404	0.4592	0.0283	0.9897		
Barrett & Gifford (1995)		Cotton	363	746	24	low	0.2328	0.2071	0.0255	2.2070	0.9887		
			363	746	24	intermediate	0.2328	0.1566	0.0255	1.3051	0.9863		
			363	746	24	high	0.2328	0.0942	0.0255	0.8825	0.9953		
Bassow <i>et al.</i> (1994)	Betula populifolia	Gray birch	350	700	28	low	0.0724	-0.0241	0.4121	0.1700	0.8589		
			350	700	28	high	0.2303	0.3828	0.4121	0.1700	0.9841		
	Acer pensylvanicum	Striped maple	350	700	28	low	0.0780	0.0447	0.3049	0.1710	0.7350		
			350	700	28	high	0.2325	0.2152	0.3049	0.1683	0.8704		
Betula alleghaniensis	Yellow birch	350	700	28	low	0.0551	-0.0756	0.5855	0.2585	0.9835			
		350	700	28	high	0.2408	0.5160	0.5855	0.2585	0.9613			
Bernacchi <i>et al.</i> (2000)	Abutilon theophrasti		350	700	28	low	0.1279	0.0937	0.0759	0.1583	0.9871		
			350	700	28	high	0.1559	0.1370	0.0759	0.1225	0.9555		
Bowler & Press (1993)	Agrostis capillaris L.		340	550	20	low	0.2749	0.0810	0.0044	0.0056	0.9891		
			340	550	20	high	0.3023	0.0385	0.0044	0.0018	0.9938		
			340	550	20	low	0.1335	-0.0317	0.2163	0.0099	0.9909		
Nardus stricta L.			340	550	20	low	0.1335	-0.0317	0.2163	0.0099	0.9909		
			340	550	20	high	0.1401	0.0300	0.2163	0.0028	0.9925		
			340	550	20	high	0.1401	0.0300	0.2163	0.0028	0.9925		
Brown & Higginbotham (1986)	Populus tremuloides. Michx	Aspen	350	750	22	low	0.0935	0.2532	0.0006	3.3842	0.9620		
			350	750	22	high	0.1589	0.0777	0.0006	0.4089	0.9666		
			350	750	22	low	0.2047	0.1365	0.0006	0.4089	0.9759		
	Picea glauca (Moench) Voss.	White spruce	350	750	22	high	0.0744	0.2109	0.0012	13.1165	0.9820		
			350	750	22	low	0.0909	0.0923	0.0012	1.2963	0.9914		
			350	750	22	high	0.0980	0.0631	0.0012	1.2963	0.9855		
Coleman <i>et al.</i> (1993)	Abutilon theophrasti		350	700	28	low	0.1782	0.1514	0.0206	0.2069	0.9342		
			350	700	28	high	0.2015	0.1467	0.0206	0.1332	0.9493		
Conroy <i>et al.</i> (1990)	Pinus radiata D.Don Family 10		340	660	27.5	low	0.1247	0.1223	0.1208	0.0146	0.9982		
			340	660	27.5	high	0.1354	0.1469	0.1208	0.0031	0.9971		
	Pinus radiata D.Don Family 62		340	660	27.5	low	0.1255	0.0464	0.1246	0.0125	0.9930		
			340	660	27.5	high	0.1382	0.1079	0.1246	0.0028	0.9982		
Cure <i>et al.</i> (1988)	Glycine max (L.) Merr. Cv. Lee.	Soy bean	350	700	28	very low						No exponential growth phase identified, data not used	
			350	700	28	low	0.1813	0.1668	0.0305	0.0937	0.9972		
			350	700	28	intermediate	0.1978	0.2100	0.0305	0.0489	0.9976		
			350	700	28	high	0.2145	0.1207	0.0305	0.0418	0.9992		
			350	700	28	very high	0.2145	0.1636	0.0305	0.0321	0.9992		
Demmer-Derks <i>et al.</i> (1998)	Beta vulgaris L.	Sugar beet	372	592	14	low	0.0440	0.0138	30.0638	0.0006	0.9993	Results from their 1993 experiment	
			372	592	14	high	0.0567	0.0278	30.0638	0.0004	0.9994		
			372	592	17	low	0.0447	0.0120	30.0642	0.0009	0.9993		
			372	592	17	high	0.0557	0.0590	30.0642	0.0004	0.9993		
				377	709	16	low	0.0332	0.0472	36.0130	0.0000	0.9952	Results from their 1995 experiment
				377	709	16	high	0.0434	0.0339	36.0130	0.0000	0.9963	
				377	709	19	low	0.0307	0.0062	42.1612	0.0000	0.9838	
				377	709	19	high	0.0419	0.0613	42.1612	0.0000	0.9855	
Frantz & Ling (2011)	Petunia x hybrida Vilm.	Petunia (high light)	400	800	23	low	0.1341	0.0151	0.4078	0.0557	0.9988		
			400	800	23	high	0.1362	-0.0058	0.4078	0.0289	0.9996		
			400	800	23	low	0.1341	0.0155	0.4078	0.0630	0.9993		
			400	800	23	high	0.1341	0.0015	0.4078	0.0361	0.9990		
Franzaring <i>et al.</i> (2011)	Spring oilseed rape cultivar cv. Mozart	Rape	380	550	15	low	0.0736	0.0202	0.0130	0.0286	0.9815		
			380	550	15	intermediate	0.0804	0.0204	0.0130	0.0205	0.9927		
			380	550	15	high	0.0864	0.0195	0.0130	0.0205	0.9949		
Gebauer <i>et al.</i> (1996)	Pinus taeda L.	Loblolly pine	350	700	15	very low	0.0627	0.0570	0.1002	0.0091	0.9947		
			350	700	15	low	0.0672	0.0606	0.1104	0.0091	0.9963		
			350	700	15	moderate	0.0701	0.0676	0.0363	0.0091	0.9960		
			350	700	15	high	0.0787	0.0758	0.0380	0.0091	0.9981		
Griffin <i>et al.</i> (1993)	Pinus taeda L.	Loblolly pine	350	500	24	low	0.0448	0.0161	0.0219	0.0462	0.9831		
			350	500	24	high	0.0648	0.0028	0.0219	0.0462	0.9894		
			350	650	24	low	0.0448	0.0407	0.0219	0.0462	0.9823		
			350	650	24	high	0.0648	0.0354	0.0219	0.0462	0.9912		
Griffin <i>et al.</i> (1995)	Pinus taeda L.	Loblolly pine	350	700	27	low	0.0519	0.0806	0.0081	0.1249	0.9765		
			350	700	27	high	0.0574	0.2761	0.0081	0.1209	0.9658		
	Pinus ponderosa	Ponderosa pine	350	700	27	low					These data were not used as they appeared to be anomalous.		
350	700	27	high										
Harmens <i>et al.</i> (2000)	Dactylis glomerata		360	680	20	very low	0.2311	0.1937	0.0028	3.8911	0.8835		
			360	680	20	low	0.2311	0.0917	0.0028	0.7837	0.9814		
			360	680	20	moderate	0.2311	0.0657	0.0028	0.1307	0.9848		
			360	680	20	high	0.2348	0.0522	0.0028	0.1307	0.9981		

Hunt <i>et al.</i> (1995)	Arrhenatherum elatius (L.) Beauv		350	700	18	low	0.1558	0.1305	0.0088	1.4806	0.9906	
			350	700	18	high	0.2348	0.0330	0.0088	0.2725	0.9972	
	Festuca avina L.		350	700	18	low	0.1427	0.0442	0.0016	1.5739	0.9977	
			350	700	18	high	0.1623	0.0890	0.0016	0.4435	0.9983	
	Festuca rubra L.		350	700	18	low	0.1387	0.0812	0.0033	1.4613	0.9924	
		350	700	18	high	0.1917	0.1118	0.0033	0.3258	0.9976		
	Poa annua L.		350	700	18	low	0.2148	0.0305	0.0014	2.3666	0.9962	
			350	700	18	high	0.3039	0.0591	0.0014	0.4490	0.9990	
Johnsen (1993)	Picea mariana (Mill) B.S.P.	Black spruce	350	700	20	low	0.0222	0.0549	0.0756	0.0000	0.9992	
			350	700	20	high	0.0255	0.0689	0.0756	0.0000	0.9995	
Kerstiens & Hawes (1994)	Prunus avium	Cherry trees	350	600	14	low	0.0264	0.1105	1.0015	0.0320	0.9738	Same experimental facility as used by Townend - use the temperature obtained from the Townend (1995)
			350	600	14	high	0.0267	-0.0116	1.0015	0.0152	0.9805	
Kim <i>et al.</i> (2003)	Oryza sativa L.	Rice (1998 data)	365	643	19.7	low	0.0811	0.0828	5.0000	0.0016	0.9964	
			365	643	19.7	high	0.0846	0.1540	5.0000	0.0016	0.9481	
	Oryza sativa L.	Rice (1999 data)	365	643	21.1	low	0.0854	0.1207	3.8408	0.0015	0.9859	
			365	643	21.1	medium	0.0885	0.1497	3.8408	0.0015	0.9889	
	Oryza sativa L.	Rice (1999 data)	365	643	21.1	high	0.0889	0.1685	3.8408	0.0015	0.9688	
		365	643	21.1	low	0.0844	0.0510	8.3707	0.0016	0.9628		
	Oryza sativa L.	Rice (2000 data)	365	643	21.1	medium	0.0912	0.1340	8.3707	0.0016	0.9864	
			365	643	21.1	high	0.0967	0.1006	8.3707	0.0016	0.9957	
Manderscheid <i>et al.</i> (2009)	Hordeum vulgare L.	Barley	375	550	13.8	low	0.0444	0.0475	0.1079	0.6249	0.9767	Data from experiment in 2000
			375	550	13.8	high	0.0520	0.1210	0.1079	0.6249	0.9695	
			375	550	13.6	low	0.0603	0.0585	0.0146	0.7651	0.9984	Data from experiment in 2003
			375	550	13.6	high	0.0636	0.0665	0.0146	0.7651	0.9990	
Manderscheid <i>et al.</i> (2010)	Beta vulgaris L.	Sugar beet	375	550	15.8	low	0.0450	0.0470	0.0577	0.3253	0.9987	
			375	550	15.8	high	0.0493	0.0163	0.0577	0.3253	0.9988	
			375	550	15.4	low	0.0653	0.1271	0.0577	1.1960	0.9965	
			375	550	15.4	high	0.0738	0.0397	0.0577	1.0880	0.9970	
McConnaughay <i>et al.</i> (1993)	Abutilon theophrasti Medic		400	700	27	low	0.0423	0.0043	1.4807	0.0284	0.9881	
			400	700	27	high	0.0511	0.0790	1.4807	0.0284	0.9246	
			400	700	27	low	0.0423	0.0043	1.4807	0.0284	0.9881	
			400	700	27	high	0.0511	0.0790	1.4807	0.0284	0.9246	
Meier & Fuhrer (1997)	Dactylis glomerata L.	Grass/ clover mix	400	780	16.25	low	0.0422	0.1517	19.9965	0.0040	0.9672	
			400	780	16.25	high	0.0471	0.2348	19.9965	0.0040	0.9694	
Norby & O'Neill (1991)	Liriodendron tulipifera. L.	Yellow poplar	371	493	26	low	0.0476	-0.0557	0.0150	0.2729	0.9581	
			371	493	26	high	0.0722	0.0626	0.0150	0.0340	0.9865	
			371	787	26	low	0.0472	-0.0237	0.0150	0.2540	0.9649	
			371	787	26	high	0.0723	0.0289	0.0150	0.0353	0.9860	
Pal <i>et al.</i> (2005)	Triticum aestivum L. cv. HD-2285	Wheat	350	600	25	low	0.0534	0.4804	0.0569	0.5031	0.9736	Temperature not reported in this study. Used a guess of 25 C for the CO2 normalisation used in the nutrient data, but because of the temperature uncertainty, the data were not used for testing the RERC response to different [CO2]
			350	600	25	high	0.0649	0.5038	0.0569	0.3603	0.9889	
Prior <i>et al.</i> (1997)	Pinus palustris Mill.	Longleaf pine	365	720	29.9	low	0.0020	-0.0124	33.0358	0.0015	0.8540	Slow-growing plants. RGR is expressed here per week rather than per day
			365	720	29.9	high	0.0047	0.2853	33.0358	0.0015	0.9462	
Shenglei & Ferris (2006)	Medicago truncatula		370	520	22	low	0.1157	0.1295	0.0014	0.6851	0.9807	
			370	520	22	high	0.1479	0.0460	0.0014	0.6851	0.9593	
	Avena sativa		370	520	22	low	0.0992	0.0430	0.0232	0.3517	0.9948	
			370	520	22	high	0.1090	0.0604	0.0232	0.3517	0.9868	
Thomas <i>et al.</i> (1991)	Gliricidia sepium (Jacq). Walp		350	650	26	low	0.0941	0.0920	0.1240	0.1204	0.9998	
			350	650	26	high	0.1366	0.2032	0.1240	0.1033	1.0000	
Townend (1995)	Picea sitchensis (Bong.) Carr.	Sitka spruce	350	600	14	low	0.0353	0.1075	0.3709	0.0316	0.9969	High water treatment
			350	600	14	high	0.0372	0.1943	0.3709	0.0182	0.9937	
			350	600	14	low	0.0353	0.1244	0.3709	0.0342	0.9923	Low water treatment
			350	600	14	high	0.0372	0.3314	0.3709	0.0568	0.9956	
Wong <i>et al.</i> (1992)	Eucalyptus camaldulensis Dehnh.		330	660	28	low	0.0986	0.0709	0.0013	0.0293	0.9935	
			330	660	28	high	0.1134	0.1179	0.0013	0.0293	0.9951	
	Eucalyptus cypellocarpa L.Johnson.		330	660	28	low	0.0785	0.1421	0.0031	0.0085	0.9885	
			330	660	28	high	0.0951	0.1847	0.0031	0.0085	0.9914	
	Eucalyptus pauciflora Sieb. Ex. Spreng.		330	660	28	low	0.0695	0.2068	0.0020	0.0513	0.9945	
			330	660	28	high	0.0877	0.1510	0.0020	0.0513	0.9971	
	Eucalyptus pulverulenta Sims.		330	660	28	low	0.0796	0.1811	0.0012	0.0483	0.9943	
			330	660	28	high	0.0955	0.1985	0.0012	0.0483	0.9935	

DATA FOR INTERACTION WITH WATER STRESS

Authors	Scientific name	Coloquial name	CO ₂ low μmol mol ⁻¹	CO ₂ high μmol mol ⁻¹	Temp. °C	Water avail.	RGR ₃₅₀	C _{enh}	B ₀	k ₂	Model Efficiency	
Aranjuelo <i>et al.</i> (2006)	M. sativa. L. cv. Aragon	Alfafa	400	720	19	low	0.1248	0.0496	30.3000	0.0000	0.9951	
			400	720	19	high	0.1431	0.0099	30.3000	0.0000	0.9270	
			400	720	23	low	0.1293	0.0504	30.3000	0.0000	0.9799	
			400	720	23	high	0.1495	0.0111	30.3000	0.0000	0.9361	
Atwell <i>et al.</i> (2007)	Eucalyptus tereticornis. Sm.	Forest red gum	360	700	28	low	0.0669	0.0663	0.2704	0.0244	0.9942	
			360	700	28	high	0.0798	0.0549	0.2704	0.1307	0.9999	
Centritto <i>et al.</i> (1999)	Prunus avium	Cherry	350	700	20.25	low	0.0335	0.2229	0.4792	0.0104	0.9076	
			350	700	20.25	high	0.0366	0.1783	0.4792	0.0070	0.9783	
Conroy <i>et al.</i> (1986a)	Pinus radiata D.Don		330	660	25	low	0.0058	0.4063	2.2552	0.0000	0.9880	
			330	660	25	medium	0.0094	0.2041	2.2552	0.0000	0.9997	
			330	660	25	high	0.0103	0.1720	2.2552	0.0000	0.9997	
Conroy <i>et al.</i> (1986b)	Pinus radiata D.Don	Pines	330	660	25	low	0.0059	0.3652	2.2279	0.0000	0.9924	High phosphorus
			330	660	25	high	0.0104	0.1632	2.2279	0.0000	0.9997	
			330	660	25	low	0.0053	0.3965	1.7352	0.0000	0.9924	Low phosphorus
			330	660	25	high	0.0088	0.0380	1.7352	0.0000	0.9997	
Ge <i>et al.</i> (2012)	Phalaris arundinacea L.	Reed canary grass	370	700	15.8	low	0.0264	0.1296	0.1551	0.0000	0.9937	
			370	700	15.8	medium	0.0290	0.1156	0.1551	0.0000	0.9969	
			370	700	15.8	high	0.0304	0.1072	0.1551	0.0000	0.9955	
Hibbs <i>et al.</i> (1995)	Alnus rubra Bong.	Red Alder	350	700	23	low	0.0162	0.1730	0.5797	0.0000	0.8511	
			350	700	23	high	0.0171	0.1557	0.5797	0.0000	0.9548	
Johnsen (1993)	Picea mariana (Mill) B.S.P.	Black spruce	350	700	20	low	0.0494	0.1865	0.0073	2.0990	0.9924	
			350	700	20	high	0.0545	0.1195	0.0073	1.6939	0.9928	
Jones <i>et al.</i> (1985)	Glycine max L. Meer cv Bragg	Soy bean	330	660	31	early drought	0.0433	0.0425	0.0206	5.4507	0.0000	
			330	660	31	late draught	0.0439	0.0408	0.0754	5.4507	0.0000	
			330	660	31	high water	0.0469	0.0427	0.0975	5.4507	0.0000	
Ko <i>et al.</i> (2010)	Triticum aesticum L. cv. Yecora Rojo	Wheat	370	550	11.9	low	0.0482	0.0548	4.7153	0.0003	0.9846	
			370	550	11.9	high	0.0483	0.0561	4.7153	0.0002	0.9891	Arizona mean temperature from January-May. Experimental period given in a comapion paper by Kimball et al. (1999).
Mauney <i>et al.</i> (1994)	Gossypium hirsutum L. cv. Coker I15	Cotton	350	550	24.2	medium	0.1166	0.1317	0.1815	0.0020	0.9945	Temperatures for Arizona given by Ko et al. (2010) - different growing season for cotton than wheat.
			350	550	24.2	high	0.1180	0.0956	0.1815	0.0019	0.9942	Ambient [CO ₂] not stated, but for a 1990 experiment, assume a CO ₂ of 350 ppm
			350	550	24.2	low	0.0998	0.0925	0.1735	0.0026	0.9956	
			350	550	24.2	high	0.1022	0.0602	0.1735	0.0019	0.9958	
Meier & Fuhrer (1997)	Dactylis glomerata / Trifolium pratense L.	Mixture	400	780	16.25	low	0.0656	0.5693	19.9965	0.0110	0.9948	
			400	780	16.25	high	0.0802	0.2542	19.9965	0.0091	0.9868	
Nicolas <i>et al.</i> (1993)	Triticum aestivum cv. Matong	Wheat	330	660	20.5	saline	0.1724	0.3442	0.1095	0.1476	0.9971	
			330	660	20.5	fresh water	0.2601	0.2458	0.1095	0.1415	0.9980	
Pardos <i>et al.</i> (2006)	Quercus suber L.	Cork oak	360	700	25	low	0.2820	0.0000	0.0000	1.5131	0.8180	
			360	700	25	high	0.2579	0.0903	0.0000	0.7997	0.8734	
Prior <i>et al.</i> (1997)	Pinus palustris Mill.	Longleaf pine	365	720	25	low	0.0021	0.4435	38.0808	0.0000	0.9716	Assumed 25 C - no temperatures given in the paper. Data not used for calculated CO ₂ dependence of RERC
			365	720	25	high	0.0036	0.0889	38.0808	0.0000	0.9085	
Retuerto & Woodward (1993)	Sinapis alba L.	White mustard	350	700	25.6	low	0.1290	0.4339	0.0083	4.8336	0.9645	
			350	700	25.6	high	0.1359	0.2670	0.0083	3.8172	0.9553	
Townend (1995)	Picea sitchensis (Bong.) Carr.	Sitka spruce	350	600	14	low	0.0372	0.3314	0.3709	0.0568	0.9956	High fertility treatment
			350	600	14	high	0.0372	0.1943	0.3709	0.0182	0.9937	
			350	600	14	low	0.0353	0.1244	0.3709	0.0342	0.9923	Low fertility treatment
			350	600	14	high	0.0353	0.1075	0.3709	0.0316	0.9969	
Wall <i>et al.</i> (2006)	Triticum aestivum L. cv. Yecora Rojo	Spring wheat	370	550	16.75	low	0.0850	0.0430	3.9740	0.0013	0.9981	
			370	550	16.75	high	0.0860	0.0430	3.9740	0.0013	0.9981	
Wray & Strain (1986)	Aster pilosus Willd	Aster	350	650	26	low	0.1150	0.2299	0.0903	2.0000	0.7658	
			350	650	26	high	0.1584	0.0302	0.0903	2.0000	0.9979	
			350	650	26	low	0.1150	0.4956	0.0903	2.0000	0.9883	
			350	650	26	high	0.1584	0.0377	0.0903	2.0000	0.8282	

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