Supplementary information for

A physico-chemical framework for explaining the generation mechanism of Nocturnal Soil CO_2 Uptake in Deserts

Table I Mean annual precipitation (MAP), Mean annual temperature (MAT), Air temperature (Ta), Soil temperature (Ts), air-soil temperature difference (ΔT), soil water content (θv), Soil pH, ln(clay/sand) and Nocturnal soil CO_2 influx (Fs) extracted from each of the papers.

Study	location	MAP (℃)	MAT (℃)	Ta (℃)	Ts (℃)	ΔT (℃)	θv (m^3 m^{-3})	pH	ln(clay/sand)	Fs (μmol m^{-2} s^{-1})
Yates et al. (2013)	38.5°N, 115.7°W	248	7.2	25.399	32.634	-7.236	0.093	9.80	-1.897	-0.400
Yates et al. (2013)	38.5°N, 115.7°W	248	7.2	25.713	30.777	-5.064	0.093	9.80	-1.897	-0.370
Yates et al. (2013)	38.5°N, 115.7°W	248	7.2	25.399	29.063	-3.664	0.093	9.80	-1.897	-0.330
Yates et al. (2013)	38.5°N, 115.7°W	248	7.2	25.684	27.463	-1.779	0.093	9.80	-1.897	-0.280
Yates et al. (2013)	38.5°N, 115.7°W	248	7.2	23.984	24.813	-0.829	0.093	9.80	-1.897	-0.330
Yates et al. (2013)	38.5°N, 115.7°W	248	7.2	23.763	23.763	0.000	0.093	9.80	-1.897	-0.290
Yates et al. (2013)	38.5°N, 115.7°W	248	7.2	23.463	23.970	-0.507	0.093	9.80	-1.897	-0.350
Yates et al. (2013)	38.5°N, 115.7°W	248	7.2	33.963	47.249	-13.286	0.093	9.80	-1.897	-0.340
Yates et al. (2013)	38.5°N, 115.7°W	248	7.2	31.727	44.884	-13.157	0.093	9.80	-1.897	-0.360
Yates et al. (2013)	38.5°N, 115.7°W	248	7.2	30.727	42.434	-11.707	0.093	9.80	-1.897	-0.390
Yates et al. (2013)	38.5°N, 115.7°W	248	7.2	29.313	40.199	-10.886	0.093	9.80	-1.897	-0.410
Yates et al. (2013)	38.5°N, 115.7°W	248	7.2	28.249	38.099	-9.850	0.093	9.80	-1.897	-0.440
Yates et al. (2013)	38.5°N, 115.7°W	248	7.2	27.413	36.099	-8.686	0.093	9.80	-1.897	-0.450
Jason et al. (2005)	38.5°N, 115.7°W	150	20	7.041	5.156	1.886	0.093	7.00	-1.386	-0.183
Jason et al. (2005)	38.5°N, 115.7°W	150	20	6.263	4.513	1.750	0.093	7.00	-1.386	-0.152
Jason et al. (2005)	38.5°N, 115.7°W	150	20	5.741	4.049	1.693	0.093	7.00	-1.386	-0.142
Jason et al. (2005)	38.5°N, 115.7°W	150	20	5.106	3.613	1.493	0.093	7.00	-1.386	-0.135
Jason et al. (2005)	38.5°N, 115.7°W	150	20	4.527	3.277	1.250	0.093	7.00	-1.386	-0.131
Jason et al. (2005)	38.5°N, 115.7°W	150	20	4.663	3.034	1.629	0.093	7.00	-1.386	-0.102
Jason et al. (2005)	38.5°N, 115.7°W	150	20	4.491	2.841	1.650	0.093	7.00	-1.386	-0.147
Jason et al. (2005)	38.5°N, 115.7°W	150	20	11.641	12.777	-1.136	0.093	7.00	-1.386	-0.137
Jason et al. (2005)	38.5°N, 115.7°W	150	20	10.777	10.891	-0.114	0.093	7.00	-1.386	-0.143

Study	location	MAP (℃)	MAT (℃)	Ta (℃)	Ts (℃)	ΔT (℃)	θv (m^3 m^{-3})	pH	ln(clay/sand)	Fs (μmol m^{-2} s^{-1})
Jason et al. (2005)	38.5°N, 115.7°W	150	20	9.949	9.491	0.457	0.093	7.00	-1.386	-0.155
Jason et al. (2005)	38.5°N, 115.7°W	150	20	9.149	8.299	0.850	0.093	7.00	-1.386	-0.163
Jason et al. (2005)	38.5°N, 115.7°W	150	20	8.256	7.320	0.936	0.093	7.00	-1.386	-0.169
Jason et al. (2005)	38.5°N, 115.7°W	150	20	7.384	6.470	0.914	0.093	7.00	-1.386	-0.175
Hamerlynck et al. (2013)	31.7°N, 110.1°W	280	17.07	3.000	25.169	-5.354	0.122	8.20	-1.179	-0.130
Hamerlynck et al. (2013)	31.7°N, 110.1°W	280	17.07	19.055	24.148	-5.093	0.122	8.20	-1.179	-0.124
Hamerlynck et al. (2013)	31.7°N, 110.1°W	280	17.07	18.165	23.133	-4.968	0.122	8.20	-1.179	-0.118
Hamerlynck et al. (2013)	31.7°N, 110.1°W	280	17.07	17.270	22.622	-5.351	0.122	8.20	-1.179	-0.121
Hamerlynck et al. (2013)	31.7°N, 110.1°W	280	17.07	16.502	21.850	-5.348	0.122	8.20	-1.179	-0.124
Hamerlynck et al. (2013)	31.7°N, 110.1°W	280	17.07	16.921	21.088	-4.167	0.122	8.20	-1.179	-0.094
Hamerlynck et al. (2013)	31.7°N, 110.1°W	280	17.07	19.276	20.836	-1.559	0.122	8.20	-1.179	-0.064
Hamerlynck et al. (2013)	31.7°N, 110.1°W	280	17.07	35.614	40.944	-5.329	0.122	8.20	-1.179	-0.034
Hamerlynck et al.(2013)	31.7°N, 110.1°W	280	17.07	31.773	36.753	-4.980	0.122	8.20	-1.179	-0.058
Hamerlynck et al. (2013)	31.7°N, 110.1°W	280	17.07	28.160	33.806	-5.646	0.122	8.20	-1.179	-0.103
Hamerlynck et al. (2013)	31.7°N, 110.1°W	280	17.07	25.338	31.258	-5.920	0.122	8.20	-1.179	-0.119
Hamerlynck et al. (2013)	31.7°N, 110.1°W	280	17.07	24.278	30.252	-5.975	0.122	8.20	-1.179	-0.136
Hamerlynck et al. (2013)	31.7°N, 110.1°W	280	17.07	22.514	28.474	-5.960	0.122	8.20	-1.179	-0.133
Thomas et al. (2011)	22.8°S, 21.9°E	350	21.81	12.100	11.943	0.157	0.078	8.50	-2.708	-0.215
Thomas et al. (2011)	22.8°S, 21.9°E	220	20.55	11.243	11.207	0.036	0.078	8.50	-2.708	-0.208
Thomas et al. (2011)	22.8°S, 21.9°E	290	21.97	10.507	10.679	-0.171	0.078	8.50	-2.708	-0.202
Thomas et al. (2011)	22.8°S, 21.9°E	290	21.97	9.821	10.214	-0.393	0.078	8.50	-2.708	-0.195
Thomas et al. (2011)	22.8°S, 21.9°E	340	21.37	9.264	9.771	-0.507	0.078	8.50	-2.708	-0.188
Thomas et al. (2011)	22.8°S, 21.9°E	350	21.81	8.714	9.364	-0.650	0.078	8.50	-2.708	-0.182
Thomas et al. (2011)	22.8°S, 21.9°E	420	23.61	8.250	8.957	-0.707	0.078	8.50	-2.708	-0.175
Thomas et al. (2011)	22.8°S, 21.9°E	420	23.61	22.364	23.571	-1.207	0.078	8.50	-2.708	-0.151

Study	location	MAP (℃)	MAT (℃)	Ta (℃)	Ts (℃)	ΔT (℃)	θv (m^3 m^{-3})	pH	ln(clay/sand)	Fs (μmol m^{-2} s^{-1})
Thomas et al. (2011)	22.8°S, 21.9°E	220	20.55	20.164	20.129	0.036	0.078	8.50	-2.708	-0.133
Thomas et al. (2011)	22.8°S, 21.9°E	350	21.81	18.043	17.564	0.479	0.078	8.50	-2.708	-0.160
Thomas et al. (2011)	22.8°S, 21.9°E	350	21.81	16.414	15.586	0.829	0.078	8.50	-2.708	-0.188
Thomas et al. (2011)	22.8°S, 21.9°E	290	21.97	15.036	14.121	0.914	0.078	8.50	-2.708	-0.216
Thomas et al. (2011)	22.8°S, 21.9°E	220	20.55	13.914	12.950	0.964	0.078	8.50	-2.708	-0.243
Bekin et al. (2025)	27.2°N, 13.2°E	16	22.52	22.860	32.100	-9.240	0.016	9.46	-6.224	-0.272
Bekin et al. (2025)	27.2°N, 13.2°E	16	22.52	22.460	30.600	-8.140	0.016	9.46	-6.224	-0.238
Bekin et al. (2025)	27.2°N, 13.2°E	16	22.52	21.310	29.050	-7.740	0.016	9.46	-6.224	-0.223
Bekin et al. (2025)	27.2°N, 13.2°E	16	22.52	19.860	27.750	-7.890	0.016	9.46	-6.224	-0.216
Bekin et al. (2025)	27.2°N, 13.2°E	16	22.52	19.010	26.600	-7.590	0.016	9.46	-6.224	-0.219
Bekin et al. (2025)	27.2°N, 13.2°E	16	22.52	18.410	25.550	-7.140	0.016	9.46	-6.224	-0.193
Bekin et al. (2025)	27.2°N, 13.2°E	16	22.52	17.760	24.600	-6.840	0.016	9.46	-6.224	-0.164
Bekin et al. (2025)	27.2°N, 13.2°E	16	22.52	32.660	43.650	-10.990	0.016	9.46	-6.224	-0.223
Bekin et al. (2025)	27.2°N, 13.2°E	16	22.52	30.060	42.000	-11.940	0.016	9.46	-6.224	-0.245
Bekin et al. (2025)	27.2°N, 13.2°E	16	22.52	28.610	41.850	-13.240	0.016	9.46	-6.224	-0.279
Bekin et al. (2025)	27.2°N, 13.2°E	16	22.52	27.310	39.250	-11.940	0.016	9.46	-6.224	-0.353
Bekin et al. (2025)	27.2°N, 13.2°E	16	22.52	26.610	36.950	-10.340	0.016	9.46	-6.224	-0.386
Bekin et al. (2025)	27.2°N, 13.2°E	16	22.52	26.460	34.750	-8.290	0.016	9.46	-6.224	-0.401
Parsons et al. (2004)	77.6°S, 162.9°E	96	-21.44	-8.690	0.012	-8.702	0.017	9.46	-3.871	-0.225
Parsons et al. (2004)	77.6°S, 162.9°E	107	-18.97	-9.240	-0.023	-9.217	0.017	9.46	-3.871	-0.274
Parsons et al. (2004)	77.6°S, 162.9°E	96	-21.44	-9.890	-0.057	-9.833	0.017	9.46	-3.871	-0.252
Parsons et al. (2004)	77.6°S, 162.9°E	96	-21.44	-10.390	-0.040	-10.350	0.017	9.46	-3.871	-0.209
Parsons et al. (2004)	77.6°S, 162.9°E	107	-18.97	-10.790	0.060	-10.850	0.017	9.46	-3.871	-0.194
Parsons et al. (2004)	77.6°S, 162.9°E	96	-21.44	-10.890	0.090	-10.980	0.017	9.46	-3.871	-0.188
Parsons et al. (2004)	77.6°S, 162.9°E	107	-18.97	-10.840	0.117	-10.957	0.017	9.46	-3.871	-0.146

Study	location	MAP (℃)	MAT (℃)	Ta (℃)	Ts (℃)	ΔT (℃)	θv (m^3 m^{-3})	pH	ln(clay/sand)	Fs (μmol m^{-2} s^{-1})
Parsons et al. (2004)	77.6°S, 162.9°E	107	-18.97	-7.333	0.121	-7.454	0.017	9.46	-3.871	-0.157
Parsons et al. (2004)	77.6°S, 162.9°E	96	-21.44	-9.219	0.090	-9.309	0.017	9.46	-3.871	-0.197
Parsons et al. (2004)	77.6°S, 162.9°E	96	-21.44	-10.333	0.060	-10.393	0.017	9.46	-3.871	-0.201
Parsons et al. (2004)	77.6°S, 162.9°E	107	-18.97	-11.019	-0.040	-10.979	0.017	9.46	-3.871	-0.215
Parsons et al. (2004)	77.6°S, 162.9°E	96	-21.44	-12.019	-0.057	-11.961	0.017	9.46	-3.871	-0.229
Parsons et al. (2004)	77.6°S, 162.9°E	107	-18.97	-13.661	-0.023	-13.639	0.017	9.46	-3.871	-0.274
Ball et al. (2009)	77.6°S, 163.2°E	107	-18.97	-9.300	-25.000	15.700	0.017	9.46	-2.473	-0.343
Ball et al. (2009)	77.6°S, 163.2°E	107	-18.97	-9.350	-25.600	16.250	0.017	9.46	-2.473	-0.327
Ball et al. (2009)	77.6°S, 163.2°E	107	-18.97	-9.500	-25.450	15.950	0.017	9.46	-2.473	-0.293
Ball et al. (2009)	77.6°S, 163.2°E	107	-18.97	-9.450	-25.300	15.850	0.017	9.46	-2.473	-0.238
Ball et al. (2009)	77.6°S, 163.2°E	107	-18.97	-9.250	-25.250	16.000	0.017	9.46	-2.473	-0.183
Ball et al. (2009)	77.6°S, 163.2°E	107	-18.97	-8.950	-25.200	16.250	0.017	9.46	-2.473	-0.148
Ball et al. (2009)	77.6°S, 163.2°E	107	-18.97	-8.700	-25.200	16.500	0.017	9.46	-2.473	-0.129
Ball et al. (2009)	77.6°S, 163.2°E	107	-18.97	-7.450	-24.950	17.500	0.017	9.46	-2.473	-0.117
Ball et al. (2009)	77.6°S, 163.2°E	107	-18.97	-7.600	-24.950	17.350	0.017	9.46	-2.473	-0.165
Ball et al. (2009)	77.6°S, 163.2°E	107	-18.97	-7.850	-24.950	17.100	0.017	9.46	-2.473	-0.175
Ball et al. (2009)	77.6°S, 163.2°E	107	-18.97	-8.200	-24.950	16.750	0.017	9.46	-2.473	-0.225
Ball et al. (2009)	77.6°S, 163.2°E	107	-18.97	-8.700	-24.950	16.250	0.017	9.46	-2.473	-0.233
Ball et al. (2009)	77.6°S, 163.2°E	107	-18.97	-9.100	-24.950	15.850	0.017	9.46	-2.473	-0.285
Shanhun et al. (2012)	77.7°S, 163.1°E	104	-19.21	-15.169	-30.583	15.414	0.016	9.46	-2.473	-0.240
Shanhun et al. (2012)	77.7°S, 163.1°E	104	-19.21	-15.169	-30.583	15.414	0.016	9.46	-2.473	-0.331
Shanhun et al. (2012)	77.7°S, 163.1°E	104	-19.21	-15.311	-30.569	15.257	0.016	9.46	-2.473	-0.290
Shanhun et al. (2012)	77.7°S, 163.1°E	104	-19.21	-15.497	-30.569	15.071	0.016	9.46	-2.473	-0.280
Shanhun et al. (2012)	77.7°S, 163.1°E	104	-19.21	-15.561	-30.547	14.986	0.016	9.46	-2.473	-0.140
Shanhun et al. (2012)	77.7°S, 163.1°E	104	-19.21	-15.411	-30.540	15.129	0.016	9.46	-2.473	-0.100

Study	location	MAP (℃)	MAT (℃)	Ta (℃)	Ts (℃)	ΔT (℃)	θv (m^3 m^{-3})	pH	ln(clay/sand)	Fs (μmol m^{-2} s^{-1})
Shanhun et al. (2012)	77.7°S, 163.1°E	104	-19.21	-15.261	-30.526	15.264	0.016	9.46	-2.473	-0.200
Shanhun et al. (2012)	77.7°S, 163.1°E	104	-19.21	-14.969	-30.397	15.429	0.016	9.46	-2.473	-0.160
Shanhun et al. (2012)	77.7°S, 163.1°E	104	-19.21	-14.626	-30.376	15.750	0.016	9.46	-2.473	-0.130
Shanhun et al. (2012)	77.7°S, 163.1°E	104	-19.21	-14.533	-30.376	15.843	0.016	9.46	-2.473	-0.140
Shanhun et al. (2012)	77.7°S, 163.1°E	104	-19.21	-14.483	-30.361	15.879	0.016	9.46	-2.473	-0.180
Shanhun et al. (2012)	77.7°S, 163.1°E	104	-19.21	-14.440	-30.354	15.914	0.016	9.46	-2.473	-0.290
Shanhun et al. (2012)	77.7°S, 163.1°E	104	-19.21	-12.106	-26.084	13.979	0.016	9.46	-2.473	-0.170
Ball et al. (2015)	77.7°S, 163.1°E	107	-17	-4.660	-1.281	-3.379	0.016	9.46	-3.871	-0.136
Ball et al. (2015)	77.6°S, 163.3°E	107	-17	-5.010	-0.771	-4.239	0.016	9.46	-3.871	-0.143
Ball et al. (2015)	77.6°S, 163.3°E	107	-17	-5.360	-1.321	-4.039	0.016	9.46	-3.871	-0.156
Ball et al. (2015)	77.6°S, 163.3°E	107	-17	-5.610	-2.033	-3.577	0.016	9.46	-3.871	-0.148
Ball et al. (2015)	77.6°S, 163.3°E	107	-17	-5.860	-1.999	-3.861	0.016	9.46	-3.871	-0.120
Ball et al. (2015)	77.6°S, 163.3°E	107	-17	-6.010	-0.320	-5.690	0.016	9.46	-3.871	-0.125
Ball et al. (2015)	77.6°S, 163.3°E	107	-17	-6.060	-0.052	-6.008	0.016	9.46	-3.871	-0.140
Ball et al. (2015)	77.6°S, 163.3°E	107	-17	-4.060	-0.186	-3.874	0.016	9.46	-3.871	-0.152
Ball et al. (2015)	77.6°S, 163.3°E	107	-17	-4.260	-0.862	-3.398	0.016	9.46	-3.871	-0.137
Ball et al. (2015)	77.6°S, 163.3°E	107	-17	-4.260	-1.511	-2.749	0.016	9.46	-3.871	-0.152
Ball et al. (2015)	77.6°S, 163.3°E	107	-17	-4.610	-2.467	-2.143	0.016	9.46	-3.871	-0.144
Ball et al. (2015)	77.6°S, 163.3°E	107	-17	-4.960	-1.852	-3.108	0.016	9.46	-3.871	-0.135
Ball et al. (2015)	77.6°S, 163.3°E	107	-17	-5.360	-2.434	-2.926	0.016	9.46	-3.871	-0.134
Kim et al. (2024)	37.0°N, 2.4°W	230	18	10.921	8.138	2.783	0.062	8.17	-0.693	-0.072
Kim et al. (2024)	37.0°N, 2.4°W	230	18	11.512	7.793	3.719	0.062	8.17	-0.693	-0.079
Kim et al. (2024)	37.0°N, 2.4°W	230	18	9.877	7.417	2.460	0.062	8.17	-0.693	-0.087
Kim et al. (2024)	37.0°N, 2.4°W	230	18	9.877	6.750	3.127	0.062	8.17	-0.693	-0.091
Kim et al. (2024)	37.0°N, 2.4°W	230	18	10.479	6.706	3.773	0.062	8.17	-0.693	-0.063

Study	location	MAP (°C)	MAT (°C)	Ta (°C)	Ts (°C)	ΔT (°C)	θv (m^3 m^{-3})	pH	ln(clay/sand)	Fs (μmol m^{-2} s^{-1})
Kim et al. (2024)	37.0°N, 2.4°W	230	18	8.672	6.395	2.277	0.062	8.17	-0.693	-0.069
Kim et al. (2024)	37.0°N, 2.4°W	230	18	6.435	5.928	0.506	0.062	8.17	-0.693	-0.076
Kim et al. (2024)	37.0°N, 2.4°W	230	18	12.803	10.216	2.587	0.062	8.17	-0.693	-0.025
Kim et al. (2024)	37.0°N, 2.4°W	230	18	11.770	9.727	2.043	0.062	8.17	-0.693	-0.062
Kim et al. (2024)	37.0°N, 2.4°W	230	18	10.824	9.194	1.629	0.062	8.17	-0.693	-0.080
Kim et al. (2024)	37.0°N, 2.4°W	230	18	10.135	8.927	1.208	0.062	8.17	-0.693	-0.051
Kim et al. (2024)	37.0°N, 2.4°W	230	18	9.877	8.683	1.194	0.062	8.17	-0.693	-0.061
Kim et al. (2024)	37.0°N, 2.4°W	230	18	9.275	8.439	0.836	0.062	8.17	-0.693	-0.063
Kim et al. (2024)	37.0°N, 2.4°W	230	18	27.927	30.677	-2.750	0.062	8.17	-0.693	-0.166
Kim et al. (2024)	37.0°N, 2.4°W	230	18	27.056	29.849	-2.793	0.062	8.17	-0.693	-0.170
Kim et al. (2024)	37.0°N, 2.4°W	230	18	26.320	28.434	-2.114	0.062	8.17	-0.693	-0.180
Kim et al. (2024)	37.0°N, 2.4°W	230	18	25.906	27.234	-1.329	0.062	8.17	-0.693	-0.181
Kim et al. (2024)	37.0°N, 2.4°W	230	18	24.691	26.199	-1.507	0.062	8.17	-0.693	-0.180
Kim et al. (2024)	37.0°N, 2.4°W	230	18	23.906	25.313	-1.407	0.062	8.17	-0.693	-0.175
Kim et al. (2024)	37.0°N, 2.4°W	230	18	23.449	24.527	-1.079	0.062	8.17	-0.693	-0.147
Kim et al. (2024)	37.0°N, 2.4°W	230	18	34.091	44.591	-10.500	0.062	8.17	-0.693	-0.118
Kim et al. (2024)	37.0°N, 2.4°W	230	18	32.806	42.520	-9.714	0.062	8.17	-0.693	-0.071
Kim et al. (2024)	37.0°N, 2.4°W	230	18	31.370	39.806	-8.436	0.062	8.17	-0.693	-0.116
Kim et al. (2024)	37.0°N, 2.4°W	230	18	30.091	36.934	-6.843	0.062	8.17	-0.693	-0.123
Kim et al. (2024)	37.0°N, 2.4°W	230	18	29.220	34.513	-5.293	0.062	8.17	-0.693	-0.142
Kim et al. (2024)	37.0°N, 2.4°W	230	18	28.449	32.427	-3.979	0.062	8.17	-0.693	-0.155
Lopez-Canfin et al. (2022a)	37.0°N, 2.4°W	230	17.9	12.391	22.427	-10.036	0.103	8.17	-1.099	-0.330
Lopez-Canfin et al. (2022a)	37.0°N, 2.4°W	230	17.9	11.356	20.643	-9.287	0.103	8.17	-1.099	-0.333
Lopez-Canfin et al. (2022a)	37.0°N, 2.4°W	230	17.9	10.241	19.805	-9.564	0.103	8.17	-1.099	-0.310
Lopez-Canfin et al. (2022a)	37.0°N, 2.4°W	230	17.9	9.577	17.788	-8.211	0.103	8.17	-1.099	-0.296

Study	location	MAP (℃)	MAT (℃)	Ta (℃)	Ts (℃)	ΔT (℃)	θv (m^3 m^{-3})	pH	ln(clay/sand)	Fs (μmol m^{-2} s^{-1})
Lopez-Canfin et al. (2022a)	37.0°N, 2.4°W	230	17.9	9.027	15.488	-6.461	0.103	8.17	-1.099	-0.289
Lopez-Canfin et al. (2022a)	37.0°N, 2.4°W	230	17.9	8.513	15.249	-6.736	0.103	8.17	-1.099	-0.286
Lopez-Canfin et al. (2022a)	37.0°N, 2.4°W	230	17.9	8.227	14.571	-6.344	0.103	8.17	-1.099	-0.274
Lopez-Canfin et al. (2022a)	37.0°N, 2.4°W	230	17.9	13.799	12.272	1.527	0.103	8.17	-1.099	-0.259
Lopez-Canfin et al. (2022a)	37.0°N, 2.4°W	230	17.9	12.834	13.783	-0.949	0.103	8.17	-1.099	-0.277
Lopez-Canfin et al. (2022a)	37.0°N, 2.4°W	230	17.9	11.956	16.157	-4.201	0.103	8.17	-1.099	-0.229
Lopez-Canfin et al. (2022a)	37.0°N, 2.4°W	230	17.9	11.191	20.967	-9.776	0.103	8.17	-1.099	-0.283
Lopez-Canfin et al. (2022a)	37.0°N, 2.4°W	230	17.9	10.934	21.218	-10.284	0.103	8.17	-1.099	-0.252
Lopez-Canfin et al. (2022a)	37.0°N, 2.4°W	230	17.9	10.420	22.251	-11.831	0.103	8.17	-1.099	-0.298
Lopez-Canfin et al. (2022b)	37.0°N, 2.4°W	230	17.9	24.649	28.546	-3.897	0.078	8.17	-1.099	-0.088
Lopez-Canfin et al. (2022b)	37.0°N, 2.4°W	230	17.9	24.181	28.320	-4.139	0.078	8.17	-1.099	-0.050
Lopez-Canfin et al. (2022b)	37.0°N, 2.4°W	230	17.9	24.493	27.869	-3.376	0.078	8.17	-1.099	-0.082
Lopez-Canfin et al. (2022b)	37.0°N, 2.4°W	230	17.9	25.085	27.417	-2.332	0.078	8.17	-1.099	-0.076
Lopez-Canfin et al. (2022b)	37.0°N, 2.4°W	230	17.9	24.483	27.041	-2.558	0.078	8.17	-1.099	-0.096
Lopez-Canfin et al. (2022b)	37.0°N, 2.4°W	230	17.9	22.301	26.590	-4.288	0.078	8.17	-1.099	-0.105
Lopez-Canfin et al. (2022b)	37.0°N, 2.4°W	230	17.9	23.354	25.988	-2.633	0.078	8.17	-1.099	-0.030
Lopez-Canfin et al. (2022b)	37.0°N, 2.4°W	230	17.9	32.307	37.198	-4.890	0.078	8.17	-1.099	-0.055
Lopez-Canfin et al. (2022b)	37.0°N, 2.4°W	230	17.9	29.975	35.618	-5.643	0.078	8.17	-1.099	-0.070
Lopez-Canfin et al. (2022b)	37.0°N, 2.4°W	230	17.9	26.138	33.285	-7.147	0.078	8.17	-1.099	-0.098
Lopez-Canfin et al. (2022b)	37.0°N, 2.4°W	230	17.9	23.655	31.705	-8.050	0.078	8.17	-1.099	-0.090
Lopez-Canfin et al. (2022b)	37.0°N, 2.4°W	230	17.9	22.602	29.975	-7.373	0.078	8.17	-1.099	-0.046
Lopez-Canfin et al. (2022b)	37.0°N, 2.4°W	230	17.9	23.279	28.546	-5.266	0.078	8.17	-1.099	-0.040
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	14.520	17.520	-3.000	0.155	9.17	-3.114	-0.462
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	13.920	15.670	-1.750	0.155	9.17	-3.114	-0.433
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	13.220	14.020	-0.800	0.155	9.17	-3.114	-0.428

Study	location	MAP (℃)	MAT (℃)	Ta (℃)	Ts (℃)	ΔT (℃)	θv (m^3 m^{-3})	pH	ln(clay/sand)	Fs (μmol m^{-2} s^{-1})
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	12.120	13.670	-1.550	0.155	9.17	-3.114	-0.408
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	11.070	12.970	-1.900	0.155	9.17	-3.114	-0.341
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	10.220	12.270	-2.050	0.155	9.17	-3.114	-0.270
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	9.570	11.420	-1.850	0.155	9.17	-3.114	-0.168
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	29.670	29.020	0.650	0.155	9.17	-3.114	-0.120
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	29.320	27.870	1.450	0.155	9.17	-3.114	-0.219
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	28.570	26.020	2.550	0.155	9.17	-3.114	-0.333
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	26.920	23.720	3.200	0.155	9.17	-3.114	-0.388
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	23.000	22.270	0.730	0.155	9.17	-3.114	-0.392
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	22.420	19.120	3.300	0.155	9.17	-3.114	-0.512
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	23.370	28.820	-5.450	0.155	9.17	-3.114	-0.425
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	22.220	27.470	-5.250	0.155	9.17	-3.114	-0.383
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	21.300	26.100	-4.800	0.155	9.17	-3.114	-0.334
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	21.100	25.720	-4.620	0.155	9.17	-3.114	-0.288
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	20.770	25.070	-4.300	0.155	9.17	-3.114	-0.243
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	20.270	24.450	-4.180	0.155	9.17	-3.114	-0.216
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	19.620	22.880	-3.260	0.155	9.17	-3.114	-0.173
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	30.200	37.820	-7.620	0.155	9.17	-3.114	-0.128
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	29.470	36.770	-7.300	0.155	9.17	-3.114	-0.180
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	28.700	34.920	-6.220	0.155	9.17	-3.114	-0.266
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	28.700	33.520	-4.820	0.155	9.17	-3.114	-0.317
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	27.100	31.370	-4.270	0.155	9.17	-3.114	-0.357
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	25.500	33.770	-8.270	0.155	9.17	-3.114	-0.396
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	14.377	5.256	9.121	0.155	9.17	-3.114	-0.192
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	13.470	4.513	8.957	0.155	9.17	-3.114	-0.158

Study	location	MAP (℃)	MAT (℃)	Ta (℃)	Ts (℃)	ΔT (℃)	θv (m^3 m^{-3})	pH	ln(clay/sand)	Fs (μmol m^{-2} s^{-1})
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	12.406	3.870	8.536	0.155	9.17	-3.114	-0.159
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	11.813	3.334	8.479	0.155	9.17	-3.114	-0.133
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	11.441	2.906	8.536	0.155	9.17	-3.114	-0.202
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	11.063	2.577	8.486	0.155	9.17	-3.114	-0.174
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	10.699	2.313	8.386	0.155	9.17	-3.114	-0.175
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	18.941	14.299	4.643	0.155	9.17	-3.114	-0.165
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	18.349	12.577	5.771	0.155	9.17	-3.114	-0.165
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	17.091	10.591	6.500	0.155	9.17	-3.114	-0.135
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	15.720	8.784	6.936	0.155	9.17	-3.114	-0.229
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	14.434	7.370	7.064	0.155	9.17	-3.114	-0.187
Xie et al. (2009)	44.3°N, 87.9°E	160	6.6	13.599	6.284	7.314	0.155	9.17	-3.114	-0.133
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	27.820	27.870	-0.050	0.025	8.60	-3.114	-0.268
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	26.220	26.370	-0.150	0.025	8.60	-3.114	-0.237
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	25.720	24.220	1.500	0.025	8.60	-3.114	-0.204
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	24.070	23.220	0.850	0.025	8.60	-3.114	-0.193
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	27.370	21.520	5.850	0.025	8.60	-3.114	-0.171
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	26.670	20.970	5.700	0.025	8.60	-3.114	-0.171
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	26.020	20.670	5.350	0.025	8.60	-3.114	-0.149
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	34.070	36.370	-2.300	0.025	8.60	-3.114	-0.061
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	33.620	34.120	-0.500	0.025	8.60	-3.114	-0.127
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	32.670	31.870	0.800	0.025	8.60	-3.114	-0.215
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	30.720	30.320	0.400	0.025	8.60	-3.114	-0.259
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	26.370	24.620	1.750	0.128	8.60	-3.114	-0.292
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	25.220	23.470	1.750	0.128	8.60	-3.114	-0.281
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	24.320	22.570	1.750	0.128	8.60	-3.114	-0.171

Study	location	MAP (℃)	MAT (℃)	Ta (℃)	Ts (℃)	ΔT (℃)	θv (m^3 m^{-3})	pH	ln(clay/sand)	Fs (μmol m^{-2} s^{-1})
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	24.120	21.720	2.400	0.128	8.60	-3.114	-0.135
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	23.770	21.370	2.400	0.128	8.60	-3.114	-0.127
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	22.270	20.970	1.300	0.128	8.60	-3.114	-0.127
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	22.620	20.570	2.050	0.128	8.60	-3.114	-0.116
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	33.520	32.220	1.300	0.128	8.60	-3.114	-0.052
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	31.170	26.470	4.700	0.128	8.60	-3.114	-0.204
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	29.620	24.970	4.650	0.128	8.60	-3.114	-0.259
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	25.470	30.570	-5.100	0.128	8.90	-3.114	-0.405
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	24.520	29.520	-5.000	0.039	8.90	-3.114	-0.380
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	24.370	27.820	-3.450	0.039	8.90	-3.114	-0.358
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	24.320	27.070	-2.750	0.039	8.90	-3.114	-0.336
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	23.970	26.670	-2.700	0.039	8.90	-3.114	-0.303
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	23.570	26.020	-2.450	0.039	8.90	-3.114	-0.303
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	23.120	25.170	-2.050	0.039	8.90	-3.114	-0.292
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	25.540	24.010	1.530	0.039	8.90	-3.114	-0.193
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	24.170	23.120	1.050	0.039	8.90	-3.114	-0.203
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	23.420	22.420	1.000	0.039	8.90	-3.114	-0.225
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	24.470	29.570	-5.100	0.039	8.90	-3.114	-0.351
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	23.520	28.520	-5.000	0.004	8.90	-3.114	-0.337
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	23.370	27.830	-4.460	0.004	8.90	-3.114	-0.307
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	23.320	27.070	-3.750	0.004	8.90	-3.114	-0.261
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	22.970	26.670	-3.700	0.004	8.90	-3.114	-0.242
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	22.570	26.020	-3.450	0.004	8.90	-3.114	-0.223
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	22.120	25.080	-2.960	0.004	8.90	-3.114	-0.148
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	30.520	24.170	6.350	0.004	8.90	-3.114	-0.091

Study	location	MAP (℃)	MAT (℃)	Ta (℃)	Ts (℃)	ΔT (℃)	θv (m^3 m^{-3})	pH	ln(clay/sand)	Fs (μmol m^{-2} s^{-1})
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	29.720	24.170	5.550	0.004	8.90	-3.114	-0.129
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	23.870	23.820	0.050	0.004	8.90	-3.114	-0.153
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	23.170	23.120	0.050	0.004	8.90	-3.114	-0.192
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	22.420	22.420	0.000	0.004	8.90	-3.114	-0.237
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	27.120	22.820	4.300	0.004	9.17	-2.303	-0.223
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	25.770	21.820	3.950	0.006	9.17	-2.303	-0.193
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	24.520	21.070	3.450	0.006	9.17	-2.303	-0.182
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	24.620	20.220	4.400	0.006	9.17	-2.303	-0.171
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	24.070	19.620	4.450	0.006	9.17	-2.303	-0.149
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	23.520	19.170	4.350	0.006	9.17	-2.303	-0.149
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	23.020	18.670	4.350	0.006	9.17	-2.303	-0.138
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	39.470	37.520	1.950	0.006	9.17	-2.303	-0.061
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	38.670	35.520	3.150	0.006	9.17	-2.303	-0.072
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	37.620	32.820	4.800	0.006	9.17	-2.303	-0.109
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	36.020	29.970	6.050	0.006	9.17	-2.303	-0.149
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	34.370	28.670	5.700	0.006	9.17	-2.303	-0.181
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	29.506	25.710	3.796	0.118	9.17	-2.303	-0.148
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	28.184	24.610	3.574	0.118	9.17	-2.303	-0.148
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	27.020	23.720	3.300	0.118	9.17	-2.303	-0.133
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	26.513	22.890	3.623	0.118	9.17	-2.303	-0.127
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	25.749	22.340	3.409	0.118	9.17	-2.303	-0.110
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	25.184	21.870	3.314	0.118	9.17	-2.303	-0.110
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	24.606	21.440	3.166	0.118	9.17	-2.303	-0.092
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	35.920	33.210	2.710	0.118	9.17	-2.303	-0.064
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	35.806	32.450	3.356	0.118	9.17	-2.303	-0.079

Study	location	MAP (℃)	MAT (℃)	Ta (℃)	Ts (℃)	ΔT (℃)	θv (m^3 m^{-3})	pH	ln(clay/sand)	Fs (μmol m^{-2} s^{-1})
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	35.077	30.910	4.167	0.118	9.17	-2.303	-0.084
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	34.149	28.950	5.199	0.118	9.17	-2.303	-0.092
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	32.706	26.920	5.786	0.118	9.17	-2.303	-0.097
Ma et al. (2015)	44.3°N, 87.9°E	163	6.6	31.163	25.310	5.853	0.118	9.17	-2.303	-0.110
Wang et al. (2020)	44.3°N, 87.9°E	163	6.6	5.570	11.291	-5.721	0.126	9.59	-3.114	-0.469
Wang et al. (2020)	44.3°N, 87.9°E	163	6.6	5.520	10.685	-5.165	0.126	9.59	-3.114	-0.367
Wang et al. (2020)	44.3°N, 87.9°E	163	6.6	5.320	9.838	-4.518	0.126	9.59	-3.114	-0.387
Wang et al. (2020)	44.3°N, 87.9°E	163	6.6	5.320	9.232	-3.912	0.126	9.59	-3.114	-0.347
Wang et al. (2020)	44.3°N, 87.9°E	163	6.6	5.170	8.627	-3.457	0.126	9.59	-3.114	-0.350
Wang et al. (2020)	44.3°N, 87.9°E	163	6.6	4.870	8.627	-3.757	0.126	9.59	-3.114	-0.314
Wang et al. (2020)	44.3°N, 87.9°E	163	6.6	4.670	10.354	-5.684	0.126	9.59	-3.114	-0.290
Wang et al. (2020)	44.3°N, 87.9°E	163	6.6	7.570	22.639	-15.069	0.126	9.59	-3.114	-0.223
Wang et al. (2020)	44.3°N, 87.9°E	163	6.6	6.920	18.281	-11.361	0.126	9.59	-3.114	-0.269
Wang et al. (2020)	44.3°N, 87.9°E	163	6.6	6.170	15.496	-9.326	0.126	9.59	-3.114	-0.366
Wang et al. (2020)	44.3°N, 87.9°E	163	6.6	5.370	13.438	-8.068	0.126	9.59	-3.114	-0.402
Wang et al. (2020)	44.3°N, 87.9°E	163	6.6	4.720	11.864	-7.144	0.126	9.59	-3.114	-0.418
Wang et al. (2020)	44.3°N, 87.9°E	163	6.6	4.120	10.896	-6.776	0.126	9.59	-3.114	-0.430
Wang et al. (2013)	44.3°N, 87.9°E	164	6.6	18.363	29.570	-11.207	0.155	8.90	-3.114	-0.363
Wang et al. (2013)	44.3°N, 87.9°E	164	6.6	17.299	28.520	-11.221	0.155	8.90	-3.114	-0.366
Wang et al. (2013)	44.3°N, 87.9°E	164	6.6	16.427	27.820	-11.393	0.155	8.90	-3.114	-0.387
Wang et al. (2013)	44.3°N, 87.9°E	164	6.6	15.649	27.070	-11.421	0.155	8.90	-3.114	-0.345
Wang et al. (2013)	44.3°N, 87.9°E	164	6.6	14.870	26.670	-11.800	0.155	8.90	-3.114	-0.371
Wang et al. (2013)	44.3°N, 87.9°E	164	6.6	14.320	26.520	-12.200	0.155	8.90	-3.114	-0.409
Wang et al. (2013)	44.3°N, 87.9°E	164	6.6	13.863	26.170	-12.307	0.155	8.90	-3.114	-0.417
Wang et al. (2013)	44.3°N, 87.9°E	164	6.6	28.641	23.970	4.671	0.155	8.90	-3.114	-0.254

Study	location	MAP (℃)	MAT (℃)	Ta (℃)	Ts (℃)	ΔT (℃)	θv (m^3 m^{-3})	pH	ln(clay/sand)	Fs (μmol m^{-2} s^{-1})
Wang et al. (2013)	44.3°N, 87.9°E	164	6.6	27.227	24.170	3.057	0.155	8.90	-3.114	-0.284
Wang et al. (2013)	44.3°N, 87.9°E	164	6.6	27.249	24.170	3.079	0.155	8.90	-3.114	-0.293
Wang et al. (2013)	44.3°N, 87.9°E	164	6.6	25.334	23.820	1.514	0.155	8.90	-3.114	-0.313
Wang et al. (2013)	44.3°N, 87.9°E	164	6.6	23.063	23.120	-0.057	0.155	8.90	-3.114	-0.313
Wang et al. (2013)	44.3°N, 87.9°E	164	6.6	21.313	22.420	-1.107	0.155	8.90	-3.114	-0.325
Wang et al. (2014)	44.3°N, 87.9°E	164	6.6	33.820	32.820	1.000	0.130	7.80	-2.303	-0.076
Wang et al. (2014)	44.3°N, 87.9°E	164	6.6	32.220	31.470	0.750	0.130	7.80	-2.303	-0.136
Wang et al. (2014)	44.3°N, 87.9°E	164	6.6	30.720	30.470	0.250	0.130	7.80	-2.303	-0.116
Wang et al. (2014)	44.3°N, 87.9°E	164	6.6	30.070	29.720	0.350	0.130	7.80	-2.303	-0.096
Wang et al. (2014)	44.3°N, 87.9°E	164	6.6	29.370	29.070	0.300	0.130	7.80	-2.303	-0.126
Wang et al. (2014)	44.3°N, 87.9°E	164	6.6	28.670	28.420	0.250	0.130	7.80	-2.303	-0.151
Wang et al. (2014)	44.3°N, 87.9°E	164	6.6	28.020	27.870	0.150	0.130	7.80	-2.303	-0.156
Wang et al. (2014)	44.3°N, 87.9°E	164	6.6	36.320	42.820	-6.500	0.130	7.80	-2.303	-0.086
Wang et al. (2014)	44.3°N, 87.9°E	164	6.6	36.470	41.770	-5.300	0.130	7.80	-2.303	-0.097
Wang et al. (2014)	44.3°N, 87.9°E	164	6.6	36.070	39.820	-3.750	0.130	7.80	-2.303	-0.112
Wang et al. (2014)	44.3°N, 87.9°E	164	6.6	35.620	37.520	-1.900	0.130	7.80	-2.303	-0.160
Wang et al. (2014)	44.3°N, 87.9°E	164	6.6	34.670	35.370	-0.700	0.130	7.80	-2.303	-0.056
Wang et al. (2014)	44.3°N, 87.9°E	164	6.6	32.720	33.770	-1.050	0.130	7.80	-2.303	-0.086
Gao et al. (2021)	37.7°N, 44.3°E	275	7	14.423	19.455	-5.032	0.084	8.60	-6.180	-0.330
Gao et al. (2021)	37.7°N, 44.3°E	275	7	13.148	17.845	-4.697	0.084	8.60	-6.180	-0.288
Gao et al. (2021)	37.7°N, 44.3°E	275	7	12.209	16.906	-4.697	0.084	8.60	-6.180	-0.284
Gao et al. (2021)	37.7°N, 44.3°E	275	7	11.806	16.503	-4.697	0.084	8.60	-6.180	-0.273
Gao et al. (2021)	37.7°N, 44.3°E	275	7	10.800	15.765	-4.965	0.084	8.60	-6.180	-0.262
Gao et al. (2021)	37.7°N, 44.3°E	275	7	9.793	14.490	-4.697	0.084	8.60	-6.180	-0.244
Gao et al. (2021)	37.7°N, 44.3°E	275	7	10.598	14.490	-3.892	0.084	8.60	-6.180	-0.206

Study	location	MAP (℃)	MAT (℃)	Ta (℃)	Ts (℃)	ΔT (℃)	θv (m^3 m^{-3})	pH	ln(clay/sand)	Fs (μmol m^{-2} s^{-1})
Gao et al. (2021)	37.7°N, 44.3°E	275	7	23.548	24.554	-1.006	0.084	8.60	-3.546	-0.116
Gao et al. (2021)	37.7°N, 44.3°E	275	7	20.059	23.145	-3.086	0.084	8.60	-3.546	-0.158
Gao et al. (2021)	37.7°N, 44.3°E	275	7	17.778	22.273	-4.495	0.084	8.60	-3.546	-0.187
Gao et al. (2021)	37.7°N, 44.3°E	275	7	15.899	21.267	-5.368	0.084	8.60	-3.546	-0.206
Gao et al. (2021)	37.7°N, 44.3°E	275	7	14.758	20.327	-5.569	0.084	8.60	-3.546	-0.193
Gao et al. (2021)	37.7°N, 44.3°E	275	7	13.484	19.187	-5.703	0.084	8.60	-3.546	-0.167
Fa et al. (2015)	37.7°N, 44.3°E	287	7.6	19.983	17.140	2.843	0.087	8.50	-3.546	-0.126
Fa et al. (2015)	37.7°N, 44.3°E	287	7.6	18.583	15.770	2.813	0.087	8.50	-3.546	-0.169
Fa et al. (2015)	37.7°N, 44.3°E	287	7.6	17.176	15.110	2.066	0.087	8.50	-3.546	-0.174
Fa et al. (2015)	37.7°N, 44.3°E	287	7.6	16.776	14.210	2.566	0.087	8.50	-3.546	-0.162
Fa et al. (2015)	37.7°N, 44.3°E	287	7.6	16.533	13.580	2.953	0.087	8.50	-3.546	-0.154
Fa et al. (2015)	37.7°N, 44.3°E	287	7.6	16.319	12.010	4.309	0.087	8.50	-3.546	-0.171
Fa et al. (2015)	37.7°N, 44.3°E	287	7.6	15.990	11.770	4.220	0.087	8.50	-3.546	-0.184
Fa et al. (2015)	37.7°N, 44.3°E	287	7.6	22.119	17.190	4.929	0.087	8.50	-3.546	-0.063
Fa et al. (2015)	37.7°N, 44.3°E	287	7.6	20.790	16.590	4.200	0.087	8.50	-3.546	-0.238
Fa et al. (2015)	37.7°N, 44.3°E	287	7.6	19.783	16.190	3.593	0.087	8.50	-3.546	-0.173
Fa et al. (2015)	37.7°N, 44.3°E	287	7.6	18.961	15.940	3.021	0.087	8.50	-3.546	-0.209
Fa et al. (2015)	37.7°N, 44.3°E	287	7.6	18.240	15.740	2.500	0.087	8.50	-3.546	-0.183
Liu et al. (2015)	37.7°N, 44.3°E	287	7	12.507	18.582	-6.075	0.121	8.00	-5.180	-0.378
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	11.657	18.228	-6.571	0.121	8.00	-5.180	-0.345
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	11.090	17.873	-6.783	0.121	8.00	-5.180	-0.312
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	10.490	17.400	-6.910	0.121	8.00	-5.180	-0.298
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	9.823	16.986	-7.163	0.121	8.00	-5.180	-0.293
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	9.290	16.661	-7.371	0.121	8.00	-5.180	-0.274
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	8.773	16.307	-7.534	0.121	8.00	-5.180	-0.250

Study	location	MAP (℃)	MAT (℃)	Ta (℃)	Ts (℃)	ΔT (℃)	θv (m^3 m^{-3})	pH	ln(clay/sand)	Fs (μmol m^{-2} s^{-1})
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	19.357	21.596	-2.239	0.121	8.00	-5.180	-0.158
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	18.557	21.774	-3.217	0.121	8.00	-5.180	-0.241
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	17.290	21.685	-4.395	0.121	8.00	-5.180	-0.309
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	15.940	21.360	-5.420	0.121	8.00	-5.180	-0.328
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	14.573	20.976	-6.403	0.121	8.00	-5.180	-0.340
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	13.440	20.414	-6.974	0.121	8.00	-5.180	-0.319
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	11.465	22.483	-11.018	0.121	8.00	-5.180	-0.383
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	11.103	22.010	-10.907	0.121	8.00	-5.180	-0.357
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	10.653	21.537	-10.885	0.121	8.00	-5.180	-0.331
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	10.140	21.064	-10.924	0.121	8.00	-5.180	-0.331
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	9.478	20.680	-11.203	0.121	8.00	-5.180	-0.326
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	8.990	20.237	-11.247	0.121	8.00	-5.180	-0.316
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	8.790	19.971	-11.181	0.121	8.00	-5.180	-0.243
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	17.653	25.645	-7.992	0.121	8.00	-5.180	-0.094
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	16.353	25.320	-8.967	0.121	8.00	-5.180	-0.175
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	14.790	24.876	-10.086	0.121	8.00	-5.180	-0.238
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	13.753	24.344	-10.592	0.121	8.00	-5.180	-0.253
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	13.003	23.783	-10.780	0.121	8.00	-5.180	-0.236
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	12.240	23.192	-10.952	0.121	8.00	-5.180	-0.227
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	16.178	26.161	-9.983	0.121	8.00	-5.180	-0.407
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	15.865	25.738	-9.873	0.121	8.00	-5.180	-0.373
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	15.540	25.316	-9.776	0.121	8.00	-5.180	-0.340
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	15.240	24.893	-9.653	0.121	8.00	-5.180	-0.306
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	14.940	24.597	-9.657	0.121	8.00	-5.180	-0.289
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	14.665	24.217	-9.552	0.121	8.00	-5.180	-0.279

Study	location	MAP (℃)	MAT (℃)	Ta (℃)	Ts (℃)	ΔT (℃)	θv (m^3 m^{-3})	pH	ln(clay/sand)	Fs (μmol m^{-2} s^{-1})
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	14.303	24.963	-10.661	0.121	8.00	-5.180	-0.238
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	19.328	25.696	-6.369	0.121	8.00	-5.180	-0.116
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	18.228	25.358	-7.131	0.121	8.00	-5.180	-0.171
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	17.153	24.851	-7.699	0.121	8.00	-5.180	-0.157
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	16.453	24.344	-7.892	0.121	8.00	-5.180	-0.151
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	15.903	23.879	-7.977	0.121	8.00	-5.180	-0.134
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	18.307	23.879	-5.573	0.121	8.00	-5.180	-0.292
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	17.773	23.414	-5.641	0.121	8.00	-5.180	-0.323
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	17.323	22.950	-5.626	0.121	8.00	-5.180	-0.353
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	17.123	22.443	-5.319	0.121	8.00	-5.180	-0.326
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	16.790	22.147	-5.357	0.121	8.00	-5.180	-0.323
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	16.407	21.766	-5.360	0.121	8.00	-5.180	-0.279
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	16.107	21.471	-5.364	0.121	8.00	-5.180	-0.252
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	26.523	25.696	0.827	0.121	8.00	-5.180	-0.076
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	25.223	25.401	-0.177	0.121	8.00	-5.180	-0.134
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	23.273	25.063	-1.789	0.121	8.00	-5.180	-0.181
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	21.723	24.682	-2.959	0.121	8.00	-5.180	-0.225
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	20.640	24.175	-3.535	0.121	8.00	-5.180	-0.191
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	19.723	23.668	-3.945	0.121	8.00	-5.180	-0.130
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	4.357	15.865	-11.508	0.121	8.00	-5.180	-0.346
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	3.757	15.443	-11.686	0.121	8.00	-5.180	-0.319
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	3.240	15.021	-11.781	0.121	8.00	-5.180	-0.292
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	2.790	14.641	-11.851	0.121	8.00	-5.180	-0.289
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	2.507	14.388	-11.882	0.121	8.00	-5.180	-0.296
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	2.257	14.093	-11.836	0.121	8.00	-5.180	-0.296

Study	location	MAP (℃)	MAT (℃)	Ta (℃)	Ts (℃)	ΔT (℃)	θv (m^3 m^{-3})	pH	ln(clay/sand)	Fs (μmol m^{-2} s^{-1})
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	1.973	13.797	-11.824	0.121	8.00	-5.180	-0.269
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	13.590	18.861	-5.271	0.121	8.00	-5.180	-0.224
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	11.723	18.439	-6.715	0.121	8.00	-5.180	-0.276
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	10.157	17.932	-7.776	0.121	8.00	-5.180	-0.282
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	8.840	17.384	-8.544	0.121	8.00	-5.180	-0.252
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	7.690	16.835	-9.145	0.121	8.00	-5.180	-0.238
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	6.723	16.287	-9.564	0.121	8.00	-5.180	-0.208
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	10.240	14.494	-4.254	0.121	8.00	-5.180	-0.306
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	9.690	13.241	-3.551	0.121	8.00	-5.180	-0.292
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	9.353	12.987	-3.635	0.121	8.00	-5.180	-0.279
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	9.090	11.608	-2.518	0.121	8.00	-5.180	-0.269
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	8.540	11.054	-2.514	0.121	8.00	-5.180	-0.262
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	7.865	10.101	-2.236	0.121	8.00	-5.180	-0.242
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	7.390	9.932	-2.542	0.121	8.00	-5.180	-0.228
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	16.790	15.278	1.512	0.121	8.00	-5.180	-0.201
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	14.840	15.025	-0.185	0.121	8.00	-5.180	-0.245
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	13.253	14.477	-1.224	0.121	8.00	-5.180	-0.259
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	12.278	13.970	-1.693	0.121	8.00	-5.180	-0.242
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	11.303	13.506	-2.204	0.121	8.00	-5.180	-0.232
Liu et al. (2015a)	37.7°N, 44.3°E	287	7	10.303	13.042	-2.740	0.121	8.00	-5.180	-0.232
Fa et al. (2016)	37.7°N, 44.3°E	275	7.6	17.701	14.890	2.811	0.118	8.40	-3.546	-0.127
Fa et al. (2016)	37.7°N, 44.3°E	275	7.6	17.201	14.270	2.931	0.118	8.40	-3.546	-0.119
Fa et al. (2016)	37.7°N, 44.3°E	275	7.6	13.846	12.190	1.656	0.118	8.40	-3.546	-0.112
Fa et al. (2016)	37.7°N, 44.3°E	275	7.6	13.617	12.000	1.617	0.118	8.40	-3.546	-0.111
Fa et al. (2016)	37.7°N, 44.3°E	275	7.6	13.424	11.120	2.304	0.118	8.40	-3.546	-0.102

Study	location	MAP (℃)	MAT (℃)	Ta (℃)	Ts (℃)	ΔT (℃)	θv (m^3 m^{-3})	pH	ln(clay/sand)	Fs (μmol m^{-2} s^{-1})
Fa et al. (2016)	37.7°N, 44.3°E	275	7.6	13.339	10.290	3.049	0.118	8.40	-3.546	-0.097
Fa et al. (2016)	37.7°N, 44.3°E	275	7.6	13.196	10.100	3.096	0.118	8.40	-3.546	-0.076
Fa et al. (2016)	37.7°N, 44.3°E	275	7.6	17.760	16.140	1.620	0.118	8.40	-3.546	-0.079
Fa et al. (2016)	37.7°N, 44.3°E	275	7.6	17.646	15.540	2.106	0.118	8.40	-3.546	-0.086
Fa et al. (2016)	37.7°N, 44.3°E	275	7.6	17.367	15.140	2.227	0.118	8.40	-3.546	-0.091
Fa et al. (2016)	37.7°N, 44.3°E	275	7.6	16.810	14.890	1.920	0.118	8.40	-3.546	-0.102
Fa et al. (2016)	37.7°N, 44.3°E	275	7.6	15.974	14.740	1.234	0.118	8.40	-3.546	-0.116
Fa et al. (2016)	37.7°N, 44.3°E	275	7.6	15.310	14.640	0.670	0.118	8.40	-3.546	-0.153
Fa et al. (2018)	37.7°N, 44.3°E	275	7.6	20.840	24.590	-3.750	0.078	8.80	-3.546	-0.213
Fa et al. (2018)	37.7°N, 44.3°E	275	7.6	20.790	23.640	-2.850	0.078	8.80	-3.546	-0.200
Fa et al. (2018)	37.7°N, 44.3°E	275	7.6	20.690	23.190	-2.500	0.078	8.80	-3.546	-0.194
Fa et al. (2018)	37.7°N, 44.3°E	275	7.6	20.840	22.140	-1.300	0.078	8.80	-3.546	-0.184
Fa et al. (2018)	37.7°N, 44.3°E	275	7.6	20.540	21.490	-0.950	0.078	8.80	-3.546	-0.172
Fa et al. (2018)	37.7°N, 44.3°E	275	7.6	20.290	20.890	-0.600	0.078	8.80	-3.546	-0.157
Fa et al. (2018)	37.7°N, 44.3°E	275	7.6	19.890	20.340	-0.450	0.078	8.80	-3.546	-0.131
Fa et al. (2018)	37.7°N, 44.3°E	275	7.6	19.240	20.640	-1.400	0.078	8.80	-3.546	-0.178
Fa et al. (2018)	37.7°N, 44.3°E	275	7.6	18.790	18.540	0.250	0.078	8.80	-3.546	-0.188
Fa et al. (2018)	37.7°N, 44.3°E	275	7.6	18.290	16.640	1.650	0.078	8.80	-3.546	-0.195
Fa et al. (2018)	37.7°N, 44.3°E	275	7.6	17.740	15.340	2.400	0.078	8.80	-3.546	-0.200
Fa et al. (2018)	37.7°N, 44.3°E	275	7.6	17.390	14.390	3.000	0.078	8.80	-3.546	-0.206
Fa et al. (2018)	37.7°N, 44.3°E	275	7.6	17.040	13.640	3.400	0.078	8.80	-3.546	-0.234
Liu et al. (2015b)	37.7°N, 44.3°E	275	7	21.490	25.040	-3.550	0.086	8.50	-3.546	-0.277
Liu et al. (2015b)	37.7°N, 44.3°E	275	7	20.840	24.090	-3.250	0.086	8.50	-3.546	-0.255
Liu et al. (2015b)	37.7°N, 44.3°E	275	7	20.290	23.290	-3.000	0.086	8.50	-3.546	-0.212
Liu et al. (2015b)	37.7°N, 44.3°E	275	7	19.740	22.490	-2.750	0.086	8.50	-3.546	-0.197

Study	location	MAP (℃)	MAT (℃)	Ta (℃)	Ts (℃)	ΔT (℃)	θv (m^3 m^{-3})	pH	ln(clay/sand)	Fs (μmol m^{-2} s^{-1})
Liu et al. (2015b)	37.7°N, 44.3°E	275	7	19.390	21.890	-2.500	0.086	8.50	-3.546	-0.172
Liu et al. (2015b)	37.7°N, 44.3°E	275	7	19.090	21.390	-2.300	0.086	8.50	-3.546	-0.152
Liu et al. (2015b)	37.7°N, 44.3°E	275	7	18.740	20.990	-2.250	0.086	8.50	-3.546	-0.124
Liu et al. (2015b)	37.7°N, 44.3°E	275	7	24.690	26.990	-2.300	0.086	8.50	-3.546	-0.147
Liu et al. (2015b)	37.7°N, 44.3°E	275	7	23.090	25.990	-2.900	0.086	8.50	-3.546	-0.157
Liu et al. (2015b)	37.7°N, 44.3°E	275	7	22.240	25.240	-3.000	0.086	8.50	-3.546	-0.172
Liu et al. (2015b)	37.7°N, 44.3°E	275	7	21.440	24.540	-3.100	0.086	8.50	-3.546	-0.182
Liu et al. (2015b)	37.7°N, 44.3°E	275	7	21.190	23.990	-2.800	0.086	8.50	-3.546	-0.211
Liu et al. (2015b)	37.7°N, 44.3°E	275	7	21.040	23.540	-2.500	0.086	8.50	-3.546	-0.291
Sagi et al. (2021)	31.1°N, 34.9°E	92	18.7	22.337	26.409	-4.071	0.076	8.50	-1.758	-0.119
Sagi et al. (2021)	31.1°N, 34.9°E	92	18.7	21.923	25.266	-3.343	0.076	8.50	-1.758	-0.136
Sagi et al. (2021)	31.1°N, 34.9°E	92	18.7	21.823	26.080	-4.257	0.076	8.50	-1.758	-0.134
Sagi et al. (2021)	31.1°N, 34.9°E	92	18.7	21.766	25.037	-3.271	0.076	8.50	-1.758	-0.141
Sagi et al. (2021)	31.1°N, 34.9°E	92	18.7	21.430	24.159	-2.729	0.076	8.50	-1.758	-0.102
Sagi et al. (2021)	31.1°N, 34.9°E	92	18.7	21.209	23.430	-2.221	0.076	8.50	-1.758	-0.086
Sagi et al. (2021)	31.1°N, 34.9°E	92	18.7	21.994	23.273	-1.279	0.076	8.50	-1.758	-0.105
Sagi et al. (2021)	31.1°N, 34.9°E	92	18.7	21.280	24.880	-3.600	0.076	8.50	-1.758	-0.084
Sagi et al. (2021)	31.1°N, 34.9°E	92	18.7	20.030	23.580	-3.550	0.076	8.50	-1.758	-0.091
Sagi et al. (2021)	31.1°N, 34.9°E	92	18.7	19.180	22.380	-3.200	0.076	8.50	-1.758	-0.091
Sagi et al. (2021)	31.1°N, 34.9°E	92	18.7	18.580	21.280	-2.700	0.076	8.50	-1.758	-0.137
Sagi et al. (2021)	31.1°N, 34.9°E	92	18.7	18.130	20.330	-2.200	0.076	8.50	-1.758	-0.152
Sagi et al. (2021)	31.1°N, 34.9°E	92	18.7	17.430	19.480	-2.050	0.076	8.50	-1.758	-0.198
Bekin et al. (2023)	31.1°N, 34.9°E	116	18.62	26.819	25.214	1.605	0.120	8.20	-1.758	-0.196
Bekin et al. (2023)	31.1°N, 34.9°E	116	18.62	24.769	22.551	2.218	0.120	8.20	-1.758	-0.186
Bekin et al. (2023)	31.1°N, 34.9°E	116	18.62	23.996	20.016	3.980	0.120	8.20	-1.758	-0.178

Study	location	MAP (℃)	MAT (℃)	Ta (℃)	Ts (℃)	ΔT (℃)	θv (m^3 m^{-3})	pH	ln(clay/sand)	Fs (μmol m^{-2} s^{-1})
Bekin et al. (2023)	31.1°N, 34.9°E	116	18.62	22.994	18.769	4.225	0.120	8.20	-1.758	-0.173
Bekin et al. (2023)	31.1°N, 34.9°E	116	18.62	21.339	17.074	4.265	0.120	8.20	-1.758	-0.163
Bekin et al. (2023)	31.1°N, 34.9°E	116	18.62	19.881	15.623	4.257	0.120	8.20	-1.758	-0.135
Bekin et al. (2023)	31.1°N, 34.9°E	116	18.62	17.952	16.173	1.779	0.120	8.20	-1.758	-0.104
Bekin et al. (2023)	31.1°N, 34.9°E	116	18.62	28.010	25.169	2.841	0.120	8.20	-1.758	-0.265
Bekin et al. (2023)	31.1°N, 34.9°E	116	18.62	26.355	23.365	2.990	0.120	8.20	-1.758	-0.244
Bekin et al. (2023)	31.1°N, 34.9°E	116	18.62	24.701	22.561	2.140	0.120	8.20	-1.758	-0.207
Bekin et al. (2023)	31.1°N, 34.9°E	116	18.62	24.103	22.756	1.347	0.120	8.20	-1.758	-0.206
Bekin et al. (2023)	31.1°N, 34.9°E	116	18.62	20.197	20.688	-0.491	0.120	8.20	-1.758	-0.197
Bekin et al. (2023)	31.1°N, 34.9°E	116	18.62	17.291	18.652	-1.361	0.120	8.20	-1.758	-0.181
Yang et al. (2017)	38.9°N, 83.7°E	25.9	12.1	21.970	18.054	3.916	0.020	7.45	-5.247	-0.097
Yang et al. (2017)	38.9°N, 83.7°E	25.9	12.1	21.170	16.952	4.218	0.020	7.45	-5.247	-0.095
Yang et al. (2017)	38.9°N, 83.7°E	25.9	12.1	20.870	15.984	4.886	0.020	7.45	-5.247	-0.097
Yang et al. (2017)	38.9°N, 83.7°E	25.9	12.1	21.170	15.136	6.034	0.020	7.45	-5.247	-0.100
Yang et al. (2017)	38.9°N, 83.7°E	25.9	12.1	20.670	14.531	6.139	0.020	7.45	-5.247	-0.102
Yang et al. (2017)	38.9°N, 83.7°E	25.9	12.1	19.870	13.562	6.308	0.020	7.45	-5.247	-0.092
Yang et al. (2017)	38.9°N, 83.7°E	25.9	12.1	19.170	14.289	4.881	0.020	7.45	-5.247	-0.073
Yang et al. (2017)	38.9°N, 83.7°E	25.9	12.1	28.320	26.032	2.288	0.020	7.45	-5.247	-0.034
Yang et al. (2017)	38.9°N, 83.7°E	25.9	12.1	28.170	23.611	4.559	0.020	7.45	-5.247	-0.061
Yang et al. (2017)	38.9°N, 83.7°E	25.9	12.1	27.770	22.279	5.491	0.020	7.45	-5.247	-0.063
Yang et al. (2017)	38.9°N, 83.7°E	25.9	12.1	27.370	20.705	6.665	0.020	7.45	-5.247	-0.085
Yang et al. (2017)	38.9°N, 83.7°E	25.9	12.1	26.920	19.252	7.668	0.020	7.45	-5.247	-0.102
Yang et al. (2020)	38.9°N, 83.7°E	25.9	12.1	10.668	11.449	6.689	0.020	7.30	-5.247	-0.064
Yang et al. (2020)	38.9°N, 83.7°E	25.9	12.1	10.640	11.435	5.680	0.020	7.30	-5.247	-0.062
Yang et al. (2020)	38.9°N, 83.7°E	25.9	12.1	10.617	11.421	4.798	0.020	7.30	-5.247	-0.060

Study	location	MAP (℃)	MAT (℃)	Ta (℃)	Ts (℃)	ΔT (℃)	θv (m^3 m^{-3})	pH	ln(clay/sand)	Fs (μmol m^{-2} s^{-1})
Yang et al. (2020)	38.9°N, 83.7°E	25.9	12.1	10.585	11.403	2.875	0.020	7.30	-5.247	-0.076
Yang et al. (2020)	38.9°N, 83.7°E	25.9	12.1	10.562	11.394	2.043	0.020	7.30	-5.247	-0.075
Yang et al. (2020)	38.9°N, 83.7°E	25.9	12.1	10.268	11.132	12.689	0.020	7.30	-5.247	-0.066
Yang et al. (2020)	38.9°N, 83.7°E	25.9	12.1	10.282	11.081	8.801	0.020	7.30	-5.247	-0.062
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	25.999	19.582	6.416	0.020	7.45	-5.247	-0.105
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	25.034	18.507	6.527	0.020	7.45	-5.247	-0.103
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	24.184	17.791	6.393	0.020	7.45	-5.247	-0.102
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	23.370	16.896	6.474	0.020	7.45	-5.247	-0.101
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	22.506	15.821	6.685	0.020	7.45	-5.247	-0.098
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	21.606	14.925	6.680	0.020	7.45	-5.247	-0.098
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	20.677	14.746	5.931	0.020	7.45	-5.247	-0.093
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	29.220	30.149	-0.929	0.020	7.45	-5.247	-0.064
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	28.677	26.925	1.752	0.020	7.45	-5.247	-0.081
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	27.920	25.134	2.786	0.020	7.45	-5.247	-0.085
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	27.099	23.343	3.755	0.020	7.45	-5.247	-0.095
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	26.441	21.373	5.068	0.020	7.45	-5.247	-0.116
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	16.120	6.524	9.596	0.020	7.45	-5.247	-0.136
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	14.770	5.793	8.977	0.020	7.45	-5.247	-0.133
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	13.720	5.061	8.659	0.020	7.45	-5.247	-0.132
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	12.570	4.512	8.058	0.020	7.45	-5.247	-0.130
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	11.570	3.598	7.972	0.020	7.45	-5.247	-0.123
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	17.120	16.402	0.718	0.020	7.45	-5.247	-0.108
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	15.820	14.024	1.796	0.020	7.45	-5.247	-0.115
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	14.670	11.829	2.841	0.020	7.45	-5.247	-0.116
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	13.570	10.000	3.570	0.020	7.45	-5.247	-0.119

Study	location	MAP (℃)	MAT (℃)	Ta (℃)	Ts (℃)	ΔT (℃)	θv (m^3 m^{-3})	pH	ln(clay/sand)	Fs (μmol m^{-2} s^{-1})
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	12.620	8.354	4.266	0.020	7.45	-5.247	-0.119
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	11.570	7.439	4.131	0.020	7.45	-5.247	-0.129
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	4.770	2.209	2.561	0.020	7.45	-5.247	-0.100
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	3.620	2.030	1.590	0.020	7.45	-5.247	-0.091
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	3.470	1.134	2.336	0.020	7.45	-5.247	-0.084
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	3.920	0.776	3.144	0.020	7.45	-5.247	-0.084
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	1.170	0.060	1.110	0.020	7.45	-5.247	-0.083
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	0.070	-0.478	0.548	0.020	7.45	-5.247	-0.081
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	-0.780	-0.657	-0.123	0.020	7.45	-5.247	-0.080
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	11.570	10.806	0.764	0.020	7.45	-5.247	-0.064
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	11.120	9.015	2.105	0.020	7.45	-5.247	-0.069
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	9.720	7.045	2.675	0.020	7.45	-5.247	-0.085
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	8.070	5.791	2.279	0.020	7.45	-5.247	-0.089
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	6.620	4.716	1.904	0.020	7.45	-5.247	-0.094
Yang et al. (2023)	38.9°N, 83.7°E	25.9	12.1	5.270	3.463	1.807	0.020	7.45	-5.247	-0.097
Liu et al. (2025)	38.9°N, 83.7°E	11.05	12.1	2.870	1.501	1.369	0.020	8.90	-5.247	-0.304
Liu et al. (2025)	38.9°N, 83.7°E	11.05	12.1	2.020	0.559	1.461	0.020	8.90	-5.247	-0.305
Liu et al. (2025)	38.9°N, 83.7°E	11.05	12.1	1.120	-0.341	1.461	0.020	8.90	-5.247	-0.300
Liu et al. (2025)	38.9°N, 83.7°E	11.05	12.1	1.020	-1.227	2.247	0.020	8.90	-5.247	-0.262
Liu et al. (2025)	38.9°N, 83.7°E	11.05	12.1	0.770	-2.063	2.833	0.020	8.90	-5.247	-0.255
Liu et al. (2025)	38.9°N, 83.7°E	11.05	12.1	0.520	-2.870	3.390	0.020	8.90	-5.247	-0.235
Liu et al. (2025)	38.9°N, 83.7°E	11.05	12.1	0.470	-3.641	4.111	0.020	8.90	-5.247	-0.156
Liu et al. (2025)	38.9°N, 83.7°E	11.05	12.1	11.220	6.680	4.540	0.020	8.90	-5.247	-0.172
Liu et al. (2025)	38.9°N, 83.7°E	11.05	12.1	10.220	5.780	4.440	0.020	8.90	-5.247	-0.286
Liu et al. (2025)	38.9°N, 83.7°E	11.05	12.1	8.670	4.530	4.140	0.020	8.90	-5.247	-0.399

Liu et al. (2025)	38.9°N, 83.7°E	11.05	12.1	7.470	4.030	3.440	0.020	8.90	-5.247	-0.263
Liu et al. (2025)	38.9°N, 83.7°E	11.05	12.1	6.520	2.830	3.690	0.020	8.90	-5.247	-0.288
Liu et al. (2025)	38.9°N, 83.7°E	11.05	12.1	5.670	1.680	3.990	0.020	8.90	-5.247	-0.259
Zhang et al. (2013)	37.5°N, 105.0°E	186	10	12.910	11.730	1.180	0.031	9.00	-2.773	-0.071
Zhang et al. (2013)	37.5°N, 105.0°E	186	10	12.010	10.860	1.150	0.031	9.00	-2.773	-0.071
Zhang et al. (2013)	37.5°N, 105.0°E	186	10	11.260	8.991	2.269	0.031	9.00	-2.773	-0.070
Zhang et al. (2013)	37.5°N, 105.0°E	186	10	10.160	8.121	2.039	0.031	9.00	-2.773	-0.083
Zhang et al. (2013)	37.5°N, 105.0°E	186	10	9.460	8.821	0.639	0.031	9.00	-2.773	-0.066
Zhang et al. (2013)	37.5°N, 105.0°E	186	10	8.760	7.521	1.239	0.031	9.00	-2.773	-0.068
Zhang et al. (2013)	37.5°N, 105.0°E	186	10	8.110	7.220	0.890	0.031	9.00	-2.773	-0.070
Zhang et al. (2013)	37.5°N, 105.0°E	186	10	25.610	23.175	2.435	0.031	9.00	-2.773	-0.073
Zhang et al. (2013)	37.5°N, 105.0°E	186	10	24.510	21.020	3.490	0.031	9.00	-2.773	-0.087
Zhang et al. (2013)	37.5°N, 105.0°E	186	10	21.910	18.795	3.115	0.031	9.00	-2.773	-0.097
Zhang et al. (2013)	37.5°N, 105.0°E	186	10	19.410	16.570	2.840	0.031	9.00	-2.773	-0.108
Zhang et al. (2013)	37.5°N, 105.0°E	186	10	17.060	14.725	2.335	0.031	9.00	-2.773	-0.108
Zhang et al. (2013)	37.5°N, 105.0°E	186	10	15.260	12.880	2.380	0.031	9.00	-2.773	-0.108

Table II Overview of Net Ecosystem Exchange in Major Global Desert Areas

Desert / Sandy Land	Site Location	Measurement Method	Land Use	NEE ($g\ C\ m^{-2}\ a^{-1}$)	Time Range
Sonoran	31.82°N, 110.87°W	Eddy covariance flux measurements	Savanna	-171.6	2004-2014
Chihuahuan	31.74°N, 109.94°W	Eddy covariance flux measurements	Grassland	-190.2	2004-2014
Tabernas	36.93°N, 2.75°W	Eddy covariance flux measurements	Shrubland	-218.9	2004-2013
Qaidam Basin	38.84°N, 98.94°E	Eddy covariance flux measurements	Grassland	-254.7	2014-2020
Badain Jaran	42.00°N, 101.14°E	Eddy covariance flux measurements	Shrubland	-245.3	2014-2020
Songnen	44°35'N, 123°30'E	CASA	Grassland	-211.1	2024
Hulunbuir	49.21°N, 120.07°E	CASA	Grassland	-208.2	2024
Horqin	43.33°N, 122.65°E	CASA	Grassland	-191.6	2024
Otindag	42.90°N, 116.00°E	CASA	Shrubland	-148.5	2024
Mu Us	37.70°N, 107.23°E	CASA	Shrubland	-122.7	2024

CASA means Carnegie-Ames-Stanford Approach

Table III Overview of Soil Respiration Rates in Major Global Desert Areas

Desert / Sandy Land	Site Location	Measurement Method	Soil type	Soil respiration rate ($\mu mol\ m^{-2}\ s^{-1}$)	Time Range
Chihuahuan	29°08′N, 102°83′W	Li-Cor 6400	Sandy Loam	1.46	2004-2006
Great Basin	37°38′N, 118°58′W	Li-Cor 6400	Sandy Loam	0.97	2003-2006
Mojave	36°46′N, 115°57′W	Li-Cor 6262	Loamy Sand	0.33	2003-2004
Sagebrush	41°19′N, 107°24′W	EGM-3; EGM-4	Sandy Loam	2.45	2004-2005
Sonoran	31°78′N, 110°88′W	Li-Cor 6400; Li-Cor 820	Sandy Loam	1.96	2002-2003
Polar semi-desert	76°33′N, 68°34′W	Li-Cor 6400	Sandy Loam	1.70	2005-2006
Polar desert	76°26′N, 68°54′W	Li-Cor 6400	Sandy Loam	0.90	2004-2006