

**Table S1.** Monthly mean and annual net ecosystem production (NEP).

Year	Monthly mean NEP (gC m <sup>-2</sup> d <sup>-1</sup> )												NEP (gC m <sup>-2</sup> yr <sup>-1</sup> )
	1	2	3	4	5	6	7	8	9	10	11	12	Annual
1994	-0.7	-0.8	-0.7	-0.4	0.9	2.6	3.2	2.7	1.9	0.6	-0.4	-0.7	256
1995	-0.7	-0.7	-0.6	-0.7	-0.3	0.9	1.9	2.2	1.6	0.1	-0.7	-0.5	73
1996	-0.4	-0.3	-0.4	-0.8	0.1	2.4	3.5	3.0	1.8	0.1	-0.9	-0.6	230
1997	-0.3	-0.4	-0.7	-0.9	0.1	1.8	2.9	3.4	2.3	0.2	-0.7	-0.5	217
1998	-0.6	-0.4	-0.6	-0.7	1.6	4.3	3.5	<b>1.8</b>	<b>0.5</b>	<b>-1.0</b>	<b>-0.9</b>	<b>-0.5</b>	222
1999	<b>-0.6</b>	<b>-0.6</b>	<b>-0.6</b>	<b>-0.6</b>	<b>-0.6</b>	<b>1.7</b>	<b>3.4</b>	<b>2.9</b>	<b>2.0</b>	<b>0.3</b>	<b>-0.7</b>	<b>-0.4</b>	<b>188</b>
2000	<b>-0.6</b>	<b>-0.5</b>	<b>-0.7</b>	<b>-0.7</b>	<b>-0.7</b>	<b>2.6</b>	<b>4.9</b>	<b>4.6</b>	<b>2.5</b>	<b>0.5</b>	<b>-1.2</b>	<b>-0.5</b>	<b>313</b>
2001	<b>-0.5</b>	<b>-0.6</b>	<b>-0.7</b>	<b>-0.6</b>	<b>-0.3</b>	<b>3.1</b>	<b>5.1</b>	<b>3.8</b>	<b>2.4</b>	<b>-0.2</b>	<b>-0.8</b>	<b>-0.5</b>	<b>310</b>
2002	<b>-0.7</b>	<b>-0.7</b>	<b>-0.6</b>	<b>-1.1</b>	<b>-0.1</b>	<b>4.9</b>	<b>4.1</b>	<b>4.7</b>	<b>2.3</b>	<b>0.2</b>	<b>-0.9</b>	<b>-0.6</b>	<b>358</b>
2003	<b>-0.6</b>	<b>-0.7</b>	<b>-0.7</b>	<b>-1.2</b>	<b>-0.5</b>	<b>3.7</b>	<b>4.4</b>	<b>3.8</b>	<b>2.4</b>	<b>-0.1</b>	<b>-1.1</b>	<b>-0.4</b>	<b>276</b>
2004	<b>-0.4</b>	<b>-0.5</b>	<b>-0.6</b>	<b>-0.7</b>	<b>-0.7</b>	<b>2.5</b>	<b>3.5</b>	<b>3.2</b>	<b>-1.4</b>	<b>-0.6</b>	<b>-0.8</b>	<b>-0.4</b>	<b>96</b>
2005	<b>-0.5</b>	<b>-0.5</b>	<b>-0.6</b>	<b>-0.6</b>	<b>-0.6</b>	<b>2.8</b>	<b>4.1</b>	<b>2.9</b>	<b>1.3</b>	<b>0.0</b>	<b>-0.7</b>	<b>-0.5</b>	<b>225</b>
2006	<b>-0.5</b>	<b>-0.6</b>	<b>-0.5</b>	<b>-0.6</b>	<b>-0.8</b>	<b>2.4</b>	<b>2.5</b>	<b>4.6</b>	<b>2.8</b>	<b>-0.1</b>	<b>-0.8</b>	<b>-0.5</b>	<b>242</b>
2007	<b>-0.6</b>	<b>-0.6</b>	<b>-0.6</b>	<b>-0.8</b>	<b>-0.8</b>	<b>2.3</b>	<b>2.9</b>	<b>4.1</b>	<b>2.9</b>	<b>0.3</b>	<b>-0.9</b>	<b>-0.6</b>	<b>239</b>
2008	<b>-0.5</b>	<b>-0.5</b>	<b>-0.6</b>	<b>-0.6</b>	<b>-0.4</b>	<b>3.2</b>	<b>4.4</b>	<b>3.0</b>	<b>1.6</b>	<b>0.1</b>	<b>-0.8</b>	<b>-0.5</b>	<b>252</b>
2009	<b>-0.7</b>	<b>-0.6</b>	<b>-0.6</b>	<b>-0.7</b>	<b>-0.3</b>	<b>4.4</b>	<b>3.7</b>	<b>4.4</b>	<b>2.7</b>	<b>0.1</b>	<b>-0.8</b>	<b>-0.5</b>	<b>333</b>
2010	<b>-0.5</b>	<b>-0.6</b>	<b>-0.5</b>	<b>-0.5</b>	<b>-0.7</b>	<b>3.0</b>	<b>4.9</b>	<b>4.8</b>	<b>2.4</b>	<b>0.6</b>	<b>-0.7</b>	<b>-0.5</b>	<b>360</b>
2011	<b>-0.4</b>	<b>-0.6</b>	<b>-0.6</b>	<b>-0.5</b>	<b>-0.9</b>	<b>3.1</b>	<b>4.7</b>	<b>4.4</b>	<b>2.4</b>	<b>0.3</b>	<b>-1.4</b>	<b>-0.5</b>	<b>308</b>
2012	<b>-0.5</b>	<b>-0.5</b>	<b>-0.6</b>	<b>-0.7</b>	<b>-0.3</b>	<b>3.9</b>	<b>4.9</b>	<b>5.2</b>	<b>3.4</b>	<b>1.0</b>	<b>-0.8</b>	<b>-0.5</b>	<b>444</b>
2013	<b>-0.5</b>	<b>-0.5</b>	<b>-0.6</b>	<b>-0.5</b>	<b>-0.6</b>	<b>3.8</b>	<b>5.1</b>	<b>5.2</b>	<b>3.1</b>	<b>0.7</b>	<b>-0.7</b>	<b>-0.5</b>	<b>424</b>
2014	<b>-0.5</b>	<b>-0.5</b>	<b>-0.6</b>	<b>-0.5</b>	<b>-0.6</b>	<b>4.3</b>	<b>4.4</b>	<b>3.1</b>	<b>3.1</b>	<b>0.1</b>	<b>-0.9</b>	<b>-0.5</b>	<b>330</b>
2015	<b>-0.5</b>	<b>-0.5</b>	<b>-0.6</b>	<b>-0.9</b>	<b>0.2</b>	<b>3.8</b>	<b>3.6</b>	<b>3.8</b>	<b>2.5</b>	<b>0.1</b>	<b>-1.1</b>	<b>-0.5</b>	<b>305</b>
2016	<b>-0.5</b>	<b>-0.5</b>	<b>-0.5</b>	<b>-0.8</b>	<b>0.1</b>	<b>4.3</b>	<b>4.6</b>	<b>4.0</b>	<b>1.7</b>	<b>-0.3</b>	<b>-0.9</b>	<b>-0.5</b>	<b>325</b>
2017	<b>-0.5</b>	<b>-0.5</b>	<b>-0.6</b>	<b>-0.6</b>	<b>-0.6</b>	<b>3.7</b>	<b>4.3</b>	<b>3.5</b>	<b>1.9</b>	<b>-0.1</b>	<b>-0.8</b>	<b>-0.5</b>	<b>283</b>
2018	<b>-0.5</b>	<b>-0.6</b>	<b>-0.5</b>	<b>-0.8</b>	<b>0.5</b>	<b>3.8</b>	<b>3.9</b>	<b>3.2</b>	<b>0.9</b>	<b>-0.1</b>	<b>-0.8</b>	<b>-0.5</b>	<b>264</b>
2019	<b>-0.6</b>	<b>-0.6</b>	<b>-0.5</b>	<b>-0.6</b>	<b>-0.6</b>	<b>2.5</b>	<b>3.4</b>	<b>2.5</b>	<b>1.8</b>	<b>0.2</b>	<b>-0.7</b>	<b>-0.5</b>	<b>197</b>
2020	<b>-0.5</b>	<b>-0.5</b>	<b>-0.4</b>	<b>-0.3</b>	<b>-0.6</b>	<b>1.8</b>	<b>1.6</b>	<b>3.1</b>	<b>1.7</b>	<b>0.2</b>	<b>-0.8</b>	<b>-0.4</b>	<b>146</b>
2021	<b>-0.5</b>	<b>-0.5</b>	<b>-0.5</b>	<b>-0.4</b>	<b>-0.6</b>	<b>2.7</b>	<b>3.0</b>	<b>2.2</b>	<b>1.8</b>	<b>0.4</b>	<b>-0.7</b>	<b>-0.4</b>	<b>200</b>

Note: Plain, bold, and italic values were data obtained using an aerodynamic method, an eddy covariance method, and both methods due to a transition period, respectively.

**Table S2.** Same as Table S1, but for gross primary production (GPP).

Year	Monthly mean GPP (gC m <sup>-2</sup> d <sup>-1</sup> )												GPP (gC m <sup>-2</sup> yr <sup>-1</sup> )
	1	2	3	4	5	6	7	8	9	10	11	12	Annual
1994	-0.2	-0.2	-0.1	1.4	3.5	6.5	7.7	6.7	5.4	2.8	1.1	0.0	1060
1995	-0.2	-0.1	0.1	0.6	2.2	4.7	6.2	6.1	4.7	2.2	0.5	0.0	831
1996	0.1	0.2	0.3	0.3	2.6	6.5	7.9	6.6	4.9	2.1	0.6	0.1	984
1997	0.2	0.1	0.0	0.6	2.8	5.8	7.2	7.1	5.5	2.0	0.9	0.2	990
1998	0.0	0.2	0.1	1.8	5.0	8.3	7.9	<b>5.6</b>	<b>4.0</b>	<b>1.4</b>	<b>0.6</b>	<b>0.1</b>	1073
1999	<b>0.0</b>	<b>-0.1</b>	<b>0.1</b>	<b>0.8</b>	<b>2.2</b>	<b>5.8</b>	<b>7.8</b>	<b>6.7</b>	<b>5.6</b>	<b>2.5</b>	<b>0.8</b>	<b>0.2</b>	<b>990</b>
2000	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.5</b>	<b>2.1</b>	<b>6.7</b>	<b>9.4</b>	<b>8.4</b>	<b>6.1</b>	<b>2.7</b>	<b>0.4</b>	<b>0.1</b>	<b>1115</b>
2001	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>1.1</b>	<b>2.6</b>	<b>7.2</b>	<b>9.5</b>	<b>7.5</b>	<b>5.7</b>	<b>2.0</b>	<b>0.7</b>	<b>0.1</b>	<b>1113</b>
2002	<b>0.0</b>	<b>-0.1</b>	<b>0.1</b>	<b>0.7</b>	<b>2.6</b>	<b>9.0</b>	<b>8.6</b>	<b>8.5</b>	<b>5.6</b>	<b>2.3</b>	<b>0.3</b>	<b>0.1</b>	<b>1157</b>
2003	<b>-0.1</b>	<b>-0.1</b>	<b>0.0</b>	<b>0.6</b>	<b>2.3</b>	<b>7.8</b>	<b>8.5</b>	<b>7.6</b>	<b>5.8</b>	<b>1.8</b>	<b>0.7</b>	<b>0.2</b>	<b>1081</b>
2004	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>1.1</b>	<b>2.3</b>	<b>6.7</b>	<b>8.0</b>	<b>6.9</b>	<b>2.1</b>	<b>1.6</b>	<b>0.8</b>	<b>0.3</b>	<b>918</b>
2005	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>1.1</b>	<b>1.8</b>	<b>7.0</b>	<b>8.6</b>	<b>6.6</b>	<b>4.8</b>	<b>2.1</b>	<b>0.7</b>	<b>0.0</b>	<b>1011</b>
2006	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.6</b>	<b>1.9</b>	<b>6.4</b>	<b>6.7</b>	<b>8.5</b>	<b>6.2</b>	<b>2.2</b>	<b>0.7</b>	<b>0.2</b>	<b>1028</b>
2007	<b>0.1</b>	<b>0.0</b>	<b>0.1</b>	<b>0.4</b>	<b>1.7</b>	<b>6.3</b>	<b>7.2</b>	<b>8.0</b>	<b>6.5</b>	<b>2.4</b>	<b>0.6</b>	<b>0.1</b>	<b>1023</b>
2008	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>1.0</b>	<b>2.5</b>	<b>7.2</b>	<b>8.8</b>	<b>6.8</b>	<b>5.0</b>	<b>2.3</b>	<b>0.6</b>	<b>0.2</b>	<b>1055</b>
2009	<b>-0.1</b>	<b>0.0</b>	<b>0.1</b>	<b>1.0</b>	<b>2.8</b>	<b>8.5</b>	<b>8.2</b>	<b>8.1</b>	<b>5.9</b>	<b>2.3</b>	<b>0.8</b>	<b>0.2</b>	<b>1153</b>
2010	<b>0.0</b>	<b>0.0</b>	<b>0.2</b>	<b>0.8</b>	<b>2.0</b>	<b>7.1</b>	<b>9.4</b>	<b>8.8</b>	<b>6.0</b>	<b>2.8</b>	<b>0.8</b>	<b>0.2</b>	<b>1166</b>
2011	<b>0.1</b>	<b>0.0</b>	<b>0.0</b>	<b>0.7</b>	<b>1.9</b>	<b>7.3</b>	<b>9.2</b>	<b>8.2</b>	<b>5.9</b>	<b>2.5</b>	<b>0.4</b>	<b>0.1</b>	<b>1109</b>
2012	<b>0.0</b>	<b>0.1</b>	<b>0.1</b>	<b>1.0</b>	<b>2.3</b>	<b>7.9</b>	<b>9.4</b>	<b>9.0</b>	<b>6.9</b>	<b>3.1</b>	<b>0.5</b>	<b>0.1</b>	<b>1235</b>
2013	<b>0.0</b>	<b>0.0</b>	<b>0.2</b>	<b>0.8</b>	<b>2.3</b>	<b>7.9</b>	<b>9.5</b>	<b>9.0</b>	<b>6.5</b>	<b>3.1</b>	<b>0.7</b>	<b>0.1</b>	<b>1224</b>
2014	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>1.0</b>	<b>2.2</b>	<b>8.3</b>	<b>8.7</b>	<b>6.8</b>	<b>6.2</b>	<b>2.3</b>	<b>0.7</b>	<b>0.1</b>	<b>1117</b>
2015	<b>0.0</b>	<b>0.1</b>	<b>0.1</b>	<b>1.0</b>	<b>3.5</b>	<b>7.7</b>	<b>8.0</b>	<b>7.6</b>	<b>5.7</b>	<b>2.2</b>	<b>0.6</b>	<b>0.2</b>	<b>1122</b>
2016	<b>0.1</b>	<b>0.0</b>	<b>0.2</b>	<b>1.1</b>	<b>3.5</b>	<b>8.3</b>	<b>8.9</b>	<b>7.9</b>	<b>5.2</b>	<b>2.0</b>	<b>0.6</b>	<b>0.1</b>	<b>1158</b>
2017	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.8</b>	<b>2.4</b>	<b>7.7</b>	<b>8.8</b>	<b>7.3</b>	<b>5.2</b>	<b>2.1</b>	<b>0.7</b>	<b>0.1</b>	<b>1073</b>
2018	<b>0.0</b>	<b>0.0</b>	<b>0.2</b>	<b>1.4</b>	<b>3.7</b>	<b>7.9</b>	<b>8.4</b>	<b>7.1</b>	<b>4.2</b>	<b>2.1</b>	<b>0.8</b>	<b>0.1</b>	<b>1100</b>
2019	<b>0.0</b>	<b>0.1</b>	<b>0.2</b>	<b>0.8</b>	<b>2.4</b>	<b>6.5</b>	<b>7.8</b>	<b>6.4</b>	<b>5.3</b>	<b>2.6</b>	<b>0.8</b>	<b>0.2</b>	<b>1012</b>
2020	<b>0.1</b>	<b>0.1</b>	<b>0.3</b>	<b>0.8</b>	<b>2.5</b>	<b>6.0</b>	<b>5.8</b>	<b>7.1</b>	<b>5.2</b>	<b>2.2</b>	<b>0.8</b>	<b>0.2</b>	<b>952</b>
2021	<b>0.1</b>	<b>0.1</b>	<b>0.3</b>	<b>1.1</b>	<b>2.4</b>	<b>6.9</b>	<b>7.4</b>	<b>5.9</b>	<b>5.1</b>	<b>2.6</b>	<b>0.7</b>	<b>0.2</b>	<b>1006</b>

**Table S3.** Same as Table S1, but for ecosystem respiration (Rec).

Year	Monthly mean Rec (gC m <sup>-2</sup> d <sup>-1</sup> )												Rec (gC m <sup>-2</sup> yr <sup>-1</sup> )
	1	2	3	4	5	6	7	8	9	10	11	12	Annual
1994	0.6	0.5	0.6	1.8	2.6	3.9	4.5	3.9	3.5	2.1	1.6	0.6	804
1995	0.5	0.5	0.6	1.4	2.6	3.9	4.3	3.9	3.1	2.2	1.2	0.6	758
1996	0.5	0.5	0.6	1.2	2.5	4.0	4.4	3.7	3.1	2.0	1.5	0.6	755
1997	0.5	0.6	0.7	1.5	2.7	4.0	4.3	3.7	3.2	1.9	1.6	0.7	773
1998	0.6	0.6	0.7	2.5	3.3	4.1	4.3	3.7	3.5	2.4	1.5	0.7	851
1999	0.6	0.6	0.7	1.5	2.8	4.1	4.4	3.8	3.6	2.2	1.5	0.6	802
2000	0.6	0.5	0.6	1.2	2.8	4.1	4.5	3.9	3.6	2.2	1.7	0.7	803
2001	0.6	0.6	0.7	1.7	2.9	4.1	4.5	3.7	3.3	2.2	1.5	0.6	804
2002	0.6	0.6	0.8	1.8	2.7	4.0	4.5	3.8	3.3	2.1	1.2	0.6	799
2003	0.6	0.6	0.7	1.8	2.9	4.1	4.2	3.9	3.4	1.9	1.7	0.6	805
2004	0.5	0.6	0.7	1.8	3.0	4.2	4.5	3.7	3.5	2.2	1.6	0.7	822
2005	0.6	0.6	0.6	1.7	2.4	4.2	4.4	3.7	3.4	2.2	1.4	0.5	785
2006	0.5	0.6	0.6	1.2	2.7	4.1	4.2	3.9	3.4	2.3	1.5	0.7	786
2007	0.6	0.6	0.7	1.2	2.5	4.0	4.3	3.9	3.6	2.1	1.4	0.7	784
2008	0.6	0.5	0.7	1.6	2.9	4.0	4.4	3.8	3.3	2.2	1.5	0.7	803
2009	0.6	0.7	0.7	1.7	3.1	4.1	4.5	3.7	3.2	2.2	1.6	0.7	820
2010	0.6	0.6	0.7	1.3	2.7	4.2	4.5	4.0	3.5	2.3	1.4	0.7	806
2011	0.5	0.6	0.6	1.3	2.8	4.2	4.5	3.8	3.5	2.2	1.7	0.6	800
2012	0.5	0.6	0.7	1.7	2.6	4.0	4.4	3.8	3.5	2.1	1.3	0.6	791
2013	0.5	0.5	0.7	1.3	2.9	4.1	4.4	3.8	3.4	2.4	1.4	0.6	800
2014	0.6	0.6	0.7	1.5	2.7	4.1	4.4	3.7	3.2	2.2	1.6	0.6	786
2015	0.6	0.6	0.7	1.9	3.3	4.0	4.4	3.8	3.2	2.0	1.7	0.7	817
2016	0.6	0.6	0.7	1.9	3.4	4.0	4.4	3.8	3.5	2.3	1.5	0.6	833
2017	0.6	0.5	0.6	1.4	3.0	3.9	4.5	3.8	3.3	2.2	1.4	0.6	790
2018	0.5	0.6	0.7	2.1	3.2	4.1	4.6	3.9	3.3	2.1	1.6	0.7	836
2019	0.6	0.6	0.7	1.4	3.0	4.0	4.3	3.9	3.5	2.4	1.6	0.7	814
2020	0.6	0.6	0.7	1.1	3.1	4.1	4.2	4.0	3.5	2.1	1.6	0.6	807
2021	0.6	0.6	0.8	1.5	2.9	4.1	4.4	3.8	3.4	2.2	1.5	0.6	806