

A biogeochemical compromise: The high methane cost of sequestering carbon in restored wetlands

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Table S1

Introduction

Literature values of wetland CH₄ and CO₂ measurements were compiled from Petrescu et al. (2015) as well as more recently published studies and grouped by latitude and wetland type. Only annual or near-annual eddy covariance studies measuring both CH₄ and CO₂, from restored or natural wetlands, in addition to a subtropical inundated pasture (Chamberlain et al., 2017b; Chamberlain et al., 2016) are reported here. Interpolations based on seasonal measurements, where necessary, are detailed in Petrescu et al. (2015).

<i>Climate Zone</i>	<i>Site name, location</i>	<i>Coordinates</i>	<i>Ecosystem description</i>	<i>Measurement period</i>	<i>gC-CO₂ m⁻²yr⁻¹</i>	<i>CO₂ (S/Y)</i>	<i>gC-CH₄ m⁻²yr⁻¹</i>	<i>CH₄ (S/Y)</i>	<i>Citation</i>
Temperate	Plotnikovo, RUS	56° 51' N, 82° 58' E	Mesotrophic fen	10 May 1999 - 16 September 1999	-108.00	S	19.52	S	(Friborg et al., 2003)
	Spreewald, DEU	51°53' N, 14°02' E	Treed wetland (marsh)	CO ₂ : 8 April - 23 May 2011; CH ₄ : 2011	-122.73	Y	0.20	S	(Tiemeyer, 2013)
	Park Falls, WI, USA	45° 57' N, 90° 16' W	Mixed forest/wetland (28%) landscape (bog)	2011-2012	-80.00	Y	0.79	Y	(Desai et al., 2015)
	Fäjemyr, SWE	56° 15' N, 13° 33' E	Ombrotrophic bog	06 Feb – 31 Dec 2008, 20 January – 31 Dec 2009	-30.00	S	2.15	S	(Mastepanov et al., 2008)
	Lake Erie, OH, USA	41°27' N, 82°59' W	Emergent freshwater marsh	March 2011-March 2013	14.60	Y	50.80	Y	(Chu et al., 2015)
	Bog lake peatland, MN, USA	47° 32' N, 93° 28' W	Open ombrotrophic bog	20 May - 12 Oct 1991 & 1992	19.64	S	10.88	Y	(Shurpali et al., 1993; Shurpali et al., 1995)
	Bog lake peatland, MN, USA	47° 32' N, 93° 28' W	Open ombrotrophic bog	May-Oct 2009-2011	-35.27	Y	16.30	Y	(Olson et al., 2013)
	Burns Bog, Delta, BC, CAN	49° 07' N, 122° 59' W	Rewetted coastal raised bog	16 June 2015 - 15 June 2016	-179.00	Y	17.00	Y	(Lee et al., 2016)
	Western Peatland, Athabasca, Alberta, CAN	54° 57' N, 112° 28' W	Moderately rich treed fen	CO ₂ : Aug 2003 - September 2009; CH ₄ : May - September 2007	-188.45	S	2.40	S	(Flanagan and Syed, 2011; Long et al., 2010)
	Siikaneva, FIN	61°50'N, 24°12'E	Boreal oligotrophic fen	CH ₄ : March 2005-Feb 2006; CO ₂ : 2005	-42.55	Y	9.46	Y	(Rinne et al., 2007)
	Lost Creek Wetland, WI, USA	46°N, 89° W	Shrub wetland (marsh)	CO ₂ : 2000-present; CH ₄ : 2014-present	0.00*	Y	51.00	Y	(Pugh et al., 2017)
Skjern Meadows, DEN	55° 54' N, 8°24' E	Restored wetland peatland (marsh)	2009-2011	-142.27	Y	10.51	Y	(Herbst et al., 2013)	
Arctic	Zackenberglund, GREENLAND	74°30' N, 21°00' W	Continuous permafrost fen	01 June - 26 August 1997	-35.18	S	3.00	S	(Friborg et al., 2000)
	Kytalyk, RUS	70°49' N, 147°29' E	Wetland tundra	08 July - 24 August 2007-2009	-88.36	S	2.48	S	(Parmentier et al., 2011)
	Lena Delta, RUS	72°22'N, 126°30'E	Wetland tundra polygons	11 June- 3 September 2006	-34.36	S	1.21	S	(Runkle et al., 2013; Sachs et al., 2008; Sachs et al., 2010; Zhang et al., 2012)
	Stordalen, SWE	68°20' N, 19°03' E	Fen	1 June 2012 - 31 May 2014	-66.30	Y	21.20	Y	(Jammet et al., 2017)

	Barrow, USA	71°17' N, 156°35' W	Wet sedge tundra	12 June - 31 August 2007	-34.09	S	0.74	S	(Zona et al., 2009)
Subtropical	Buck Island Ranch, FL, USA	27°9' N, 81°11' W	Grazed, flooded pasture	April 2013 - March 2015	-119.00	Y	23.45	Y	(Chamberlain et al., 2017)
	Pointe-aux-Chene WMA, LA, USA	29°30' N, 90°26' W	Brackish marsh	May 2012 - Oct 2013	170.60	Y	11.10	Y	(Holm et al., 2016; Krauss et al., 2016)
	Salvador WMA, LA, USA	29°51' N, 90°17' W	Freshwater marsh	May 2012 - Oct 2013	-337.00	Y	47.10	Y	(Holm et al., 2016; Krauss et al., 2016)

Table S1. Literature values of wetland mean annual (where there are multiple years reported) CH₄ and CO₂ eddy covariance measurements compiled from Petrescu et al. (2015), as well as more recently published studies. (S) denotes seasonal measurement interpolated to annual budget, (Y) denotes annual measurement. *Reported as “near-neutral”.