Supplement

A multi-scale comparison of modeled and observed seasonal methane cycles in northern wetlands
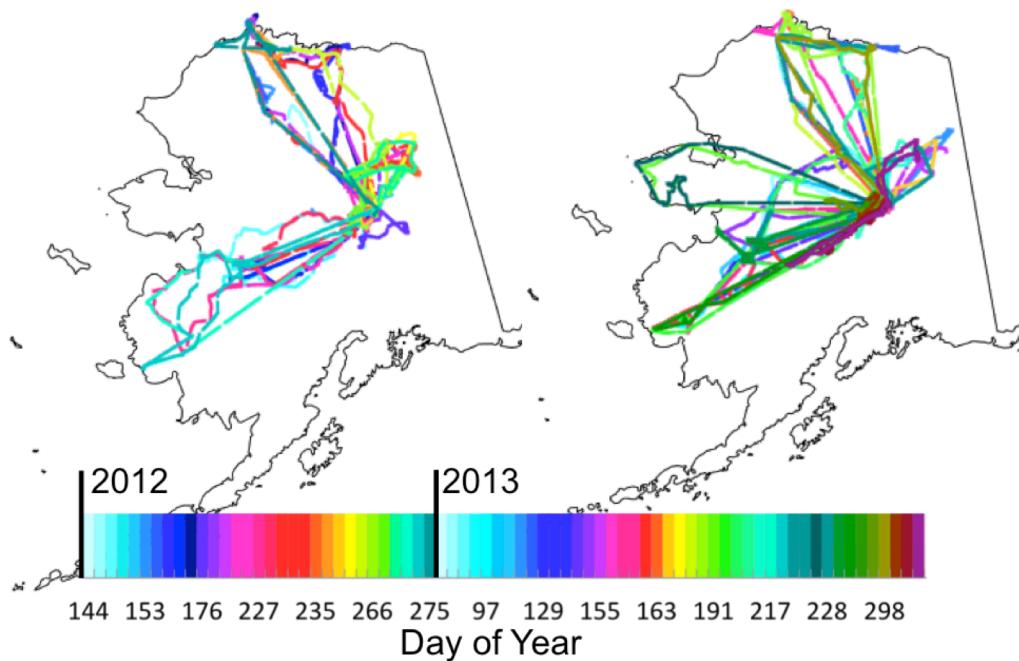
Fig. S1. Flight tracks with valid CH_4 mole fractions during the CARVE 2012 and 2013 campaigns. There were 31 flight days in 2012 and 43 flight days in 2013 (Supplement Table S2).

Site Name	Site Location (Lat, Lon)	Citation	Measurement Method	Data years
Ruoergai, China	32°47'N, 102°32'E	Ding et al. (2004)	SC	2001, 2002
Mississippi, USA	34°24'N, 89°50'W	Koh et al. (2009)	SC	2005, 2006
Michigan, USA	42°27'N, 84°01'W	Shannon and White (1994)	SC	1991, 1992, 1993
Minnesota, USA	47°32'N, 93°28'W	Clement et al. (1995)	SC	1991, 1992
Minnesota, USA	47°32'N, 93°28'W	Dise(1993)	SC	1988, 1989, 1990
Boreas NSA-Fen, Canada	55°55'N, 98°25'W	Bubier et al. (1998)	SC	1994, 1996
Salmisuo, Finland	62°47'N, 30°56'E	Saarnio et al.(1997)	SC	1993
Degeröe, Sweden	64°11'N, 19°33'E	Granberg et al. (2001)	SC	1995, 1996, 1997
Alaska, USA	64°52'N, 147°51'W	Whalen and Reeburgh (1992)	SC	1987,1988, 1989, 1990
Stordalen, Sweden	68°20'N, 19°03E	Svensson et al. (1999)	SC	1974, 1994, 1995
Boreas SSA-Fen, Canada	53°48'N, 104°37'W	Verma et al.(1998)	EC	1994, 1995
Stordalen, Sweden	68°20'N, 19°03E	Jackowicz-Korczynski et al. (2010)	EC	2006, 2007
Alaska-BEO1, USA	71°17'N, 156°37'W	Raz-Yaseef, N. (NGEE-Arctic)	EC	2012, 2013
Alaska-BEO2, USA	71°17'N, 156°37'W	Zona et al., (2016)	EC	2013, 2014
Alaska-BES, USA	71°17'N, 156°36'W	Zona et al., (2016)	EC	2013, 2014
Alaska-CMDL, USA	71°19'N, 156°37'W	Zona et al., (2016)	EC	2013, 2014
Alaska-ATQ, USA	70°28'N, 157°25'W	Zona et al., (2016)	EC	2013, 2014
Alaska-IVO, USA	68°29'N, 155°45'W	Zona et al., (2016)	EC	2013, 2014
Alaska-FAI, USA	64°52'N, 147°51'W	Iwata et al., (2015)	EC	2011, 2012, 2013
Alaska-IMN, USA	68°37'N, 149°18'W	EUSKIRCHEN, E. S. (UAF)	EC	2012, 2013, 2014

Table S1. Summary of the sites and measurements used in comparison with model prediction. SC: static chamber; EC: eddy covariance tower.
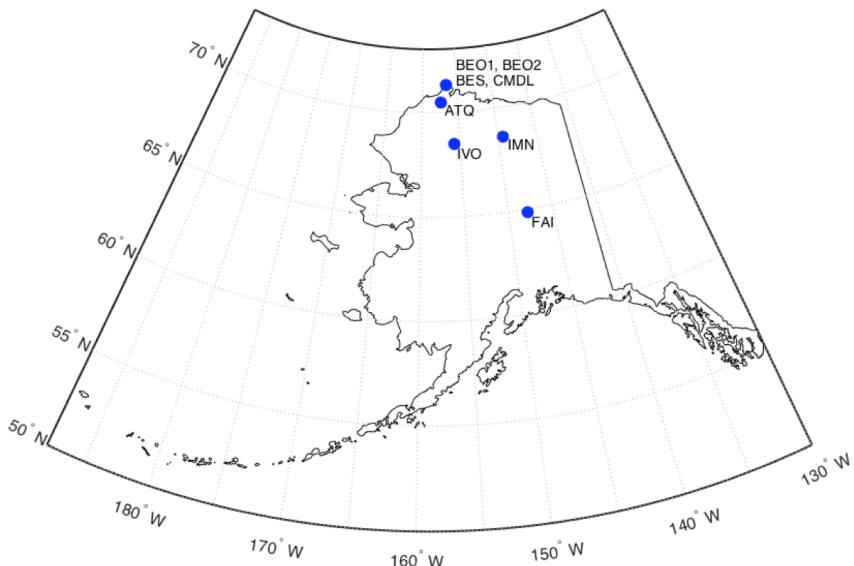
Fig. S2 The eight eddy covariance (EC) sites in Alaska

Table S2. The flight dates of CARVE measurements in 2012 and 2013

Year	Month	Dates
2012	May	23,24,27,28,30
	June	1,18,19,21,22,24
	July	17,22,24,25
	August	14,18,19,20,21,22,23
	September	17,18,19,21,22,23,24,26
	October	1
2013	April	2,3,4,5,6
	May	2,4,6,7,8,9,10,13
	June	2,3,6,7,8,9,11
	July	3,4,5,7,9,11,12
	August	2,3,4,7,11,12,13
	September	5,6,7,10,12
	October	24,25,26,27