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Supplement of

Changes in the annual sea ice freeze–thaw cycle in the Arctic Ocean from 2001 to 2018

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Table S1—Summary of surface and basal melt/freeze onsets from different methods.

No.	IMBs	Location	SMO-IMB	SFO-IMB	SMO-SAT	SFO-SAT	ESMO-PMW	ESFO-PMW	CSMO-PMW	CSFO-PMW	BMO-IMB	BFO-IMB
1	2001A	CAO	/	/	2001/06/14	2001/08/19	/	/	/	/	/	/
2	2002A	CAO	2002/05/29	2002/08/22	2002/05/29	2002/08/24	2002/05/24	2002/08/13	2002/06/14	2002/08/23	2002/06/11	2002/11/06
3	2003A	CAO	2003/06/12	/	2003/06/15	/	2003/06/09	/	2003/06/22	/	2003/06/28	/
4	2003B	CAO	/	/	2003/06/12	/	/	/	/	/	/	/
5	2003C	BG	2004/05/22	/	2004/06/15	/	/	/	/	2003/09/07	2004/05/19	2003/10/13
6	2003E	CAO	/	/	/	/	/	/	/	/	/	2003/10/22
7	2004A	CAO	2004/06/10	2004/08/26	2004/06/20	2004/08/22	2004/06/04	2004/08/20	2004/06/10	2004/08/21	2004/09/14	2004/12/01
8	2004B	CAO	2004/06/13	2004/08/16	2004/06/15	2004/08/13	2004/06/12	2004/09/05	2004/06/19	2004/09/07	/	2004/11/24
9	2004C	CAO	2004/06/13	2004/08/21	2004/06/18	2004/08/16	/	/	/	/	2004/07/3	/
10	2004D	CAO	2004/06/11	2004/08/18	2004/06/13	2004/08/13	2004/06/05	2004/08/12	2004/06/24	2004/08/30	2004/06/21	2004/11/30
11	2005A	CAO	/	/	2005/06/07	2004/08/12	/	/	/	/	/	/
12	2005B	BG	/	/	2006/06/09	/	2006/05/23	2006/09/03	2006/06/09	2006/09/09	2006/06/03	2005/11/29 2006/11/24
13	2005F	CAO	2006/06/12	2006/08/18	2006/06/15	2006/08/09	2006/06/10	2006/08/11	2006/06/29	2006/09/16	2006/06/16	2005/11/25
14	2006B	CAO	2006/06/11	/	2006/06/18	2006/08/11	/	2006/08/10	/	2006/08/23	/	/
15	2006C	BG/CAO	2007/06/05	/	2007/06/06	2007/08/31	2007/06/07	2007/09/11	2007/06/07	2007/09/12	2007/05/28	2006/12/11 2008/06/10 2008/06/15 2008/06/15 2008/06/07 2007/11/16

16	2006D	CAO	2007/06/10	2007/8/31	2007/06/12	2007/08/26	2007/06/08	2007/08/24	2007/06/09	2007/08/26		2006/11/12
17	2006E	CAO	/	/	/	/	/	/	/	/	/	2006/10/15
18	2006F	CAO	/	/	/	2007/08/27	2007/06/10	2007/09/05	2007/06/14	2007/09/17	/	/
19	2007B	BG	2007/06/05	/	2007/06/05	/	2007/06/06	/	2007/06/06	/	2007/05/27	/
20	2007C	CAO	2007/06/10	2007/09/06	2007/06/13	2007/08/21	2007/06/10	2007/09/07	2007/06/14	2007/09/17	/	/
21	2007D	CAO	2007/06/10	/	2007/06/14	/	2007/06/07	/	2007/06/09	/	2007/06/23	/
22	2007E	BG	/	/	2008/06/01	/	2008/06/02	2007/09/01	2008/06/03	2007/09/02	2008/05/20	2007/12/22
23	2007F	BG	/	/	/	2007/08/27	2008/05/24	2007/08/23	2008/05/24	2007/08/25	2008/05/28	2007/12/17
24	2007H	CAO	/	/	/	/	/	/	/	/	/	2007/11/29
25	2007J	CAO/BG	/	/	2008/06/01	2008/08/25	2008/05/19	2008/08/24	2008/05/21	2008/08/25	2008/06/20	2007/11/30
					2009/06/03		2009/06/06		2009/06/06		2009/05/28	2008/11/18
26	2008B	CAO	2008/06/13	/	2008/06/16	2008/8/16	2008/06/11	2008/08/12	2008/06/17	2008/08/19	2008/06/21	2008/10/28
27	2008C	CAO	2008/06/12	/	2008/06/17	2008/08/10	2008/06/11	2008/08/12	2008/06/18	2008/09/20	2008/06/28	2008/12/2
28	2008D	CAO	2008/06/10	/	2008/06/13	/	2008/06/09	/	2008/06/10	/	/	/
29	2008E	CAO	2008/06/09	/	2008/06/18	2008/08/14	2008/06/08	2008/08/22	2008/06/20	2008/09/12	2008/06/08	/
30	2008F	BG	/	/	/	2008/08/27	/	2008/08/22	/	2008/08/26	/	2008/10/31
31	2009A	CAO	/	/	/	/	/	/	/	/	2009/05/28	/
32	2010A	CAO	2010/06/15	2010/08/22	2010/06/16	2010/08/05	2010/06/11	2010/08/20	2010/06/18	2010/08/21	2010/06/16	/
33	2010F	BG	/	/	/	/	/	/	/	/	2011/05/21	2010/11/29

34	2010H	CAO	2011/06/15	/	2011/06/18	2011/08/29	2011/06/20	2011/08/23	2011/06/22	2011/08/24	/	/
35	2011A	BG	2011/05/21	/	2011/05/20	/	2011/05/30	/	/	/	/	/
36	2011C	CAO	2011/06/03	/	/	/	2011/06/03	/	2011/06/08	/	/	/
37	2011D	CAO	2011/06/11	/	2011/06/12	/	2011/06/04	/	2011/06/25	/	/	/
38	2011I	BG	/	2011/09/01	/	2011/08/29	/	2011/08/26	/	2011/09/06	/	/
39	2011J	BG	/	2011/09/01	/	2011/08/25	/	2011/09/13	/	2011/09/14	/	2011/12/18
40	2011K	BG	/	2011/09/14	/	2011/09/07	/	2011/09/14	/	2011/09/15	/	2011/10/29
41	2011M	CAO	2012/06/09	2012/08/29	2012/06/08	2012/08/16	2012/05/31	2012/08/29	2012/06/01	2012/08/30	/	/
42	2012B	CAO	2012/05/27	/	2012/06/07	2012/09/01	2012/05/26	2012/08/30	2012/06/25	2012/08/31	2012/06/11	/
43	2012C	CAO	2012/05/29	/	2012/06/10	/	2012/05/26	/	2012/06/25	/	/	/
44	2012D	CAO	2012/06/01	/	2012/06/11	/	2012/05/31	/	2012/06/13	/	2012/06/23	/
45	2012G	CAO	2013/06/11	2013/08/17	2013/06/15	2013/08/04	2013/06/10	2013/08/09	2013/06/16	2013/09/03	2013/06/17	2012/11/07
46	2012H	BG	2013/05/31	/	2013/06/10	2013/08/19	2013/05/28	2013/08/16	2013/06/02	2013/08/19	2013/05/21	2012/11/04
47	2012I	CAO	/	2012/08/23	/	2012/08/27	/	2012/08/24	/	2012/08/25	/	2012/11/12
48	2012J	CAO	/	2012/09/11	2013/06/24	/	2013/06/04	2012/09/12	2013/07/12	2012/09/12	/	2012/10/14
								2013/08/26		2013/08/31		
49	2012L	BG	2013/05/27	2013/08/19	2013/06/09	2013/08/19	2013/05/31	2013/08/26	2013/06/04	/	2013/05/21	/
50	2013B	CAO	2013/07/01	2013/08/27	2013/07/01	2013/08/04	2013/06/04	2013/08/22	2013/07/06	2013/08/25	2013/06/09	/
51	2013E	CAO	2013/06/19	/	2013/06/26	/	2013/06/04	/	2013/07/06	/	/	/

52	2013F	BG	2014/06/13	2014/09/02	2014/06/18	2014/08/24	2014/05/02	2014/08/24	2014/06/14	2014/08/28	2014/05/08	2013/10/19
			2015/05/19		2015/06/11		2015/05/19		2015/05/29		2015/05/26	2014/10/05
53	2013G	BG	/	/	/	/	/	/	/	/	/	2013/12/26
54	2013H	CAO	/	/	/	/	/	/	/	/	/	2013/10/29
55	2013I	BG	/	/	/	/	/	/	/	/	/	2013/10/29
56	2014B	BG	2014/05/02	/	2014/06/16	/	2014/05/03	/	2014/06/13	/	2014/06/25	/
57	2014C	BG	2014/05/03	/	2014/06/17	/	2014/05/03	/	2014/05/13	/	2014/05/26	/
58	2014E	CAO	2014/06/25	2014/08/18	2014/06/24	2014/08/10	2014/06/26	2014/08/09	2014/06/27	2014/09/17	/	/
59	2014F	BG	2015/05/17	2014/08/25	2015/05/22	/	2015/05/19	2014/08/18	2015/06/01	2014/08/20	2015/05/18	/
60	2014G	BG	/	/	2015/05/22	/	2015/05/23	/	2015/06/09	/	/	/
61	2014I	BG	2015/05/19	/	2015/06/10	/	2015/05/19	/	2015/05/31	/	2015/05/24	/
61	2015B	BG	/	/	/	/	/	/	/	/	2015/05/15	/
62	2015D	CAO	2015/06/05	2015/08/24	2015/06/09	2015/08/20	2015/06/02	2015/08/14	2015/06/19	2015/08/21	2015/06/16	/
63	2015F	CAO	2016/06/09	/	2016/06/14	2015/08/19	2016/06/09	/	2016/06/10	2015/09/06	2016/06/14	2015/11/01
64	2015G	CAO	/	/	/	/	/	/	/	/	/	2015/11/01
65	2015I	CAO	/	/	/	/	/	/	/	/	/	2015/11/18
66	2015J	BG	/	/	/	2016/08/30	/	2016/08/28	/	2016/08/28	2016/05/19	2015/11/01
67	2017A	BG	2017/06/08	/	2017/06/19	/	2017/05/29	/	2017/06/07	/	2017/05/22	/
68	2017B	CAO	2017/06/17	2017/09/11	2017/06/17	2017/08/25	2017/06/11	2017/09/07	2017/06/28	2017/09/10	2017/06/02	2017/11/08

69	2017D	BG	/	/	2018/06/08	/	2018/06/03	/	2018/06/06	/	/	/
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