

Table S1. Remote sensing data used for outline extraction of A68a, the area and parameter of A68a on different observation dates.

Iceberg	Date	CenterLat (degree)	Centerlon (degree)	Area (km ²)	Parameter (km)	Error of Area (km ²)	Image
A68b	20170718	-67.255562	-60.817377	85.0	38.6	1.0	s1a-ew-grd-hh-20170718t235039-20170718t235139-017532-01d523-001.tiff
A68a	20170722	-67.961743	-60.876499	5648.7	413.4	10.3	s1a-ew-grd-hh-20170722t001458-20170722t001558-017576-01d670-001.tiff
A68b	20170722	-67.270836	-60.832699	84.7	38.5	1.0	s1a-ew-grd-hh-20170722t001458-20170722t001558-017576-01d670-001.tiff
A68a	20180119	-67.771615	-60.460849	5613.8	430.2	10.8	s1a-ew-grd-hh-20180119t235845-20180119t235945-020230-02285d-001.tiff
A68a	20180718	-67.598382	-59.613729	5493.5	401.6	10.0	s1a-ew-grd-hh-20180718t235851-20180718t235951-022855-027a77-001.tiff
A68a	20190116	-66.658290	-58.954639	5475.7	424.9	10.6	s1b-ew-grd-hh-20190116t075242-20190116t075342-014516-01b09b-001.tiff
A68a	20190716	-65.556068	-58.340262	5383.3	392.2	9.8	s1b-ew-grd-hh-20190716t233400-20190716t233505-017165-0204a8-001.tiff
A68a	20190820	-65.162119	-57.928811	5323.1	394.0	9.8	s1b-ew-grd-hh-20190820t075249-20190820t075349-017666-0213c3-001.tiff
A68a	20190920	-65.010718	-57.645070	5321.9	393.0	9.8	s1b-ew-grd-hh-20190920t074429-20190920t074529-018118-0221dd-001.tiff
A68a	20191014	-64.906512	-57.478979	5313.8	393.7	9.8	s1b-ew-grd-hh-20191014t074430-20191014t074530-018468-022cbd-001.tiff
A68a	20191119	-64.770480	-56.459051	5301.4	393.0	9.8	s1a-ew-grd-hh-20191119t233446-20191119t233550-029986-036c4a-001.tiff
A68a	20191215	-64.472854	-55.602035	5294.3	401.4	10.0	s1a-ew-grd-hh-20191215t231834-20191215t231938-030365-037956-001.tiff
A68a	20200111	-63.955031	-53.383135	5142.8	391.5	9.8	s1b-ew-grd-hh-20200111t075148-20200111t075248-019766-0255f6-001.tiff
A68a	20200227	-62.646448	-53.209014	5068.7	391.1	9.8	s1a-ew-grd-hh-20200227t230322-20200227t230422-031444-039ec9-001.tiff

A68a	20200317	-61.801540	-52.150074	5031.6	392.2	9.8	s1a-ew-grd-hh-20200317t225506-20200317t225606-031721-03a873-001.tiff
A68a	20200415	-60.800285	-50.207698	4931.3	391.3	9.8	s1a-ew-grd-hh-20200415t230323-20200415t230423-032144-03b755-001.tiff
A68a	20200422	-60.616417	-50.280739	4749.1	384.5	9.6	s1a-ew-grd-hh-20200422t225507-20200422t225607-032246-03baed-001.tiff
A68c	20200422	-60.392719	-51.157896	162.1	54.5	1.4	s1a-ew-grd-hh-20200422t225507-20200422t225607-032246-03baed-001.tiff
A68a	20200524	-60.292840	-49.496361	4670.9	390.2	9.8	s1b-ew-grd-hh-20200524t223830-20200524t223930-021729-0293e2-001.tiff
A68a	20200611	-59.928756	-48.890569	4618.1	376.2	9.4	s1a-ew-grd-hh-20200611t223913-20200611t224013-032975-03d1d0-001.tiff
A68a	20200710	-59.501127	-49.435560	4554.9	381.2	9.5	s1a-ew-grd-hh-20200710t224720-20200710t224820-033398-03deaa-001.tiff
A68a	20200816	-58.861869	-49.794604	4472.5	383.9	9.6	s1b-ew-grd-hh-20200816t223835-20200816t223935-022954-02b92b-001.tiff
A68a	20200908	-59.288183	-49.688496	4435.5	381.6	9.5	s1a-ew-grd-hh-20200908t224723-20200908t224823-034273-03fbbb-001.tiff
A68a	20201009	-57.533720	-47.885448	4324.3	368.3	9.2	s1a-ew-grd-hh-20201009t223919-20201009t224019-034725-040ba5-001.tiff
A68a	20201121	-56.155275	-41.242298	4099.4	382.1	9.6	s1a-ew-grd-hh-20201121t072605-20201121t072705-035343-042119-001.tiff
A68a	20201209	-55.024682	-39.296301	3925.4	384.9	9.6	s1b-ew-grd-hh-20201209t072431-20201209t072535-024622-02ed88-001.tiff
A68a	20201213	-55.165336	-38.029978	3840.9	358.6	9.0	s1b-ew-grd-hh-20201213t215842-20201213t215942-024689-02efad-001.tiff
A68a	20201215	-55.303313	-37.721103	3825.1	358.8	9.0	s1b-ew-grd-hh-20201225t065306-20201225t065406-024855-02f50b-001.tiff
A68a	20201221	-56.246809	-36.884176	3582.5	334.1	8.4	s1a-ew-grd-hh-20201221t214224-20201221t214328-035789-043075-001.tiff
A68d	20201221	-55.322073	-36.936190	147.5	50.5	1.3	s1a-ew-grd-hh-20201221t214328-20201221t214425-035789-043075-001.tiff
A68a	20201222	-56.179889	-36.883439	2605.7	227.0	5.7	s1a-ew-grd-hh-20201222t071734-20201222t071834-035795-0430ac-001.tiff
A68d	20201222	-55.320450	-36.932963	146.4	50.7	1.3	s1a-ew-grd-hh-20201222t071734-20201222t071834-035795-0430ac-001.tiff

A68e	20201222	-56.736723	-36.570533	655.9	147.0	3.7	s1a-ew-grd-hh-20201222t071734-20201222t071834-035795-0430ac-001.tiff
A68f	20201222	-56.517146	-36.853663	230.1	70.9	1.8	s1a-ew-grd-hh-20201222t071734-20201222t071834-035795-0430ac-001.tiff
A68a	20201224	-56.552848	-36.574164	2600.9	229.4	5.7	s1a-ew-grd-hh-20201224t070105-20201224t070205-035824-043192-001.tiff
A68d	20201224	-55.482242	-36.867484	138.7	49.7	1.2	s1a-ew-grd-hh-20201224t070105-20201224t070205-035824-043192-001.tiff
A68a	20210128	-56.264788	-35.751754	1560.5	189.4	4.7	s1b-ew-grd-hh-20210128t070913-20210128t071001-025351-0304eb-001.tiff s1b-ew-grd-hh-20210128t070809-20210128t070913-025351-0304eb-001.tiff
A68g	20210128	-56.477715	-35.798319	742.6	135.6	3.4	s1b-ew-grd-hh-20210128t070913-20210128t071001-025351-0304eb-001.tiff s1b-ew-grd-hh-20210128t070809-20210128t070913-025351-0304eb-001.tiff
A68a	20210212	-56.710656	-34.292655	752.5	138.9	34.7	MOD02QKM.A2021043.1145.061.2021043190932.hdf
A68a	20210312	-56.117930	-32.025916	364.5	96.2	24.1	MOD02QKM.A2021071.1205.061.2021072012606.hdf
A68a	20210416	-52.858790	-33.529354	19.8	18.8	4.7	MOD02QKM.A2021106.1235.061.2021107031355.hdf

Table S2. Information of other MODIS data used in this research.

Index	Date	Image
1	20201216	MOD02QKM.A2020351.1245.061.2020358182102.hdf
2	20201217	MOD02QKM.A2020352.1150.061.2020352190753.hdf
3	20210520	MOD02QKM.A2021140.1225.061.2021141014525.hdf
4	20210520	MYD02QKM.A2021140.1630.061.2021141153238.hdf

Table S3. Cryosat-2 Data used to detect freeboard of A68a and the mean sea surface and freeboard of A68a extracted from the five different orbits of Cryosat-2.

Orbit	Cycle	Date-Time	S_i (m)	F_i (m)
56101	18	2020-11-07 T 07:59:11	15.96 ± 0.15	33.85
56224	18	2020-11-15 T 19:26:16	16.19 ± 0.31	32.82
56405	18	2020-11-28 T 06:49:30	15.72 ± 0.48	31.06
56434	18	2020-11-30 T 06:47:36	15.22 ± 0.40	32.01
56528	18	2020-12-06 T 18:16:36	15.36 ± 0.45	32.94

Table S4. Coordinates used for georeferencing A68a from December 15, 2020 to MODIS observation on December 16, 2020.

GCP on Sentinel-1 December 15		GCP on MODIS December 16	
X (m)	Y (m)	X (m)	Y (m)
-2371855.517	3031098.056	-2338939.512	3039672.94
-2295409.767	3007681.891	-2274043.685	2993018.26
-2289619.996	2971292.464	-2280078.7	2956734.917
-2276209.657	2973496.644	-2266724.571	2954497.459
-2337791.245	3048172.077	-2301180.962	3044969.823
-2364447.927	3053186.194	-2324741.544	3058250.966
-2379161.617	3051742.46	-2339204.075	3061583.376
-2354203.831	3000344.178	-2331990.634	3004904.861
-2340469.756	2988926.281	-2322634.73	2989692.543
-2314994.357	3027473.842	-2286206.027	3018054.559
-2362608.915	3011091.483	-2336520.341	3017777.605
-2384809.729	3045348.69	-2346578.906	3057330.117
-2383139.308	3038473.189	-2347196.407	3050283.184
-2324998.719	3037355.806	-2292479.98	3030573.942
-2316525.152	2989610.178	-2299771.317	2982682.996
-2308363.465	2993818.755	-2290698.479	2984055.238
-2274894.899	2962617.513	-2268909.126	2943782.583

Table S5. Coordinates used for georeferencing A68a from December 21, 2020 to MODIS observation on December 16, 2020.

GCP on Sentinel-1 December 21		GCP on MODIS December 16	
X (m)	Y (m)	X (m)	Y (m)
-2274128.788	2996151.716	-2343693.248	3048613.812
-2258158.143	3010187.593	-2324744.979	3058259.041
-2209073.253	2945956.276	-2293089.29	2983875.537
-2181040.342	2916964.066	-2273106.381	2948845.897
-2229596.996	3000348.487	-2299508.683	3041655.533
-2175690.821	2912924.731	-2268923.37	2943607.956
-2230975.868	2948887.275	-2313584.511	2992137.571
-2211308.622	2980867.837	-2286612.275	3018253.76
-2260001.42	2968256.598	-2336915.39	3018064.859
-2179684.497	2937649.664	-2266671.232	2968555.222
-2193592.808	2928726.119	-2282356.509	2963347.824

Table S6. Coordinates used for georeferencing A68d from December 21, 2020 to MODIS observation on December 16, 2020.

GCP on Sentinel-1 December 21		GCP on MODIS December 16	
X (m)	Y (m)	X (m)	Y (m)
-2297169.69	3048973.353	-2333402.43	3063739.142
-2295511.063	3052562.868	-2330034.673	3062155.65
-2292071.295	3040282.426	-2343680.898	3059030.918
-2289401.276	3037965.285	-2346592.054	3056606.604
-2294640.716	3043345.039	-2339796.965	3061418.126
-2288457.391	3051258.359	-2332876.28	3055395.413

Table S7. Drifting velocity of iceberg A68a during December 13-15 and December 15-16, 2020. The centroid of A68a on December 13 and 15, 2020 was extracted from Sentinel-1 images. Centroid on December 16, 2020 was extracted from MODIS Aqua image.

Centroid _Start (m)	Centroid _End (m)	Date_Start (YYYYMM MDD HH:MM:S S)	Date_End (YYYYMM MDD HH:MM:S S)	V _x (cm/s)	V _y (cm/s)	V (cm/s)	Angular Velocity (°/d)
(-2357843, 3014273)	(-2332560, 3015491)	20201213 21:58:42	20201215 07:25:34	21.0±0.1	1.0±0.1	21.0±0.1	17.2±0.7 clockwise
(-2332560, 3015491)	(-2306705, 3012311)	20201215 07:25:34	20201216 12:45:00	24.5±1.9	-3.0±1.9	24.7±1.9	15.1±1.6 clockwise