



Supplement of

Characterizing the surge behaviour and associated ice-dammed lake evolution of the Kyagar Glacier in the Karakoram

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Table S1. Mean differences and the standard deviation (SD) of elevation difference maps over off-glacier areas before and after co-registration process.

DEM Product ID	Date	Statistics of stable ground differences (Product vs SRTM) (m)			
		Pre-mean	Pre-SD	Post-mean	Post-SD
AST14DEM_00302272001055811	2001/2/27	5.34	10.76	-0.08	10.30
AST14DEM_00303312001055714	2001/3/31	9.81	22.63	0.67	15.19
AST14DEM_00304252001055043	2001/4/25	33.19	20.55	1.20	19.53
AST14DEM_00308022002054207	2002/8/2	6.14	13.33	0.68	10.74
AST14DEM_00305082003054658	2003/5/8	10.44	37.89	0.15	39.34
AST14DEM_00305032004054046	2004/5/3	5.09	18.78	1.56	14.29
AST14DEM_00305032004054037	2004/5/3	7.11	16.65	1.71	12.07
AST14DEM_00306112004054637	2004/6/11	2.11	18.26	0.38	16.93
AST14DEM_00310202005054549	2005/10/20	-2.96	11.45	0.14	9.58
AST14DEM_00311142005053944	2005/11/14	24.86	22.21	1.06	22.32
AST14DEM_00311142005053953	2005/11/14	25.24	21.46	1.45	21.73
AST14DEM_00311302005053951	2005/11/30	20.14	17.15	1.83	16.77
AST14DEM_00302092006054532	2006/2/9	-15.29	18.84	0.00	15.28
AST14DEM_00305282007054024	2007/5/28	6.71	15.00	1.75	11.23
AST14DEM_00305282007054033	2007/5/28	2.53	17.41	1.20	12.86
AST14DEM_00307312007054050	2007/7/31	5.20	13.02	0.24	10.64
AST14DEM_00307312007054059	2007/7/31	-6.05	18.55	0.69	15.64
AST14DEM_00312222007054044	2007/12/22	6.90	29.90	1.93	28.56
AST14DEM_00312222007054035	2007/12/22	6.46	26.46	1.37	24.60
AST14DEM_00303112008054024	2008/3/11	4.45	18.47	1.08	17.80
AST14DEM_00310212008054055	2008/10/21	11.45	28.96	0.82	23.80
AST14DEM_00310212008054046	2008/10/21	11.12	28.09	1.04	22.37
AST14DEM_00311222008054054	2008/11/22	5.03	23.19	1.98	17.44
AST14DEM_00311222008054103	2008/11/22	-3.23	19.74	0.31	12.30
AST14DEM_00304222009054745	2009/4/22	0.03	15.73	-0.10	14.64
AST14DEM_00308212009054049	2009/8/21	14.17	24.23	1.24	24.45
AST14DEM_00310312009054651	2009/10/31	-3.46	12.39	-0.54	12.36
AST14DEM_00312022009054657	2009/12/2	-6.68	10.84	0.23	10.22
AST14DEM_00302042010054646	2010/2/4	2.40	14.57	-0.23	12.96
AST14DEM_00304092010054648	2010/4/9	0.03	11.52	-0.16	11.23
AST14DEM_00309162010054631	2010/9/16	-8.04	17.04	-0.13	12.49
AST14DEM_00301312011054004	2011/1/31	0.92	36.48	1.77	36.12
AST14DEM_00305072011054026	2011/5/7	-0.48	15.62	1.01	11.47
AST14DEM_00305072011054035	2011/5/7	-2.42	15.77	1.06	11.41
AST14DEM_00306082011054011	2011/6/8	1.83	16.35	0.50	10.75
AST14DEM_00306082011054020	2011/6/8	-2.75	18.02	0.56	11.64
AST14DEM_00306242011054010	2011/6/24	7.34	10.86	1.29	9.87
AST14DEM_00306242011054019	2011/6/24	4.86	12.41	0.33	11.58
AST14DEM_00303222012054024	2012/3/22	16.38	17.56	0.76	15.25
AST14DEM_00304142012054630	2012/4/14	4.44	11.84	0.41	11.79
AST14DEM_00304232012054026	2012/4/23	24.70	23.33	1.03	16.94
AST14DEM_00304232012054035	2012/4/23	19.87	22.19	0.35	14.93
AST14DEM_00305092012054029	2012/5/9	21.51	14.29	1.38	13.97
AST14DEM_00305162012054638	2012/5/16	-3.95	12.40	0.80	12.29
AST14DEM_00307032012054636	2012/7/3	1.64	19.03	0.40	13.05
AST14DEM_00310192013054017	2013/10/19	9.86	25.58	1.12	25.53
AST14DEM_00310192013054025	2013/10/19	5.59	27.38	0.90	26.71
AST14DEM_00308192014054100	2014/8/19	2.97	13.11	1.01	11.09
AST14DEM_00308192014054109	2014/8/19	-4.98	14.77	0.28	12.40
AST14DEM_00302112015054102	2015/2/11	-2.36	21.49	1.39	20.93
AST14DEM_00309142015054723	2015/9/14	-2.57	12.25	0.01	10.97
AST14DEM_00312032015054715	2015/12/3	-17.06	16.33	-0.38	14.08
AST14DEM_00303082016054644	2016/3/8	-16.31	12.62	-0.31	11.00
AST14DEM_00303242016054647	2016/3/24	-5.15	11.16	-0.50	10.43
AST14DEM_00305142017054652	2017/5/14	-5.32	15.79	1.04	13.02
AST14DEM_00305302017054652	2017/5/30	0.33	20.98	0.40	19.87
AST14DEM_00312082017054653	2017/12/8	-1.81	10.84	0.01	10.42

AST14DEM_00305262018054155	2018/5/26	22.87	24.62	1.13	14.22
AST14DEM_00305262018054204	2018/5/26	14.89	27.46	0.71	16.47
AST14DEM_00305292019054059	2019/5/29	-1.98	18.08	1.20	12.09
AST14DEM_00305292019054050	2019/5/29	2.63	16.05	0.88	11.48
AST14DEM_00303032020054720	2020/3/3	-8.20	14.70	0.50	14.35
AST14DEM_00306232020054643	2020/6/23	1.14	20.40	0.02	14.60
AST14DEM_00305092021054453	2021/5/9	1.55	21.98	0.69	17.79
AST14DEM_00306032021053822	2021/6/3	16.57	28.27	1.28	14.69
AST14DEM_00306032021053813	2021/6/3	20.22	22.54	1.43	12.48
AST14DEM_00309302021054225	2021/9/30	6.90	19.68	-0.04	11.82
HMA_DEM8m_AT_20110625_0602_1030 01000B995100_103001000B62DE00	2011/6/25	-21.73	6.68	0.16	6.30
HMA_DEM8m_AT_20110625_0602_1030 01000C6D7F00_103001000B48A500	2011/6/25	-18.74	6.38	0.11	5.95
HMA_DEM8m_AT_20120817_0555_1030 01001ABA5800_103001001BA72400	2012/8/17	-18.02	6.30	0.07	6.05
HMA_DEM8m_AT_20121002_0548_1020 01001D519C00_102001001E5C8700	2012/10/2	-14.60	6.84	0.13	6.59
HMA_DEM8m_AT_20130121_0537_1020 01001E3AD500_102001001FD84200	2013/1/21	-17.77	6.82	0.31	6.53
HMA_DEM8m_AT_20150321_0533_1040 01000970E100_1040010009200000	2015/3/21	-18.94	6.08	0.23	5.67
HMA_DEM8m_AT_20150409_0533_1040 01000A61D300_104001000A3BBC00	2015/4/9	-17.71	6.07	0.25	5.81
HMA_DEM8m_AT_20150409_0534_1040 01000A8D7900_104001000955A900	2015/4/9	-17.65	5.55	0.17	5.33
HMA_DEM8m_AT_20150507_0542_1050 410012A5C000_1050410012A5BF00	2015/5/7	-19.05	6.97	0.14	6.33
HMA_DEM8m_AT_20150523_0550_1030 010042AEB200_103001004177F700	2015/5/23	-23.14	6.09	0.09	5.81
HMA_DEM8m_AT_20151016_0545_1040 010012C70E00_104001001380D500	2015/10/16	-16.88	6.34	0.22	5.79
HMA_DEM8m_AT_20151128_0742_1020 0100481CBF00_10200100470C5800	2015/11/28	-21.61	8.16	-0.07	7.56
HMA_DEM8m_AT_20160730_0547_1030 010058028600_103001005A695500	2016/7/30	-19.06	6.34	0.13	6.10
HMA_DEM8m_AT_20161002_0535_1050 010006818700_1050010006818900	2016/10/2	-18.07	5.97	0.04	5.54
HMA_DEM8m_AT_20161002_0534_1050 010006818800_1050010006818600	2016/10/2	-19.26	6.36	0.23	5.79
HMA_DEM8m_CT_20141025_1736_1040 010003AC5200_10300100388CC800	2014/10/25	-12.47	6.81	0.09	6.57
HMA_DEM8m_CT_20141129_1801_1030 01003CC3F400_1020010038C4A900	2014/11/29	-18.49	6.56	0.18	6.12

Figure S1. Sharpened Landsat images showing ice-dammed lake evolution (1).

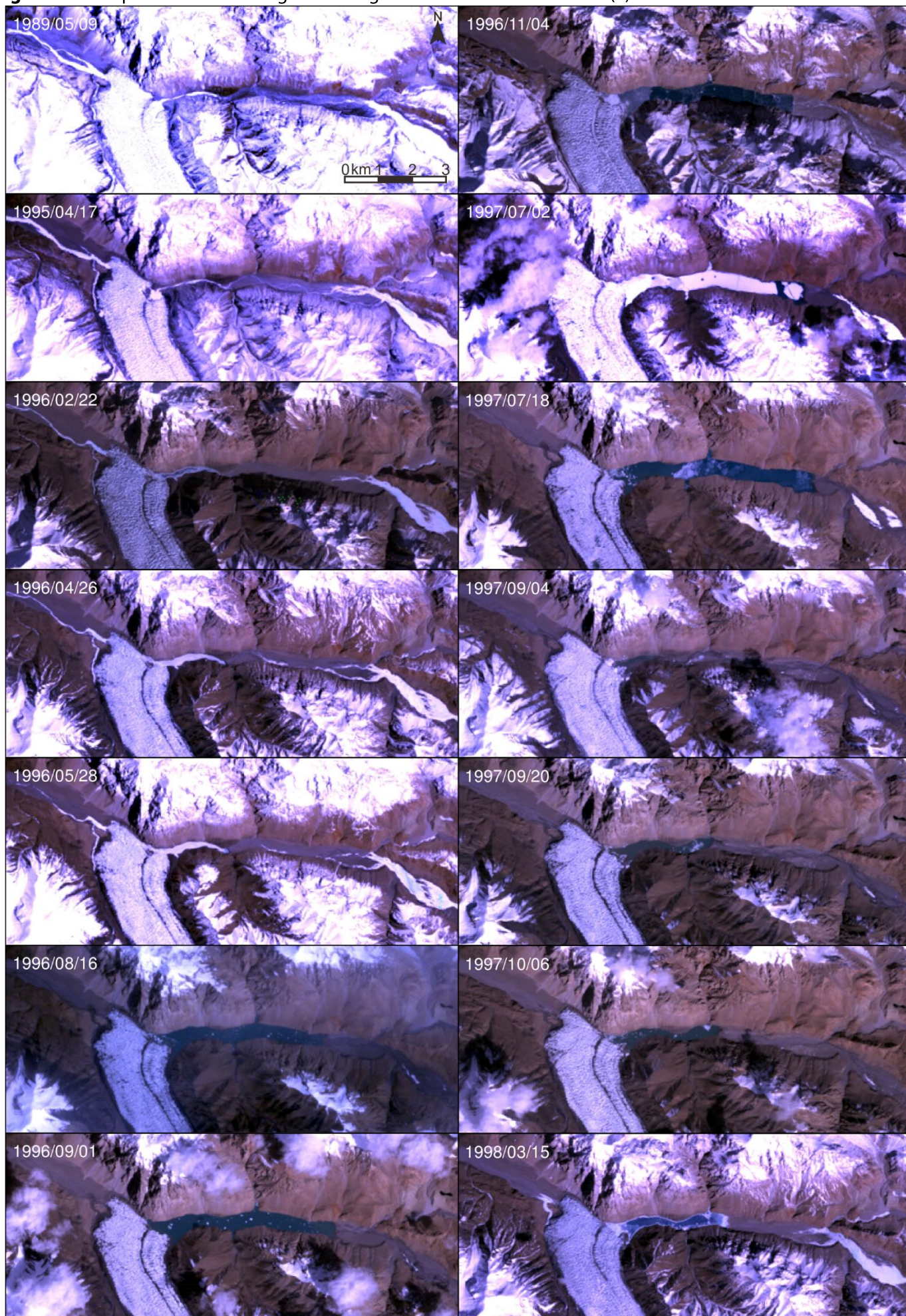


Figure S2. Sharpened Landsat images showing ice-dammed lake evolution (2).

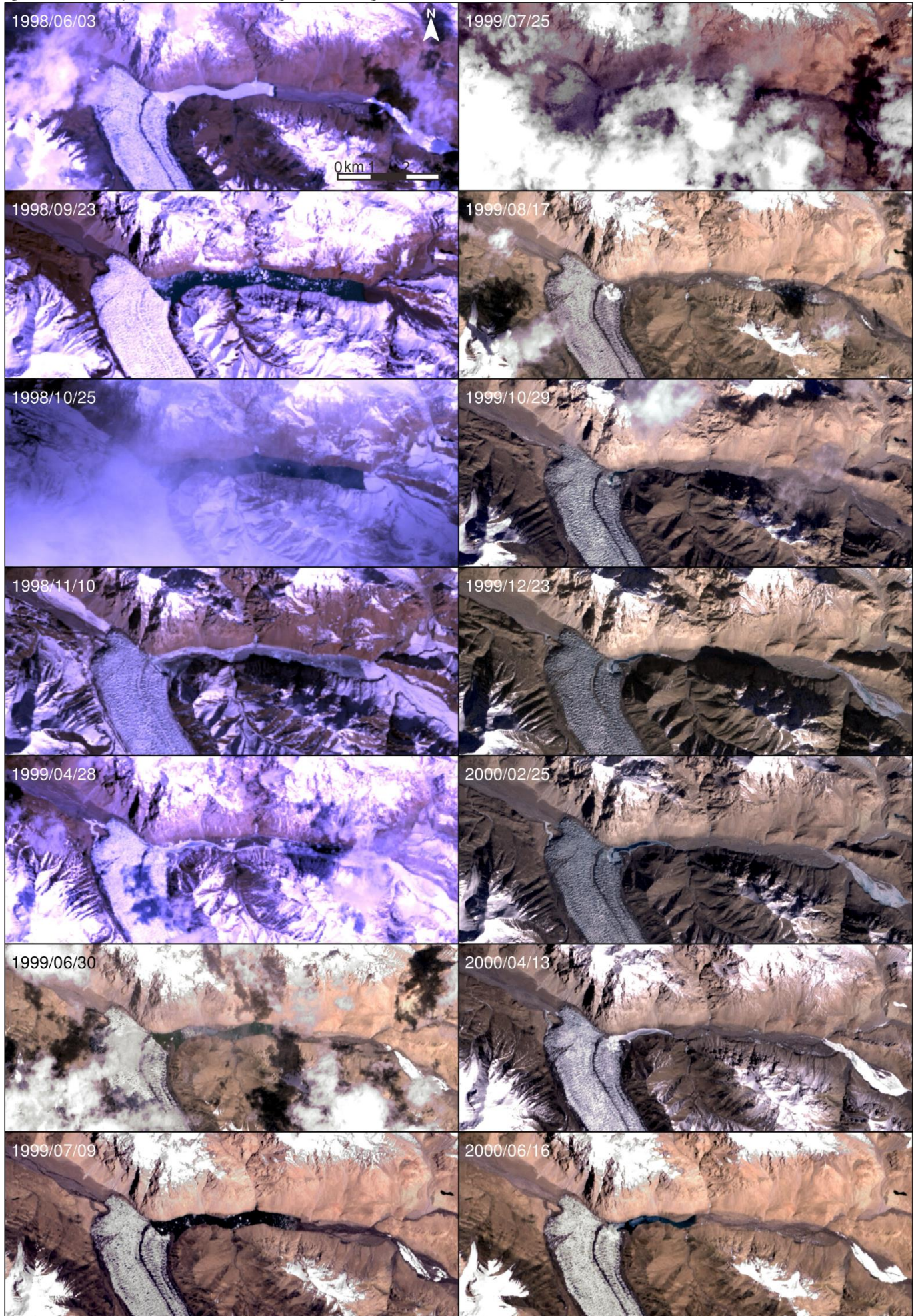


Figure S3. Sharpened Landsat images showing ice-dammed lake evolution (3).

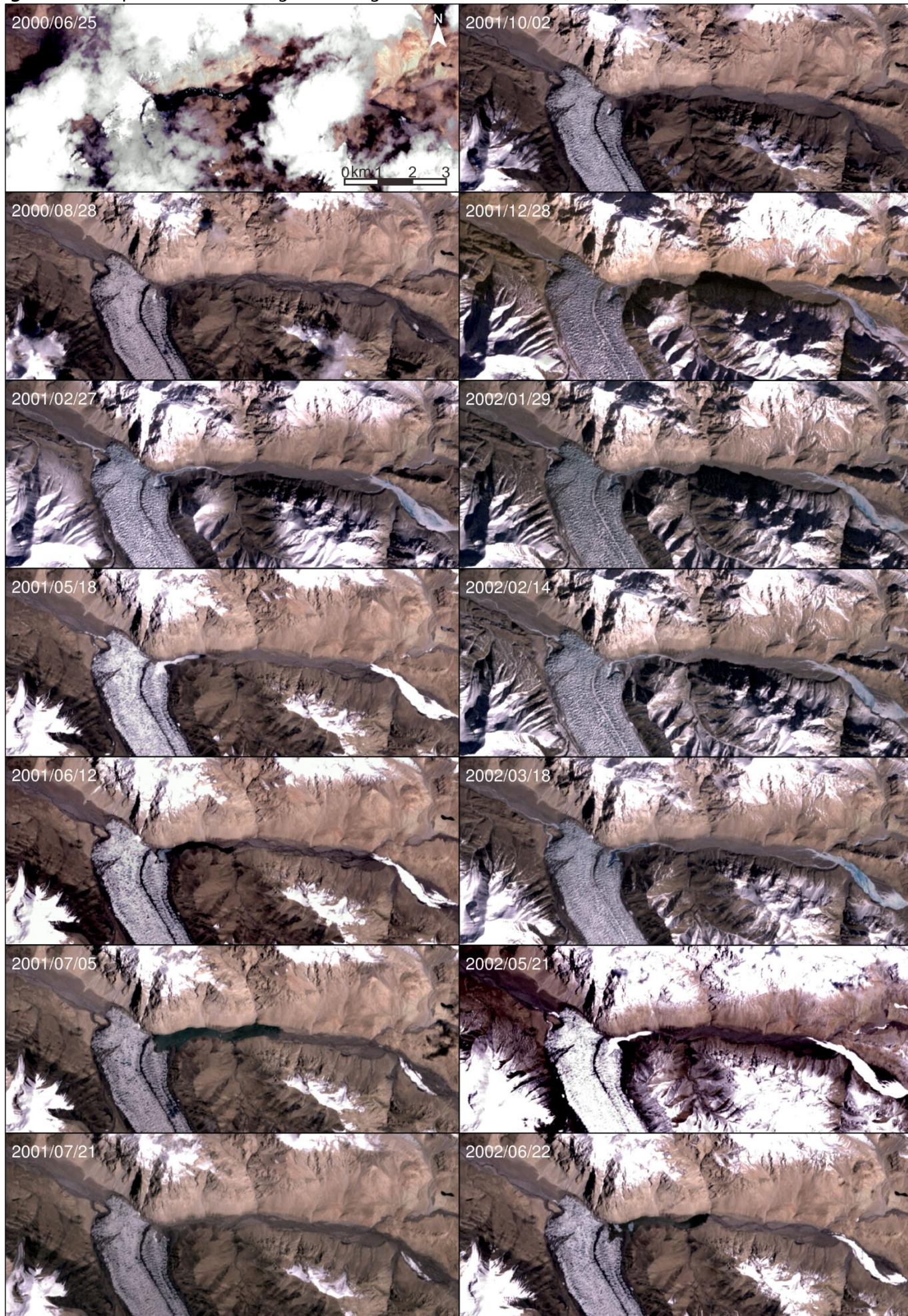


Figure S4. Sharpened Landsat images showing ice-dammed lake evolution (4).



Figure S5. Sharpened Landsat images showing ice-dammed lake evolution (5).

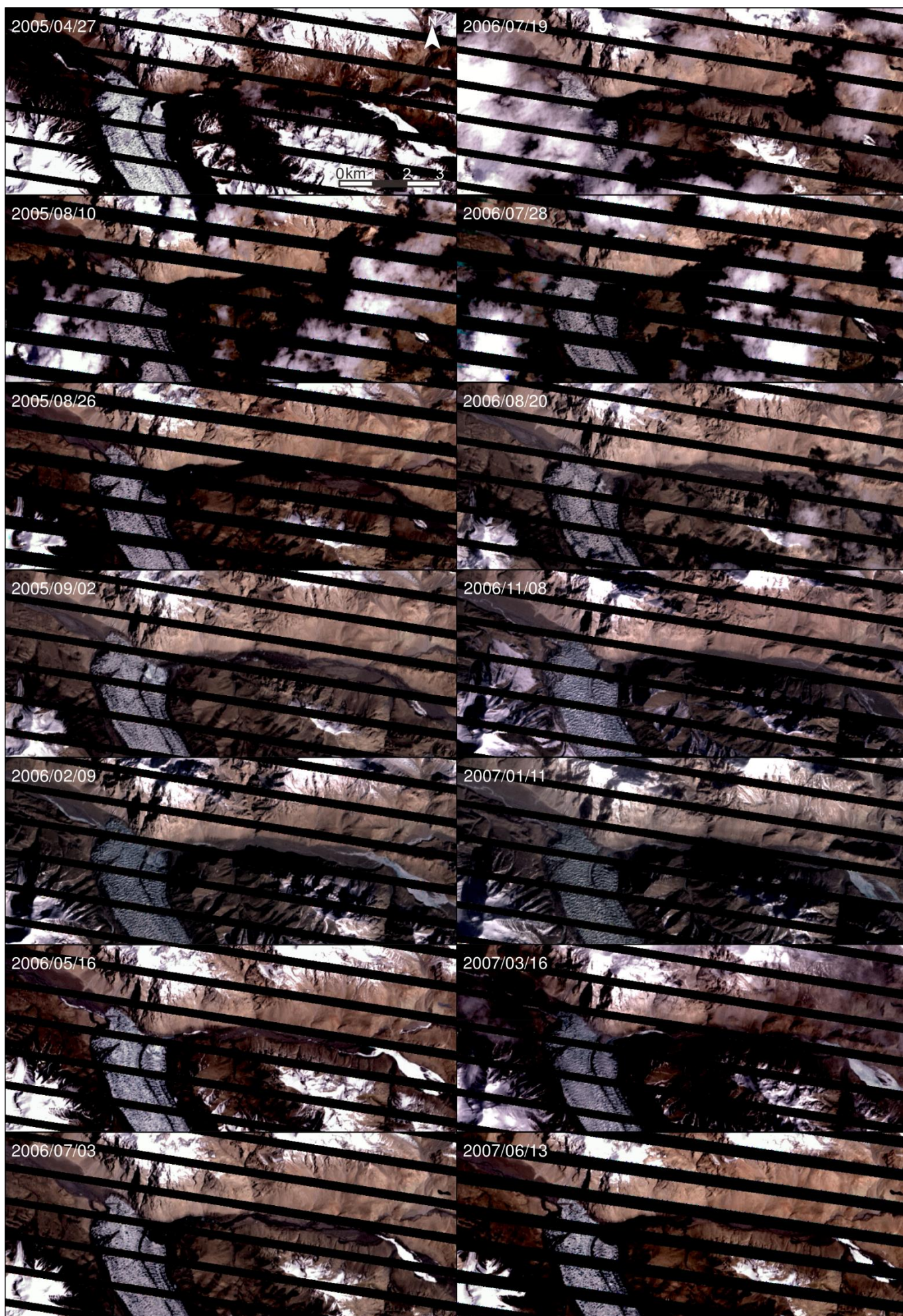


Figure S6. Sharpened Landsat images showing ice-dammed lake evolution (6).

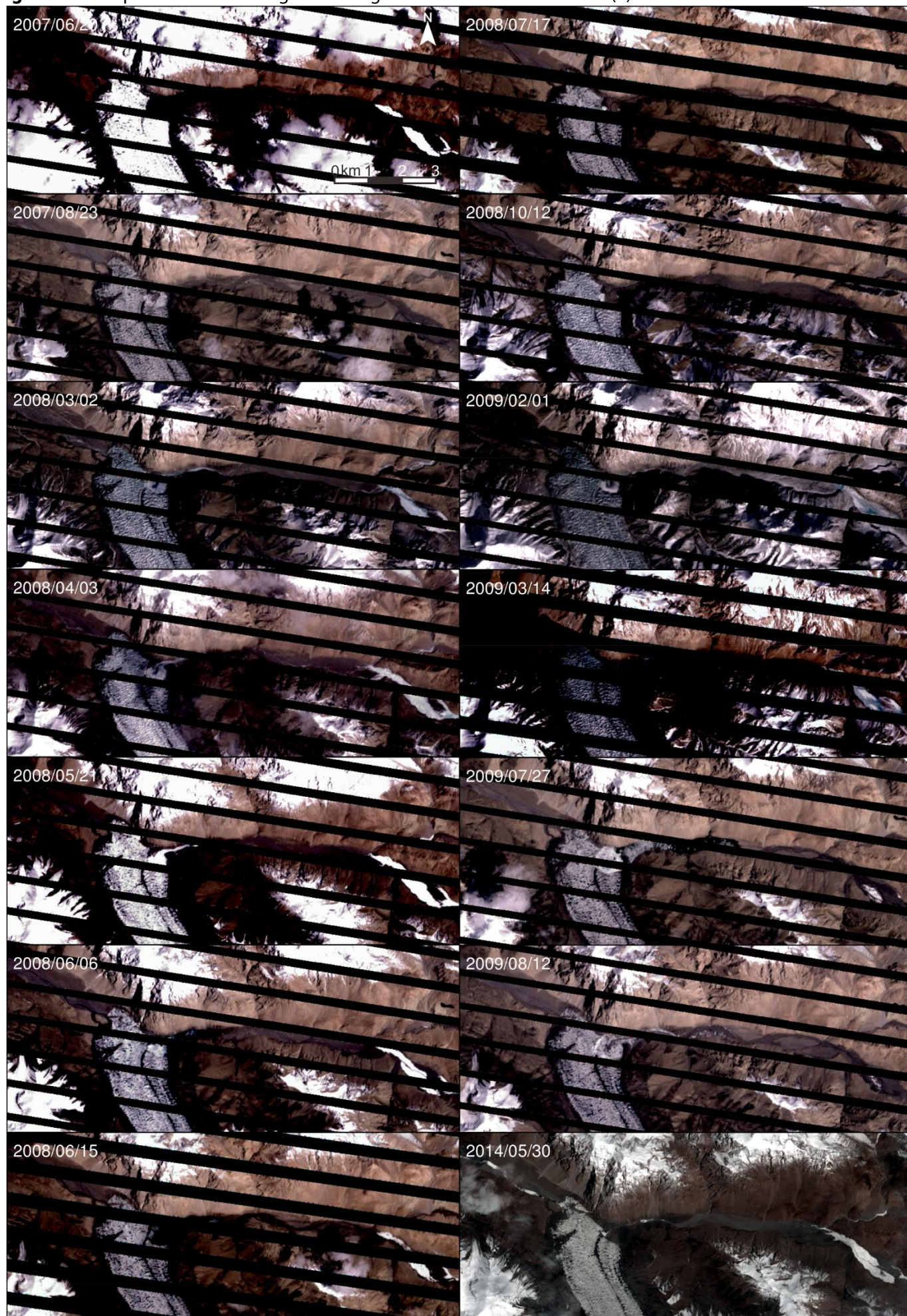


Figure S7. Sharpened Landsat images showing ice-dammed lake evolution (7).

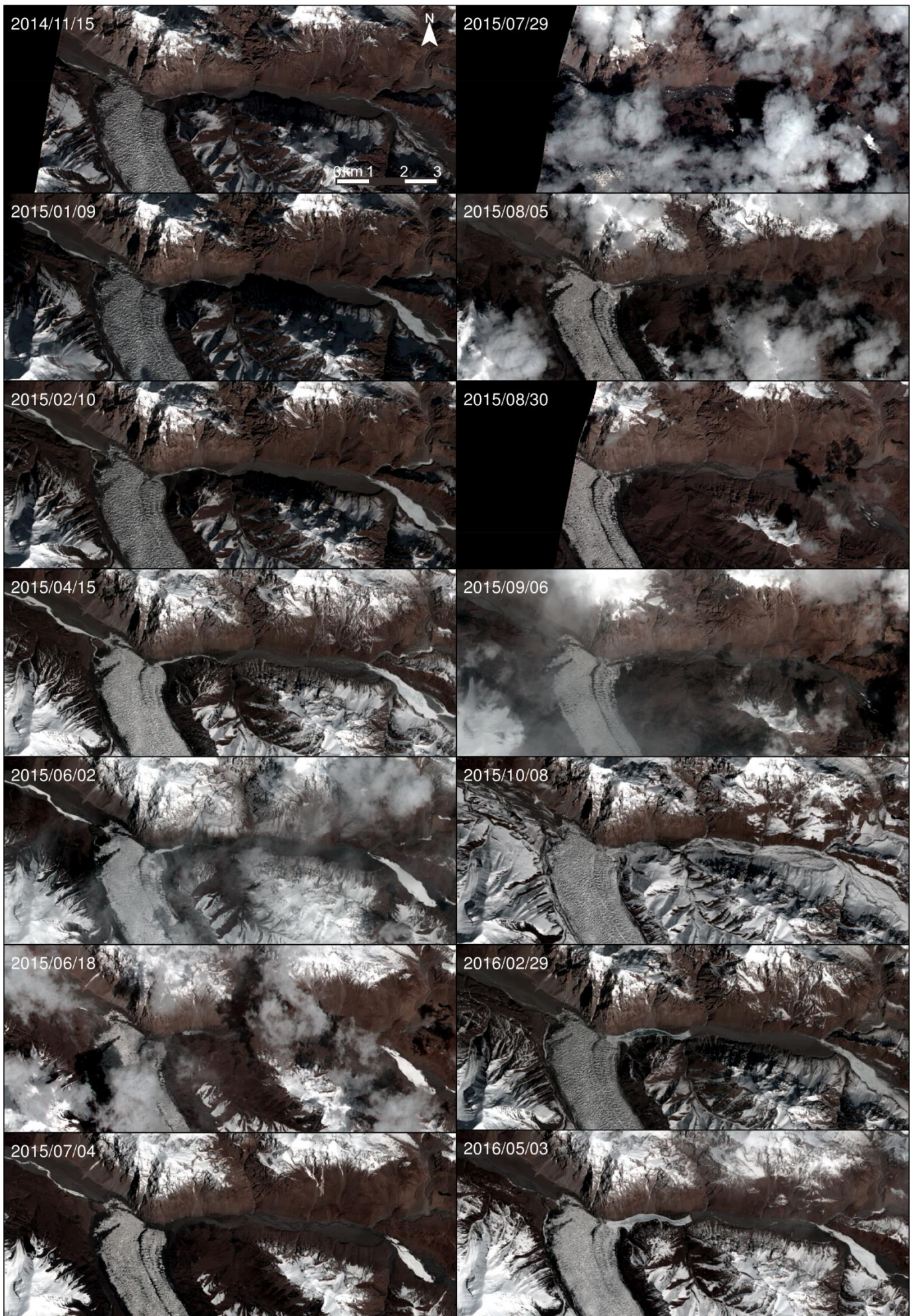


Figure S8. Sharpened Landsat images showing ice-dammed lake evolution (8).

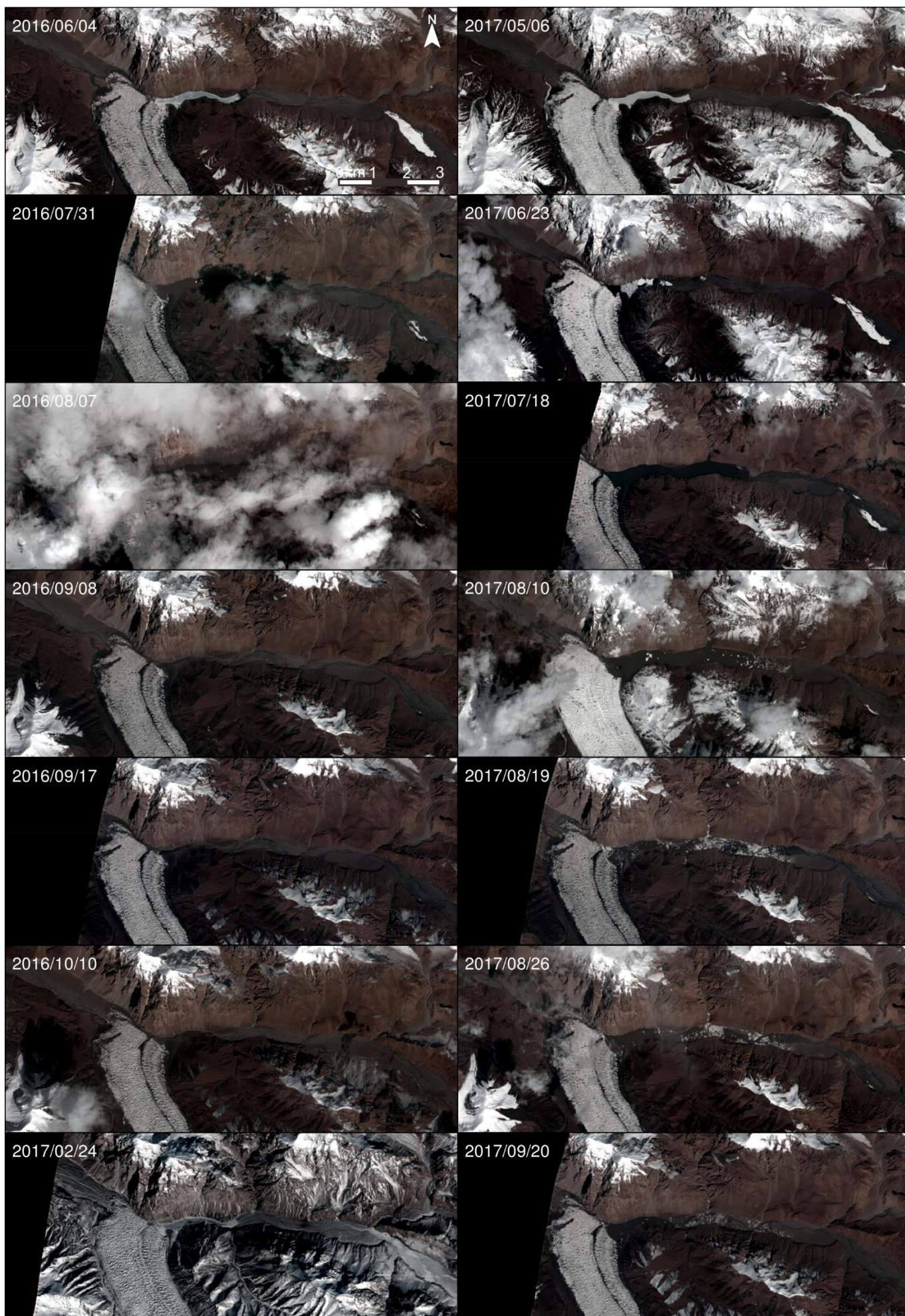


Figure S9. Sharpened Landsat images showing ice-dammed lake evolution (9).

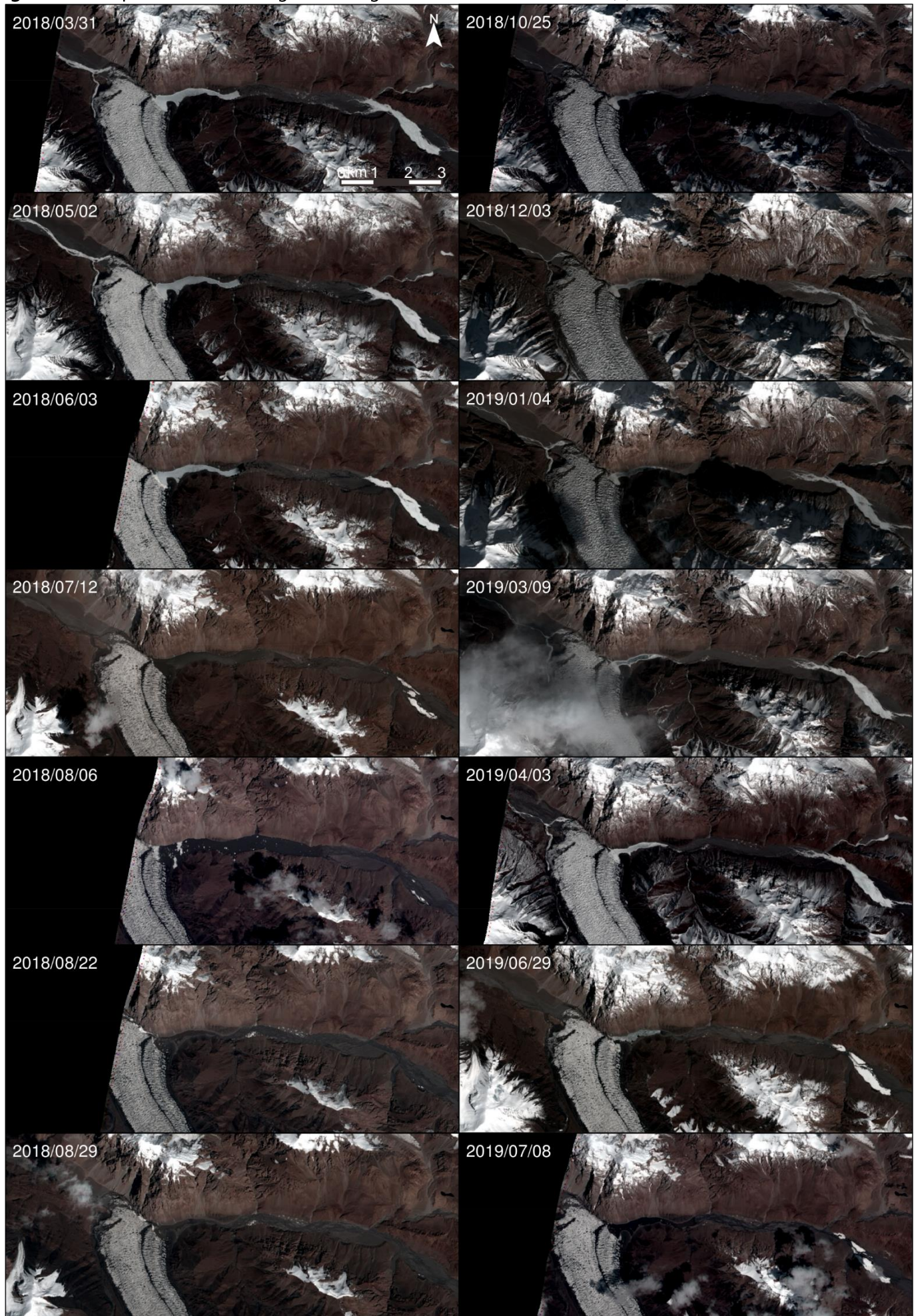


Figure S10. Sharpened Landsat images showing ice-dammed lake evolution (10).

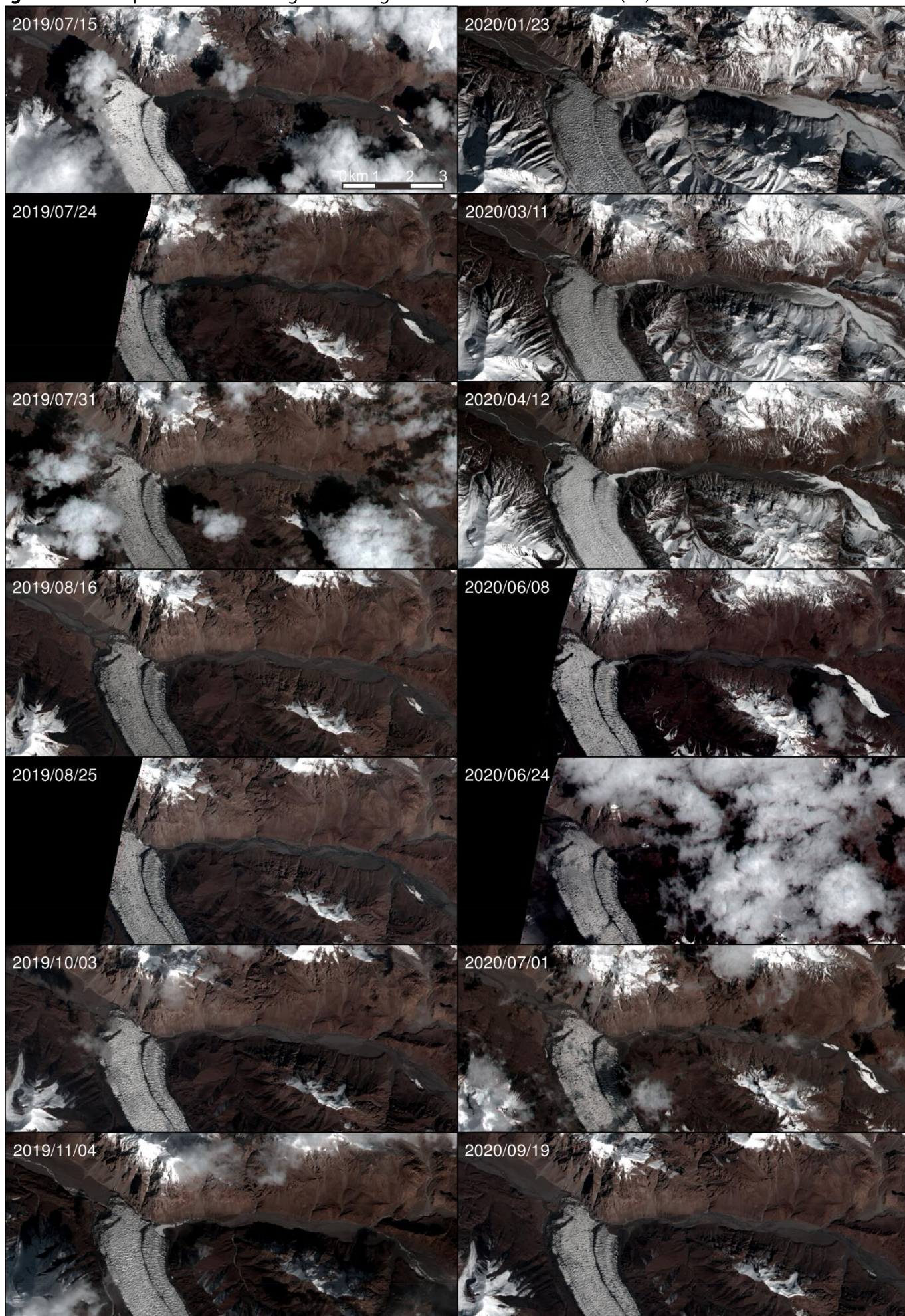


Figure S11. Sharpened Landsat images showing ice-dammed lake evolution (11).

