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	5.83	10.51	0.37	10.19
AST14DEM_00303312001055714	2001/3/31	10.60	23.50	1.66	16.48
AST14DEM_00304252001055043	2001/4/25	33.79	22.40	1.89	21.46
AST14DEM_00308022002054207	2002/8/2	6.36	13.30	0.86	10.56
AST14DEM_00305082003054658	2003/5/8	10.40	38.21	0.31	39.56
AST14DEM_00305032004054046	2004/5/3	6.36	20.66	2.08	16.00
AST14DEM_00305032004054037	2004/5/3	7.13	16.84	1.91	12.27
AST14DEM_00306112004054637	2004/6/11	2.57	18.62	-0.15	17.18
AST14DEM_00310202005054549	2005/10/20	-2.33	12.36	0.66	9.95
AST14DEM_00311142005053944	2005/11/14	25.98	24.19	2.18	24.13
AST14DEM_00311142005053953	2005/11/14	32.00	27.54	3.42	31.54
AST14DEM_00311302005053951	2005/11/30	28.50	25.23	4.91	26.87
AST14DEM_00302092006054532	2006/2/9	-14.74	18.74	0.55	15.16
AST14DEM_00305282007054024	2007/5/28	6.95	15.41	1.87	11.11
AST14DEM_00305282007054033	2007/5/28	3.82	19.15	1.45	13.57
AST14DEM_00307312007054050	2007/7/31	5.36	13.04	0.46	10.81
AST14DEM_00307312007054059	2007/7/31	-4.43	20.39	0.29	16.90
AST14DEM_00312222007054044	2007/12/22	13.10	34.16	2.91	34.19
AST14DEM_00312222007054035	2007/12/22	7.16	27.50	1.17	25.25
AST14DEM_00303112008054024	2008/3/11	4.73	18.61	1.23	17.66
AST14DEM_00310212008054055	2008/10/21	15.86	34.07	2.32	29.81
AST14DEM_00310212008054046	2008/10/21	11.57	29.32	1.67	23.30
AST14DEM_00311222008054054	2008/11/22	5.35	23.63	2.19	17.27
AST14DEM_00311222008054103	2008/11/22	-1.95	20.65	0.61	12.56
AST14DEM_00304222009054745	2009/4/22	0.25	15.74	0.15	14.47
AST14DEM_00308212009054049	2009/8/21	14.31	24.76	1.47	25.47
AST14DEM_00310312009054651	2009/10/31	-2.87	12.05	0.03	12.03
AST14DEM_00312022009054657	2009/12/2	-6.11	10.54	-0.29	10.16
AST14DEM_00302042010054646	2010/2/4	2.93	14.40	0.22	13.04
AST14DEM_00304092010054648	2010/4/9	0.41	11.45	0.23	11.19
AST14DEM_00309162010054631	2010/9/16	-7.54	17.59	0.36	12.60
AST14DEM_00301312011054004	2011/1/31	1.23	36.38	1.12	36.21
AST14DEM_00305072011054026	2011/5/7	-0.05	15.98	1.40	11.38
AST14DEM_00305072011054035	2011/5/7	-1.23	16.69	1.05	11.28
AST14DEM_00306082011054011	2011/6/8	2.02	16.91	0.57	10.48
AST14DEM_00306082011054020	2011/6/8	-1.76	20.46	0.66	12.68
AST14DEM_00306242011054010	2011/6/24	7.52	11.04	0.43	9.75
AST14DEM_00306242011054019	2011/6/24	6.05	13.47	0.42	12.25
AST14DEM_00303222012054024	2012/3/22	16.75	18.58	1.08	15.76
AST14DEM_00304142012054630	2012/4/14	5.09	12.00	-0.01	11.98
AST14DEM_00304232012054026	2012/4/23	24.93	25.85	0.56	18.77
AST14DEM_00304232012054035	2012/4/23	22.34	26.47	1.61	18.00
AST14DEM_00305092012054029	2012/5/9	22.08	15.37	0.77	14.42
AST14DEM_00305162012054638	2012/5/16	-3.34	12.41	0.37	12.41
AST14DEM_00307032012054636	2012/7/3	2.25	20.88	0.83	13.61
AST14DEM_00310192013054017	2013/10/19	10.42	26.29	1.73	26.26
AST14DEM_00310192013054025	2013/10/19	9.61	32.00	1.92	32.61
AST14DEM_00308192014054100	2014/8/19	3.18	13.31	1.28	11.28
AST14DEM_00308192014054109	2014/8/19	-3.94	16.42	0.24	13.67
AST14DEM_00302112015054102	2015/2/11	0.33	22.80	2.17	22.58
AST14DEM_00309142015054723	2015/9/14	-2.00	12.47	-0.38	11.01
AST14DEM_00312032015054715	2015/12/3	-16.50	16.77	0.15	14.23
AST14DEM_00303082016054644	2016/3/8	-15.78	12.98	0.13	11.16
AST14DEM_00303242016054647	2016/3/24	-4.81	11.14	-0.17	10.29
AST14DEM_00305142017054652	2017/5/14	-4.65	16.58	0.68	13.52
AST14DEM_00305302017054652	2017/5/30	2.48	25.14	1.48	23.46
AST14DEM_00312082017054653	2017/12/8	-1.20	11.05	0.62	10.62

AST14DEM_00305262018054155	2018/5/26	23.48	27.18	1.14	16.29
AST14DEM_00305262018054204	2018/5/26	14.95	37.11	2.15	27.27
AST14DEM_00305292019054059	2019/5/29	-0.59	20.11	1.78	13.31
AST14DEM_00305292019054050	2019/5/29	2.80	16.35	0.98	11.29
AST14DEM_00303032020054720	2020/3/3	-6.98	16.32	0.50	15.50
AST14DEM_00306232020054643	2020/6/23	1.61	21.38	0.42	14.60
AST14DEM_00305092021054453	2021/5/9	2.23	23.64	1.38	19.16
AST14DEM_00306032021053822	2021/6/3	17.21	30.01	1.65	16.08
AST14DEM_00306032021053813	2021/6/3	20.40	22.97	1.69	12.77
AST14DEM_00309302021054225	2021/9/30	7.32	20.55	0.29	11.77
HMA_DEM8m_AT_20110625_0602_1030 01000B995100_103001000B62DE00	2011/6/25	-21.39	6.03	0.22	5.79
HMA_DEM8m_AT_20110625_0602_1030 01000C6D7F00_103001000B48A500	2011/6/25	-18.53	5.80	0.14	5.52
HMA_DEM8m_AT_20120817_0555_1030 01001ABA5800_103001001BA72400	2012/8/17	-17.38	5.67	0.15	5.54
HMA_DEM8m_AT_20121002_0548_1020 01001D519C00_102001001E5C8700	2012/10/2	-14.10	6.11	0.22	6.02
HMA_DEM8m_AT_20130121_0537_1020 01001E3AD500_102001001FD84200	2013/1/21	-17.31	6.10	0.32	5.92
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	-17.32	5.58	0.28	5.42
HMA_DEM8m_AT_20150409_0534_1040 01000A8D7900_104001000955A900	2015/4/9	-17.53	5.09	0.20	5.00
HMA_DEM8m_AT_20150507_0542_1050 410012A5C000_1050410012A5BF00	2015/5/7	-18.71	6.30	0.20	5.84
HMA_DEM8m_AT_20150523_0550_1030 010042AEB200_103001004177F700	2015/5/23	-22.85	5.52	0.11	5.38
HMA_DEM8m_AT_20151016_0545_1040 010012C70E00_104001001380D500	2015/10/16	-16.57	5.75	0.26	5.35
HMA_DEM8m_AT_20151128_0742_1020 0100481CBF00_10200100470C5800	2015/11/28	-19.96	7.63	-0.03	7.38
HMA_DEM8m_AT_20160730_0547_1030 010058028600_103001005A695500	2016/7/30	-18.66	5.70	0.15	5.55
HMA_DEM8m_AT_20161002_0535_1050 010006818700_1050010006818900	2016/10/2	-17.75	5.41	0.10	5.13
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	-11.83	6.61	0.02	6.50
HMA_DEM8m_CT_20141129_1801_1030 01003CC3F400_1020010038C4A900	2014/11/29	-17.98	6.11	0.20	5.83

Figure S1. Sharpened Landsat images showing ice-dammed lake evolution (1).
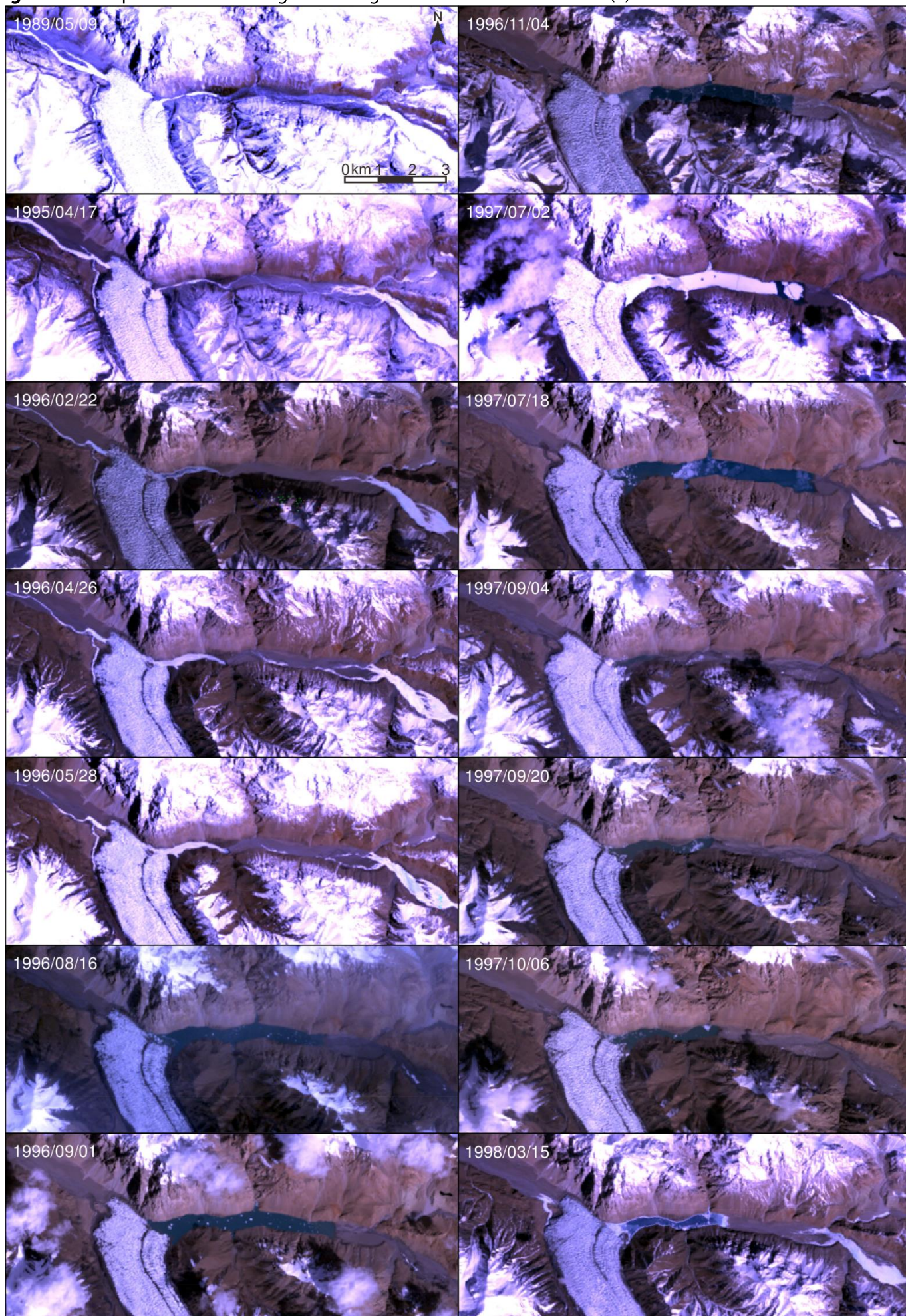
Figure S2. Sharpened Landsat images showing ice-dammed lake evolution (2).
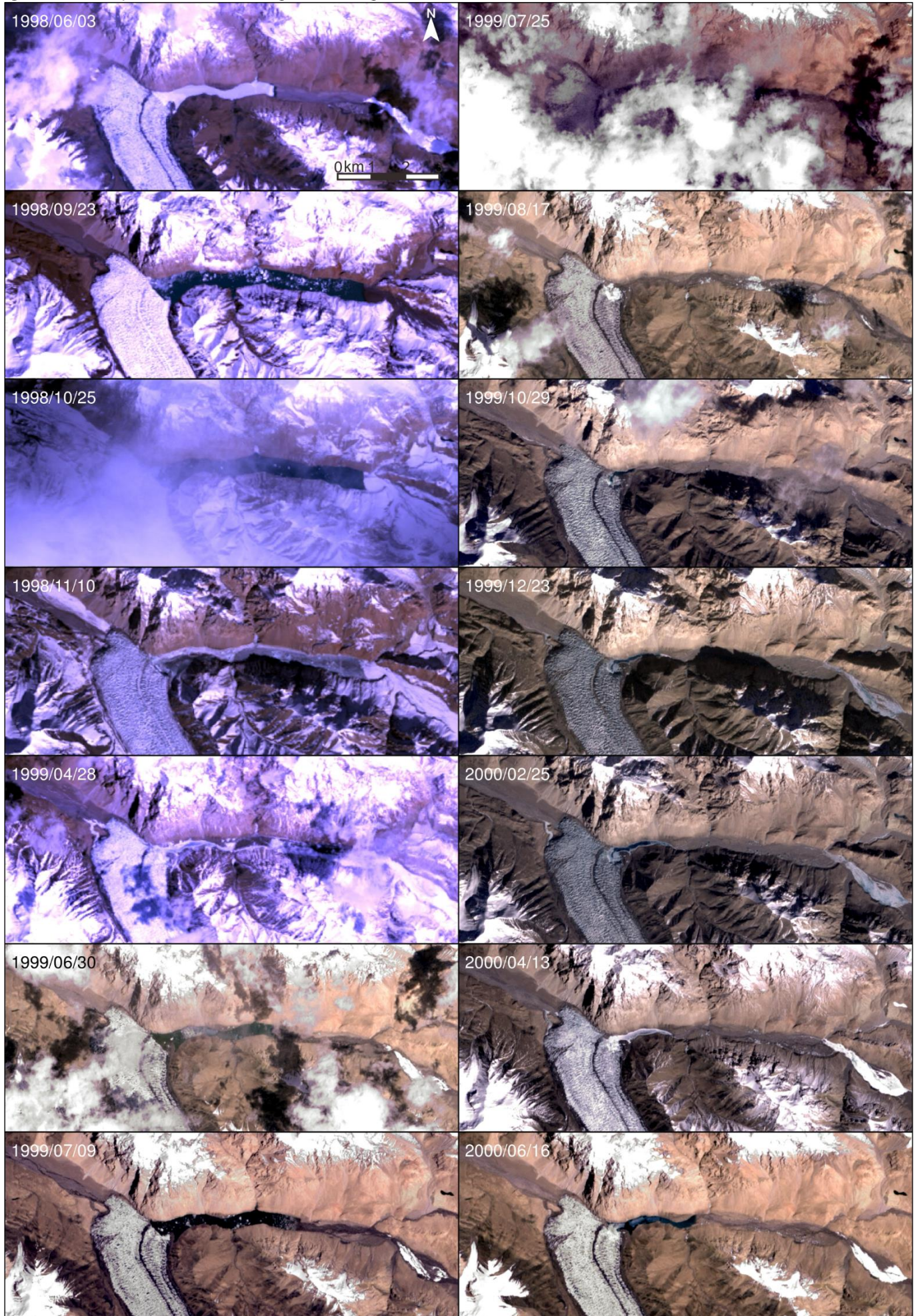
Figure S3. Sharpened Landsat images showing ice-dammed lake evolution (3).
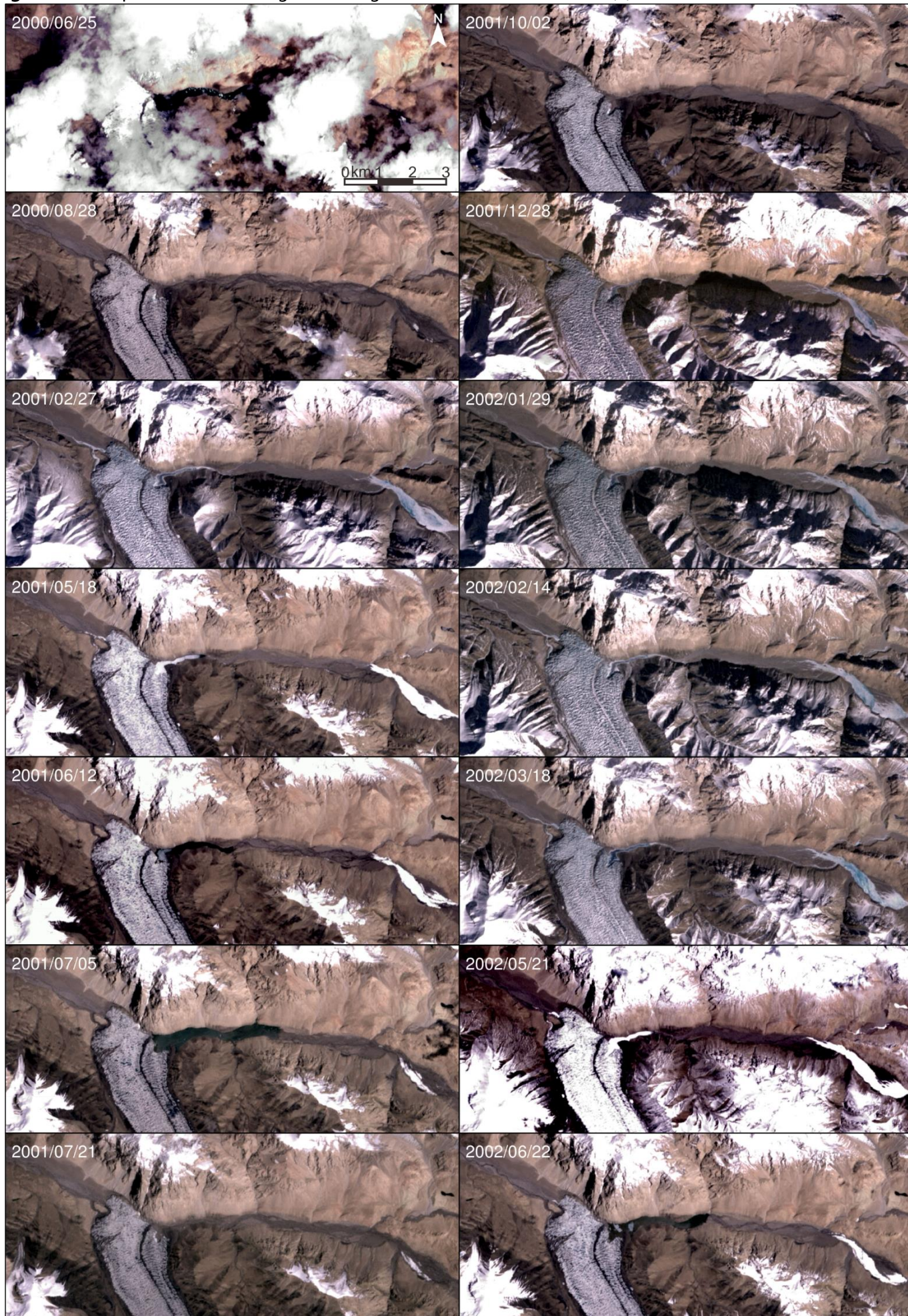
Figure S4. Sharpened Landsat images showing ice-dammed lake evolution (4).

Figure S5. Sharpened Landsat images showing ice-dammed lake evolution (5).
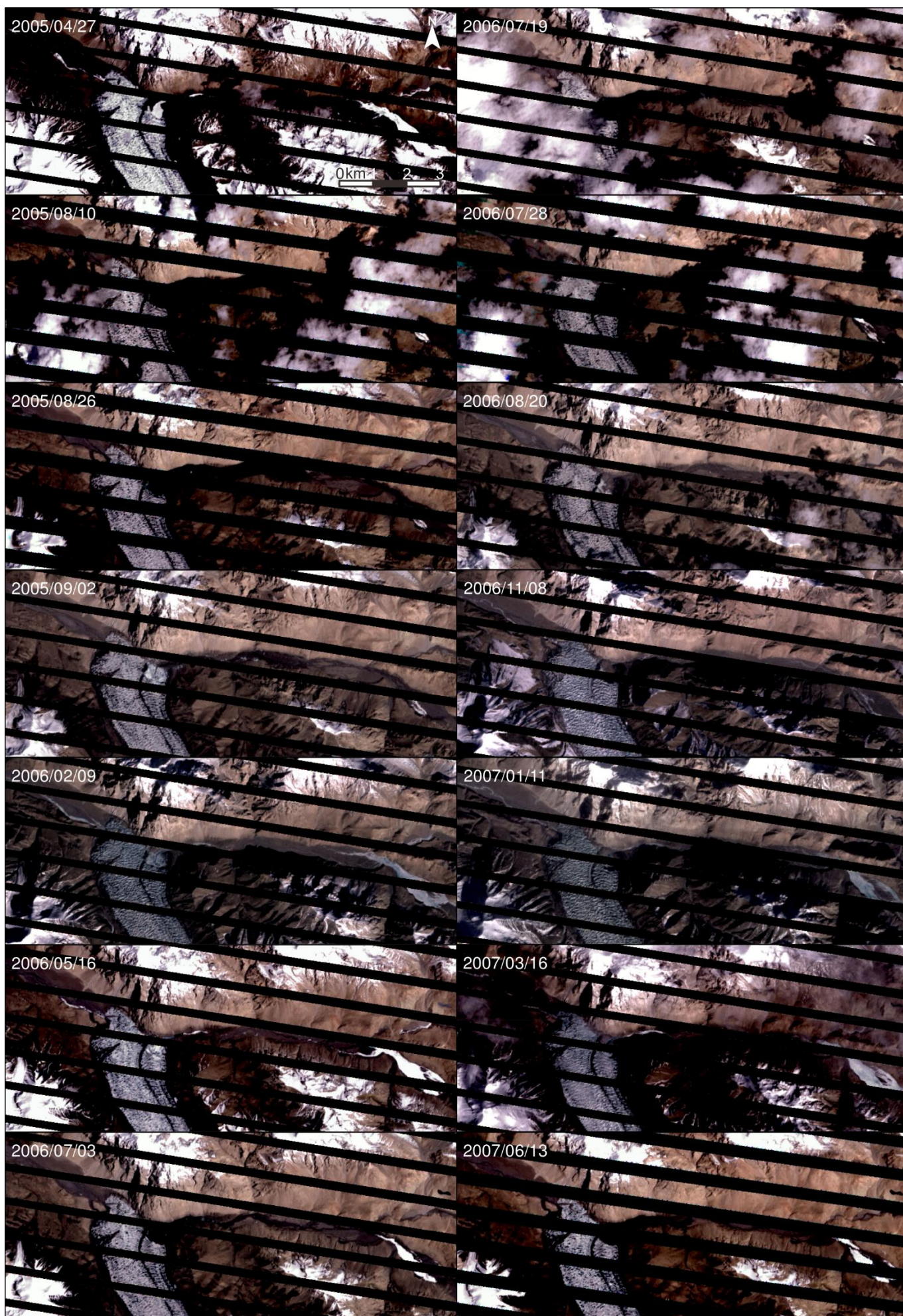
Figure S6. Sharpened Landsat images showing ice-dammed lake evolution (6).
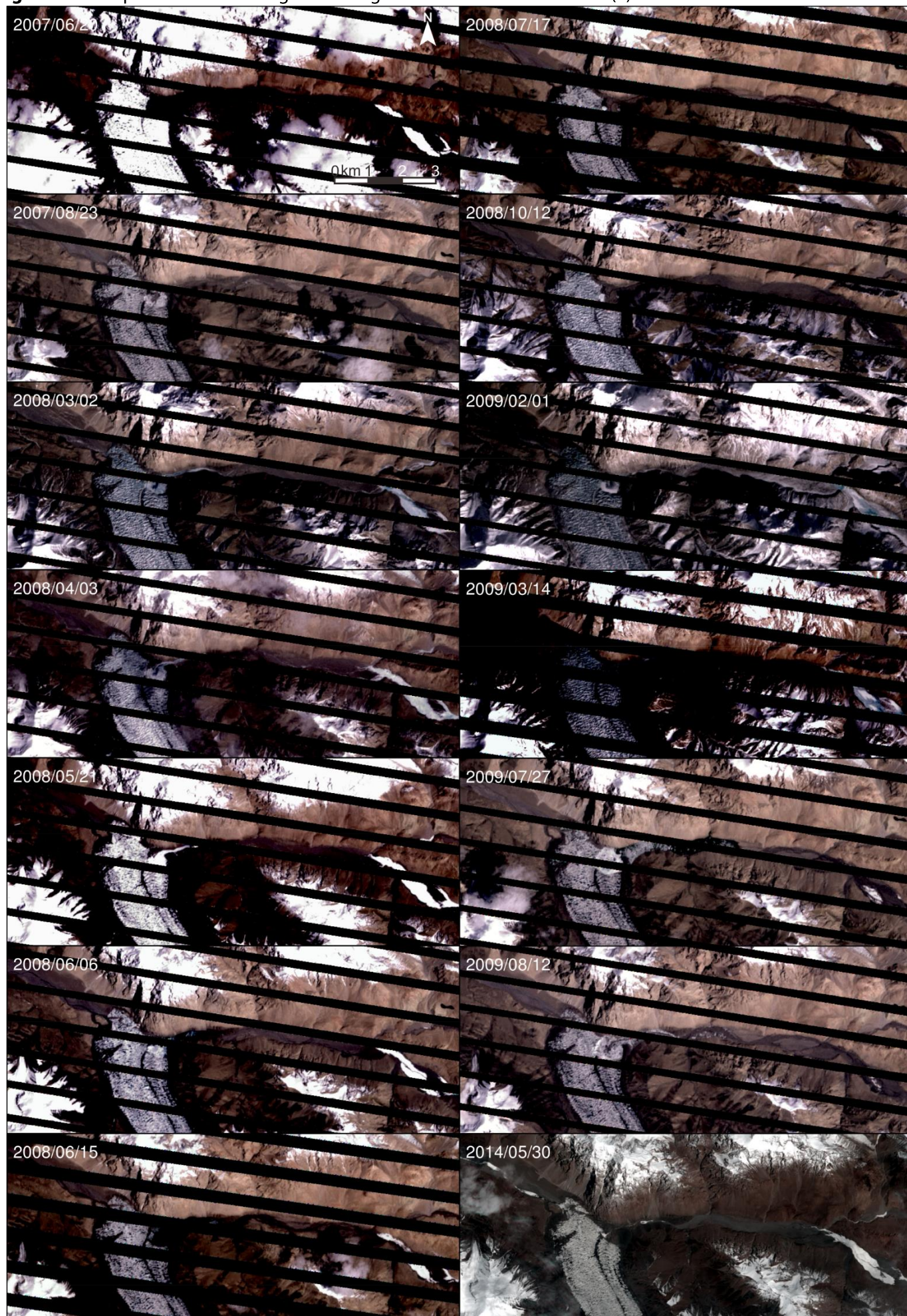
Figure S7. Sharpened Landsat images showing ice-dammed lake evolution (7).
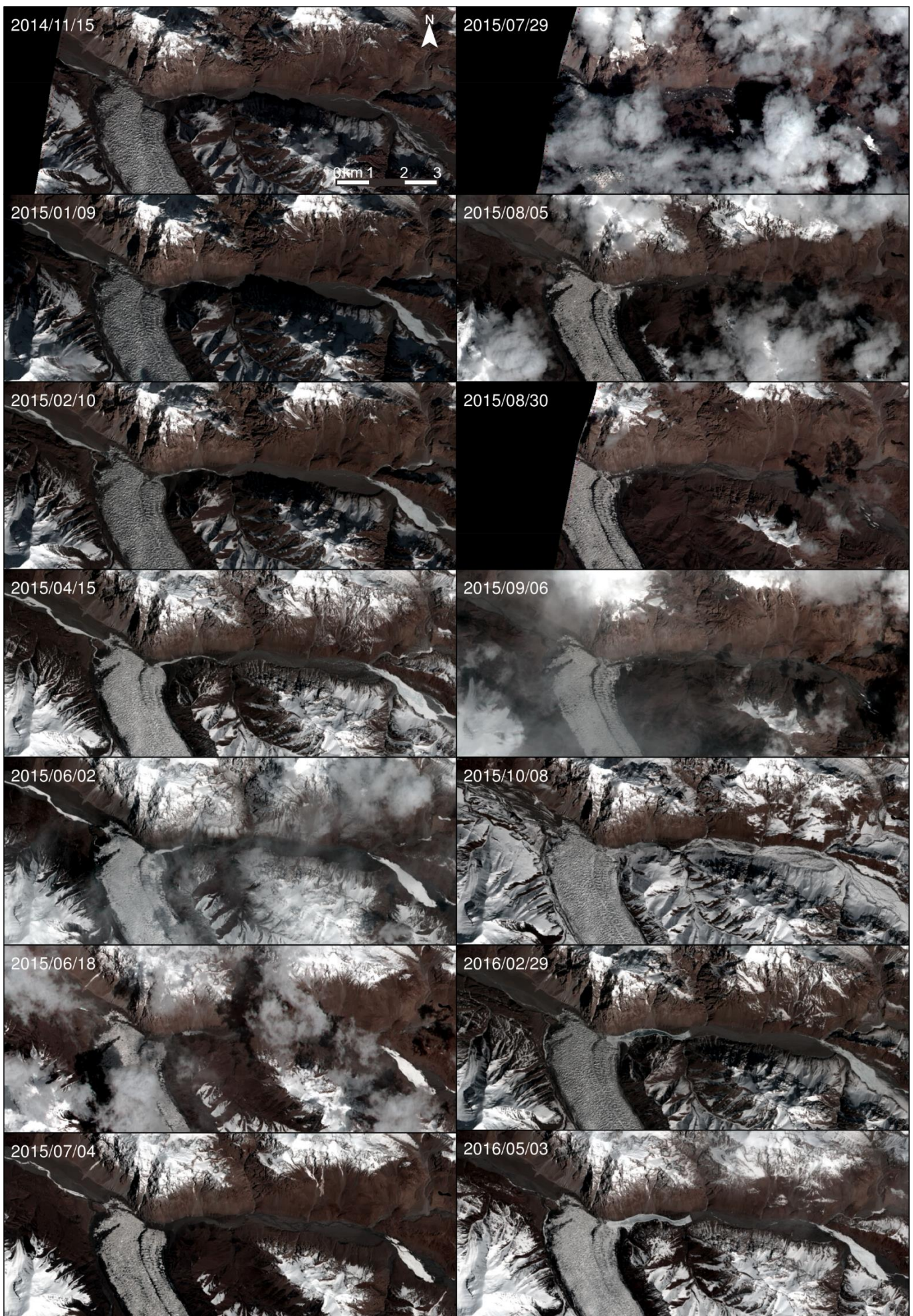
Figure S8. Sharpened Landsat images showing ice-dammed lake evolution (8).
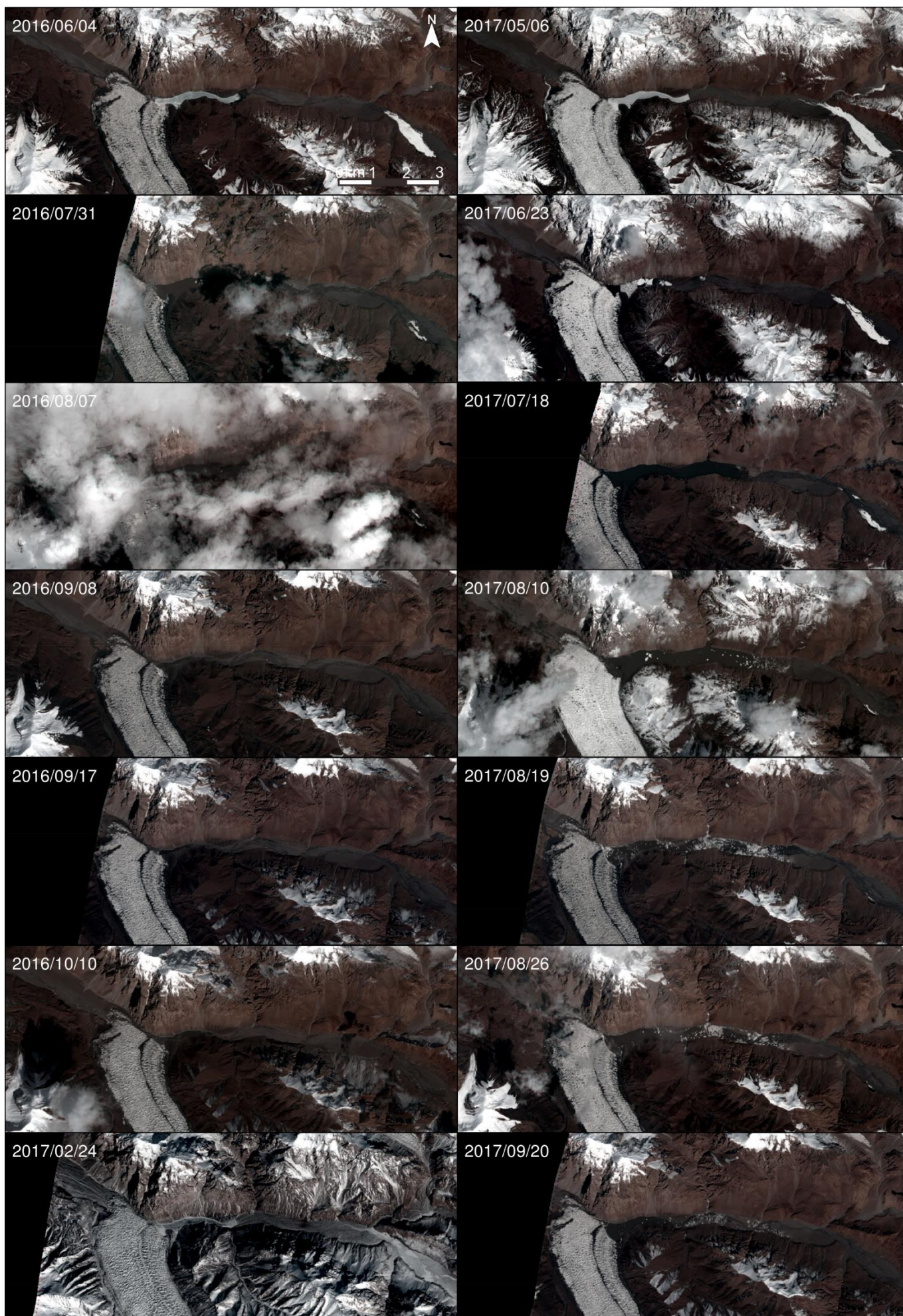
Figure S9. Sharpened Landsat images showing ice-dammed lake evolution (9).
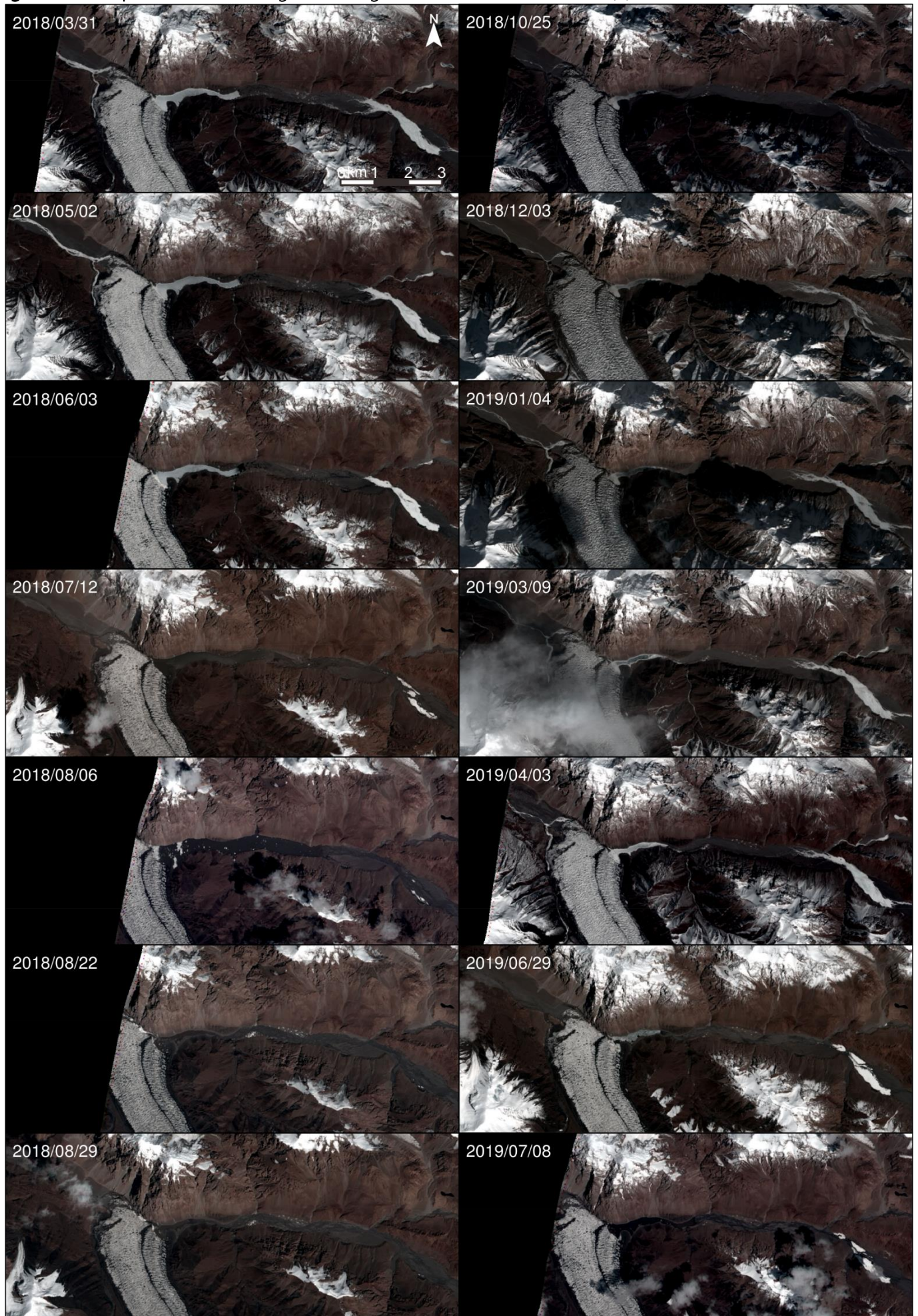
Figure S10. Sharpened Landsat images showing ice-dammed lake evolution (10).
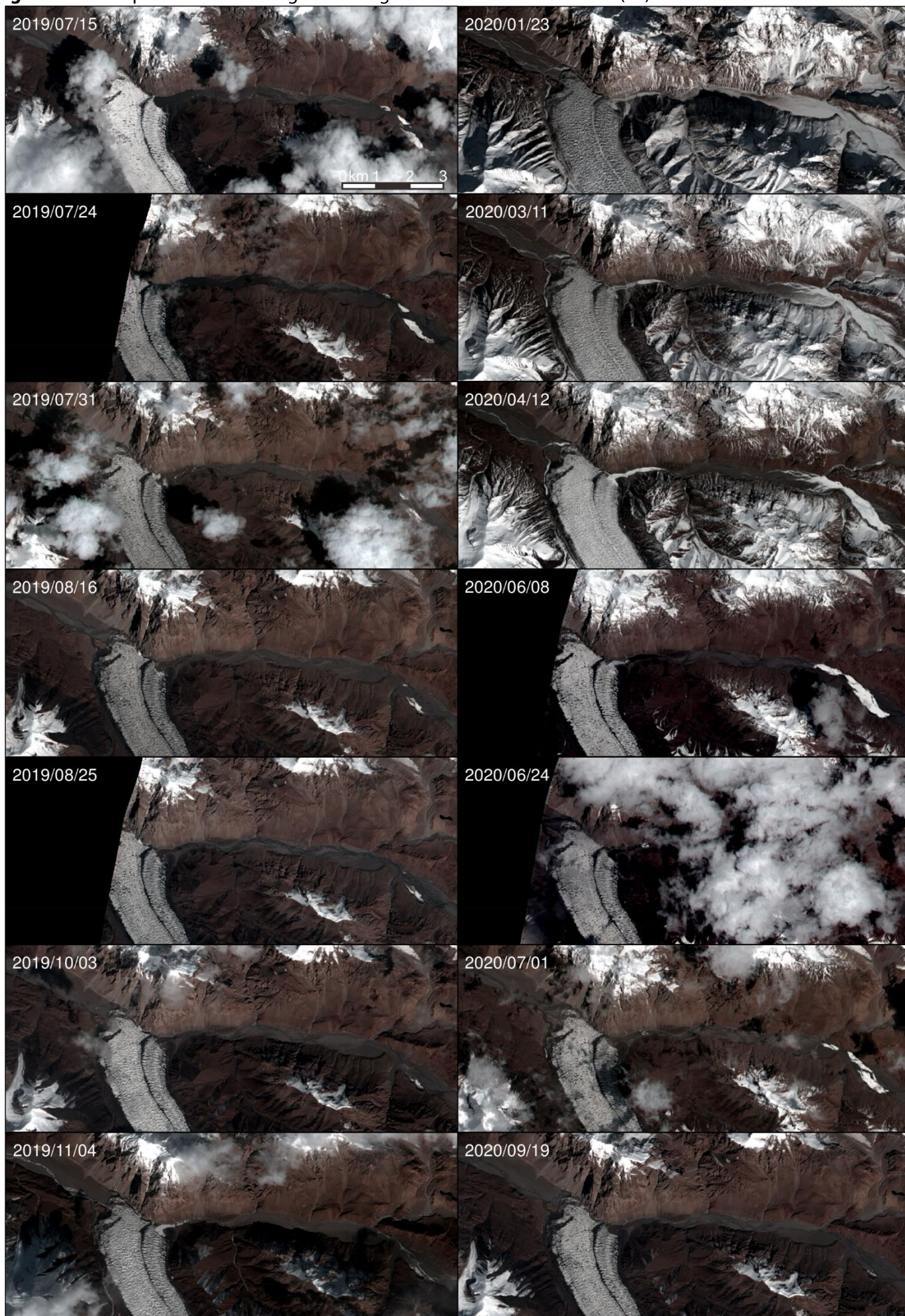
Figure S11. Sharpened Landsat images showing ice-dammed lake evolution (11).