Supplemental Material to: Remote sensing of glacier change (1965 - 2021) and identification of surge-type glaciers on Severnaya Zemlya, Russian High Arctic

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| Sensor | Spatial Resolution | Spectral bands | Date(s) | Coverage | Tiles | Source |
|   |   |   |   |   |   |   |
| KH-7 | 4.9 m  | N/A | 7th July 1965 | All except Komsomolet & Schmidt | DS1022-1005DA010 DS1022-1005DA011 DS1022-1005DA012 DS1022-1005DA013 DS1022-1005DA014 DS1022-1005DA015 DS1022-1005DA016 DS1022-1005DA017 DS1022-1005DA018 DS1022-1005DA019 DS1022-1005DA0120 DS1022-1005DA021 | USGS (https://earthexplorer.usgs.gov/) |
| KH-9 | 7 m  | N/A | 22nd June 1979 | Only Komsomolet & N. October Revolution | DZB1215-500454L003001 | USGS (https://earthexplorer.usgs.gov/) |
| Landsat TM | 30 m  | B1: (0.45 - 0.52 µm) B2: (0.52 - 0.60 µm) B3: (0.63 - 0.69 µm) | 21st – 24th July 1986 | Full coverage | LT05\_L2SP\_169002\_19860723\_20200917\_02\_T1 LT05\_L2SP\_162003\_19860722\_20200918\_02\_T1LT05\_L2SP\_160003\_19860724\_20200918\_02\_T1 LT05\_L2SP\_171001\_19860721\_20200917\_02\_T1 | USGS (https://earthexplorer.usgs.gov/) |
|   |   |   | Various dates in July/Aug 1997  | Full coverage | LT05\_L2SP\_167002\_19970723\_20200910\_02\_T1 LT05\_L1TP\_179001\_19970711\_20200910\_02\_T1 LT05\_L1TP\_167003\_19970723\_20200910\_02\_T1 LT05\_L2SP\_177001\_19970830\_20200909\_02\_T1 LT05\_L2SP\_158004\_19970724\_20200910\_02\_T1 LT05\_L2SP\_157004\_19970802\_20200910\_02\_T1 |   |
| ASTER | 15 m | B1: (0.52 - 0.60 µm) B2: (0.63 - 0.69 µm) B3N: (0.78 - 0.86 µm) | Various dates in July/Aug 2011 (Schmidt Island 20th June) | Full coverage | AST\_07\_00308162011121734\_20211123091415\_30482 AST\_07\_00308212011123556\_20211123091324\_28626 AST\_07\_00308212011123605\_20211123091314\_28293 AST\_07\_00308212011123547\_20211123091314\_28299 AST\_07\_00308122011124210\_20211019044822\_1490 AST\_07\_00308162011072436\_20211123085034\_7322 AST\_07\_00309012011121753\_20211123085753\_19671 AST\_07\_00308202011070009\_20211025122709\_5827 AST\_07\_00308122011074912\_20211018094530\_15987 AST\_07\_00308122011074921\_20211018094510\_15738 AST\_07\_00308122011124228\_20211018094530\_15995 AST\_07\_00308202011070018\_20211019063322\_31230 AST\_07\_00308122011124219\_20211018094530\_15982 AST\_07\_00308122011124201\_20211019063322\_31233 AST\_07\_00307082011121208\_20211018094540\_16065 AST\_07\_00308192011075520\_20211018094500\_15606 AST\_07\_00308122011110445\_20211019063252\_30941 AST\_07\_00308192011075529\_20211019063222\_30830 AST\_07\_00308172011112316\_20211123091435\_30746 AST\_07\_00308112011115948\_20211123091435\_30740 AST\_07\_00308172011112307\_20211123115146\_784 AST\_07\_00306202011104629\_20220220043307\_17570 | NASA (https://earthdata.nasa.gov/) |
| Arctic DEM | 2 m  |   | 12th July 2018 | Full coverage | N/A | Arctic DEM (https://doi.org/10.7910/DVN/OHHUKH) |
| Landsat 8 | 15 m | B2: (0.45 - 0.51  µm) B3: (0.53 - 0.59 µm) B4: (0.64 - 0.67 µm) | 3rd and 6th August 2021 | Bolshevik Island | LC08\_L1TP\_198241\_20210803\_20210811\_02\_T1 LC08\_L1TP\_203240\_20210806\_20210811\_02\_T1 | USGS (https://earthexplorer.usgs.gov/) |
| Sentinel-2A | 10 m  | B2: (490 µm) B3: (560 µm) B4: (665 µm) | Various dates in July, August and September | October Revolution & Komsomolets Islands | L1C\_T46XEQ\_A031879\_20210730T092553 L1C\_T46XEP\_A031935\_20210803T072618 L1C\_T47XMH\_A031935\_20210803T072618 L1C\_T47XMJ\_A031935\_20210803T072618 L1C\_T47XNJ\_A031935\_20210803T072618 L1C\_T46XER\_A031936\_20210803T090557 L1C\_T46XDP\_A032250\_20210825T080608 L1C\_T46XDQ\_A032422\_20210906T084559 | USGS (https://earthexplorer.usgs.gov/) |
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***Table S1.*** *The sensors used for glacier delineation and surge detection, including the dates of acquisition and individual tile names.*

**[See supplementary video S2]**

***Video S2.*** *The surge of glacier 105, a lake-terminating outlet of the Karpinsky Ice Cap. Note the looped medial moraine in ~1965, which has mostly disappeared by ~1986 where the surge appears to have initiated, terminating by 2011.*