

Supplement of

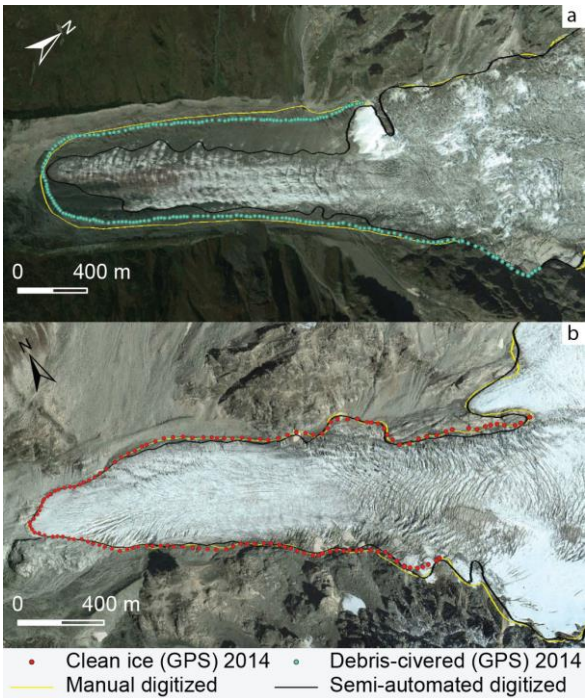
# Brief communication: Supraglacial debris-cover changes in the Caucasus Mountains

Levan G. Tielidze et al.

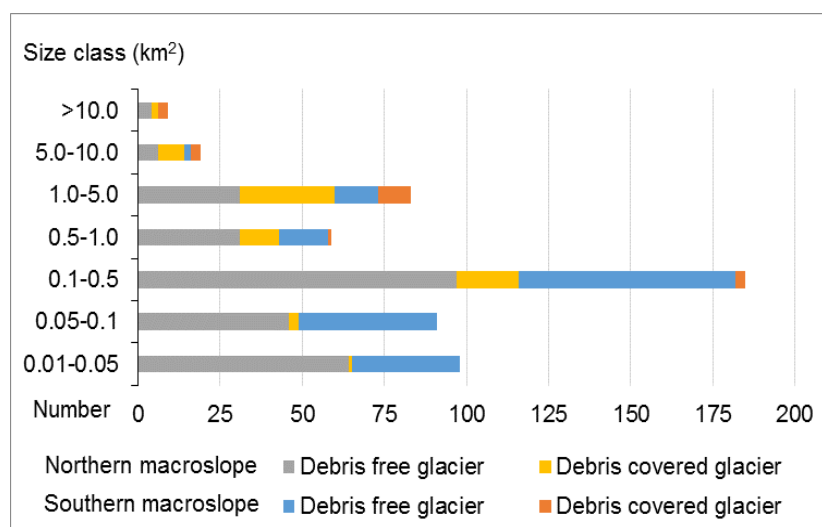
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**Table S1.** Satellite images used in this study.

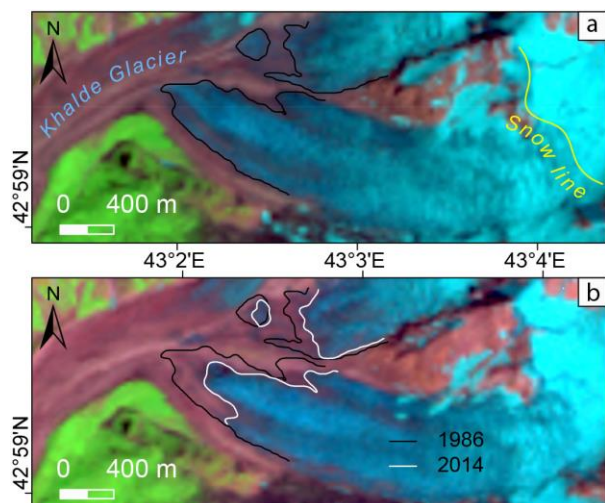
Date	UTM zone	Sensor	Region/Section	Resolution	Scene ID
10/08/1985	37N	Landsat 5 TM	Western Greater Caucasus	30 m	LT51720301985222XXX04
06/08/1986	38N	Landsat 5 TM	Central Greater Caucasus	30 m	LT51710301986218XXX02
31/08/1986	38N	Landsat 5 TM	Eastern Greater Caucasus	30 m	LT51700301986243XXX03
12/09/2000	37N	Landsat 7 ETM+	Western Greater Caucasus	15/30 m	LE71720302000256SGS00
05/09/2000	38N	Landsat 7 ETM+	Central Greater Caucasus	15/30 m	LE71710302000249SGS00
28/07/2000	38N	Landsat 7 ETM+	Eastern Greater Caucasus	15/30 m	LE17003020000728SGS00
23/08/2013	37N	Landsat 8 OLI	Western Greater Caucasus	15/30 m	LC81720302013235LGN00
03/08/2014	38N	Landsat 8 OLI	Central Greater Caucasus	15/30 m	LC81710302014215LGN00
28/08/2014	38N	Landsat 8 OLI	Eastern Greater Caucasus	15/30 m	LC81700302014240LGN00
20/08/2016	37N	SPOT-7	Elbrus	1.5 m	DS_SPOT7201608200751063



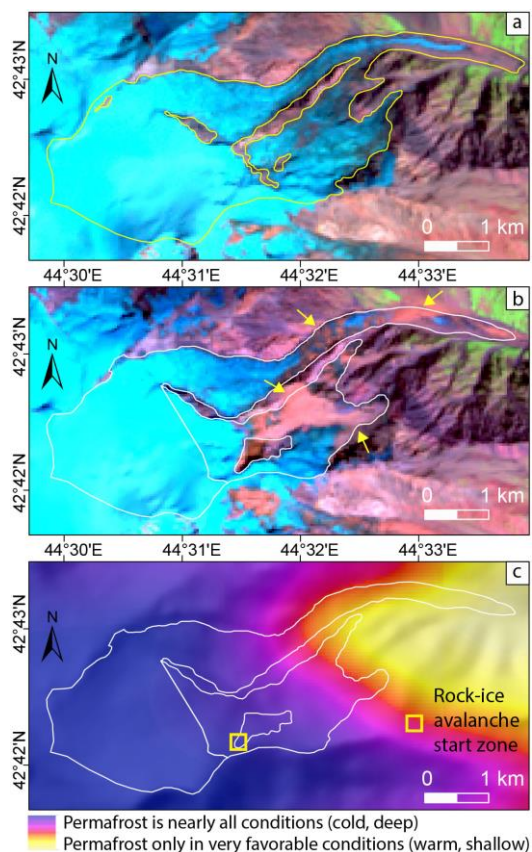
**Figure S1.** Examples of glacier outline accuracy assessment by GPS measurements: a – Adishi Glacier; b – Kirtisho Glacier. Google Earth imagery 19/09/11.



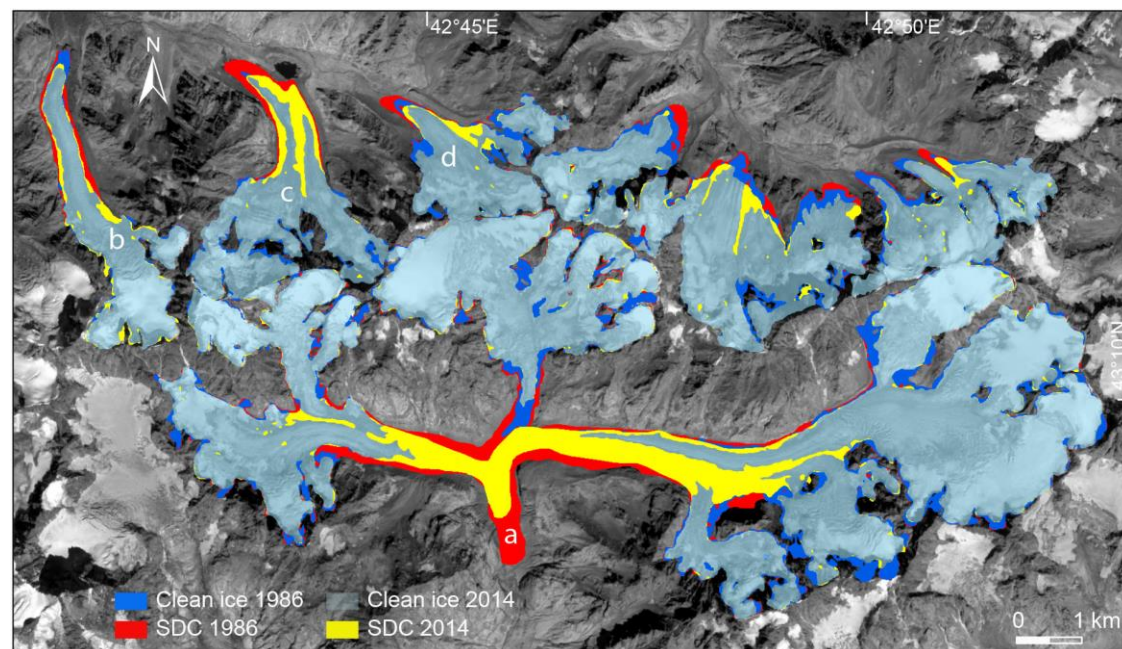
**Figure S2.** The Greater Caucasus glacier size classes with debris covered and debris free glaciers distributions for northern and southern slopes.



**Figure S3.** An example of the SDC up-glacier migration onto the Khalde Glacier. a – 1986 (Landsat 5, 06/08/86). b – 2014 (Landsat 8, 03/08/14).



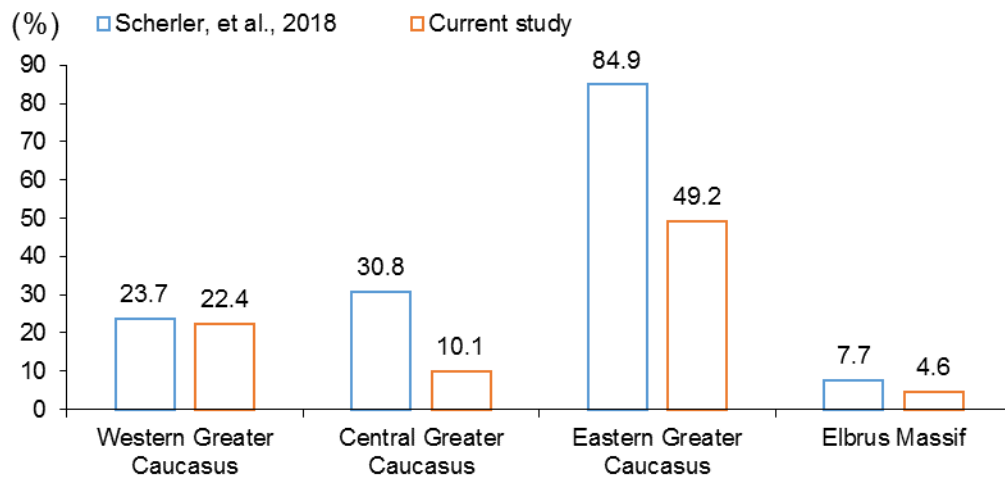
**Figure S4.** a – Devdoraki Glacier in 2000 (Landsat 7, 30/08/00); b – Devdoraki Glacier after rock-ice avalanche in 2014 (Landsat 8, 28/08/14). Yellow arrow shows increased SDC area. c – Devdoraki Glacier on the permafrost zonation index map (Gruber, 2012).



**Figure S5.** A comparison of SDC and clean-ice area distribution in 1986-2014 for the southern (a – Lekhziri) and northern (b – Kashkatash, c – Bashkara and d – Djankuat) glaciers. Landsat 8 (panchromatic band 8), 03/08/14 was used background.

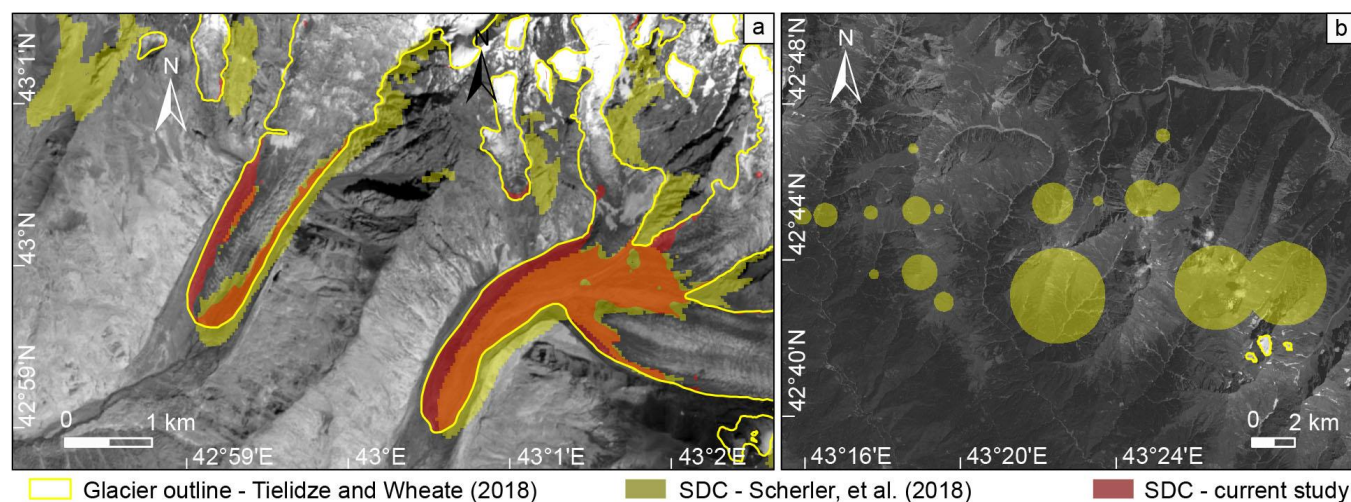


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**Figure S6.** Relative SDC for the Western, Central, and Eastern Greater Caucasus as well as for Elbrus based on the current study (brown) and in comparison with Scherler et al. (2018).



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**Figure S7.** a - Comparison of SDC assessment by Scherler, et al. (2018) (based the RGI v6) and current study. b - An example of the RGI v6 nominal glaciers (circles). According to Scherler, et al. (2018), all nominal glaciers were classified as debris-covered. Landsat 8 (panchromatic band 8), 03/08/14 was used background.