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Supplement of

Inventory and changes of rock glacier creep speeds in Ile Alatau and Kungöy Ala-Too, northern Tien Shan, since the 1950s

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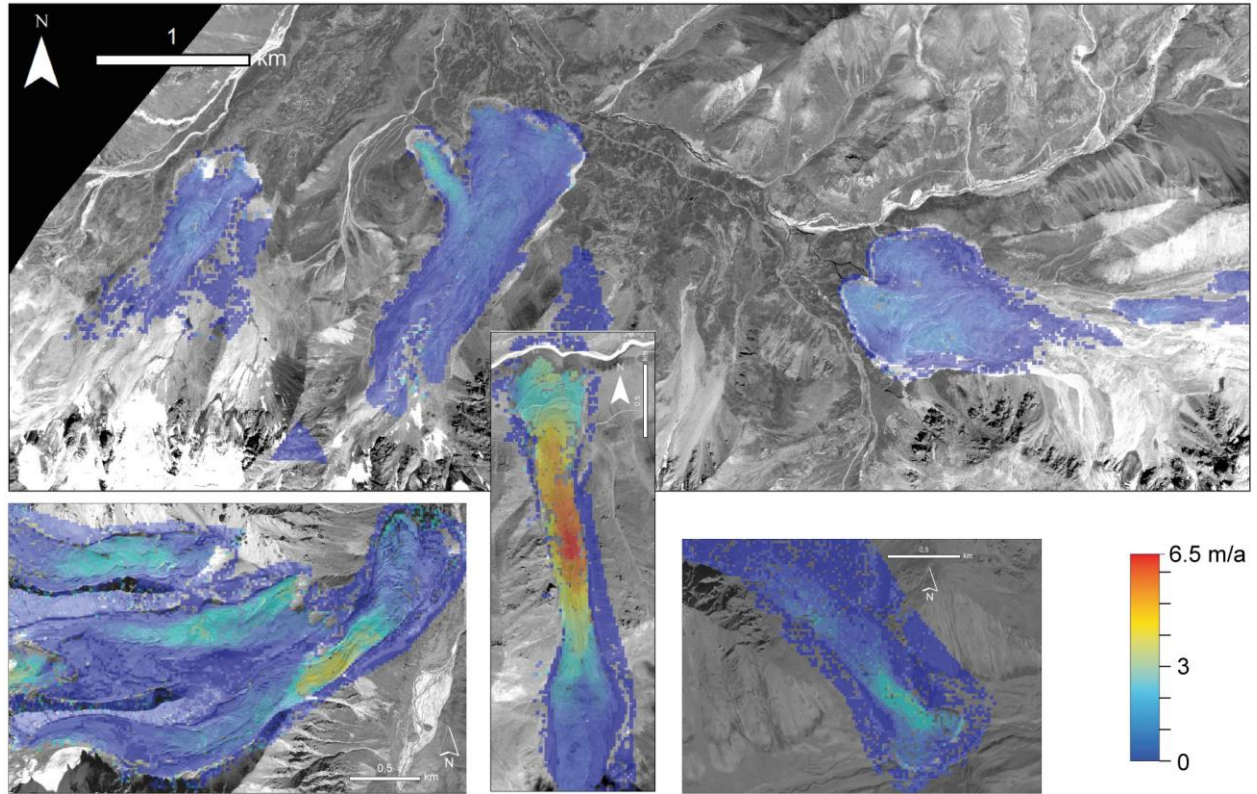
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Table S1: Main characteristics of the differential SAR interferograms used. Date format: YYYYMMDD

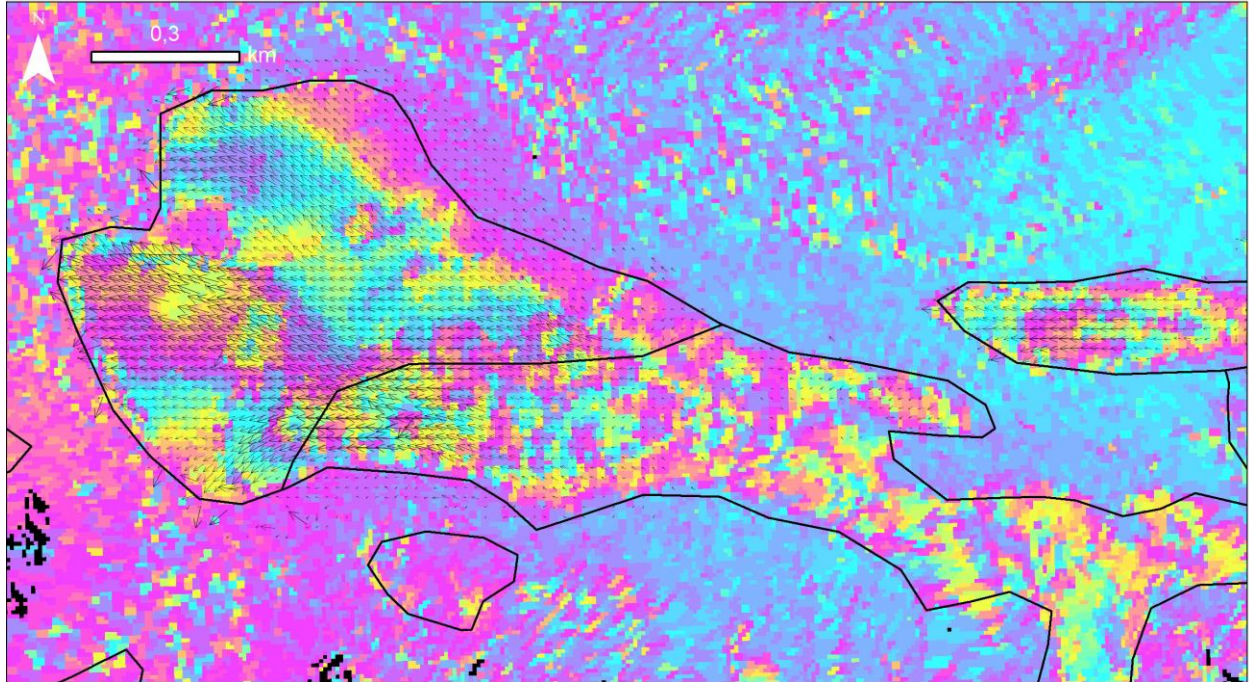
Satellite	Orbit	Date 1	Date 2	Perp. Baseline	Time Interval
ERS-1/2	Descending	19980707	19980708	-455.5 m	1 day
ERS-1/2	Descending	19990413	19990414	-118.1 m	1 day
ERS-1/2	Ascending	19990331	19990401	59.1 m	1 day
ERS-1/2	Ascending	19990505	19990506	69.6 m	1 day
ERS-1/2	Ascending	19990609	19990610	34.8 m	1 day
ALOS-1 PALSAR-1	Ascending	20070903	20071019	305.6 m	46 days
ALOS-1 PALSAR-1	Ascending	20080119	20080305	650.5 m	46 days
ALOS-1 PALSAR-1	Ascending	20080305	20080420	460.9 m	46 days
ALOS-1 PALSAR-1	Ascending	20080905	20081021	650.4 m	46 days
ALOS-1 PALSAR-1	Ascending	20090121	20090308	460.8 m	46 days
ALOS-1 PALSAR-1	Ascending	20100124	20100311	627.3 m	46 days
ALOS-1 PALSAR-1	Ascending	20070116	20090121	225.9 m	736 days
ALOS-1 PALSAR-1	Ascending	20070903	20100727	946.6 m	1058 days
ALOS-1 PALSAR-1	Ascending	20071019	20100727	641.0 m	1012 days
ALOS-1 PALSAR-1	Ascending	20070817	20071002	251.6 m	46 days
ALOS-1 PALSAR-1	Ascending	20080102	20080217	994.8 m	46 days
ALOS-1 PALSAR-1	Ascending	20080819	20081004	957.3 m	46 days
ALOS-1 PALSAR-1	Ascending	20090104	20090219	497.8 m	46 days
ALOS-1 PALSAR-1	Ascending	20100107	20100222	710.6 m	46 days
ALOS-1 PALSAR-1	Ascending	20100525	20100710	65.9 m	46 days
ALOS-1 PALSAR-1	Ascending	20100710	20100825	451.9 m	46 days
ALOS-1 PALSAR-1	Ascending	20100825	20101010	389.7 m	46 days
ALOS-1 PALSAR-1	Ascending	20100710	20101010	841.6 m	92 days
ALOS-1 PALSAR-1	Ascending	20061230	20090104	6.9 m	736 days
ALOS-1 PALSAR-1	Ascending	20070817	20090822	-1038.9 m	736 days
ALOS-1 PALSAR-1	Ascending	20071002	20100825	1030.7 m	1058 days
ALOS-2 PALSAR-2	Descending	20150306	20150320	-220.8 m	14 days
ALOS-2 PALSAR-2	Ascending	20141005	20141214	180.2 m	70 days
ALOS-2 PALSAR-2	Ascending	20141005	20151004	142.6 m	364 days
ALOS-2 PALSAR-2	Ascending	20141005	20160724	57.4 m	658 days
ALOS-2 PALSAR-2	Ascending	20141214	20150222	64.2 m	70 days
ALOS-2 PALSAR-2	Ascending	20151004	20160724	-85.2 m	294 days
ALOS-2 PALSAR-2	Ascending	20160724	20161030	-24.4 m	98 days
Sentinel-1	Descending	20150712	20150724	-170.5 m	12 days
Sentinel-1	Descending	20150712	20150829	27.0 m	36 days
Sentinel-1	Descending	20160718	20160811	-65.9 m	24 days
Sentinel-1	Descending	20160811	20160904	102.6 m	24 days
Sentinel-1	Descending	20160904	20160928	-50.4 m	24 days
Sentinel-1	Descending	20160928	20161022	-74.0 m	24 days
Sentinel-1	Descending	20150712	20160718	15.9 m	372 days
Sentinel-1	Descending	20150829	20160811	-77.0 m	348 days
Sentinel-1	Ascending	20150723	20150816	26.5 m	24 days
Sentinel-1	Ascending	20150816	20150909	-36.6 m	24 days
Sentinel-1	Ascending	20160729	20160822	79.2 m	24 days
Sentinel-1	Ascending	20160822	20160915	-14.7 m	24 days
Sentinel-1	Ascending	20150723	20150909	-10.1 m	48 days
Sentinel-1	Ascending	20160729	20160915	64.5 m	48 days
Sentinel-1	Ascending	20150723	20160729	-53.4 m	372 days
Sentinel-1	Ascending	20150816	20160822	-0.8 m	372 days
Sentinel-1	Ascending	20150909	20160915	21.1 m	372 days
Sentinel-1	Descending	20180824	20180905	51 m	12 days
Sentinel-1	Descending	20180824	20180917	13 m	24 days
Sentinel-1	Ascending	20180825	20180906	-72 m	12 days
Sentinel-1	Ascending	20180825	20180918	-79 m	24 days
Sentinel-1	Ascending	20180906	20180918	-6 m	12 days

Table S2: Airphotos and optical satellite data used. The column “Gorodetsky ...” includes Morenny and Archaly rock glaciers. Date format: YYYY MMDD. Note, the days and months of acquisition on the airphotos were not always clearly identified and could be wrong in a few cases by several days to a month. 1953 data for Gorodetsky cover not Morenny and Archaly.

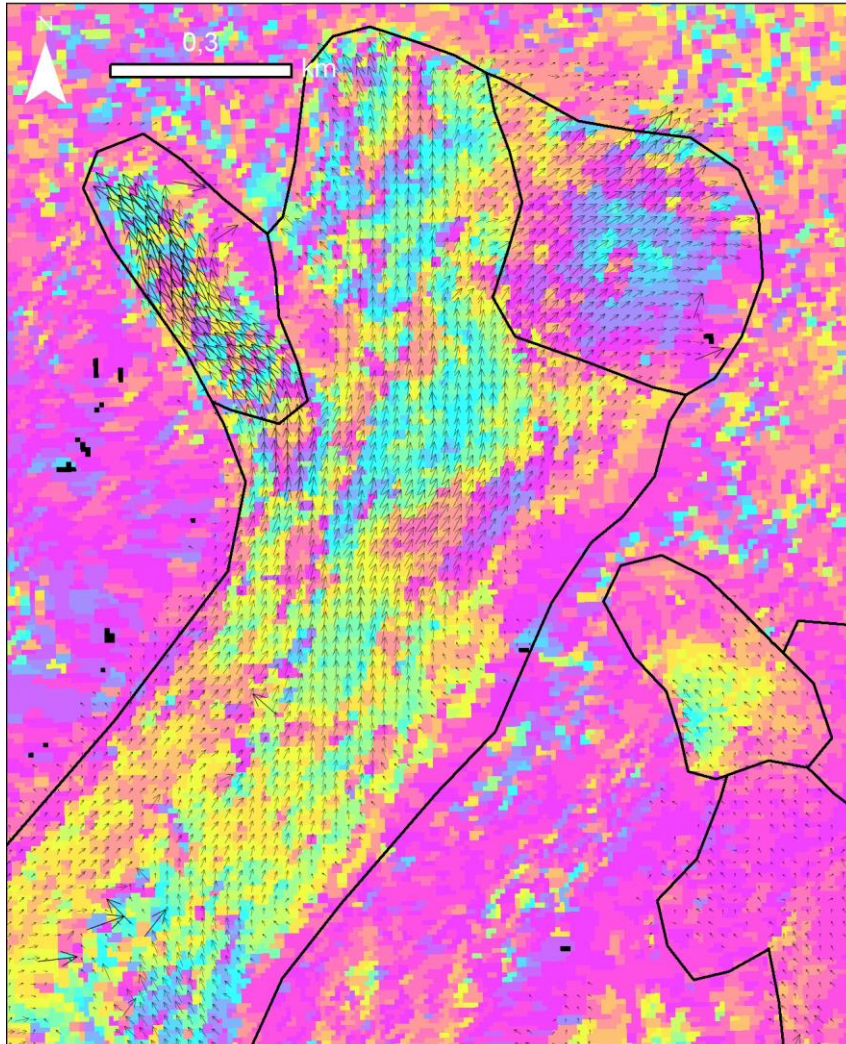
Gorodetsky ...	Karakoram	Ordzhonikidze	Kugalan Tash	Image source
1953		1953		Airphoto
			1956 0902	Airphoto
	1964 0819			Airphoto
1964 1006				Corona
		1966 0913		Airphoto
	1971 0917	1971 0917	1971 0917	Corona
			1973 0917	Airphoto
	1977 0818			Airphoto
	1980 0712		1980 0712	Airphoto
	1985 0825	1985 0726		Airphoto
	1988 0810		1988 0810	Airphoto
1990 0915				Airphoto
	2001 1114			Ikonos
			2004 0712	Airphoto
	2008 0813			WorldView
	2009 0801			Quickbird
		2009 0806		WorldView
2012 0809				GeoEye
			2012 0923	WorldView
		2013 1006		GeoEye
			2014 0710	WorldView
2016 0827				Pléiades
	2017 0729			GeoEye
2018 0823		2018 0727		WorldView



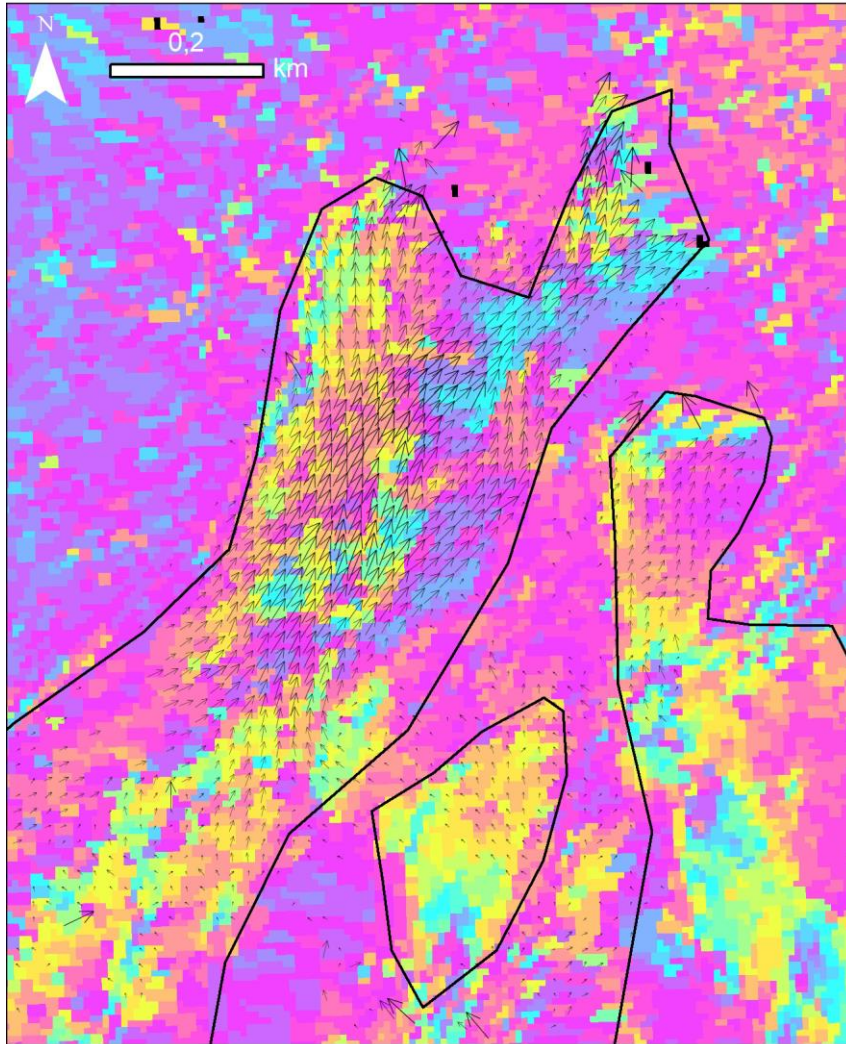
Supplementary Figure S1: Same velocities as shown in Figs 3-7 in the main article, but with the same map scale and the same colour scale for speeds.



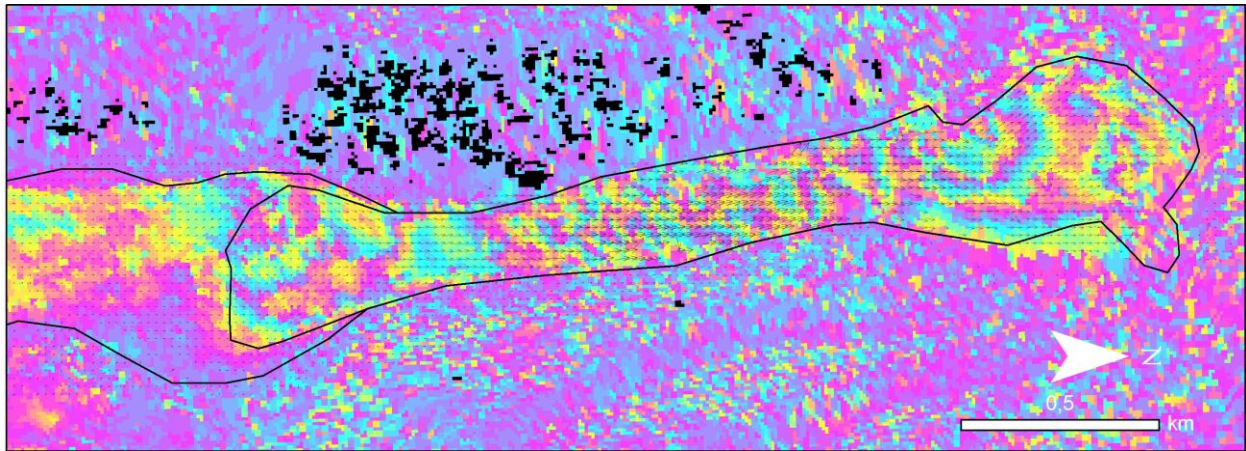
Supplementary Figure S2: Gorodetzky rock glacier. Velocities of Fig. 3 and inventory outlines (Fig. 1) superimposed over interferogram Fig. 2. Maximum magnitude of velocity arrows is 1.4 m/a.



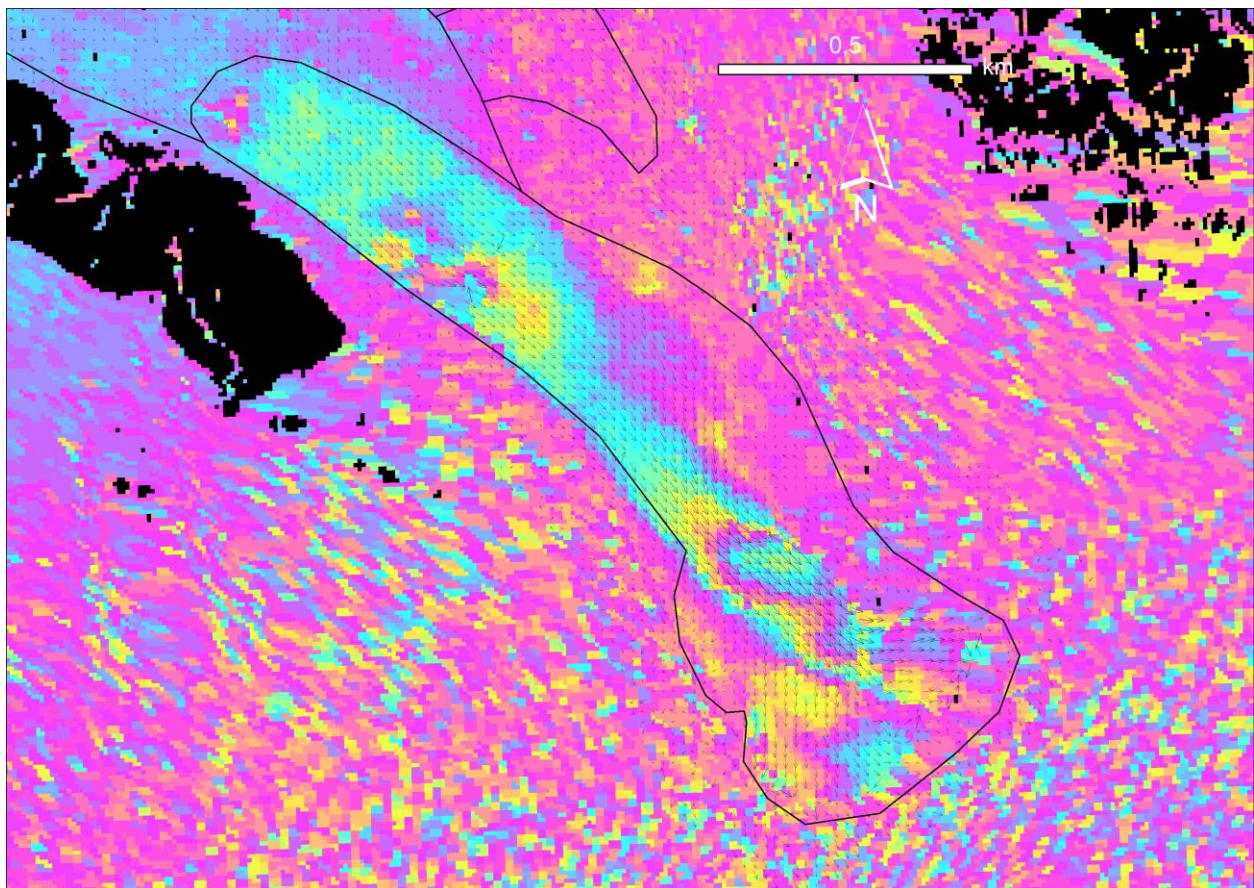
Supplementary Figure S3: Morenny rock glacier. Velocities of Fig. 4 and inventory outlines (Fig. 1) superimposed over interferogram Fig. 2. Maximum magnitude of velocity arrows is 2.5 m/a.



Supplementary Figure S4: Archaly rock glacier. Velocities of Fig. 4 and inventory outlines (Fig. 1) superimposed over interferogram Fig. 2. Maximum magnitude of velocity arrows is 1.4 m/a.



Supplementary Figure S5: Karakoram rock glacier. Velocities of Fig. 5 and inventory outlines (Fig. 1) superimposed over interferogram Fig. 2. Maximum magnitude of velocity arrows is 6.5 m/a.



Supplementary Figure S6: Kugalan Tash rock glacier. Velocities of Fig. 7 and inventory outlines (Fig. 1) superimposed over interferogram Fig. 2. Maximum magnitude of velocity arrows is 2.5 m/a.