Supplement: Brief Communication: Glacier mapping and change estimation using very high resolution declassified Hexagon KH-9 panoramic stereo imagery (1971-1984)

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Site	Sensor	Images	Spatial Resolution (m)	Scan Angle (deg)	Acquisition Date
Ak-Shirak	KH-9PC	D3C1206-100180A062, 063 D3C1206-100180F062	0.7	-45 to +45	31/7/1973
	КН-9МС	DZB1206-500069L010001 DZB1206-500069L011001	7	-	31/7/1973
	KH-4PC	DS1014-2134DA088, 089, 090 DS1014-2134DF084, 085, 089	4	-35 to +35	27/11/1964
	SPOT-6	DS_SPOT6_201708070515034	1.5	-	7/8/2017
Passu	KH-9PC	D3C1206-200215F051, 052 D3C1206-200215A052	0.7	-60 to +30	4/8/1973
	КН-9МС	DZB1206-500082L020001 DZB1206-500082L021001	7	-	4/8/1973
	Pléiades	PHR1A_P_202108130559004	0.5	-	13/8/2021

Table S1. Specifications of the data used for the evaluation of KH-9PC imagery over the two study sites.



Figure S1. Coverage of the declassified KH-9PC scenes (data source: USGS).



Figure S2. Footprints of the images from KH-9PC (D3C1206-100180A062,A063, F062), KH-9MC (DZB1206-500069L010001, L011001) and KH-4PC (DS1014-2134DA089, DS1014-2134DF085) of region around AkShirak. For clarity, only one pair of KH-4 image footprints are shown here. The red rectangle shows the glacierized Ak-Shirak area used in the analysis. Basemap: ESRI World Imagery (© ESRI)



Figure S3. Footprints of the images from KH-9PC (D3C1206-200215A052, F051, F052) and KH-9MC (DZB1206-500082L021001, L021001) covering Passu Glacier and the surrounding region. Basemap: ESRI World Imagery (© ESRI)



Figure S4. Four KH-9PC images covering the Karakoram and the Hindukush area. Together with the corresponding stereo images from the *aft* camera, these images were used for large-scale mapping example. The footprints of D3C1206-200215F051 and D3C1206-200215F052 are shown in Fig. S3



Figure S5. (a,b) Orthoimages of KH-9PC and KH-9MC of Passu Glacier, Karakoram. (c,d,e) KH-9PC, KH-9MC and KH-4PC images of the Petrov Glacier, Ak-Shirak. Insets show zoomed areas (marked as red rectangles) in the accumulation zones of the glaciers.



Figure S6. A visual comparison of the orthoimages of KH-9PC, KH-9MC with Pléiades and SPOT-6 images of Passu, Karakoram and Petrov Glacier, Ak-Shirak respectively.



Figure S7. a: Supraglacial ponds and ice-cliffs on the Khumbu Glacier (Himalaya). b: Lake formed at the terminus of the Kaygar Glacier (Karakoram), which has caused several outburst floods. c,d: Hispar Glacier (Karakoram) tributary surge visible in multi-temporal KH-9PC scenes.