Rapid regional assessment of rock glacier activity based on DInSAR wrapped phase signal

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SUPPLEMENTARY MATERIALS
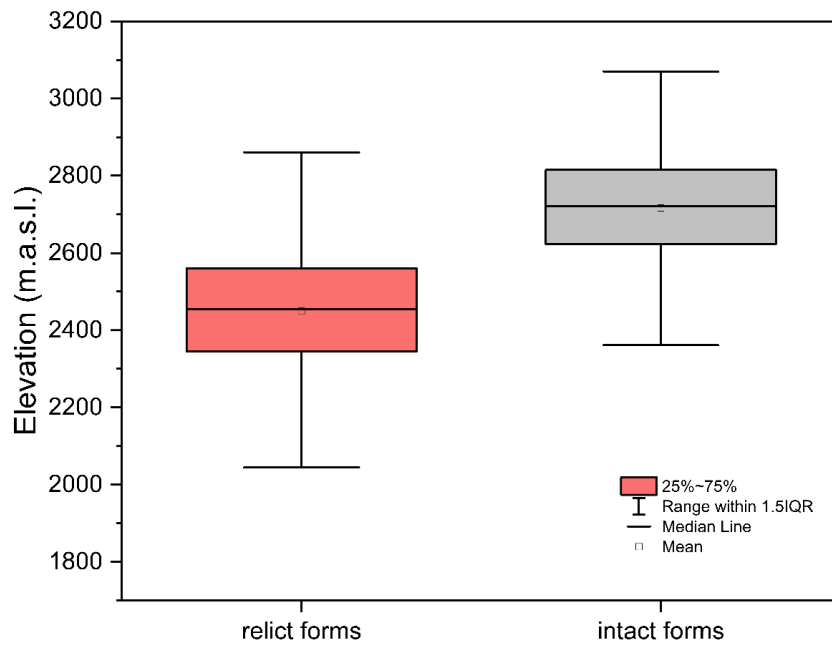
Figure S1. Altitude value distributions in the periglacial features mapped in the study area (geomorphological classification according to Scotti et al., 2013).
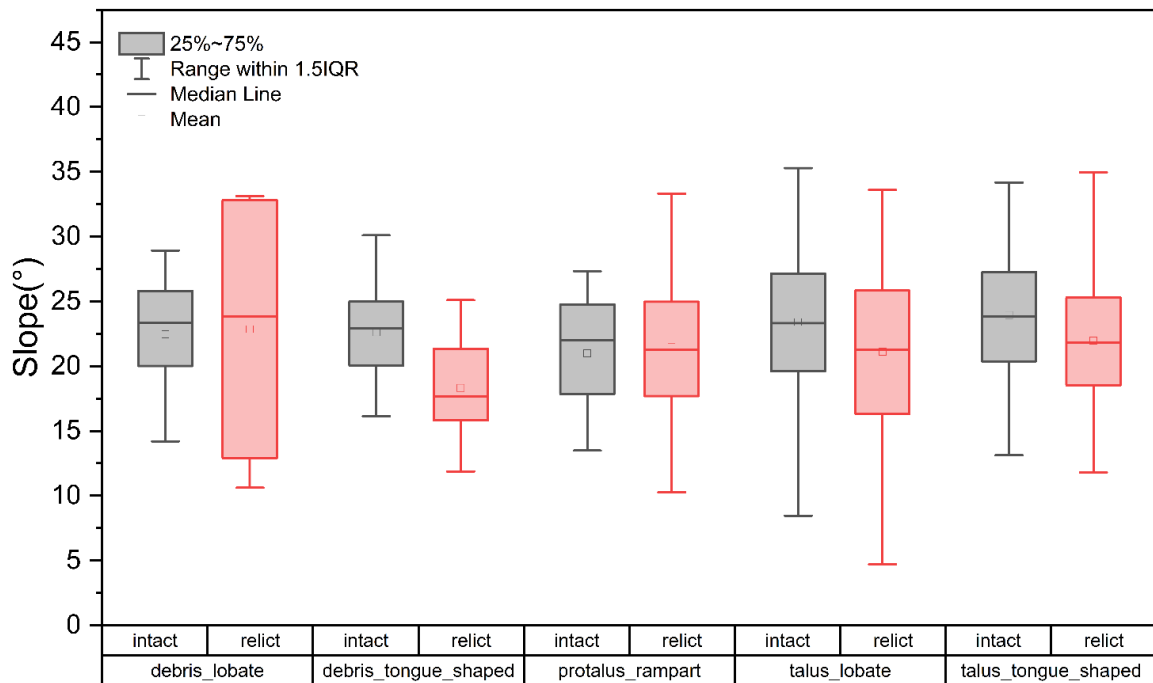
Figure S2. Topographic slope distributions in the periglacial features mapped in the study area (geomorphological classification according to Scotti et al., 2013).
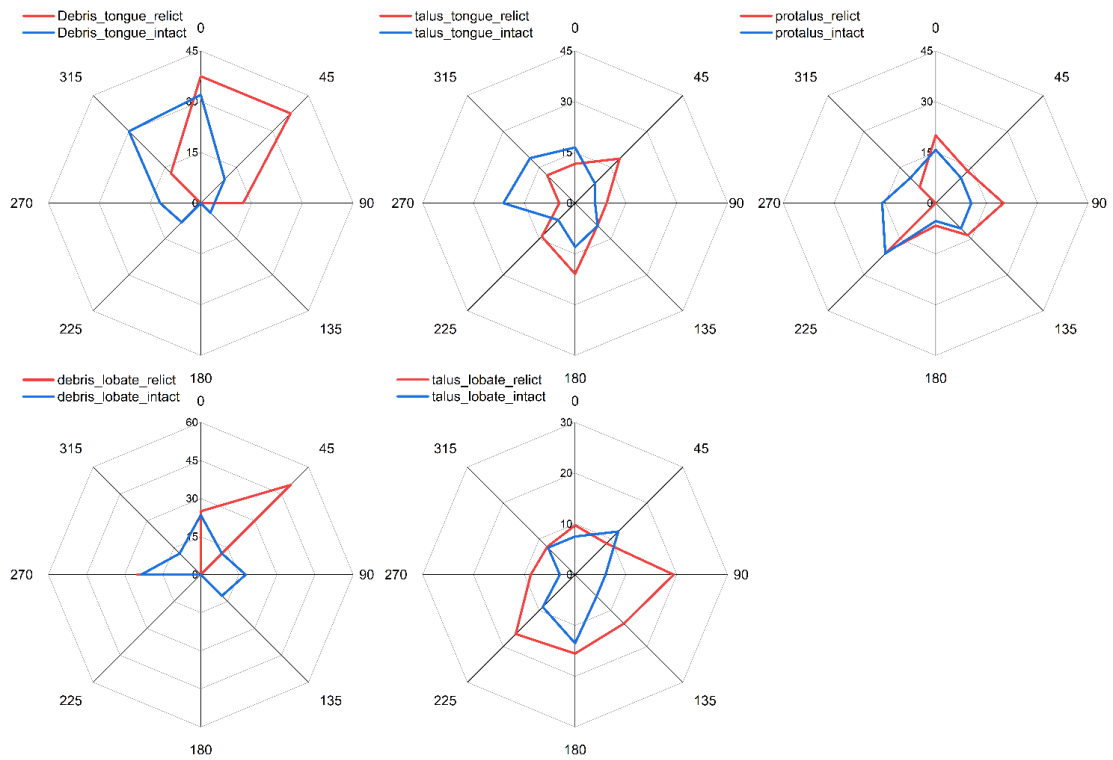
Figure S3. Topographic aspect distributions in the periglacial features mapped in the study area (geomorphological classification according to Scotti et al., 2013).
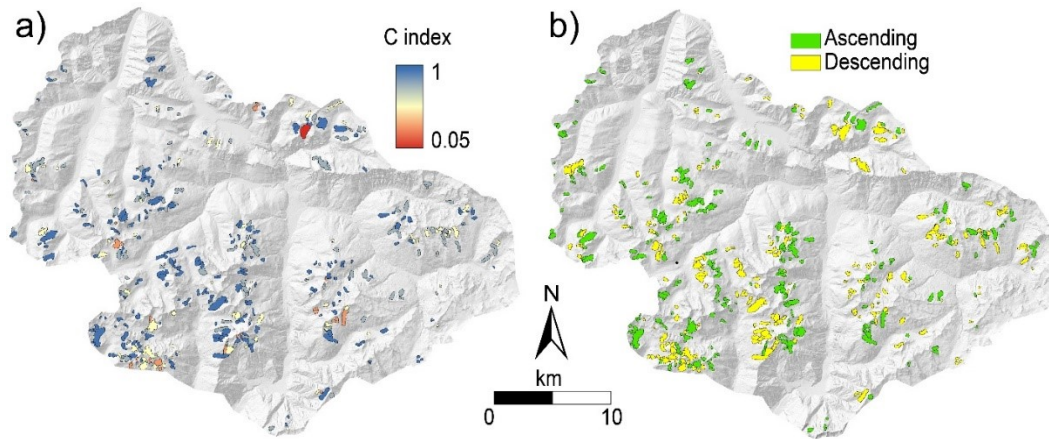
Figure S4. Maps portraying: a) the visibility of each periglacial landform to SAR sensors. Favourably oriented slopes have higher C index; b) most suitable satellite geometry for each mapped periglacial landform.

Table S1. SAR satellite datasets used in the analyses.

Satellite	Orbit type	incidence angle Θ	Orbital Azimuth δ	Orbit	# images	Period
Sentinel-1	Ascending	~42°	10.23	15	100	2017-2020
Sentinel-1	Descending	~41.8°	8.89	168	94	2017-2020

Table S2. SAR images (Sentinel-1 A/B, SLC, IW) used for dual-pass interferogram generation.

Descending				**Ascending**		
Date	**Sat**	**Track**		**Date**	**Sat**	**Track**
03/06/2017	SNT	168		04/06/2017	SNT	15
09/06/2017	SNT	168		10/06/2017	SNT	15
15/06/2017	SNT	168		16/06/2017	SNT	15
21/06/2017	SNT	168		22/06/2017	SNT	15
27/06/2017	SNT	168		28/06/2017	SNT	15
03/07/2017	SNT	168		04/07/2017	SNT	15
09/07/2017	SNT	168		10/07/2017	SNT	15
15/07/2017	SNT	168		16/07/2017	SNT	15
21/07/2017	SNT	168		22/07/2017	SNT	15
27/07/2017	SNT	168		28/07/2017	SNT	15
02/08/2017	SNT	168		03/08/2017	SNT	15
08/08/2017	SNT	168		09/08/2017	SNT	15
14/08/2017	SNT	168		15/08/2017	SNT	15
20/08/2017	SNT	168		21/08/2017	SNT	15
26/08/2017	SNT	168		27/08/2017	SNT	15
01/09/2017	SNT	168		02/09/2017	SNT	15
07/09/2017	SNT	168		08/09/2017	SNT	15
13/09/2017	SNT	168		14/09/2017	SNT	15
19/09/2017	SNT	168		20/09/2017	SNT	15
25/09/2017	SNT	168		26/09/2017	SNT	15
01/10/2017	SNT	168		02/10/2017	SNT	15
07/10/2017	SNT	168		08/10/2017	SNT	15
13/10/2017	SNT	168		14/10/2017	SNT	15
25/10/2017	SNT	168		20/10/2017	SNT	15
31/10/2017	SNT	168		26/10/2017	SNT	15
04/06/2018	SNT	168		05/06/2018	SNT	15

10/06/2018	SNT	168		11/06/2018	SNT	15
16/06/2018	SNT	168		17/06/2018	SNT	15
22/06/2018	SNT	168		23/06/2018	SNT	15
28/06/2018	SNT	168		05/07/2018	SNT	15
04/07/2018	SNT	168		11/07/2018	SNT	15
10/07/2018	SNT	168		17/07/2018	SNT	15
16/07/2018	SNT	168		23/07/2018	SNT	15
22/07/2018	SNT	168		29/07/2018	SNT	15
28/07/2018	SNT	168		04/08/2018	SNT	15
03/08/2018	SNT	168		10/08/2018	SNT	15
09/08/2018	SNT	168		16/08/2018	SNT	15
15/08/2018	SNT	168		22/08/2018	SNT	15
21/08/2018	SNT	168		28/08/2018	SNT	15
27/08/2018	SNT	168		03/09/2018	SNT	15
02/09/2018	SNT	168		09/09/2018	SNT	15
08/09/2018	SNT	168		15/09/2018	SNT	15
14/09/2018	SNT	168		21/09/2018	SNT	15
20/09/2018	SNT	168		27/09/2018	SNT	15
26/09/2018	SNT	168		03/10/2018	SNT	15
02/10/2018	SNT	168		09/10/2018	SNT	15
08/10/2018	SNT	168		15/10/2018	SNT	15
14/10/2018	SNT	168		21/10/2018	SNT	15
20/10/2018	SNT	168		27/10/2018	SNT	15
26/10/2018	SNT	168				
05/06/2019	SNT	168		06/06/2019	SNT	15
11/06/2019	SNT	168		12/06/2019	SNT	15
17/06/2019	SNT	168		18/06/2019	SNT	15
23/06/2019	SNT	168		30/06/2019	SNT	15
29/06/2019	SNT	168		06/07/2019	SNT	15
05/07/2019	SNT	168		12/07/2019	SNT	15
11/07/2019	SNT	168		18/07/2019	SNT	15
17/07/2019	SNT	168		24/07/2019	SNT	15
23/07/2019	SNT	168		30/07/2019	SNT	15
29/07/2019	SNT	168		05/08/2019	SNT	15
04/08/2019	SNT	168		11/08/2019	SNT	15
10/08/2019	SNT	168		17/08/2019	SNT	15
16/08/2019	SNT	168		29/08/2019	SNT	15
22/08/2019	SNT	168		04/09/2019	SNT	15
28/08/2019	SNT	168		10/09/2019	SNT	15
03/09/2019	SNT	168		16/09/2019	SNT	15
09/09/2019	SNT	168		22/09/2019	SNT	15

15/09/2019	SNT	168		28/09/2019	SNT	15
21/09/2019	SNT	168		04/10/2019	SNT	15
27/09/2019	SNT	168		10/10/2019	SNT	15
03/10/2019	SNT	168		16/10/2019	SNT	15
09/10/2019	SNT	168		28/10/2019	SNT	15
15/10/2019	SNT	168				
21/10/2019	SNT	168				
27/10/2019	SNT	168				
05/06/2020	SNT	168		06/06/2020	SNT	15
11/06/2020	SNT	168		12/06/2020	SNT	15
17/06/2020	SNT	168		24/06/2020	SNT	15
23/06/2020	SNT	168		30/06/2020	SNT	15
29/06/2020	SNT	168		06/07/2020	SNT	15
05/07/2020	SNT	168		12/07/2020	SNT	15
11/07/2020	SNT	168		18/07/2020	SNT	15
17/07/2020	SNT	168		24/07/2020	SNT	15
23/07/2020	SNT	168		30/07/2020	SNT	15
29/07/2020	SNT	168		05/08/2020	SNT	15
04/08/2020	SNT	168		11/08/2020	SNT	15
10/08/2020	SNT	168		17/08/2020	SNT	15
16/08/2020	SNT	168		23/08/2020	SNT	15
22/08/2020	SNT	168		29/08/2020	SNT	15
28/08/2020	SNT	168		04/09/2020	SNT	15
03/09/2020	SNT	168		10/09/2020	SNT	15
09/09/2020	SNT	168		16/09/2020	SNT	15
15/09/2020	SNT	168		22/09/2020	SNT	15
21/09/2020	SNT	168		28/09/2020	SNT	15
27/09/2020	SNT	168		04/10/2020	SNT	15
03/10/2020	SNT	168		10/10/2020	SNT	15
09/10/2020	SNT	168		22/10/2020	SNT	15
15/10/2020	SNT	168		28/10/2020	SNT	15
21/10/2020	SNT	168				
27/10/2020	SNT	168				

Table S3. SAR interferograms generated in this study.

Geometry	Master	Slave	Δt (dd)		Geometry	Master	Slave	Δt (dd)
Descending	21/06/2017	03/07/2017	12		Ascending	28/06/2017	10/07/2017	12
Descending	27/06/2017	09/07/2017	12		Ascending	16/07/2017	28/07/2017	12
Descending	03/07/2017	15/07/2017	12		Ascending	28/07/2017	09/08/2017	12
Descending	09/07/2017	21/07/2017	12		Ascending	15/08/2017	27/08/2017	12
Descending	15/07/2017	27/07/2017	12		Ascending	27/08/2017	08/09/2017	12
Descending	21/07/2017	02/08/2017	12		Ascending	14/10/2017	26/10/2017	12
Descending	02/08/2017	14/08/2017	12		Ascending	17/07/2018	29/07/2018	12
Descending	14/08/2017	26/08/2017	12		Ascending	29/07/2018	10/08/2018	12
Descending	20/08/2017	01/09/2017	12		Ascending	16/08/2018	28/08/2018	12
Descending	26/08/2017	07/09/2017	12		Ascending	28/08/2018	09/09/2018	12
Descending	22/06/2018	04/07/2018	12		Ascending	03/09/2018	15/09/2018	12
Descending	10/07/2018	22/07/2018	12		Ascending	09/09/2018	21/09/2018	12
Descending	22/07/2018	03/08/2018	12		Ascending	03/10/2018	15/10/2018	12
Descending	03/08/2018	15/08/2018	12		Ascending	24/07/2019	05/08/2019	12
Descending	08/09/2018	20/09/2018	12		Ascending	17/08/2019	29/08/2019	12
Descending	08/10/2018	20/10/2018	12		Ascending	16/09/2019	28/09/2019	12
Descending	14/10/2018	26/10/2018	12		Ascending	10/09/2020	22/09/2020	12
Descending	29/06/2019	11/07/2019	12		Ascending	04/06/2017	28/06/2017	24
Descending	05/07/2019	17/07/2019	12		Ascending	04/07/2017	28/07/2017	24
Descending	29/07/2019	10/08/2019	12		Ascending	10/07/2017	03/08/2017	24
Descending	04/08/2019	16/08/2019	12		Ascending	03/08/2017	27/08/2017	24
Descending	10/08/2019	22/08/2019	12		Ascending	15/08/2017	08/09/2017	24
Descending	16/08/2019	28/08/2019	12		Ascending	08/09/2017	02/10/2017	24
Descending	15/09/2019	27/09/2019	12		Ascending	17/06/2018	11/07/2018	24
Descending	21/09/2019	03/10/2019	12		Ascending	23/06/2018	17/07/2018	24
Descending	15/10/2019	27/10/2019	12		Ascending	23/07/2018	16/08/2018	24
Descending	17/06/2020	29/06/2020	12		Ascending	22/08/2018	15/09/2018	24
Descending	29/06/2020	11/07/2020	12		Ascending	28/08/2018	21/09/2018	24
Descending	05/07/2020	17/07/2020	12		Ascending	21/09/2018	15/10/2018	24
Descending	10/08/2020	22/08/2020	12		Ascending	05/08/2019	29/08/2019	24
Descending	16/08/2020	28/08/2020	12		Ascending	04/09/2019	28/09/2019	24
Descending	28/08/2020	09/09/2020	12		Ascending	24/07/2020	17/08/2020	24
Descending	03/09/2020	15/09/2020	12		Ascending	17/08/2020	10/09/2020	24
Descending	21/06/2017	15/07/2017	24		Ascending	29/08/2020	22/09/2020	24
Descending	27/06/2017	21/07/2017	24		Ascending	10/06/2017	08/09/2017	90
Descending	03/07/2017	27/07/2017	24		Ascending	16/07/2017	14/10/2017	90
Descending	09/07/2017	02/08/2017	24		Ascending	11/06/2018	09/09/2018	90
Descending	21/07/2017	14/08/2017	24		Ascending	11/07/2018	09/10/2018	90
Descending	07/10/2017	31/10/2017	24		Ascending	17/07/2018	15/10/2018	90

Descending	16/06/2018	10/07/2018	24		Ascending	18/06/2019	16/09/2019	90
Descending	22/06/2018	16/07/2018	24		Ascending	06/06/2020	04/09/2020	90
Descending	28/06/2018	22/07/2018	24		Ascending	10/06/2017	08/10/2017	120
Descending	04/07/2018	28/07/2018	24		Ascending	05/06/2018	09/10/2018	126
Descending	10/07/2018	03/08/2018	24		Ascending	23/06/2018	15/10/2018	114
Descending	16/07/2018	09/08/2018	24		Ascending	23/06/2018	21/10/2018	120
Descending	22/07/2018	15/08/2018	24					
Descending	28/07/2018	21/08/2018	24					
Descending	09/08/2018	02/09/2018	24					
Descending	15/08/2018	08/09/2018	24					
Descending	21/08/2018	14/09/2018	24					
Descending	14/09/2018	08/10/2018	24					
Descending	20/09/2018	14/10/2018	24					
Descending	26/09/2018	20/10/2018	24					
Descending	29/06/2019	23/07/2019	24					
Descending	05/07/2019	29/07/2019	24					
Descending	11/07/2019	04/08/2019	24					
Descending	29/07/2019	22/08/2019	24					
Descending	22/08/2019	15/09/2019	24					
Descending	15/09/2019	09/10/2019	24					
Descending	21/09/2019	15/10/2019	24					
Descending	03/10/2019	27/10/2019	24					
Descending	17/07/2020	10/08/2020	24					
Descending	29/07/2020	22/08/2020	24					
Descending	16/08/2020	09/09/2020	24					
Descending	03/07/2017	01/10/2017	90					
Descending	10/06/2018	08/09/2018	90					
Descending	16/06/2018	14/09/2018	90					
Descending	28/06/2018	26/09/2018	90					
Descending	16/07/2018	14/10/2018	90					
Descending	11/07/2019	09/10/2019	90					
Descending	17/07/2019	15/10/2019	90					
Descending	17/06/2020	15/09/2020	90					
Descending	23/06/2020	21/09/2020	90					
Descending	15/06/2017	31/10/2017	138					
Descending	16/06/2018	14/10/2018	120					
Descending	16/06/2018	20/10/2018	126					
Descending	17/06/2019	27/10/2019	132					
Descending	29/06/2019	27/10/2019	120					
Descending	05/07/2019	27/10/2019	114					