

## Supplementary data

Sentinel-2	Landsat			
		Snow	No snow	Total
	Snow	7360	540	7900
	No snow	15	88001	88016
	Total	7375	88541	95916

**Supplementary Table S1** Confusion matrix showing accuracy of Landsat-8 June 1st 2016 satellite image in classifying snow-covered pixels, using June 2<sup>nd</sup> 2016 Sentinel-2 image for validation. All numbers are pixel counts. User's accuracy is 99.8% and producer's accuracy is 93.2%.

Sentinel-2	Landsat			
		Snow	No snow	Total
	Snow	3307	318	3625
	No snow	1	41086	41087
	Total	3308	41404	44712

**Supplementary Table S2** Confusion matrix showing accuracy of Landsat-8 June 3rd 2016 satellite image in classifying snow-covered pixels, using June 2<sup>nd</sup> 2016 Sentinel-2 image for validation. All numbers are pixel counts. User's accuracy is 100% and producer's accuracy is 91.2%.

Sentinel-2	Landsat		
		Snow	No snow
	Snow	187	107
	No snow	4	113550
	Total	191	113657
		Total	113848

**Supplementary Table S3** Confusion matrix showing accuracy of Landsat-8 June 26<sup>th</sup> 2019 satellite image in classifying snow-covered pixels, using June 27<sup>th</sup> 2019 Sentinel-2 image for validation. All numbers are pixel counts. User's accuracy is 97.9% and producer's accuracy is 63.6%.

Sentinel-2	Landsat		
		Snow	No snow
	Snow	437	146
	No snow	1	394287
	Total	438	394433
		Total	394871

**Supplementary Table S4** Confusion matrix showing accuracy of Landsat-8 June 28<sup>th</sup> 2019 satellite image in classifying snow-covered pixels, using June 27<sup>th</sup> 2019 Sentinel-2 image for validation. All numbers are pixel counts. User's accuracy is 99.8% and producer's accuracy is 75.0%.

Sentinel-2	Landsat			
		Snow	No snow	Total
	Snow	215	60	275
	No snow	1	49453	49454
	Total	216	49513	49729

**Supplementary Table S5** Confusion matrix showing accuracy of Landsat-8 July 1st 2021 satellite image in classifying snow-covered pixels, using July 1st 2021 Sentinel-2 image for validation. All numbers are pixel counts. User's accuracy is 99.5% and producer's accuracy is 78.2%.

Sentinel-2	Landsat		
	Snow	No snow	Total

	Snow	3108	562	3670
	No snow	16	381230	381246
	Total	3124	381792	384916

**Supplementary Table S6** Confusion matrix showing accuracy of Landsat-8 June 4<sup>th</sup> 2022 satellite image in classifying snow-covered pixels, using June 4<sup>th</sup> 2022 Sentinel-2 image for validation. All numbers are pixel counts. User's accuracy is 99.5% and producer's accuracy is 84.7%.

Sentinel-2	Landsat			
		Snow	No snow	Total
	Snow	489	239	728
	No snow	0	289890	289890
	Total	489	290129	290618

**Supplementary Table S7** Confusion matrix showing accuracy of Landsat-7 June 24<sup>th</sup> 2018 satellite image in classifying snow-covered pixels, using June 25<sup>th</sup> 2018 Sentinel-2 image for validation. All numbers are pixel counts. User's accuracy is 100% and producer's accuracy is 67.2%.

Sentinel-2	Landsat			
		Snow	No snow	Total
	Snow	366	202	568
	No snow	2	281194	281196
	Total	368	281396	281764

**Supplementary Table S8** Confusion matrix showing accuracy of Landsat-7 June 27<sup>th</sup> 2019 satellite image in classifying snow-covered pixels, using June 27<sup>th</sup> 2019 Sentinel-2 image for validation. All numbers are pixel counts. User's accuracy is 99.5% and producer's accuracy is 64.4%.

Sentinel-2	Landsat			
		Snow	No snow	Total
	Snow	83	72	15
	No snow	0	28747	28747
	Total	83	28819	28902

**Supplementary Table S9** Confusion matrix showing accuracy of Landsat-7 July 2nd 2021 satellite image in classifying snow-covered pixels, using July 1<sup>st</sup> 2021 Sentinel-2 image for validation. All numbers are pixel counts. User's accuracy is 100% and producer's accuracy is 87.0%.