

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 2nd 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 2nd 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			Total
	Snow	No snow		
Snow	187	107		294
No snow	4	113550		113554
Total	191	113657		113848

Supplementary Table S3 Confusion matrix showing accuracy of Landsat-8 June 26th 2019 satellite image in classifying snow-covered pixels, using June 27th 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			Total
	Snow	No snow		
Snow	437	146		583
No snow	1	394287		394288
Total	438	394433		394871

Supplementary Table S4 Confusion matrix showing accuracy of Landsat-8 June 28th 2019 satellite image in classifying snow-covered pixels, using June 27th 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 4th 2022 satellite image in classifying snow-covered pixels, using June 4th 2022 Sentinel-2 image for validation. All numbers are pixel counts. User's accuracy is 99.5% and producer's accuracy is 84.7%.

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

Supplementary Table S7 Confusion matrix showing accuracy of Landsat-7 June 24th 2018 satellite image in classifying snow-covered pixels, using June 25th 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 27th 2019 satellite image in classifying snow-covered pixels, using June 27th 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 1st 2021 Sentinel-2 image for validation. All numbers are pixel counts. User's accuracy is 100% and producer's accuracy is 87.0%.