

Supplementary Material:

Tracking rapid and slow glacial lake changes through optical satellites and local knowledge – a case study of Tystigbreen in Norway.

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Jogscha M. Abderhalden [1], Kristine K. Bly [1], Ronja Lappe [1], Liss M. Andreassen [2], and Irina Rogozhina* [1,3,4]

[1] Norwegian University of Science and Technology, Department of Geography, Norway

[2] Norwegian Water Resources and Energy Directorate, Norway

[3] Center for Advanced Studies in Arid Zones (CEAZA), Chile

[4] University of Concepcion, Chile

* Corresponding author

Table S1. Specifications of different satellite products and utilised VIS, NIR, SWIR and TIR bands.

Satellite	Purpose	Period of operation	Spectral resolution	Spatial resolution (m)	Orbit	Utilised bands
Landsat 7 ETM+	Comparison	1999-present	8 bands	15 (pan)/30/ 100 (TIR)	16 days/ 705 km	VIS, NIR, SWIR
Landsat 8-9 OLI/TIRS	Comparison	2013-present	11 bands	15 (pan)/30/ 100 (TIR)	16 days/ 705 km	VIS, NIR, SWIR
Sentinel-2	Comparison, change mapping	2015-present	13 bands	10/ 20/ 60	5 days/ 786 km	VIS, NIR, SWIR
PlanetScope	Comparison, change mapping	2016-2021	4 bands	3.7-4.1	Daily/475-525 km	VIS, NIR
		2021-present	8 bands			

Table S2. Available satellite images from Landsat 7-8, Sentinel-2 and PlanetScope with full or partial visibility of the ice-dammed lakes at Tystigbreen for the ablation seasons from 2016-22. BQ stands for Bad Quality, SC stands for Snow Cover and L1 stands for only Lake 1 visible.

Year	Satellite	01. Jun	02. Jun	03. Jun	04. Jun	05. Jun	06. Jun	07. Jun	08. Jun	09. Jun	10. Jun	11. Jun	12. Jun	13. Jun	14. Jun	15. Jun	16. Jun	17. Jun	18. Jun	19. Jun	20. Jun	21. Jun	22. Jun	23. Jun	24. Jun	25. Jun	26. Jun	27. Jun	28. Jun	29. Jun	30. Jun	
2016																																
	Landsat 7-8							x																								
	Sentinel-2						x																									
	PlanetScope																															
2017																																
	Landsat 7-8																															
	Sentinel-2																															x
	PlanetScope																															
2018																																
	Landsat 7-8						x																								x	x
	Sentinel-2	x					x		x																			BQ				
	PlanetScope				BQ					x																					x	x
2019																																
	Landsat 7-8																															
	Sentinel-2																															
	PlanetScope															x																
2020																																
	Landsat 7-8		SC																SC											x		
	Sentinel-2															x											x					
	PlanetScope																										x					
2021																																
	Landsat 7-8																															x
	Sentinel-2		x					x																x								x
	PlanetScope							x																						x		x
2022																																
	Landsat 7-8									x																						
	Sentinel-2							x																								x
	PlanetScope																															x

Year	Satellite	Date																																			
		01. Jul	02. Jul	03. Jul	04. Jul	05. Jul	06. Jul	07. Jul	08. Jul	09. Jul	10. Jul	11. Jul	12. Jul	13. Jul	14. Jul	15. Jul	16. Jul	17. Jul	18. Jul	19. Jul	20. Jul	21. Jul	22. Jul	23. Jul	24. Jul	25. Jul	26. Jul	27. Jul	28. Jul	29. Jul	30. Jul	31. Jul					
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Sentinel-2																								x													
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2017																																					
Landsat 7-8																						x	x														
Sentinel-2																																					
PlanetScope																					BQ	BQ			x												
2018																																					
Landsat 7-8																x	x																				
Sentinel-2	x		x																													x					
PlanetScope		BQ	x	x						x			x				x					x										x					
2019																																					
Landsat 7-8												x																				x	x				
Sentinel-2													x				x														x		x				
PlanetScope																	x									x		x	x	x	x	x					
2020																																					
Landsat 7-8				x																																	
Sentinel-2																											x										
PlanetScope																																					
2021																																					
Landsat 7-8	x																																				
Sentinel-2		x											x																					x			
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2022																																					
Landsat 7-8																																					
Sentinel-2																																					
PlanetScope																																				x	

Year	Satellite	Date																																			
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Sentinel-2																																					
PlanetScope																																					
2019																																					
Landsat 7-8			x	x																																	
Sentinel-2		x				x											x																				
PlanetScope	x	x	x	x	x												x																				
2020																																					
Landsat 7-8																																					
Sentinel-2	x																																			x	
PlanetScope	x																																				x
2021																																					
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PlanetScope																																					
2022																																					
Landsat 7-8																																					
Sentinel-2																																					
PlanetScope																																					

Year	Satellite	Date																																			
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2016																																					
Landsat 7-8																						x															
Sentinel-2												x (L1)																									
PlanetScope																									x												
2017																																					
Landsat 7-8																										x											
Sentinel-2																	x																				
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Year	Satellite	Date																																				
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