

Supplement of

The 2020 abrupt drainage of Jinwuco triggered lake- to land- terminus transition and lagged slowdown of Jinwu Glacier, southeastern Tibet

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Table S 1 Remote sensing imagery used for proglacial lake boundary extraction.

Time	ID
1990-11-16	LT05_136039_19901116
1991-11-19	LT05_136039_19911119
1992-12-07	LT05_136039_19921207
1993-10-24	LT05_136039_19931124
1994-11-11	LT05_136039_19941111
1995-07-25	LT05_136039_19950725
1996-11-16	LT05_136039_19961116
1997-11-03	LT05_136039_19971103
1998-10-05	LT05_136039_19981005
1999-10-24	LT05_136039_19991024
2000-10-02	LE07_136039_20001002
2001-11-21	LE07_136039_20011122
2002-08-13	LT05_136039_20020813
2003-11-04	LT05_136039_20031104
2004-10-21	LT05_136039_20041021
2005-09-06	LT05_136039_20050906
2006-10-11	LT05_136039_20061011
2007-06-24	LT05_136039_20070624
2008-10-16	LT05_136039_20081016
2009-07-15	LT05_136039_20090715
2010-10-06	LT05_136039_20101006
2011-10-25	LT05_136039_20111025
2012-10-19	LE07_136039_20121019
2013-09-12	LC08_136039_20130912
2014-10-01	LC08_136039_20141001
2015-10-20	LC08_136039_20151020
2016-08-19	PlanetScope
2017-08-27	
2018-10-31	
2019-09-26	
2020-08-17	
2021-09-28	
2022-08-25	
2023-09-13	
2024-08-25	
2025-09-29	

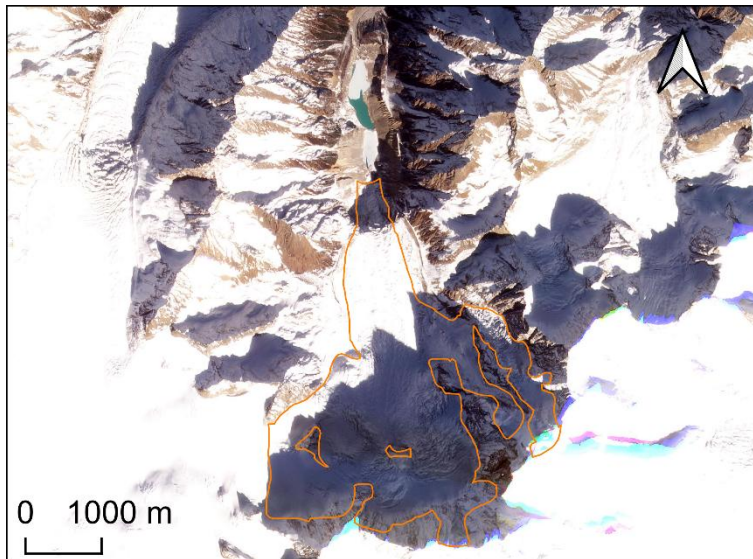


Figure S 1 Example of terrain shadows covering Jinwu Glacier. The map is based on PlanetScope imagery acquired on 4 December 2022.

Table S 2 Satellite image pairs used for velocity field calculation in this study.

Year	PlanetScope (NIR 3m)		Velocity stable terrain (m a^{-1})	
	Pre-image	Post-image	Mean	NMAD
2017	2016-09-10	2017-10-06	3.47	2.33
2018	2017-10-06	2018-09-18	1.98	1.14
2019	2018-09-18	2019-10-05	2.24	1.31
2020	2019-10-05	2020-09-03	2.86	1.73
2021	2020-09-03	2021-09-21	3.87	2.58
2022	2021-09-21	2022-09-11	2.24	1.38
2023	2022-09-11	2023-09-13	1.58	0.82
2024	2023-09-13	2024-09-18	2.31	1.41
2025	2024-09-18	2025-09-24	3.28	1.76

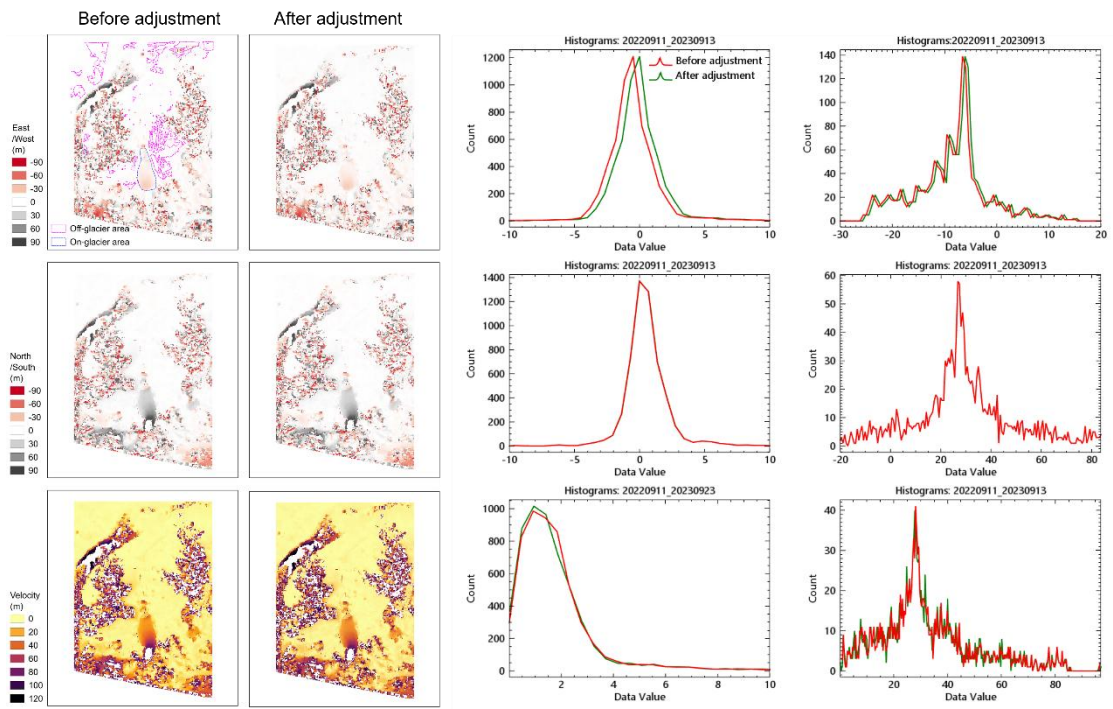


Figure S 2 An example of reducing uncertainty in north/south and east/west geolocation between two image pairs by detecting and correcting systematic shifts in selected non-glacier areas, adjusting them to zero.

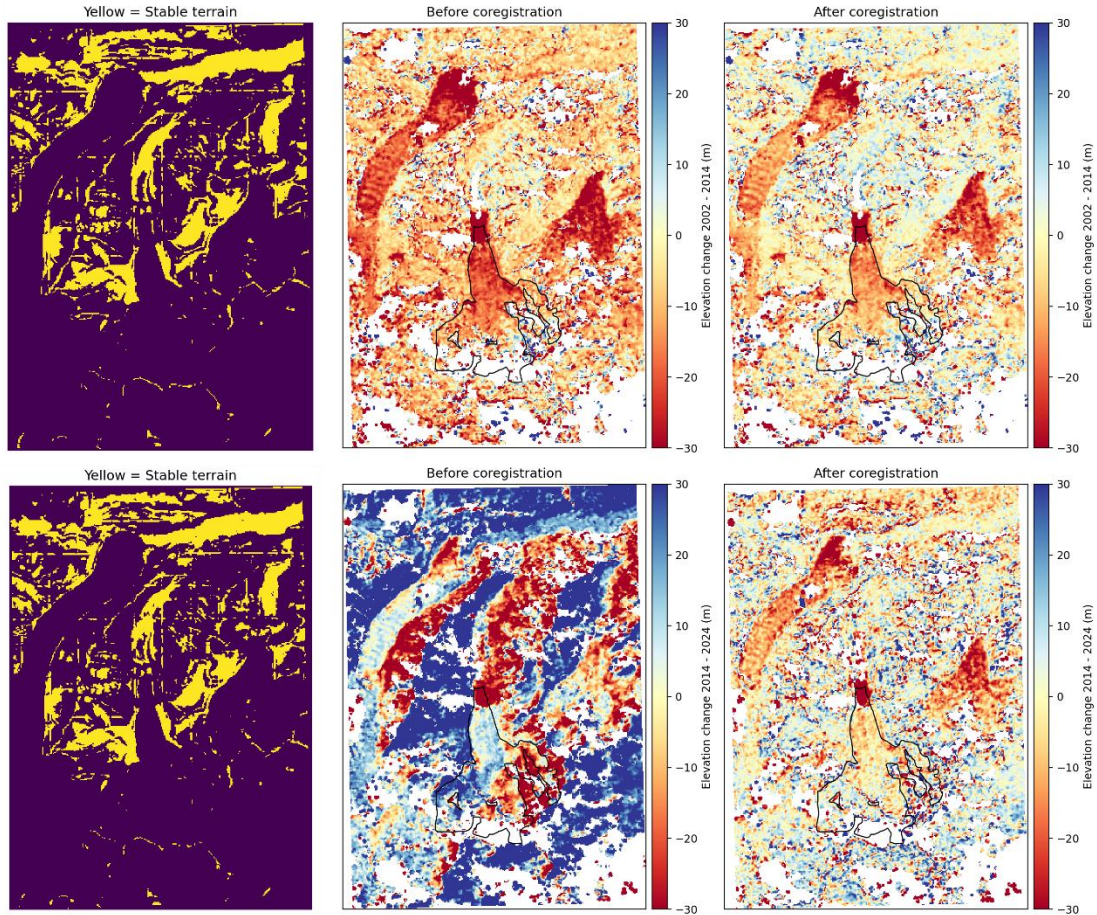


Figure S 3 DEM co-registration

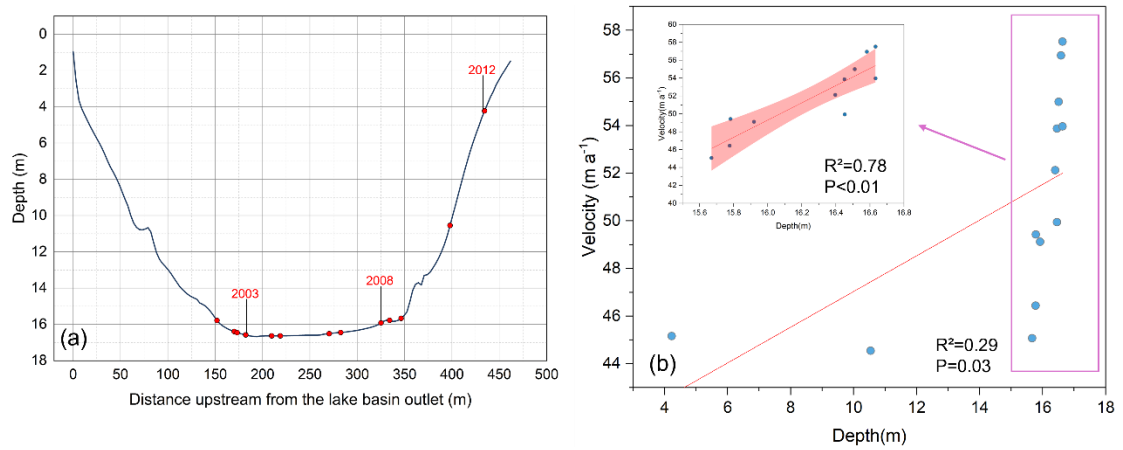


Figure S 4 (a) Longitudinal profile of proglacial lake depth at the glacier terminus, measured after the 2020 GLOF (Zhang et al., 2019). Red dots indicate the mapped positions of the glacier terminus during 2000 - 2012, and labels mark selected years. (b) Relationship between glacier surface velocity and lake depth at the corresponding terminus positions. The pink box marks the data enlarged in the inset, which shows the correlation for depths greater than 15 m. Solid lines indicate linear fits, and shaded areas indicate the 95% confidence intervals.

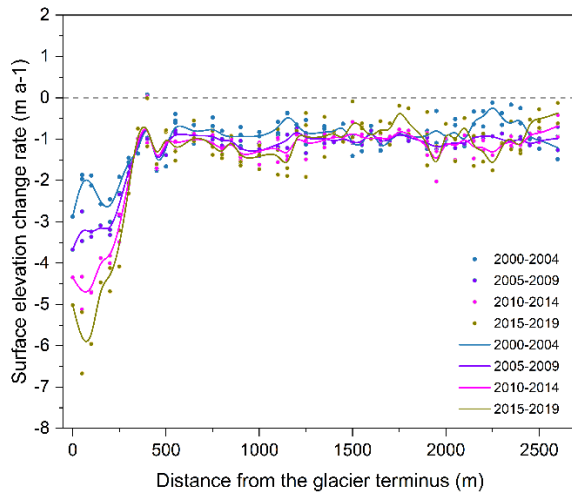


Figure S 5 Longitudinal profiles of glacier surface elevation change rates as a function of distance from the glacier terminus for 2000 - 2004, 2005 - 2009, 2010 - 2014, and 2015 - 2019, based on (Hugonnet et al., 2021). Dots indicate sampled values at 50 m intervals, and solid lines denote the corresponding smoothed curves.

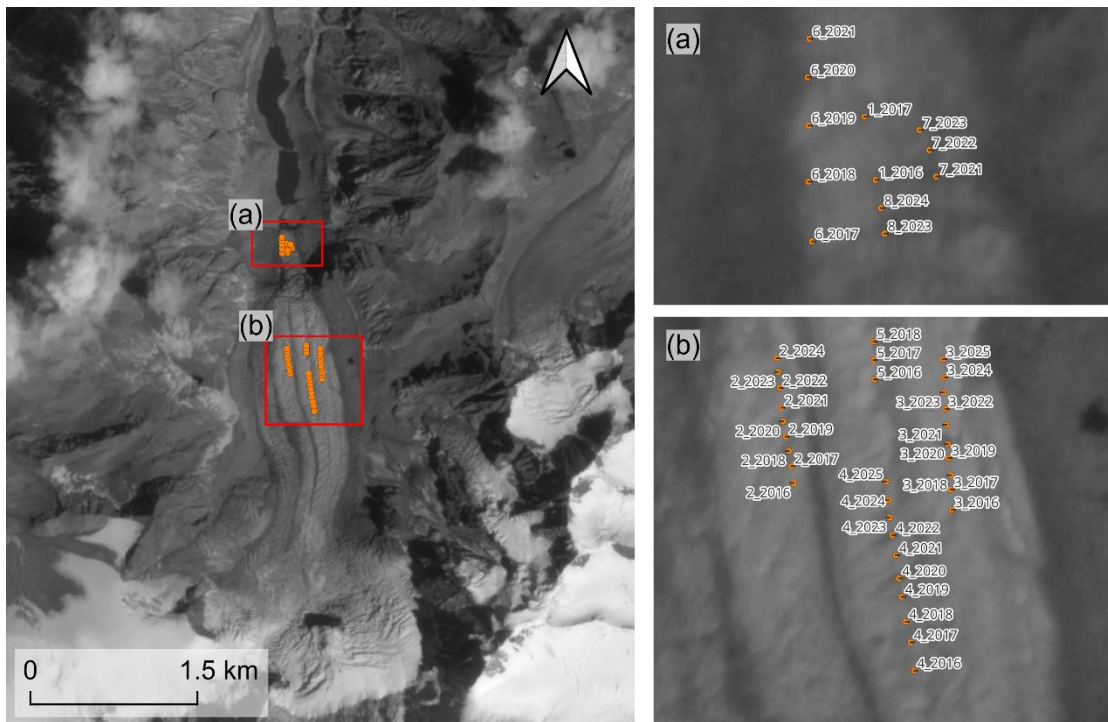


Figure S 6 Reference points selected for manual displacement measurements. The basemap is an image from PlanetScope taken on September 3, 2020.

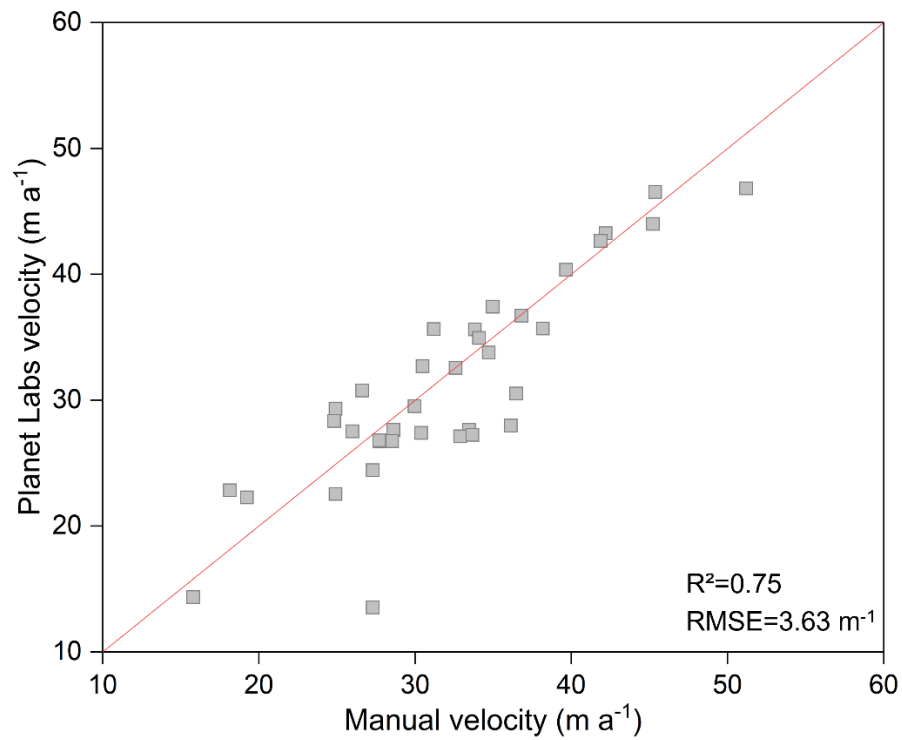


Figure S 7 Plotted comparison between Planet and manual estimates.

Hugonnet, R., McNabb, R., Berthier, E., Menounos, B., Nuth, C., Girod, L., Farinotti, D., Huss, M., Dussaillant, I., Brun, F., and Kaab, A.: Accelerated global glacier mass loss in the early twenty-first century, *Nature*, 592, 726–731, [10.1038/s41586-021-03436-z](https://doi.org/10.1038/s41586-021-03436-z), 2021.

Zhang, G., Bolch, T., Allen, S., Linsbauer, A., Chen, W., and Wang, W.: Glacial lake evolution and glacier–lake interactions in the Poiqu River basin, central Himalaya, 1964–2017, *Journal of Glaciology*, 65, 347–365, [10.1017/jog.2019.13](https://doi.org/10.1017/jog.2019.13), 2019.