



Supplement of

Towards ice-thickness inversion: an evaluation of global digital elevation models (DEMs) in the glacierized Tibetan Plateau

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Table S1. Statistics of elevation difference (m) between six DEMs and ICESat-2 over four glacierized sub-zones (defined in Fig. 7e).

Item	Zone	AW3D30	SRTM-GL1	NASADEM	TanDEM-X	SRTM v4.1	MERIT
Mean difference	1	8.1	10.6	9.1	3.9	9.2	10.1
	2	3.0	2.5	1.5	0.3	1.7	2.9
	3	-1.1	-3.7	-4.4	-2.1	-3.2	-2.0
	4	-3.6	-7.1	-8.4	-6.0	-6.8	-5.9
Absolute Mean difference	1	10.8	14.9	13.6	10.1	16.2	15.8
	2	7.6	9.0	8.5	7.9	10.5	10.1
	3	7.3	8.3	7.9	9.4	10.9	9.8
	4	8.5	10.4	10.3	13.8	15.4	13.6
Standard Deviation	1	12.3	16.2	15.6	15.1	20.2	18.7
	2	10.0	11.7	11.1	13.3	14.5	13.5
	3	9.6	9.9	8.8	16.3	15.4	13.5
	4	10.9	11.6	9.6	22.6	21.8	17.7
RMSE	1	14.7	19.4	18.1	15.5	22.2	21.2
	2	10.5	12.0	11.2	13.4	14.6	13.8
	3	9.7	10.6	9.8	16.4	15.7	13.7
	4	11.4	13.6	12.8	23.4	22.9	18.7

Table S2. Weights of different models required to achieve minimum mean absolute error in ten experiments.

AW3D30						SRTMGL1						
Exp. No.	GlabTop2	HF	ITIBOV	OGGM	MAE		GlabTop2	HF	ITIBOV	OGGM	MAE	
1	0.00	0.41	0.50	0.09	46.71		0.00	0.17	0.16	0.67	54.68	
2	0.00	0.31	0.39	0.30	42.83		0.00	0.24	0.15	0.61	50.41	
3	0.00	0.54	0.30	0.16	45.26		0.00	0.01	0.32	0.67	50.51	
4	0.00	0.34	0.47	0.19	42.64		0.00	0.07	0.27	0.66	53.47	
5	0.00	0.46	0.28	0.26	40.79		0.00	0.25	0.16	0.59	53.46	
6	0.00	0.43	0.29	0.28	41.26		0.00	0.11	0.21	0.68	54.94	
7	0.00	0.47	0.29	0.24	44.28		0.00	0.25	0.16	0.59	58.75	
8	0.00	0.47	0.29	0.24	47.99		0.00	0.12	0.29	0.59	56.47	
9	0.00	0.44	0.26	0.30	47.02		0.00	0.26	0.13	0.61	48.95	
10	0.00	0.41	0.50	0.09	42.04		0.00	0.01	0.41	0.58	53.13	
Weight	0.00	0.43	0.36	0.22	44.08	-	0.00	0.15	0.23	0.63	53.48	
NASADEM						TanDEM						
Exp. No.	GlabTop2	HF	ITIBOV	OGGM	MAE		GlabTop2	HF	ITIBOV	OGGM	MAE	
1	0.00	0.76	0.01	0.23	38.37		0.00	0.65	0.31	0.04	37.29	
2	0.00	0.67	0.01	0.32	34.52		0.00	0.67	0.32	0.01	33.03	
3	0.00	0.76	0.04	0.20	39.67		0.00	0.68	0.31	0.01	32.53	
4	0.00	0.85	0.01	0.14	32.63		0.00	0.66	0.33	0.01	41.37	
5	0.00	0.86	0.01	0.13	37.80		0.00	0.66	0.31	0.03	35.95	
6	0.00	0.47	0.01	0.52	43.81		0.00	0.53	0.35	0.12	40.24	
7	0.00	0.71	0.07	0.22	37.59		0.00	0.66	0.33	0.01	39.03	
8	0.00	0.73	0.01	0.26	31.54		0.00	0.68	0.31	0.01	41.47	
9	0.00	0.77	0.03	0.20	34.51		0.00	0.64	0.32	0.04	42.39	
10	0.00	0.85	0.01	0.14	36.11		0.00	0.64	0.35	0.01	41.11	
Weight	0.00	0.74	0.02	0.24	36.66	-	0.00	0.65	0.32	0.03	38.44	
SRTM v4.1						MERIT						
Exp. No.	GlabTop2	HF	ITIBOV	OGGM	MAE		GlabTop2	HF	ITIBOV	OGGM	MAE	
1	0.00	0.20	0.10	0.70	53.66		0.00	0.01	0.15	0.84	47.32	
2	0.00	0.28	0.11	0.61	51.83		0.07	0.00	0.01	0.92	51.17	
3	0.00	0.19	0.10	0.71	48.95		0.00	0.03	0.06	0.91	45.13	
4	0.00	0.25	0.11	0.64	53.77		0.00	0.02	0.01	0.97	52.50	
5	0.00	0.28	0.11	0.61	52.71		0.13	0.02	0.00	0.85	49.88	
6	0.00	0.22	0.20	0.58	58.19		0.15	0.05	0.00	0.80	48.80	
7	0.00	0.21	0.15	0.64	51.56		0.00	0.33	0.04	0.63	49.50	
8	0.00	0.19	0.10	0.71	49.35		0.00	0.11	0.22	0.67	44.28	
9	0.00	0.20	0.13	0.67	48.62		0.00	0.01	0.16	0.83	53.20	
10	0.00	0.25	0.11	0.64	48.12		0.01	0.00	0.05	0.94	52.27	
Weight	0.00	0.23	0.12	0.65	51.68	-	0.04	0.06	0.07	0.84	49.41	-

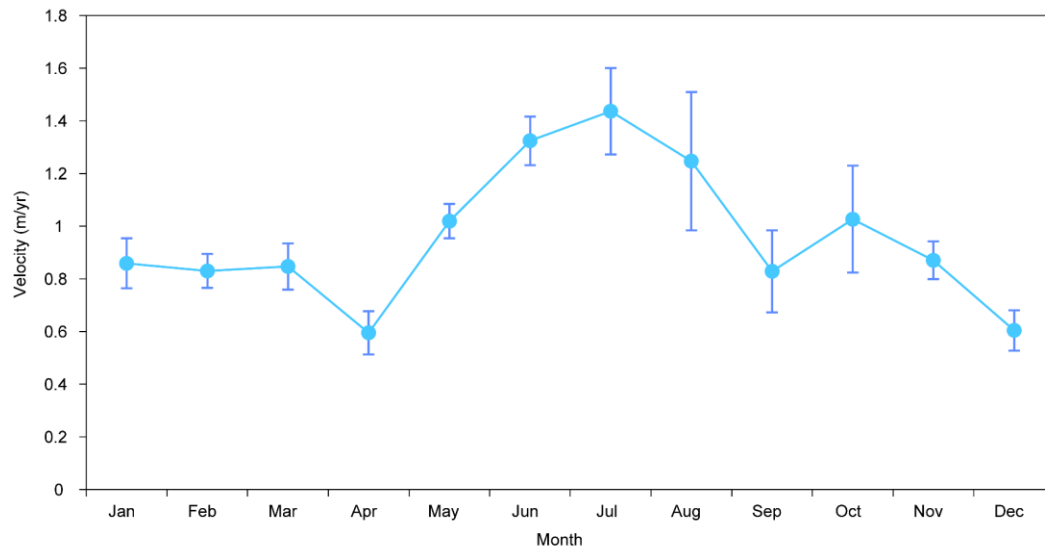


Fig. S1 Mean monthly ice velocity from Global Land Ice Velocity Extraction by Landsat 8 (GoLIVE) in path 147 and row 038 where Chhota Shigri is located.