



Supplement of

Early warning system for ice collapses and river blockages in the Sedongpu Valley, southeastern Tibetan Plateau

Wei Yang et al.

Correspondence to: Baosheng An (anbaosheng@itpcas.ac.cn) and Wei Yang (yangww@itpcas.ac.cn)

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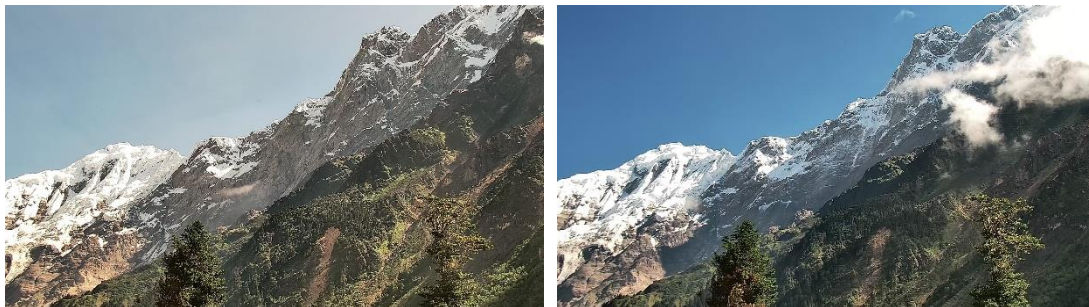
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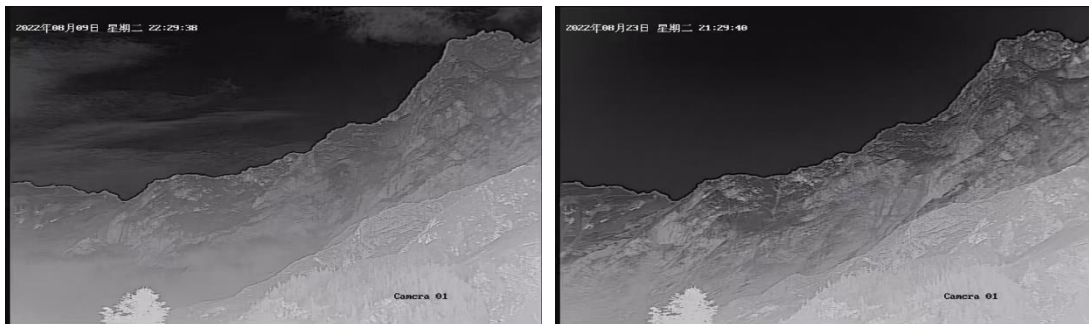
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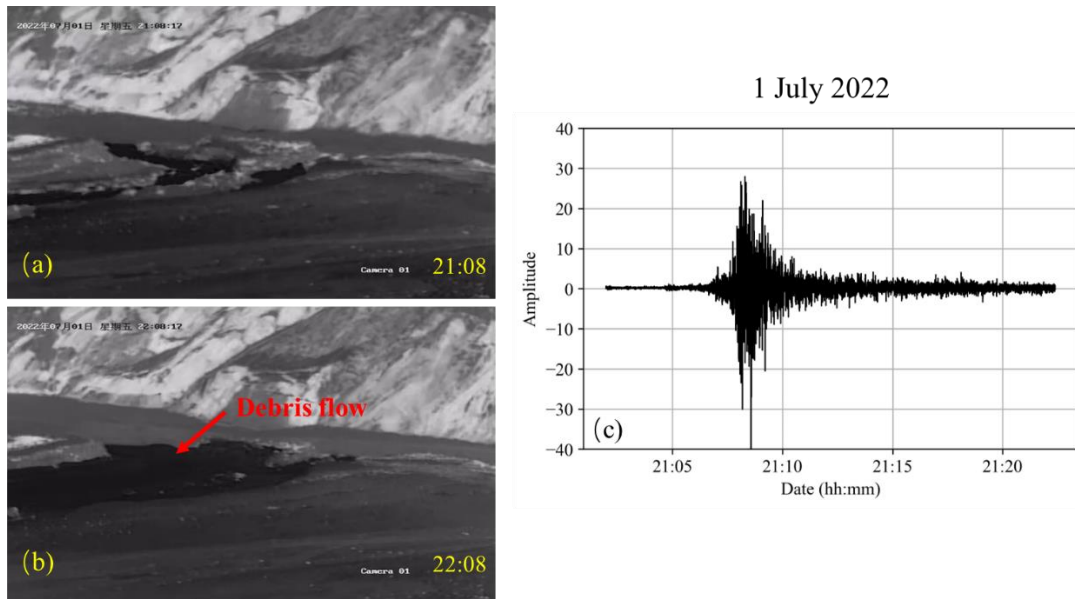


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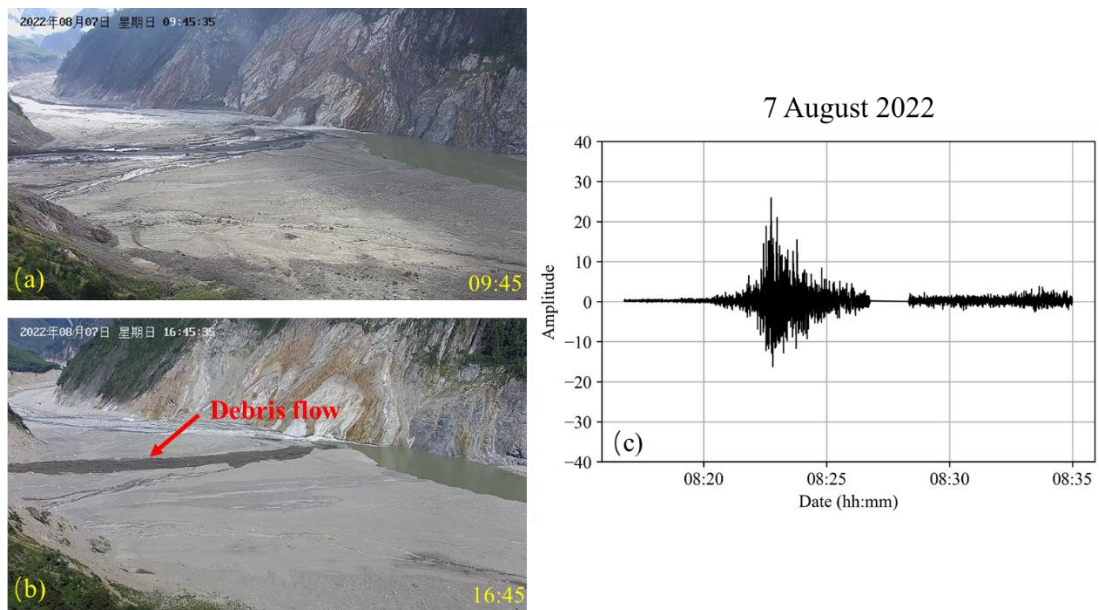
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17 **Figure S1.** Optical photos taken on 15 July and 22 August (top) and thermal photos taken on 9
18 August and 23 August (bottom) showing the topographic changes before and after the collapses
19 occurring on 11 August 2022.



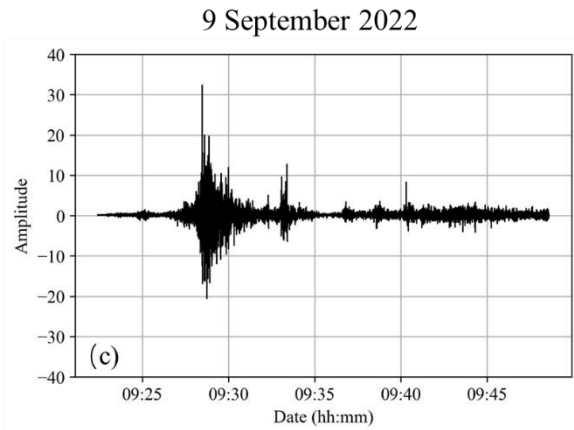
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Figure S2. Comparison of images showing the occurrence of debris flows at the Sedongpu Valley outlet (a, b) and the collapse-induced seismic waveform on 1 July 2022, where the maximum amplitude of the geophone waveform was greater than 20 (c).



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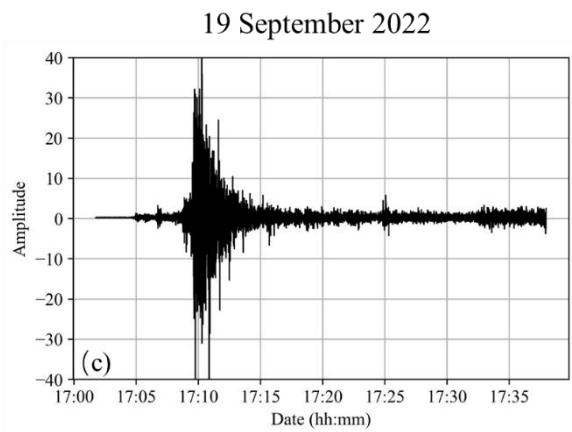
Figure S3. Similar to above, but on 7 August 2022.



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31 **Figure S4.** Similar to above, but on 9 September 2022.

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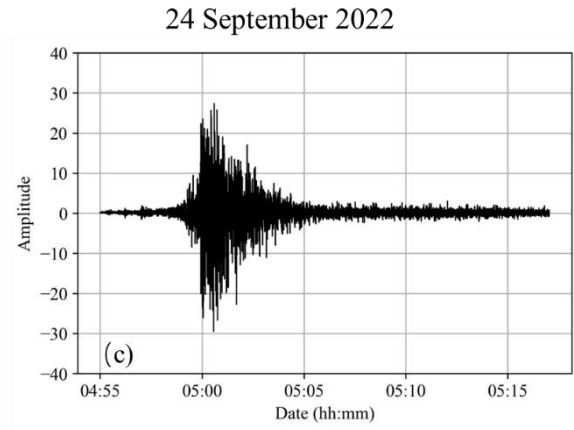
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34 **Figure S5.** Similar to above, but on 19 September 2022.

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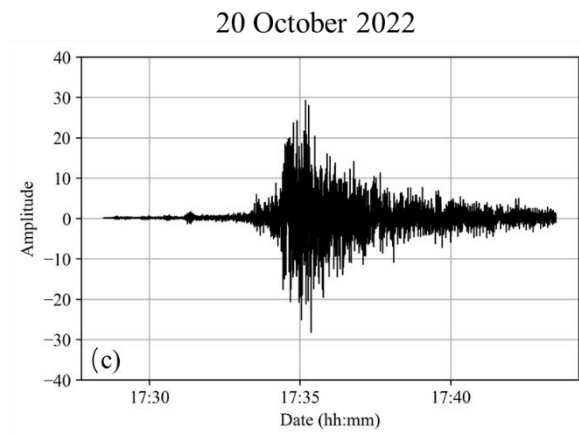
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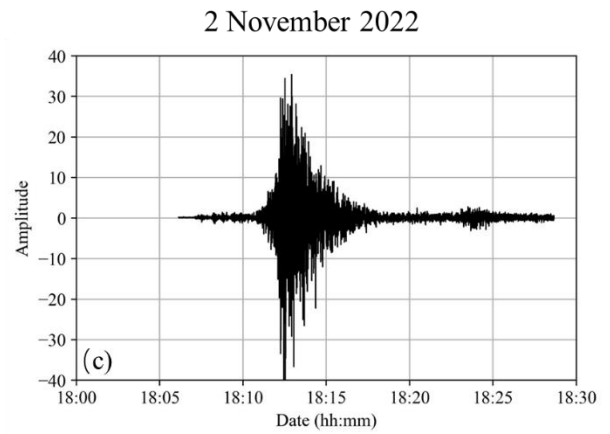
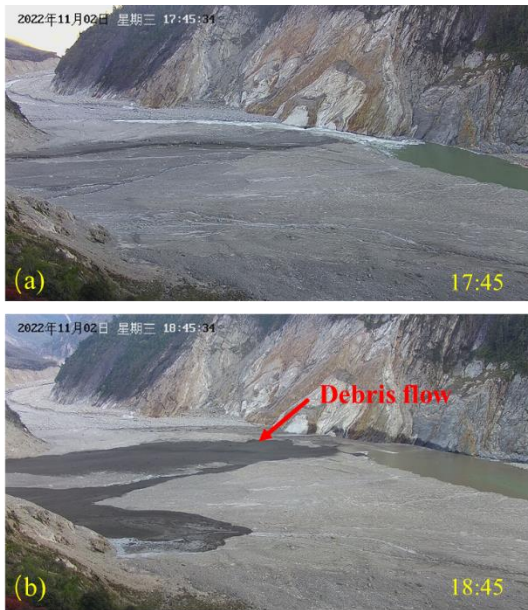
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Figure S6. Similar to above, but on 24 September 2022.



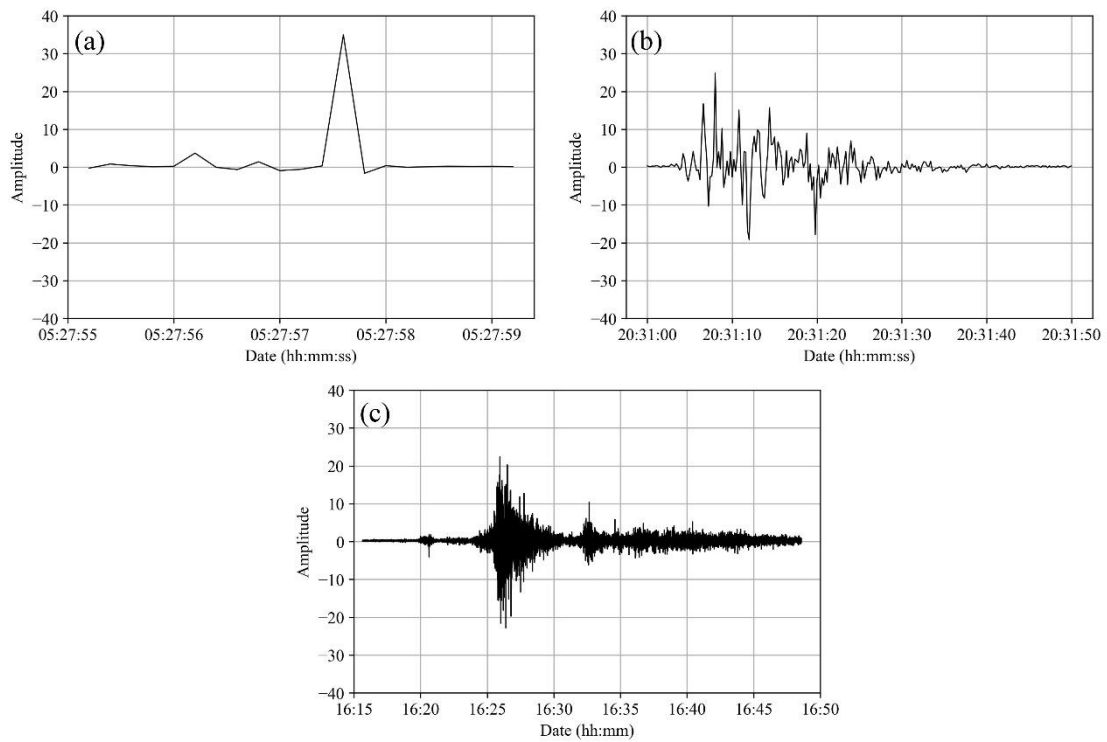
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Figure S7. Similar to above, but on 20 October 2022.



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Figure S8. Similar to above, but on 2 November 2022.



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Figure S9. The two abnormal waveforms occurred on 2 June 2022 (a) and 1 October 2022 (b) and the collapse-induced waveforms occurred on 11 August 2022 (c), showing the different waveform characteristics and duration.

59 **Table S1.** The daily mean values of meteorological factors during the occurrence of ice-rock
60 collapses in 2022

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Collapse Events	Air temperature (°C)	Rainfall (mm)	Wind speed (m/s)	Solar radiation (W/m ²)
2022/5/14	8.3	22.6	0.3	83.9
2022/7/1	13.7	0.0	0.9	314.0
2022/8/7	15.8	2.8	0.8	301.0
2022/8/11	15.4	0.4	0.7	321.1
2022/9/9	10.5	6.4	0.5	184.3
2022/9/19	13.6	0.0	0.7	216.6
2022/9/24	9.6	9.4	0.3	107.3
2022/10/20	4.6	0.0	0.9	166.8
2022/11/2	4.0	0.0	1.3	146.4

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