



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)

The copyright of individual parts of the supplement might differ from the article licence.

1

2

3 Supplement

4

5

6

7

8

9

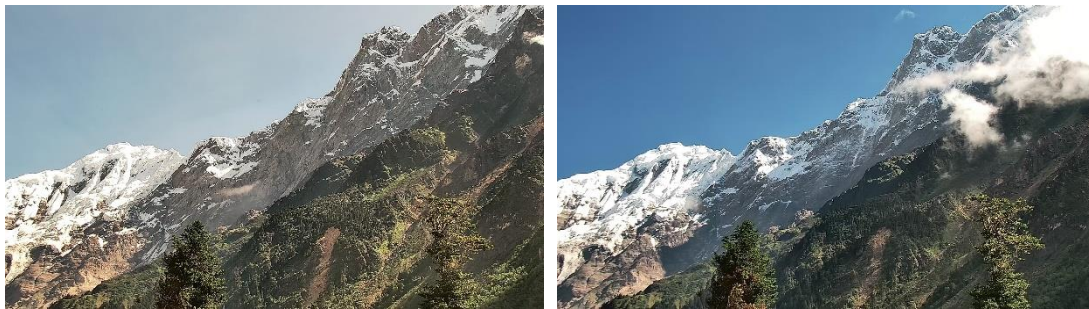
10

11

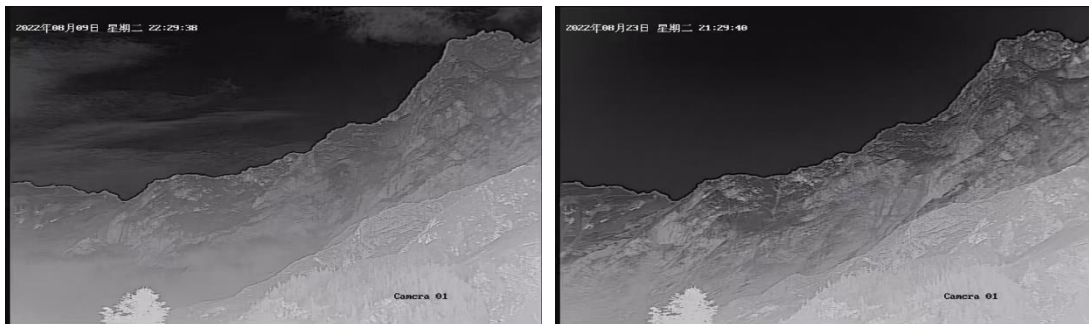
12

13

14

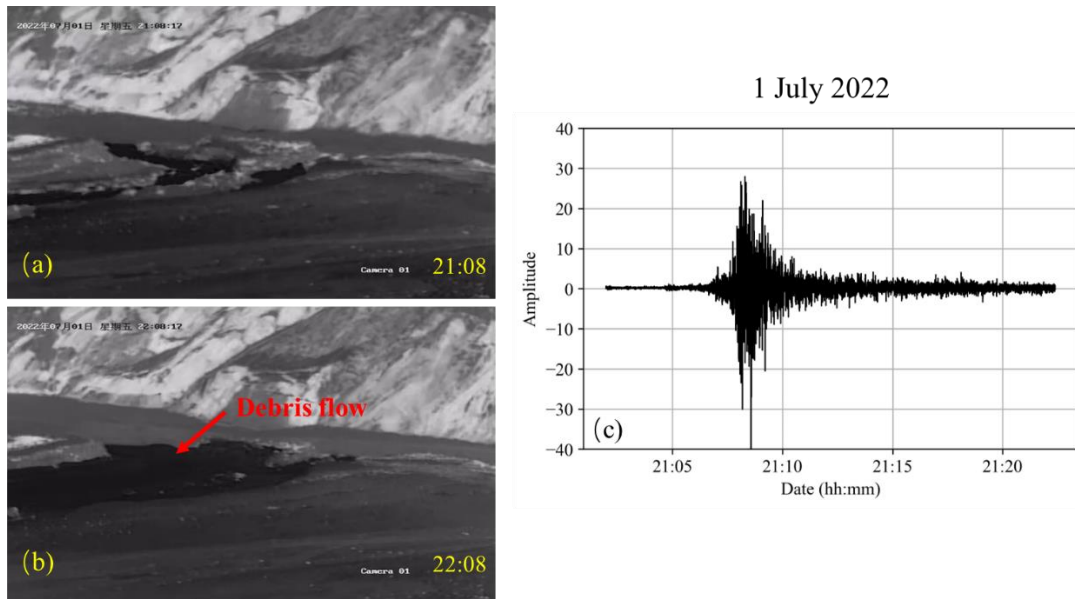


15



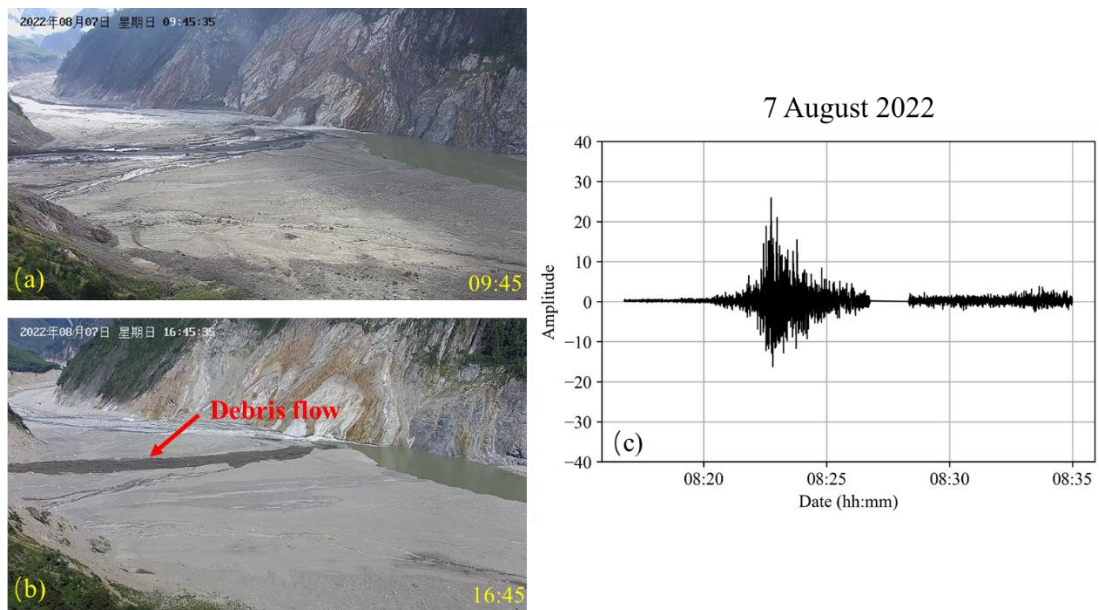
16

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.



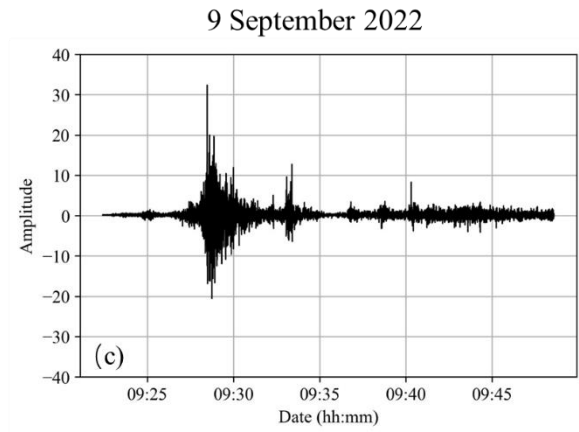
20
21
22
23
24
25

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).



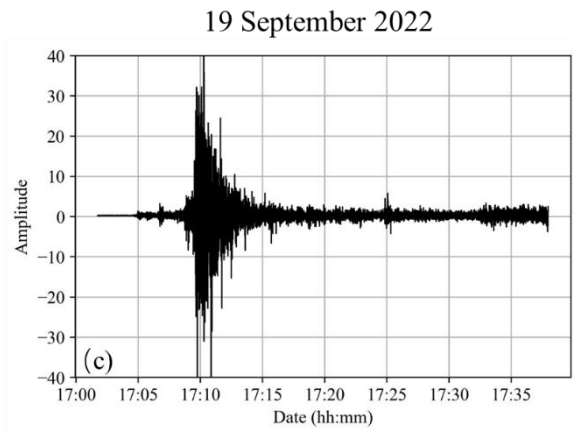
26
27
28
29

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



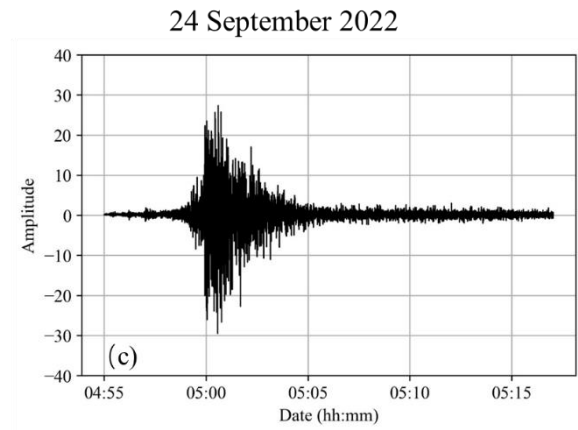
30
31
32

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



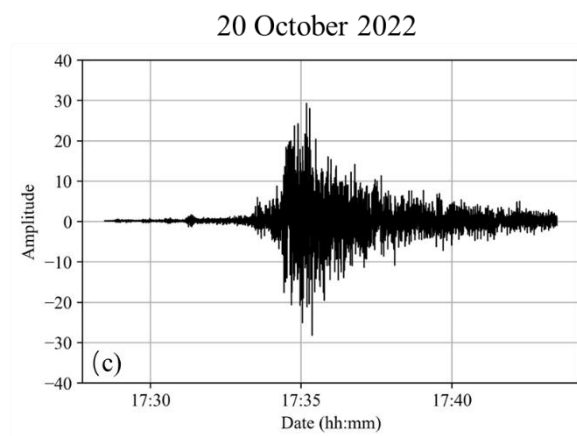
33
34
35
36
37

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



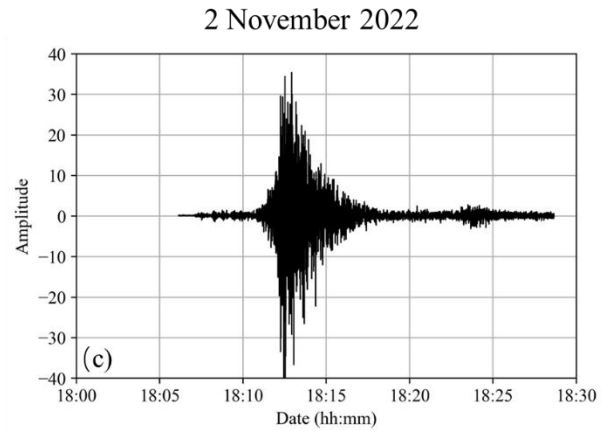
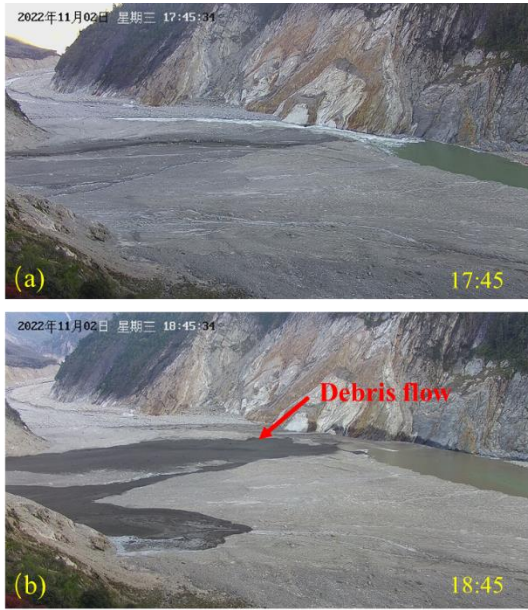
38
39
40
41
42

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



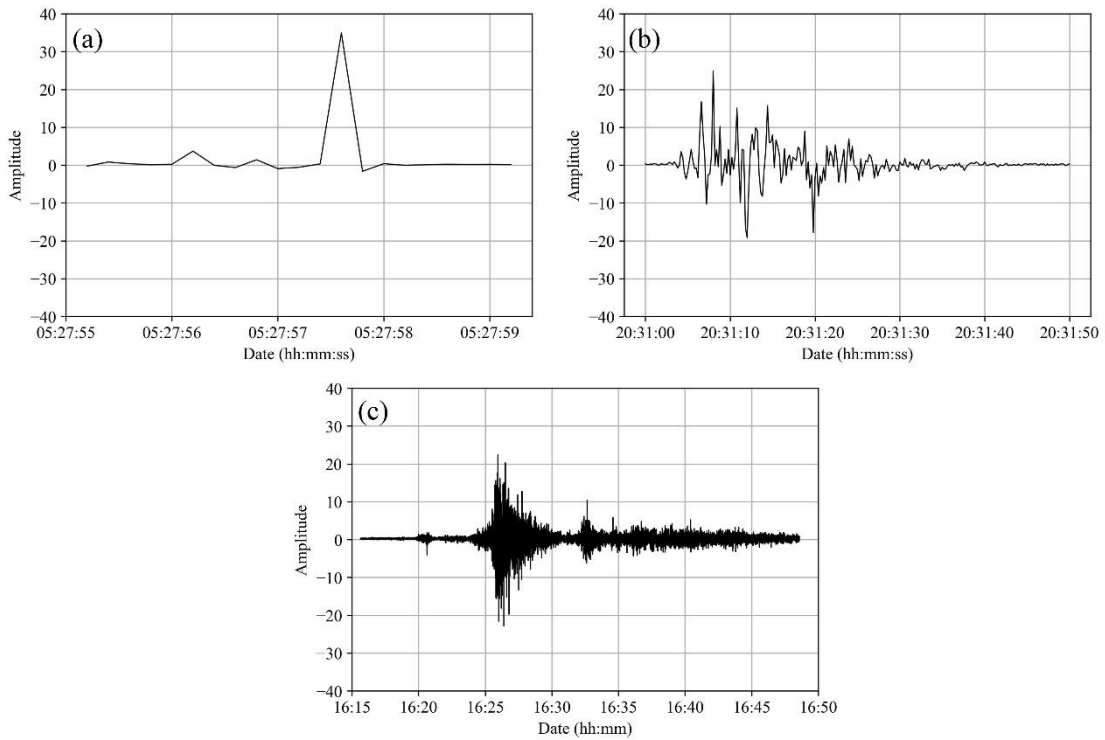
43
44
45
46

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



47
48
49
50

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



51
52
53
54
55
56
57
58

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

61

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

62