

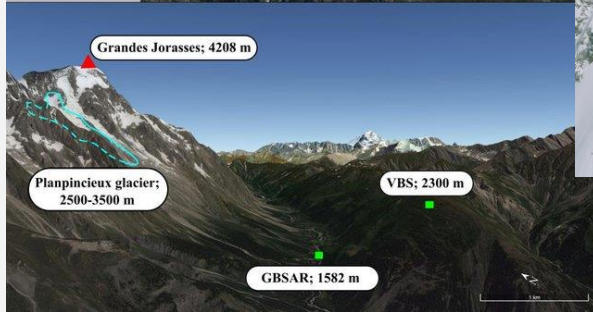
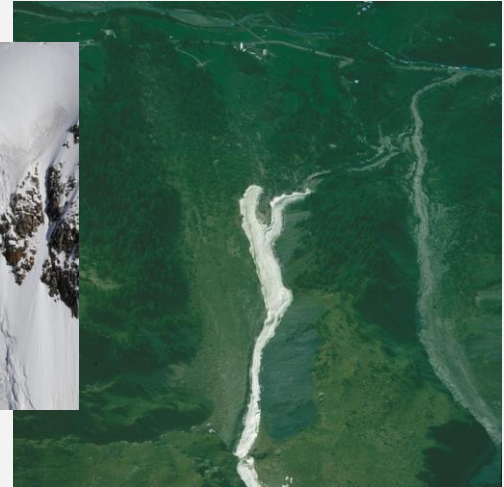
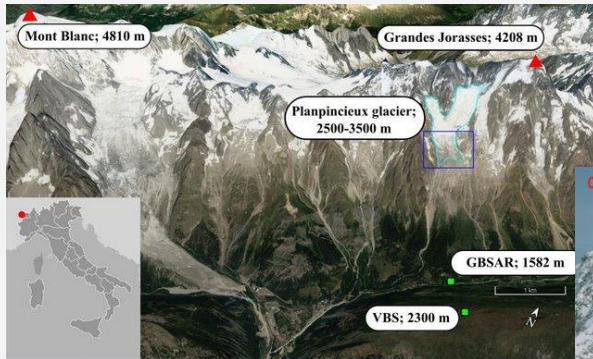
Basal thermal regime investigations at Whymper hanging Glacier (Aosta Valley – Italy)



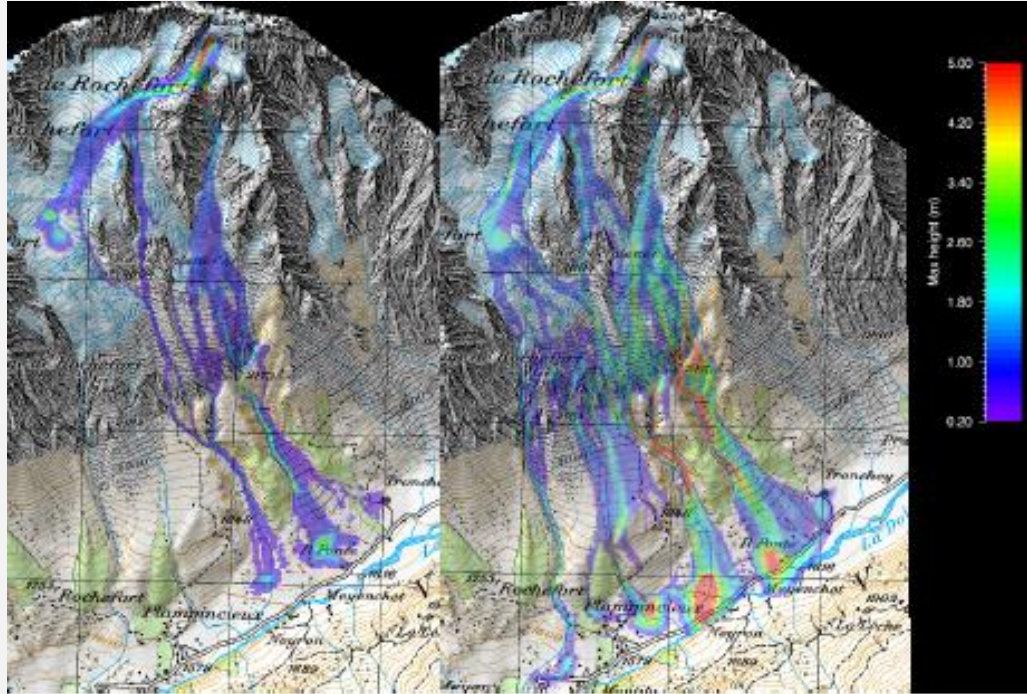
Fabrizio Troilo (1), Perret Paolo (1), Simone Gottardelli (1), Luca Mondardini (1), Daniele Giordan (2), Niccolò Dematteis (2), Luc Piard (3), Olivier Gagliardini (3), Adrien Gilbert (3), and Christian Vincent (3).

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Ice avalanches



Safety plan



SLF Expert report G2009.06: Hazard from ice avalanches from the Whymper glacier, Gr. Jorasses – Val Ferret, I-Courmayeur

Tab. 7: Safety concept with recommendations for temporary measures during winter (valley bottom of Val Ferret)

Local avalanche level Val Ferret:	Ice avalanche volume Whymper glacier:		
	<10'000 m ³	10'000 m ³30'000 m ³	30'000 m ³150'000 m ³
1 Low	No safety measures	Exclusion of zones A and B	Exclusion of zones A, B and C, Curfew zone D
2 Moderate	No safety measures	Exclusion of zones A and B	Exclusion of zones A, B, C and D
3 Considerable	Exclusion of zones A and evtl. B*	Exclusion of zones A and B	Exclusion of zones A, B, C and D
4 High	Exclusion of zones A, B and C	Exclusion of zones A, B and C, Curfew zone D	Exclusion of zones A, B, C and D
5 Very high	Exclusion of zones A, B, C and D	Exclusion of zones A, B, C, D	Exclusion of zones A, B, C and D

* If the safety concept is applied with the danger level of the regional avalanche bulletin zone A and B have to be excluded, if the avalanche danger is assessed locally and the danger level is "3-". (Release of large avalanches is unlikely) it is sufficient to exclude zone A. If the local danger level is "3+" (Release of medium-sized and large avalanches is possible) the zones A and B have to be excluded (see chapter 5.3).

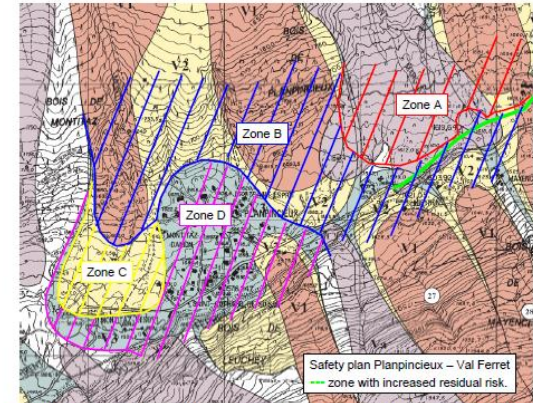
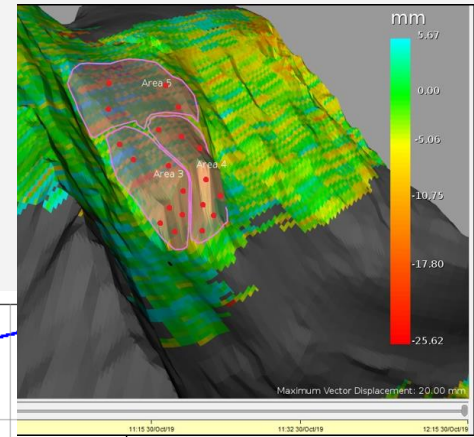
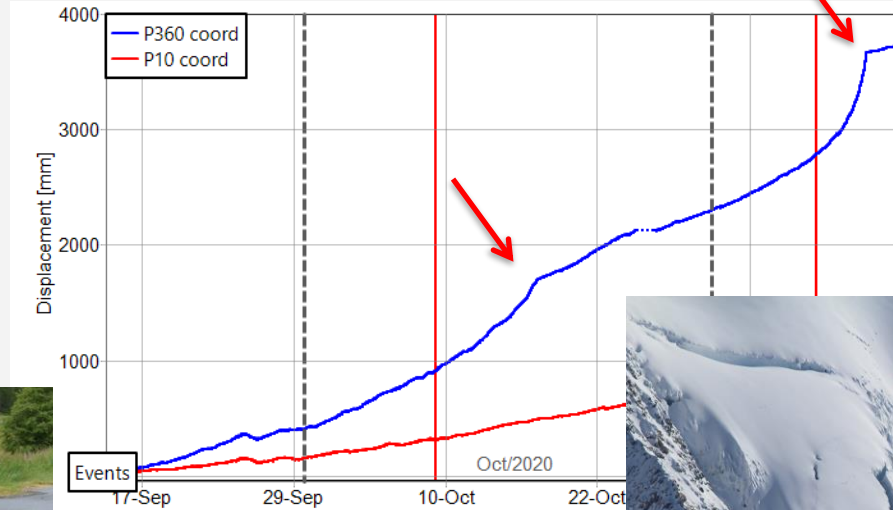
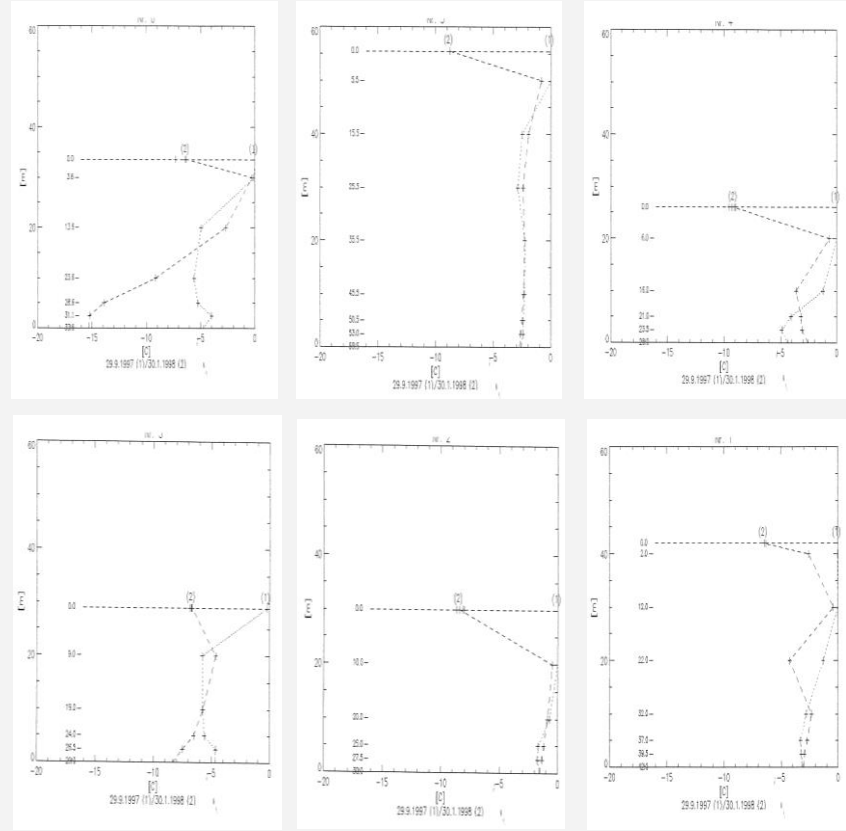
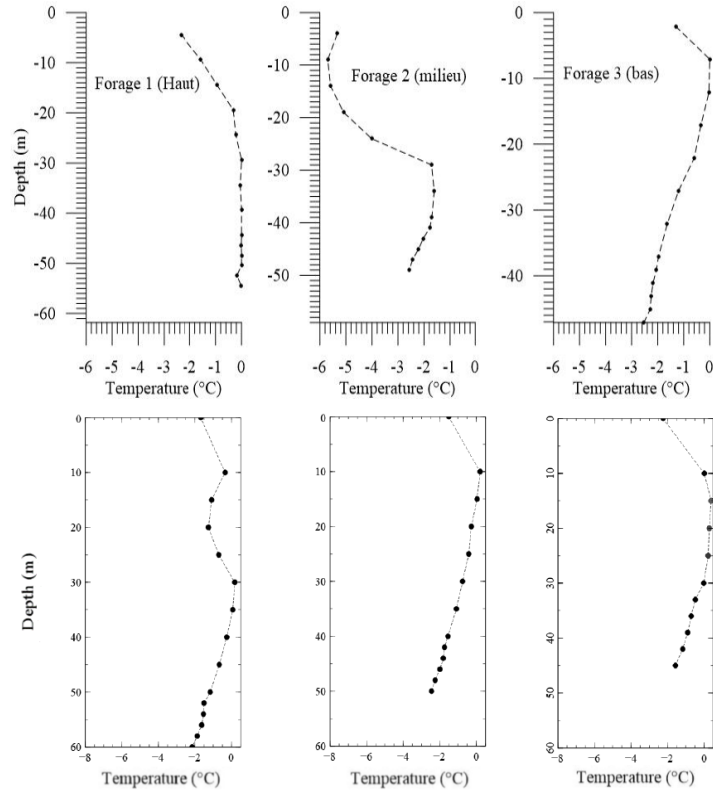


Fig. 10: Safety plan Planpincieux – Val Ferret for ice and snow avalanches from the Whymper glacier.

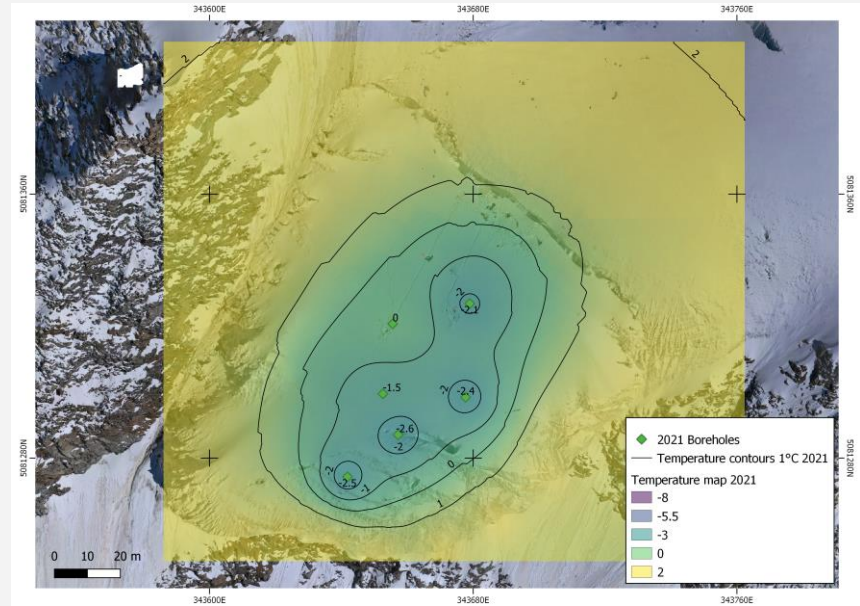
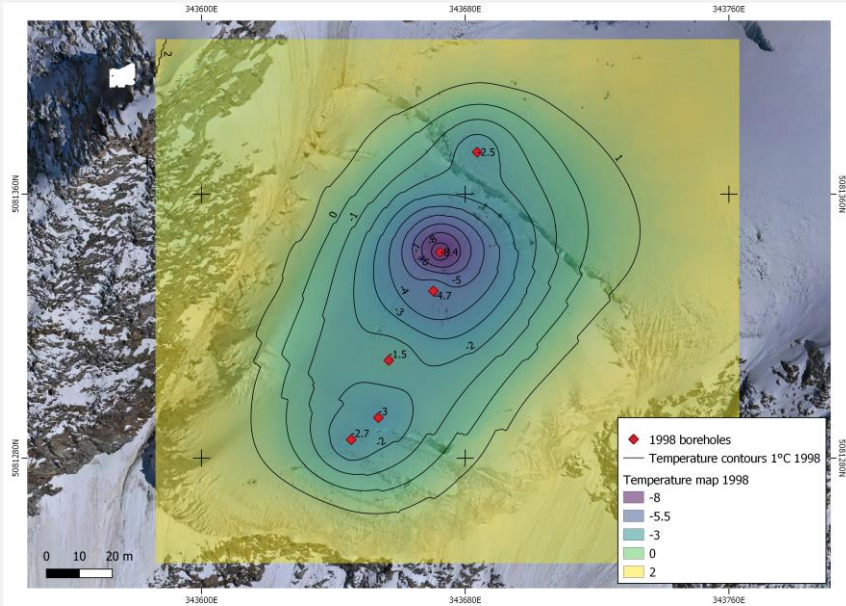
Monitoring: Gb-SAR deformation measures





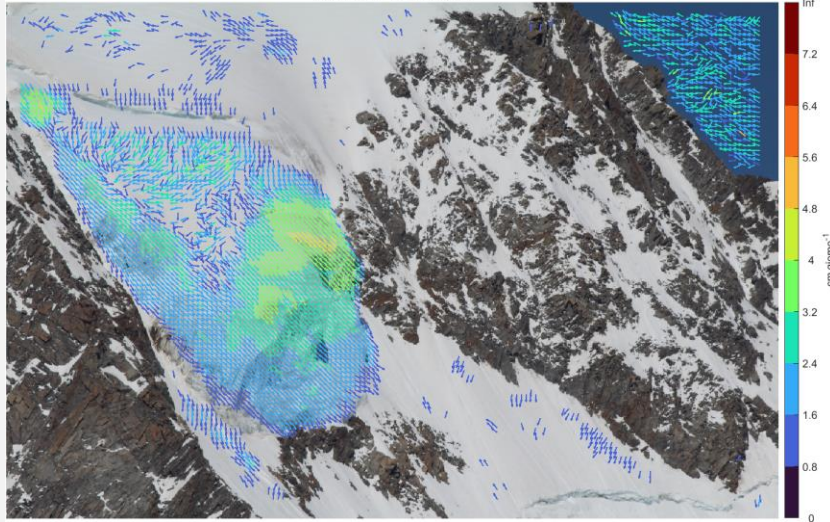


Temperature distribution 1998 vs 2021

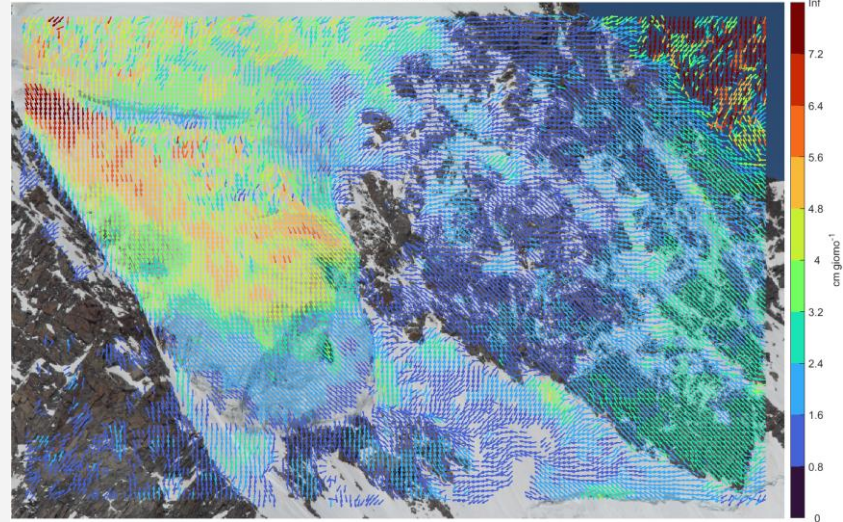


Velocity anomalies

Spostamento
20 Oct 2021 - 27 Oct 2021

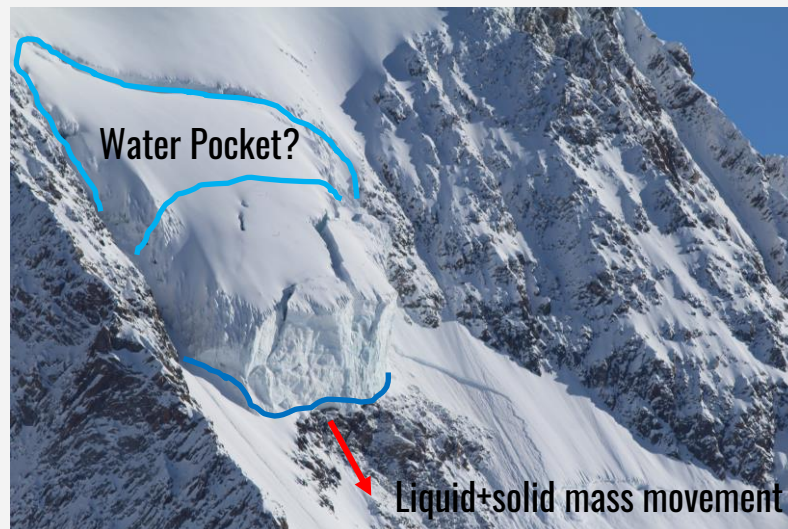


Spostamento
21 Aug 2021 - 28 Aug 2021



Major possible consequences

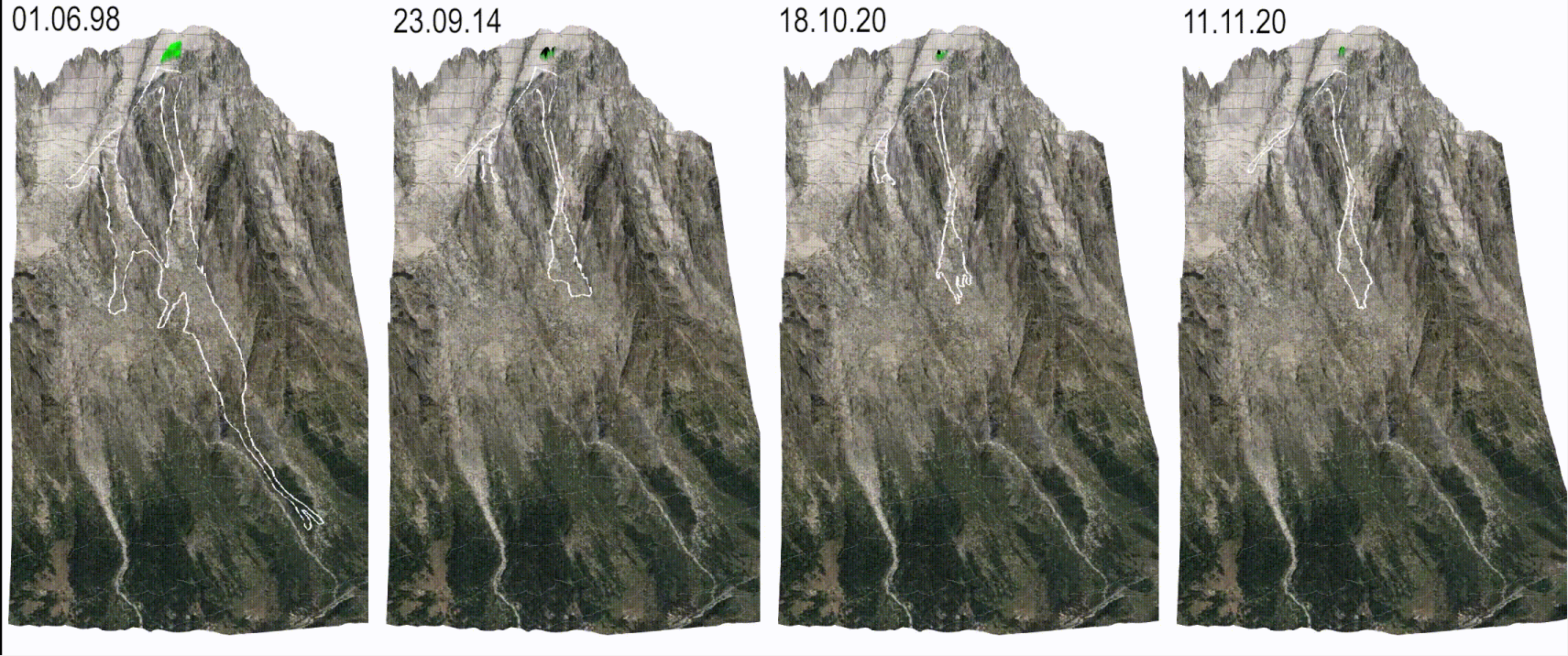
- 1) Deterioration of previsional model
- 2) Increase of destabilized volumes
- 3) Possible water accumulation



Thermo-mechanical modeling: Elmer-Ice



Ice Avalanches experimental simulations (Paolo Perret Talk)





THANKS FOR THE ATTENTION

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