Fondazione Montagna sicura - Courmayeur

«The PrévRiskHauteMontagne Project : from knowledge to resilience improvement in the population »

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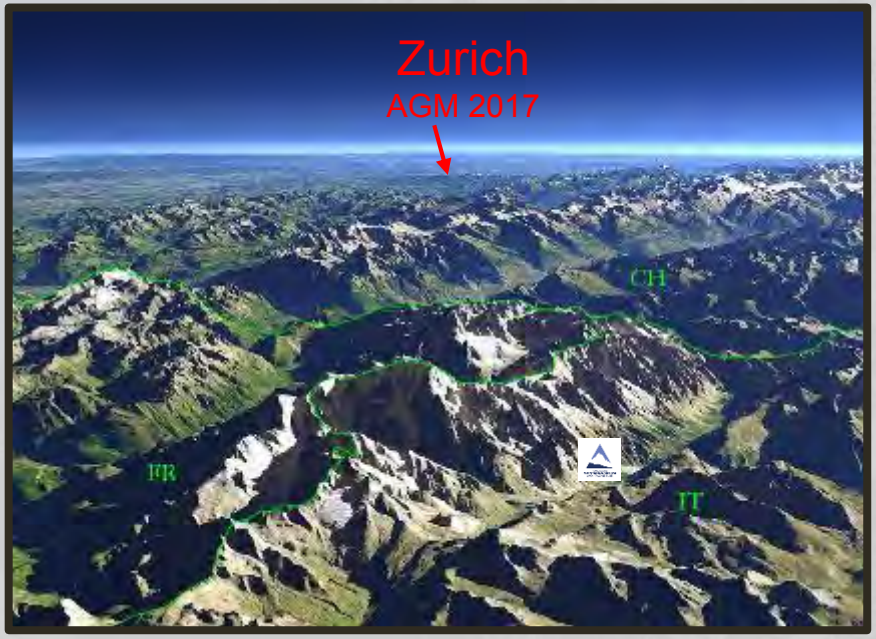
Alpine Glaciology Meeting – Zurich, 2-3rd February 2017

Objectives of the project

The PrévRiskHauteMontagne Project concerns the Alpine Regions of **Aosta Valley**, **Haute-Savoie**, **Wallis** and **Piedmont**, where the glacial and periglacial environment is very often in close relationship to the population.



1) Better understand glacial and periglacial risks that concern local communities

(**Research actions**)

2) Improve the resilience of local communities with a better understanding of risks linked to high mountain environment

(**Communication actions**)

Research Actions

WP 3

WP 3.1 Improving knowledge about **permafrost** and related risks.

WP 3.2 Study of **hanging glaciers** dynamics and monitoring.

WP 3.3 **Snow Bridges** experimental study.

Research Actions

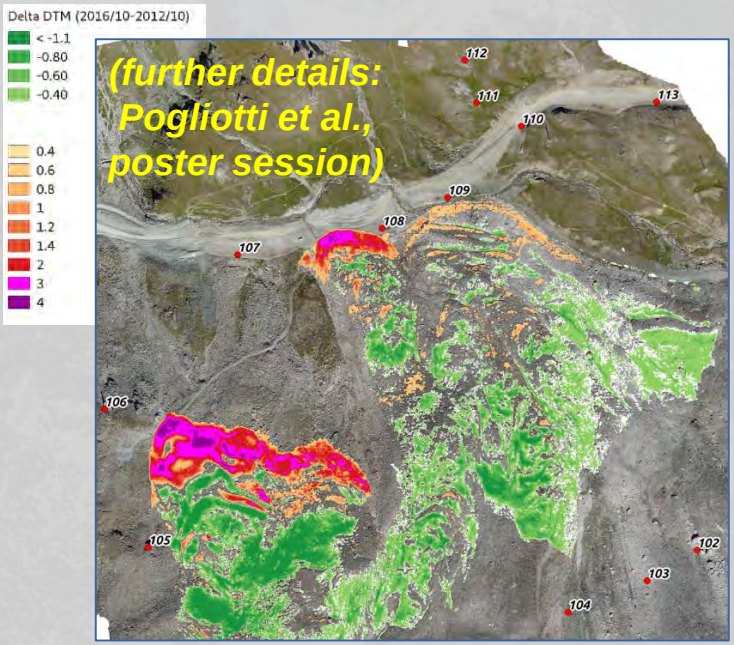
3.1.1 Improvement of existing permafrost monitoring sites

Rocciamelone south ridge 3130m

- Surface velocities (monthly drone, GNSS)

- Internal temperatures (two 15m deep boreholes)

- Internal structures (repeated geophysical soundings)



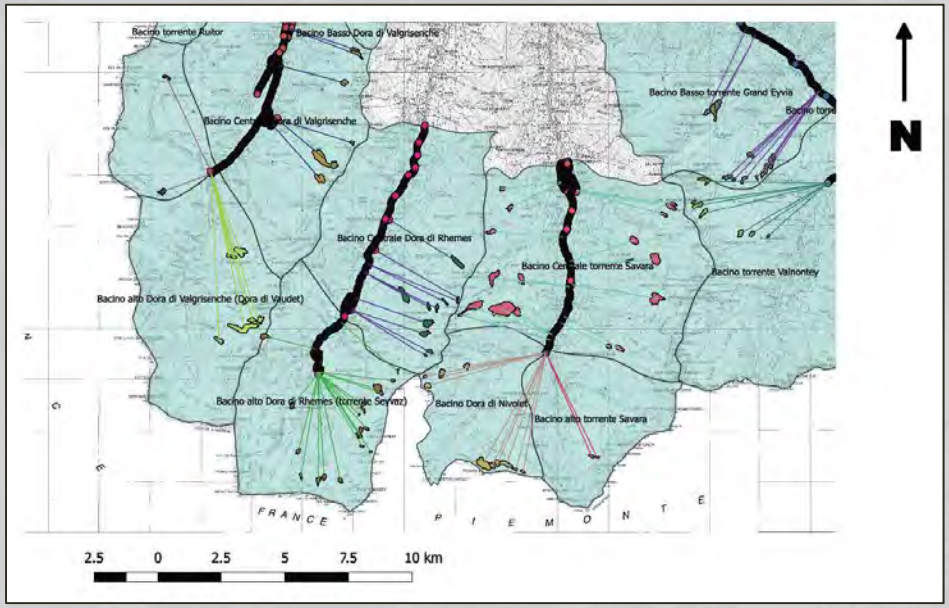
Gran Sommetta Rock Glacier

Research Actions

WP 3.1.2 Detailed study of a potentially hazardous Rock Glacier

Individuation of potentially hazardous Rock Glaciers

1. Regional **inventory** of Rock Glaciers; selection of a) Active Rock Glaciers with mean PFidx>0,45
2. **GIS** Analysis: subdivision in drainage basins, individuation of urbanization (Roads Layer + Urban areas)



3. Computation of decreasing distances

4. Comparison of the first 40 results to **Risknet** project manual analysis

Good match: 87,5% of RiskNet sites individuated in the GIS analysis

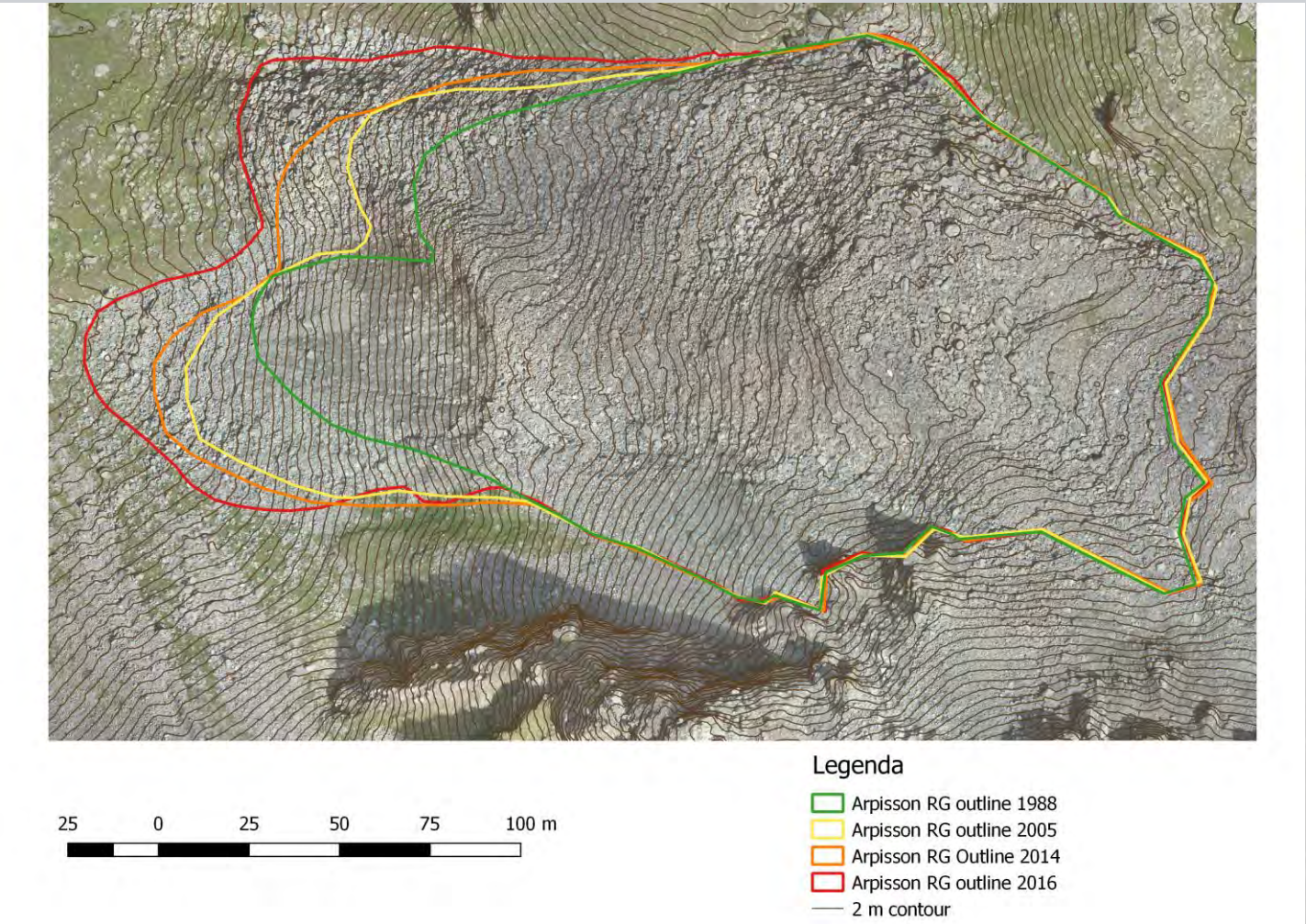
Research Actions

3.1.2 Detailed study of a potentially hazardous Rock Glacier

SenseFly ® ebee RTK

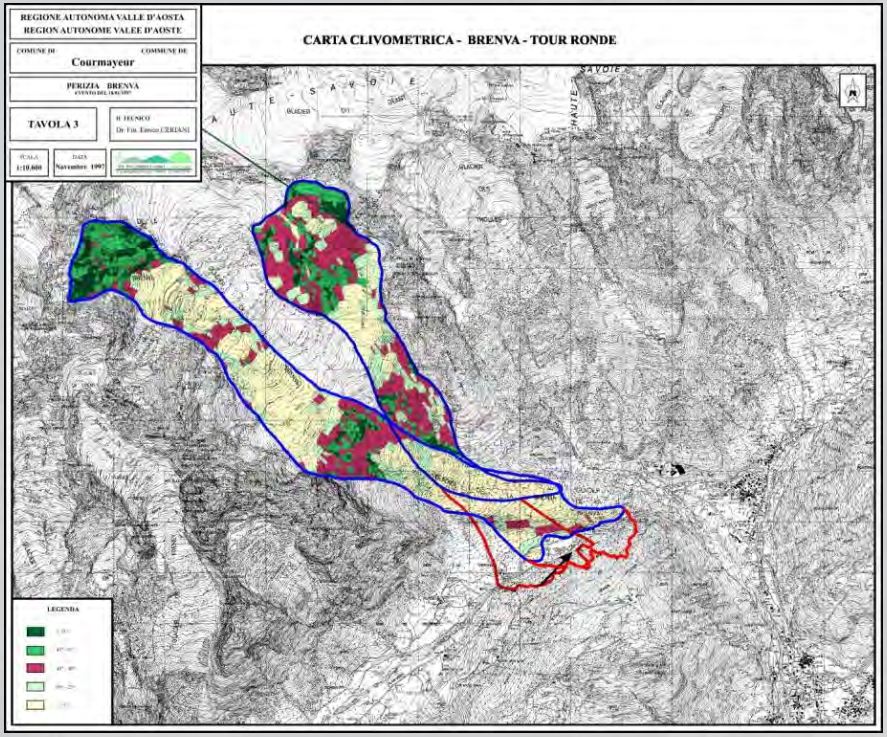
Research Actions

Evolution of Rock Glacier extension from 1988 to 2016



Research Actions

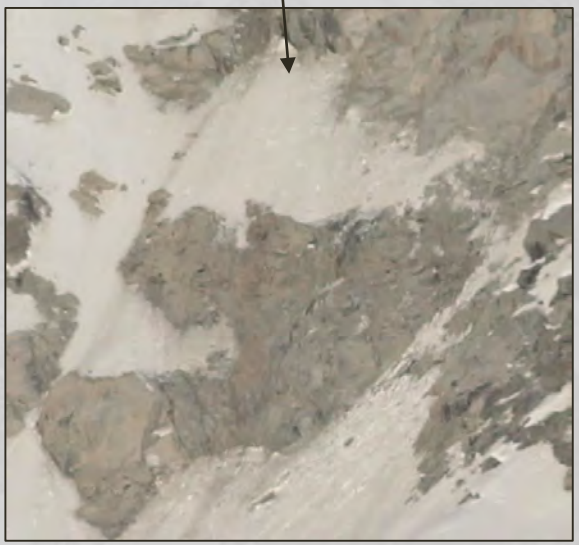
3.2 Hanging Glacier/Rockwall monitoring via high definition automatic camera



Elaboration of an Expert report on avalanche scenarios by SLF - Davos

Research Actions

Identification of possible indicators of slope instability

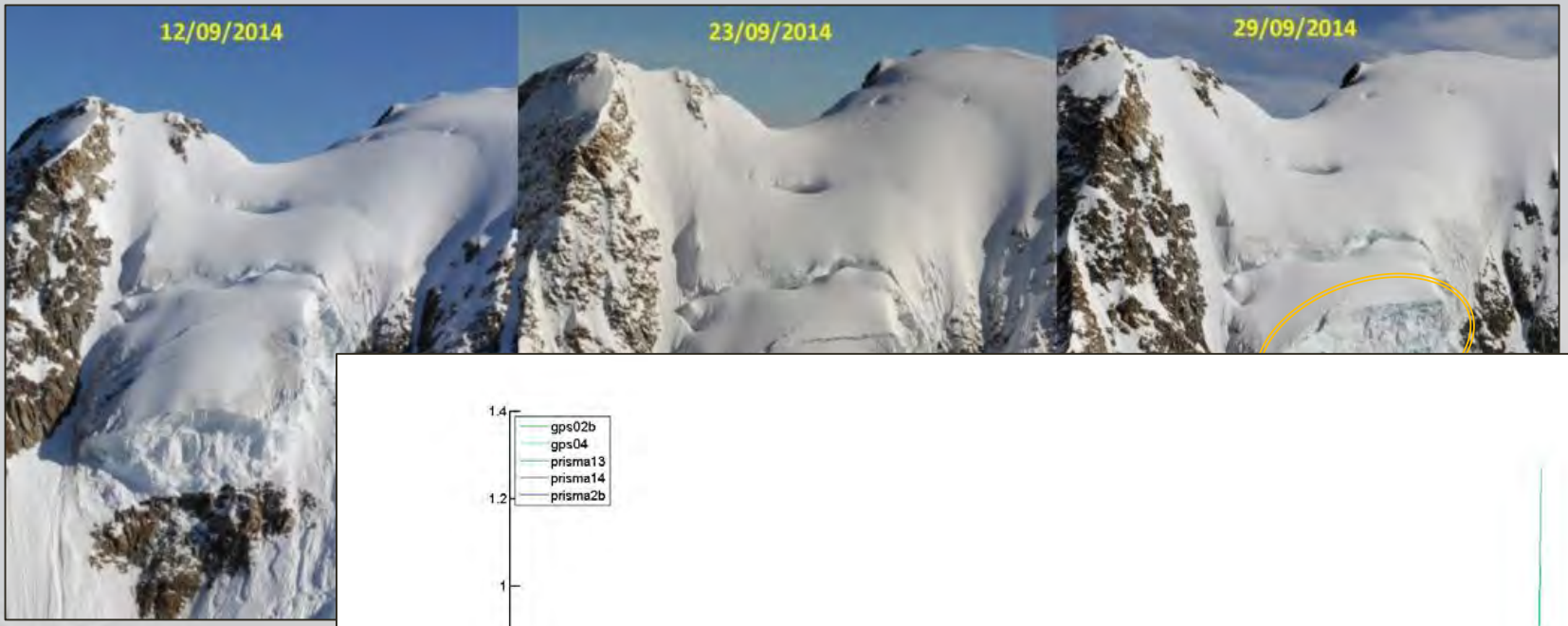


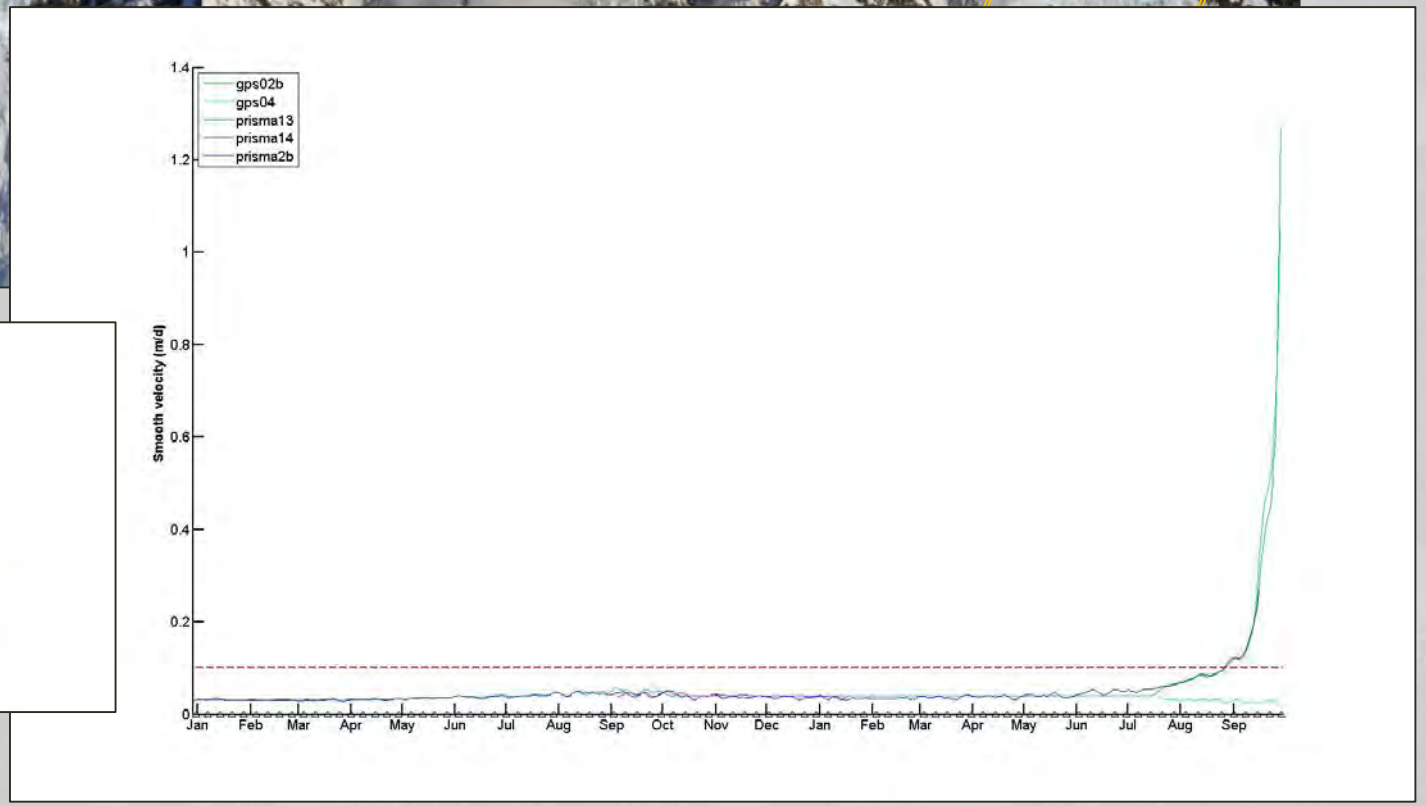
Stable rockwall

September 2016
Rockwall Collapse
(35.000 m3)

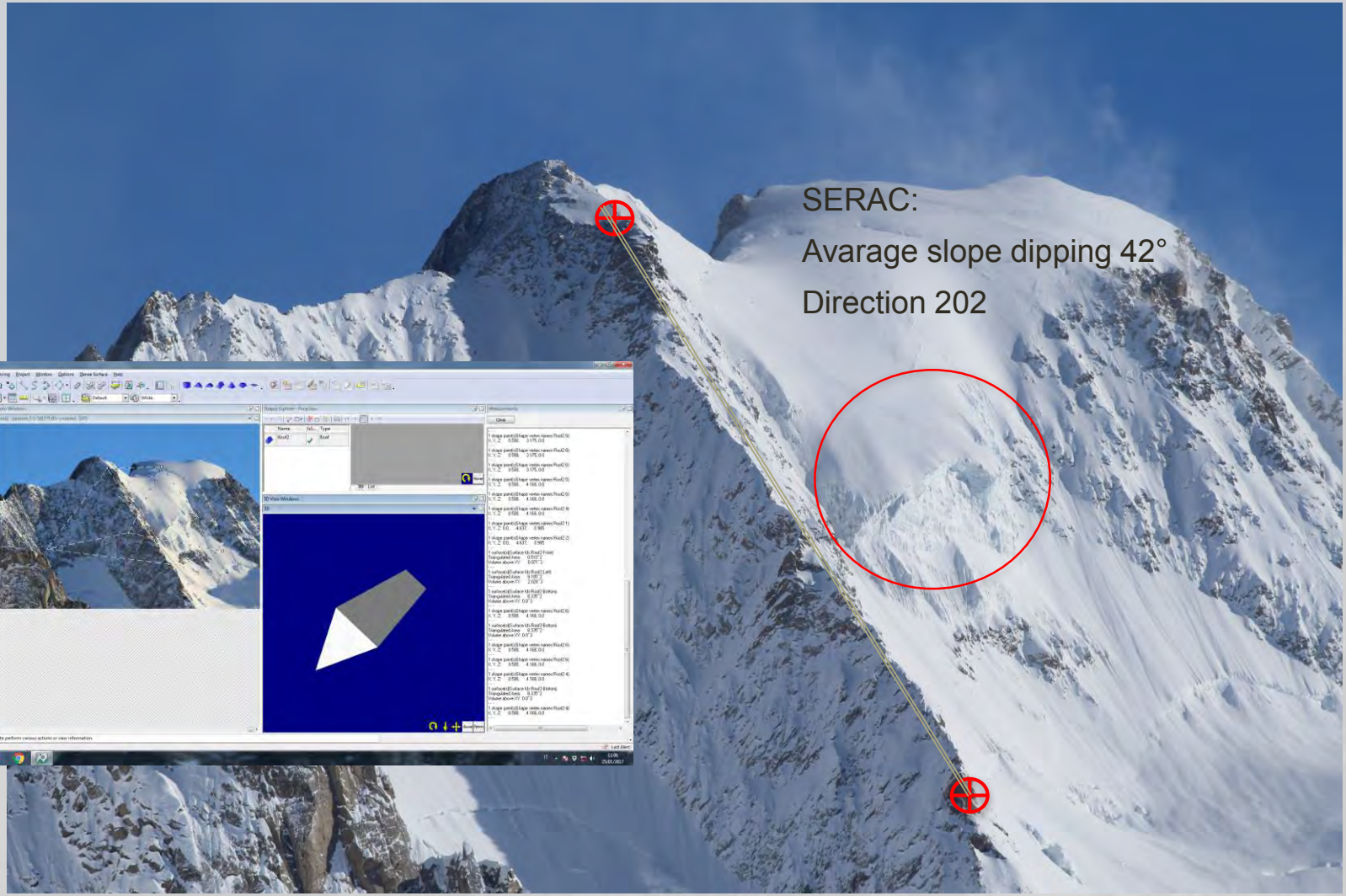
Minor Rockfalls

Hanging Glacier of Grandes Jorasses monitoring

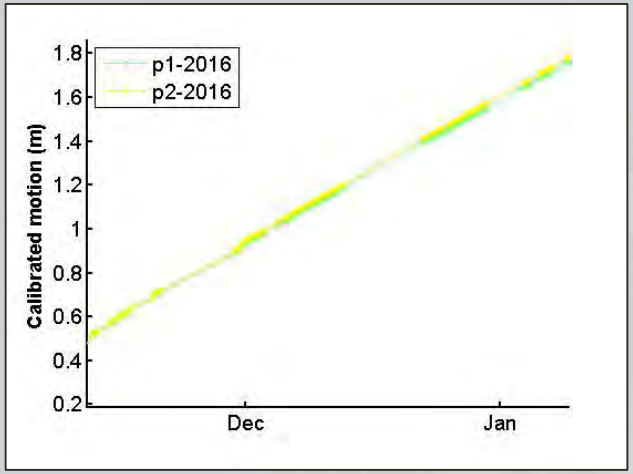




Hanging Glacier of Grandes Jorasses monitoring



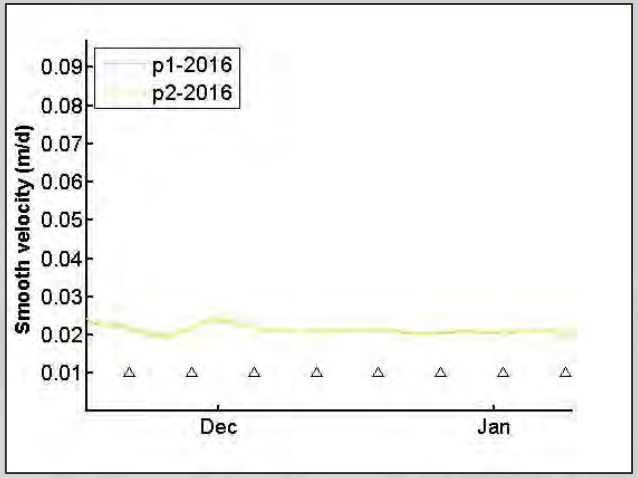
Movements on camera pixel motion Vs. Leica topographic measures

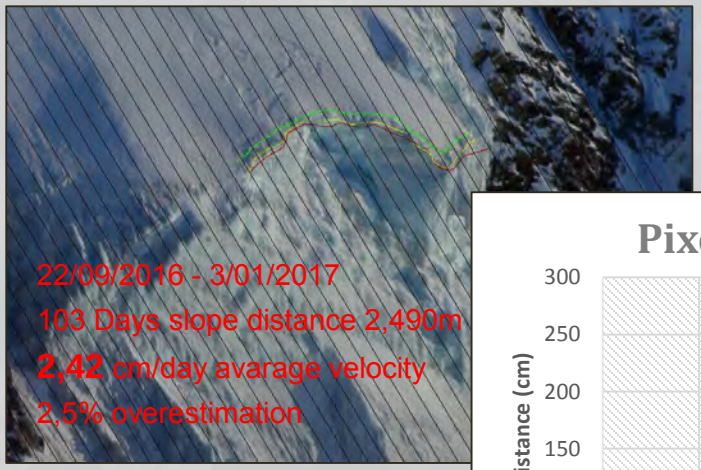


12/11/2016 - 9/01/2017

58 Days slope distance 1,367m

2,36 cm/day avarage velocity





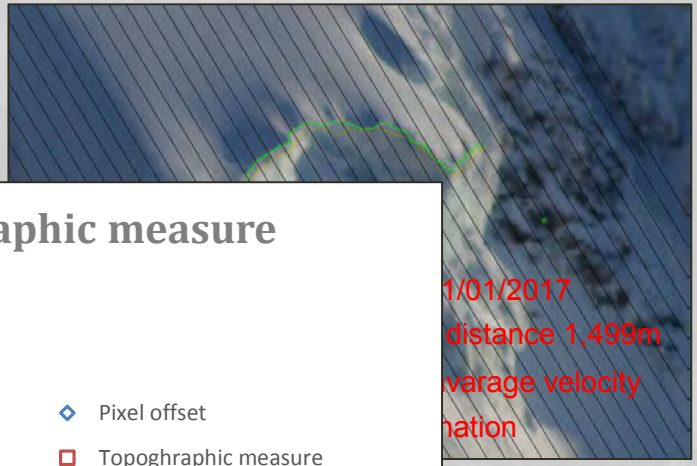
22/09/2016 - 3/01/2017

103 Days slope distance 2,490m

2,42 cm/day avarage velocity

2,5% overestimation

Measure of mean pixel offset of serac edge on 25 pixel intervals grid

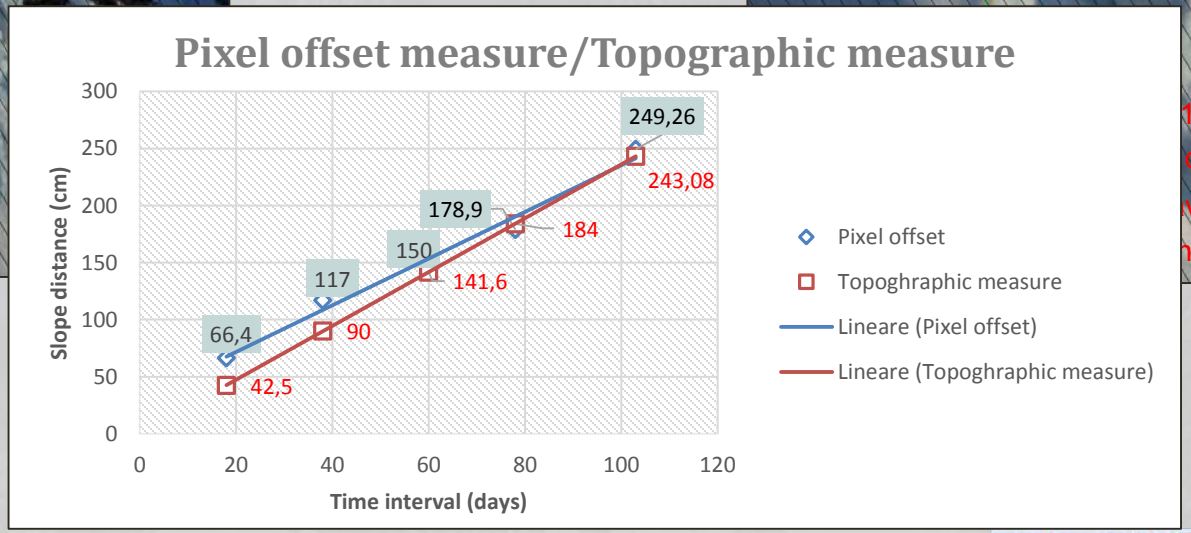


1/01/2017

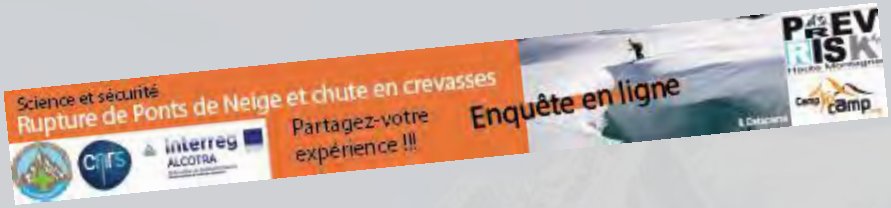
distance 1,499m

varage velocity

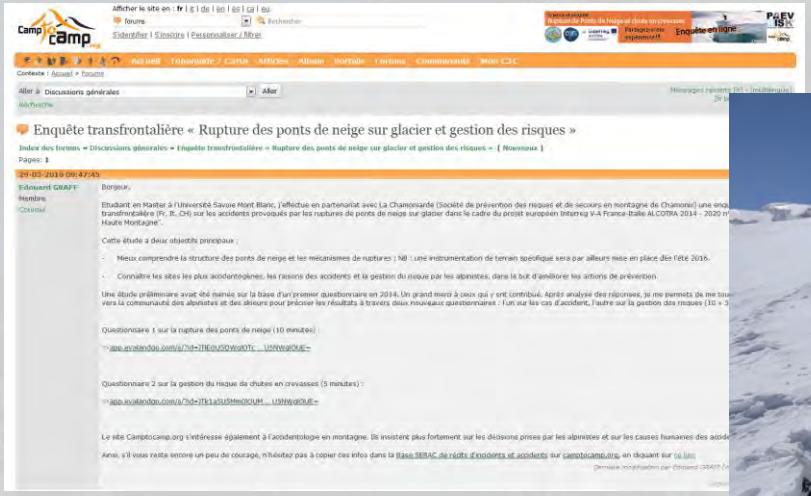
nation

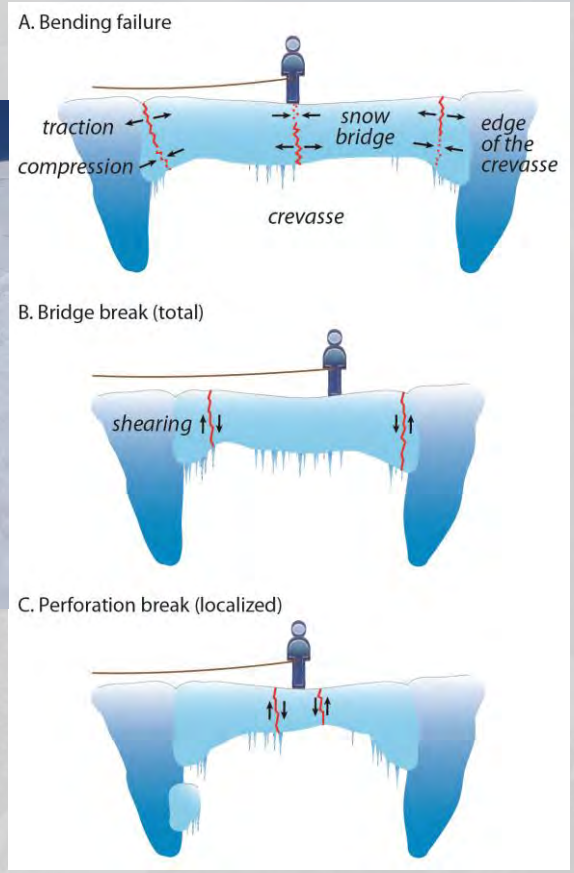


3.3 Snow Bridges experimental study



Data processing in progress but models already validated

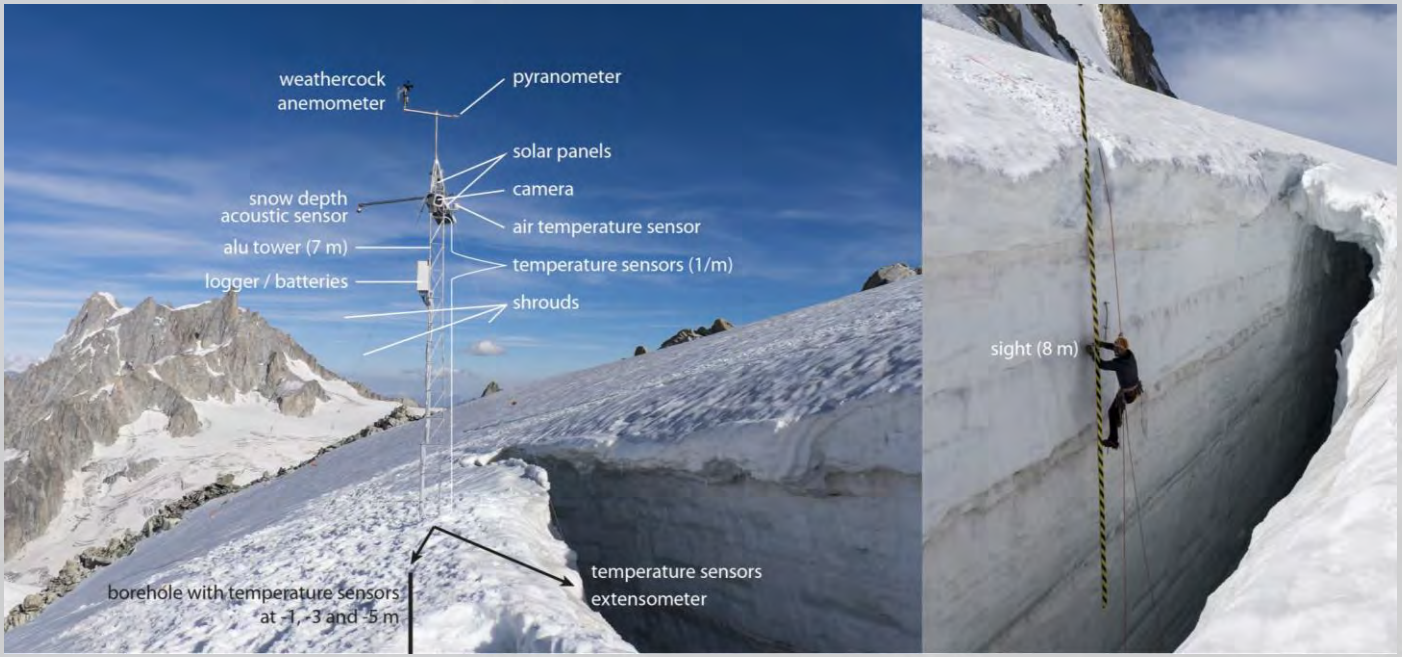




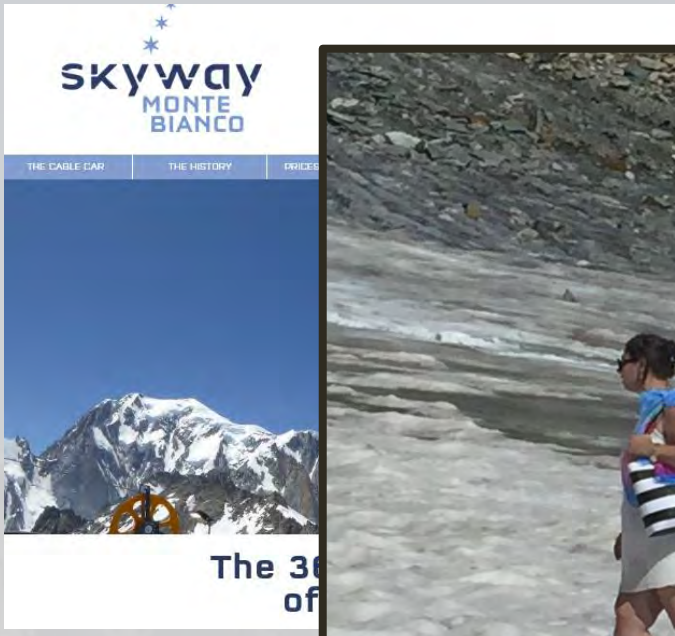
NOM DU QUESTIONNAIRE	QUESTIONS	RAPPORTS	RÉPONSES		STATUT	DATE
Questionario 2 sulla gestione del rischio della caduta in crepaccio (5 minuti) :	20 Questions	1 Rapport	90 Réponses	0 24h	Ouvert	20/04/2016
Questionario 1 sulla rottura dei ponti di neve (10 minuti)	47 Questions	1 Rapport	86 Réponses	0 24h	Ouvert	18/04/2016
Questionnaire (2) sur la gestion du risque de chute en crevasse (~ 5 min.)	21 Questions	1 Rapport	207 Réponses	0 24h	Ouvert	18/03/2016
Questionnaire (1) sur la rupture des ponts de neige (~ 10 min.)	46 Questions	1 Rapport	188 Réponses	0 24h	Ouvert	10/03/2016

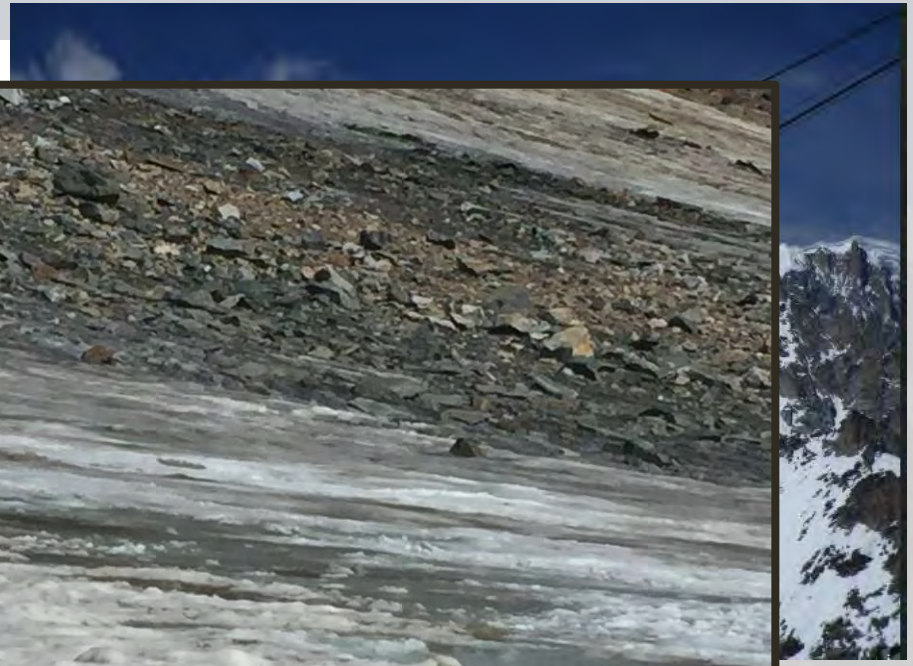
3.3 Snow Bridges experimental study

Monitoring the construction and evolution of a snow bridge throughout a hydrological year



Why communication actions?





Communication Actions

- **Glacier workshops**: Campaign to raise awareness in the population of the risks in the high mountain environment through field activities framed by alpine guides (summer 2016). La Chamoniarde Association (Chamonix-France)

- **Mountain safety exhibition:** (event held in Breuil Cervinia on the 20 and 21st August 2016). Valtournenche municipality.

- **Conferences** on mountain rescue for the wide public. La Chamoniarde.

- **Avalanche transceiver training sites:** realization of 4 permanent sites.

Communication Actions

- Uniformation of **mountain signage**

- **Educationals** for professionals:

  - Refuge owners and keepers;
  - Journalists;
  - Professionals (geologists, engineers);
  - Touristic Operators.

Thank you for your attention!