



2 CATASTROPHIC AVALANCHES

1969 : Val d'Isère, 39 people killed
1999 : Chamonix (Montroc), 12 people killed



NEWS PROGRAMS



THE AVALANCHE PERMANENT SURVEY

a chronicle of events on determined sites

- since 1900
- 300 forest rangers
- observing on 5000 determined sites
- past event

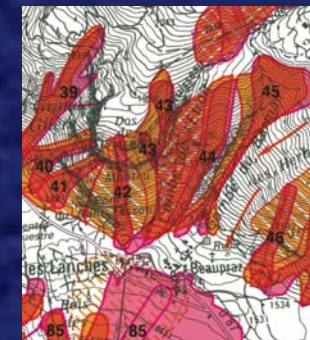


Why 2 programs ?

permanent survey = textual information about events, but not geographical information.
past avalanche map = geographical information about sites (and not each event that occurred).

→ The survey and the map are economical and complementary.

THE PAST AND GEOMORPHIC AVALANCHE MAP



Global envelope of event areas

1:25,000 scale

- facts collected from archives and witness testimonies through field investigations.

- interpretation of stereo-aerial photographs, to find avalanche marks on vegetation and relief.



Some constants Principles

but new Ways

A protocol of observation précised for each site

- an observation threshold: systematic / opportunist report
- an alert threshold: for detailed investigation and a point of observation

News medium to localize sites : a photograph of each site and an observation map



- Reference
- Edge of the site, zone affected
- Avalanche main flow
- Observation and alert thresholds
- Past avalanche areas
- Observation point

Common characteristics

- Focus on areas with constructions or roads, not mountain sport activity.
- All data, even the oldest, on databases.
- Strong informatics : Oracle and ArcGIS with a connection Arc SDE, data security



A regular update processes

- An annual update : locals information from professionals
- A decennial update (full investigation on 10 % each year) .

News products

- Files of tracks of testimony references and main facts for each site.
- A synthesis of the main avalanches that happened for each mountain massif, mains past avalanches, geomorphology, environment, climate and precipitation data



and Results (2002-2006)

All 5000 sites updated one by one
More than 80 000 events with as much as 20 characteristics filled
Over a century of observation on the oldest sites

Observation de l'avalanche		Avalanche de l'hiver	
Date de l'observation	Observateur	Date de l'avalanche	Observateur
10/01/03	L. Bélanger	10/01/03	L. Bélanger
11/01/03	L. Bélanger	11/01/03	L. Bélanger
12/01/03	L. Bélanger	12/01/03	L. Bélanger

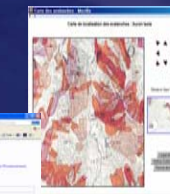


Communication :

- Booklet and formal binders for leaders and professionals
- Database for Scientifics

www.avalanches.fr

epa@cemagref.fr et clpa@cemagref.fr



More areas studied

- 3 500 square km updated
- new 1 000 square km mapped
- All in all, 8,000 square km mapped

At least 10 000 avalanches sites fully inquired and 20 000 avalanches mapped

Another complementary project

A FULL CLASSIFICATION OF AVALANCHE RISK AREA

- A full inventory and classification of areas according to the risk level, Rapin (2002).
- 38 questions about past events, risks, avalanche knowledge and meteorology,
- with answers selected in lists of 2 to 8 defined items.

→ Classify the area into strong, middle or less important risk.

Key points: as objective as possible, quick to answer (one day per site)

Conclusions : A WORK FOR LONG TIME PROGRESS

Great benefits from systematic collections of data as far as a century old
→ to be continue

To strengthen quality of data :

- quality process,
- quality indicators about data output
- traceability

To develop new applications

- statistical regional model of avalanches triggering,
- automatic mapping of triggering areas,
- automatic mapping of avalanches extents

To value people reactions

- How to collect testimonies from this public ?
- How to cross testimonies and check author's identity?