CLPA – Reflection on the quality of the testimonies collected during a field investigation

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ABSTRACT: A catastrophic avalanche occurred in 1970, and killed 39 people in a tourist centre located in the ski resort Val d'Isère, Savoie, France. As a response, the French government gave Cemagref named at this time CERAFER (Grenoble, Isère) the responsibility of developing avalanche mapping in the whole French mountains (Alps and Pyrénées), which is the CLPA (localization map of avalanches phenomena).

The scope of the project is based on two distinct methods. The first one consists in an expert approach with photo interpretations and observations on sites to find avalanche signs in landscapes. The second is based on historical background. Information is taken from archives and memories witnesses. We find our information by interviewing people who live and who work in mountains (forest office, ski resorts managers, inhabitants…). Data collected are often very ancient, variable or conflicting. Therefore, we are now considering the question of the quality of testimonies, and trying to find unbiased criteria to value it. For example, we try to test the precision of the information in asking the same question several times in different ways. We also consider the fact that the witness may have an interest to minimize or emphasize information. This problem is now in the centre of our reflections in order to improve the quality of our product.

KEYWORDS: Avalanche, Testimony, Witness, Uncertainties, interview

1 Introduction

In order to create a useful tool of evaluation, it is necessary to understand the approach of the person conducting the enquiry. First, we will present how the interview of a witness is realised and how we collect information. Then we will explain how the uncertainties are created by the answers of the witness during the interview. Finally we will develop the tool which may be used in the next work of avalanche mapping. The conclusion will expose the axis opened by this reflection.

2 Creating a net of witnesses and Progressing in the interview

2.1 Witnesses net

The main work of an investigator is to collect information from local inhabitants of mountain areas. After having collected archives and other written information about old avalanches, the investigator has to create a net of people who will be able to give him some information about the greatest avalanche phenomenon. This step is divided into 3 different parts.

First, the person in charge of the study has to get in touch with the city mayor and the "National Forest Office" (ONF), who is the partner of the Cemagref by a convention signed with the ecology ministry (MEEDDM). This part happened in an institutional agreement. These first contacts give the investigator names of people who can be concerned by avalanche hazards.

Then, the investigator gets in touch with some professional workers in snow management, on a technical agreement. The ONF is also contacted for a technical competence. In this part, the main contacts taken are generally the managers of ski resorts, managers of road department, mountain guides, mountain emergency services…

Finally, the investigator is to be sent to local inhabitants who are supposed to have a good knowledge of avalanche history. These kinds of witnesses are often older people who live in the study area for a long time. Even if they don't have a strong knowledge of snow and avalanches, most of the time, they know the history of their valley.

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2.2 Question and progress of the interview

The quality of the collected information depends on the quality of the interview. A list of questions has to be established to understand the way an interview is conducted. The main problem is that the answers of the interviewed person create uncertainties in the comprehension and the map avalanche drawing. The questions asked are:
- Has there ever been an avalanche on this site?
- Have you ever seen this avalanche?
- What were the characteristics of this avalanche?
- What were the heights, length, and thickness of the avalanche?
- What was the weather like before and during the phenomena?
- What's the date of the event?
- Did the avalanche create damage?
- How many times did you observe the avalanche?
- What are the characteristics of the rest of the snow?
- How many surprising events happened?

In the answer of the witnesses, the investigator can find some uncertainties and often wonders about the quality of the information collected. He has to estimate if he needs more information to understand more the phenomena and to have a better drawing on the avalanche on the map.

Each question is related to particular themes: which are the size of the avalanche, the weather before and during the event, the damages and the history of the avalanche. Each theme is tackled directly but some answers give data indirectly. For example, the terms used by the witness to describe an avalanche can inform about the type of snow and avalanche.

3 Uncertainties discovered during the interview

In the answers given by the witnesses, the investigator often discovers incoherencies in the information collected. Those uncertainties are linked to different theme and it is necessary to divide them into different categories in order to create a rigorous tool of evaluation of the testimonies. The quality and the precision of the avalanche drawing on the map will depend on the answers of the person met. We can classify the uncertainties into different categories:

Uncertainties linked to the geography of the study area:
- lack of landmark on field and map, bad quality of landmark
- area not visited in winter time
- difficulties of observation of avalanche sites
- evolution of the mountain (reforestation)

Uncertainties linked to quality of the person met:
- age of the witness during the event
- age of the witness during the interview
- psychological state of the witness
- time spent since the event
- geographical origin of the witness
- knowledge of avalanche and snow
- lack of a precise knowledge of study area
- regular or partial observation of the events
- interest for mountain
- personal interest, neighbourhood
- possible contradiction during the interview
- partial information : for example avalanche known by witness without direct observation

Uncertainties linked to the investigator's work:
- knowledge of the territories by the investigator (local names)
- comprehension of phenomenon and experience in investigation
- work map support
- investigation period compared to last phenomenon

The combination of different uncertainties leads the investigator to meet other persons in order to confirm or to infirm the doubts he get during the previous interview. So far, the investigator has had to evaluate himself the quality of the testimonies to know if it's necessary to keep on investigating. The tool of evaluation will also be a help for him to take the good decisions.

4 Organisation of criteria for the evaluation and scale of notation

4.1 Criteria defining

From the uncertainties firstly defined, it is possible to extract an evaluation tool about

the quality testimonies. The criteria have to be defined clearly to obtain an efficient tool.

The first category of criteria will concern the general testimony. Usually, a witness gives much information about many avalanches. But here, the subject is the witness. That is why we will evaluate the information in general. The second category of criteria is interested in the witness properly. The last category of criteria, introduces the relationship between the testimony collected and the other information about avalanche the investigator has found in a preamble work.

The 3 axis of reflection are:
- The Testimony
- The witness
- Relationship with other information

4.2 Methodology of evaluation used

It has been decided to give a mark for each criterion; between -2 and 2. It is necessary to choose the good interval of marking for each criterion. In fact, each criterion will not have the same influence in the testimony quality. Some criteria can only be negative in the global qualification, for example, it's the case when the witness is contradictive. It can only be negative for the general feeling of the witness. Otherwise, some criteria can only be positive for the evaluation, which is the case when the witness gives some pictures or written proofs. This really supports his testimony.

The following grid (figure 1) exposes the criteria chosen and the window of marking for each one:

Testimonies quality	-2	-1	0	1	2
Collected information					
Time precision	●━━━━━━━━━━━━━━━━━━●				
Space precision	●━━━━━━━━━━━━━━━━━━●				
Operational avalanche site / working of the avalanche events	●━━━━━━━━━━━━━━━━━━●				
Mapping used		●━━━━━━●			
Visited, frequented areas in winter time	●━━━━━━━━━━━━━━━━━━●				
Witness					
Age during the avalanche event	●━━━━━━━━━━━━━━━━━━●				
Age during the interview		●━━━━━━━━━━━━━━●			
Time distance from the event	●━━━━━━━━━━━━━━━━━━●				
Professional			●━━━━━━━━━●		
Knowledge of the territories		●━━━━━━━━━━━━━━●			
Knowledge of avalanches an snow			●━━━━━━━━━●		
Presence on territories		●━━━━━━━━━━━━━━●			
Experience on field (specially in winter)			●━━━━━━━━━●		
Sizes evaluation		●━━━━━━━━━━━━━━●			
Interests in mountain life.		●━━━━━━━━━━━━━━●			
Contradiction	●━━━━━━━━━●				
Personnal interest, neighbourhood	●━━━━━━━━━━━━━●				
Relationship between collected information					
Testimonies from other witnesses		●━━━━━━━━━━━━━━●			
Written Datas		●━━━━━━━━━━━━━━●			
Pictures			●━━━━━━━━━●		

Figure 1: Criteria chosen and scale of value for each

An addition of the marks founded for each criterion give a general mark between -22 and +36. The testimony will be qualifying with the help of the following grid:

Mark			
-22 to -11	-10 to 0	1 to 15	16 to 36
Bad	Average	Good	Excellent

Figure 2: classification of testimony by mark

5 Limits of this tool

The purpose of this tool is to give an objective mark to a testimony. Nevertheless, it seems that a part of subjectivity is remaining. At the end of the interview, the investigator has his idea about the interviewed witness. If an other investigator had made the interview, the general impression may have been probably different. That is why we can imagine that the final mark would probably be different for each investigator. However, the difference of marks would be very small, but all the Cemagref investigators will have to test this evaluation tool in order to approve or disapprove it.

Otherwise, this tool may be useful in different situations during the investigation. It could be a guideline for a new investigator or it could explain the CLPA approach to the local actors.