

MOUNTAINOUS AREAS NATURAL HAZARDS OBSERVATORY

THE RTM – EVENTS DATABASE

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INTRODUCTION

Organising our knowledge of natural hazards, based in particular on past events, is one branch of the Government's prevention policy.

The Office National des Forêts, via its RTM (Restauration des Terrains en Montagne / Restoration of Mountain Territories) departments, produces and organises the data collected on the various natural hazards from 11 mountain departments (french administrative entity ; 6 in the Alps and 5 in the Pyrenees).

These data concern :

- the description and location of "sites" exposed to hazards in the mountains: avalanches, torrential flash floods and other flooding, and various terrain movements (rockfalls, landslides, etc.). The sites are linked to the commune concerned (sometimes several communes).
- the description of the "events" which occurred there, along with their impacts, if necessary detailed for each commune concerned.
- the description of the protection "systems" and "structures" located on these sites.

One key objective of the DataBase (DB) is to provide information for studies and expert to a broad audience: Government departments, private consulting firms, elected officials and the general public, via a website (data placed on-line).

CONTENT OF THE DATABASE

To date, the RTM DB contains:

- more than 30,000 events, linked to nearly 10,000 sites, out of the 15,000 sites listed in the French Alps and Pyrenees). 600 of those events date back to 1700 and earlier
- nearly 19,000 protection structures, among which 17,000 are controlled by the Government.

USES OF THE "EVENTS" DATABASE

The advantage of having such a database at hand is mainly related to:

- an easy, fast, and rather comprehensive access to the historical data linked to a given location
- new possibilities for data searching, on the basis of criteria other than the location
- new possibilities for large scale statistical processing linked to the codification of numerous criteria

The on-line Database

It offers:

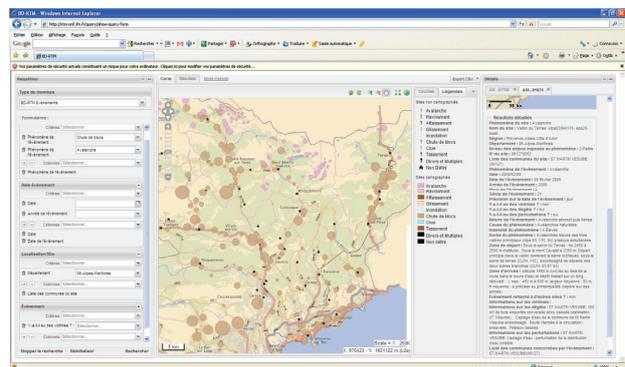


Fig.1 Printscreen of a website consultation

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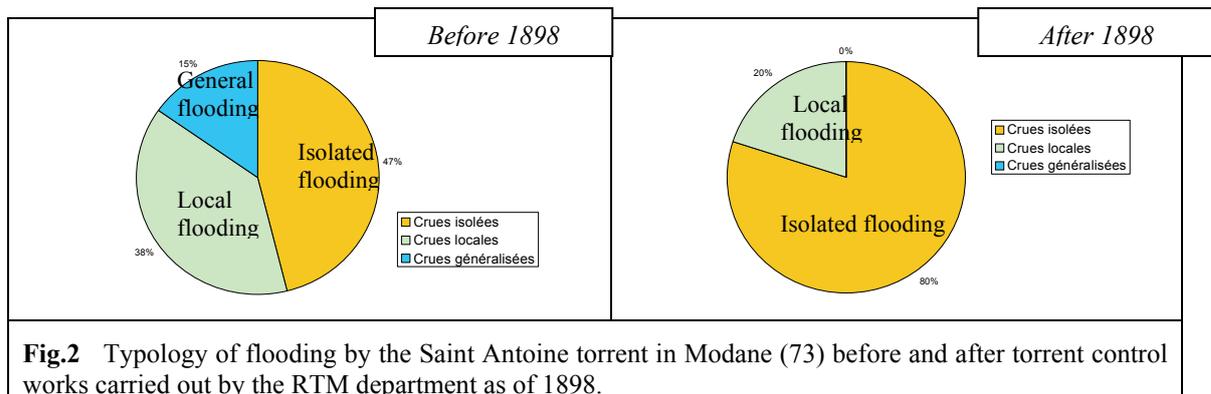
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- a search module using various site and event description criteria,
- a cartographic display of the sites concerned by the search result,
- data in table format (exportable),
- a detailed data sheet for on-screen consultation, with all information about the event.

Examples of uses of the data

- Study of torrential flash-flooding phenomena which have historically impacted transport infrastructures in the French Alps, as part of the Interreg Espace Alpin "Paramount" project. The data has been processed in 2011, using the impacts described in the base. Initially, the data to be analysed concern 5,300 torrential events on 4,200 sites.
- Implementation of the European "Flood" Directive – Step 1: Preliminary Assessment of the Flooding Risk. For this step, on a regional scale, the DB allows an overall analysis of the number of events which had an impact on the territory of the communes, and above all draws attention to major events which merit more detailed analysis.
- An example of help with survey of rockfalls :
On a site without its own historical data, analysis of data concerning neighbouring sites and with a similar geological context made it possible to define the angle value to be adopted for application of the energy line method, in order to determine the maximum extension zone for the rockfalls liable to occur.
- Hydrology applications :
The "events" DB has many applications for torrential hydrology.
For a given study, it can for example be used to define the typology of the rain showers causing the damaging floods known in a given catchment basin, according to the number and location of the sites affected, potentially at the same time (see figure 2).



Many other uses are available, with the help of data computing, as for example:

- ⇒ pinpointing the area of any particular event inside broader areas
- ⇒ underlining the links between events or catchment areas when reacting to one given weather event
- ⇒ linking different natural hazards, like floods and landslides... and so forth

The experience drawn from the making up and processing of this database allows us to put forth advice when creating such a base, particularly when choosing among parameters or codifying them.

Keywords: observatory, Database, expert appraisals, natural phenomena, natural disasters