SEMIAUTOMATIC ADJUSTMENTS OF THE AVALUATOR FOR SIDECOUNTRY TRIPS IN THE PYRENEES

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ABSTRACT: We present an adaptation of the Avaluator to obtain safety recommendations for sidecountry trips. We zoned with ATES and set a list of trips in two Catalan ski resorts. Every trip was split in sections depending on altitude and aspect bands. This gave us more precision in obtaining a level of avalanche hazard for each section before applying the Avaluator. This method brought good results but evidenced a number of weaknesses. These weaknesses are what we want to discuss with the community.

KEYWORDS: ATES, Avaluator, semiautomatic recommendations, Pyrenees.

1. INTRODUCTION

Snowshoeing and ski touring activities are becoming popular in the Pyrenees. While some recreationists are experienced, others are new to the mountains and come to ski resorts and surroundings looking for safety. This brings challenges to these areas as professionals try to guarantee the safety of both user profiles and, at the same time, make a business of this new interest. In order to accommodate the new visitors, some trips were signposted inside and around the ski resorts. In this paper, we present an adaptation of the Avaluator to obtain safety recommendations for sidecountry trips.

2. METHODOLOGY AND RESULTS

First of all, we zoned with ATES and set a list of snowshoeing and ski touring trips around two Catalan ski resorts (Tavascan and Boí-Taüll). In order to offer updated safety information, we issued remote recommendations for every trip three days per week during the last winter. All this information was available online and in the trailhead panels. These recommendations are a product of The Avaluator but we made some adjustments to give more accurate advice.

The official bulletin for the region (Institut Cartogràfic i Geològic de Catalunya) offers a spatial distribution for the avalanche hazard. This is why every trip has been split in sections taking into account elevation and aspect bands. The key is to give a level of hazard to every section before applying The Avaluator. We assumed that the aspects and elevation which are not highlighted in red in the hazard distribution graphic have one avalanche hazard level less than the regional level given for the area (Tbl.1).

We show here the area of Tavascan Ski Resort and how we offer the information to the recreationists (Fig.1). We chose 8 trips leading to 4 different summits. The sidecountry was classified in three terrain classes (ATES) and we gave a terrain class for every trip. The size of the all area is around 850 hectares. Tavascan ski area was marked in grey. A challenging avalanche control is performed in this ski operation.

After obtaining the recommendations, we use our local knowledge and snow observations from patrollers to go over the results again. At this stage, we pay close attention to the distribution of the snow on the terrain. Wind is present most of the time and its local effect can erode slopes and ridges and accumulate in certain prone places. In some cases, we decrease or increase the level of our preliminary recommendation because we know local wind effect is not reflected in the regional avalanche bulletins.

All this process is done remotely by an avalanche forecaster using all the information mentioned and checking webcams and weather stations. Every Friday, Saturday and Sunday we issue one Avaluator recommendation for every trail section. We update this information at 8.00 in the morning adding color magnets on trailhead panels and modifying the interactive map on the web.

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Fig. 1: Topographic map with ATES zones and winter trips. We signposted two travel options for every summit (e.g. trip1 and trip 1A).

Tbl. 1: Campirme trail has been split up in three sections. The first one (challenging) gets to Pla de Meli and has a safer alternative skinning up inside avalanche control area. Section 2 (simple) reaches Mascarida lake and the last one (simple) leads us to the summit crossing a short band of challenging terrain to reach the pass. We have characterized every section in terms of elevation and aspect following the distribution hazard graphic format used in the bulletins. For a given day, every section has a certain level of avalanche hazard depending on its distribution. Consequently, every section has its own Avaluator recommendation.

<table>
<thead>
<tr>
<th>Sections of trip 2 (Campirme)</th>
<th>Terrain class</th>
<th>Elevation band (m)</th>
<th>Aspect band</th>
<th>Distribution hazard graphic example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refugi-Pla de Meli</td>
<td>Challenging</td>
<td>1600-2200</td>
<td>S, SE</td>
<td></td>
</tr>
<tr>
<td>Pla de Meli-Estany de Mascarida</td>
<td>Simple</td>
<td>2200-2600</td>
<td>N, NE</td>
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<tr>
<td>Estany de Mascarida-Campirme</td>
<td>Simple</td>
<td>2200-2600</td>
<td>NW, NE</td>
<td></td>
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</tbody>
</table>
3. DISCUSSION AND CONCLUSIONS

So far, this tool has become an interesting product for people with low and intermediate level of winter mountain skills. In our opinion, these semiautomatic adjustments improve the avalanche information without investing in a local forecast. However, some weaknesses have been detected. We mention them as follows:

In terms of applicability, we think we need more time to reach more people to come to solid conclusions. ATES is still not very well known in our mountains and this weekly safety recommendation method has been running just during the last winter.

In terms of technical considerations, we list below the main handicaps we found:

- Zoning ATES in a small area like the sidecountry of a ski resort makes you aware of the importance of the scale. We doubted many times if we detailed too much due to the existence of trails in certain places (e.g. some narrow corridors along trails classified as simple class and surrounded by challenging terrain).
- Rating trails, we ideally would like to obtain a varied list of trails in terms of avalanche exposure. That would give the recreationist the possibility of choosing safety routes in most levels of avalanche hazard. After the preliminary classification, we found ourselves trying to rename as simple a trail that crosses a short band of challenging terrain, or giving class 2 to a trail that flanks complex terrain just at the very end of the path. After checking references and using our local knowledge and common sense, we finally decided to zone the terrain using the new model and rating the trails using Model v.1/04. Even we read on references that both are equivalents, we found v.1/04 more permissible.
- Designing the new adjustments for the Avaluator recommendations, we figured out the best way to apply the avalanche bulletin to the different sections of the trails was to split them taking into account the elevation and aspect bands used in the hazard distribution graphic (8 aspects and 3 elevation bands: 1600m-2200m-2600m-3000m). At the same time, these sections must make local sense (e.g. section 1 starts from the refuge and reaches the lake; section 2 starts from the lake and reaches the summit). But reality and graphics do not necessarily match perfectly.
- As a more general consideration, we title the article using the word semiautomatic. Even though the Avaluator crosses hazard level and terrain class, we think that a local forecaster eye is essential for supervising the final recommendations. For this reason, the process is carried out remotely by an avalanche professional who knows the area in detail.

ACKNOWLEDGMENTS

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REFERENCES


Avalanche Terrain Exposure Scale (ATES). Rating and mapping guidelines. Canadian Avalanche Center.