Snow Avalanche Warning Services cooperation in Europe: EAWS

Enabling interoperability and standards for snow avalanche services in Europe

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Avalanche accidents are differentiated into 2 categories:

1- accidents in recreational settings, human triggered (95%)
2- accidents in residential, industrial, and transportation settings, spontaneous release.

Snow avalanches represent the major hazard in Europe’s mountain areas during winter.

Snow avalanches cause about 100 deaths in Europe per year on average.

Awareness of avalanche danger increased as a result of disasters:

In Switzerland in 1950. In the 70’ in ski resorts in France but in special during winter season 1998-1999 in the Alps affecting villages and roads: Galtür (AT) 31 fatalities, Montroc (F) 12 fatalities.

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Avalanche warning services are Governmental centers responsible for forecasting snow avalanches.
European Avalanche Warning Services

EAWS: was set up in 1983 with the aim:
- To achieve coordination between avalanche warning services
- To improve cross border cooperation and interoperability

EAWS is a non-government, not for profit organization dedicated to discuss and manage technical and operational snow avalanche forecasting issues for public avalanche safety purposes.

EAWS is composed by the public warning services in Europe (15 countries)

Biannual General Assembly and regular working group meetings.

EAWS MEETINGS TILL TODAY:
1983  München (D)
1985  Davos (CH)
1985  Innsbruck (A)
1986  Grenoble (F)
1991  Bozen (I)
1993  Wildbad Kreuth (D)*
1994  Davos (CH)
1995  Davos (CH)
1997  St. Christoph (A)
1999  Chamonix (F)
2001  Trento (I)
2003  München (D)
2005  Davos (CH)
2007  Starý Smokovec (SK)
2009  Innsbruck (A)
2011  Grenoble (F)
2013  Barcelona (S)*
2015  Rome (I)

Barcelona / Catalunya 2013

Wildbad Kreuth / Bayern 1993
VISION: coordinate the activities of the Avalanche Warning Services in Europe

MISSION:
➢ To deepen and reinforce an effective and continuous cooperation between services:
  ▪ establishing common codes and common operating methods
  ▪ better ways of exchanging data and information in order to enhance the production of avalanche forecasting thus minimizing risk
  ▪ providing a better communication and awareness
➢ To ensure an upward revaluation of Avalanche Warning Services’ work and their products
➢ To create and sustain the activities of a working group
➢ To hold a European meeting every two years
## EAWS ACHIEVEMENTS

### EUROPEAN AVALANCHE DANGER SCALE

<table>
<thead>
<tr>
<th>Danger level</th>
<th>Icon</th>
<th>Snowpack stability</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 - Very high</td>
<td><img src="image" alt="Icon" /></td>
<td>The snowpack is poorly bonded and largely unstable in general.</td>
</tr>
<tr>
<td>4 - High</td>
<td><img src="image" alt="Icon" /></td>
<td>The snowpack is poorly bonded on most steep slopes.</td>
</tr>
<tr>
<td>3 - Considerable</td>
<td><img src="image" alt="Icon" /></td>
<td>The snowpack is moderately to poorly bonded on many steep slopes*.</td>
</tr>
<tr>
<td>2 - Moderate</td>
<td><img src="image" alt="Icon" /></td>
<td>The snowpack is only moderately well bonded on some steep slopes*, otherwise well bonded in general.</td>
</tr>
<tr>
<td>1 - Low</td>
<td><img src="image" alt="Icon" /></td>
<td>The snowpack is well bonded and stable in general.</td>
</tr>
</tbody>
</table>
EAWS ACHIEVEMENTS

Access to all avalanche reports in Europe

www.avalanches.org
HARMONIZING AVALANCHE REPORTS

Hierarchical information in Avalanche reports

- **1st level**: most important, easy to keep (danger rating)
- **2nd level**: what, where, how,
- **3rd level**: avalanche assessment, snowpack, weather & trend (text),
Bavarian matrix distinguish:

- spontaneous release
- Non spontaneous (human triggered- additional load)
USING SAME AVALANCHE SIZE SCALE: According to potential damage and runout length

Avalanche Sizes – *Size 5*
DEFINING STANDARD TYPICAL AVALANCHE-SITUATIONS

5 avalanche problems

- New snow
- Drifting snow
- Wet snow
- Old snow
- Gliding snow

1 favourable situation
- Favourable sit.
ALLOWING ON LINE TOOLS - SnoProfiler

Using IACS standards
International Association of Cryospheric Sciences
International Classification seasonal snow on the ground
Snow Grain Photo Library
VISUALIZATION TOOLS: Snow & weather automatic stations
REPORTING AVALANCHE INCIDENTS: Fatal accidents from all over Europe
### Additional load

**Low additional load**
- individual skier/snowboarder, riding softly, not falling
- group with good spacing (minimum 10 m) keeping distances
- snowshoe

**High additional load**
- two or more skiers/snowboarders etc. without good spacing (or without intervals)
- snow machine
- explosives
- occasionally single hiker / climber

### Altitudes

Area within certain altitude ranges (accuracy ± 100 m)
- high alpine regions: over 3000 m above sea level
- high altitude: 2000 to 3000 m above sea level
- intermediate altitude: 1000 to 2000 m above sea level
- low altitude: below 1000 m above sea level

### Amount of fresh fallen snow
NEW MEDIA: SnowSafe app

Features

Regions Overview
The maps overview gives you a good idea of the general situation in your area of interest. The phone’s GPS function shows you to which avalanche jurisdiction your current location relates.

Avalanche information in your pants pocket
With SnowSafe you can make better-informed decisions while in the mountains. SnowSafe provides you with the official avalanche information at your fingertips. The application automatically fetches avalanche report bulletins and updates from the official avalanche warning services of the regional governments. Information is presented using concise and easy to understand internationally recognised warning symbols.

For advanced users and Freeride experts
Advanced users will appreciate the full avalanche bulletin which includes all detailed and official information. It is presented in an easy-to-read to empower your judgement, even on the go. For even more information, SnowSafe presents direct links to the hotlines and websites of the respective government agencies. SnowSafe synchronizes the avalanche bulletins automatically as soon as network conditions permit and stores the information on your phone.

Inclinometer
Experts know that the inclination of a line has important impact on avalanche risk. SnowSafe’s built-in inclinometer allows you to measure any line’s inclination in order to make better-informed risk decisions.

Mobile Avalanche Information
Mountains
A truly helpful Android™ and iPhone™ application for ev mountains. Perfect for freeriders, snowboarders, skiers helps you better understand and evaluate the avalanche avalanche bulletin updates of the governmental avalanche.
THE XML STANDARD OF THE EAWS: CAAML

CAAML (Canadian Avalanche Association Markup Language) is a standard for the electronic representation of information pertinent to avalanche safety operations. Adopted from 2009 by EAWS

By building on existing Internet standards, CAAML expresses avalanche related information in a way that can easily be shared over World Wide Web.
CONCLUSIONS

1- EAWS provides advantages for forecasters: ensures precise comparisons with neighboring regions, facilitates international exchange of experiences, assures a continuous process of evolution for the forecasting techniques.

2- EAWS provides advantages for users: Website to find all the snow avalanche forecasts with the same danger level scale; provides international standard of quality for the forecasting products; common glossary with long-lasting definitions; provide wide ranging of information and publications.

3- The more advantages for professionals/forecasters derived in more accurate infos, more accessible from different media and easy to keep in mind so The more advantages for users with the aim of saving lifes in the mountains by means of forecasting and warning.

THANK YOU FOR YOUR ATTENTION!