

Avalanche accident parameters

Avalanche accident data are a central element of avalanche warning services, avalanche courses, avalanche statistics and further avalanche safety initiatives. In an effort by EAWS to provide uniform data, the parameters of avalanche accident data are defined below.

Only avalanches with damage to persons are focused on and described here. Avalanches with other damage, e.g. material, economic or to the ecosystem are not covered by this definition. As AWS, the focus is on the location of the accident, the description of the avalanche itself including the triggering processes as well as the associated daily operational avalanche bulletin and any other communications issued by the AWS.

The information is structured as following:

1. Basic data of the avalanche
2. Characteristics of the avalanche
3. Geographical data of the avalanche
4. Starting zone
5. Track and Deposit zone
6. Groups
7. Victims
8. Avalanche danger description
9. Links with other databases

Explanations:

- Points means that only one option can be chosen
- Squares means that multiple options can be chosen

Light green are the most important fields to collect in the EAWS.

1. Basic data of the avalanche - incident

Field	Format	Options	Description
Date of triggering	Timestamp	[yyyy-mm-dd]	On what date was the avalanche triggered?
Time of triggering	Timestamp	[hh:mm]	At what time was the avalanche triggered? (with timezone information)
Accuracy of date and time of triggering	Dropdown	• exact • ± 15 min • ± 30 min • ± 1 h • ± 2 h • ± 4 h • ± 6 h • ± 12 h • ± 1 d • ± 2 d • ± 3 d • unknown	This field can be used to specify the accuracy of the date or time of the avalanche.
Source of information	Text		Who observes the following avalanche data? AWS /Professional rescue/ General Public/ Media/Community website/Social network /etc
Comment	Text		For further information

2. Characteristics of the avalanche

Field	Format	Options	Description
<i>Avalanche specification</i>			
Avalanche type	Dropdown	• slab avalanche • loose snow avalanche • gliding avalanche • unknown	What was the type of avalanche? For mixed forms choose the more relevant.
<i>Avalanche dimension</i>			
Avalanche length	Digit	[meters]	How long is the avalanche measured from the highest point of the fracture line to the lowest point of the deposition?
Avalanche width (only for slab, glide av.)	Digit	[meters]	How width is the avalanche at its release area?
Avalanche size	Dropdown	• size 1: small • size 2: medium	Size of the avalanche as defined in EAWS glossary

		- size 3: large - size 4: very large - size 5: extremely large - unknown	
<i>Snowpack</i>			
Weak layer location	Dropdown	- within new and drifting snow - at the transition to old snow - in the old snow - in old snow close to the ground	<i>within new and drifting snow: Weak layer within the new and drifting snow layers of the current snowfall/deposition period.</i> <i>at the transition to old snow: e.g. snow-covered surface hoar frost or angular crystals of the snow-covered old snow surface that have been transformed by building up.</i> <i>in the old snow: Weak layer in the middle or upper part of the old snow cover, e.g. snow-covered surface hoar or weak layers in the area of crusts.</i> <i>in old snow close to the ground: weak layer in the lower part of the old snow, e.g. angular crystals that have been transformed by building up. After avalanches, the ground often comes to light.</i>
Type of grain in the weak layer – in cases with slab avalanches		- Precipitation Particles - Decomposing and Fragmented precipitation particles - Rounded Grains - Faceted Crystals - Depth Hoar - Surface Hoar - Melt Forms - Unknown	<i>What was the grain type in the weak layer that caused the avalanche?</i>
Avalanche stepped down into old snow layers	Dropdown	- Yes - No	Did the avalanche step down into old snow layers?
<i>Triggering</i>			
Trigger type	Dropdown	- natural - person - preventing control - vehicle - other - unknown	<i>Natural: Triggering of an avalanche without additional artificial load (such as by person or blasting) on the snowpack</i> <i>Person: Triggering of the avalanche by one or more persons</i>

			- Preventing control: Triggering of the avalanche by explosives (regardless of the method) - Vehicle: Triggering of the avalanche by a vehicle (e.g., snow groomer, snowmobile) - Other: Triggering of the avalanche by other influences such as by animals, by a glacier collapse, cornice or another avalanche. - Unknown: It is not known or unclear how the avalanche was triggered
Trigger type person detail (load) (only apply if trigger type = "person")	Dropdown	- ski - snowboard - Snowshoe - Foot - other [text]	What was the load? Who triggered the avalanche? What did the person wear when triggering?
Trigger type vehicle detail (only apply if trigger type = "vehicle")	Dropdown	- snow cat/ snow groomer - snow mobile - other [text]	
Trigger type explosives detail (only apply if trigger type = "preventing control")	Dropdown	- hand-charge - helicopter detonations - dropping or lowering from cable car - professional avalanche control system - other [text]	
Remote triggering		- yes - no	
Comment	Text		For further information

3. Geographical data of the avalanche

Field	Format	Options	Description
<i>Location</i>			
country	Dropdown	[All countries]	In which country did the avalanche happen?
District/Town	Text		In which district/town or smallest administrative unit of the country did the avalanche happen?

Peak/Mountain range	Text		Near which peak of which mountain range did the avalanche happen?
Coordinates	Digits	[WGS84 Decimal Degrees]	Which coordinates does the starting zone of the avalanche have?
Accuracy of coordinates	Dropdown	▪ exact ▪ ± 15 m ▪ ± 30 m ▪ ± 100 m ▪ ± 250 m ▪ ± 500 m ▪ ± 1 km ▪ ± 2 km ▪ ± 5 km ▪ ± 10 km ▪ ± 20 km ▪ ± 50 km ▪ unknown	This field can be used to specify the accuracy of the coordinates given
Comment	Text		For further information

4. Starting zone

Field	Format	Options	Description
<i>Starting zone (Sector of terrain where avalanche releases.)</i>			
<i>Fracture line (upper most part of the starting zone; remaining boundary of a slab av.)</i>			
Altitude starting zone	Digits	[meters]	What is the altitude of the start point of the starting zone [m a.s.l.]
Gradient of starting zone	Digits	[degree] 0-90	What is the slope angle of the starting zone?
Aspect of the starting zone	Dropdown	• N • NE • E • SE • S • SW • W • NW	What is the aspect of the starting zone?
Terrain of the starting zone	Dropdown with text option	▪ bowl ▪ couloir ▪ crest near ▪ forest ▪ glacier ▪ open slope ▪ ridge ▪ rock extreme terrain ▪ rock face foot ▪ wood path	What is the terrain of the starting zone?

		- Lee slopes - ice waterfall - other [text]	
Height of fracture line, Average	Digits	[centimeters]	How deep is the fracture depth? Slab thickness at the fracture line, measured vertically. Average
Height of fracture line, Maximum	Digits	[centimeters]	How deep is the fracture depth? Slab thickness at the fracture line, measured vertically. Maximum
Height of fracture line, Minimum	Digits	[centimeters]	How deep is the fracture depth? Slab thickness at the fracture line, measured vertically. Minimum.
Avalanche moisture	Dropdown	- dry - wet - unknown	How was the snow of the avalanche in the release area?
Comment	Text		For further information

5. Track and Deposit zone

Field	Format	Options	Description
<i>Deposit zone</i>			
Altitude of the deposit zone	Digits	[meters]	What is the altitude of the lowest point of the deposition [m a.s.l.]
Deposit height	Digits	[cm]	What is the maximum height of the deposit?
Deposit width	Digits	[meters]	
For further information on the deposit.	Text		
<i>Debris</i>			
Debris type	Dropdown with text option	- fine - blocks - hard - soft - rocks - trees - unknown	What is the debris type?

		▪ other [text]	
Debris density	digits	[kg/m ³]	How dense is the debris?
Avalanche moisture in deposit zone	Dropdown	• dry • wet • unknown	How was the snow of the avalanche in the deposit area?
<i>Terrain</i>			
Terrain trap	Dropdown	• yes • no	Features, that amplify the consequences of getting caught in an avalanche, either by increasing the burial depth or by causing traumatic injuries.
Terrain trap type	Dropdown with text option	▪ trees ▪ cliffs ▪ gullies ▪ unknown ▪ other [text]	What type do the terrain trap has?
Comment	Text		For further information

6. Groups

<i>Field</i>	<i>Format</i>	<i>Options</i>	<i>Description</i>
Group size	Digits		Total number of people close to the avalanche (could potentially have been caught)
Number of groups	Digits		What is the number of groups involved?
Leaded group/guided group	Dropdown	• yes, IFMGA guide • yes, other • no • unknown	
Comment	text		for further information

7. Victims

<i>Field</i>	<i>Format</i>	<i>Options</i>	<i>Description</i>
Number of fatal(s)	Digits		
Number of injured	Digits		Number of persons injured but survived.
Number of caught	Digits		Total number of persons caught in the avalanche/ in contact with moving snow masses.
<i>Only free terrain</i>			

Free terrain activity	Dropdown with text option	▪ backcountry skiing/snowboarding ▪ mountaineering/climbing ▪ snowmobiling ▪ hiking on foot ▪ snowshoeing ▪ cross country skiing ▪ ice climbing ▪ sledging ▪ other [text]	Which activity was the person doing?
Travel direction just before avalanche	Dropdown with text option	• ascending • descending • stationary • traversing • moving on peaks/ridges • snowmobile high marking • crossing run outs • other [text]	
Experienced in avalanche terrain		• yes • no • unknown	Were those involved well experienced in avalanche terrain?
Knowledge of the area	Dropdown with text option	• poor • just read about the area • been in the area • been on this mountain before • been on this mountain many times before • unknown • other [text]	How knowledgeable of this area was the group/person?
<i>Only controlled terrain</i>			
Location type of controlled terrain	Dropdown with text option	• indoor/ inside building • street • train track • ski area resort • cross country track • sledging track • other [text]	
Closed area	Dropdown	• yes • no	Was the "controlled terrain type" closed?
#travel type on street	Dropdown	• by car • by bus • by foot • by bike • by train • snow plower	If secured area incident site type=street, choose
#travel type in ski area	Dropdown with text option	▪ on piste skiing/snowboarding ▪ off piste skiing/snowboarding ▪ ski lift ▪ hiking on foot ▪ snowshoeing ▪ Snowmobiling/snowcat	If secured area incident site type=ski area, choose

		▪ Piste machine ▪ other [text]	
Comment	Text		For further information

a. Victim (for each person)

<i>Field</i>	<i>Format</i>	<i>Options</i>	<i>Description</i>
Fatal	Boolean	▪ yes ▪ no	
Injured	Boolean	▪ yes ▪ no	
Caught	Boolean	▪ yes ▪ no	
Degree of burial	Dropdown with text option	▪ caught only, not buried ▪ partially buried – non-critical (airways above surface) ▪ partially buried - critical (airways below surface) ▪ completely buried ▪ other [text]	
Burial depth	Digits	[cm]	Burial depth of the head of the victim
Burial duration	Timestamp	[dd:hh:mm]	How long was the victim buried?
Respiratory cavity	Dropdown	▪ Yes ▪ no	Had the victim a cavity to breath?
Rescued by	Dropdown with text option	▪ self ▪ companion ▪ other group ▪ organized rescue ▪ unknown ▪ Other[text]	
Rescue devices type	Dropdown	▪ transceiver ▪ probe ▪ visible ▪ observation ▪ calling ▪ dog ▪ recco ▪ shoveling ▪ snow melt	
<i>Necessary for: free terrain, controlled terrain, building</i>			
Personal information: Gender	Dropdown	[Gender]	
Personal information: Age	Digits	[years]	

Local or visiting	Dropdown	• local, living in the region • visiting from same country • visiting from foreign country • unknown	Is the person visiting or living in the area?
<i>Only free terrain</i>			
transceiver		• on • off • none • unknown	
shovel		• yes • No • unknown	
probe		• yes • No • unknown	
airbag		• deployed • undeployed • none • unknown	Was the person wearing an airbag and was it deployed?
If use of Airbag; Was it useful?		• Yes • No • Unknown	Did the person save her/his life or got less injured?
Comment	Text		For further information

8. Avalanche danger description

Field	Format	Options	Description
Avalanche danger description: description of avalanche situation			
Accident outside forecast areas	Dropdown	• yes • no	Was the location of the avalanche outside a forecast area?
Daily avalanche bulletin in effect	Dropdown	• yes • no	
Avalanche danger level/rating	Dropdown	• 1 • 2 • 3 • 4 • 5	Avalanche danger rating in the latest bulletin issued and valid for the time of the accident.
Name of the avalanche region or micro-region	Text		Name of the avalanche region from the AWS point of view
Other Avalanche warning	Dropdown	• Meteoalarm CAP format yellow • Meteoalam CAP format orange • Meteoalarm CAP format red	Other avalanche bulletins or warnings

		- specialized bulletin dedicated to authorities - Other [text]	issued by AWS than daily avalanche bulletin
Comment	Text		For further information
Avalanche problem as EAWS defined: https://www.avalanches.org/standards/avalanche-problems/			
forecast avalanche problem 1	Dropdown	- New snow loose - New snow slab - Windslab - Persistent weak layers - Wet snow loose - Wet snow slab - Gliding snow - Cornices - No distinct avalanche problem	What was the first forecast avalanche problem?
forecast avalanche problem 2	Dropdown	- New snow - Windslab - Persistent weak layers - Wet snow - Gliding snow - Cornices - No distinct avalanche problem	What was the second forecast avalanche problem?
forecast avalanche problem 3	Dropdown	- New snow - Windslab - Persistent weak layers - Wet snow - Gliding snow - Cornices - No distinct avalanche problem	What was the third forecast avalanche problem?
Comment	Text		For further information

9. Links with other databases

Field	Format	Options	Description
Link with other avalanche databases	Dropdown	- yes - no	
# Other databases and avalanche id related	Text	- database1 [text] Avalanche Id [text] - database2 [text] Avalanche Id [text] - database3 [text] Avalanche Id [text] - Database 4 [text] Avalanche Id [text] - Database 5 [text] Avalanche Id [text]	If link with other databases yes Can be ICAR or any international avalanche database.
Comment	Text		For further information