

THE NEW SAIS AVALANCHE REPORT FORMAT

Background

In April 2009 a Snow and Avalanche Foundation of Scotland (SAFOS) seminar took place with the objective of providing an open forum where the SAIS service and in particular the provision of avalanche forecasting in Scotland could be publicly reviewed

The following aims and objectives were covered ;

- Report on the activities of the sportScotland Avalanche Information Service and recent innovations in the provision of avalanche information.
- Opportunity for users of the avalanche forecast to interact directly with avalanche forecasters.
- Discuss the content of information delivered by the SAIS.
- A discussion of current and planned methods for the delivery of the avalanche forecast and to consider how it can be best delivered to differing target groups; and to bring together those who use the avalanche forecast on a day to day basis.

The meeting was attended by a spectrum of mountain users which included; climbers and walkers, mountaineers, international mountain guides, instructors, mountain rescue, police rescue, National outdoor centres, SAIS personnel, ski patrol, Met office and MWIS weather forecasters.

Review of the existing SAIS report format

The current snow and avalanche report format (see below) was presented and discussed.

SNOW AND AVALANCHE REPORT NORTHERN CAIRNGORMS

AVALANCHE HAZARD WED 04/03/2009

It has been a calm, clear and sunny day on the tops. Fresh soft snow covers most aspects mainly above 600m and has drifted to form deep accumulations in sheltered locations. Most deposits have formed on steep lee aspects mainly above 950 metres on North through East to South-East slopes and here the soft snowpack contains weak layers and is moderately stable. Cornices remain unstable. The avalanche hazard is Considerable (Category 3)

AVALANCHE HAZARD OUTLOOK THU 05/03/2009

Overnight it will be generally dry but snowfall will develop from the West and continue in the day. The winds will be West then strengthening North-Westerly in the day with a freezing level of 400 metres. New snowfall and drifting snow will continue to form weakly bonded windslab on North-East through East to Southerly aspects mainly above 800 metres where avalanches are likely. Corrie rims, gully exits and flanks in North facing corries will be cross loaded. The avalanche hazard will be Considerable (Category 3)

CLIMBING CONDITIONS

SNOW DISTRIBUTION: Fresh deep snow on most aspects above 600 m
ICING: Scoured on NW to W aspects
COMMENT: Remaining cold with more snow .

Observations on the existing SAIS report format and the provision of information

- That the SAIS **website** provided a variety of good information (Blogs, photos, winter condition reports) for the mountain user and that this attracted users to the snow and avalanche report.
- The snow and avalanche **report** provided good and relevant information for the winter mountain user.
- That the user had to study the report carefully in order to identify and select the relevant and pertinent information from the text. (see highlighted text)
- That often, the user only retained the hazard rating number.
- If the report was complex it reduced the amount of time spent on interpretation by the user.
- That if the Hazard rating number was used without reference to the situation on the ground the number gave a false impression of the hazard.

Recommendations by the SAFOS seminar group

After group discussions and reviews of other Avalanche information providers worldwide, the following was recommended;

- That the report presentation appearance could be improved.
- That the report information be presented in a variety of ways and levels.
- A visual hazard rose would give a better understanding of snow hazard conditions in the mountain environment.
- That the hazard rating number should not be used and that only the words; low, moderate, considerable, high, very high be used in the reports.
- The hazard level could be related better to the avalanche probability so that the user understands the implication of a reported hazard level.
- That the established European Avalanche hazard scale - description and colours should be used.
- That terms use on the website report be highlighted and explained so that better understanding and educational opportunities could be achieved.

Developments - post SAFOS April 2009 seminar

The SAIS co-ordinator progressed the recommendations with continued group consultation, and web developers Hotscot.

The new SAIS report format will be launched at season start for the winter (2009/2010).

The new report incorporates the recommendation of the SAFOS seminar group and subsequent consultation.

The following are examples of the new format (download/email versions)

Northern Cairngorms - Issued 19/11/2009

Avalanche Hazard Forecast - FOR PERIOD 18:00HRS Thu 19/11/2009 TO 18:00HRS Fri 20/11/2009

Hazard Level	Avalanche Probability
Low	Natural Avalanches very unlikely. Human triggered avalanches not likely.
Moderate	Natural Avalanches unlikely. Human triggered avalanches possible.
Considerable	Natural Avalanches possible. Human triggered avalanches are likely.
High	Natural and Human triggered avalanches will occur.
Very High	Widespread Natural and Human triggered avalanches will occur.

Localized Avalanche Hazard

Forecasted Weather Influences

Overnight and during the day it is expected to be dry with moderate North then North-Easterly winds and a freezing level of 300 metres.

Forecasted Snow Stability and Avalanche Hazard

New accumulations of drifted snow will form weakly bonded windslab on South-East through South to Westerly aspects mainly above 900 metres, this will be in addition to the existing weak snowpack on East to South aspects above 900 metres where avalanches will occur. The avalanche hazard will be High

Demo Version - Winnovative Software Components

Observed Avalanche Hazard - Thu 19/11/2009

Observed Weather Influences

It has been a day of poor visibility, continual snowfall and moderate North-Westerly winds.

Observed Snow Stability and Avalanche Hazard

Accumulations of weakly bonded windslab have formed on North-East to Southerly aspects mainly above 800 metres. Field tests produced easy failures on a South-East aspect at 1120 metres on a weak layer of buried faceted grains. Surface cracks were also noted on a North-East aspect at 950 metres. Elsewhere the new snow is moderately bonded to the old snowpack. The avalanche hazard is Considerable.

Mountain Conditions	
Snow Distribution	Snow above 200m soft
Icing	Buttresses covered in fresh snow
Comment	Improving weather forecast for end of forecast period.

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Interpretation of the new SAIS avalanche report

The SAIS snow and avalanche report

There are 2 versions of the report; - web and download. They both have the same content but the web version has interactive elements.

The report consists of 4 main levels of information;

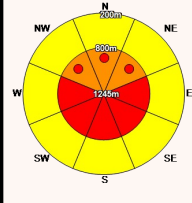
Download version

1. A visual forecast representation of hazards by aspect and altitude with hazard level / avalanche probability key.
2. A written forecast with weather influences
3. A written observed avalanche hazard with weather influence.
4. General mountain conditions

4

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Demo Version - Winnovative Software Components

Observed Avalanche Hazard - Thu 19/11/2009

Observed Weather Influences

It has been a day of poor visibility, continual snowfall and moderate North-Westerly winds.

Observed Snow Stability and Avalanche Hazard

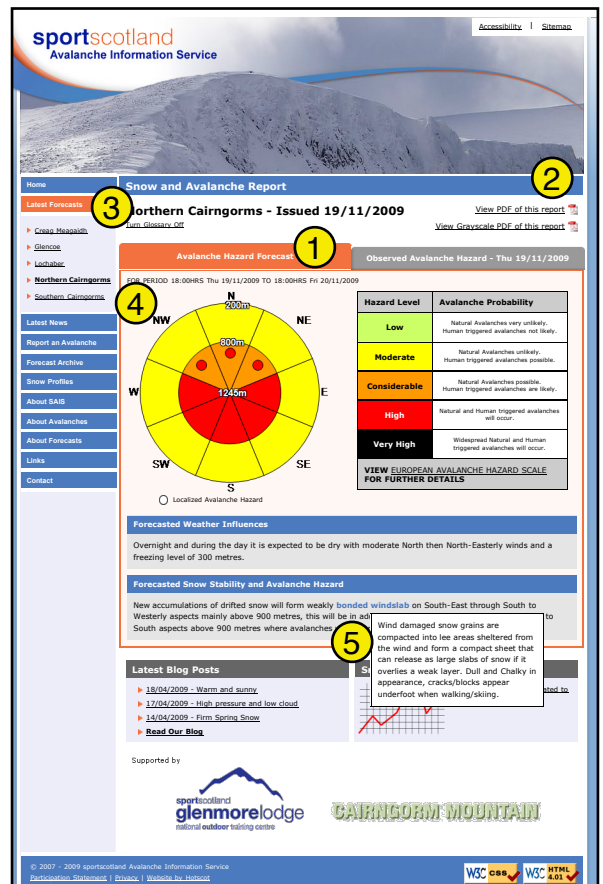
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Mountain Conditions

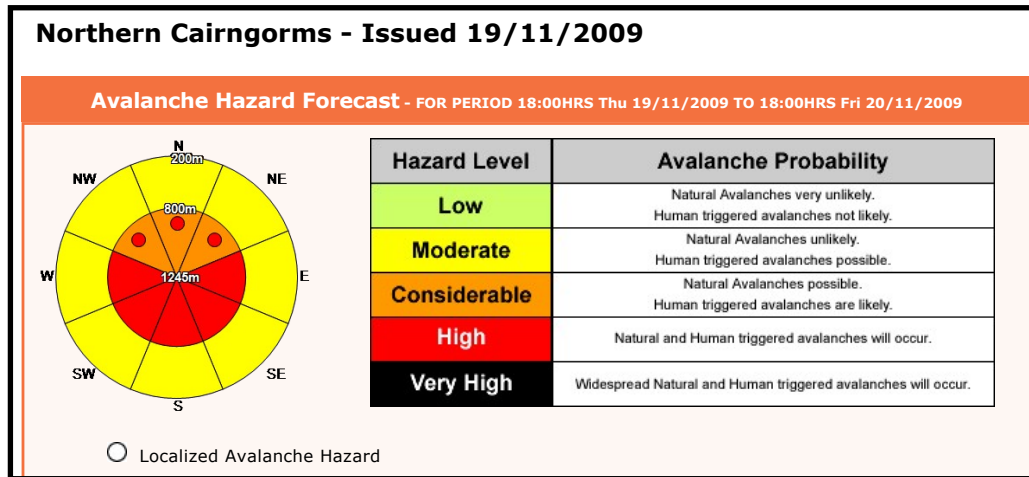
Snow Distribution	Snow above 200m soft
Icing	Buttresses covered in fresh snow
Comment	Improving weather forecast for end of forecast period.

Web version

1. The forecast hazard page and observed hazard page are presented one at a time using tabs
 2. Black and white and colour pdf versions of the report are downloadable.
 3. The report is issued on the date indicated at the top of the page.
 4. The Avalanche hazard forecast period extends from 18:00 hrs on the day of issue to 18:00hrs the next day (forecast day) This is on both report versions.
 5. Highlighted words (blue) indicate that an explanation is available and that a text box will appear when the mouse is over the highlight.
- 3 M Diggins - SAIS -Co-ordinator - Nov 2009. www.sais.gov.uk



1. The Visual forecast



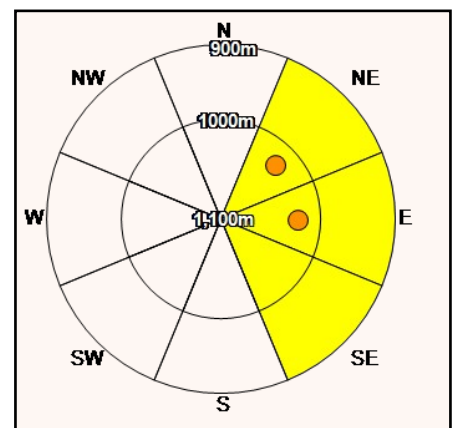
Interpretation

- The stated hazard is HIGH
- The snow line starts at 200 metres altitude
- Ascending above 200 metres the hazard level is moderate until the altitude of 800 metres is reached.
- above 800 metres on East, South-East, South and South-West aspects the hazard level is high and therefore natural avalanches will occur and a person would trigger an avalanche on these slopes.
- On North-West, North and North-East aspects above 800 metres the avalanche hazard is considerable but there are localized places where the hazard will be high, eg steeper slopes etc.
- Traveling in the mountains with a forecast such as this would require a good understanding of travel in avalanche terrain methods, particular slopes would be avoided by ascending /descending ridges or using techniques that avoid certain slopes. Additionally, reading the written reports would give an indication of wind scoured areas and other areas where travel remains possible. Good visibility would help you to make better route choices.
- All hazard forecasts require the user to interpret their own observations and continually assess the encountered situation

1. The Visual forecast - Example 2

Interpretation

- The stated hazard is CONSIDERABLE.
- The snow line starts at 900 metres altitude.
- Ascending above 1000 metres, the hazard level remains moderate up to the altitude indicated. (usually the highest point in the area).
- The snow only lies on North-East, East and South-East aspects above 900 metres - no other aspect has snow.
- In localised areas on North-East and East aspects above 1000 metres there are localised places where the hazard is Considerable.



2. The Written forecast

Forecasted Weather Influences
Overnight and during the day it is expected to be dry with moderate North then North-Easterly winds and a freezing level of 300 metres.
Forecasted Snow Stability and Avalanche Hazard
New accumulations of drifted snow will form weakly bonded windslab on South-East through South to Westerly aspects mainly above 900 metres, this will be in addition to the existing weak snowpack on East to South aspects above 900 metres where avalanches will occur. The avalanche hazard will be High

Interpretation

- The Forecasted weather influences text is now separated from the snow stability and avalanche hazard text
- More detail is available in the text forecast which gives a better picture of the situation likely to be encountered

3. The Written Observed Avalanche Hazard

Observed Avalanche Hazard - Thu 19/11/2009	
Observed Weather Influences	It has been a day of poor visibility, continual snowfall and moderate North-Westerly winds.
Observed Snow Stability and Avalanche Hazard	Accumulations of weakly bonded windslab have formed on North-East to Southerly aspects mainly above 800 metres. Field tests produced easy failures on a South-East aspect at 1120 metres on a weak layer of buried faceted grains. Surface cracks were also noted on a North-East aspect at 950 metres. Elsewhere the new snow is moderately bonded to the old snowpack. The avalanche hazard is Considerable.

Interpretation

- The information provided is a description of what was encountered by the SAIS observer in the mountains.
- This is an important source of information as it describes the avalanche hazard situation and snowpack with 100% certainty at the time of observation. Whereas the avalanche **forecast** is dependent on uncertain factors and 100% certainty is not possible.
- The snowpack and its stability is a continually changing process and stability can vary greatly from hour to hour especially when the weather conditions are unstable and during storms.
- All hazard forecasts require the user to interpret their own observations and continually assess the encountered situation.

4. Mountain Conditions

Mountain Conditions	
Snow Distribution	Snow above 200m soft
Icing	Buttresses covered in fresh snow
Comment	Improving weather forecast for end of forecast period.

Interpretation

- Observations relating to climbing and walking conditions and related subjects are noted in this section.