

# Scottish Avalanche Information Service

## Winter Report 2016/17



Scottish  
Avalanche  
Information  
Service  
sportscotland



Mark Diggins - Coordinator November 2017

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**sportscotland**  
the national agency for sport

Photo SAIS P Noble, Lochnagar Southern Cairngorms

# The General Snowpack situation Winter 2016/17

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The winter of 2016/17 was characterised as a generally mild winter with limited snow cover and stormy periods and periods of winter conditions associated with the named storm events of Barbara over the Christmas period and Storm Doris during the month of February.

# The general snowpack situation

The winter started slowly in December in all areas with a generally thin snow cover and mild conditions, this changed after the Christmas period with the sudden arrival of significant snow cover in all areas and the promise that winter had at last arrived.. During these storms there would be natural avalanche activity mostly triggered by cornice collapse, and then as mild conditions returned with rain at summit levels, large natural avalanches on Ben Nevis and Creag Meagaidh. A much depleted snowpack and stable conditions carried us into the early weeks of February

Early February saw the arrival once again of winter with significant snowfall, wind loaded slopes and poor visibility, the weekends activity saw a number of human triggered avalanches, on the North face area of Ben Nevis a party of 3 were carried down and required evacuation by mountain rescue, injured but ok. At the same time in the Cairngorms on Angels peak a climber was dislodged by a small avalanche which resulted in a leader fall and subsequent broken ankle, which resulted in an airlift by rescue helicopter. During the next week natural avalanche activity from cornice collapse triggers and natural sloughing from steep scarp slopes above crags during stormy conditions and poor visibility saw many climbers have narrow escapes, mostly in the Northern Corries of the Cairngorms.

The latter part of February saw a mild period return with a depletion of snow cover. Storm Doris brought the next winter period with significant snowfall arriving end of Feb beginning of March. During this time, buried weak layers most notably in the Cairngorms, were the reason that some very large natural avalanches occurred during a warm overnight spike, producing size 2-3 avalanches ( could bury a car) in Coire an Lochain and Coire Laogh Mor.

A spate of avalanche activity took place during the first weeks of March with large natural avalanches noted in Lochnagar, Creag Meagaidh and in Coire na Ciste and Observatory Gully on Ben Nevis. This was followed by cycles of freeze thaw conditions which resulted in purging avalanche activity in many areas. A final short period of colder conditions toward the end of March brought a mostly firm stable snowpack, but with localised unstable windslab building in wind sheltered locations. Some human triggered avalanches occurred during this time with a party of two being carried near the Douglas gap on Ben Nevis and some small triggered releases on Aonach Mor.

By the end of March winter had come to an end with a depleted snowpack and the onset of spring conditions with clear and settled periods.

In summary it can be said that generally the snow cover in the highlands was poor, but with three distinct winter periods providing a taste of a Scottish winter.

# SAIS Operation

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Avalanche hazard information is provided on a daily basis in the following 6 main mountain areas of Scotland : -The Torridon region, Northern Cairngorms, Southern Cairngorms, Creag Meagaidh, Lochaber and Glencoe. Avalanche hazard assessment is achieved by traveling through the mountains on foot or ski, carrying out snow profiles and field observations, in combination with other factors.



# SAIS Operation

Having carried out an avalanche hazard evaluation in the mountains, the SAIS forecaster returns to their area base. A weather forecast provided by the Aberdeen Met Office team (usually around mid afternoon) is then used for further information. An avalanche hazard forecast is then produced, and after discussion between relevant SAIS forecasters, an avalanche report is published.

The avalanche hazard evaluations are provided by SAIS Avalanche Forecasters who have many years experience of avalanche hazard assessment ( in most cases over 15yrs). Forecasters undergo a verification process on a regular basis, to meet the relevant SAIS observer and forecaster standards and carry out annual continual professional development. Additionally, Forecasters are experienced and committed climbers, skiers and outdoor enthusiasts who are required to be competent in all the skills necessary for safe travel in the most challenging of winter conditions. The team comprise IFMGA mountain guides, instructors and avalanche experts from many countries. Their experience and professionalism is integral to

providing a trusted avalanche forecasting service and safe operational practice.



SAIS Forecaster carrying out field observations

# Avalanche Hazard Information

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Analysis of the snow layer interfaces is carried out by making observations in an excavated snow-profile. Temperatures taken at regular intervals in the snowpack from the ground to the surface gives us valuable information in terms of the stability processes that are taking place. Additionally, observing how the snow 'behaves' between layers, enables us to get an indication of snow stability. These observations play a part in the assessment of a mountain landscape and help us determine the overall avalanche hazard as we travel to different aspects and altitudes.

# Avalanche Hazard reports

The number of operational days for the avalanche service was approx 104 days per area.

All areas observed twice as many low hazard days as the winter of 2015/16

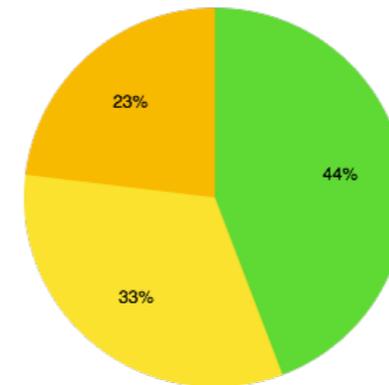
The moderate level of hazard for winter 16/17 in comparison to the winter 15/16 remained similar in the number of days it was issued.

Nonetheless although the moderate hazard level frequency appears relatively less than normal, human triggered avalanches remain a significant possibility, which was the case during winter 16/17.

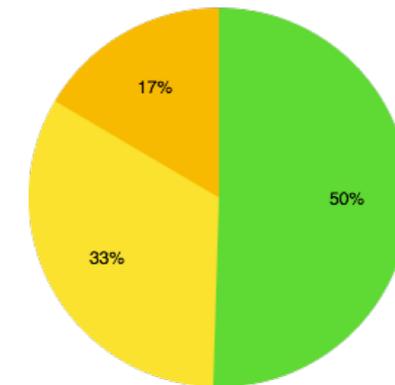
It is often considered by many national avalanche warning services that the moderate level of hazard presents strong potential for catching people out. This winter, with the majority of the days being of low hazard and limited winter conditions available, when human activity took place, a number of avalanche incidents occurred despite the low frequency of avalanche hazard days and the limited areas where unstable slopes were present.

Moderate hazard levels therefore still require vigilance and considered party management, for instance with a good spacing out of group members, any loading of a weak area on a slope will be minimised.

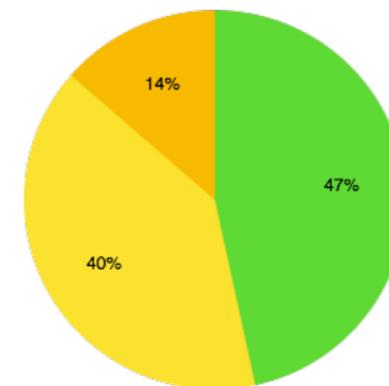
The five hazard levels are defined by the European Avalanche Hazard Warning Scale which is also the recognised scale worldwide.



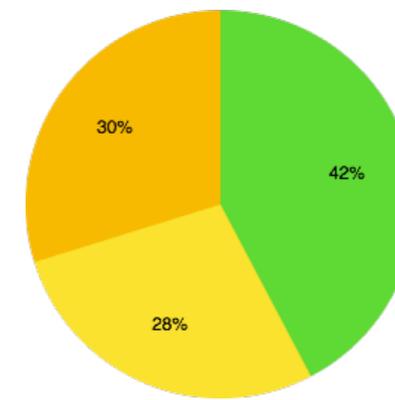
Northern Cairngorms



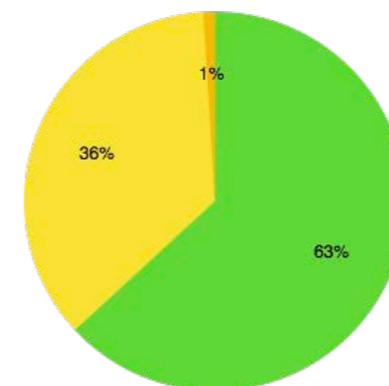
Southern Cairngorms



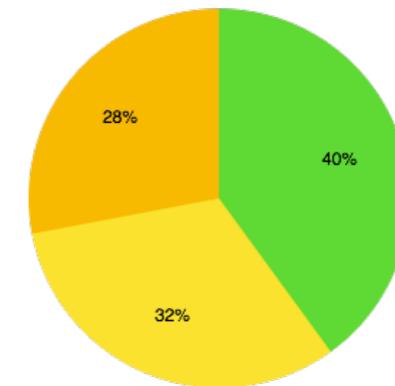
Glencoe



Lochaber



Torridon



Creag Meagaidh

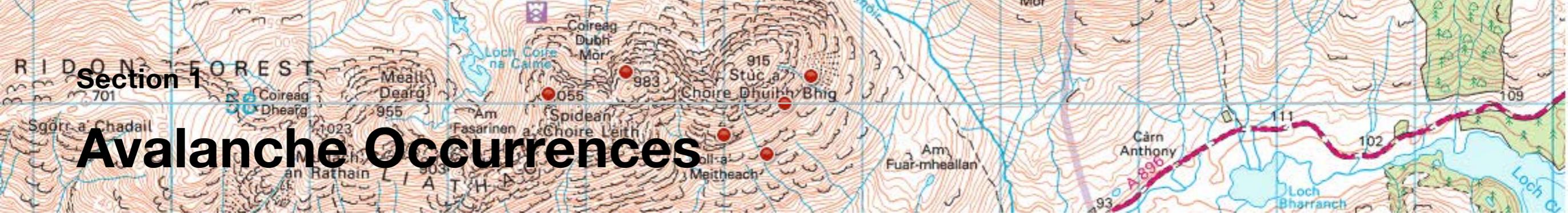
# Avalanche Occurrences

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Recorded avalanches are a compilation of observed avalanche occurrences from a number of different sources namely, SAIS forecasters making observations in the 6 areas of operation and submitted reports from winter mountain sport enthusiasts and interested members of the public.



SAIS Northern Cairngorms - Heavy drifting with unstable windslab rapidly developing



## Section 1

# Avalanche Occurrences

The SAIS avalanche report facility on the website has helped greatly with the recording of avalanche occurrence observations. Once reports are verified the details provide not only valuable information for our records, but most importantly, provide clear, real time hazard information. This gives the mountain traveller key stability information which helps with the planning process and the identification of potentially hazardous places before going into the mountains. However, field observations and the reporting of avalanche occurrences require good visibility and clear vantage points, usually from roads and paths.

Therefore without good visibility and people being able to cover every corner of the landscape it can be assumed that a far greater number of avalanches have occurred in places unseen than have been recorded. The total number of seasonal avalanches recorded on the SAIS website is therefore an estimate.

The recording of avalanche occurrences is the best indicator of the immediate short term snow stability situation. Avalanche occurrence location and the reporting of avalanche incidents by anyone traveling in the mountains is valuable information to provide to the SAIS. We can pass on this information to the mountain community which helps to illustrate the extent of avalanche activity and unstable snowpack areas.

The total number of avalanche occurrences recorded by the SAIS for the winter of 2016/17 was **90**.

Of this number, **80** were natural and/or cornice released and **10** were incidents triggered by people, some avalanche occurrences were minor, in that small

releases occurred, but others were more significant and resulted in people being carried with down by the avalanche .

Of the 10 avalanches triggered by people:

1 avalanche occurrence was purposefully triggered by ski patrol during the avalanche hazard assessment process,

1 was triggered by skiers and boarders.

8 avalanche occurrences were triggered by people on foot.

In total 14 persons were involved in avalanche incidents as members of a party ( the sum total of all persons in triggering groups),:

9 people in total were carried down by avalanches, with one party of two being carried down twice in consecutive avalanches on Aonach Mor !

0 fatalities occurred during the season.

# Reaching The Public

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SAIS Avalanche Reports are accessible by mobile phone, tablets and computers. Condensed avalanche report summaries are also available via twitter feed. SAIS reports are also posted in a variety of locations such as ski stations, tourist offices and retail outlets.

# Reaching the Public



**Avalanche Report** views for the period between Dec 2016 and April 2017 was **224,000**.

**Scottish Avalanche Information Service**

REPORT AN AVALANCHE | LEARN ABOUT AVALANCHES

Craig Meaghalis | Glencoe | Lochaber | Northern Cairngorms | Southern Cairngorms | Torridon

### Avalanche Report for Lochaber

Issued 11/04/2014

Weekly Snowpack Summary

13/12/2013 Limited snowpack. Localised deposits of old, wet, stable snow on some steep N, NE and E aspects above 1000m.

Lochaber - Latest Blog Posts

- 20/04/2014 Spring on Aonach Mor
- 13/04/2014 Spring is defiantly here
- 18/04/2014 Bright and sunny in Lochaber

Lochaber - Recent Snow Profiles

- 14/12/2007 09:10
- 15/12/2007 10:30
- 16/12/2007 13:37
- 17/12/2007 10:30
- 18/12/2007 09:15

FOR PERIOD 06:00 Fri 11/04/2014 TO 06:00 Sat 12/04/2014

**THE AVALANCHE HAZARD WILL BE CONSIDERABLE**

**Forecasted Snow Stability & Avalanche Hazard**

Areas of unstable windslab will develop overnight above 1150m. Greatest accumulations will be on steep North, North-East and East aspects with further redistribution on to South-East aspects during Saturday. Below 1150m the snowpack will be wet and generally stable, although localised surface instabilities will be present on some steep slopes. The avalanche hazard will be Considerable.

**Forecasted Weather Influences**

Winds will be strong from the South-West overnight and more Westerly during Saturday. Fairly heavy precipitation overnight falling a snow over the summits. Drying up during Saturday morning with the freezing level lowering to around 900m.

**Key Snow Stability Observations**

What do these icons mean?

View PDF of this report | View grayscale PDF of this report

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SAIS Blogs

Our **blogs** are used by the public to access information about mountain conditions and snow cover, SAIS forecasters are on the mountains daily and can therefore provide information which

is useful as a reference in the planning process. During the winter period between Dec 2016 and April 2017 (4 month period) the blogs were viewed **627,000** times.

**SAIS Southern Cairngorms Blog**

VIEW THE LATEST SAIS AVALANCHE FORECASTS

Lochaber Blog | Glencoe Blog | Northern Cairngorms Blog | Southern Cairngorms Blog | Craig Meaghalis Blog | Torridon Blog

Home | Archive for February, 2015

### February 2015

- 28th February 2015 Gore lax test day.
- 27th February 2015 More snow on way?
- 26th February 2015 Overnight thaw.
- 26th February 2015 Lochnagar post storms.
- 26th February 2015 Windy and drifting.
- 26th February 2015 New snow and drifting.
- 25th February 2015 Back to winter.
- 24th February 2015 Lochnagar 20th February
- 26th February 2015 Localised windslab.
- 19th February 2015 Lochnagar 19th February

Latest Southern Cairngorms Avalanche Reports

Recent Posts

- Landfill, 20th December
- Snow melt 30th December
- Stormy and mild
- The difference a day makes
- Windy Day
- A Christmas Day Lochaber
- 2nd snowfalls at Glen Muir
- Snow
- The shortest day
- A cooler day

Archives

Categories

Useful Links

- SAIS website
- Southern Cairngorms Avalanche Report

RSS Feed

Keep up to date by subscribing to our RSS feed

# Developments

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The SAIS is continually developing its product by engaging with avalanche forecast agencies worldwide both in Europe (EAWS) and further afield.

Attendance at international conferences and membership of international avalanche groups provides opportunities to exchange views and experiences and to keep abreast of developments and research. Collaborating on subjects relating to snow science, human behaviour and communication methods ensures a consistency of approach.

# Developments - European Avalanche Warning Services

The European Avalanche warning services comprise 29 avalanche warning services from 16 countries. In 1993 the European avalanche hazard scale was unified and has since been adopted throughout the world (See below). This enables a consistent global reference for avalanche services and the public. Continued collaboration and exchanges enables cross border consistency of avalanche bulletins and the exchange of knowledge.

## European Avalanche Hazard Scale

Danger level	Icon	Snowpack stability	Avalanche triggering probability
5 - Very high		The snowpack is poorly bonded and largely unstable in general.	Numerous large-sized and often very large-sized natural avalanches can be expected, even in moderately steep terrain.
4 - High		The snowpack is poorly bonded on most steep slopes.	Triggering is likely even from low additional loads** on many steep slopes. In some cases, numerous medium-sized and often large-sized natural avalanches can be expected.
3 - Considerable		The snowpack is moderately to poorly bonded on many steep slopes*.	Triggering is possible, even from low additional loads** particularly on the indicated steep slopes*. In some cases medium-sized, in isolated cases large-sized natural avalanches are possible.
2 - Moderate		The snowpack is only moderately well bonded on some steep slopes*, otherwise well bonded in general.	Triggering is possible primarily from high additional loads**, particularly on the indicated steep slopes*. Large-sized natural avalanches are unlikely.
1 - Low		The snowpack is well bonded and stable in general.	Triggering is generally possible only from high additional loads** in isolated areas of very steep, extreme terrain. Only sluffs and small-sized natural avalanches are possible.

In June 2017 the SAIS coordinator was elected to be a member of the technical advisory board of the EAWS. Current objectives include the harmonisation of avalanche forecaster standards throughout Europe, determining the main avalanche patterns or typical avalanche situations that are the common cause of snowpack instability. (A common symbol set will help with consistent communication of avalanche hazard ) and systems to assist avalanche forecasters to produce a consistent product.



EAWS conference Munich June 17

## The five main typical avalanche situations determined in Munich 2017

- New Snow
- Wind drifted snow
- Persistent weak layers
- Wet snow
- Gliding snow

# Developments - Be Avalanche Aware

In 2011 the "Be Avalanche Aware" initiative was developed following a collaboration between many agencies and groups from throughout the UK and further afield with the objective of addressing the avalanche situation in Scotland. Organised by the Snow and Avalanche Foundation of Scotland (SAFOS) and managed by the SAIS the BAA leaflet was introduced in the winter of 2013.

The BAA leaflet outlines the decision making process and fundamental considerations for assessing avalanche hazard in the winter mountains. For the first time the BAA initiative provided a guideline framework for those going into the winter mountains.



The BAA leaflet and information has been designed from the outset as being app ready. Over the last 2 years donations and funding has enabled us to continue with this development. Funding for the app and other such initiatives are wholly dependent on donations and financial support. We are extremely grateful for the seed money, provided by the Glencoe Ski Club and the Daniel Maddox fund that enabled app development to start, this was followed by a significant donation from WL Gore R&D UK. Following this, donations from the Chris Walker Memorial Trust, Scottish Mountain Training, Scottish Mountain Trust and sportscotland have been instrumental in allowing

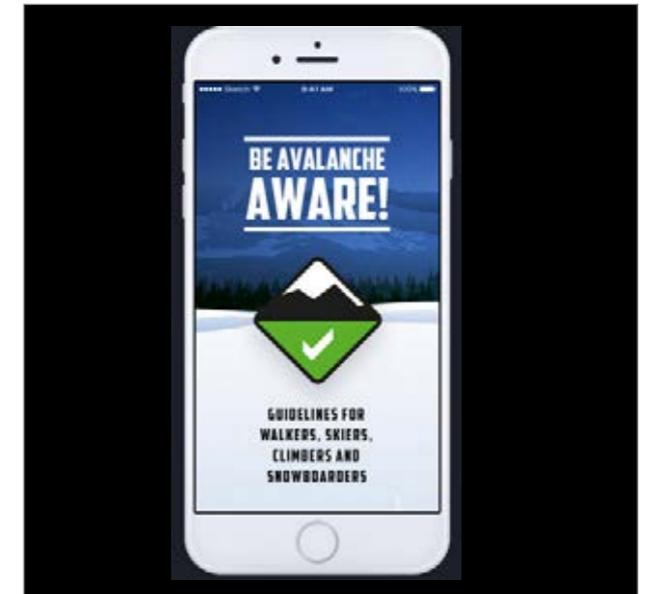
us to create something that will be of fundamental use to all mountain enthusiasts and professionals.

Donations are always welcome for both the continued development of the BAA app and other potential initiatives that will inform and help all those that visit the winter mountains of the Scottish Highlands, whether on foot, ski, snowboard or climbers scaling the icy winter cliffs and gullies.

If you would like to donate please contact the SAIS coordinator at [coordinator@sais.gov.uk](mailto:coordinator@sais.gov.uk) for further information about the charitable trust fund and ways to donate.

In early winter 2017 the BAA app will be launched in iOS (iphone) followed by the launch of the BAA Android app.

As well as providing an intuitive set of guidelines to help the user with the decision making process, features such as the SAIS daily avalanche reports, mountain info blogs, notifications, and tools to help with determining critical slope angles, slope aspect, in relation to avalanche hazard and your location will be incorporated.



## Chapter 7

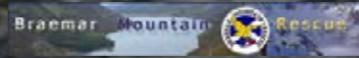
# Support and Sponsorship

The SAIS are supported by many agencies and organisations who provide help in many ways;- essential information, equipment and clothing, the provision of facilities from where we carry out our operations and mountain access. We are very grateful for the help we are given and would like to thank all those who provide the support that enables us to carry out our work in a more effective way.

NATURAL RETREATS  
CAIRNGORM  
MOUNTAIN



glencoe mountain



sportscotland  
the national agency for sport



the National Trust  
for Scotland  
a place for everyone



Photo: P Noble SAIS S Cairngorms

# Support and Sponsorship



We are pleased to continue our relationship with Mountain Equipment who provide us with well designed and functional equipment that works well in all the weather conditions that we are faced with during a Scottish winter. Good clothing allows us to carry out our job with confidence, comfort and with protection from the elements.



Collaboration continues with WL GORE & Associates, our work environment providing appropriate diverse weather conditions and the variety of mountain activities needed for the field testing of GORE-TEX & Windstopper fabrics and the development of the GORETEX PRO fabric. Real world feedback from the SAIS forecast team is used as part of their research and development process for developing next generation technologies.



Avalanche transceivers, shovels and avalanche probes are provided to the SAIS by Back Country Access through their UK distributors ANATOM and are used daily by the SAIS forecasting team when carrying out field observations.



We are provided with media resources to enable us to capture images and movie clips which are used to enhance condition reports for our blogs and for other public information initiatives.