

# ABSTRACT

## Winter season 2009-2010

*M. Valt and P. Cianfarra*

This article is the report on the work carried out by more than 300 tireless snow observers and dam keepers, who measure snow in the Alps ... dedicated to them and all those who preceded them.

The winter season 2009–2010 in the Italian Alps was characterized by harsh temperatures, good snow conditions with frequent but moderate snowfalls, frequent winds, long periods of high avalanche danger and 43 avalanche casualties.

In particular, as far as temperatures are concerned, from December to April the season was especially cold with a temperature of 0.5°C lower than the average of the 1961–1990 period. More specifically, meteorological winter was particularly harsh, with temperatures up to 2.3°C lower than the average, while the spring period (March–April) was milder (+0.6 °C).

Low winter temperatures meant longer snowcover duration and snow crystals turning into generally weak grains (angular snow crystals and depth hoar). The season was also characterized by frequent snowfalls, with more than 50 days of snowfalls from December to April in many

resorts of the Italian Alps.

To sum up, the winter season 2009–2010 ranks fourth in the period 1987–2010 as for snowfalls, following the season 2008–2009 (one of the seasons with the heaviest snowfalls since 1920 to date), the season 2003–2004 and the season 2000–2001.

Monthly distribution of precipitation for the 3 large sectors of Italian Alps showed a trend of intense snowfalls in December and February, average precipitation values in January in Western and Central Alps, snowfalls in March in Western Alps and weak snowfalls in April in Western and Eastern Alps.

Snowcover height values were within the norm and, compared with average reference values, they were slightly lower in the Western Alps and slightly higher in the Eastern Alps.

Of great importance for the avalanche activity were some short periods of bad weather: from 21 to 26 December 2009, when heavy rains occurred even at high altitude (2,300 – 2,500 m) and many large avalanches took place in the Italian alpine range as a whole; from 29 January to 7 February 2010, when intense snowfalls occurred followed by strong winds; in this period many

avalanche accidents occurred in the Alps, with more than 35 casualties (16 in Austria, 13 in Italy, 9 in France, 5 in Switzerland). Last but not least, from 16 to 23 March 2010, the whole alpine range was affected by an anticyclone front that from northern Africa reached Eastern Europe, resulting in many wet snow avalanches.

In the whole alpine range, the winter season 2009–2010 was characterized by many avalanche casualties: 148, 46 more than the average of the last 25 years. In Italy, victims were 45 (43 in the Alps and 2 in the Apennines). Based on the study of typical snow layers, the most frequent avalanche accidents in the Eastern Alps were caused by weak layers made of faceted snow crystals and buried surface hoar.

## The rhythmic Mediterranean breath of winter in the Apennine mountains

*M. Pecci*

If on one hand the winter season 2009–2010 brought about intense precipitation in the Apennines, the weather being characterized by prevailing westerlies and fronts, on the other it was characterized by steady sirocco winds in the cen-

tral Mediterranean sector that, at least in five distinct and important events, almost completely melt snowcover, even at high altitude. Typically winter conditions were therefore rare, causing unusual and incipient crusty and transformed snow. With such meteorological conditions, deposited snow, due to the action of sirocco winds, barely resisted in slopes exposed to sunlight and, due to higher than average temperatures, maintained isothermal properties inside the snowcover for long periods during winter.

## CISA IKAR 2010

*S. Pivot*

The annual CISA-IKAR conference took place in Stary Smokovec in Slovakia, on the southern slopes of the Tatra mountain.

This year too, the conference was attended by a number of mountain rescue specialists from all over the world, and worth mentioning are the delegates of two new organizations that have joined CISA-IKAR: the Mountain Rescue service of the Italian financial police and EURAC – the institute for emergency medicine in the mountains, headquartered in Bolzano.





## CENSUS OF BACKCOUNTRY SKIERS AND SNOWSHOE WALKERS IN SOUTH TYROL

*A. Aberer, L. Castlunger, H. Staffler, G. Strapazzon, H. Brugger*

Despite the rising popularity of backcountry skiing and snowshoe walking epidemiological data is lacking.

To determine the mortality rate of these sport activities and to establish local recommendations for avalanche prevention and rescue management, frequencies, origin, composition and preferred destinations of backcountry-skiers and snowshoe walkers are needed.

On 21st February 2010, we performed the very first comprehensive census of backcountry skiers and snowshoe walkers covering the whole area of South Tyrol in Italy. Volunteering mountain rescuers registered 1,955 groups including 6,010 backcountry skiers and snowshoe walkers who passed 143 check points. Of all recorded people, 68.7% were backcountry skiers, 31.3% snowshoe walkers; 81.0% of all groups started before 11 am, 19.0% after 11 am; 78.6% were in a group, 21.4% alone on tour; 61.9% were local mountaineers and 31.1% came from other Italian provinces or abroad. On the same day, one avalanche fatality was recorded by the Helicopter Emergency Medical Service Association.

Due to the small study sample and particular weather conditions, the dataset cannot be generalized and is not representative for the season. From this dataset we infer that snowshoe walking is more popular than expected and that every fifth mountaineer starts too late in the morning.

However, further longitudinal counts are needed for a reliable estimation of the frequency of trips and thus of the mortality.

## INTUITION, RECOGNITION AND KNOWN MODELS

*J. Mersch*

The various kinds of cognitive approach and the strategical methods recommended by normative theories of traditional science for avalanche risk management often confuse beginners, who feel as being burdened with a too demanding task, while limiting professionals, who see themselves as being too restrained within excessively rigid schemes. In the practice, experts rely on different types

of instruments to manage dangerous situations, but they never refer to a single method that could be recognized as "the" right method.

Jan Mersch sums up the different procedures to manage avalanche risk and shows the results of a graduation thesis on this subject.

## AVALANCHE RISK AND MOUNTAIN RESCUE

*K. Kristensen, M. Genswein and D. Atkins*

Based on the document "risk and avalanche Rescue" presented by the authors at the international workshop titled Snow Science Workshop ISSW 2008, this article describes the most effective decision-making strategies that, within the avalanche rescue area, refer to systematic analyses of risks and benefits.

## AVALANCHES IN VAL BREMBANA AND VAL SERIANA (BERGAMO) OPERATIONAL TEAM FOR AVALANCHE MONITORING

*F. Rota*

The winter season 2008-09 was particularly significant: intense and frequent snowfalls were followed by a number of major avalanches. It was the season with the most frequent avalanche events of the last decades.

The most destructive avalanches reaching the valley bottom occurred following self-evident and clearly dangerous situations. But much more numerous and dangerous were latent danger conditions, sometimes going on for several days, with avalanches never reaching maximum run-out distances.

From this experience, the necessity even more clearly arises to set up a monitoring system as most efficient as possible in the mountains of Bergamo province that is able to detect beforehand all dangerous situations that can affect the most important communication routes and resorts, in order to allow professionals to implement all necessary countermeasures.