

Recent avalanche activity of the mountain massif of Matese (Central-Southern Italy Adriatic)

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ABSTRACT: The massif of Matese is one of the most important "water castles" of the Italian peninsula. the precipitation as snow during the winter. I'm still not clear about the predisposing causes avalanche events - mainly loose dry snow or wet.

The phenomena are recurring during seasons characterized by heavy snowfall and affect the Campitello Matese ski area and the road to the ski resort of entrenchment. This paper attempts to highlight the main features of the snow stations and possible statistical relationships between events and avalanche significant sudden changes in the weather and snow parameters detected with the ultimate goal of achieving a specific plan of civil protection.

KEYWORDS: Appennino, avalanches, Molise, First results, Defence civil.

INTRODUCTION

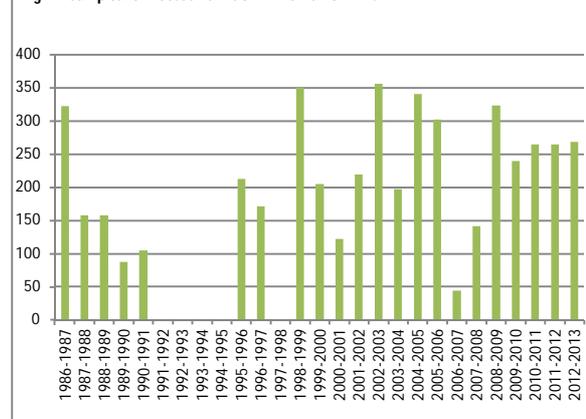
The massif of Matese is one of the most important " water castles " of the Italian peninsula. The Matese stretches for about 35 kilometers and forms the boundary between the regions of Molise and Campania, the maximum quotas over 2000 meters. The equidistance between the Tyrrhenian and Adriatic seas and its form " bastion " favor with abundant rainfall exceeding 1800 mm and mean annual rainfall regime of sub-Mediterranean Apennines - a winter maximum . The low winter temperatures lead to heavy snowfall between mid- November and the end of April. The monitoring and avalanches is assured by Meteomont Service of the State Forestry Corps who runs since the 1986-87 winter season a field manual snow in Campitello Matese , at an altitude of about 1400 meters above sea level, a supplement to the manual monitoring , since 2007 the Regional Civil Protection installed an automatic station. Avalanche events - mainly loose dry snow or wet - are rather the applicants during the season characterized by heavy snowfall and affect the Campitello Matese ski area - are involved in the road and some of the ski resort ski slopes. After defining the main characteristics of the snow stations , we will try to highlight the possible statistical relationships between significant events avalanche - avalanche described in the land - and sudden changes in the nivometric parameters recorded daily, and available on models 1.

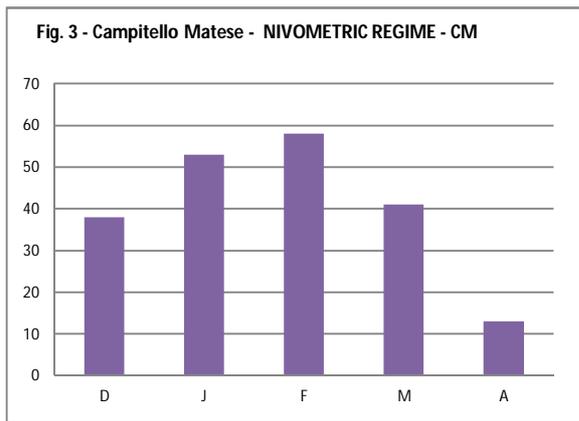
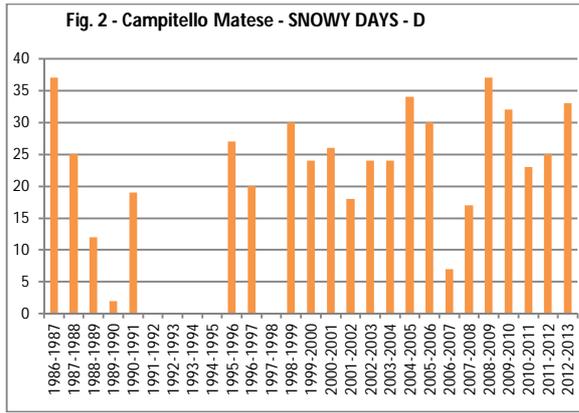
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FIRST RESULTS - EVIDANCE

The analysis of time series with temporal extension of more than twenty years, shows a nivometric trend type unimodal (Fig. 1), with a maximum in January and February (Fig. 2). The discovery site is situated on a saddle particularly windy and rainfall totals can be considered slightly undersized. Despite this, the snow is plentiful in relation to the total share, albeit with marked intraseasonal variations. The recent trends show a moderate increase of about 4 cm for season, the monthly signal is complex, with increases in December and March and declines in January (Fig. 3). The number of snowy days is on the rise - about 0.7 per season; monthly trends are similar to those related to artificial.

Fig. 1 - Campitello Matese - SEASON FRESH SNOW - CM





STATISTICAL ANALYSIS

In order to understand the relationship between avalanches - generally loose even of medium size - and weather parameters and snow, we analyzed the data extracted from models 1 to 72 hours prior to the event avalanches. There are no studies on the avalanche phenomena and scientific publications are non-existent. From direct experience on the snow-covered field, it has been deduced that the 72 hours are the best time to detect any changes in the physical and mechanical properties of the snowpack. (Fig. 4).

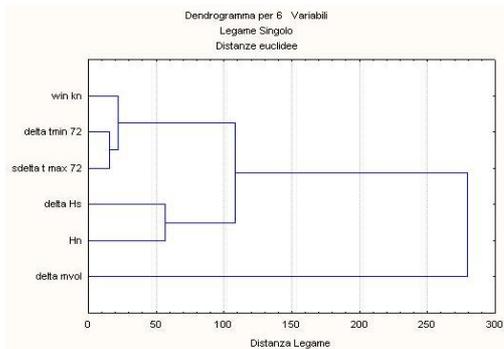
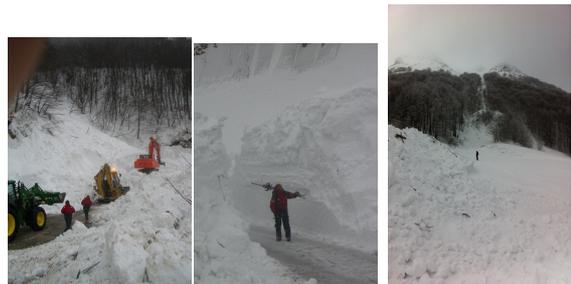
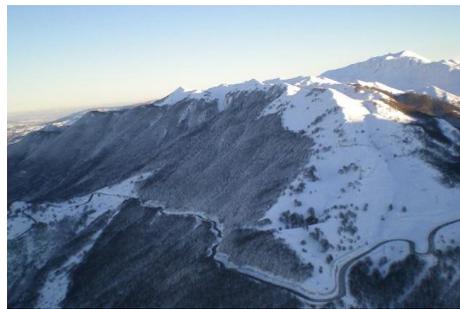
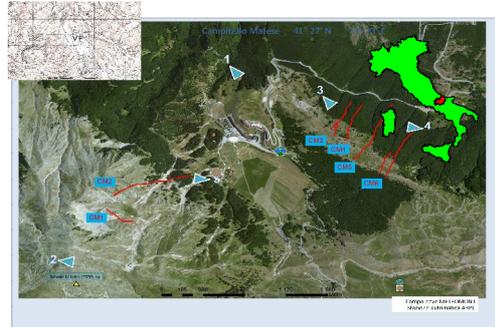


Fig. 4 – Statistical Analysis

FIGURES

Some pictures that describe the landscape of the massif of Matese and some avalanche release activity



Figures. Photos of the landscape and avalanches Molise Apennines (Matese Massif) – (Photo Antonio Cardillo)

CONCLUSIONS

A first analysis shows that all the variables of weather and snow behave extremely varied. The avalanche phenomena in the " land

avalanches " are not directly related to the wind speed at the height of the snow and the change in temperature.

During spring phenomena , we observe a significant decrease of the snowpack. The parameter that seems to show more uniformity of behavior is the density , always on the rise. The analysis component principal (ACP) shows a cumulative contribution of the first two principal components , with positive weight delta MVOL Hn and close to 76%, while a tree clustering analysis shows the presence of a outlayer , the density (delta MVOL) . From a point of view and climatological dynamic highlights the presence of extreme events in the last ten years. Rapid changes in temperature with rotation of the winds from the south cause in 24-48 hours after the rise in temperature , a higher frequency of avalanche events , mainly small size and loose .

This phenomenon could be considered as an indicator added in the assessment of the effects of climatic change taking place in the mountain range of the Apennines.

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