5 YEARS OF EXPERIENCE WITH THE BAVARIAN MATRIX

M. Valt

The Bavarian matrix is an effective tool for avalanche forecasters to help them determine objectively the avalanche danger degree. The present work analyzes the Bavarian matrices an avalanche forecaster has drawn up during 5 winter seasons.

Results show the working methods used by forecaster and its accuracy degree. The avalanche scenarios found out with the Bavarian matrix very often lie halfway between the different avalanche danger degrees of the European classification, which underlines how it is difficult to formulate a danger degree for the avalanche warning bulletin. Some scenarios found with the matrix are recurrent and this is supposed to be associated with the orographic complexity of the avalanche forecasting area (Dolomites).

By studying the use of matrix it can also be possible to improve our insight of the most dangerous situations in a determined alpine territory.

A CLOSER LOOK TO WINTER MOUNTAIN HIKERS

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This work follows a preliminary mostly quantitative census of ski tourists and snow shoe users, which was carried out in South Tyrol on the 20th of February 2010 (Neve e valanghe n° 71). The results found on that occasion led to the desire to know better who are the hikers who travel in the mountain in winter.

In 2011 a second census was therefore carried out in South Tyrol mountains, this time considering a "typical" winter week from Monday to Sunday. In addition to the information already gathered from the 2010 census, experts also wanted to get to know some aspects related to safety for mountain hiker and prevention. The scientific organization was provided for by the fire prevention and civil protection department of Provincia di Bolzano – South Tyrol, the avalanche prevention service, the institute of emergency medicine in the mountain of EURAC of Bolzano and the provincial statistics institute (ASTAT), which then processed the huge amount of data gathered to allow for its easier and simpler interpretation, especially for the pairs that evaluate several parameters together. Jointly involved in the fundamental and demanding field operations were the rescue organizations BRD (Bergrettungdienst) – AVS (Alpenverien Südtirol) and CNSAS – CAI, which interviewed thousands of people through their network of volunteers operating in the provincial area.

TOP TRAINING FOR AVALANCHE EXPERTS: PRACTICAL PRODUCTS OF TWO RESEARCH PROJECTS IN Valle d'Aosta

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With the aim to create operation tools to meet the everyday requirements of effective territory management, the organization Assetto Idrogeologico dei Bacini Montani of the autonomous region of Valle d'Aosta has always tried to combine "theory" and "practice" – researchers and sector experts – for a mutual exchange of information and a positive confrontation.

Thanks to the Italian/French territorial cooperation programme (Alps) 2007/2013, Standard 2.2 – Risk prevention – "DynAval projects - Dynamique des avalanches: départ et interactions ecoulement/obstacles" and "RiskNat", several top technical training activities have been organized for snow and avalanche experts, including three special courses dealing with the following subjects: 1) artificial avalanche release, 2) slow motions of snowcover and associated loads on defense works, 3) interaction of avalanche flows with buildings. These courses have been specifically devised for avalanche experts in order to explain them the latest scientific findings and offer them all the new practical information they can use to solve their practical problems. In line with this, several guidelines have been published that deal with: 1) definition of avalanche release zones, 2) avalanche flow/obstacles interaction, 3) how to build in areas subject to avalanche danger, 4) evaluation of snowcover stability and 5) artificial release.

The pride of the training programme for professionals, making the most of the projects developed, are the two tutorials specifically created for online training of the several users of the new avalanche cadaster on web of Regione Autonoma Valle d'Aosta.

THE NEW AVALANCHE CADASTER ON WEB IN THE VALLE D'AOSTA REGION

A. Debernardi, V. Segor

Avalanches are natural phenomena that, in the context of a mountain region, as the Valle d'Aosta is, may have significantly influence on land use, on the ordinary course of human businesses, and on the economic and touristic activities.

For this reason, it's essential for the

Regional Administration to have tools able to summarize, preserve and make easily accessible the historical information related to avalanches.

The Regional Avalanches Cadaster is the instrument with which, from the early seventies, the Snow and Avalanche Warning Service have been recording the history of the avalanches observed in the Valle d'Aosta mountains.

Here, documentation signed in by the office staff, information and reports provided by snow/weather observers are collected, including documents, photographs and measurements. The Avalanches Cadaster has proven to be a useful tool to describe the avalanche events occurred and to preserve memory. After many years dedicated to organizing data, the Snow and Avalanche Warning Service has reached the goal of publishing on the Regione Autonoma Valle d'Aosta website a space dedicated to the Avalanche Cadaster, from which the public can access information about all documented avalanches.

The web portal consists of three geonavigators, cartographic tools that allow users to view the avalanche limits overlapping technical maps with orthophotomaps, and two applications that make available all the information, alphanumeric data and images related to avalanches.

The website also contains other useful links with thematic areas related to avalanches. The Avalanches Cadaste also significantly enhances many years of detailed cataloging and updating performed by the office staff. The Regional Avalanches Cadaster is a solid base for future studies in this field.

IMPACT OF CLIMATE CHANGES ON ITALIAN NORTH-WEST ALPINE GLACIERS

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In the densely populated Alpine regions, glaciers are a unique resource of freshwater for domestic, agricultural, and industrial use, an important economic component of tourism and hydro-electric power production.

As glaciers shrink, so does the frozen water supply they store.

This is one of the reasons why it is very important to understand why glaciers change over time and to predict their response in different climate change scenarios.

In this work, we analyzed the impact of climate variability on a large group of valley glaciers in the Western Italian Alps in the last 50 years. By analyzing the cross-correlation of snout position data with temperature and precipitation time series, we found significant correlations between the variations of the annual snout position and fluctuations in precipitation and temperature during specific periods of the year and with a time delay up to several years. On the basis of the results obtained in this way, we implemented a simple lagged-linear empirical stochastic model that can be used to estimate the average response of Alpine glaciers in different climate change scenarios.