



CISA IKAR 2008

S. Pivot

The annual CISA-IKAR meeting took place in Chamonix, the French town near Mont Blanc. CISA-IKAR, with its medical, terrestrial, air and avalanche commissions, is an International work platform that promotes high level meetings between experts and product suppliers, in order to improve knowledge and circulate innovations in the rescue area.

The association, which was set up in 1948 by 11 organizations from 5 alpine countries, celebrated its 60th birthday in 2008, and now it includes 57 organizations (which will grow to 60 by the end of the year) from 31 countries.

Over the last sixty years, many new rescue organizations were able to make the most of the experiences gained over the years and of the available knowledge, mainly concerning the improvements and innovations of techniques and materials.

On the other hand, the president of CISA-IKAR, Toni Grab, reported that in the last few years several national and International regulations have been set up that restrict rescue possibilities: in several

cases rescuers are not allowed to carry out any rescue operations, though they are perfectly capable and efficient, owing to regulations established by other organizations that are not even specialized in mountain rescue.

HYDRO PROJECT 2007

The new radio network for the collection of hydrological data of Provincia Autonoma di Bolzano

M. Pernter

Modern telecommunication techniques allow for the setting up of radio networks for data transmission as an alternative to the large public mobile telephone networks.

The following article describes the engineering and development of the new radio network for the nivometric, weather and hydrometric stations managed by the Hydrographic service of the fire prevention and civil defence sector of Provincia Autonoma di Bolzano.

The aim of this project was to set up a radio network that fits the highest possible number of automated survey stations operated by our office.

Network scalability for future implementations should also be granted.

SIRIO-IHR

To know in order to decide

P. Macconi

The modern management approaches for the hydrogeological risk are based on the availability of organizational, updated and widespread information.

Provincia di Bolzano makes use of a specific information system, named SIRIO-IHR (Sistema Informativo per il Rischio Idrogeologico – Information system for hydrogeological risk) that, among other things, includes an event documentation system, the register of works, danger susceptibility papers, the documentary archive and a browser.

SIRIO-IHR therefore represents a platform for data exchange, as well as a physical and virtual place of collaboration for all the people from the provincial administration who are involved in hydrogeological risk management at various levels; the main team includes the Hydraulic Works section, the Civil Defence service and the Geology department.

Active collaboration is also provided by the forest division and the municipal engineering service.

MODEL FOR THE DYNAMICS OF DENSE SNOW AVALANCHES

E. Arena, Lo Riggio, M. Mura,

D. Bocchiola, M.C. Rulli and R. Rosso

A model is proposed for the study of the dynamics of dense snow avalanches with center of mass.

Equations of motion are based on an energy formulation, which is made fit for avalanche calculation through the typical parameterization of the Voellmy-Salm method. This formulation allows experts to express motion dynamics in terms of flow heights and rates on a variable-step calculation mesh. The model was applied to the case study of Vallecetta mountain, in Bormio, for May 1983 events.

The results were then compared with those from the literature model AVAL1D®, developed by the personnel of the SLF institute of Davos, offering comparable results. The model can be therefore considered a suitable instrument for the analysis of areas subject to avalanche risk. Future developments will be the model validation for other avalanche sites and modeling of mass transport along the avalanche path.

PASSIVE DEFENCE WORKS FOR DENSE SNOW AVALANCHEES

Experimental laboratory analysis for the evaluation of the behavior of avalanche barriers

P. Scotton and F. Moro

The article presents an experimental investigation performed at the Hydraulic Laboratory of the University of Trent in order to analyse the behaviour of some passive defence structures used in the practice of environmental engineering in order to slow down granular dense snow avalanches.

The research considers retarding mounds and teeth, taken as single elements and in a system of three elements arranged in two lines.

The experimental apparatus is made up of two planes arranged at two slopes in order to simulate the slope of the flowing zone and of the stopping zone of a dense snow avalanche.

The flowing part of the experiments is confined inside a rectangular section. The motion on the lower plane is cross-sectionally free.

The works are located at the end of the upper plane, at the beginning of the slowing down phase of the granular mass.

The article describes the experimental set-up, that can simulate the real phenomena following the Froude similarity with a geometrical scale of about 1:100, and gives some criteria for the estimation of the impact force against front and rear works. It is described the most efficient works layout and it is shown that maximum efficiency occurs when maximum dimensionless force occurs.

THE WIND IN SUSA VALLEY Fifteen years of anemological data

S. Fratianni, B. Cagnazzi and R. Cremonini

The aim of the study is to analyze climatological features of the wind in the Susa Valley (Piedmont region, NW Italy).

The analysis avails itself of a twelve dataset of wind data (from 1990 to 2007) collected by the ARPA Piemonte's monitoring network.

The wind statistical analyses have followed different phases:

- Analysis of wind frequency and wind directions and spotting of the anemological basins: estimate of annual, monthly (and hourly) frequency of wind provenance by considering eighteen quadrants of direction. These analyses are based on a classification related to the wind direction regime (unimodal, bimodal, three-modal);
- Annual and monthly average of wind directions: starting from all those available data measured every ten minutes;
- Annual and monthly average of the wind force;
- Analyses of daily and hourly wind calm: frequency in number of windy days with an average speed inferior to given thresholds;
- Analyses of the strongest windblasts with records of critical cases;
- Spotting of breeze regimes (high and

low) and comparison between stations;

- Analysis of the yearly, seasonal and monthly frequency of North and North-West foehn.

The climatological analysis of wind measures is carried out in relation to the annual occurrence and to the meteorological current events, in order to get into a better comprehension of the weather events occurring in this territory.

“ACTIVE” PROTECTION STRATEGIES FOR GLACIERS First Italian applications and results

G. Diolaiuti, C. Smiraglia and E. Meraldi
On Dosdè Est Glacier (Upper Valtellina, Italy) a pilot experiment to reduce snow and ice ablation was performed between May and October 2008. On this Alpine glacier (1 km² of area, North aspect) a cover of Ice protector® was spread on a glacier surface 150 m² wide at an elevation of about 2800 m a.s.l. The glacier covering was carried out on the 15th of May 2008 when the glacier surface was characteri-

zed by a snow depth of 2,50 m equal to 1,29 m water equivalent.

The experiment ended on the 4th of October 2008. The study was aimed at verifying the ability of such method in reducing snow and ice ablation on a natural glacier surface to compare the results with the ones obtained in Austria on glaciers used for skiing activities. The results we obtained are in agreements with the ones from Austria. At the end of the ablation season on the glacier area without artificial cover it resulted a snow ablation of 1,29 m water equivalent (w.e.) and an ice ablation of 1,05 m w.e.; the glacier surface protected with the cover, instead, resulted to be affected only by snow ablation and its magnitude resulted lower than in unprotected areas: there was a snow loss equal to 0,73 m w.e. and no ice ablation occurred.

The positive result due to the artificial cover is thus equal to 1,61 m water equivalent (1,05 m w.e. from ice and 0,56 m w.e. from snow) and the snow survived was 43% of its initial value.

