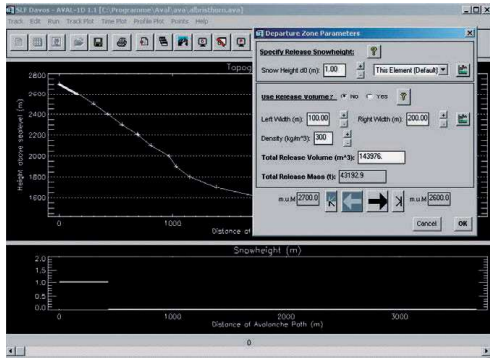


AVAL-1D

An avalanche dynamics program for the practice

AVAL-1D is the new one-dimensional avalanche dynamics program that predicts runout distances, flow velocities and impact pressures of both flowing and powder snow avalanches. It was developed at the Swiss Federal Institute for Snow and Avalanche Research SLF, in Davos. Emphasis was placed on developing an easy-to-use graphical user interface in order to simplify the introduction into practice.



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AVAL-1D: Specifications

Language: English
Manual: German/English
Costs: CHF 4000.– (excl. taxes)
Pentium 133
32 MB RAM
CD-ROM drive
25 MB harddisc
Win 95/98/ME/NT/2000/XP



AVAL-1D

The avalanche winter of 1999 clearly demonstrated that inhabited regions and traffic in the alps are endangered by avalanches during winters with extraordinary amounts of snow. Therefore flowing and powder snow avalanche calculation models have been under development for some time at the SLF. The avalanche dynamics program AVAL-1D, based on these developed models, has been proven to work since 1999. Both engineers and practitioners rely on practical experience and these calculation models. Considerable snow and avalanche know-how is still required to correctly use the program.

Results

- Continuous information about flow height, velocity and pressure is given along the entire avalanche track (c.f. analytical Voellmy-Salm model which only give results for specific points).
- Runout distances and mass distribution in the runout zone
- Animation of avalanche flow
- XY-Plots at user-selected points along the avalanche track (time-history).
- Profile-Plots at user-selected points for powder snow avalanches.
- Possibility to overlay different simulation runs to visualize sensitivity studies.

Avalanche track

There are three ways of specifying a new topography:

1. Read your data from a map and input using dialogue windows.
2. Put your data into a table (Excel) and input this table directly.
3. Specify the topography directly on a digital map. Maps can be geo-referenced in ArcView or the coordinate-transformation can be done directly in AVAL-1D.

Avalanche and model parameters

Avalanche and calculation parameters can be specified by using interactive dialogue windows. Either a dense flow or a powder snow avalanche simulation can be performed.

Calculation

Calibrated depth-average continuum models are used to track the motion of the avalanches from initiation to runout. AVAL-1D consists of two computational modules – FL-1D (dense flow avalanches) and SL-1D (powder snow avalanches) – both programmed in C. These modules solve the governing equations of mass, energy and momentum balance using an upwind finite difference scheme. The graphical user interface was programmed in IDL (Interactive Data Language).

Sale

AVAL-1D costs CHF 4000.– (excl. taxes). A detailed price list can be found on our website www.slf.ch/aval-1d. The software package including the installation CD, the installation guide and the user manual will be sent by post. The software can be ordered from our website.

