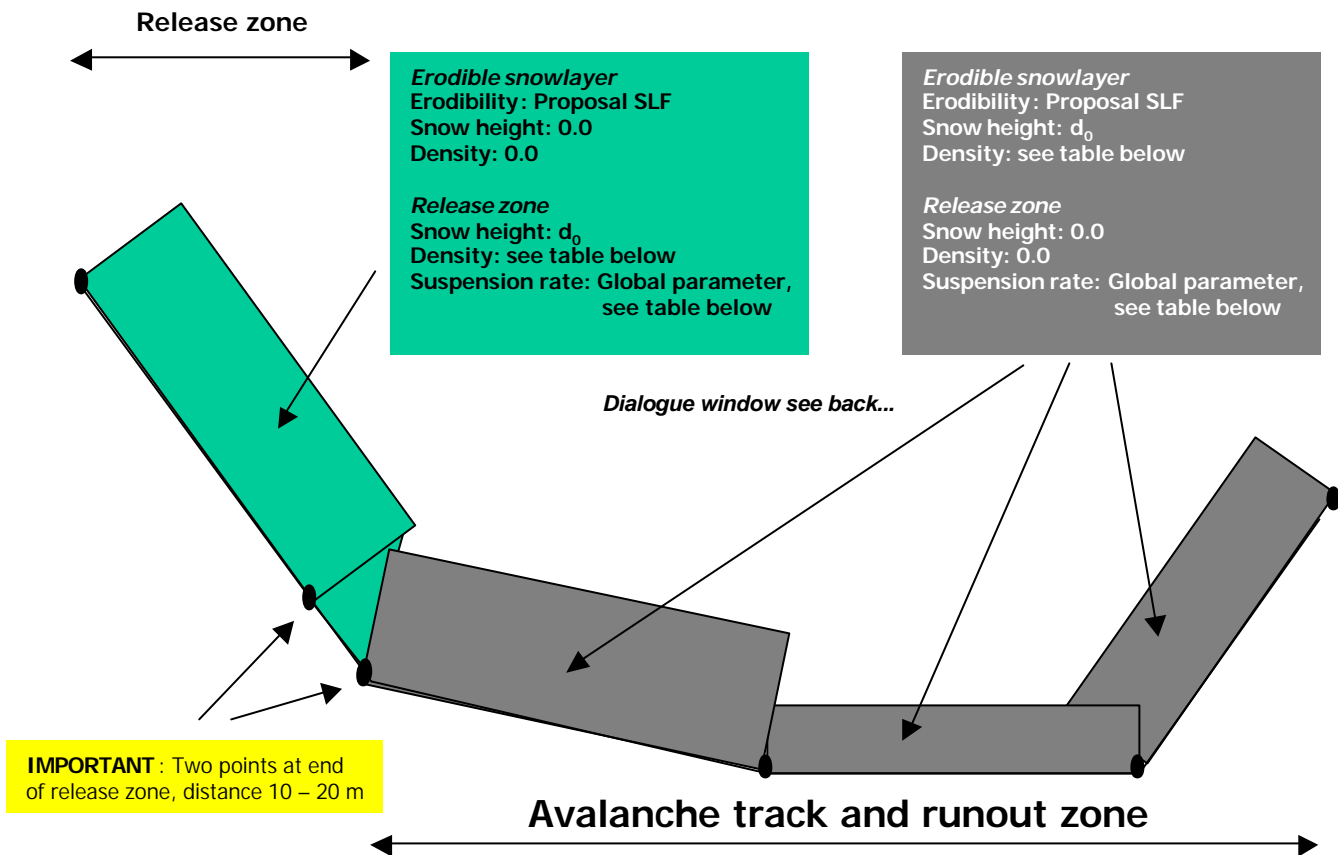


AVAL-1D: Calculation steps for powder snow avalanches

Choose: **Edit** → **Avalanche parameters...** → **Powder snow** or **Toolbar** → 



- Avalanche width is only required for information purposes, not for the calculation! SL-1D uses a unit width. The program was validated for wide avalanches.
- No widening / narrowing is taken into account! Pressure forces have to be reduced in case of widening after channeled area / gully. Experience of expert is required.
- Definition of release zone and release height d_0 : See „dense flow avalanches“!!

Recommended values for mean snow density against climatic region and altitude. Lower values for one day snowfall, upper values for several days' snowfall.

| Mean snow density (kg / m ³) Climatic region | Altitude | |
|--|-----------|-----------|
| | ≤ 2200 m | > 2200 m |
| Wallis, Graubünden | 120 – 200 | 100 – 170 |
| Alpenordhang | 140 – 230 | 120 – 200 |
| Alpensüdhang | 160 – 250 | 140 – 220 |

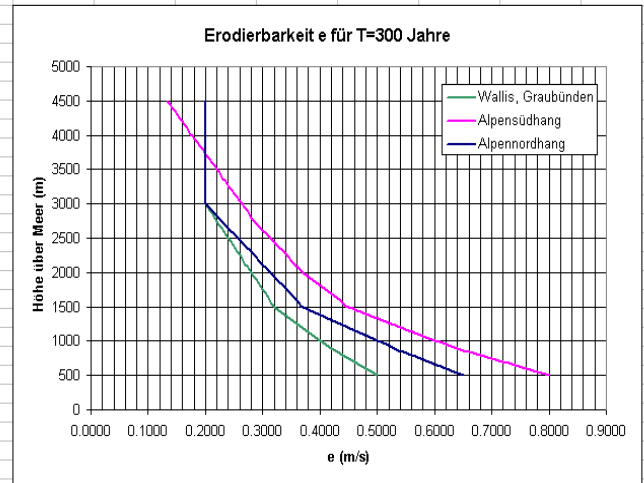
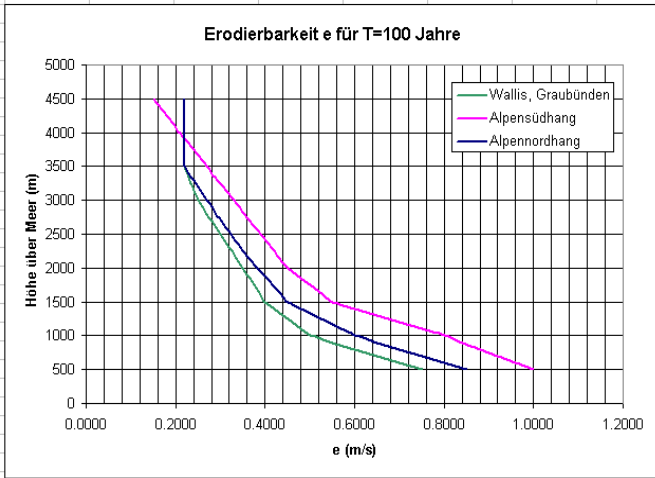
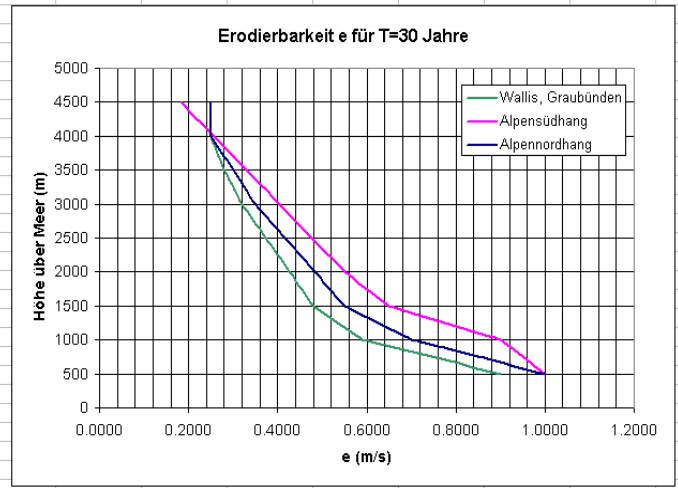
Estimated values for suspension rate (ratio between powder release mass and original snow slab mass) against climatic region and altitude.

| Suspension rate () Climatic region | Altitude | | |
|---|----------|---------------|----------|
| | < 2000 m | 2000 – 3000 m | > 3000 m |
| Zentralwallis, Engadin | 0.10 | 0.12 | 0.14 |
| Alpenordhang | 0.08 | 0.10 | 0.12 |
| Alpensüdhang | 0.06 | 0.08 | 0.10 |

ATTENTION: Increase these values in case of rough terrain or flow over a cliff.

Erodibility

Threshold velocities for snow erosion, e , in powder avalanches depending on altitude (Höhe über Meer) and climatic zones for return periods of 30 (right), 100 (below left) and 300 (below right) years. These are rough standard values, that have to be adapted to local climatic and wind conditions.



Erodibility

Erodible snow height

Density

Mean release height d_0

Density

Suspension rate *

Return period (years) *

Climatic region *

The screenshot shows the 'AVAL-1D | Powder snow avalanche parameters' dialog box. It is divided into several sections:

- Erodible snowlayer:** Includes a 'Use SLF proposal' button and input fields for Erodibility (m/s) set to 0.37, Snow height (m) set to 0.00, and Density (kg/m³) set to 0. Each field has increment/decrement buttons and a dropdown menu set to 'all'.
- Release zone:** Includes input fields for Snow height d_0 (m) set to 1.00, Density (kg/m³) set to 200, and Suspension rate (0-1) set to 0.12. Similar control buttons are present.
- Return period (years):** Radio buttons for 30 (selected), 100, and 300.
- Region:** Radio buttons for Nordalpen, Südalpen, and VS/GR (selected).
- Jump to distance (m):** Input field set to 0.00 with a 'GO' button.
- Altitude:** Input fields for (m a.s.l.) at 2615.00 and 2534.60, with navigation arrows between them.
- Buttons for 'Cancel' and 'OK' are at the bottom right.

* Suspension rate, return period and climatic region are global parameters; only input them once.