RAMMS CHANGELOG EXTENDED

V 3.0.6 [2025-11-12]

- **Improvement: Update check at startup**: At startup, RAMMS used the new updater to check for updates. Unfortunately, this updater requires admin privileges, which does not allow for a silent check for updates. We changed this approach, such that RAMMS can perform a silent check at startup.
- **Improvement: Erosion density limit**: We increased density limit for densities > 200kg/m3 to allow modelling of heavy moist or wet snow.
- **New Feature: 3D line measuring**: The line measure tool only measured distances in projected 2D. This has now been supplemented with information on the 3D distance.
- **Bugfix: Batch mode**: When running simulations in batch mode, the automatic export of geotiff-output-files at the end was interrupted, because RAMMS was asking for maps and images for every simulation. Resolved.

V 3.0.4 [2025-09-24]

- **New Feature: Max values exported**: Raster files (GeoTIFF) of core- and powder-results are now automatically exported after every simulation.
- **New Feature: DEM projection preserved**: Up until now, DEM projections were not preserved, and exported raster files had no projection. Resolved. All exported results as well as *slope.tif* inherit the projection of the DEM.
- **Improvement: Optimized output reader**: Faster loading of simulation output files.
- **Improvement: Slope angles and hillshade image**: Calculation of slope angles and hillshade visualization improved (performance). When creating a new project, the hillshade image is automatically created, saved in the folder *\hillshade* and the user can overlay it directly.
- **Improvement: Fluidization in steep terrain**: We don't allow xi fluidization on slopes > 40° (before, 55°). This helps with problems of acceleration in steep terrain.
- **Improvement: Manual updated**: We updated the manual with a chapter about wet snow avalanches, including example simulations.
- **Bugfix: Water content**: Water content in the release zone was specified in %, but internally used in mm. Resolved. Additionally, the initial water content can now be visualized in the results.
- **Bugfix: Forest snowcover**: The dropdown list (no snowcover, interception, full snowcover in forested areas) did not work. RAMMS always ran the simulation with "no snowcover" in forested areas. Resolved.

V 3.0.1 [2025-06-01]

- **OFFICIAL RELEASE OF RAMMS::EXTENDED**

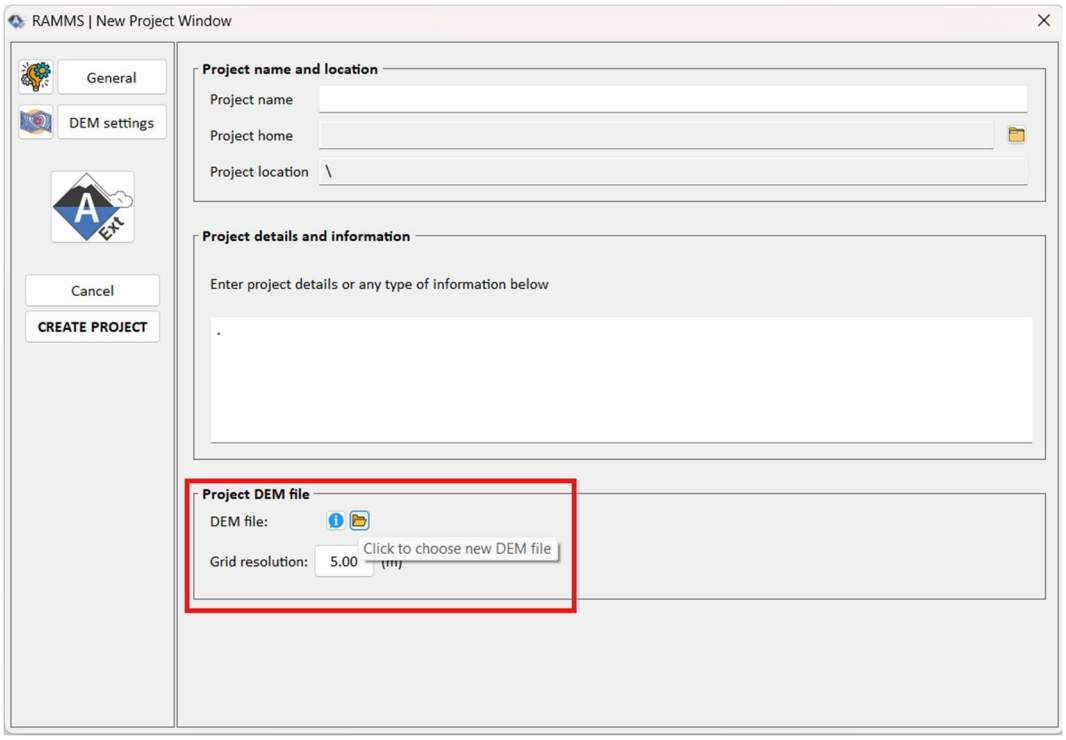
- You can buy an Extended-License as an add-on to an Avalanche-License in the RAMMS-shop. If you already have a running Avalanche-License, please order the Extended-Add-On by email to order@ramms.ch.

- **New Extended-Manual available!!** You can find the manual in the GUI at *'Help → RAMMS User Manual'*, or download it from the website. **Rocky**, our new RAMMS-Chatbot, also knows all about the manual. You can find **Rocky** on the RAMMS website, in the lower right corner. Ask a question in any language – **Rocky** will reply in the same one!

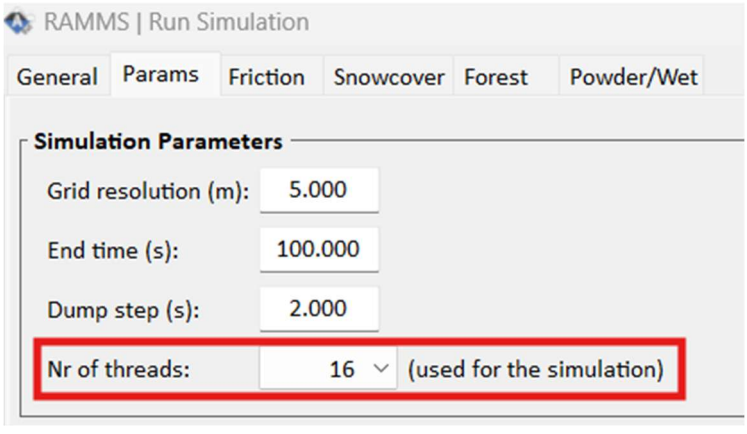
- **MAJOR New Feature: Improved file path handling**: File paths containing spaces (e.g. from OneDrive or other cloud storage providers) and special/non-ASCII characters (e.g. accented letters or localized characters common in countries like Norway or France) are now fully supported. This resolves previous issues with file access and improves compatibility across different systems and locales.

- **New Feature: New installer and update mechanism**: The installation process has been redesigned with multi-language support for better user experience across regions. A new update mechanism has also been implemented. Please note that both installation and update operations now require administrator privileges.

- **New Feature: New Project Wizard**: Implemented new project wizard. Specify *Project name* and *Project home* in the upper part and select DEM file in the lower part. View DEM details or clip DEM in *DEM settings*.



- **New feature: Nr of threads**: Users can now configure the number of threads their computer uses for the simulation.

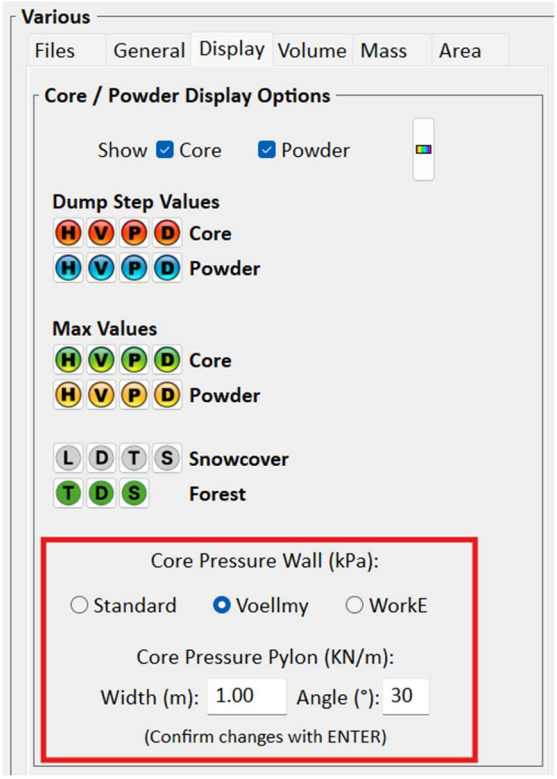


- **New Feature: Adaptive colorbar styling**: The colorbar text and tick colors now automatically adapt to the background color: white on black backgrounds, and black otherwise. This improves visibility and readability across different visualization settings.

- **Improvement: Friction Table**: Slight adaptation of friction table. Changes were made to the following categories:

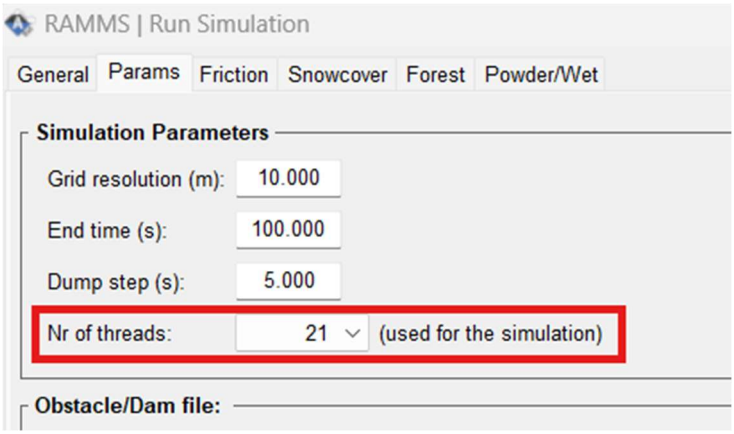
```
; Release Volume    |  10Y  |  30Y  |  100Y  |  300Y |
; < 5'000           |   A   |   A   |   B    |   B C |
;  5'000 - 25'000   |   A B |   B   |   C    |   C D |
; 25'000 - 60'000   |   B C |   C   |   D    |   E   |
; > 60'000          |   C D |   D   |   E    |   F   |

; Parameters        |   A   |   B   |   C    |   D   |   E   |   F   |
; mu_0              |  0.55 |  0.48 |  0.42  |  0.37 |  0.33 |  0.30 |
; xi_0              |  1800 |  1850 |  1900  |  1900 |  1950 |  2000 |
; Cohesion          |  200  |  150  |  100   |  100  |  75   |  50   |
```

- **Improvement: Core Pressures**: Core Pressures updated with *Standard-*, *Voellmy-* and *Work-Energy-*pressures. The user can choose which core pressure should be visualized. Wall- and pylon-pressures are selectable. There is a lot of information about pressure fores in the new manual, or ask **Rocky** about it.



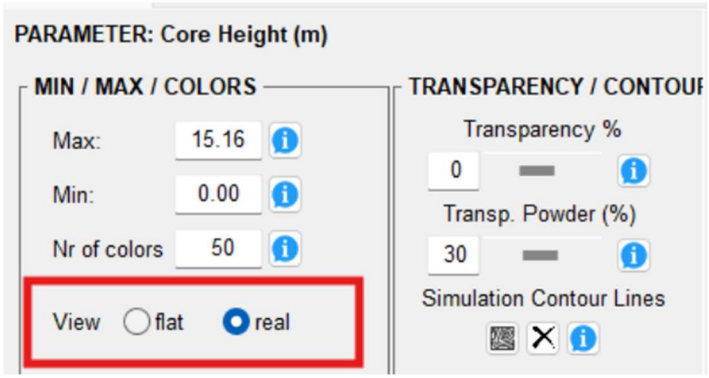
V 2.8.47 [2025-02-28]

- **Bug fix: Curvature**: Simulations without curvature incorrectly produced the same results as those with curvature. Now, they yield distinct results as expected.
- **New feature: Nr of threads**: Users can now configure the number of threads their computer uses for the simulation. By default, the simulation utilizes **2/3 of the available threads** on the system.



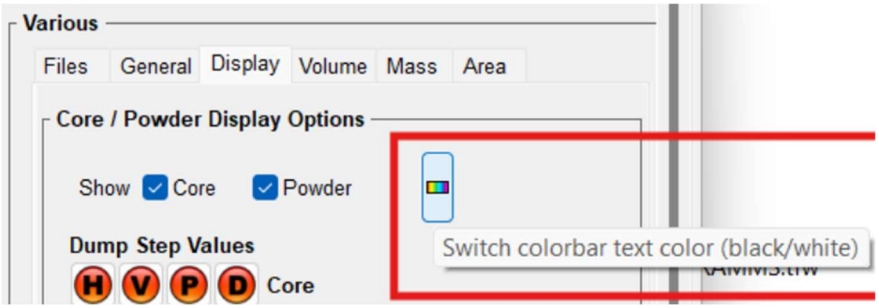
V 2.8.43 [2024-09-18]

- **New feature: Flow Height Exaggeration**: Flow height exaggeration can now be switched on and off by using these radio buttons:



Until now, this feature had to be changed in the Additional Preferences. If this feature is set to "real", then simulation contour lines will not work.

- **New feature: Colorbar Text Color**: The text color of the colorbar (black or white) can be changed now by using this button in the Display-tab on the right:



- **Improvement: Erosion Density**: Erosion density can be visualized also in input mode.

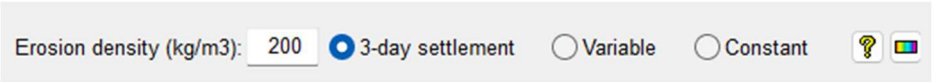
- **Improvement: Line Profile**: Click line profile points with left mouse button. The right mouse button click (finish a line profile) is no line profile point anymore.

- **Improvement: Special Characters / Blancs**: RAMMS checks for special characters and blancs in file paths and names, such that it is not possible, to start a simulation or create a project with wrong file paths anymore.

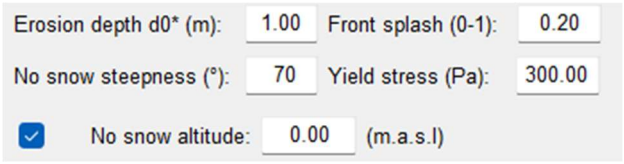
V 2.8.42 [2024-09-13]

- **New feature: Drag & Drop**: Input files, output files, shapefiles as well as DEM-files (TIF) can be moved by drag & drop onto the GUI surface. RAMMS will detect the type of the file and acts accordingly.

- **New feature: Erosion density**: 3 erosion density options available: 1) 3-day settlement according to Kojima, 2) Variable density with cosine of slope angle and 3) Constant erosion density. 3-day settlement is the default erosion density option. Use the constant density option, if you need more mass in your system (e.g. old snow layer eroded).



- **New feature: No snow altitude**: It's now possible to remove the erodible snowcover below a certain altitude (e.g. at sea level, or at the border of a river or lake).



- **Improvement: Project Wizard**: New project wizard implemented. Use the button in the top left corner to select a DEM-file, and then the new project wizard is opened. Or drag & drop a DEM-file onto the GUI area.

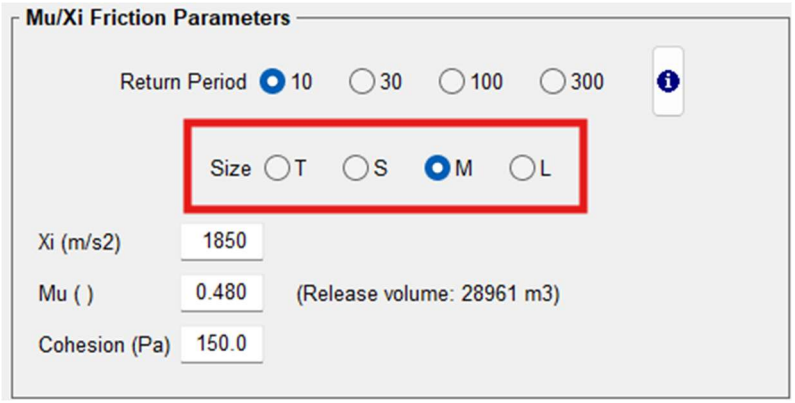
- **Improvement: Log file**: Log file checked and revised.

V 2.8.40 [2024-09-05]

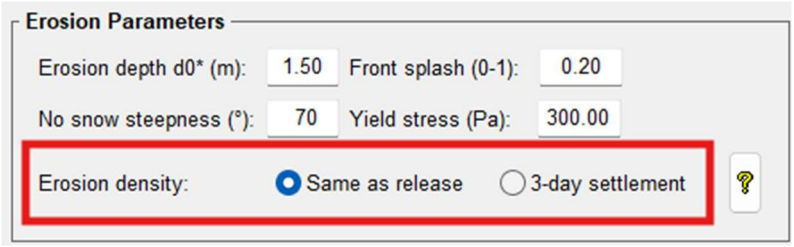
- **Improvement: Icons**: GUI improved with new icons! Since the beginning of RAMMS in 2010, we used the same small icons. Now, with RAMMS AG, new icons were implemented, providing a much better user experience. We hope you like it 😊!
- **New Feature: Web Update**: With "Help -> Update… -> Web Update" you can check for new udpates.

V 2.8.38 [2024-08-28]

- **New Feature: Volume category**: Avalanche volume category can be changed.



- **New Feature: Erosion density**: Implemented a new approach for the erosion density (3-day settlement), based on settlement experiment of Kojima.



- **Improvement: RAMMS Logos**: New RAMMS AG logos implemented.

V 2.8.35 [2024-04-04]

- **Improvement: Simulation contour-lines**: A problem with the simulation contour-lines was fixed.

- **Improvement: CSV-Files**: For every simulation, a data-total-csv-file is created, listing the sums of the many core- and powder-parameters. The file is called <simulation_name>_dataTotals.csv.
Additionally, when using the "Create VOLUME-PLOT" or "Create MASS-PLOT" buttons in the Volume- and Mass-tabs in the right panel, csv-files are created (<simulation_name>_mass_plot_data.csv resp. <simulation_name>_vol_plot_data.csv).

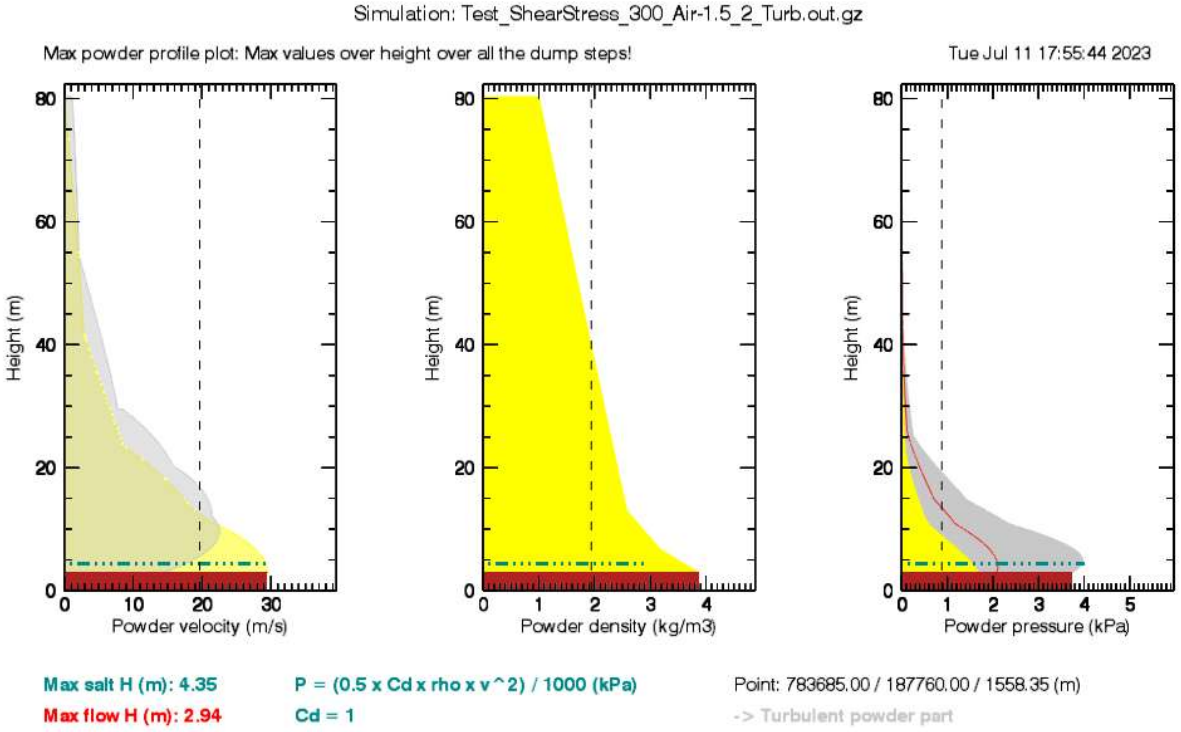
V 2.8.25 [2023-07-12]

- **Improvement: Slope-Angle**: Handling of slope angle improved. Not necessary to calculate slope angle before starting a new simulation. Much faster to start a new simulation!

V 2.8.24 [2023-07-11]

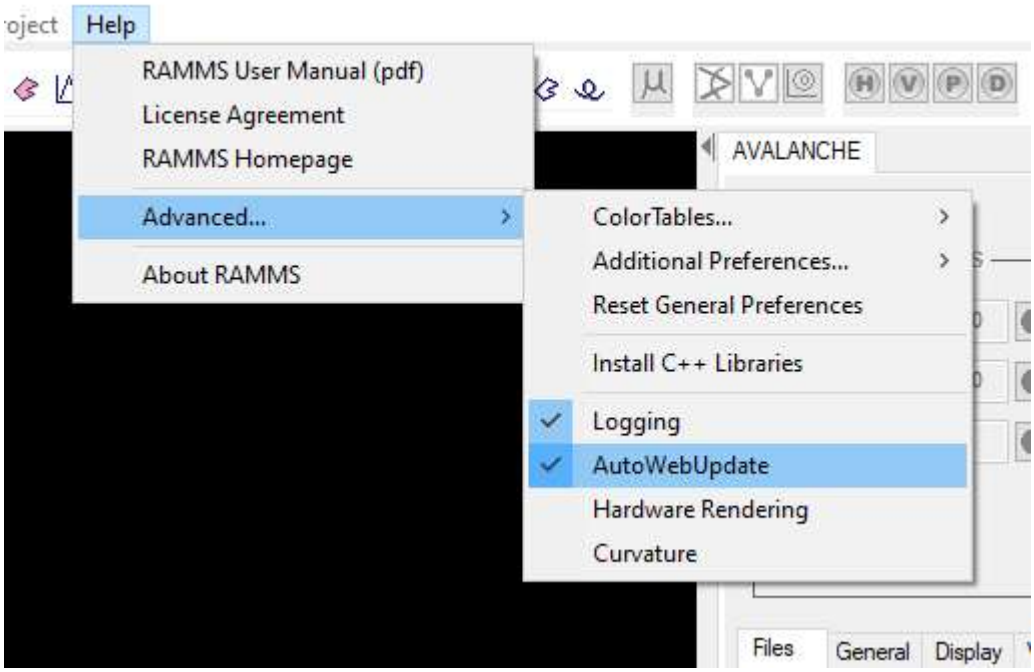
- **Improvement: Air-Temperature**: Air temperature field did not work, only slider. Resolved.

- **Improvement: Pressure-Plot**: Visualization of turbulent part improved, see image below. Turbulent velocity is not added to laminar powder velocity, and the addition of the turbulent part to the powder pressure is indicated in two ways:
  - grey part: pressure = 0.5 x rho x (laminar_v + turbulent_v)^2
  - red line: pressure = 0.5 x rho x (laminar_v^2 + turbulent_v^2)

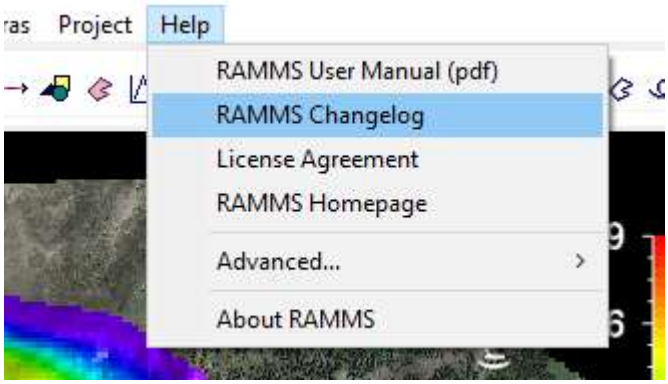


V 2.8.23 [2023-07-03]

- **Improvement: Web-Update**: Checking for new versions automatically at startup. Please make sure, that AutoWebUpdate is enabled.

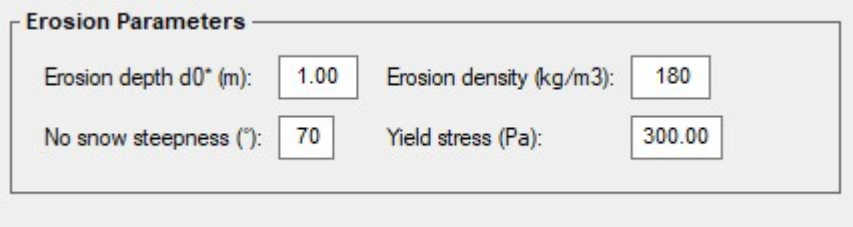


- **New Feature: Changelog**: View changelog-document in RAMMS.

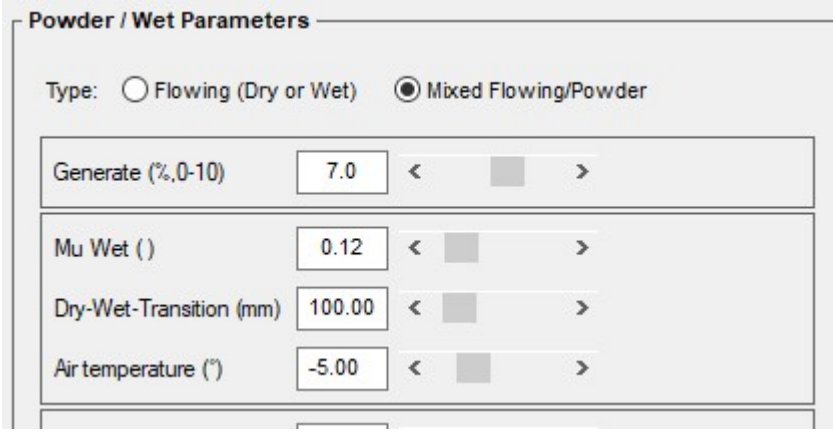


V 2.8.21 [2023-06-29]

- **New Feature: Erosion yield stress**: A yield stress is introduced to prevent small flow depths with higher velocities to erode too much snow. Default value is around 300 Pa.

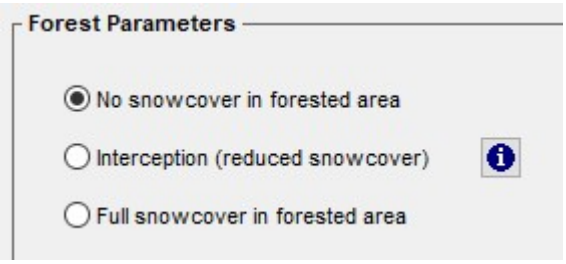


- **New Feature: Air temperature**: The powder cloud is using the ambient air temperature to improve the powder model.



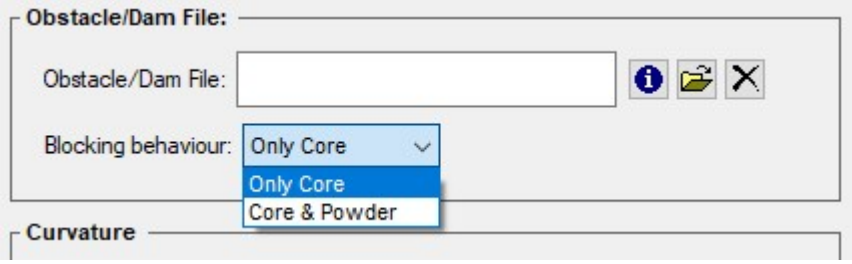
V 2.8.19 [2023-05-10]

- **Improvement: Pressure profile**: Pressure profile improved.
- **Improvement: Forest erosion**: Improved selection of snow erosion in forests:

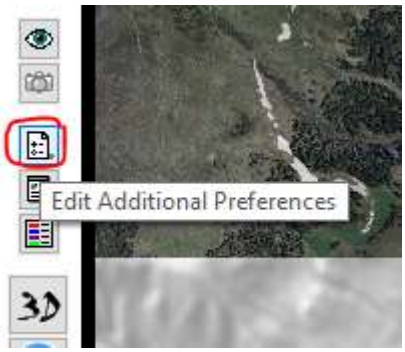


V 2.8.18 [2023-04-17]

- **Improvement: Dam/Obstacle**: Blocking behaviour can be set, "only core" or "core & powder". If "only core" is chosen, then the powder part will not be blocked by the dam/obstacle.



- **New Feature: Powder arrows**: It's now possible to also show direction arrows for the powder part. In the "Additional Preferences" (Help -> Advanced… -> Additional Preferences… -> Edit) or with this button



You can add a new keyword before END:

ARROW_MODE 0 (0: core, 1: powder)

Don't forget to "Save" and click "OK" to save the setting. This will then either show core or powder arrows. Disable and enable the arrows again to take effect.

V 2.8.15 [2023-02-07]

- **New Feature: Epsilon function**: New epsilon function. Cannot be set anymore manually.

- **New Feature: Turbulence checkbox**: Enable new turbulence model by checking the checkbox. Use "Beta Powder" = 1 for the moment. Recommendations on this parameter will follow. The pressure profile is also updated with the turbulence part.