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Title: **ROFMOD 5 - Tutorial 3: Dam Impacts**
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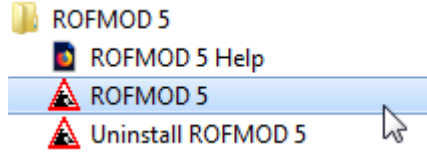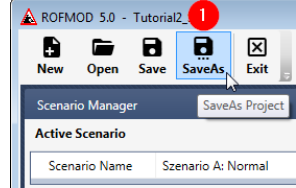Time needed: About 20 to 30 minutes

Summary

In this tutorial we examine the possibilities of specifying a **dam definition**, calculating the **dam impacts**, and statistically examining the dam effectiveness.
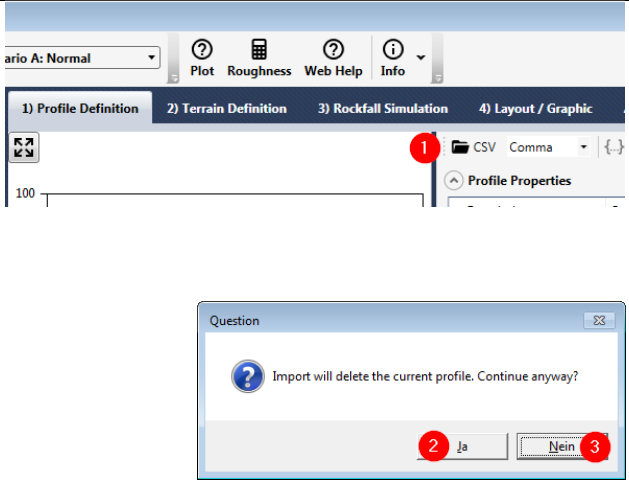
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0. Getting started

Start "ROFMOD 5" on your Windows PC.	
1. Save the current project under a new name, for example "**Tutorial3.pzip**".	

1. Profile Definition

1.1 Load profile points 1. Click on [CSV Comma] and select the already prepared comma separated text file with the profile points "**Tutorial3_Profile.csv**" from your hard disc. (If you cannot find the CSV file, see next step.) ROFMOD will ask you, if you really want to discard the existing profile. 2. "Yes" to continue and load new profile 3. "No" to abort loading a new profile	

!) If you don't have a text file with profile points, just copy the values on the right hand side to a text file and call it "**Tutorial3_Profile.csv**"	0.00,1550.00 10.00,1548.00 19.00,1545.00 23.00,1540.00 25.00,1530.00 28.10,1526.00 30.00,1522.00 35.00,1517.00 40.00,1510.00 45.00,1507.00 50.00,1500.00 58.00,1489.50 74.00,1487.00 90.00,1480.00 106.00,1474.00 110.00,1474.00 125.00,1472.00 140.00,1472.00

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2. Dam Definition

2.1   Adding dam to profile

1. Enter the dam dimensions:
   2.3, 4.2, 1.5,
   68.7, 51.9,
   61.4, 1489.5
2. The dam preview is shown in green in the plot.
3. Click on "Save to Profile" to save the dam definition
4. The dam definition is saved and displayed on the right.
5. The dam has been added to the profile.

3. Rockfall simulation with dam

### 3.1   Rockfall simulation

1. Activate "Consider Block Axes" in the simulation settings.
2. Run the rockfall simulation.

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3.2 Show parallel profile in plot

1. Activate the "Plot Parallel Profile" option in the tab "Plotting".
2. Active the "Plot Dam Definition".
3. The parallel profile and the dam definition are shown in the result plot.
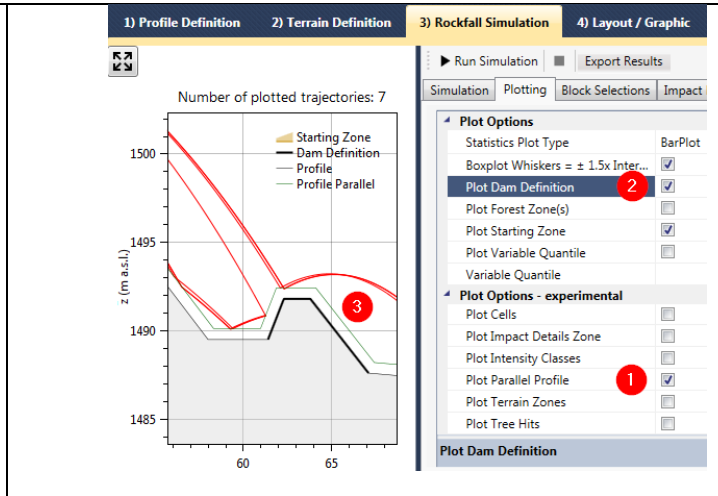
3.3 Impact details

1. Look at the tab "Impact Details".
2. Check how many dam impact are total and how many are listed.
3. Click on "Fit to Dam" to adapt the filter range automatically.
4. In this line you can filter the hits by x-range and minimum impact energy.

Block...	x (m)	z (m)	trajectory inclin...	impact angle (d...	total impact en...	impact height (...
0	62.05	1491.16	13.02	55.68	229.35	1.66
1	62.01	1491.07	16.43	52.27	300.65	1.57
2	61.96	1490.93	19.96	48.74	271.88	1.43
3	62.02	1491.09	15.42	53.28	304.29	1.59
4	62.44	1492.16	-58.50	52.80	910.22	2.66
6	62.44	1492.16	-58.52	52.78	909.57	2.66
7	62.00	1491.05	15.67	53.03	305.81	1.55
8	62.36	1491.97	-58.75	52.55	901.79	2.47
9	61.65	1490.13	-61.75	49.55	969.97	0.63
10	61.86	1490.68	-4.45	73.15	114.11	1.18
11	61.95	1490.91	4.63	64.07	203.59	1.41
12	61.94	1490.89	9.37	59.33	182.90	1.39
13	61.92	1490.83	5.90	62.80	193.34	1.33
14	61.93	1490.87	14.81	53.89	181.82	1.37
15	61.94	1490.90	5.36	63.34	201.68	1.40
17	61.69	1490.23	-14.91	83.62	107.03	0.73

18 of 18 impacts listed

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3.4   Filter impacts

1. Set the minimal energy filter to "300".
2. 7 of 18 impacts remain in the list.
3. Click on the button "Show filtered blocks" to show the listed impacts only.
4. The plot shows only block trajectories that have an impact in the filtered list.

3.5   Study individual impact

1. Filter the impact for total impact energy
2. Select block "9" in the list.
3. The impact is displayed in the plot.

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4. Dam Statistics

4.1 Compute Dam Statistics

1. Set the length of foundation to "3".
2. Leave the slope values unchanged, since they have no influence on the calculation.
3. Here you could change the layer distance, but leave it at "0.3".
4. Click on "Compute Statistics and Impacts.
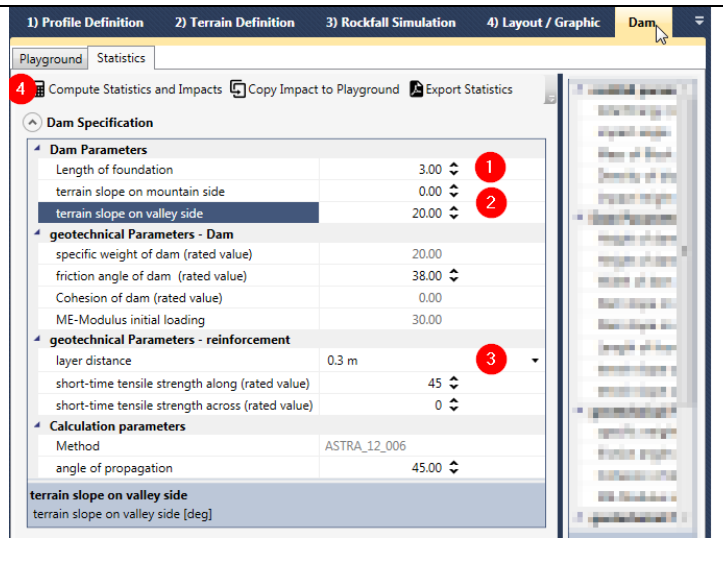
4.2 Read Dam Statistics

1. Apparently, 15 of a total of 20 blocks have been stopped by the dam. Three blocks hit the dam too high and are therefore "insufficient". Two more blocks have passed the dam.
2. Altogether only 75% of the blocks were stopped by the dam.
3. Click on "Export Statistics" to generate a PDF file with the dam statistics summary.

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