

# Generate avalanche problem danger levels

Here I briefly present the procedure to modify the avalanche problem files and add a danger level per avalanche problem.

The avalanche danger levels and problems can be downloaded, respectively, with the following scripts:

```
Download_Avalanche_Danger_Events.py
```

```
Download_Avalanche_Problem_Events.py
```

The avalanche problem file can then be adjusted with

```
Adjust_Store_Avalanche_Problems_List.py
```

to remove the multi-index structure and only have one index.

The application of the following two scripts will generate the danger level per avalanche problem.

First, the *sensitivity* values must be converted to a readable format which is done in

```
Convert_Sensitivity_to_Readable.py
```

Then, execute

```
Gen_ADL_per_AP_File.py
```

to finally generate the danger level per avalanche problem. This will also produce a combined file with all these danger levels plus the general danger level from the file downloaded with `Download_Avalanche_Danger_Events.py`.

In a second step we combine the *wet slab* and *wet loose* problems to one *wet* problem, to be able to later train a model on wet avalanches only. We first execute

```
Combine_Wet_Loose_and_Slab.py
```

which performs the combination produces the file `wet_Danger_List.csv`. Then we can add the new combined *wet* avalanche problem with the other avalanche problem danger levels with

```
Add_Wet_AP_to_Combined_Files.py
```

which will produce the file

```
Avalanche_Problems_ADL_Extended.csv
```

With this file we can proceed to combine the danger levels with the predictive features as described in the document `Gen_Avalanche_Predictors.pdf`.