**Requirement library:**

* Tensorflow 1.14
* Keras 2.2.5
* Numpy 1.17.5
* Pandas 0.25.3

About the files:

1. *DataAugmentation.ipynb* displays the process of generating new images;
2. The training process of model is shown in the file *training.ipynb*;
3. The file *predicting.ipynb* shows the predicting demo process of computing exact snow coverage;
4. And the *Estimator2.py* is the estimator file for computing each image’s snow percentage;
5. And the *snowModel\_933.h5* is the trained model files.
6. *test\_dataset* is an empty file folder, which is used to store test images.

Executing the program:

Firstly, please put the test dataset into the folder *test\_dataset* (or open the file *Estimator2.py* and rewrite the dataset\_path at the first line of code);

Then ensure the 4、5、6 files at the working directory;

Finally, run the following code:

*!python3 " Estimator2.py"*

to execute the program. It takes almost 3 minute to predict and output estimation results with 300 images in Google Colab, please wait patiently.