Atmospheric Measurement Techniques Discussions

Atmos. Meas. Tech. Discuss., referee comment RC2
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Comment on amt-2021-1

Anonymous Referee #2

Referee comment on "Applying self-supervised learning for semantic cloud segmentation of all-sky images" by Yann Fabel et al., Atmos. Meas. Tech. Discuss., https://doi.org/10.5194/amt-2021-1-RC2, 2021

Manuscript „Applying self-supervised learning for semantic cloud segmentation of all-sky images" by Yann Fabel and coauthors describes application of new developments in neural networks to improve automatic cloud recognition in all-sky images. In order to increase the size of training data set used in supervised learning of the deep neural network, they apply a two-step learning procedure. In the first step, „self-supervised" pretraining of the network, a vast volume of 300000 images is used in two distinctive approaches based on image reconstruction and cluster analysis. In the second, fine tuning stem, about 600 images is used for training and ~150 for verification.

As the effect of the procedure, the authors report significant improvement of the recognition compared to existing automated procedures, reaching 95% pixel accuracy.

The manuscript is clearly written, providing step-by-step description of the activities. All the necessary information is given.

The discussion part, however, could be improved. While in Fig. 6 confusion matrix is presented and in Fig. 7 exemplary segmentation mask from one of the recognition is presented, it would be useful to read/see some examples of best and worst recognition to compare. The authors describe which regions and types of clouds are most problematic, yet it would be informative to show examples.

I believe that such minor revision of the document would give useful information and possibility co compare whether other recognition algorithms have similar for different problems.

After such a minor revision the manuscript van be accepted for final publication.