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A global classification dataset of daytime and nighttime marine low-cloud mesoscale morphology based on deep-learning methods

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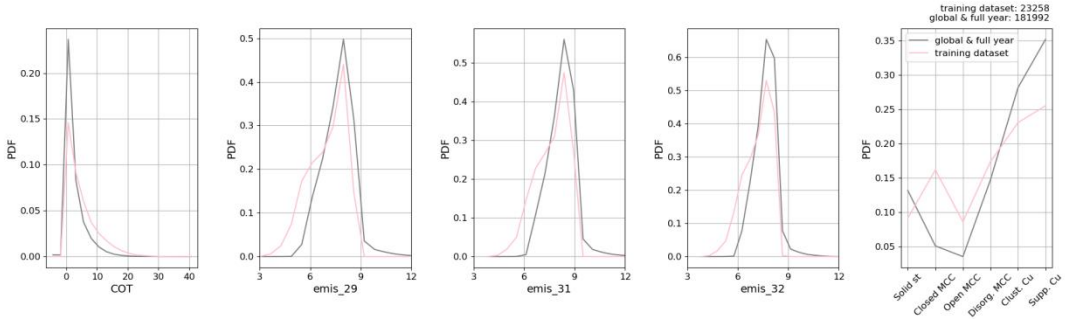


Figure S1: The comparison of probability density functions (PDFs) between our training dataset and a global full-year dataset. (a) PDFs of cloud optical thickness (COT); PDFs of radiance data from infrared channels: (b) 29, (c) 31, (d) 32; (e) PDFs of cloud morphology.

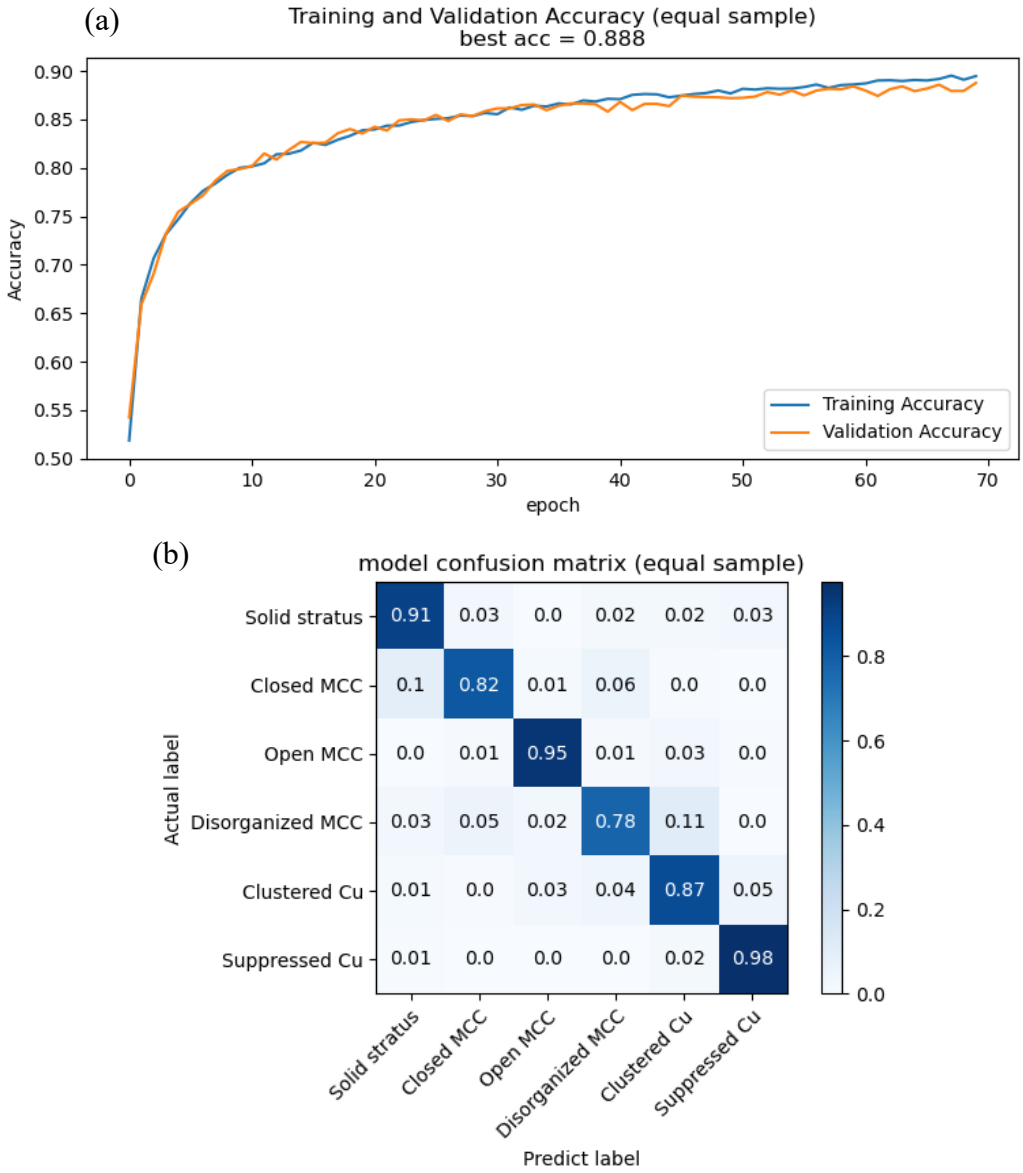


Figure S2: Results of the model trained on a balanced sample dataset (2,000 samples per category). (a) the model's accuracy on the training and validation datasets. (b) the confusion matrix of the model.

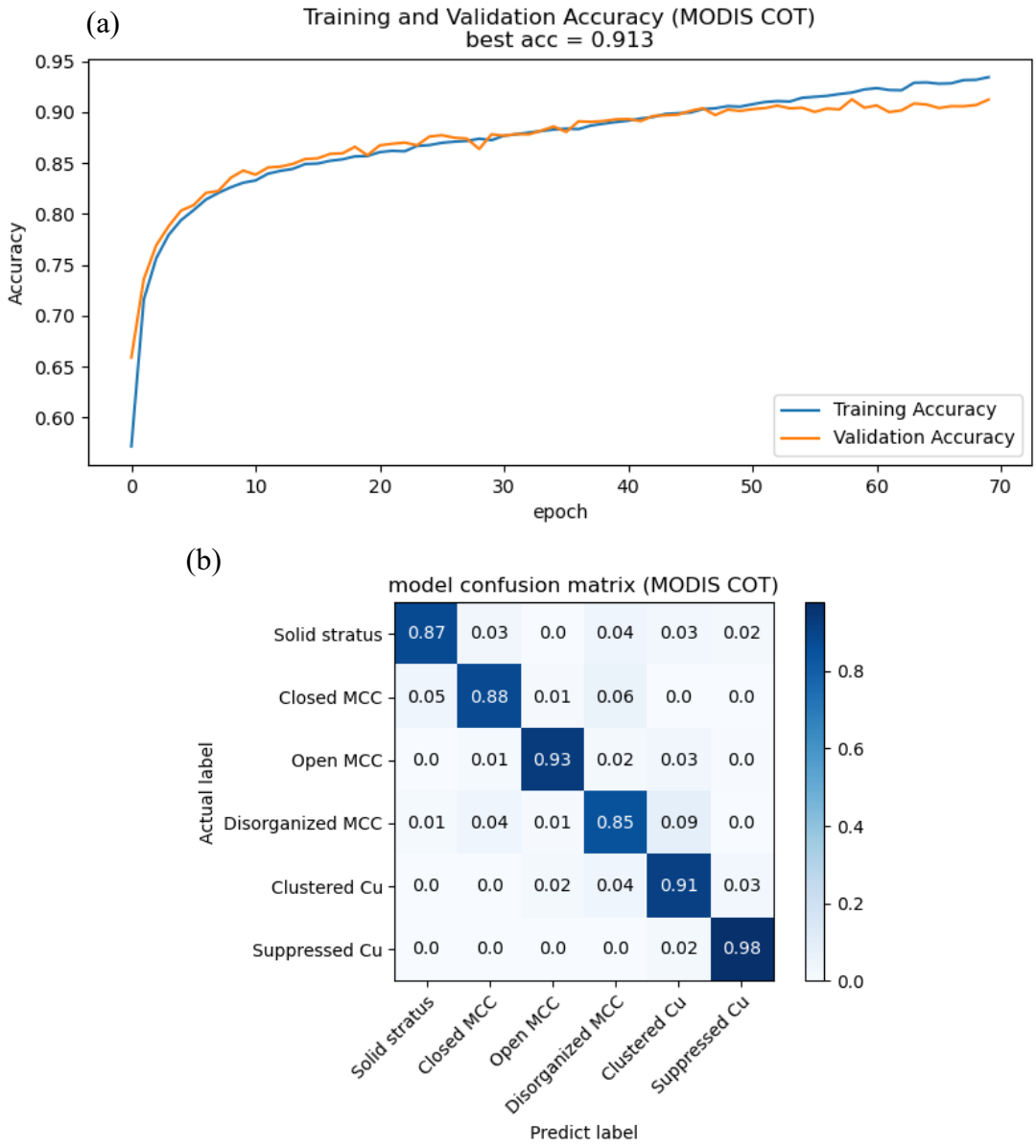


Figure S3: Model training results based on MODIS COT. (a) the model's accuracy on the training and validation datasets. (b) the confusion matrix of the model.

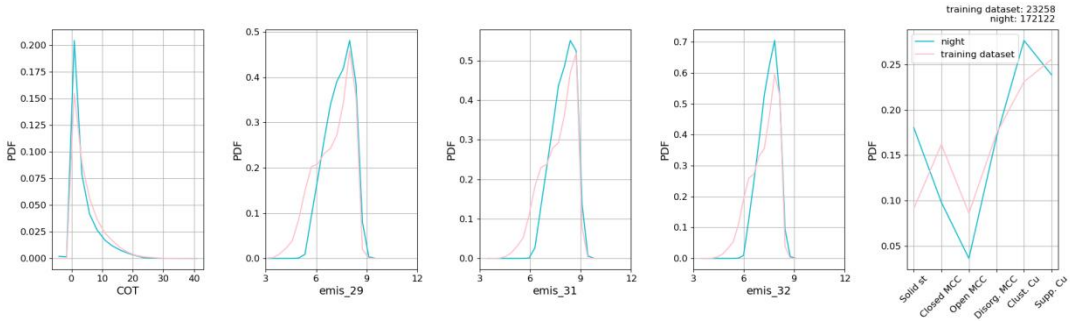


Figure S4: The comparison of probability density functions (PDFs) between our training dataset and a nighttime dataset. (a) PDFs of cloud optical thickness (COT); PDFs of radiance data from infrared channels: (b) 29, (c) 31, (d) 32; (e) PDFs of cloud morphology.

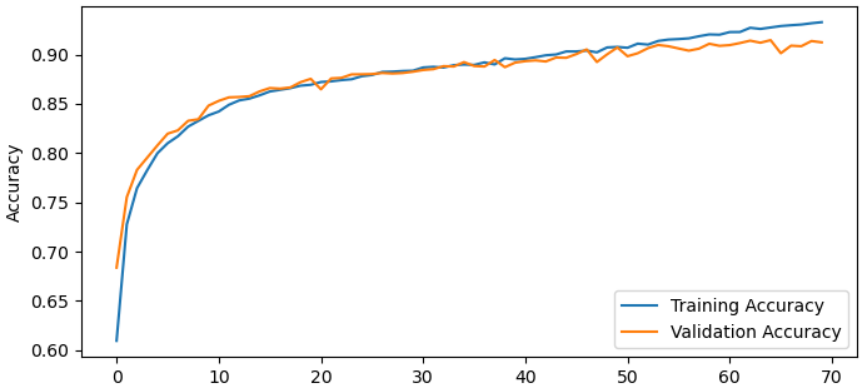


Figure S5: The training and validation accuracy curves. Validation accuracy reaches its maximum around epoch 65.

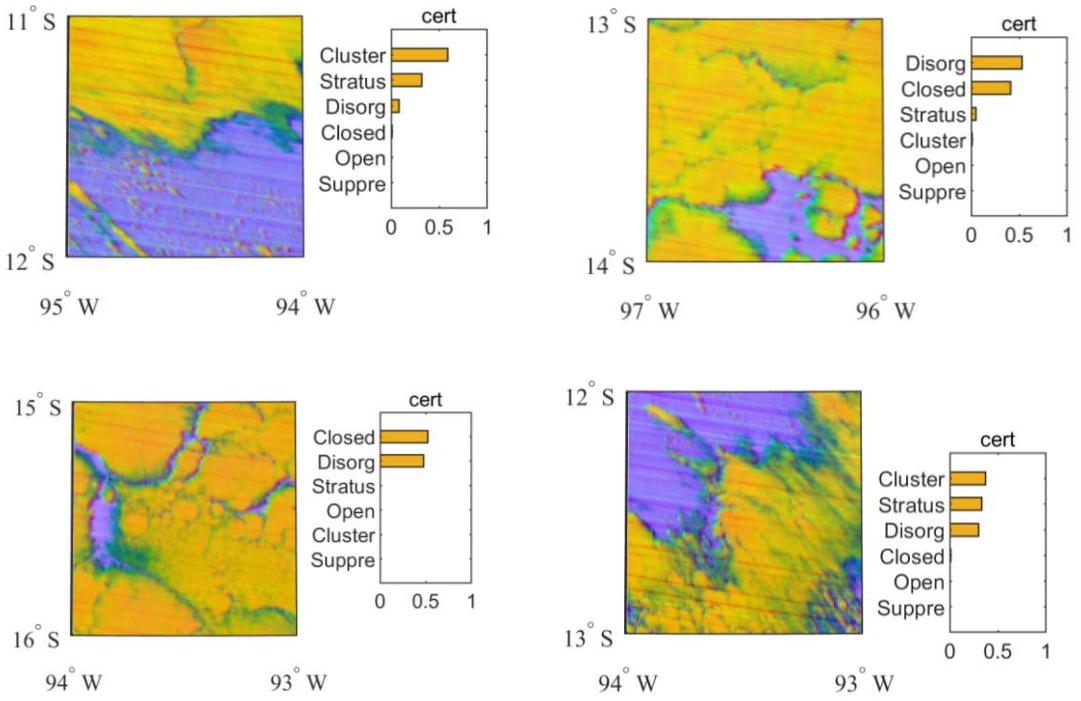


Figure S6: Examples of some mixed and transition scenes. Here, 'cert' represents the confidence level of each category. The sum of the confidence levels for the six categories equals to 1.

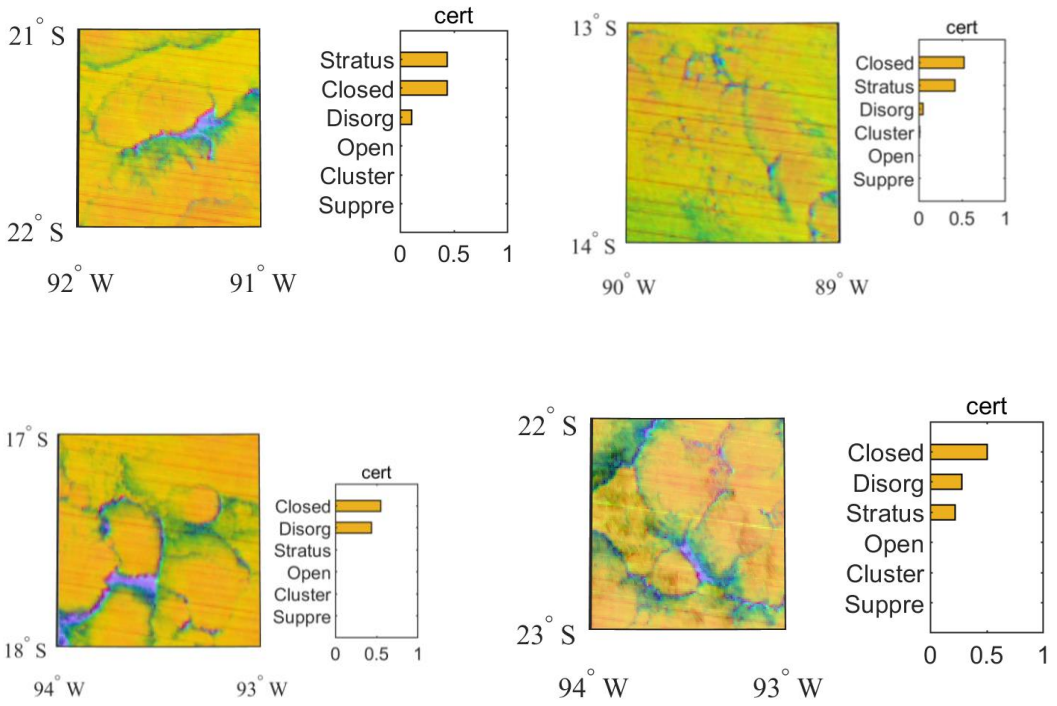
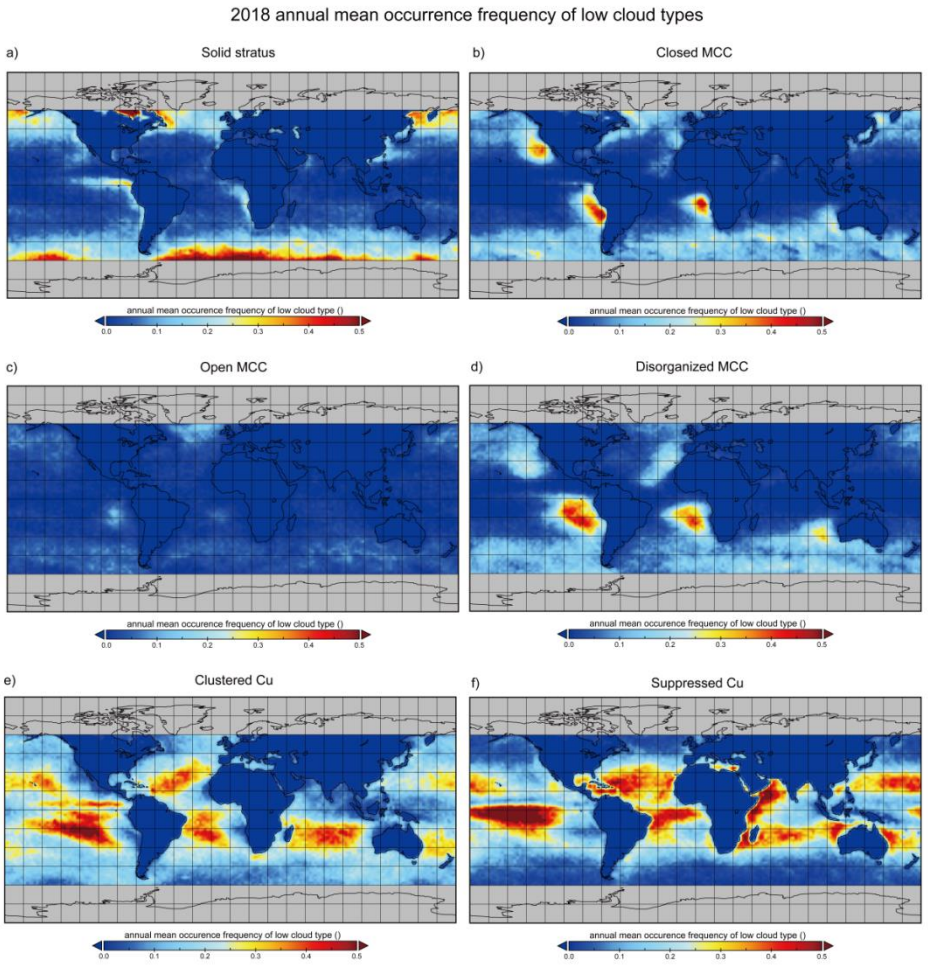


Figure S7: Same as Fig. S2. Examples of some misclassified scenes because of model's limited capacity to distinguish between stratiform structures and convective cells.



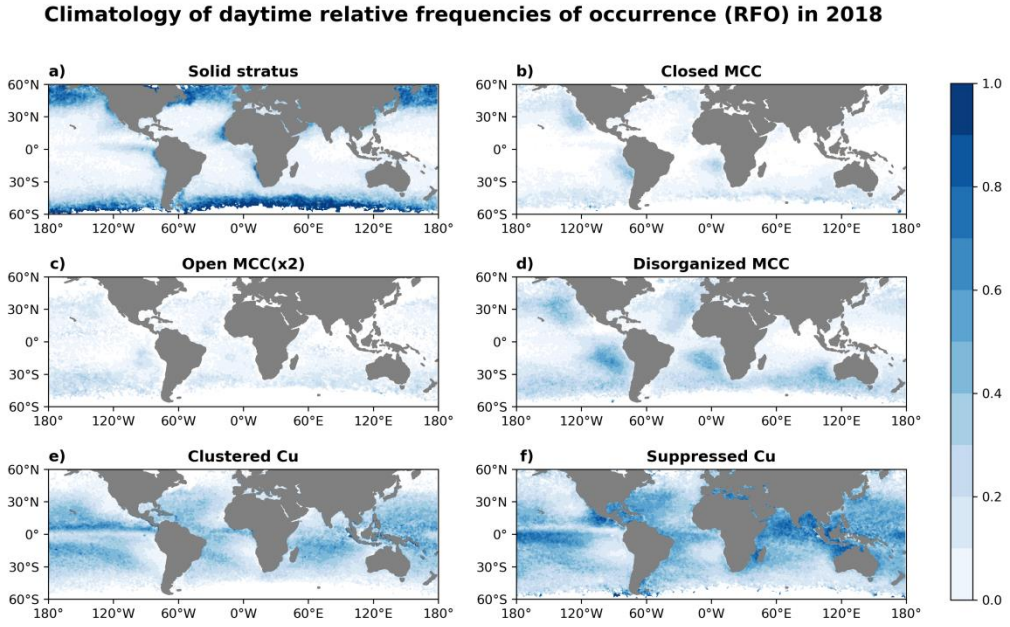


Figure S8: 2018 annual mean occurrence frequency of low cloud types from Yuan et al. (2020) and from our model.