



Cirrus clouds occurrence and condensation processes observed by lidar and HALOE

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The monthly probabilities for the occurrence of single layer and multilayered cirrus cloud are reported here based on six years of lidar data. Averagely, the cirrus cloud monthly occurrence is about 42%, which is close to 47% observed by HALOE. In July, cirrus clouds occur with a probability of more than 90% observed by both lidar and HALOE. Multilayer cirrus clouds occur about 25% of single layer clouds. The cirrus clouds show a probability of 80% for heights about 16 km and 20% below 14 km.

The condensation of cirrus clouds may be investigated in terms of water vapor density in the tropopause region. The occurrence of cirrus clouds is correlated positively with the water vapor density at 16 km; at this region higher densities of water vapor in the summer months are measured by HALOE. The five days back trajectory calculations shows more than 80% of cirrus clouds can be traced to the Tibet High Plateau region where nearby Asian monsoon region is formed. Another small fraction of cirrus clouds is traced to the east in the Pacific Ocean.