

## Cirrus cloud case study over Sao Paulo city using lidar associated with determination of tropopause height

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**Abstract:** A robust methodology [1] to obtain the macro-physical and optical properties of cirrus cloud over São Paulo, Brazil (23° 33' S, 46° 44' W) have been tested from the lidar data corresponding to winter period of 2007. In the same time a numerical algorithm [2] is used to determine the thermal tropopause height from gridded data with low vertical resolution to localize vertically the cirrus. The air mass trajectory close to such altitude is studied considering the vertical level given by the highest values of potential temperature variation with pressure (similarly to the dynamical tropopause approach) in order to determine the history and origin of these clouds. The preliminary results for a specific day shown occurrence of cirrus at 12 km high, associated with air mass originated from the East Pacific and another occurrence at 10 km high provided from a tropical convection in the North America. The retrieved lidar data show optical depth and lidar ratio ranging respectively from  $\tau_{cir} = 0.08 \pm 0.02$  to  $\tau_{cir} = 0.56 \pm 0.01$  and LR = 19 to LR = 74.

### References

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- [2] Reichler, T.; Dameris, M.; Sausen, R., *Determining the tropopause height from gridded data*, Geophys. Res. Lett., **30**, No. 20, 2042, doi:10.1029/2003GL018240 (2003).

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