Geophysical Research Abstracts
Vol. 20, EGU2018-5095, 2018
EGU General Assembly 2018

High Spectral Resolution Lidar using Spherical Fabry-Perot to measure Aerosol and Atmospheric Molecular Density in the upper troposphere and lower stratosphere

Yann Caraty (1), Alain Hauchecorne (2), Philippe Keckhut (3), Jean-François Mariscal (4), and Eric D'almeida (5)

(1) LATMOS, UVSQ, Guyancourt 78280, France, (yann.caraty@latmos.ipsl.fr), (2) LATMOS, UVSQ, Guyancourt 78280, France, (alain.hauchecorne@latmos.ipsl.fr) , (3) LATMOS, UVSQ, Guyancourt 78280, France, (philippe.keckhut@latmos.ipsl.fr) , (4) LATMOS, UVSQ, Guyancourt 78280, France, (jean-francois.mariscal@latmos.ipsl.fr) , (5) LATMOS, UVSQ, Guyancourt 78280, France, (eric.dalmeida@latmos.ipsl.fr)

Measurement of the vertical temperature profile within the UTLS presents a major challenge in geophysics to study microphysical phenomena and dynamic processes in particular to detect gravity waves between 2 km and 30 km of altitude. Theoretically, the use of an HSRL method should enable the validity range for the molecular density and temperature profiles from Rayleigh LIDAR to be extended to below 30 km by eliminating the particle contribution. In practice, a spectral separation of a few picometres requires a special filtering system. In the context of this work, we tested the use of a Spherical Fabry-Perot which achieves these performances while maintaining a high level of flexibility in terms of optical alignment. However, the first tests have shown that this filtering device has some technical limitations (thermal drift and possibly partial depolarization of the backscattered signal).