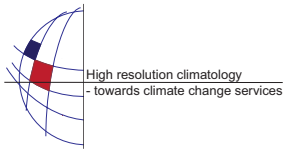
EMS Annual Meeting Abstracts
Vol. 7, EMS2010-708, 2010
10th EMS / 8th ECAC



A Raman Lidar as Operational Tool for Long-Term Water Vapor, Temperature and Aerosol Profiling in the Swiss Meteorological Office

Dr Simeonov (1), Dr Dinoev (1), Dr Serikov (1,2), Dr Calpini (3), Dr Bobrovnikov (4), Dr Arshinov (4), Dr Ristori (1), Dr van den Bergh (6), and Dr Parlange (1)

(1) EPFL, ISTE, EFLUM, Lausanne, Switzerland (valentin.simeonov@epfl.ch), (2) MPI For meteorology ; Hambour, Germany (ilya.serikov@znav.de), (3) MeteoSwisse, Payerne, Switzerland (bertrand,calpini@meteoswiss.ch), (4) IOA Tomsk, Russia (smb@iao.ru), (6) EPFL, ISTE, LPAS, Lausanne, Switzerland

To satisfy the rising demands on the quality and frequency of atmospheric water vapor, temperature and aerosol measurements used for numerical weather prediction models, climate change observations and special events (volcanoes, dust and smoke transport) monitoring, MeteoSwiss decided to implement a lidar at his main aerological station in Payerne. The instrument is narrow field of view, narrowband UV Raman lidar designed for continuous day and night operational profiling of tropospheric water vapor, aerosol and temperature The lidar was developed and built by the Swiss Federal Institute of Technology- Lausanne (EPFL) within a joint project with MeteoSwiss. To satisfy the requirements for operational exploitation in a meteorological network the lidar had to satisfy a number of criteria, the most important of which are: accuracy and precision, traceability of the measurement, long-term data consistency, long-term system stability, automated operation, requiring minimal maintenance by a technician, and eye safety. All this requirements were taken into account during the design phase of the lidar. After a ten months test phase of the lidar at Payerne it has been in regular operation since August 2008. Selected data illustrating interesting atmospheric phenomena captured by the lidar as well as long-term intercomparison with collocated microwave radiometer, GPS, radiosonding and an airborne DIAL will be presented and discussed. The talk will address also the technical availability, alignment and calibration stabilities of the instrument.