



## **Lidar observations of the aerosol backscatter coefficient and aerosol mixed layer height above Neuchâtel (Switzerland), during years 2000-2003**

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Backscatter lidar measurements in the PBL and the lower atmosphere have been performed at Neuchâtel, Switzerland, 47.00°N, 6.95°E, 485 m above sea level (asl), from May 25, 2000 till April 4, 2003. The aerosol backscatter coefficient (ABC) is obtained at wavelength of 532 nm and the height of the aerosol mixed layer (AML) is determined. The averaged ABC and its annual variation are presented for the AML and for the lower troposphere. The annual cycle of the ABC and the AML height involve 86 measurements at local noon (14:00h local solar time,  $\pm 1$ h) and 99 measurements at local sunset ( $\pm 2$ ) for a total of 185 measurements.

It is found that the AML height has an yearly mean value of 2005 m (asl) and is showing a monthly-averaged maximum during summer. The variation of the ABC in the AML is from  $2.14 \times 10^{-7} \text{ m}^{-1} \text{ sr}^{-1}$  till  $1.23 \times 10^{-5} \text{ m}^{-1} \text{ sr}^{-1}$  (altitude mean:  $3.24 \times 10^{-6} \text{ m}^{-1} \text{ sr}^{-1}$ ), while the variation of the altitude-averaged ABC in the lower free troposphere varies from  $1.16 \times 10^{-7} \text{ m}^{-1} \text{ sr}^{-1}$  till  $6.27 \times 10^{-6} \text{ m}^{-1} \text{ sr}^{-1}$  (altitude mean:  $1.13 \times 10^{-6} \text{ m}^{-1} \text{ sr}^{-1}$ ). The statistical distribution of the ABC in the AML and in the lower troposphere, as well as the aerosol optical depth in the AML may be approximated by a lognormal distribution, while the statistical distribution of the AML height may be approximated by a normal distribution.

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