First Urban Boundary layer determination from Lidar measurements at Natal (Brazil)

Renata Santos

Federal University of Rio Grande do Norte – Department of Atmospheric and Climate Science -UFRN/DCAC, Natal/RN (Brazil)

Federal University of Rio Grande do Norte – Science and Technology School - UFRN/ECT, Natal/RN (Brazil)

renatasammaraufrn@gmail.com

Daniel Camilo[1,2], Marcos P. Araujo[1], Anderson Guedes[1], Judith Hoelzemann[1], José Henrique[1], Fabio Lopes[3,4],

Eduardo Landulfo[4], Elena Montilla-Rosero[1,4]

[1] *Federal University of Rio Grande do Norte -Department of Atmospheric and Climate Science-UFRN/DCAC, Natal/RN (Brazil)*

[2]*Federal University of Rio Grande do Norte – Department of Civil engineering -UFRN/CT/CIV, Natal/RN (Brazil)*

[3] *Universidade de São Paulo, Instituto de Astronomia, Geofísica e Ciências Atmosféricas, Rua do Matão, 1226, Cidade Universitária, 05508-000, São Paulo (Brazil)*

[4] *Instituto de Pesquisas Energéticas e Nucleares (IPEN), Avd. Prof. Lineu Prestes 2242, 05508-000, São Paulo (Brazil)*

Abstract: The planetary boundary layer (PBL) height is a crucial parameter for air quality monitoring or forecasting and is essential for the interpretation of atmospheric constituents. A first determination of PBL height has been done through the identification of the minimum in the vertical gradients of Lidar profiles measured with a multiwavelength polarized Lidar system (named DUSTER) developed by the Laser Environmental Application Laboratory (LEAL) at the Nuclear and Energy Research Institute (IPEN, São Paulo, Brazil) and installed in February, 2016 at the Department of Atmospheric and Climate Sciences of the Federal University of Rio Grande do Norte (UFRN) in the city of Natal, Rio Grande do Norte, in the Brazilian Northeast (5°50'29 S, 35°11'57 W, sea level). In this work, the first information about daily evolution of urban PBL height in Natal is presented.

Keywords: PBL; LIDAR measurements; Urban air pollution

IXWLMLA Topic: Process studies and applications using Lidar data