

# A COMPARISON BETWEEN THE PLANETARY BOUNDARY LAYER HEIGHT ESTIMATED BY COSMIC-2 AND AN ELASTIC LIDAR: A CASE STUDY TO SÃO PAULO CITY

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## Abstract

The Planetary Boundary Layer Height (PBLH) is one of the most important variables for studies related to pollutant dispersion, serving as an input parameter for weather forecast models and prediction of pollutant concentration and/or air quality indices. However, obtaining such a parameter is not an easy task and it is restricted to regions that have radiosoundings and/or remote sensing equipment, e.g. elastic or Doppler lidars, which, due to their high cost and the need for specialist operators, have low availability in several countries, such as Brazil, for example. Based on this scenario, the present work presents a comparison between the PBLH estimated using Constellation Observing System for Meteorology Ionosphere and Climate – 2 (COSMIC-2 satellite data and MSP-1 (an elastic lidar located at Center for Lasers and Applications – CELAP for the city of São Paulo. The results demonstrate that in situations where the PBLH is well developed and there is not low clouds, both instruments present very similar results. Based on this result, it is possible to replicate the methodology presented in this work for other regions, so that it is possible, even with a low temporal resolution, to estimate the PBLH for regions that do not have measuring instruments.

**Keywords:** COSMIC-2; Elastic Lidar; Atmospheric Boundary Layer Height.

**XII WLMLA Topic:** Data processing

**ID:** Poster P209