Atmospheric Chemistry and Physics Discussions

Atmos. Chem. Phys. Discuss., referee comment RC1
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Comment on acp-2021-93

Tadeusz Niedzwiedz (Referee)

Referee comment on "Measurement report: Effect of wind shear on PM_{10} concentration vertical structure in the urban boundary layer in a complex terrain" by Piotr Sekuła et al., Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2021-93-RC1, 2021

General Comments:

The work was prepared by a team of good specialists in the field of climatology and meteorology, statistical methods and atmospheric pollution. Measurements of the vertical structure of PM10 concentration and temperature in an atmosphere layer >200m in Krakow were taken during two winter seasons thanks to the use of sightseeing balloon. The authors also used all available meteorological and air pollution data from all measuring stations in Krakow and from meteorological models to explain the vertical structure of PM10 concentration. The results were discussed with other similar measurements around the world. The authors have demonstrated knowledge of the latest literature on this subject. This is evidenced by the citation of the latest works, even from 2020 and 2021, for example lines: 37, 44, 50, 60-62 71, 80-81, 84).

The most important result of the research is the finding of a significant influence of wind shear on the vertical distribution of PM10 concentration and the determination of three vertical zones of air pollution hazards. These results are representative of other parts of Europe with poor aero sanitary conditions.

In terms of content, I fully accept the text of the publication. If possible, I suggest making a few technical corrections, which are listed below.

Technical corrections:

Line 108: (PM10 emissions… 2020). In the reference is the year 2021, see line825.

Line 1003: change (Raport… 2020) to (Roczna… 2020). See line 834.

Line 122: (Kraków, 2019)? Is this citation?

Table 1 and 2: add "°" for Lat and Lon: °N, °E

Lines 398 and 399: 2-4 $m \cdot s^{-1}$ is to be written together on one line.

Lines 552, 556, 566-567: citations must be in chronological order.

Line 568: Zangl - in reference list, line 892 is Zängl.

Lines 739-740: This position is not cited in the text (Drechsel and Mayr, 2008).

Lines 834-837: Roczna… move to line 843.