

DIAL measurement of lower tropospheric ozone over Saga (33.24°N, 130.29°E), Japan, and comparison with a chemical climate model,

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General Remarks

The manuscript describes an upgraded version of an existing ozone lidar system. The performance of the system seems to be good. The value of lidar vertical sounding for model validation and synergetic use is demonstrated. However, some more literature on the benefit of model validation with lidar systems should be included. If a longer effort is planned this should be mentioned since in the past just single case studies have been made. I recommend publication after a few minor adjustments.

Details

- (1) P. 173, line 22: Replace "pollution" by "pollutant".
- (2) P. 175 line 21: I suggest writing: "we modified the coaxial receiving system by adding a small telescope in biaxial configuration".
- (3) P. 178, lines 3-4: Please, replace "systematic error" by "systematic uncertainty". A systematic error is a known quantity and must be corrected!
- (4) P. 181, lines 21-22: "A regional model....might solve these discrepancies": Such a statement requires more information on the air masses. For instance, it could be the case that air from different sources arrives side by side. This can be clarified by trajectory analyses or by looking at the model output for adjacent grid boxes. A smaller-scale model is helpful, if air filaments from outside the model domain of the fine-scale model are captured to some extent by the larger-scale model. Otherwise they are missed! I suggest improving also the corresponding part of the "Concluding remarks".
- (5) P. 182, line 8: Replace "exchanges" by "exchange" (or perhaps "exchange events").
- (6) Sec. 5: There is no clear statement about future plans or work. The use of the regional model is sold as an option, not as a plan. Given the uncertainties of regional models with air parcels coming from remote sources mentioned above it is also advisable to announce further comparisons and optimization (see general remarks).