

Interactive comment on “Ground-based measurements of middle-atmospheric carbon monoxide above Ny-Ålesund (78.9° N, 11.9° E)” by Niall J. Ryan et al.

Anonymous Referee #2

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This manuscript discusses middle atmospheric CO measurements carried out by a novel ground-based microwave spectrometer, CORAM, installed at the Arctic station of Ny-Ålesund (78.9° N, 11.9° E). The development of this instrument and its dataset are of interest to the scientific community, as CO is a useful tool for studying mesospheric dynamics in Polar regions and the satellite coverage of CO will become scarce in the near future. In fact, the creation of a network of ground-based instruments observing middle atmospheric constituents is desirable.

The paper is well written and well organized and I recommend this work be published. In my opinion, however, since this is the presentation paper for CORAM, there are

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a few aspects of the instrumentation and the data presented that should be better discussed in the manuscript.

General comments

The paper lacks information on the receiver itself, possibly a photo, a sketch of the quasi-optical front end, and on the observing equations of this (total power?) instrument.

As a validation paper presenting a new receiver to the scientific community, I would expect there would be more data to show and that the validation would cover a longer time period. Especially since Polar mesospheric CO changes substantially from winter to summer, as do the observing capabilities of a 230 GHz ground-based instrument installed at sea level, so the data and their analysis results and uncertainties may change significantly from winter to summer. I understand that a technical failure occurred in January 2018 but now more than 14 months have passed. Are there new data to add to the analysis?

Specific comments

See the attached pdf file.

Please also note the supplement to this comment:

<https://www.atmos-meas-tech-discuss.net/amt-2019-121/amt-2019-121-RC2-supplement.pdf>

Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2019-121, 2019.

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