

Interactive comment on “Global ozone monitoring by occultation of stars: an overview of GOMOS measurements on ENVISAT” by J. L. Bertaux et al.

Anonymous Referee #1

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The paper by Bertaux et al. is an elaborate overview of the GOMOS instrument, data analysis, and scientific achievements. It is notable that the various problems which occurred during the operation of the instrument are clearly stated. For such an overview paper it is justifiable that essentially no new scientific results are presented. Thus, publication in ACP is recommended. Still, I've two points to criticize: first, the length of the paper which could be reduced considerably by avoiding various repetitions in different chapters. Second, the quality of English varies significantly which makes reading not a pleasant task: proofreading by a native speaker could help.

Find below some specific remarks.

Content:

P9974L25: Can you explain, why both parameters are not fitted simultaneously?

P9977L15: Can you give an explanation, why such a complicated way of different steps via line-densities is used and not a direct retrieval of altitude profiles?

P9977L18: Relative errors are given here. Could you state whether/which of the original error sources lead more to relative or absolute errors. Could you also show the absolute profiles in Fig. 22 to which the relative data refer to?

P9979L24 'Another ozone profiles interesting comparison was made in the': 1. strange sentence, 2: what have been the results of this comparison.

P9979L27: For such an overview paper it is in my opinion not appropriate to show examples of only two profiles in the validation section: either a paper should be quoted where this has been analysed in detail or a statistical analysis should be given here.

P9980L14, 'Before GOMOS on ENVISAT, the best ozone climatology (based on measurements) was produced by': the wording 'best' is not very informative: can you explain why it is the 'best' or use some clearer statement here.

P9981L25: Can you give references for your claim that these are the two most important causes for the differences?

P9996L14 'According to this first GOMOS climatology of PMCs, they seem to be 15 more frequent in the Northern Hemisphere than in the Southern Hemisphere.': could you justify a bit more this observation? Are the number of available stars for PMC detection similar in the north and south? How much more in the north?

P9996L28, 'The scattering efficiency as a function of wavelength will allow to determine the characteristics (at least the size distribution) of these icy particles.': can you specify which/how many independent parameters of the size distribution should be able to be retrieved.

Technical:

Abstract: OCLO should read OCIO, like in the text

P9920L3, '8.2tons': not necessary for the description of GOMOS

P9920L11, 'necessary: to answer the following questions': . . . beside others

P9920L26, 'Local Time, and period 100 mn.': This is not a sentence.

P9921L2, 'ozone, NO₂, NO₃, H₂O, air, aerosols, O₂, temperature and turbulence parameters': could you be more specific here, i.e. air-density, aerosol-extinction ...

P9924L13, '0.5.' : delete 2nd dot

P9925L16, 'emission-looking instruments (like MIPAS and SCIAMACHY, for example)': SCIAMACHY does not look at the atmospheric emission but detects the scattered radiation.

P9926L19 'for NO₂ and NO₃': this appears two times in the sentence, skip one

P9927L14: delete dot before '('

P9930L20, 'In Sect. 7 is presented a short overview of': change to 'In Sect. 7 a short overview of . . . is presented'

P9932L7 'For instance, the influence of Quasi Biennial Oscillation (QBO) on ozone depends on altitude.': This is not a sentence.

P9932L24: check the sentence

P9934L7, 'discrepancy': -> discrepancies

P9934L10, 'It is clear': . . .make this sentence easier readable

P3340L14, 'we do not felt': -> we do not feel

P3341L25, 'It is a thin layer (2 km) of small ice particles ($r < 0.1 \mu\text{m}$) at 83–85 km': really only there or more extended but not visible?

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P9942L4, 'In emission': you mean when looking at scattered sunlight; i.e. not a direct emission of the PMCs.

P9942L20, 'possibly in relation with less leakage from russian gas pipelines': this is only one possible explanation beside many others; better to skip it or give evidence.

P9943L3 'limb emission': this term is usually used in the mid-IR for real emission of the atmosphere; please change to limb scattering;

P9955L16, 'It should be noted the high degree of resemblance between the data and the model.': this is not the case for the water absorption, but only mentioned in the Figure caption of Fig. 16. It should be stated in the text.

P9961L21, 'In addition is needed an atmospheric vertical profile, in order to account for atmospheric refraction': an atmospheric profile of air density

P9963L18, 'Data form the SATU (Star Acquisition Tracking Unit)': This is not a sentence.

P9967L8: ozone 'and' other gases

P9968L11, 'the corrected star signal Sobs is corrected as': 2xcorrected?

P9970L14, 'the line density data are noisier than the line densities': should read 'the local density data. . .'

P9974L9, MSISE: -> MSIS

P9974L9, 'After all, ECMWF are based on actual measurements made all over the planet, updated every 6 h.': What should this sentence mean?

P9981L29: reference mission.

P9989L8: This paragraph is a very general statement which should be moved to the conclusions and be extended by definite examples/plans.

P9992L20, 'In Fig. 40 are represented the line densities for 6 occultation . . .': In Fig.

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40 the line densities for 6 occultations are presented

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