

## ***Interactive comment on “BrO measurements over the Eastern North-Atlantic” by M. Martin et al.***

### **Anonymous Referee #1**

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Review of "BrO measurements over the Eastern North-Atlantic" by M. Martin et al. submitted to ACP

General comments:

First, I would like to apologise for being so late with the submission of my review; this is certainly not meant as a reflection on the quality of the manuscript. The paper presents a very interesting and highly relevant data set measured using the MAX-DOAS technique during a ship cruise made along the West African coast in February 2007. The authors provide just the right amount of information and evidence needed to convince the reader that they have done a thorough and in-depth study of their observations and that the instrumentation and analysis technique (e.g. specially the RT model) used in this study are state-of-the-art. I also find the interpretation of the MAX-DOAS measurements of BrO thorough and valuable, and appreciate that at the same

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time the results have not been over-interpreted and shortcomings which naturally exists with data sets like this one have been discussed as well. The manuscript answers most of the questions I would have asked with regard to the observations. In summary, the scientific material is well presented and definitely well suited for publication in ACP.

Specific comments (including typos etc.)

- Did you have a look if you could gain any extra information by comparing the campaign data with satellite observations from the relevant time period and region?

- If satellite maps of marine biogenic activities would be available, they could possibly also add to the discussion - any chance to add more information here? It would be quite interesting to find out more about if the source is rather land-based or marine - or both ... . I suspect it would be hard to find additional information to pin this anymore down than you have already in the manuscript but can't do harm to try and collate as much information as possible.

- I assume there were no in-situ ozone measurements made during this cruise?

Page 9292, line 8: ... 'marine air in many ways' (not was) ... 'ozone, it changes...'

Page 9293, line 12: ...'in upwelling regions'

Page 9293, line 25: ...'not yet known'

Page 9294, lines 1-2: either: 'Reactive bromine species can... . They can ...' or 'Reactive bromine can ... It can ...'

Page 9294, lines 14&18: either 'mid-latitudes'; or 'mid latitudes' should be used consistently in the text.

Page 9295, lines 5-7: The 2 sentences about IO don't really belong into the introduction and should definitely be in the conclusions section. It is a "null result" but still useful information!

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Page 9296, lines 10/11: How well did the gimbal mount work - can you provide an estimate on how much movement you would expect in terms of degrees for the elevation angles used? This is quite important when looking at quantitative values deduced from the MAX-DOAS measurements.

Page 9296, lines 12-16: Did the approach using 3 telescopes with about 20deg offset in azimuth provide you with some additional information re the horizontal distribution? Was that part of the agenda when you set up the instrumentation in this way?

Page 9300, line 25: delete: '... thus close to Mauretanian upwelling region.' Already mentioned in line above.

Page 9302, lines 10-12: Right, but the amounts measured on 12 and 16th Feb are also very low and much further south!!

Fig. 2: Definitely a very appealing figure which conveys quite some information at once. However, I do find the "error bars"; a bit misleading since they are not actual real errors but are a mix of error and real variability over the day, right? Maybe it would be safer to just refer to it as standard deviation. I also noticed that daily mean values for 11 and 13 Feb are missing. Why is that? Due to the instrument malfunctions briefly mentioned in the paper under section 2.2?

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Interactive comment on Atmos. Chem. Phys. Discuss., 9, 9291, 2009.

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