Atmos. Chem. Phys. Discuss., 5, S2998–S3002, 2005
www.atmos-chem-phys.org/acpd/5/S2998/
European Geosciences Union

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Reactive and organic halogen species in three different European coastal environments" *by* C. Peters et al.

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Received and published: 1 October 2005

The paper contains important scientific information about measurements of tropospheric reactive halogen species. The comparison of measurements at three different sites makes it possible to draw some conclusions about the general relevance of marine halogen chemistry. However, in my opinion, the presentation quality of the manuscript is not sufficient yet. Therefore, I suggest that the manuscript should be published in ACP after making several changes as described below.

General comments

- In the text, the terms “volatile halogenated organic compounds”, “organohalogens”, and “halogenated hydrocarbons” are used. If there is a difference between them, please explain it. If they are used to describe the same species, I suggest to choose one term and use it consistently.
- p. 6079, l. 10: The sentence may suggest that halogen oxides affect ozone only via the NO/NO_2 and the OH/HO_2 ratio. However, they also destroy ozone directly via the catalytic cycle involving X + O_3.
- p. 6081, l. 4: In the context of describing DOAS as a “well-established” method, it may be more suitable to cite one of the original papers, e.g. “Measurements of atmospheric trace gases by long path differential UV/visible absorption spectroscopy” by Platt and Perner in: “Optical and laser remote sensing”.
- p. 6084, l. 11: Please specify if the value of 15.5 hours of sunlight also includes cloudy periods.
- p. 6093, l. 26: What is meant by “agriculture of the laminaria”? Is this the harvest of the laminaria?
- Table 4: Pruvost (2001) also measured CH_2ClI and CH_2I_2. This could also be added to the table.
- Fig. 17: Is there a reason why here the second model is shown and not the lowest model layer, as in Fig. 16?

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Technical corrections

- According to the IUPAC Recommendations (Schwartz & Warneck “Units for use in atmospheric chemistry”, Pure & Appl. Chem., 67(8/9), 1377-1406, 1995) the usage of “ppb” and “ppt” is discouraged for several reasons. Instead, “nmol/mol” and “pmol/mol” should be used for gas-phase mole fractions. Please replace the obsolete units.
- The physical properties “mixing ratio” and “concentration” are used as if they were identical. This is not the case! (for details, see http://www.mpch-mainz.mpg.de/~sander/res/vol1kg.pdf) Please check all occurences of the word “concentration” in the main text and check if it should read “mixing ratio” instead.
- All acronyms should be defined before they are used for the first time. For example: GC/ECD-ICPMS, FWHM.
- Running title: replace “in mid latitudes” with “at mid latitudes”.
- p. 6079, l. 19: Replace “in low concentrations” with “at low concentrations”
- p. 6081, l. 15: replace $^\circ$ with $^\circ$C
- p. 6082: replace “Uni” with “University” or “Univ.”
- p. 6082, Section 2.2: There is no need to explain ECD and ICPMS twice in this section.
- p. 6082, l. 19: I think the acknowledgement section would be a better place to mention the AFO2000 project through which this work was funded.
- p. 6083, l. 16: What is a “drawn line”? Maybe this should be “solid line”?

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- p. 6086, l. 13: The term “both campaigns” is confusing since the manuscript describes 3 campaigns.
- p. 6086, l. 26: I find the sentence “The absorption structure of BrO is comparable to the residual structure” confusing. BrO has a structure, whereas the residual should have no structure. Maybe it is better to say that the OD of BrO is in a similar range as the OD of the residual?
- p. 6088, l. 19: The “remarkable agreement” between Fig. 7 and Fig. 8 is difficult to see because there are several species that occur in one plot but not in the other. I suggest to list exactly the same species in both figures and leave empty spaces for species that were not measured.
- p. 6089, l. 10: Referring to Lucy Carpenters paper, replace “their suggestion” with “her suggestion”.
- p. 6090, l. 12: Since “low tide” refers to the point in time when the water level is lowest, replace “the area of exposed algae increased” with “the area of exposed algae was at its maximum”.
- p. 6094, l. 13: replace “regards to iodine chemistry” with “respect to iodine chemistry”
- Table 1: Does the line with “DL 10.15” refer to IO or BrO?
- Table 3: Average mixing ratios are given here for all species, even for those that were always below DL. I suggest to either leave the entries for species below DL empty or indicate it by putting the values into parentheses.
- Fig. 2: Ard Bay and Bertraghboy Bay are difficult to see on the map. Since they are mentioned in the figure caption, I suggest to highlight their locations on the map.

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Interactive Comment

- Fig. 2: What is the meaning of the arrows 16, 17, and 19? If they are not needed, they should be removed from the map.
- Fig. 6: I think box- and whisker plots are a better way to present a range of measurements concisely, including some information about outliers. See e.g http://mathworld.wolfram.com/Box-and-WhiskerPlot.html.
- Fig. 9: Is there a reason why the color of the text labels alternates between blue and black?
- Fig. 9: Please explain the meaning of the red ellipsis in the figure caption.
- Fig. 9: It is not clear to me to which species the linear fits refer to.
- Fig. 11: What is the difference between the dashed and the solid blue fits?
- Fig. 11: The open black triangle in the legend should probably be solid.
- Fig. 12: Is there a reason why the color of the text labels alternates between blue and yellow?

Interactive comment on Atmos. Chem. Phys. Discuss., 5, 6077, 2005.