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Comment

Interactive comment on “Iodine monoxide at a clean marine coastal site: observations of high frequency variations and inhomogeneous distributions” by R. Commane et al.

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We thank Dr. Sander for his helpful review of this manuscript. We present our detailed response to the questions raised and have made the corresponding changes in the new draft of the manuscript.

(Comment 1) The addition of “(1 s)” to the IO mixing ratio is not self-explanatory. I suggest to write “(1 s average)” instead. - corrected

(C2) According to the IUPAC Recommendations (page 1387 of Schwartz Warneck “Units for use in atmospheric chemistry”, Pure Appl. Chem., 67(8/9), 1377- 1406, 1995, <http://www.iupac.org/publications/pac/67/8/1377/pdf>) the usage

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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 use of nmol/mol is not immediately understood in the chemical observation community so the authors have added the conversion to the introduction.

(C3) p. 4535, l. 19: change “concentrations of [...] a maximum of 7 pptv” to “mixing ratios of. . .” - corrected

(C4) p. 4536, l. 23: Aren’t all tides semi-diurnal? I think “semi-diurnal” is redundant and can be deleted here. - Not all tides are semi-diurnal. While Atlantic coasts predominantly experience semi-diurnal tides, most Pacific coasts experience mixed or diurnal tides e.g. diurnal tides in the Gulf of Mexico and areas of South East Asia and mixed tides around Australia, the western side of North and South America and the northern coast of the Mediterranean Sea.

(C5) p. 4537, l. 6-7: In the sentence “24h back trajectories [...] of the previous 24 h.”, one of the “24h” is redundant. - corrected

(C6) p. 4539, l. 16: Add a minus sign to the exponent of “cts s1”. - corrected

(C7) p. 4539, l. 24: Change “normalised” to “normalised”. - corrected

(C8) p. 4540, l. 11: What is a “standard litre per minute”? Please define the temperature and pressure that you use. There are many ways to define a “standard”. - temperature and pressure added

(C9) p. 4540, l. 8: Something is wrong with the sentence “...did not found to vary...” - corrected

(C10) p. 4546, l. 2-3: Something is wrong with the sentence “...with the IO mixing ratio showed a temporally broader peak” - corrected

(C11) p. 4546, l. 15: Replace “Although” by “However”. - corrected

(C12) p. 4547, l. 17: Change “Bitter et al. (2005)” to “(Bitter et al., 2005)” -

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corrected

(C13) p. 4548, l. 14: Change “reflector” to “retro-reflector” - corrected

(C14) p. 4551, l. 14: Change “can be photolysed” to “is photolysed” - corrected

(C15) p. 4551, l. 21-23: The self-reaction of IO does not involve ozone. Thus it cannot destroy ozone directly. Please define what you call “ozone depletion rate”. Note that at the beginning of the section, you describe the reaction of ozone with I atoms as ozone destruction. - Section 4.3.2 has been re-written to clarify the role of IO self-reaction in ozone destruction. The chemical loss of O₃ in the presence of 50 pptv of IO and 1km inland from the site have also been calculated.

(C16) p. 4552, l. 17: Replace “suggest” by “suggests” - corrected

(C17) p. 4556: Please give a URL from where the PhD-thesis from Kraus can be down- loaded. - added

(C18) Figures:Fig.3 uses DOY as axis labeling, Fig.4 uses “August 29th” and “29/Aug”. Please use a uniform and consistent format for the time axis. - corrected

(C19) Define all acronyms before they are first used: cts, slm, sccm, a.s.l., CRDS. - corrected

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