

## ***Interactive comment on* “Direct evidence for coastal iodine particles from Laminaria macroalgae - linkage to emissions of molecular iodine” by G. McFiggans et al.**

**G. Malin**

g.malin@uea.ac.uk

Received and published: 30 March 2004

From the perspective of a biologist working on biogenic production of trace gases and the role of algae in the iodine cycle, I found the paper by McFiggans et al very interesting and thought-provoking. Whilst the paper is generally very clearly written some of the details of the biological aspects are rather scant and some additional detail would be informative for future experiments of this type. My specific comments are as follows:

Given that 30–40 ppbv levels are typical for a coastal site like Mace Head I was surprised to find the approx. 300 ppbv levels of ozone used in the experiments described as ‘ambient levels of ozone’ in the abstract. Ozone is very toxic to biological organisms and so-called acute exposure to 150–300 ppb concentrations are used experimentally to

Full Screen / Esc

Print Version

Interactive Discussion

Discussion Paper

trigger cell death (e.g. Rao et al. 2000). Colleagues who are plant molecular biologists tell me that controlling experimental ozone levels can be problematic because it is so surface reactive. Here page 5 lines 17-19 infers that problems may have been experienced in controlling the ozone concentration and I note that the ozone concentration was measured in the reactor(s) exhaust flow. For Figure 2 the ozone mixing ratios are reported as being of the order of 300 ppbv and Table 1 gives concentrations of 100 or 200 ppbv. It would be useful to know just how variable the ozone concentration was with time during a single experiment (what was the duration of the experiments?) and between different experiments. McFiggans et al report that particle formation was seen when ozone was added to the secondary reactor which might suggest that the high ozone levels used were not biologically damaging, but the data are not shown.

The repeatability of the 7 SMPS aerosol mobility size distributions could not be judged from a printed version of Figure 2 because the maximum and minimum range error bars did not show up. I suggest that all 7 curves are plotted along with the average. Could the authors also clarify the size and number of *Laminaria digitata* specimens used in these experiments, whether they were cropped and used in experiments intact and the duration of the experiments. Some additional information regarding the recovery of re-exposed specimens would also be welcome.

I agree with Anonymous Referee #2s comment that Laminariales are only infrequently fully exposed to air and that any molecular iodine that is produced will react very quickly with dissolved organic matter.

Reference Rao, M.V., Koch, J.R. and Davis, K.R., 2000. Ozone: a tool for probing programmed cell death in plants. *Plant Molecular Biology*, 44(3): 345-358.

Interactive comment on Atmos. Chem. Phys. Discuss., 4, 939, 2004.

[Full Screen / Esc](#)[Print Version](#)[Interactive Discussion](#)[Discussion Paper](#)