Atmos. Chem. Phys. Discuss., 14, C9223–C9225, 2014
www.atmos-chem-phys-discuss.net/14/C9223/2014/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Seasonal in situ observations of glyoxal and methylglyoxal over the temperate oceans of the Southern Hemisphere" *by* S. J. Lawson et al.

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Received and published: 16 November 2014

When addressing referees comments, we noticed that Figure 4b (Chatham Rise) had used HYSPLIT back trajectory data for dates which did not correspond to the sample dates. HYSPLIT back trajectory data for the correct dates have since been obtained. As we use the trajectories as a tool for selecting clean oceanic samples (see Section 3.1.1), examination of these new back trajectories showed that 2 of the 6 Chatham Rise samples met the strict criteria of 'clean oceanic' e.g. no terrestrial influence for 96 hours prior. There is therefore a reduction in clean oceanic samples for Chatham Rise from 4 samples (March 1, 2, 3 and 4) to 2 samples (March 3 and 4). Fig 4b has been

modified to show the back trajectories for March 3 and 4.

While this change has halved the number of clean oceanic samples for Chatham Rise, it has made a negligible difference to the mixing ratios reported: Glyoxal was previously 24 $\pm$5 ppt and is now 23$\pm$ 8ppt while methylglyoxal was previously 12$\pm$ 7ppt and is now 10 $\pm$ 10 ppt. CN and CO2 values for Chatham Rise are slightly lower (Table 1). Parallel precursor mixing ratios for Chatham Rise have in most cases been reduced by only a few ppt (isoprene –previously 17 ppt now 14 ppt, monoterpenes- previously 34 ppt now 32 ppt, aromatics previously 10, 9 and 10 ppt now 10, 9 and 8 ppt and acetone- previously 125 ppt now 89 ppt) (see Table 3). The changes of a few ppt in both the dicarbonyl and precursor mixing ratio has changed the Chatham Rise calculated yield (Section 3.3) from 28% to 29% for methylglyoxal and the glyoxal yield from 11% to 10%.

Excluding the two Chatham Rise samples on the 1 and 2 March from the 'clean marine' category has made a negligible difference to the dicarbonyl, CN and CO2, parallel precursor mixing ratios, and yields calculated. This suggests that these samples from the 1 and 2 March in fact had very minimal, or no terrestrial influence. However in keeping with the strict criteria we have used for identifying clean marine samples in this work, we felt for consistency these samples should be excluded. As the clean oceanic Chatham Rise dicarbonyl mixing ratios and yields are very similar, to those reported previously, the conclusions of this work remain unchanged.

Clean oceanic Chatham Rise glyoxal and methylglyoxal mixing ratios in the text in Sect 3.1 and 3.2 have been changed along with the yields in Sect 3.3. Section 3.4 is unaffected. The 'all data' mixing ratios for Chatham Rise are unchanged, and all Cape Grim data remain unchanged.

Interactive comment on Atmos. Chem. Phys. Discuss., 14, 21659, 2014.

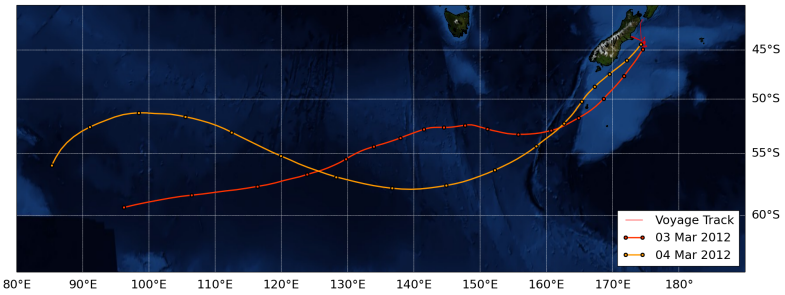

Fig. 1. modified Fig 4b