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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Emissions of Carbon Tetrachloride (CCl_4) from Europe" *by* Francesco Graziosi et al.

P. J. Fraser (Referee)

paul.fraser@csiro.au

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Text suggestions

Line 40: near exclusively

Line 45: (Butler et al., 1999; Sturrock et al., 2002)

Line 53: sharp decrease in the large-scale emissive use of CCl4

Line 63: emissive uses of CCl4 are banned...in signatory countries

Line 67: no signiïňĄcant natural sources

Line 69: the industry sector (Simmonds et al., 1998; Fraser et al., 2014)

Line 77: deïňĄne NH, SH

Line 78: shows that CCl4 is still being emitted...

Line 96: ...to 0.12-0.18 Gg yr-1, a decline of 5% yr-1

Line 106: Emission estimates by Hu et al. were...

Line 110: please state the Xiao et al. European CCl4 emissions in Gg (referred to later in the text)

Line 111: this study....did not derive regional variations that likely occur across Line 128: AGAGE and afïňĄliated stations

Line 131: oceanic air masses and occasionally by air masses from over Ireland, UK and continental Europe

Line 154: 20-day back trajectories

Line 156: deïňĄne ERA

Linre 226: ...macro areas (acronyms given in Table 1)

Line 227: deïňĄne SRR

Line 242: geo-referenced

Line 259: and/or chlor-alkali industry

Line 283: add 'Australian CCl4 emissions are declining at 5% yr-1 (Fraser et al., 2014)

Line 545: a priori (blue squares)

Comments

Line 136: CCl4 is measured at MHD by GC-MS and GC-ECD - the latter data are preferred because there are inherent problems in AGAGE in measuring CCl4 by GCMS. Do these problems exist for GC-MS at JFJ, and, if they do, do they impact on this analysis

Line 165: a priori emissions. I suggest the following prior could be used - the Xiao et al. European emissions should be released according to the E-PRTR distribution of industrial emissions. Hu et al. (2016) showed conclusively the US emissions of CCl4 (and presumably European emissions of CCl4) are not signiïňĄcantly related to population distributions but are related to the distribution of chemical industrial activity. Why bias your prior in the likely wrong direction using largely (96%) population distributed emissions. This could lead to a signiïňĄcantly better a priori.

Line 260: this study and Hu et al. show that the CCl4 emissions are coming from industrial chemical hot-spots and are not related to population distributions. LandïňĄlls and domestic bleach sources tend to follow population distributions and these studies therefore tend to down-play land ïňĄlls and domestic bleach as signiïňĄcant sources although tentative, I think this important conclusion can be made.

3.2.4 Comparison with NAME: why not run the NAME inversion using all 3 observation sites not just MHD?

Line 270 - Figure 6 compares UK and NWEU emissions of CCl4 with the latter signiïňĄcantly higher. At this point it would be instructive to compare the relative size of the chemical industries in these two regions - for example compare their chlor-alkali productions.

Line 284: per capita emissions. Since it has been shown that CCl4 emission distributions do not follow population distributions, then something better than per capita emissions could be calculated as a reference indicator, such as CCl4 emissions per unit of chemical production. I have done this for Hu et al USA emissions and Fraser et al. Australian emissions, as a function of chloro-alkali production - USA (0.39 kg CCl4/tonne Cl and Australia (0.41 kg CCl4/tonne/Cl). European Cl production numbers are available - it would be interesting to see what the European CCl4/Cl emission factor is.

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