Geophysical Research Abstracts,
Vol. 11, EGU2009-2240-4, 2009
EGU General Assembly 2009

Emission indices and characterization of the NMHCs and trace gases in the city air of Santiago de Chile

Y. Elshorbany (1,2), R. Kurtenbach (1), J. Kleffmann (1), M. Rubio (3), E. Lissi (3), G. Villena (3), E. Gramsch (4), and P. Wiesen (1)

(1) Wuppertal University, Physical Chemistry/FBC, Wuppertal, Germany (elshorbany@uni-wuppertal.de, +49 2024392757), (2) Environmental Sciences Devision, National Research Center, Giza, Egypt, (3) Faculty of Chemistry and Biology, University of Santiago de Chile, Santiago, Chile, (4) Physics Department, Faculty of Science, University of Santiago de Chile, Santiago, Chile

Due to its unique geographic location and weather pattern, Santiago de Chile is a highly polluted urban area and frequently experiences high pollution episodes. Policies to reduce pollutants emissions require the determination of the emission indices (EI) of these pollutants and identifying their potential sources. During the winter campaign from June 25 - July 07, 2005, non-methane hydrocarbons (NMHCs) were measured at short time intervals ranging from 30 to 60 min during the day time and for longer periods during night. These measurements were also accompanied by simultaneous measurements of HONO, HCHO, CO_2, CO, NO, NO_2, and photolysis frequencies, $j(O^1D)$ and $j(NO_2)$. The average campaign mixing ratio of the total measured NMHCs was 2028 ppbC of which only 970 ppbC were identified. Among NMHCs, toluene and (m & p)-xylenes had the highest EI with 342 and 343 mg/kg fuel, respectively while that of benzene was 167 mg/kg fuel. High EI for propane, propene and i-butane were also observed which is mainly due to leakage of liquid petroleum gas (LPG). EIs of CO, NO, HONO and HCHO were 59, 6.93, 0.044, 0.063 g/kg fuel, respectively. Emission ratios of toluene/benzene, m-, p-xylene/ethylbenzene were 2.6 and 3.7, respectively. Analysis of the emission ratios and its significance is presented.