Geophysical Research Abstracts,
Vol. 11, EGU2009-4569, 2009
EGU General Assembly 2009

The Humic Like Substances in biomass burning emissions

C. Baduel, D. Voisin, J. L. Jaffrezo, and M. Legrand

Laboratoire de Glaciologie et Géophysique de l'Environnement, 54 rue Molière - Domaine Universitaire - BP 96, 38402 St Martin d'Hères Cedex, France, baduel@lgge.obs.ujf-grenoble.fr, Fax : +33 (0) 4 76 82 42 01

Several studies have shown that "HUmic LIke Substances" (HULIS) may represent a significant fraction (15 and 40 % in mass) of the organic carbon (OC) of atmospheric aerosols. Concentrations indicate seasonal variations with one maximum in summer and another one in winter. This last maximum is tentatively linked to emissions from bimoass combustion, with HULIS coming from the incomplete breakdown of polymeric carbohydrates and lignin products. A second way for HULIS formation can be the transformation of pyrogenic semi-volatile organic compounds through condensation reactions with other molecules. It is also proposed that HULIS can derive from the reaction of soot particles with atmospheric oxidants. This last process can be important for any combustion-generated aerosol. This work is focused on HULIS in samples impacted by combustion processes. It presents results obtained for two HULIS fractions: water soluble HULIS and "Total" HULIS, the fraction extracted in alkali media to extract the more hydrophobic compounds. Samplings were carried out in very close proximity to combustion-generated aerosol activity: in a tunnel and nearby garden fires; in cities during burning season etc. The results indicate some variability in the characteristics of HULIS obtained from these different sources.