Geophysical Research Abstracts
Vol. 14, EGU2012-9642, 2012
EGU General Assembly 2012

Atmospheric deposition of Pb, Cu, Ni, As, Sb, V, Cr, Co, Cd and Zn recorded in the Misten peat bog (Hautes-Fagnes, Belgium) during the Industrial Revolution

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A 40 cm peat core was studied from ombrotrophic bog in Western Europe (Misten bog, Hautes-Fagnes, Belgium). Trace metal and metalloid content (TM) and Pb isotopes were analysed by Q-ICP-MS and MC-ICP-MS, respectively. We focused our attention to a selected number of TM according to their specific enrichment (i.e. Pb, Cu, Ni, As, Sb, Cr, Co, V, Cd and Zn). Our aims were: 1) to investigate TM mobility; 2) to determine TM accumulation rates and 3) to link TM accumulation rates with established histories of anthropogenic atmospheric emission. According to 210Pb and 14C data the studied peat core section covered the last two centuries. The general agreement in TM concentration and flux profiles suggested that all TM (except Zn and Cd), were immobile in the Misten peat bog. The temporal increase of TM fluxes between the inception of the Industrial Revolution and the present vary by a factor of 5 to 50 according to TM. The maximum fluxes of TM were found between 1991 and 1995 AD. The coal consumption and metallurgical activities were the predominant source of pollution. The historical TM profiles in the Misten peat profile are in agreement with other European records, reflecting the influence of regional European pollution.