

LONG RANGE TRANSPORT OF FINE PARTICULATE SOIL, SULPHATE AND BLACK CARBON ACROSS THE EAST ASIAN REGION AND BEYOND DURING 2001-03.

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The Australian Nuclear Science and Technology Organisation (ANSTO) has been using accelerator based ion beam analysis (IBA) techniques to characterise fine particulate matter on a daily basis at 5 sites throughout East Asia for 3 years now. These IBA techniques provide detailed information on over 20 different chemical species from hydrogen to lead. This enables key species, important in visibility studies, human health of urban populations and climate change models, like soil, sulphates and black carbon to be quantitatively determined from the total fine mass loadings across a region covering Vietnam, Korea, China, Japan and Philippines. This paper will report quantitatively on seasonal variations in and the transport of these three key chemical components of fine particulate matter across thousands of kilometres. Data collected to date show annual average PM_{2.5} mass levels in excess of 50 µg/m³ at some sites and significant seasonal and daily variations. Clearly at certain times of each year there are significant anthropogenic (soil) and natural (sulphate and black carbon) fine particle events affecting several countries. Through the use of appropriate back trajectories on a global scale, we will show the sources of these very large fine particulate mass events to be the industrial regions of eastern China and the desert regions of northern China near the Mongolian border.