Chemical composition of aerosol particles at the CVAO

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Abstract

Chemical analysis was performed on both bulk and size-resolved aerosol particles collected at the CVAO at both 24 h and 72 h intervals. The samples were analyzed for their organic and inorganic compositions. The aerosol particles were mainly dominated by sea salt and mineral dust with the relative contributions varying according to seasons. Other aerosol chemical components were sulfates, ammonium, nitrate, organic matter, elemental carbon and trace metals. Observations showed strong seasonal variation in the chemical compositions of most aerosol components with mineral dust showing strong winter peaks while ammonium and non-sea salt sulfate show spring and summer peaks, respectively. Trace metals such as iron was mainly deposited by mineral dust with the soluble content of iron found to be very low (< 0.5%) under near to marine atmospheric conditions. The main sources of trace metals were mineral dust, ship emissions and biomass combustion while elemental carbon mainly originated from long-range transport.