



Long-term observation of water-soluble chemical components in the bulk atmospheric aerosols collected at Okinawa, Japan

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The economic development and population growth in recent Asia spread air pollution. Emission rate of air pollutants from Asia, in particular oxides of nitrogen, surpassed those from North America and Europe and should continue to exceed them for decades. The study of the long-range transported air pollution from Asian continent has gained a special attention in Japan because of increase in photochemical oxidants in relatively remote islands. Okinawa Island is situated approximately 1500 km south of Tokyo, Japan, 2000 km southeast of Beijing, China, and 1000 km south of South Korea. Its location in Asia is well suited for studying long-range transport of air pollutants in East Asia because maritime air mass prevails during summer, while continental air mass dominates during fall, winter, and spring. The maritime air mass data can be seen as background and can be compared with continental air masses which have been affected by anthropogenic activities. Bulk aerosol samples were collected on quartz filters by using a high volume air sampler. Sampling duration was one week for each sample. We determined the concentrations of water-soluble anions, cations and dissolved organic carbon (DOC) in the bulk aerosols collected at the Cape Hedo Atmosphere and Aerosol Monitoring Station (CHAAMS) using ion chromatography, atomic absorption spectrometry, and total organic carbon analyzer, respectively. We will report water-soluble chemical components data of anions, cations and DOC in bulk atmospheric aerosols collected at CHAAMS during August, 2005 to April, 2010. Seasonal variation of water-soluble chemical components showed that the concentrations were relatively low in summer, higher in fall and winter, and the highest in spring. When air mass came from Asian Continent, the concentrations of water-soluble chemical components were much higher compared to the other directions. In addition, we calculated background concentration of water-soluble chemical components at Okinawa, Japan.