Microanalysis of atmospheric aerosols collected at Baengnyeong Island, Korea and Weizhou Island, China using low-*Z* particle EPMA

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In order to compare the physicochemical properties of individual atmospheric aerosols over the Yellow sea with the South China Sea, the ambient particles with aerodynamic diameter in the range of 10-2.5μm (coarse) and 2.5-1μm (fine) were collected through a three-stage Dekati PM_{10} impactor in the morning and afternoon on September 24-27, 2012 at the Baengnyeong Island (BI) near the Korean Peninsula and on March16-30, 2015 at the Weizhou Island (WI), Beihai city, China, respectively. Approximately 2545 particles at BI and 4421 at WI were determined using a scanning electron microscope equipped with ultrathin-window energy dispersive X-ray spectrometer (SEM-EDX, JEOL JSM-6390). Six groups, namely sea spray salt, mineral dust, organic carbon (OC), elemental carbon (EC), heavy mental- and K-containing particles, were observed based on their secondary electron images (SEIs) and semi-quantitative elemental atomic concentrations calculated using a Monte Carlo simulation program. A lot of mixing particles with either homogeneity or heterogeneity were identified and three mixing types were classifed, i.e. ring-coating, disperse-embedding and totally mixed. Almost half of mineral dust and nearly total of sea salt particles were proved to be the reacted or aged ones, in which the nitrate-containing species outnumbered the sulfate-containing at BI while it is contrary at WI. Furthermore, more OC (especially biogenic particles) and heavy mental-containing particles at BI, and more EC particles at WI were detected, suggesting that there were different air pollution sources above the Yellow sea and the South China Sea.