

SEASONAL VARIATION IN UPWIND AND DOWNWIND AREAS OF SEOUL, KOREA**Y.S. Ghim, H.S. Oh, J.Y. Kim***Air Resources Research Center, Korea Institute of Science and Technology, Seoul, Korea*

The greater Seoul area (GSA), which has an area of 3,071 km², is crowded with 20 million people and 4.8 million cars. Half of people and cars reside within Seoul of 605 km². Influence of emissions from Seoul to air quality of the neighboring area could not be small because of both high density and large amount; emissions from various sources distributed over wide circumferential areas certainly impact air quality of Seoul. As a first step to identify the relationship between Seoul proper and the neighboring area in the GSA, upwind and downwind areas of Seoul were determined by season. Three consecutive days were selected as episode days typical of each season in 1997. Mesoscale meteorology on episode days was reproduced by MM5 (PSU/NCAR Mesoscale Modeling System) with horizontally nested grids. The meteorological field on the study area of 240 km x 224 km with grid spacing of 2 km was obtained by using the CALMET diagnostic meteorological model. Twenty-four hour upwind and downwind area of Seoul were determined by calculating backward and forward trajectories, respectively, with u, v and w velocity vectors. The upwind and downwind areas were extended to the northwest and the southeast, respectively, in spring and winter due to high wind speeds while those areas were restricted in the fringe of Seoul in summer and fall.