

NUMERICAL SIMULATIONS OF THE MESOSCALE CIRCULATION AND THE TRANSPORTATION AND DIFFUSION OF AIR POLLUTANTS IN TAIWAN**P-L. Lin***Department of Atmospheric Sciences, National Central University, Jung-Li, Taiwan*

Abstract The local circulation of land and sea breezes and mountain-valley winds, induced by differential heating and topographical effects often play an important role in transporting, redistribution and transforming atmospheric pollutant. Observational Studies have pointed out severe episodes of air pollution usually result from mass accumulation of air pollutants by the locally closed circulation. Taiwan is located in the subtropical region and surrounded by the ocean. Two-thirds of the island of Taiwan is mountainous. In particular, the Central mountain Range runs through Taiwan in a north-south orientation with an average terrain height of about 2000m and a peak of 4000m. With this unique orography, the land sea contract and the mountains not only generate strong local circulation but also interact with different kind weather systems to produce locally convergence and develop to complex closed circulation. Since the coast zone of Taiwan has the highest density of population and is the major industrial area, the role of local circulation in the transporting and diffusing of atmospheric pollutants should be very important. In this study PSU/NCAR MM5 have been used to investigate the development of land-sea breeze and mountain-valley circulation and their effects on the distribution and variation of atmospheric pollutants in Taiwan.