Geophysical Research Abstracts
Vol. 14, EGU2012-12081-1, 2012
EGU General Assembly 2012

Numerical study of the impact on local weather due to development of a river in South Korea

Y.-J. Choi, M.-W. Kim, Y.-S. Park, T. Kwon, K. Kahng, M. Kim, and G.-H. Kim
National Institute of Meteorological Research, Korea Meteorological Administration, Korea (yjchoikma@korea.kr)

A big project for development of 4 major rivers is progressing in South Korea. The most influencing change in the rivers by the project which would affect on the local meteorology is the increase of river width, that is, the increase of water surface area. To assess the impact of water surface area change, the mesoscale model suitable for local meteorological phenomena simulation, WRF (Weather Research and Forecasting) is applied. The experiment area is the Nakdong River located in west of Taegu city in South Korea. West side of the river is agricultural area and east side of the river is occupied by industrial complex. The model domains are nested and the simulation for the smallest domain has spatial and temporal resolutions, 111m and 0.333sec, respectively. The simulations are applied for the surface conditions before and after the development for arbitrary 20 days selected from year 2010. The air temperature, humidity, and wind speed are compared. For the cases of wider river, the air temperatures decrease during daytime and increase during nighttime while the mixing ratios and wind speeds increase during whole day by and large. The mixing ratios increase greatly in daytime, on the contrary the wind speeds increase a lot in nighttime. The region under influence extends up to approximately 1km away from the riverfront and 2km at maximum.